

# Who really needs to have a mitral valve intervention for mitral regurgitation?

Cardiology Day 2021

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# Faculty/Presenter Disclosure

- Faculty: Steven Promislow
- Relationships with commercial interests: not applicable

# Mitigating Potential Bias

- Not applicable

# Outline

- Valvular heart disease epidemic
- Mitral valve anatomy
- Intervention for mitral regurgitation
  - Why
  - When
  - How
- Pathway for MR management

# Mrs. MR

- 60F with HTN and mild COPD
  - Routine check-up, asymptomatic
  - BP well-controlled
  - Euvolemic
  - Grade III/VI blowing murmur at the apex radiating to the axilla
- Send her for an echo:
  1. Myxomatous mitral valve with bileaflet prolapse. Severe mitral regurgitation.
  2. Normal biventricular size and systolic function. LVEF >60%.
  3. No pulmonary hypertension.
  4. Moderately dilated left atrium.

# Mrs. MR

- 6 months later:
  - Confusion!!!
  - Cardiologist: valve leaking like crazy but doesn't need to get fixed right now!
  - Nurse son: get it fixed before your heart becomes weak for the rest of your life!
- So who's right???

# Prevalence of valvular heart disease

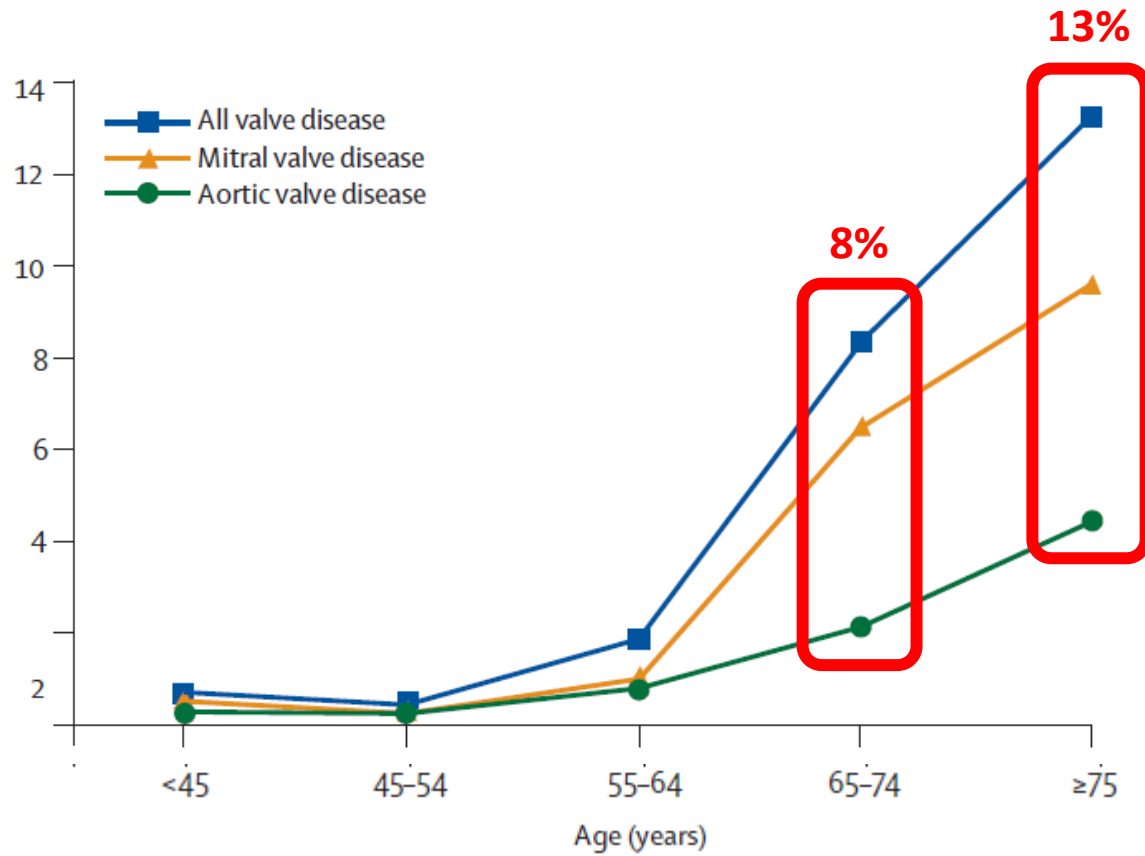
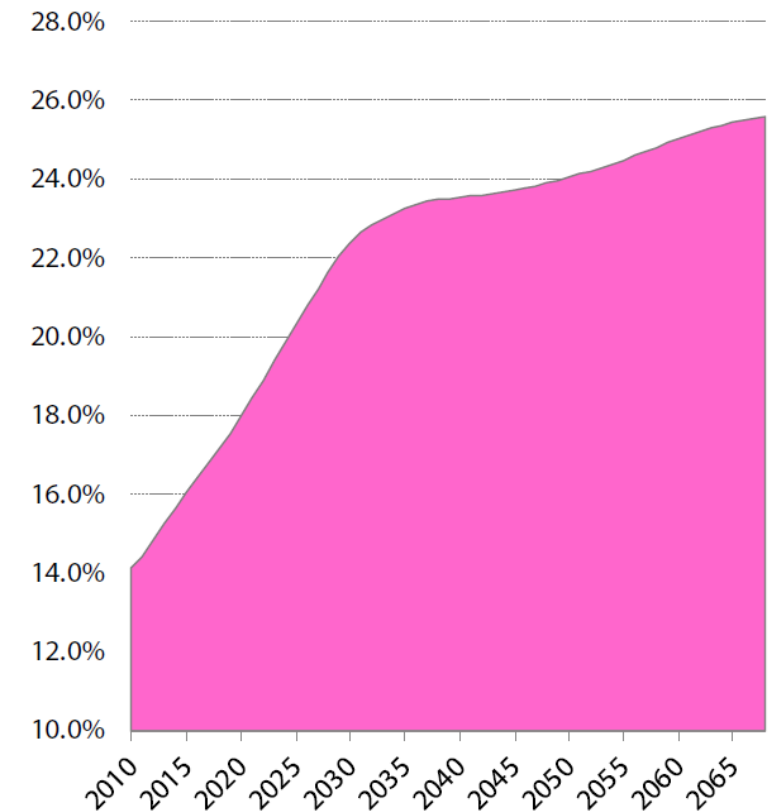
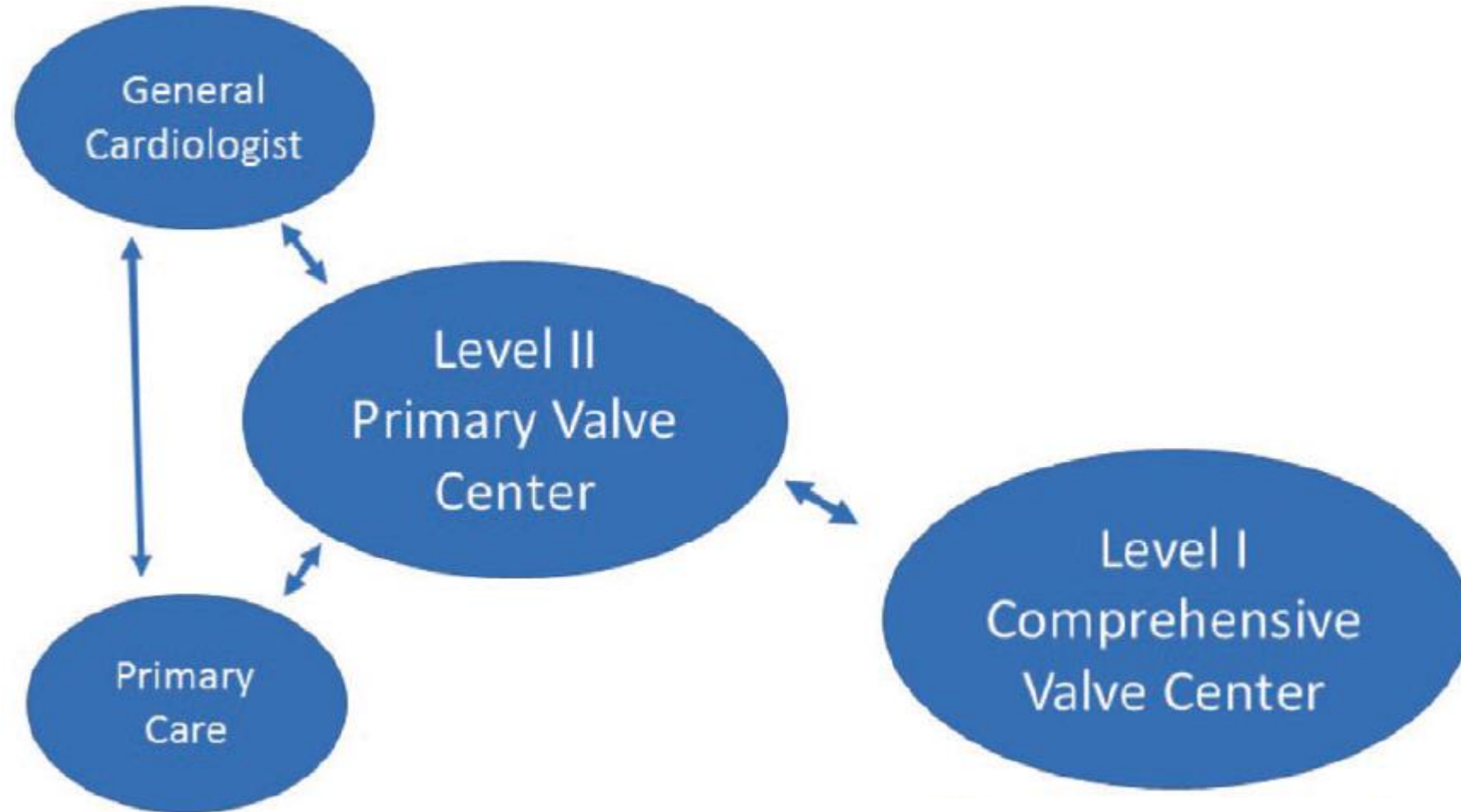


