2017 Update to the AHA/ACC Guideline for Management of Mitral Valve Disease

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Disclosures

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• Medtronic Apollo Exec Cmte
2017 Valvular Heart Disease Guideline
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‡ACC/AHA Task Force on Clinical Practice Guidelines Liaison. §SCAI Representative. ¶ASE Representative. #AATS Representative. **SCA Representative.
The MV Apparatus

- Leaflets
- Annulus
- [LA endocardium]
- Chordae tendineae
- Papillary muscles, LV

Otto CM. *NEJM* 2001; 345:740
Chronic Mitral Regurgitation

**Etiology**

**Primary**
- Myxomatous
- Endocarditis
- MAC, RHD, XRT
- Other

**Secondary**
- Ischemic
- DCM
- HOCM*
- Other

**Leaflet/Chordal Disease**

**Ventricular Disease**
Question 1

Which of the following anti-thrombotic strategies can reasonably be employed for patients with AF and native VHD other than moderate or severe rheumatic MS?

1. ASA 81 mg daily + clopidogrel 75 mg daily
2. Rivaroxaban 30 mg daily
3. Warfarin to INR 1.5-2.0 + aspirin 81 mg daily
4. Apixaban 5 mg twice daily
5. Dabigatran 110 mg twice daily
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## Anticoagulation for Atrial Fibrillation in Patients With VHD (New Section)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>COR</th>
<th>LOE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New:</strong> Anticoagulation with a VKA is indicated for patients with rheumatic mitral stenosis and AF</td>
<td>I</td>
<td>B-NR</td>
</tr>
<tr>
<td><strong>New:</strong> Anticoagulation is indicated in patients with AF and a CHA$_2$DS$_2$-VASc score of 2 or greater with native aortic valve disease, tricuspid valve disease, or MR</td>
<td>I</td>
<td>C-LD</td>
</tr>
<tr>
<td><strong>New:</strong> It is reasonable to use a DOAC as an alternative to a VKA in patients with AF and native aortic valve disease, tricuspid valve disease, or MR and a CHA$_2$DS$_2$-VASc score of 2 or greater</td>
<td>IIa</td>
<td>C-LD</td>
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</table>
Primary (Degenerative) MR
Question 2
For which of the following findings would MV repair be considered reasonable (Class IIa) in a patient with severe primary MR?

1. Symptoms and EF < 0.30
2. Asymptomatic, normal LV (EF >0.60, ESD <4.0cm) with progressive decrease in EF or increase in LV size on serial echo’s.
3. Asymptomatic, normal LV, Barlow’s deformity, likelihood of successful repair 80%
4. Asymptomatic, normal LV, bileaflet pathology, likelihood of successful repair 85%
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Asymptomatic Severe Primary MR

NYHA FC I

EF > 0.60
ESD < 40 mm

AF, PHTN or ΔLVEDS, EF

Yes

MV Repair
MVR

Class I

No

MV Repair Highly Likely

Class IIa

EF ≤ 0.60
ESD ≥ 40 mm

Yes

MV Repair*

Class IIa

No

ACC/AHA Valve Guidelines 2006/2014/2017
Primary MR

Chronic Primary Mitral Regurgitation

Intervention

<table>
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<tr>
<td>Percutaneous MV repair may be considered for severely symptomatic patients (NYHA class III-IV) with chronic severe primary MR (stage D) who have a reasonable life expectancy, but a prohibitive surgical risk because of severe comorbidities</td>
<td>IIb</td>
<td>B</td>
</tr>
</tbody>
</table>
Ischemic MR
Question 3
Which of the following interventions is reasonable (Class IIa) for patients with secondary (functional) MR?
1. Transcatheter edge-to-edge repair for severe MR with NYHA Class III symptoms
2. Down-sized annuloplasty for moderate ischemic MR without need for CABG
3. Chord-sparing MVR for NYHA Class III/IV with severe ischemic MR
4. MV surgery before trial of CRT in patient with wide LBBB and severe functional MR
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### Chronic Severe Secondary Mitral Regurgitation: Intervention

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<tr>
<td>It is reasonable to choose chord-sparing MVR over down-sized annuloplasty repair if operation is considered for NYHA Class III/IV patients with chronic severe ischemic MR and persistent symptoms despite GDMT for HF</td>
<td>Ila</td>
<td>B-R</td>
</tr>
</tbody>
</table>

