CCS Guidelines for the Management of Heart Failure: 2017 Update Pearls for Primary Care

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Advances in Chronic Care CPD

Disclosures

Advisory Board:
Boehringer-Ingelheim

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N/A

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Mitigating Potential Bias

A version of these slides was initially presented as part of the CCS HF Guidelines panel presentation at CCC 2017 and is available on the CCS website.

Industry was not involved in the development of these slides.

Subsequent modifications to content and/or format do not necessarily represent official CHFS opinion or recommendations.

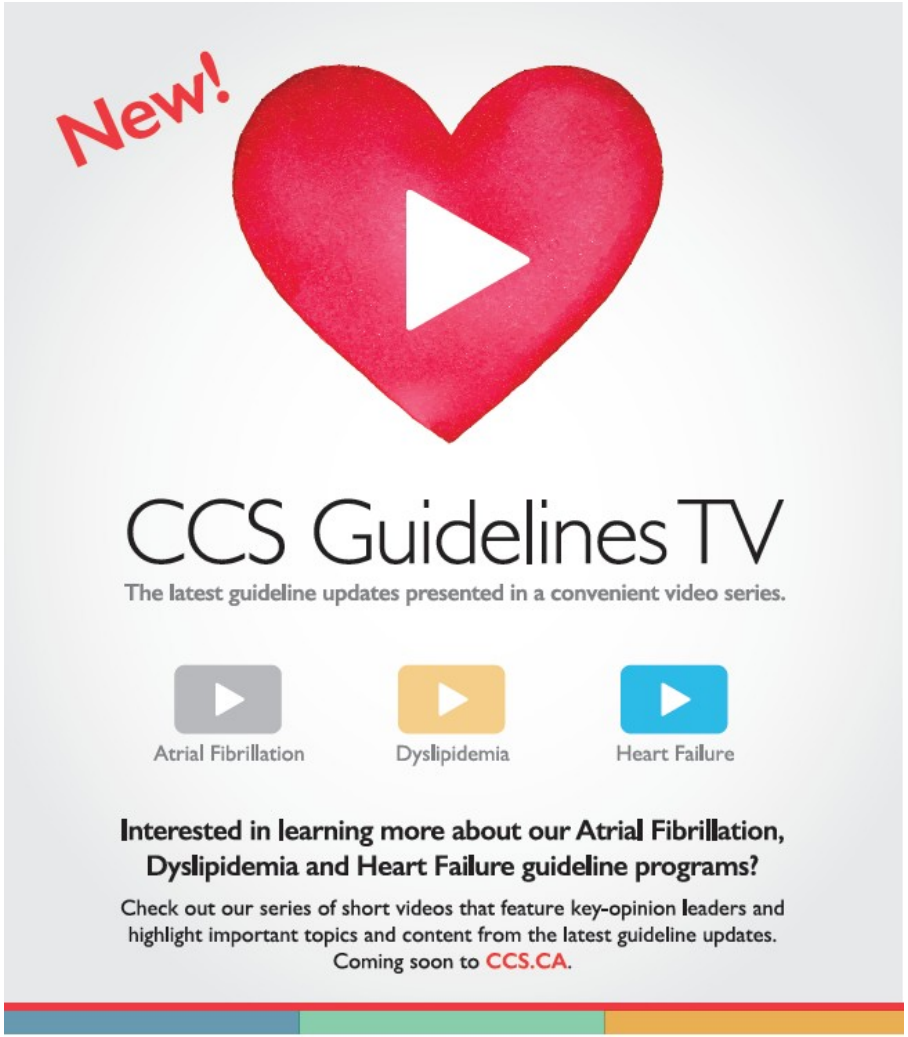
Key Messages

- **Big role for primary care in HF management**
  - HF adds to chronic disease burden and complexity
  - symptoms present first to primary care
  - collaboration and networking benefit the patient and the system

- **Emphasis will be on community-based care**
  - tertiary academic groups struggle with volume and triaging
  - community providers can be knowledgeable and accessible

- **Knowledge translation and dissemination is crucial**
  - key clinical and therapeutic concepts can have high impact

New Knowledge Translation Initiatives



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The Basics

Practical Tip

- "Nobody told me I had to restrict....."