Figure 2: Share of population over 65 years old, 2010-2068

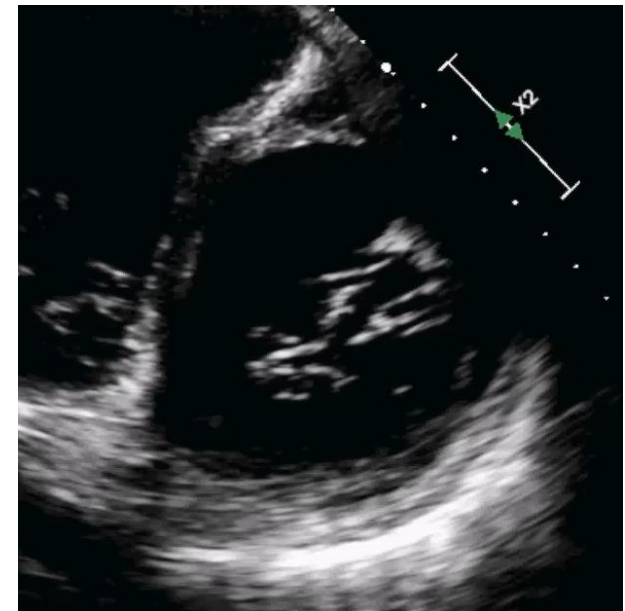
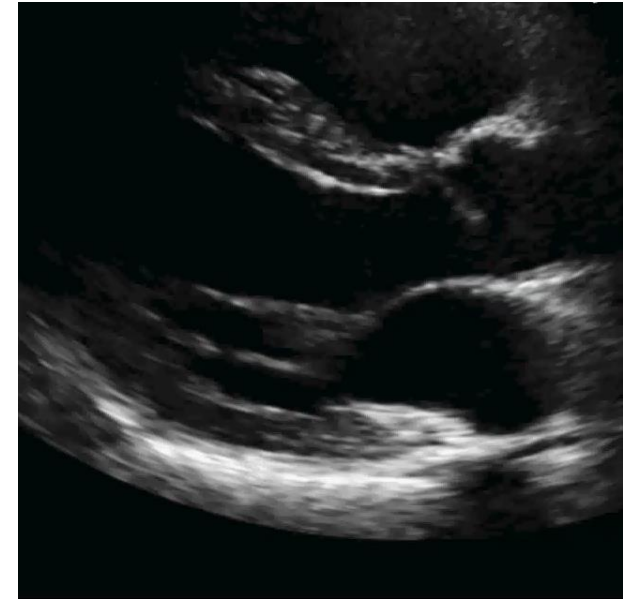
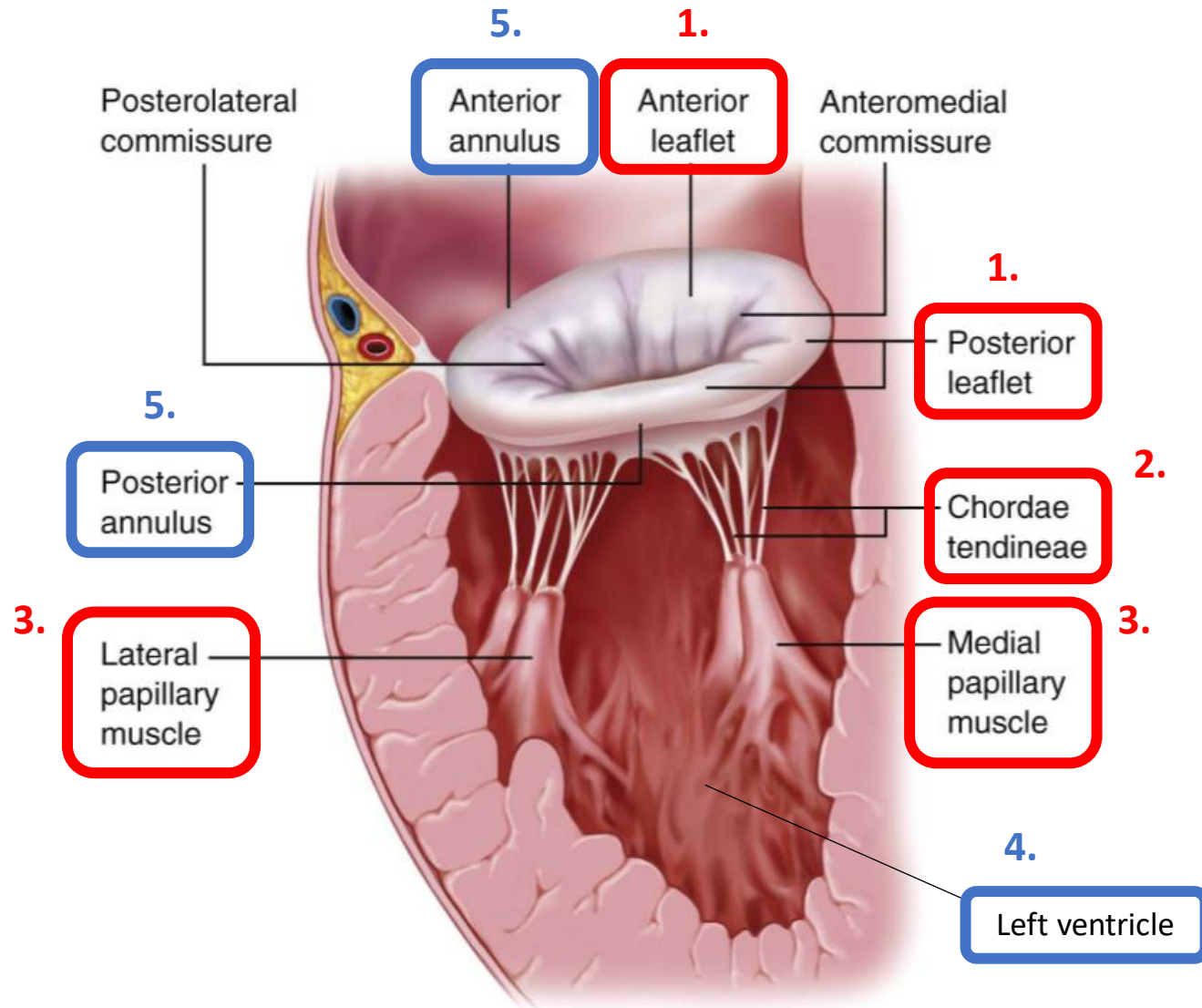


