

## Evaluation of Diastolic Dysfunction with TEE

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## Diastolic Function

- As many as 30 to 50 percent of patients with symptomatic HF exhibit diastolic rather than systolic dysfunction.
- Diastolic dysfunction is more common in women and the elderly, and in the latter it may be the dominant form of HF.
- Additional risk factors for diastolic dysfunction include a history of hypertension and diabetes mellitus.

- Systolic heart failure (SHF), is characterized by progressive chamber dilation, eccentric remodeling, and abnormalities in systolic function.
- Diastolic heart failure (DHF), is characterized by normal LV volume, concentric remodeling, normal LV systolic properties, and abnormalities in diastolic properties.

- SHF and DHF are distinct syndromes, not a continuous spectrum of disorders.

Kitzman, DW, et al. JAMA 2002; 288:2144.

- Patients with SHF may have evidence of diastolic dysfunction, particularly during periods of symptomatic decompensation.
- However, such patients have predominant abnormalities in systolic properties, with secondary abnormalities in diastolic function.

- Similarly, patients with DHF may have subtle abnormalities in systolic function, but they have predominant abnormalities in diastolic properties and concentric remodeling.

Baicu, CF, et al. Circulation 2005; 111:2306.

- Diastolic dysfunction indicates a functional abnormality of diastolic relaxation, filling, or distensibility of the left ventricle, regardless of whether the EF is normal or abnormal and whether the patient is asymptomatic or has symptoms and signs of HF.

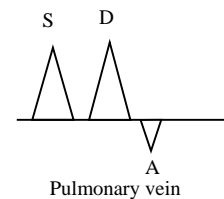
- DHF denotes the signs and symptoms of clinical HF in a patient with a normal EF and LV diastolic dysfunction.

### Evaluation of LV Diastolic Function

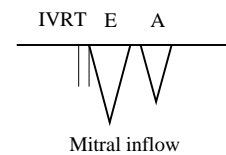
- Mitral Valve PW Doppler Tracing
- Pulmonary Venous Inflow PW Doppler Tracing
- Tissue Doppler
- Velocity Propagation

#### Normal

S/D Ratio:  $0.86 \pm 0.28$   
Reversal:  $0.17 \pm 0.03$  m/s

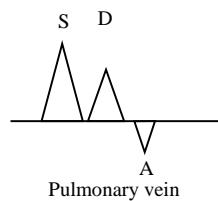


E: 0.7-1.2 m/s  
A: 0.42-0.7 m/s  
E/A ratio: 1-2.0  
Deceleration time: 150-200 ms  
IVRT: 50-100 ms



#### Impaired Relaxation

S/D Ratio:  $1.63 \pm 0.41$   
Reversal:  $0.21 \pm 0.03$  m/s



E:  $< 0.7$  m/s  
A:  $> 0.7$  m/s  
E/A ratio:  $< 1$   
Deceleration time:  $> 200$  ms  
IVRT:  $> 100$  ms