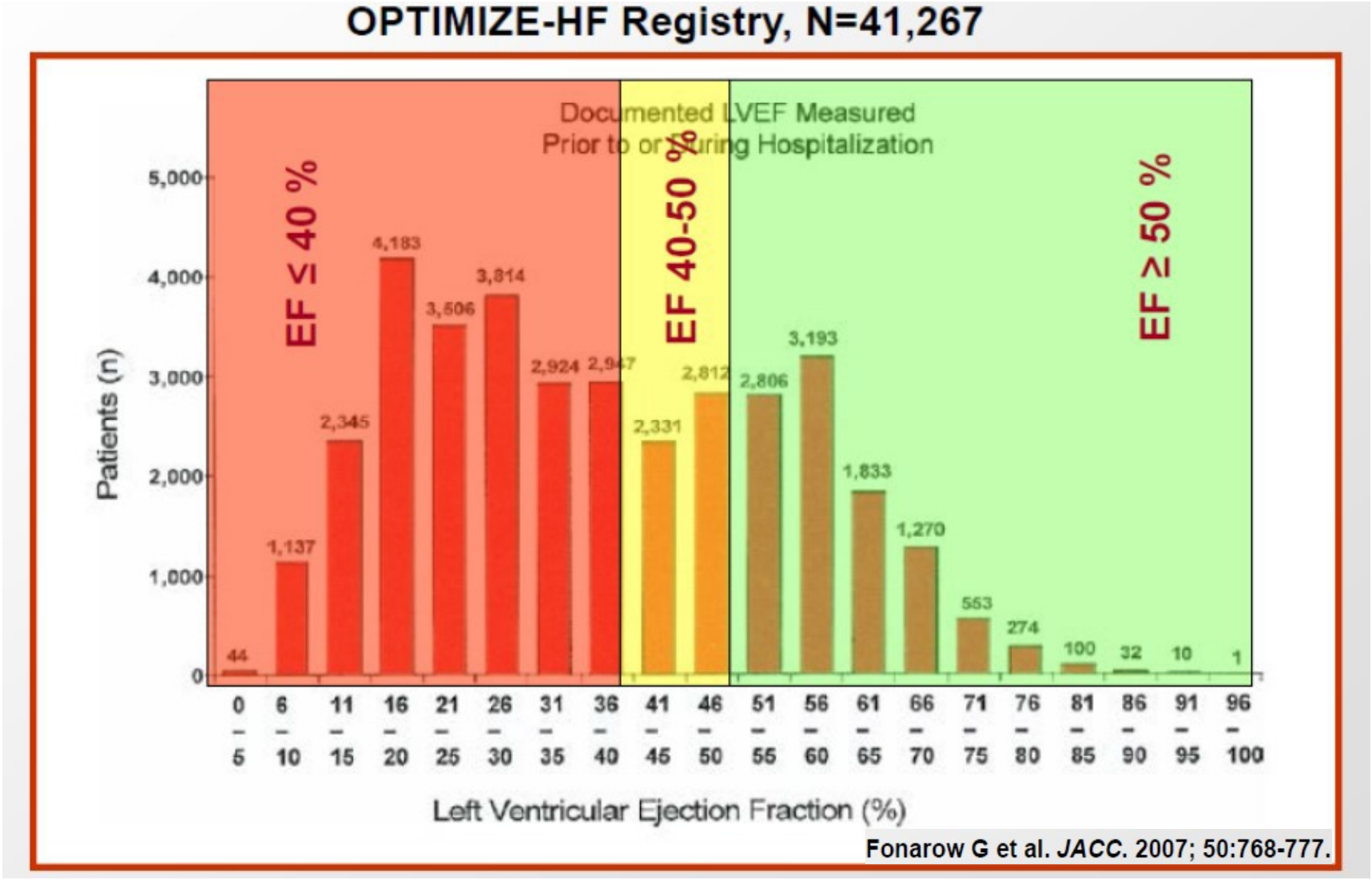
- "I didn't think that applied to me"
- "I ran out of pills....."
- ".....or money"
- "I don't have heart failure" (denial)
- "You said I was cured/fixed/better"

Reinforce self management principles at every opportunity

Key Culprits for HF Decompensation

- Medication non-compliance
- Excessive NaCl intake
- Tachyarrhythmia / loss of sinus rhythm
- Hypertension
- Gradual volume retention
- Acute infection
- Cardiac ischemia

Distribution of EF in Hospitalized Patients with Heart Failure



Fonarow G et al. *JACC*. 2007; 50:768-777.