# Care of patients with valvular heart disease





# Mitral valve anatomy



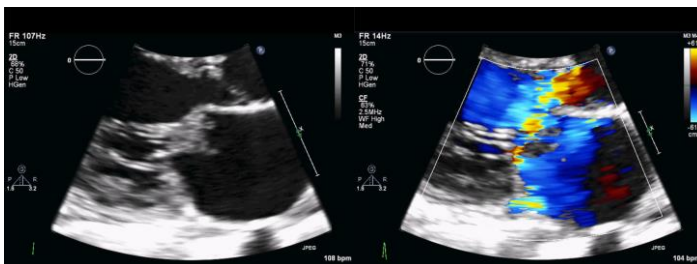
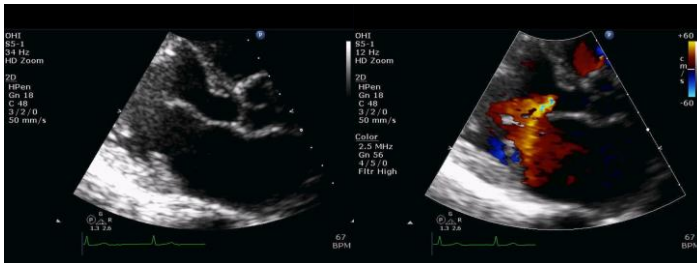
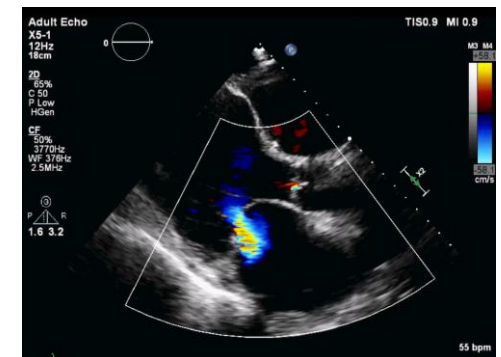
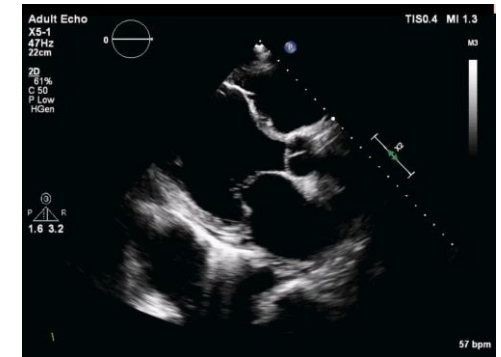
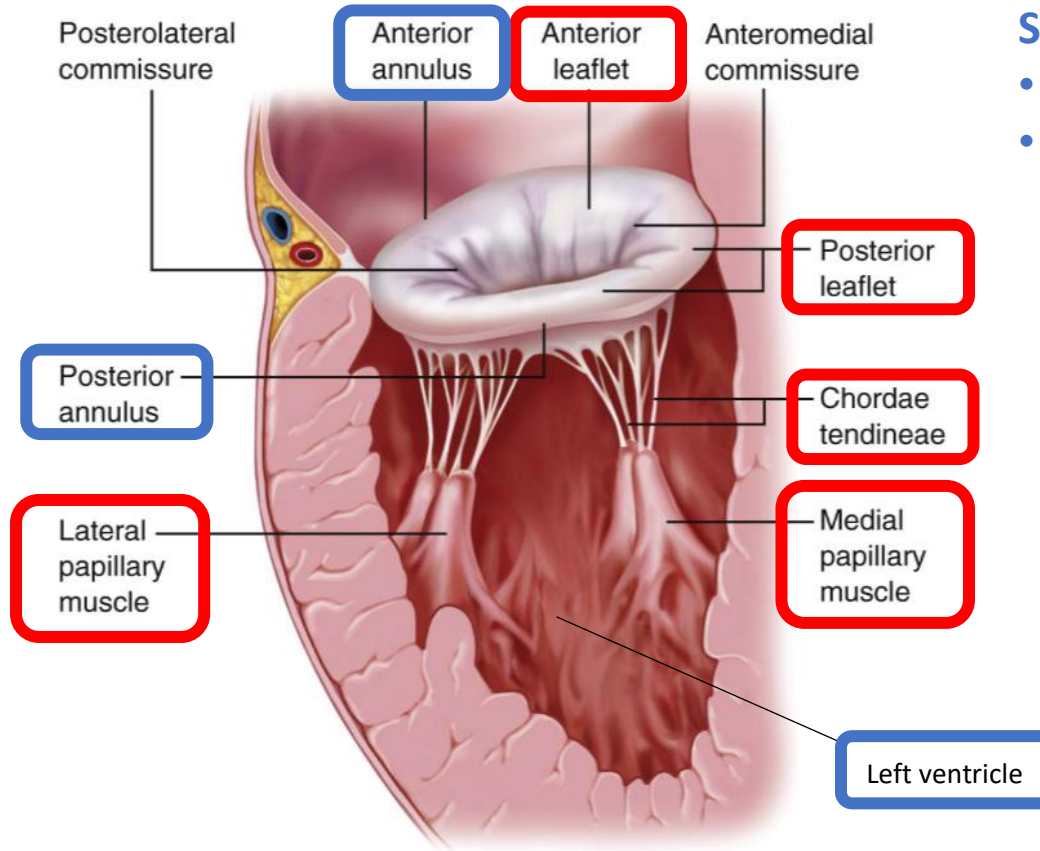
# Types of mitral regurgitation

