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MANAGING HEART FAILURE:
IMPLICATIONS OF GUIDELINE CHANGES FOR CLINICAL PRACTICE

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Disclosure: Cardiovascular Data Registry Management Board member

- Describe the role of diagnostic and prognostic biomarker testing for individuals with, or at risk for, heart failure (HF)
- Differentiate pharmaceutical treatment recommendations for HF with reduced ejection fraction (HFrEF) and HF with preserved ejection fraction (HFpEF)
- Review recommendations for newer classes of medications
- Identify strategies to improve adherence to treatment regimens

6.5 million adult Americans have HF
- Projected to increase 46% to >8 million in 2030 from 2012
HF is progressive
- Guideline directed medical therapy (GDMT) is the primary focus of treatment

Table: Characteristics

<table>
<thead>
<tr>
<th>Stage</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>At risk for developing HF</td>
</tr>
<tr>
<td>B</td>
<td>Structural heart disease but no symptoms</td>
</tr>
<tr>
<td>C</td>
<td>Symptomatic structural heart disease</td>
</tr>
<tr>
<td>D</td>
<td>Advanced HF</td>
</tr>
</tbody>
</table>


HF: Challenging and Costly

$30.7 billion in 2012
Projected to be $69.7 billion in 2030

$10.7 billion in 2012
Projected to be $19.7 billion in 2030

Increased risk of cardiac-related death / subsequent HF hospitalization

20%–25% all-cause readmission rates @30 days

Reduced vs Preserved EF

- Heart failure with reduced ejection fraction (HFrEF)
  - EF <40%
  - HFrEF = ~50% of all HF

- Heart failure with preserved ejection fraction (HFpEF)
  - EF >50%
  - HFpEF = >50% of all HF

Biomarkers:

- BNPs
- NT-proBNP
- Biomarker screening may help identify those at risk for HF
- Reliably excludes HF
- Can support diagnosis of HF


Biomarkers:

- Assess disease severity
- Establish prognosis
- Assess response to GDMT


Examples of ACEIs

- Captopril
  - Starting Dose: 6.25 mg TID
  - Target Dose: 50 mg TID

- Enalapril
  - Starting Dose: 2.5 mg BID
  - Target Dose: 20-40 mg daily

- Lisinopril
  - Starting Dose: 2.5-5 mg QD
  - Target Dose: 20-40 mg daily

- Ramipril
  - Starting Dose: 1.25 mg QD
  - Target Dose: 10 mg daily

### Examples of ARBs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting Dose</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candesartan</td>
<td>4-8 mg QD</td>
<td>32 mg daily</td>
</tr>
<tr>
<td>Losartan</td>
<td>25-50 mg QD</td>
<td>150 mg daily</td>
</tr>
<tr>
<td>Valsartan</td>
<td>40 mg BID</td>
<td>160 mg BID</td>
</tr>
</tbody>
</table>


### Aldosterone Antagonists

- New guideline recommendation: Aldosterone antagonists may reduce hospitalizations in some patients with HFpEF
- Important: Monitor kidney function and potassium within 2-3 days, again at 7 days

<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting Dose</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eplerenone</td>
<td>25 mg QD</td>
<td>50 mg QD</td>
</tr>
<tr>
<td>Spironolactone</td>
<td>12.5-25 mg QD</td>
<td>25-50 mg QD</td>
</tr>
</tbody>
</table>


### Vasodilators

<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting Dose</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydralazine</td>
<td>25 mg TID</td>
<td>75 mg TID</td>
</tr>
<tr>
<td>Isosorbide DN</td>
<td>20 mg TID</td>
<td>40 mg TID</td>
</tr>
<tr>
<td>Fixed-Dose Combo</td>
<td>20 mg/3.75 mg (1 tab) TID</td>
<td>2 tabs TID</td>
</tr>
</tbody>
</table>


### New Guideline-Based Recommendations for HF Reduced EF

- Angiotensin receptor-neprilysin inhibitor
- Standard HF regimens
  - Sacubitril/valsartan
  - Beta-blocker, ACEI or ARB, Loop diuretic, Aldosterone Antagonist to reduce morbidity and mortality
- ARNI* should replace an ACEI or ARB
- Should not be used in conjunction with an ACEI


### Optimizing Therapy: Initiating ARNI Therapy for HFrEF

- **Who**
  - HFrEF (EF < 40%)
  - NYHA Class II-IV
  - History of angioedema
  - Known sensitivity to ACEI or ARB
  - Pregnancy/Lactation
  - Severe liver impairment (Child-Pugh C)
  - Concomitant use with aliskiren in diabetes
  - If patient is tolerating ARNI - Increase dose
  - Target dose: 97/103 mg BID
  - Monitor blood pressure, kidney function, and electrolytes during titration

- **Starting Dose**
  - 24/24 mg BID for patient on low-dose ACEI, low-dose ARB, or not on any ACEI or ARB
  - 49/51 mg BID for patient on moderate- or high-dose ACEI or moderate- or high-dose ARB

- **Low-Dose ACEI**
  - Enalapril ≤ 10 mg daily or equivalent
- **Low-Dose ARB**
  - Valsartan ≤ 80 mg daily or equivalent
- **Moderate-High Dose ACEI**
  - Enalapril ≥ 15 mg daily or equivalent
- **Moderate-High Dose ARB**
  - Valsartan ≥ 160 mg daily or equivalent

Sacubitril/Valsartan (ARNI) -- Cautions

Kidney impairment
- Mild-to-moderate (eGFR 30 mL/min/1.73m²): No change
- Severe (eGFR < 30 mL/min/1.73m²): Reduce starting dose to 24 mg/26 mg BID; double dose every 2-4 weeks to reach target dose of 97 mg/103 mg BID.