For Optimizing HF Managment You Need to Know

1. EF (HFrEF, HFpEF vs HFmrEF)
2. NYHA class
3. Ischemic vs Non-ischemic

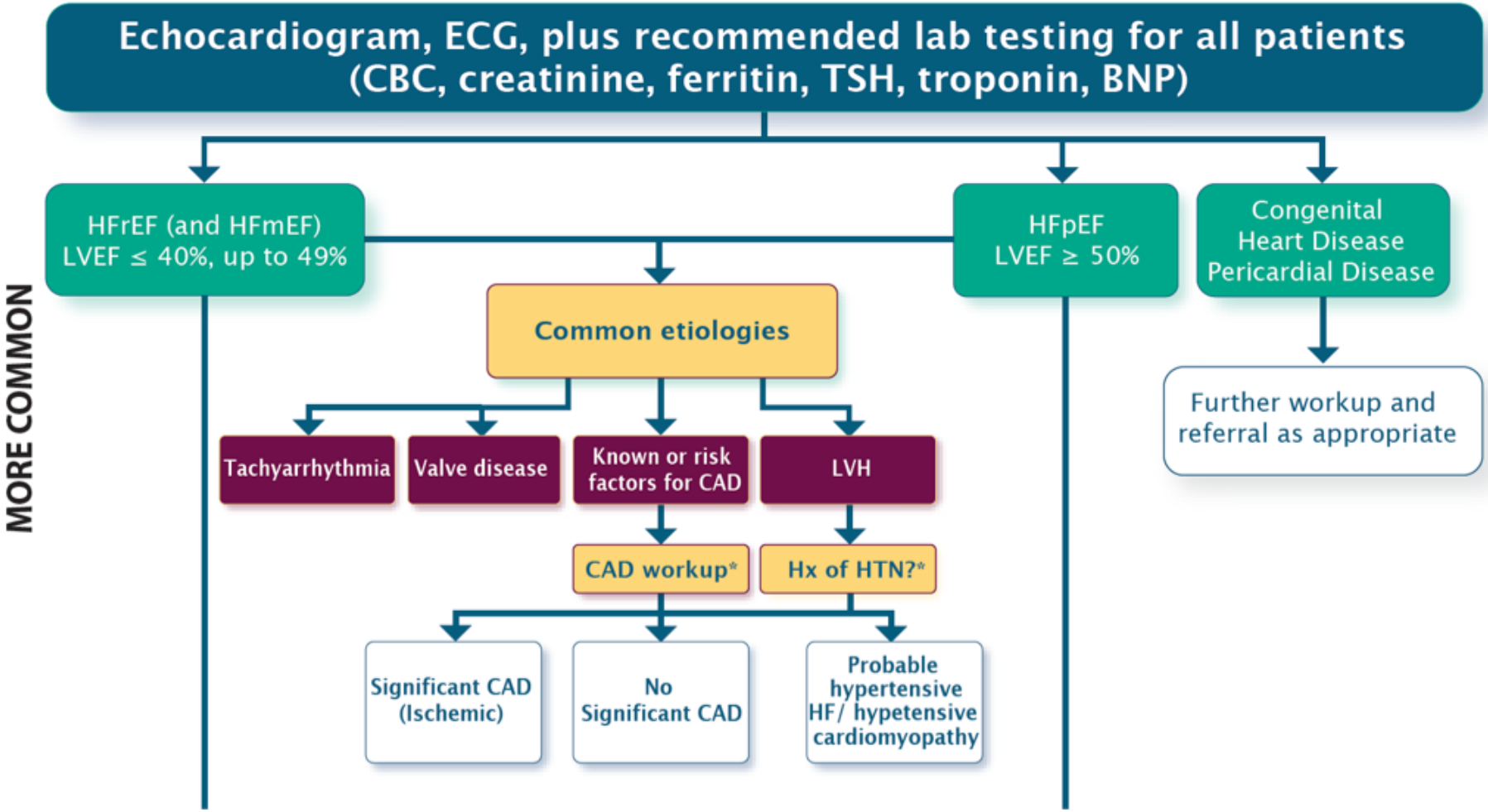
Table 1. New York Heart Association functional classification and other symptom descriptors

Class	Definition	Other descriptor
I	No symptoms	Asymptomatic
II	Symptoms with ordinary activity	Mild symptoms
III	Symptoms with less than ordinary activity	Moderate symptoms
IV	Symptoms at rest or with any minimal activity	Severe symptoms