## PRIMARY MR:

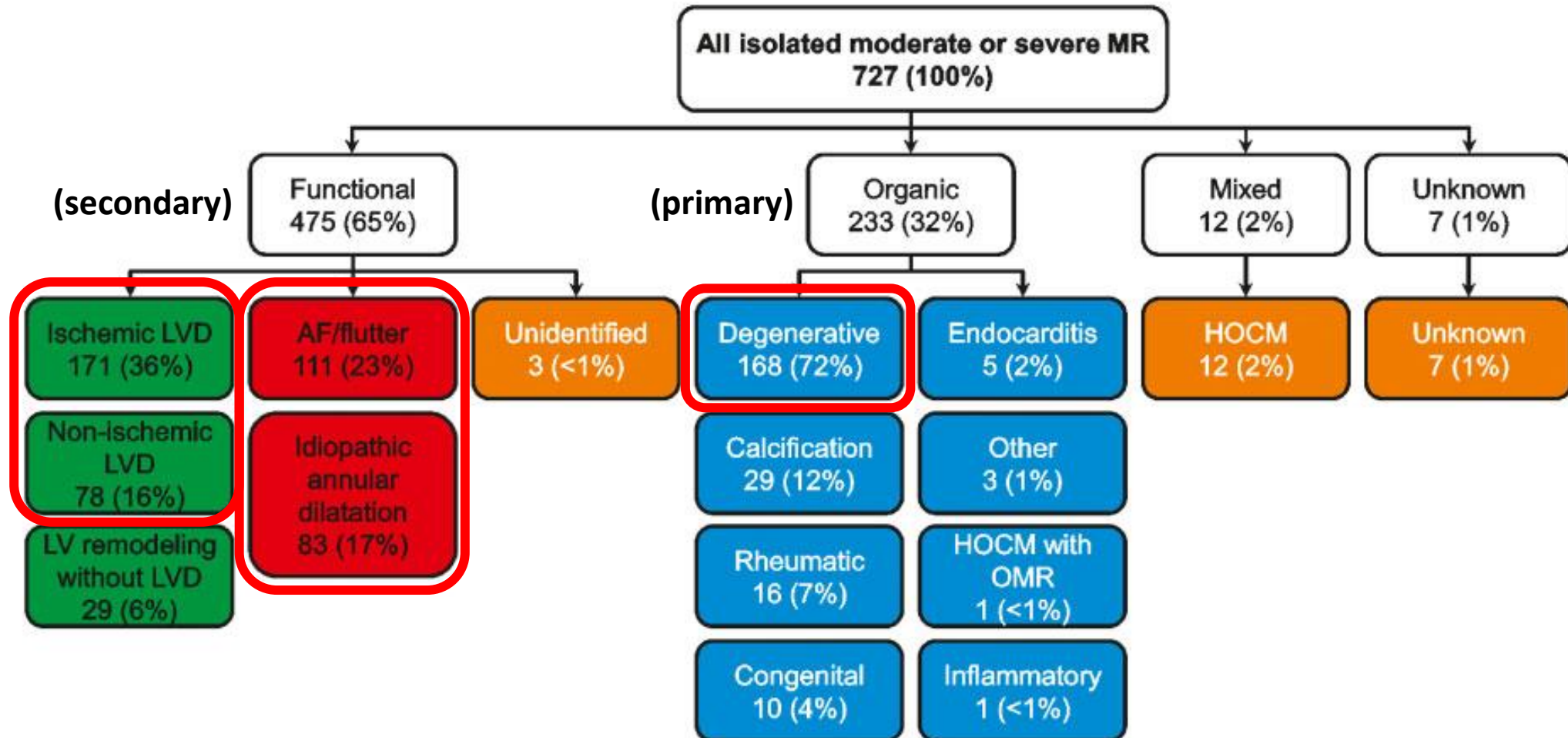
- Myxomatous mitral valve disease/mitral valve prolapse
- Calcified mitral valve apparatus
- Rheumatic valve disease
- Endocarditis

## SECONDARY (FUNCTIONAL) MR:

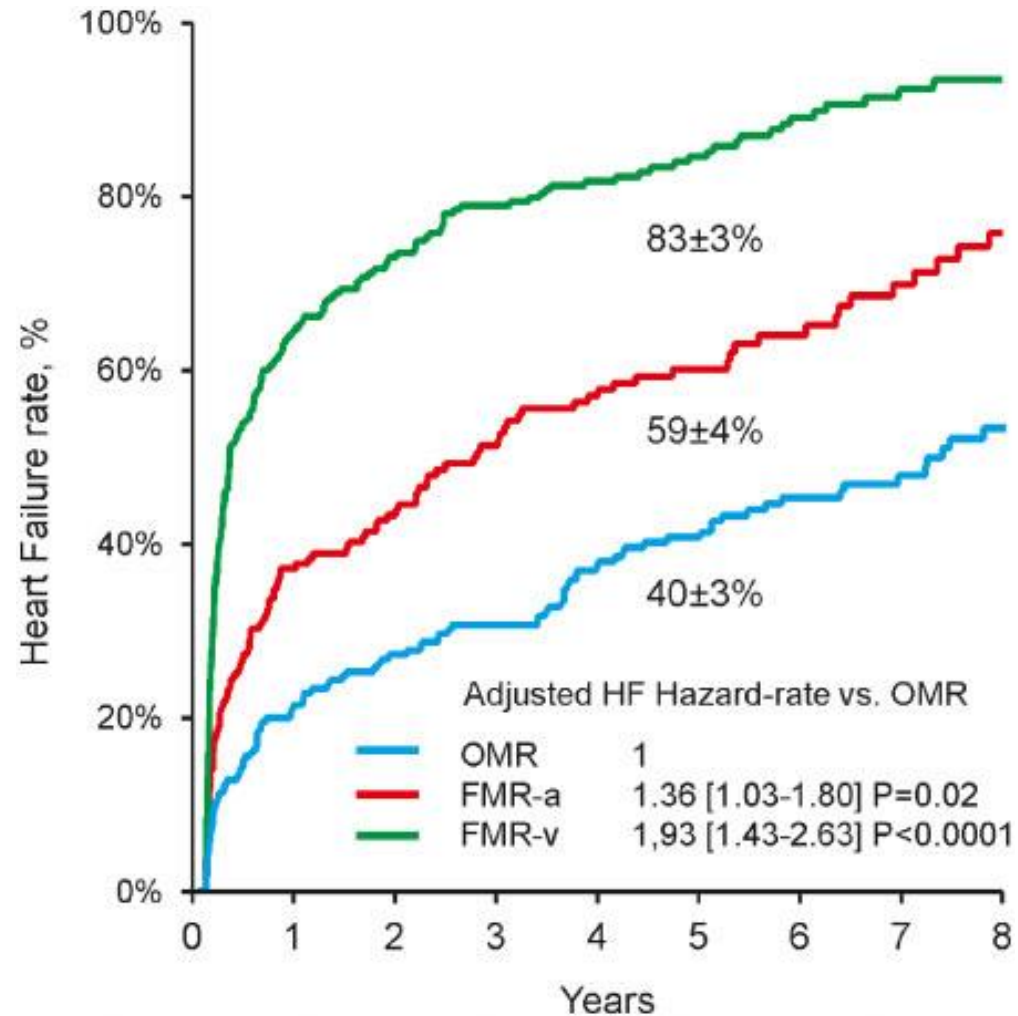
- Ischemic/dilated cardiomyopathy
- LA dilatation