New 2017
Recurrent MR over 12 Months

Repair vs. Replacement for Severe IMR

- MVRp
- MVR

Acker MA et al. NEJM 2013; DOI: 10.1056/NEJMo1312808

32.6% for MVRp
2.3% for MVR

P < 0.001

PB akinesis/dyskinesis
Severe Ischemic MR
2-Year Outcomes

Goldstein D et al. NEJM 2016; 374:344-53
Moderate Ischemic MR
2-Year Outcomes

1st EP = LVESVI (no difference)
Lower prevalence of mod or severe MR in repair patients but
higher rates of neurologic events and SVT

Michler RE, Smith PK et al. NEJM April 3, 2016
Chronic Severe Secondary Mitral Regurgitation: Intervention

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<tr>
<td>The usefulness of mitral valve repair in patients with moderate ischemic MR undergoing CABG is uncertain</td>
<td>IIb</td>
<td>B-R</td>
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Modified
Advances in VHD

• Improved knowledge of natural history
• Better patient selection & timing of valve intervention
• Multi-modality imaging (echo, CT)
• Surgical & transcatheter techniques
• Peri-procedural management; e.g., “minimalist TAVR”
Indications for Intervention for Rheumatic Mitral Stenosis

Rheumatic MS

- Very severe MS
  - MVA ≤ 1 cm²
  - T 1/2 ≥ 220 ms
  - Asymptomatic (stage C)
    - Favorable valve morphology
      - No LA clot
      - No or mild MR
      - YES
    - NO
      - Periodic Monitoring
  - NO
    - PMBC (IIa)

- Severe MS
  - MVA ≤ 1.5 cm²
  - T 1/2 ≥ 150 ms
  - Symptomatic (stage D)
    - Favorable valve morphology
      - No LA clot
      - No or mild MR
      - YES
    - NO
      - MVR (I)
      - NYHA class III-IV symptoms with high surgical risk
      - NO
        - NO
          - Periodic Monitoring
        - YES
          - PMBC (IIb)
      - YES
        - PMBC (IIa)
  - NO
    - Asymptomatic (stage C)
      - New onset AF
      - NO
        - NO
          - Periodic Monitoring
        - YES
          - PMBC (IIb)
      - YES
        - PMBC (IIb)

- Progressive MS
  - MVA > 1.5 cm²
  - T 1/2 < 150 ms
  - Symptomatic with no other cause
    - PCWP > 25 mm Hg with exercise
      - NO
        - NO
          - Periodic Monitoring
        - YES
          - PMBC (IIb)
TMVRp in US

Timeline of FDA Approval of Mitral Repair Devices, Procedure Volume, and Mortality

<table>
<thead>
<tr>
<th>Year</th>
<th>Procedure Volume</th>
<th>Mortality (In Hospital)</th>
</tr>
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<tbody>
<tr>
<td>2013</td>
<td>48</td>
<td>N/A</td>
</tr>
<tr>
<td>2014</td>
<td>1,141</td>
<td>2.9%</td>
</tr>
<tr>
<td>2015</td>
<td>2,556</td>
<td>2.1%</td>
</tr>
</tbody>
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Stages of Chronic VHD

Stage A
At Risk of VHD

Stage B
Progressive VHD

Stage C
Asx Severe

Stage D
Sx Severe

C1
Normal LV or RV

C2
Abnormal LV or RV
**Recommendations**

<table>
<thead>
<tr>
<th>MV repair is reasonable for asymptomatic patients with chronic severe nonrheumatic primary MR (stage C1) and preserved LV function in whom there is a high likelihood of a successful and durable repair with 1) new onset of AF or 2) resting pulmonary hypertension (PA systolic arterial pressure &gt;50 mm Hg)</th>
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<td>IIa</td>
<td>B</td>
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Complications after MV Repair

Recurrent MR
### Asymptomatic Primary Mitral Regurgitation: Intervention

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<td>MV surgery is recommended for asymptomatic patients with chronic severe primary MR and LV dysfunction (LVEF ≤ 60% and/or LVESD ≥40 mm, stage C2)</td>
<td>I</td>
<td>B</td>
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<td>MV repair is reasonable in asymptomatic patients with chronic severe primary MR (stage C1) with preserved LV function (LVEF &gt;60% and LVESD &lt;40 mm) in whom the likelihood of a successful and durable repair without residual MR is &gt;95% with an expected mortality &lt;1% when performed at a Heart Valve Center of Excellence</td>
<td>Ila</td>
<td>B</td>
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<tr>
<td><strong>New:</strong> Mitral valve surgery is reasonable for asymptomatic patients with chronic severe primary MR (stage C1) and preserved LV function (LVEF &gt;60% and LVESD &lt;40 mm) with a progressive increase in LV size or decrease in EF on serial imaging studies</td>
<td>Ila</td>
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