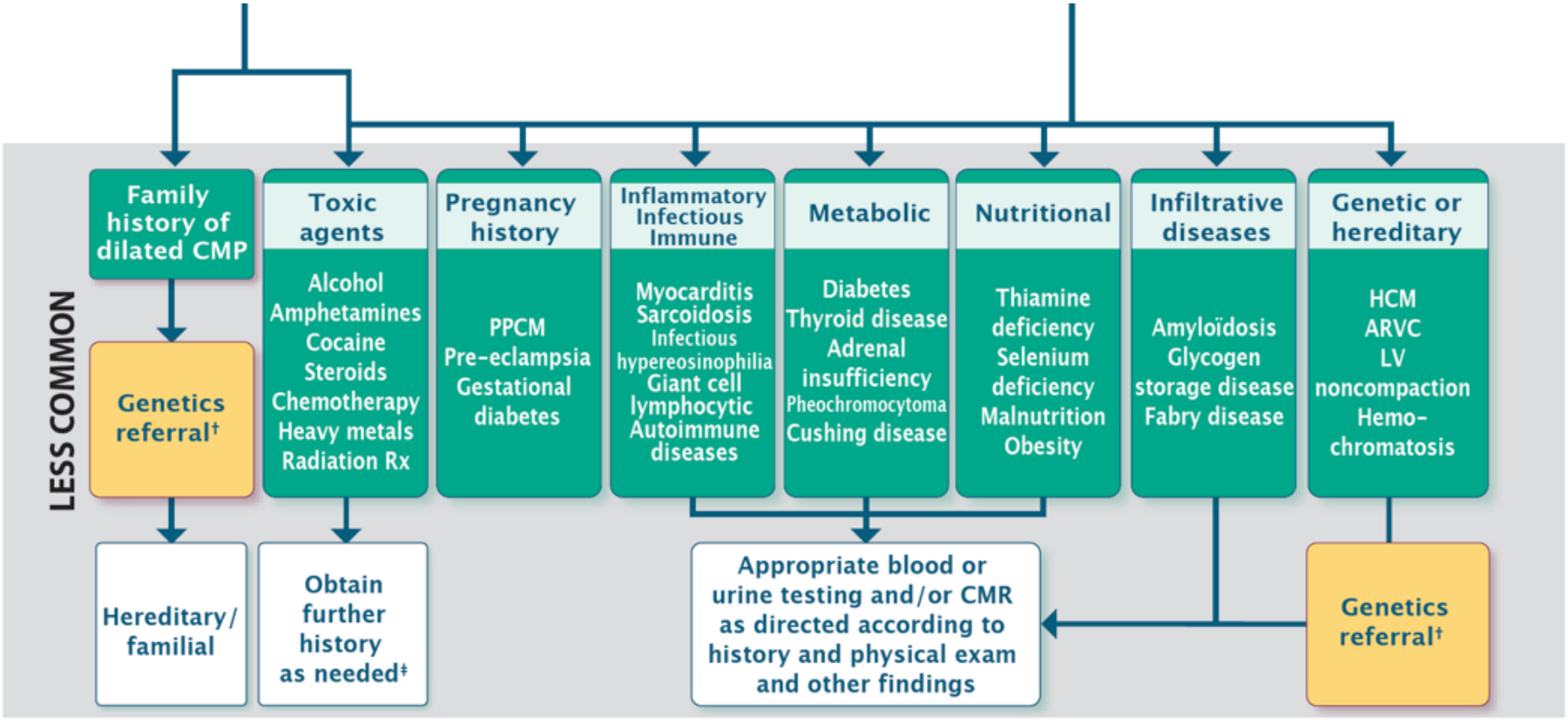
Data from the Criteria Committee of the New York Heart Association.[6]

Heart Failure Etiology: Which investigation for which patient?

Etiology of HF



Etiology of HF



* Patients may have mixed etiology of HF
† A detailed medical and family history may guide investigations and should be completed in all patients (see recommendation 19)
‡ Direct testing based on pre-test probability, availability and expertise.
ARVC, arrhythmogenic right ventricular cardiomyopathy; CAD, coronary artery disease; CBC, complete blood count; CMP, cardiomyopathy; CMR, cardiac magnetic resonance; ECG, electrocardiogram; HCM, hypertrophic cardiomyopathy; HFmEF, HF with a mid-range ejection fraction; HFpEF, HF with preserved ejection fraction; HFrEF, HF with a reduced ejection fraction; HTN, hypertension; LV, left ventricle; LVEF, left ventricular ejection fraction; LVH, left ventricular hypertrophy; NP, natriuretic peptide; PPCM, peripartum cardiomyopathy; TSH, thyroid stimulating hormone.

