THE 2025/2026 PALLIATION ALGORITHM: CLINICAL DECISION MATRIX

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I THE CLINICAL DECISION MATRIX

- **Principle:** The contemporary Heart Team must navigate the convergence of traditional open surgery and advanced transcatheter interventions. The decision tree is dictated by anatomical suitability and surgical risk profiling.

Clinical Presentation (Neonate)	Risk Stratification & Anatomy	Primary Hemodynamic Goal	2025/2026 Recommended Intervention
Duct-Dependent Pulmonary Circulation (e.g., Pulmonary Atresia, TOF)	Standard Risk; Favorable anatomy for early correction.	Establish definitive anatomical continuity early.	Early **Primary Complete Repair**
Duct-Dependent Pulmonary Circulation	High Risk (Prematurity, < 2.5 kg) OR highly tortuous ductus.	Increase pulmonary blood flow; bridge to repair.	Surgical **Modified Blalock-Taussig-Thomas Shunt (MBTS)**
Duct-Dependent Pulmonary Circulation	High Risk; Straight, vertical, and favorable ductal anatomy.	Increase pulmonary blood flow while avoiding cardiopulmonary bypass.	Transcatheter **Patent Ductus Arteriosus (PDA) Stenting**
Pulmonary Overcirculation (e.g., Unbalanced AVSD, late-presenting TGA)	Biventricular physiology; Unrestricted left-to-right shunting.	Protect pulmonary vascular bed; Induce **Left Ventricular Retraining**.	Surgical **Pulmonary Artery Banding (PAB)**
Single-Ventricle Palliation Pathway (e.g., Hypoplastic Left Heart Syndrome)	Standard Risk; Favorable arch anatomy.	Unload systemic ventricle; Ensure unobstructed systemic flow.	Stage 1: Surgical Norwood Procedure
Single-Ventricle Palliation Pathway	Prohibitive Surgical Risk; Severe prematurity or profound cardiogenic shock.	Stabilize systemic output and protect pulmonary bed without open-heart surgery.	**Hybrid Stage 1 Palliation** (Bilateral PAB + Transcatheter Ductal Stenting)
Single-Ventricle Palliation Pathway	Age 4 to 6 months; Post-Stage 1 palliation.	Volume-unload the single ventricle; Route superior venous return.	Stage 2: **Bidirectional Glenn Shunt**
Single-Ventricle Palliation Pathway	Age 2 to 4 years; Favorable hemodynamics (PA pressure < 15 mmHg).	Complete separation of systemic and pulmonary circulations.	Stage 3: Extracardiac **Fontan Procedure**