

## Top Ten Things to Know Cardiopulmonary Resuscitation in Infants and Children with Cardiac Disease

1. Cardiac arrest occurs at a higher rate in children with heart disease than in healthy children.
2. Pediatric basic life support and advanced life support guidelines focus on delivering high-quality resuscitation in children with normal hearts. The complexity and variability in pediatric heart disease pose unique challenges during resuscitation.
3. The recommendations in this statement concur with the critical components of the 2015 American Heart Association pediatric basic life support and pediatric advanced life support guidelines and are meant to serve as a resuscitation supplement.
4. Reasons specific to this unique population that make this scientific statement important:
  - cardiac arrest frequency is higher in infants and children with congenital heart disease (CHD), and the pathogenesis of these events can differ from infants and children without heart disease
  - congenital heart defects have a wide variety of hemodynamic and physiological influences on cardiac output, and the specific cardiorespiratory interactions and response to resuscitation can be quite variable
  - the response of the neonate and the postoperative patient with complex CHD to pharmacological intervention can differ from the response of infants and children without heart disease
5. An understanding of the evolving physiology is critical to prevent cardiac arrest in this high-risk population.
6. Important statistics:
  - It is estimated that 16,000 children in the United States experience an out-of-hospital cardiac arrest each year.
  - An estimated 5,807 experience an in-hospital cardiac arrest each year.
  - Hospitalized children with cardiovascular disease are at increased risk for cardiac arrest.
  - Cardiac arrest requiring resuscitation occurs in ≈7 per 1,000 hospitalizations of children with cardiovascular disease, a rate >10-fold higher than that observed in children hospitalized without cardiovascular disease.
7. Close invasive and noninvasive monitoring and anticipatory care, including a low threshold for transfer to intensive care, cardiology/intensive care consultation, or hospital readmission, are important to avoid hemodynamic instability and to prevent cardiac arrest.
8. There appears to be considerable variation in counseling practices among professionals regarding infants with CHD. Future work is needed to establish the expectation of regular multidisciplinary ethical discussions as part of standard of care for patients with CHD.
9. Understanding the anatomy and physiology of the high-risk pediatric cardiac population will promote early recognition and treatment of decompensation to prevent cardiac arrest, increase survival from cardiac arrest by providing high-quality resuscitations, and improve outcomes with post-resuscitation care.
10. Clinicians must individualize resuscitation strategies considering each patient's cardiovascular anatomy and physiology. Early consideration of other interventions, including ECPR, can be lifesaving.

Marino BS, Tabbutt S, MacLaren G, Hazinski MF, Adatia I, Atkins DL, et al; on behalf of the American Heart Association Congenital Heart Defects Committee of the Council on Cardiovascular Disease in the Young; Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Cardiovascular Surgery and Anesthesia; and Emergency Cardiovascular Care Committee. [Cardiopulmonary resuscitation in infants and children with cardiac disease: a scientific statement from the American Heart Association](#) [published online ahead of print April 23, 2018]. *Circulation*. DOI: 10.1161/CIR.0000000000000524.