Investigation

Recommendations

We recommend the choice of investigations should first be guided by careful history and physical examination and when clinical evidence suggests a possible cause and the planned test(s) result would be reasonably expected to lead to a change in clinical care *(Strong Recommendation, Low Quality Evidence).*

We recommend that in a patient suspected of a cardiomyopathy, an inquiry should be made regarding family history, concomitant illnesses, prior malignancy requiring radiation or chemotherapy, symptoms of hypo- or hyperthyroidism, pheochromocytoma, acromegaly, previous travel, occupational exposure to chemicals or heavy metals, nutritional status, alternative medicine or naturopathic agents, illicit drug use and exposure to HIV *(Strong Recommendation, Low Quality Evidence).*

Evaluating for Coronary Disease

Recommendations

We recommend that coronary angiography be:

i.Performed in patients with HF with ischemic symptoms and who are likely to be good candidates for revascularization *(Strong Recommendation, Moderate Quality Evidence);*

ii.Considered in patients with systolic HF, LVEF < 35%, at risk of CAD, irrespective of angina, who might be good candidates for revascularization *(Strong Recommendation, Low Quality Evidence);*

iii.Considered in patients with systolic HF and in whom noninvasive coronary perfusion testing yields features consistent with high risk *(Strong Recommendation, Moderate Quality Evidence).*

Take Home - 1

- **Document an ejection fraction**
  - **echo to start**
  - **HFrEF vs. HFmrEF vs. HFpEF (guides Rx)**

- **Determine an NYHA functional class**
  - **not subjective; it is valuable (guides Rx)**

- **Take a guess at etiology**
  - **guides subsequent investigations and (sometimes) Rx**

Medical Therapy for HFrEF
When…What Order…and How Much?

Case example

- 55 yr old female, “Mrs. Ref”
- Referred to you for optimization of medication for HFrEF “is she appropriate for one of those new fancy drugs”?
- PMHx:
  - HTN, dyslipidemia
- Meds prior to HF diagnosis:
  - amlodipine 5 mg od, rosuvastatin 10 mg od
- Presentation:
  - 2 presentations to ER with “respiratory tract infection”
  - 3 pillow orthopnea, symptoms with minimal activity
  - BP 120/80, HR 90, volume overloaded (JVP, crackles, peripheral edema)

Case example

- Investigations:
  - ECG: NSR, QRS 116 ms (“narrow" as < 130), no Q waves
  - CXR: cardiomegaly
  - Echo: LVEF 25-30%, moderate functional MR
  - MIBI scan: normal perfusion
  - Na 136, K 4.1, Creat 100, CBC normal

- Initial Rx:
  - furosemide 40 mg od
  - ramipril 2.5 mg bid
  - amlodipine and rosuvastatin continued

- Improved – NYHA class II-III symptoms, no orthopnea

- Now what?

Question 1

What is an appropriate next step in her medical therapy?

A. Carvedilol 3.125 mg bid; stop amlodipine

B. Digoxin 0.125 mg od

C. Spironolactone 12.5 mg od

D. Add ivabradine 5 mg bid

E. Substitute ramipril for sacubitril-valsartan 50 mg bid

F. I have never heard of ivabradine or sacubitril-valsartan

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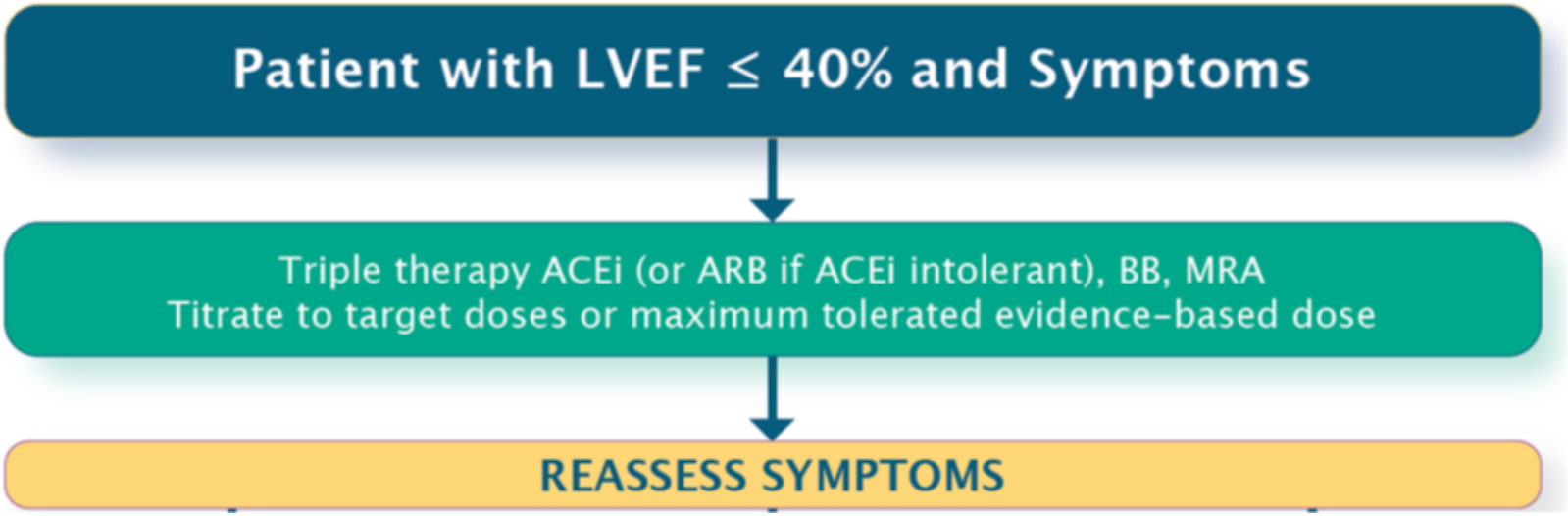
Step 1
Triple Therapy for HFrEF