# Types of mitral regurgitation

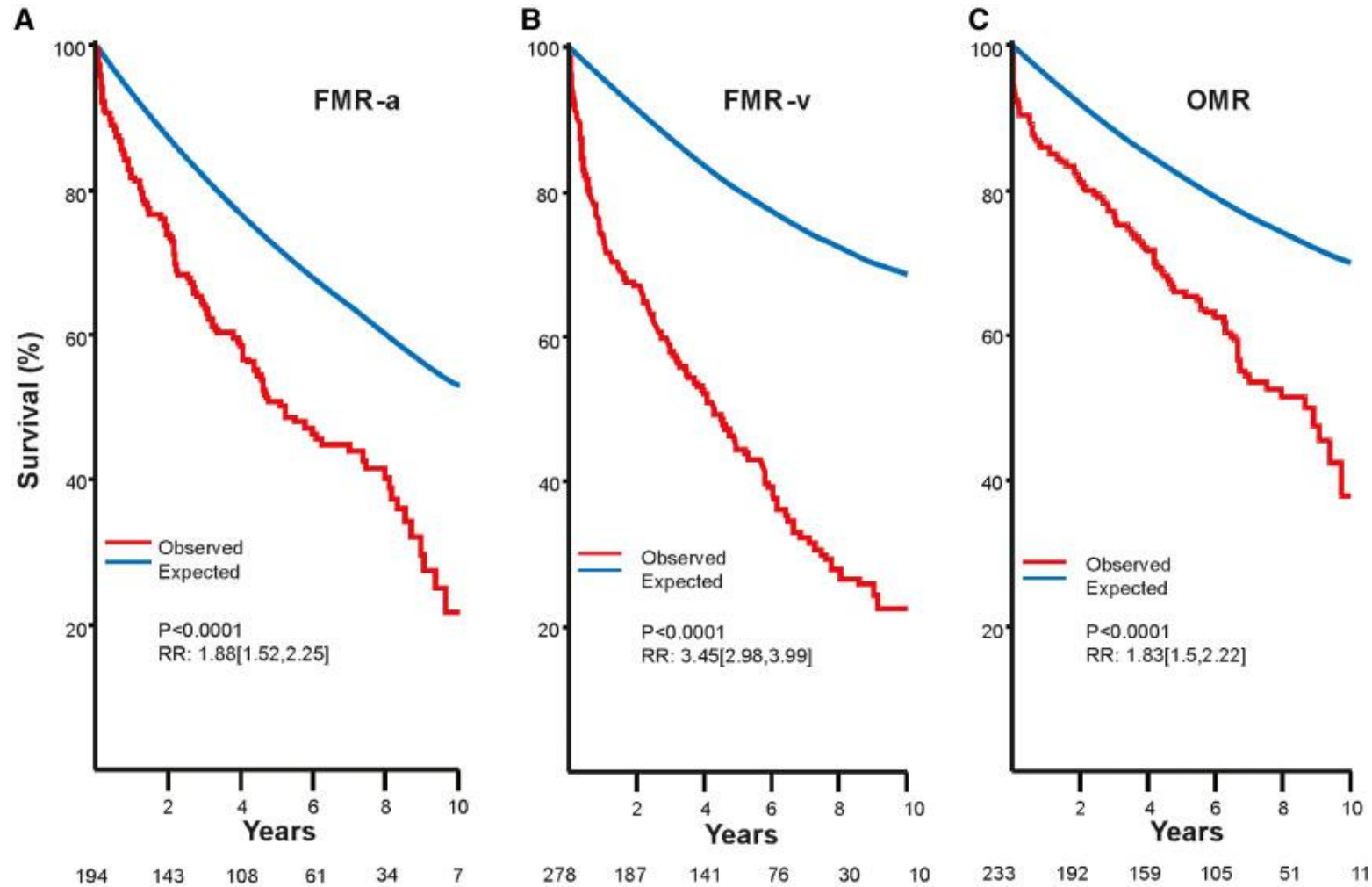


# Intervention for MR - why





# Intervention for MR - why



# Intervention for MR - why

- 4 main factors that determine patient outcome:
  - Lesion severity
    - Usually only severe MR leads to negative sequelae
  - Symptomatic status
    - Dyspnea on exertion, orthopnea, declining exercise tolerance
  - Presence of LV dysfunction
    - LVEF should be > 60% in severe MR
  - Suitability for correction by MV repair rather than replacement
    - Repair has lower operative mortality and better long-term results

# Intervention for MR - when

- Surgery for primary MR:
  - Severe MR + ...
    - Symptoms (Class 1)
    - LV dysfunction (Class 1)
    - MV repair (rather than replacement) can be performed with a high likelihood of a successful and durable result (Class 2a)

# Intervention for MR - when

Procedure	Mortality Rate (%)
Mitral valve replacement	5
Mitral valve repair	1

## Examples of Procedure-Specific Risk Factors for Interventions

### Surgical Mitral Valve Repair or Replacement

#### Technical or anatomic

- Prior sternotomy
- Prior mediastinal radiation
- Ascending aortic calcification (porcelain aorta may be prohibitive)

#### Comorbidities

- Severe COPD or home oxygen therapy
- Pulmonary hypertension
- Hepatic dysfunction
- Frailty\*

