

## Quick Fact Sheet: Aortic Stenosis

Aortic stenosis is defined as the reduction of the orifice of the aortic valve caused by a failure of the leaflets to open fully. This leads to progressive concentric left ventricular hypertrophy and eventual heart failure.

### Etiologies

- 1) Bicuspid aortic valve (Most common cause in people < 70)
- 2) Tricuspid valve calcification (aka "Senile Degeneration") (Most common cause in people > 70)
- 3) Congenital AS
- 4) Rheumatic Heart Disease (RHD)
- 5) Other Causes (SLE, familial hypercholesterolemia, ochronosis, Paget's disease, Fabry's disease)

### Signs/Symptoms

Classic triad - angina on exertion, syncope on exertion, dyspnea on exertion  
 Rarely presents as embolization of a calcification leading to AMI, CVA, or other embolic phenomenon  
 Rarely presents as arrhythmia (atrial fibrillation or AV block most commonly)  
 Rarely presents with GI bleed due to angiodysplasia (Heydes Syndrome)

### Physical Examination

- 1) Auscultation of the heart (See heart sounds and systolic murmurs for review)
  - Systolic ejection murmur at base that may radiate to apex and carotids (Radiation of AS murmur to apex known as the "Gallivaridin's phenomenon" which may sound holosystolic and mimic the murmur of MR)
  - Intensity of murmur DOES NOT correlate with severity of AS
  - As disease worsens, the murmur peaks later in systole
  - Paradoxically split second heart sound (S2)
  - Second heart gets progressively softer as disease worsens until it is no longer detectable
  - Fourth heart sound (S4) often present and third heart sound (S3) present in severe disease
  - Rarely ejection click is present with bicuspid aortic valve
- 2) Auscultation/Evaluation of the carotid upstroke
  - Murmur audible in carotid arteries
  - "Pulsus parvus et tardus" - THE BEST BEDSIDE METHOD TO ESTIMATE SEVERITY OF AS
    - Parvus means weak (carotid upstroke is weak)
    - Tardus means late (carotid upstroke is delayed compared to auscultation of the heart)
- 3) Palpation of the PMI
  - Usually NOT displaced since hypertrophy is concentric, may be hyperdynamic
  - May be laterally displaced in advanced disease with LV dilation and heart failure
- 4) Other findings
  - Signs of heart failure if present
  - Guaiac positive stools if Heydes Syndrome present

### Diagnosis

- 1) EKG - Non-specific (no EKG findings are sensitive for AS), although LVH commonly present
- 2) Chest x-ray - Non-specific
- 3) Echocardiogram - Measures aortic valve area (AVA) and pressure gradient (G) between LV and LVOT to estimate severity
- 4) Cardiac Catheterization

- Can also estimate AVA and pressure gradient
- Performed before valve replacement to assess for CAD

	AV gradient (mmHg)	AVA (cm <sup>2</sup> )
Mild	< 25	> 1.5
Moderate	25-50	1 – 1.5
Severe	51-80	0.7 – 1
Critical	> 80	< 0.7

### Treatment

- Only aortic valve replacement reduces mortality
- No pharmacologic interventions reduce mortality (afterload reducers are relatively contraindicated)
- Aortic valvuloplasty DOES NOT reduce mortality except in congenital AS