Step 1
Triple Therapy for HFrEF

ACE Inhibitor

+

Beta Blocker

(maximum tolerated dose)

MR-antagonist

(maximum tolerated dose)

Evidence-based drugs & doses

Drug	Start Dose	Target Dose
Ace-Inhibitors (ACEi)		
Enalapril	1.25-2.5 mg BID	10 mg BID/ 20 BID in NYHA class IV
Lisinopril	2.5-5 mg daily	20-35 mg daily
Perindopril	2-4 mg	4-8 mg
Ramipril	1.25-2.5 mg BID	5 mg BID
Trandolapril	1-2 mg daily	4 mg daily
Angiotensin Receptor Blocker (ARB)		
Candesartan	4-8 mg daily	32 mg daily
Valsartan	40 mg BID	160 mg BID
Beta-blockers		
Carvedilol	3.125 mg BID	25 mg BID/ 50mg BID (> 85kg)
Bisoprolol	1.25 mg daily	10 mg daily
Metoprolol CR/XL*	12.5-25 mg daily	200 mg daily
Mineralocorticoid Receptor Antagonists (MRA)		
Spironolactone	12.5 mg daily	50 mg daily
Eplerenone	25 mg daily	50 mg daily
Angiotensin receptor–neprilysin inhibitor (ARNi)		
Sacubutril/Valsartan	50-100 mg BID	200 mg BID
I_f Inhibitor		
Ivabradine	2.5-5 mg BID	7.5 mg BID
Vasodilators		
Isosorbide dinitrate	20 mg TID	40 mg TID
Hydralazine	37.5 mg TID	75-100 mg TID-QID

Take Home - 2

- **Remember the goals of HF pharmacotherapy**
  - **improve survival**
  - **decrease morbidity (symptoms, hospitalization)**
  - **increase functional capacity and quality of life**

- **Remember why particular drugs/doses are chosen**
  - **emulation of clinical trials**
  - **demonstrated benefit**
  - **modulation of the neurohormonal system**

- **Remember there is wide variability in tolerance**
  - **multiple meds; another reason for specialist involvement**

Triple Therapy Tips

- **General**
  - Stop or decrease doses of less proven meds (esp. if intolerance)
  - Usually can continue meds during acute illness

- **ACEIs / ARBs +/- MRAs**
  - rates of bothersome cough (10-20%) vs angioedema (<1%)
  - if Cr increase < 30%, not an automatic reason to discontinue
  - MRAs indication not as clear if asymptomatic

- **Beta Blockers**
  - slower titration, GP vs specialist
  - B1-selective (e.g. bisoprolol) if reactive airway disease

Mrs. Ref 4 months later after Triple Therapy Titration

- **Feels generally well**
  - **No hospitalizations**
  - **More stamina, but still fatigues with ordinary activities; NYHA II**
  - **Describes satisfactory quality of life**
  - **Meds:**
    1. **ramipril 5 mg bid**
    2. **carvedilol 12.5mg bid**
    3. **spironolactone 12.5 od**
  - **BP 114/72, HR 72, euvolemic**
  - **CBC normal, creat 104, K 4.3**

Question 2

What is your next step?