Liver impairment
- Mild (Child-Pugh A): No change
- Moderate (Child-Pugh B): Reduce starting dose to 24 mg/26 mg BID; double dose every 2-4 weeks to reach target dose of 97 mg/103 mg BID.

Optimizing Therapy: Initiating Ivabradine for HFrEF
- Who
  - HFrEF (EF < 35%)
  - NYHA Class II-III
  - Sinus rhythm with resting heart rate > 70 bpm
  - On maximally tolerated dose of beta blocker

- Starting Dose
  - 5 mg BID for patients < 75 years
  - 2.5 mg BID for patients > 75 years

- Contraindications:
  - Bradycardia (<60)
  - Sinus node disease/SSS & no pacemaker
  - Wide QT interval
  - Afib/A-flutter
  - Atrial pacemaker dependent
  - Hypotension
  - Severe liver impairment
  - Angina
  - Acute decompensated HF

Optimizing Therapy: Stepwise Approach to Stage C HFrEF
- It doesn't matter whether you initiate a beta blocker or an ACEI or ARB first
  - If starting with beta blocker therapy first, better to start treatment when patient is "dry"
  - If starting with ACEI/ARB, better to start treatment when patient is "wet"

Optimizing Therapy: Pearls for Challenging Situations
- Address patient comorbidities (kidney disease, hyperkalemia)
- Worsening Kidney Function
  - Temporarily reduce dose of ACEI/ARB/ARNI
- Symptomatic Hypotension
  - Consider decreasing diuretics
  - Space medication dosing to reduce risk of excessive fluctuation in blood pressure
- Worsening Congestion
  - Use diuretics carefully/monitor kidney function closely

Optimizing Therapy: African-Americans
- African-Americans
  - Hydralazine + isosorbide dinitrate – Reduces relative risk of mortality and hospitalization but HYD/ISDN is underused
  - ARNI with hydralazine + isosorbide dinitrate not studied
  - In patients on standard regimen, switch to ARNI (from ACEI or ARB) first and then add hydralazine + isosorbide dinitrate
  - OR
  - Add hydralazine + isosorbide dinitrate to standard HF regimen and switch to ARNI when patient has been titrated and is stable

Optimizing Therapy: Older Patients
- 50% of Medicare patients have 4 or more noncardiovascular comorbidities
- Often complex medical regimens
- May not tolerate target doses of GDMT therapy
- Increased risk of adverse events

Optimizing Therapy: Frail Patients
- >20% of very elderly patients are frail
- HF-related morbidity and mortality is heightened in these patients
- Optimal dosing of HF treatments is uncertain
Challenges to Providing Best Care

**Patient**
- Perception about medication benefit
- Poor health literacy
- Complexity of HF regimens
- Polypharmacy
- Side effects
- Physical or cognitive impairment
- Lack of social support
- Cost

**Provider**
- Inadequate knowledge of guideline and treatment recommendations
- Time constraints
- Sites of care
- Poor coordination of care
- Failure to address cultural issues

Adherence Strategies
- Shared decision making on treatment goals (e.g., feeling better, improved survival)
- Tailor education to patient’s learning style
- Simplify medication regimens
- Assess medication adherence at every visit
- Assist with cost reduction/sharing programs

Device Therapy
- Most with HFrEF are eligible for an Implantable Cardioverter Defibrillator (ICD)
- ICD indicated for HFrEF at risk for sudden death
- Consider after being on optimal dosing of GDMT for 3-6 months
- Bi-ventricular pacemakers: Benefit certain HF patients (wide QRS)

I-NEED-HELP
1. Intravenous inotropes
2. NYHA class IIIB/IV or persistently elevated natriuretic peptides
3. End organ dysfunction
4. EF < 35%
5. Defibrillator shocks
6. Hospitalizations > 1
7. Edema despite escalating diuretics
8. Low systolic BP < 90, high heart rate
9. Prognostic medication; progressive intolerance or down-titration of GDMT

Triggers for Referral to HF Specialist
- New HF onset
- Chronic HF with high-risk features
- Optimizing/managing GDMT
- Persistently reduced EF (≤ 35%) after GDMT > 3 months
- Need a 2nd opinion
- Annual visit for patients with advanced HF
- Consideration for clinical trial
Concluding Remarks

- Biomarker testing helps with screening /diagnosis and prognosis / decision making
- GDMT improves morbidity and mortality
- ARNI sacubitril/valsartan reduces CV mortality and HF hospitalizations
- ARNI could replace in ACEI/ARB in standard HF regimens for patients with HFrEF who tolerate ACEI
- Ivabradine with sinus rhythm ≥ 70 should be considered if on GDMT
- Use several touchpoints to promote adherence
- Referral to HF specialist as appropriate

Resources: Brochures/Decision Aids
- American Heart Association
  - Rise Above Heart Failure Toolkit
  - www.heart.org/en/health-topics/heart-failure/heart-failure-tools-resources/rise-above-heart-failure-toolkit
- Preventive Cardiovascular Nurses Association
  - http://pcna.net/clinical-tools/education-for-your-patients/heart-failure
- Decision Aid for CRT-D Therapy:
  - https://patientdecisionaid.org/icd-crt/
- Decision Aid for Left Ventricular Assist Device (LVAD):
  - https://patientdecisionaid.org/lvad/

Resources: Apps
- American Heart Association HF Path (Self—Management App)
- American College of Cardiology CardioSmart Med Reminder App
  - www/CardioSmart.org/Tools/Med-Reminder
- TreatHFApp
  - Available online for download to mobile phones and tablets

PLEASE COMPLETE THE POST-ACTIVITY ASSESSMENT NOW

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A strong show of engagement will demonstrate that NPs are dedicated to learning more about HF and improving patient outcomes