

Cardiac Science

1. Non-Surgical Treatments

- **Medications:**
 - **Antihypertensives:** ACE inhibitors (e.g., Enalapril), beta-blockers (e.g., Metoprolol), calcium channel blockers (e.g., Amlodipine).
 - **Antiarrhythmics:** Amiodarone, Digoxin.
 - **Anticoagulants:** Warfarin, Apixaban, or Heparin to prevent blood clots.
 - **Antiplatelets:** Aspirin or Clopidogrel for preventing platelet aggregation.
 - **Cholesterol-Lowering Drugs:** Statins like Atorvastatin or Rosuvastatin.
 - **Diuretics:** For managing fluid overload in heart failure.
 - **Vasodilators:** Nitroglycerin for angina.
- **Lifestyle Management:**
 - Diet and exercise programs for managing heart disease.
 - Smoking cessation and stress reduction therapies.

2. Diagnostic Procedures

- **Electrocardiogram (ECG/EKG):**
 - Measures electrical activity of the heart.
- **Echocardiography:**
 - Ultrasound imaging of the heart for structural and functional assessment.
- **Stress Tests:**
 - Treadmill or pharmacologic stress tests to evaluate heart function under stress.
- **Holter Monitoring:**
 - Continuous ECG monitoring to detect arrhythmias.
- **Cardiac CT and MRI:**
 - Detailed imaging of heart anatomy and blood vessels.
- **Coronary Angiography:**
 - X-ray imaging of coronary arteries using contrast dye.
- **Blood Tests:**
 - Cardiac markers (e.g., Troponin, CK-MB) for detecting heart attacks.

3. Interventional Cardiology

- **Angioplasty and Stenting:**
 - Balloon angioplasty with stent placement to open blocked arteries.
- **Atherectomy:**
 - Removal of plaque buildup in arteries.
- **Percutaneous Coronary Intervention (PCI):**
 - Non-surgical treatment for coronary artery disease.
- **Valvuloplasty:**
 - Balloon procedure to repair a narrowed heart valve.

4. Electrophysiology Treatments

- **Pacemaker Implantation:**
 - Device to regulate abnormal heart rhythms.
- **Implantable Cardioverter Defibrillator (ICD):**
 - Device to prevent sudden cardiac arrest by correcting life-threatening arrhythmias.
- **Catheter Ablation:**
 - Procedure to destroy areas causing abnormal heart rhythms.
- **Cardiac Resynchronization Therapy (CRT):**
 - Device implantation to improve heart pumping efficiency.

5. Surgical Treatments

- **Coronary Artery Bypass Grafting (CABG):**
 - Bypass surgery to restore blood flow to blocked coronary arteries.
- **Valve Repair or Replacement:**
 - Surgery to repair or replace damaged heart valves using mechanical or biological valves.
- **Heart Transplant:**
 - Replacement of a failing heart with a donor heart.
- **Left Ventricular Assist Device (LVAD) Implantation:**
 - Mechanical pump to support heart function in advanced heart failure.
- **Septal Myectomy:**

- Surgery to treat hypertrophic cardiomyopathy.

6. Vascular Treatments

- **Peripheral Angioplasty and Stenting:**
 - Procedures to open narrowed peripheral arteries.
- **Endovascular Aneurysm Repair (EVAR):**
 - Minimally invasive surgery to treat abdominal aortic aneurysms.
- **Carotid Endarterectomy:**
 - Surgery to remove plaque from carotid arteries and reduce stroke risk.

7. Heart Failure Management

- **Medical Management:**
 - Optimization of medications like beta-blockers, ACE inhibitors, or diuretics.
- **Advanced Therapies:**
 - LVAD or total artificial heart (TAH) for end-stage heart failure.
- **Cardiac Rehabilitation:**
 - Exercise, nutrition, and counseling to improve recovery and quality of life.

8. Pediatric Cardiology

- **Congenital Heart Defect Treatments:**
 - Surgical or catheter-based procedures to repair defects like atrial septal defect (ASD) or ventricular septal defect (VSD).
- **Fetal Cardiology:**
 - Monitoring and interventions for congenital conditions diagnosed during pregnancy.

9. Preventive Cardiology

- **Risk Assessment:**
 - Screening for hypertension, diabetes, or high cholesterol.
- **Lifestyle Interventions:**
 - Weight management, physical activity promotion, and smoking cessation.
- **Preventive Medications:**
 - Statins or aspirin for high-risk individuals.

10. Advanced Therapies

- **TAVR (Transcatheter Aortic Valve Replacement):**
 - Minimally invasive valve replacement for aortic stenosis.
- **MitraClip Procedure:**
 - Non-surgical repair of mitral valve regurgitation.
- **Extracorporeal Membrane Oxygenation (ECMO):**
 - Life-support technology for severe heart failure or cardiogenic shock.