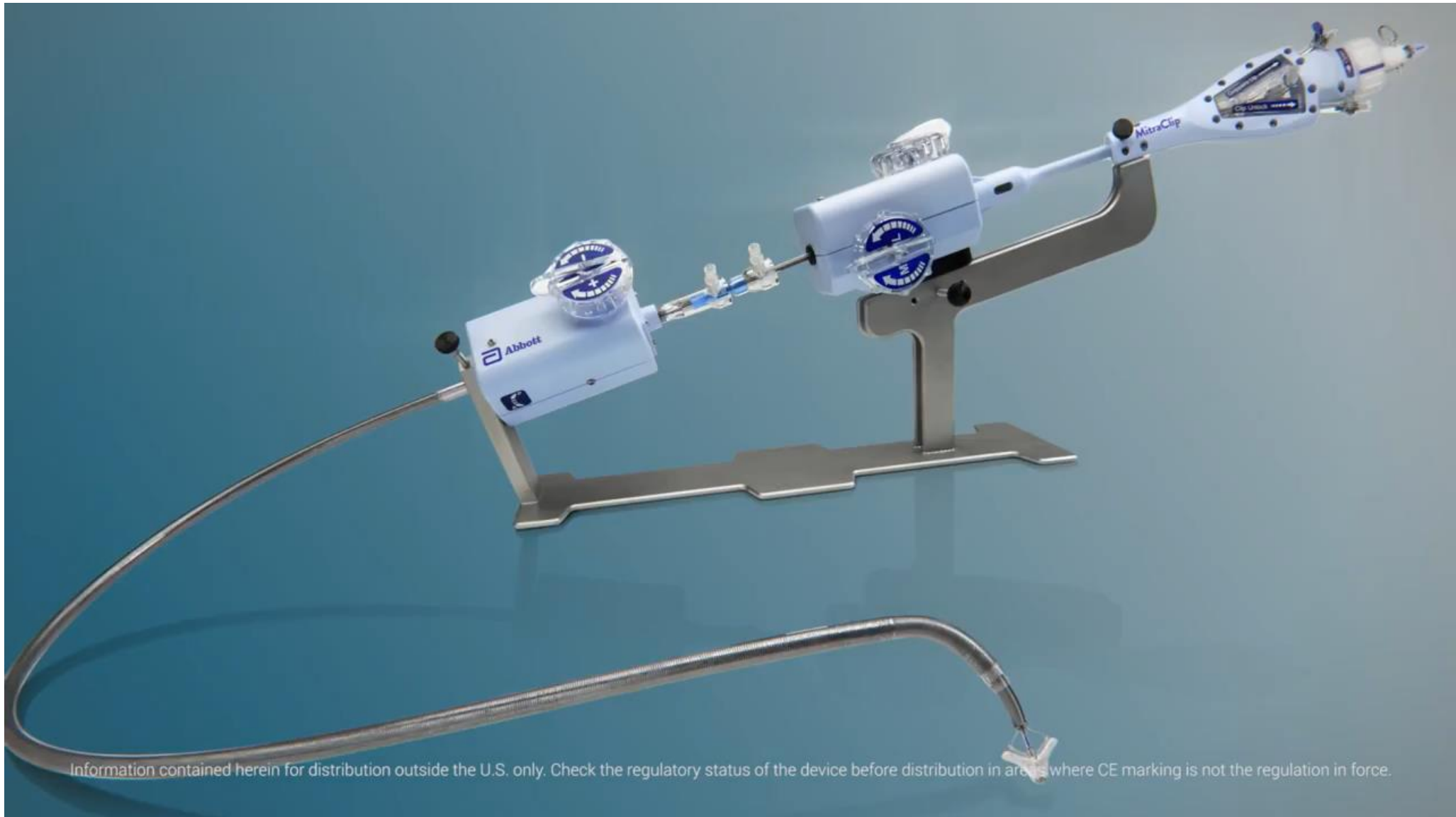
#### Futility

- STS score >15
- Life expectancy <1 y
- Poor candidate for rehabilitation



# Intervention for MR - when

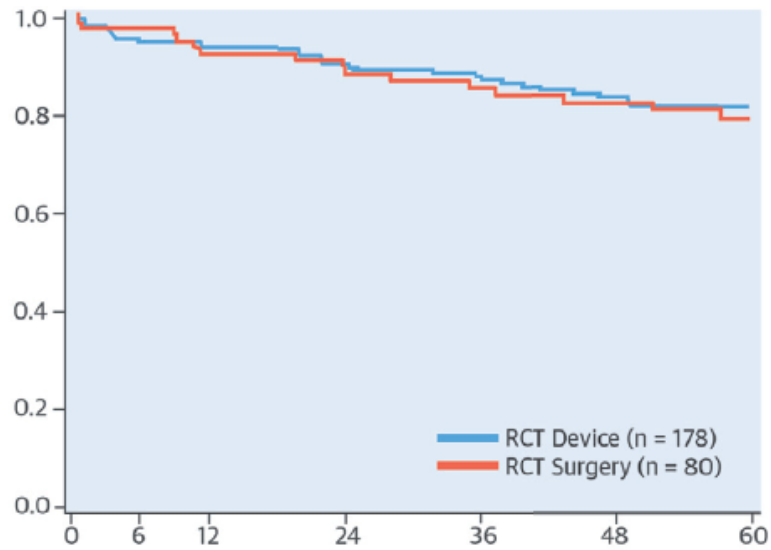
- Surgery for secondary MR:
  - Severe MR + ...
    - Persistent severe symptoms (NYHA III-IV) despite optimal guideline-directed medical therapy (Class 2b)
- But what about non-surgical interventions?