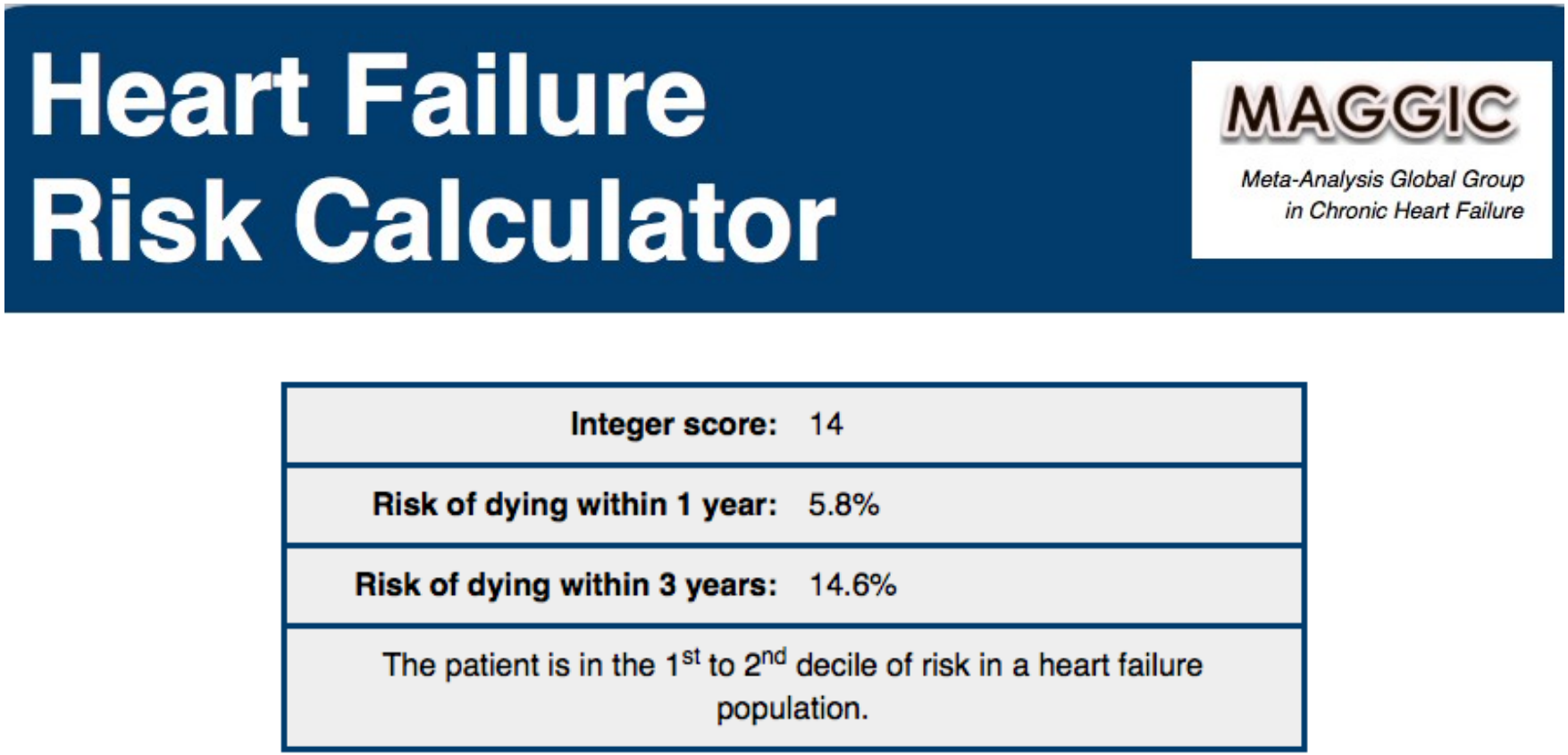
A. Add ivabradine 5 mg bid

B. Substitute ramipril for sacubitril-valsartan 50 mg bid

C. Nothing; this patient feels well and is tolerating meds

Mortality with NYHA II Symptoms

Lower risk….but not low risk



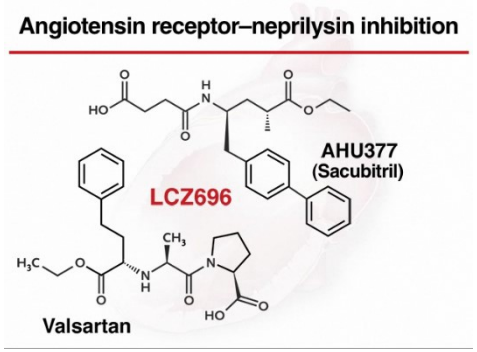
www.heartfailurerisk.org

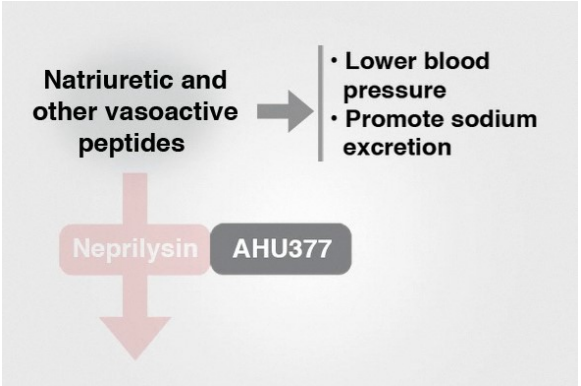
Pocock et al, Eur Heart J 2012

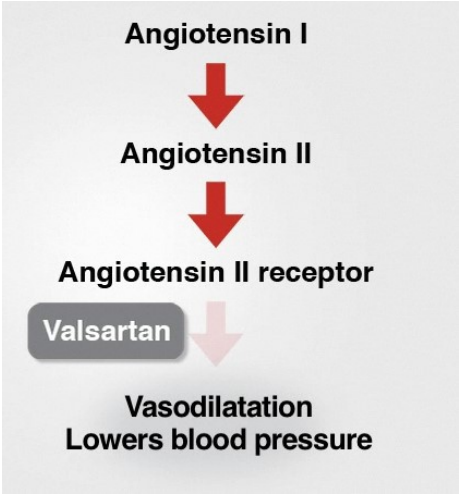
