PEDIATRIC Emergency Medicine Reports
The Practical Journal of Pediatric Emergency Medicine

Congenital Heart Disease, Part 2

Pediatric Dosing of Common Resuscitative Medications*

DRUG	DOSE**	COMMENT
Adenosine	0.1 mg/kg rapid IV push; may repeat (0.2 mg/kg) IV x 2 (max = 12 mg)	Indicated for hemodynamically stable, narrow, complex tachycardia
Amiodarone	5 mg/kg IV bolus over several minutes to 1 hour, may repeat up to 15 mg/kg/day	Indicated (class IIB) for shock-resistant VT Class indeterminate for VF/pulseless VT
Aspirin	1-2 mg/kg PO qd	Inhibits platelet aggregation
Captopril	Neonates: 0.05-0.1 mg/kg/dose PO q6-24h Infants: 0.15-0.3 mg/kg/dose PO q6-24h Children: Max = 2 mg/kg/dose	Afterload reducing agent
Dobutamine	1-20 mcg/kg/min IV	Inotropic support
Dopamine	1-20 mcg/kg/min IV	Inotropic/chronotropic support
Enalapril	0.1 mg/kg PO qd (max = 40 mg/day) 0.005-0.01 mg/kg/dose IV q8-24h (max = 1.25 mg)	Afterload reducing agent
Esmolol	Bolus-100-500 mcg/kg IV over 1 minute then 25-100 mcg/kg/min	Short-acting beta-blocker
Furosemide	1-3 mg/kg/dose PO/IV	Loop diuretic
Labetolol	3 mg/kg/day divided BID 0.2-0.5 mg/kg/dose IV (max 20 mg/kg/day) 0.2-1.5 mg/kg/h	Beta-, alpha-blocker
Metoprolol	1-5 mg/kg/day PO divided qd or BID	Selective B_1 blocker
Nitroprusside	0.3-5 mcg/kg/min IV	Relaxes smooth muscle and produces vasodilation, prolonged use at high doses may cause cyanide toxicity
Phenylephrine	5-20 mcg/kg/dose IV/IM (max = 0.5 mg)	
Propranolol	1-4 mg/kg/day PO divided q6-8h	Class II antiarrhythmic, not suitable for emergent treatment of HTN
Prostaglandin E_1	0.05-0.2 mcg/kg/min	Promotes relaxation of smooth muscle particularly in the ductus, arteriosus, decreases pulmonary vascular resistance.

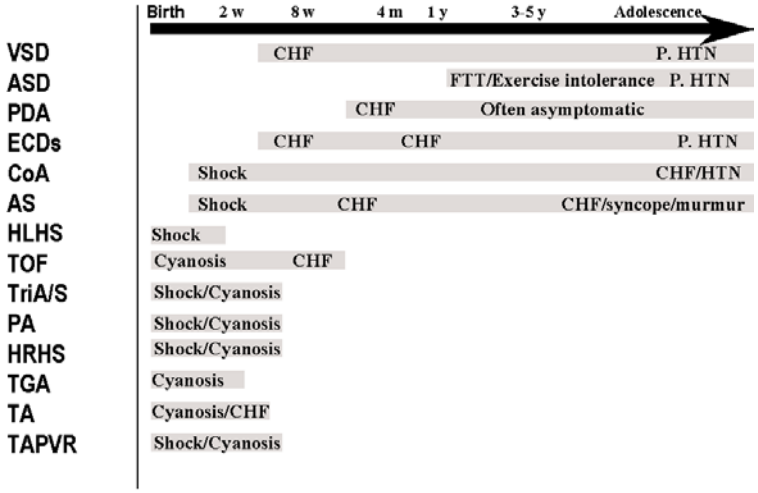
*Suggested regimens only. Doses should be adjusted to account for any comorbidity and/or drug-drug interations. Please refer to the manufacturer or Pediatric Advanced Life Support guidelines.

**All resuscitative medications and efforts should follow Pediatric Advanced Life Support guidelines where applicable.

Common Corrective Surgical Procedures

PROCEDURE	USES	DESCRIPTION
Blalock-Taussig	TOF	Shunt anastomosis of subclavian to pulmonary artery
Fontan	HLHS, TriA, HRHS	Total cavo-pulmonary shunt. Results in redirecting systemic venous return directly to the pulmonary artery. Final stage in surgery for single ventricles.
Mustard	TGA	Atrial switch using prosthetic material for intra-atrial baffle
Senning	TGA	Atrial switch using native material for intra-atrial baffle
Norwood	HLHS	Palliative procedure in HLHS. Involves reconstruction of hypoplastic aorta.
Ross	AS/AI, HLHS	Transplantation of pulmonary valve to correct defective aortic HLHS valve followed by conduit from right ventricle to pulmonary artery.
Atrial septostomy	TGA, TAPVR	Catheter-mediated balloon dilation of foramen ovale with resultant disruption of atrial septum
Bi-directional Glenn or hemi-Fontan	HLHS, HRHS	Anastomosis of superior vena cava to right pulmonary artery.
Arterial switch	TGA	Correction of TGA where aortic trunk is reconnected to the LV and the pulmonic trunk is reconnected to the RV.
Rastelli	TA, PA, Severe TOF	Patch closure of VSD with conduit connecting right ventricle to pulmonary artery

Presentation of Specific CHD



Key:
AS = Aortic stenosis
ASD = Atrial septal defect
CHF = Congestive heart failure
CoA = Coarctation of the aorta
ECD = Endocardial cushion defect
HLHS = Hypoplastic left heart syndrome
HRHS = Hypoplastic right heart syndrome
PA = Pulmonary atresia
PDA = Patent ductus arteriosus
P. HTN = Pulmonary hypertension
TGA = Transposition of the great arteries
TA = Truncus arteriosus
TAVPR = Total anomalous pulmonary venous return
TOF = Tetralogy of Fallot
TriA/S = Tricuspid atresia
VSD = Ventricular septal defect

Common CHDs and the Ages at Which They Present to the ED

0-2 WEEKS OF LIFE
- TGA
- HLHS
- TOF/severe PS
- Critical left heart obstruction
- CoA
- Critical AS

FIRST YEAR OF LIFE
- TOF/mild PS
- Left-to-right shunt lesions
- ECDs
- VSD, moderate to large
- Large ASD
- PDA

INFANCY/ADOLESCENCE
- CoA
- PS
- VSD - small
- ASD

Supplement to *Pediatric Emergency Medicine Reports*, August 2002: "Congenital Heart Disease in the Pediatric Emergency Department. Part II: Managing Acute and Chronic Complications." *Author:* **Dale P. Woolridge, MD, PhD**, Department of Pediatrics/Division of Emergency Medicine, Department of Surgery, University of Maryland Medicine, Baltimore; **Jon C. Love, MD**, Assistant Professor, Division of Pediatric Cardiology, Department of Pediatrics, University of Maryland Medicine, Baltimore.