# Postoperative Care Following Pediatric Cardiac Surgery

*Essay*

***For partial fulfillment of Master Degree in Intensive care***

*Submitted by*

**Hany Ahmed Ali Salim**

M.B.B.CH

*Supervised by*

**Prof. Dr.: Madiha Metwaly Zidan**

*Prof. of Anaesthesia and Intensive Care*
*Faculty of Medicine - Ain Shams University*

**Dr. Mahmod Hassan Mohamed**

*Lecturer of Anaesthesia and Intensive Care*
*Faculty of Medicine - Ain Shams University*

**Dr. Heba Abdelazem Labeb**

*Lecturer of Anaesthesia and Intensive Care*
*Faculty of Medicine - Ain Shams University*

**Faculty of Medicine**
**Ain Shams University**
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***Hany Ahmed Ali***

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# List of Abbreviations

| | | |
|---|---|---|
| **AP** | **:** | Anterioposterior |
| **APTT** | **:** | Activated partial thromboplastin time |
| **ASD** | **:** | Atrial septal defect |
| **AV** | **:** | Atrioventricular |
| **AVSD** | **:** | Atrioventricular septal defect |
| **BAS** | **:** | Balloon atrial septostomy |
| **BAS** | **:** | Balloon atrial septostomy |
| **BIS** | **:** | Bispectral index monitoring |
| **BIS** | **:** | Bispectral index monitoring |
| **BTS** | **:** | Blalock-Taussig shunt |
| **CAVC** | **:** | Complete atrioventricular canal |
| **CFAM** | **:** | Continuous cerebral function monitoring |
| **CHD** | **:** | Congenital heart diseases |
| **CHEOPS** | **:** | Children's Hospital of Estern Ontario Pain Scale |
| **CHF** | **:** | Congestive heart failure |
| **CICU** | **:** | Cardiac intensive care unite |
| **CMR** | **:** | Cardiac magnetic resonance |
| **CO** | **:** | Cardiac output |
| **CPAP** | **:** | Continuous positive airway pressure |

| | | |
|---|---|---|
| **CPB** | **:** | Cardiopulmonary bypass |
| **CT** | **:** | Computed tomography |
| **CXR** | **:** | Chest x ray |
| **2D** | **:** | 2 dimension |
| **DIC** | **:** | Disseminated intravascular coagulation |
| **EEG** | **:** | Electroencephalographic |
| **HCM** | **:** | Hypertrophic cardiomyopathy |
| **HLHS** | **:** | Hypoplastic left heart syndrome |
| **ICG** | **:** | Indocyanine green |
| **ICU** | **:** | Intensive care unite |
| **IVC** | **:** | Inferior vena cava |
| **MRA** | **:** | Magnetic resonance angiography |
| **MRI** | **:** | Magnetic resonance imaging |
| **NICO** | **:** | Partial CO2 rebreathing Fick monitoring |
| **NICU** | **:** | Neonatal intensive care unite |
| **NO** | **:** | Nitric oxide |
| **NSAIDs** | **:** | Nonsteroidal anti-inflammatory drugs |
| **OPS** | **:** | Objective Pain Scale |
| **PA** | **:** | Pulmonary artery |
| **PCCO** | **:** | Calibrated continuous arterial pulse contour cardiac Output |
| **PDA** | **:** | Patent dactusarteriorus |

| | | |
|---|---|---|
| **PGE1** | **:** | Prostaglandine e 1 |
| **PH** | **:** | Pulmonary hypertention |
| **PICU** | **:** | Pediatric intensive care unite |
| **PT** | **:** | Prothrombin time |
| **PVR** | **:** | Peripheral vascular resistance |
| **RACHS** | **:** | Risk-Adjusted Congenital Heart Surgery |
| **RSV** | **:** | Respiratory syncytial virus |
| **RV** | **:** | Right ventricle |
| **SIRS** | **:** | systemic inflamtory response syndrome |
| **SVAS** | **:** | Supravalvar Aortic Stenosis |
| **SVC** | **:** | Superior vena cava |
| **SVR** | **:** | Systemic vascular resistance |
| **TEG** | **:** | Thromboelastogram |
| **TGA** | **:** | Transposition of great artries |
| **TOE** | **:** | Transoesophageal Echocardiography |
| **TOF** | **:** | Tetralogy of fallot |
| **TPN** | **:** | Total parenteral nutrition |
| **VAS** | **:** | Visual Analogue Scale |
| **VSD** | **:** | Ventricular septal defect |

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# Introduction

Recent development of surgical interventions have contributed to Substantial improvements in morbidity and mortality of children with congenital cardiac defects.

Innovations in achieving early and correct preoperative diagnoses, Operative techniques, methods of extracorporeal circulation and myocardial protection, and renal replacement therapy have encouraged surgeons to attempt surgical correction for more severe cardiac anomalies, more premature babies, and lower-body-weight babies ***(Wernovsky et al., 2001).***

Heart surgery in children is done to repair heart defects a child is born with (congenital heart defects) and heart diseases a child gets after birth that need surgery. The surgery is needed for the child's well-being. There are many kinds of heart defects. Some are minor, and others are more serious. Defects can occur inside the heart or in the large blood vessels outside the heart. Some heart defects may need surgery right after the baby is born. For others, your child may be able to safely wait for months or years to have surgery. One surgery may be enough to repair the heart defect, but sometimes a series of procedures is needed ***(Bonow et al., 2007).***

The development of cardiopulmonary bypass (CPB) has brought cardiac surgery from a very limited and hazardous endeavor to a routine and relatively safe practice that addresses an incredible variety of diseases and conditions in patients from a few hours to nine or decades old ***(Mammen et al., 1985).***

With facilities for accurate diagnosis and scope of complete correction, more and more children and infants are undergoing surgical treatment for congenital heart disease in the neonatal period and infancy, and there is an increasing demand for dedicated personnel for the specialized intensive care of these critically ill children. This has translated into better outcomes in several centers ***(Balachandran et al., 2010).***

Pediatric cardiac intensive care has evolved as a distinct limb of efficient pediatric cardiac programs in the developed nations. With increasing demand for congenital heart surgery in the developing nations, concept of pediatric cardiac intensive care units (PCICU) is critical to the success of these programs. In the early years of development of congenital heart surgery, the pediatric cardiac surgeons were primarily responsible for postoperative intensive care. Over the past three decades, other pediatric cardiac professionals (cardiology, cardiac anesthesia, critical care physicians, and

ancillary staff) have started contributing increasingly to the care of these patients .Thus, pediatric cardiac intensive care has emerged as a new subspecialty to cater to the unique need of children with congenital and acquired heart disease ***(Stromberg, 2004).***