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# Intervention for MR - how

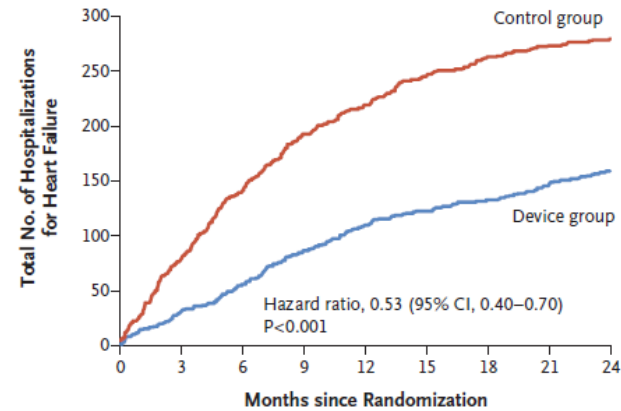
## B. Freedom From Death



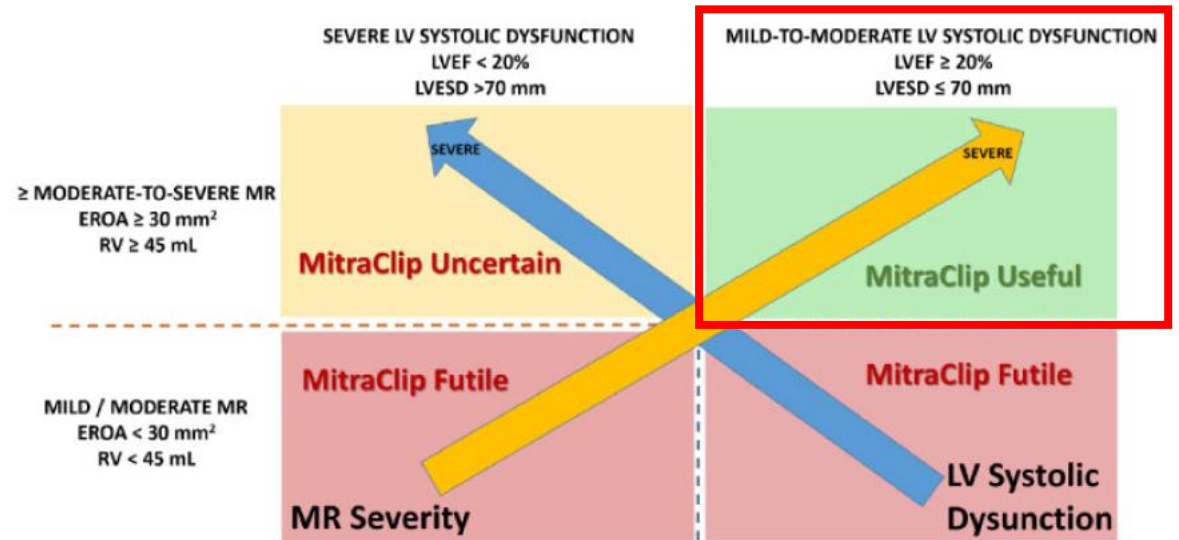
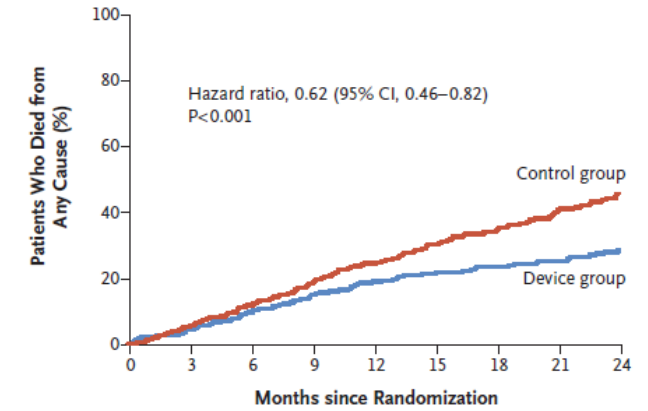
Patients At Risk

	0	6	12	24	36	48	60
Device Group	178	165	158	143	133	119	58
Control Group	80	76	70	65	57	52	24

## A Hospitalization for Heart Failure



## C Death from Any Cause



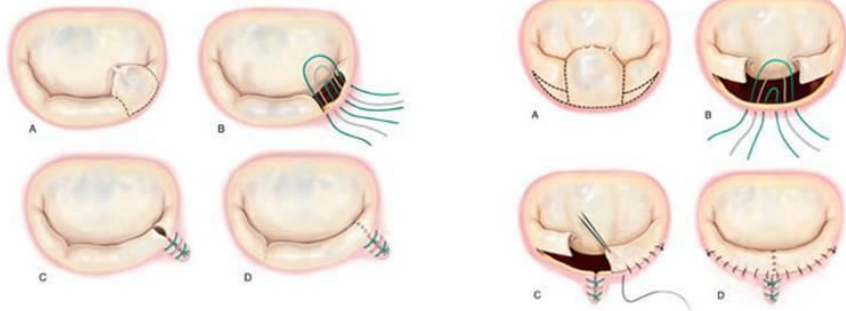
Feldman T et al. J Am Coll Cardiol 2015;66:2844-54

Stone GW et al. N Engl J Med 2018;379:2307-18

Pibarot P et al. Eur Heart J Cardiovasc Imaging 2019;20:620-4

# Intervention for MR - how

## Resection of the Prolapsed Segment

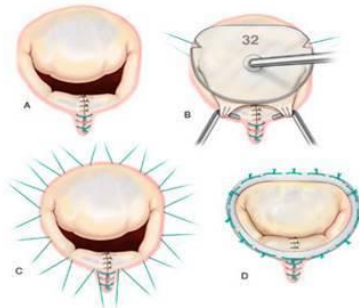


## Artificial Chordae



Mitral valve repair

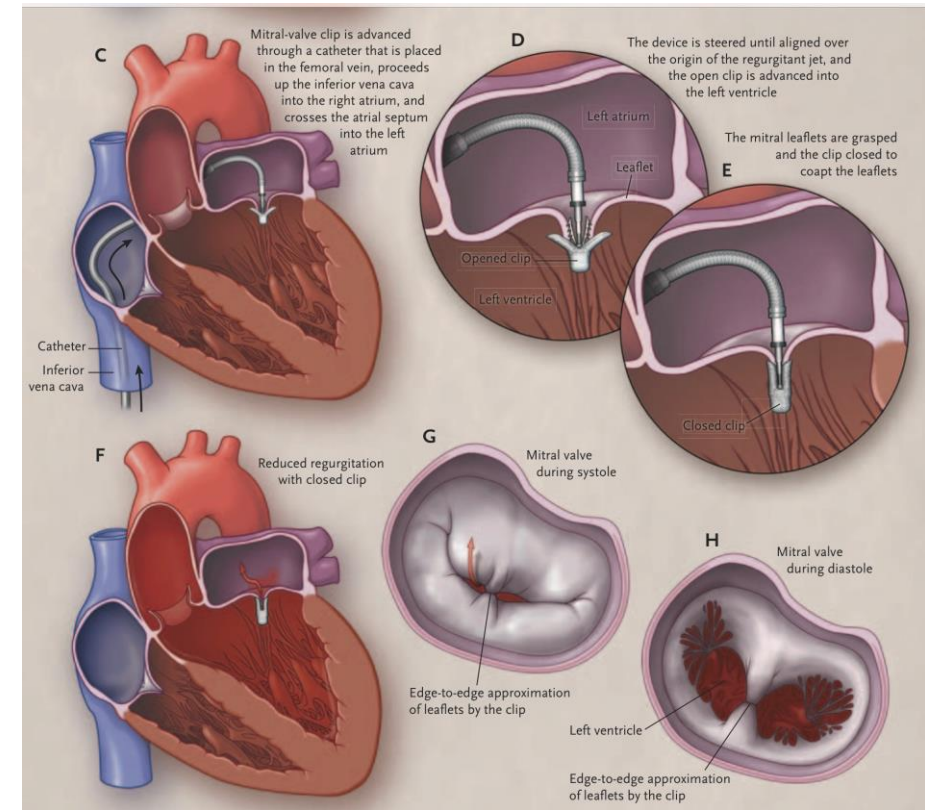
## Annuloplasty with prosthetic ring



Mitral valve repair

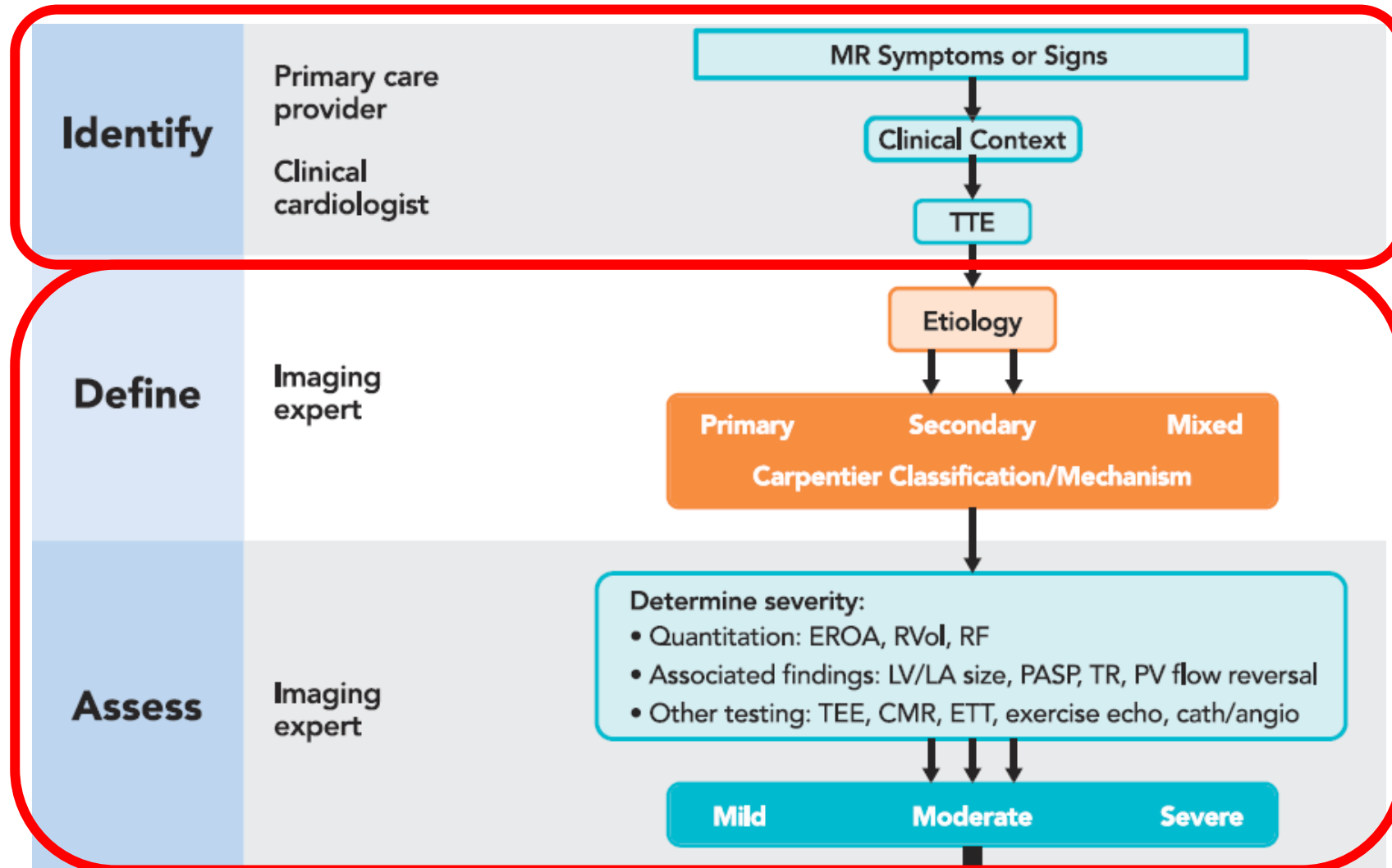


Mitral valve replacement

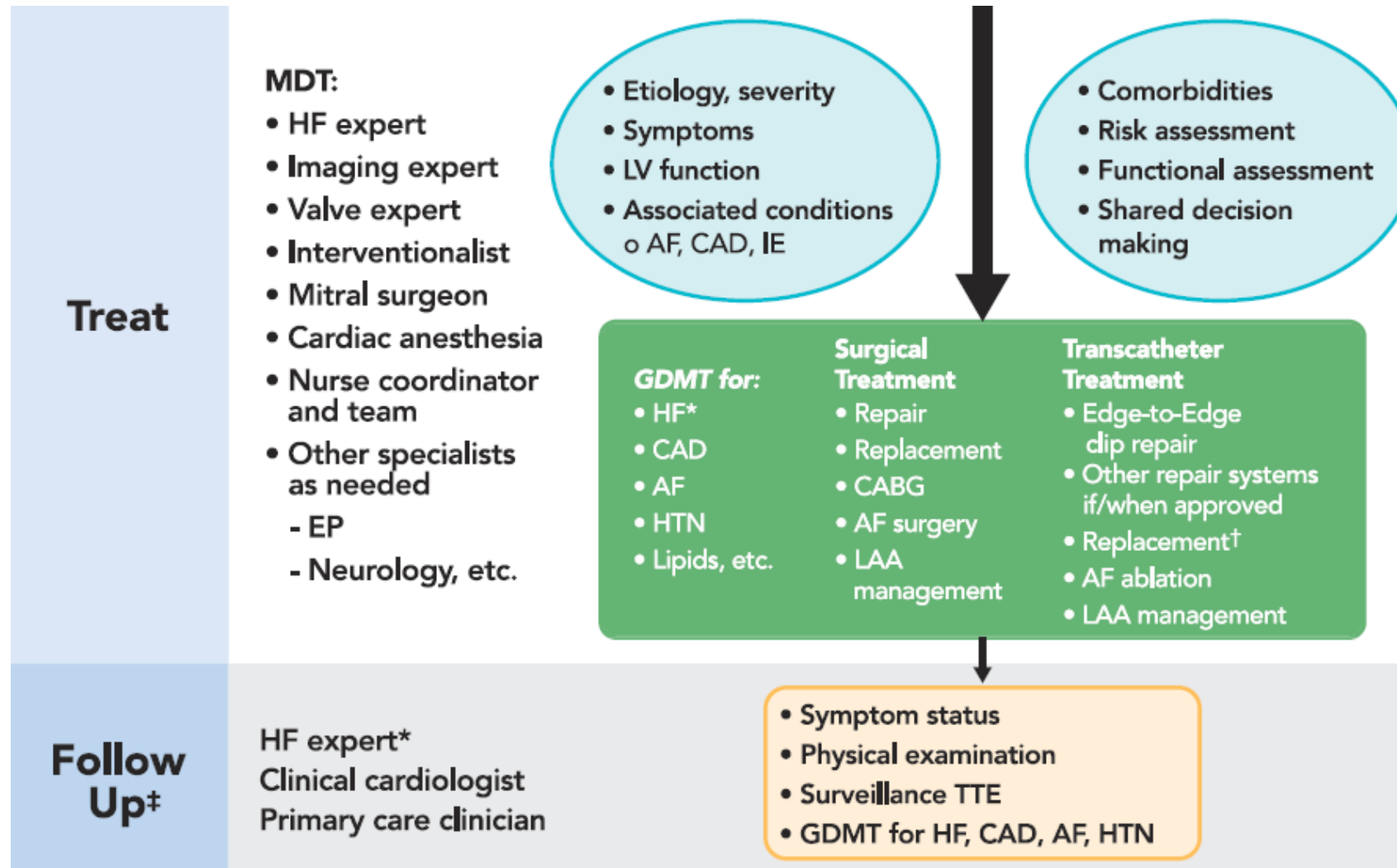


Transcatheter edge-to-edge repair

# Pathway for MR management



# Pathway for MR management



# Take home points

- Mitral regurgitation is prevalent (and likely underdiagnosed)
- Mechanism of MR (primary vs secondary) guides management
- Most common factors that drive outcome and intervention:
  - MR severity, symptoms, LV function, suitability for repair
  - Decision to intervene is a balance between indications and risks
- Optimal management depends on good communication between care providers

Thanks!