New Therapies for HFrEF: Sacubitril-Valsartan

PARADIGM-HF: LCZ696/Sac-Val/ARNI

Prospective Comparison of ARNI [Angiotensin Receptor–Neprilysin Inhibitor] with ACEI to Determine Impact on Global Mortality

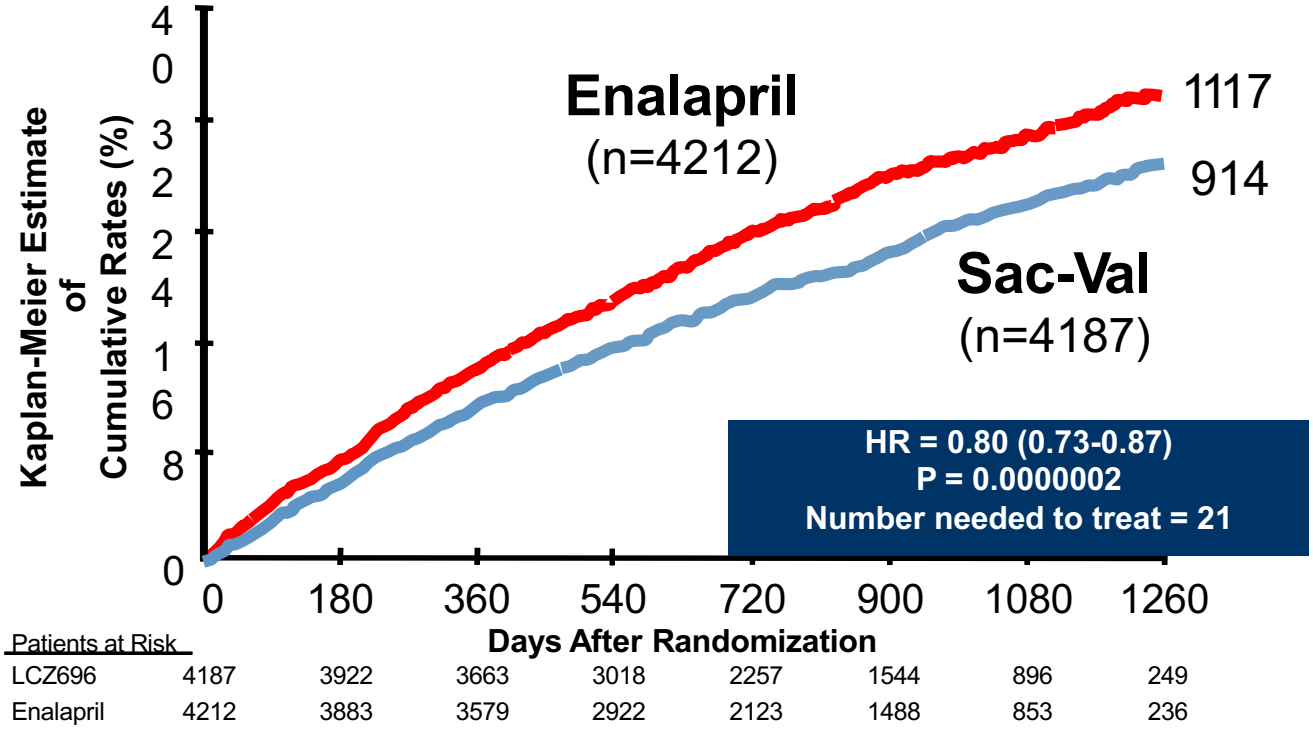






McMurray et al. N Engl J Med 2014;371(11):993-1004

PARADIGM-HF: Primary endpoint (CV death or HF hospitalization)



Patients at Risk								
LCZ696	4187	3922	3663	3018	2257	1544	896	249
Enalapril	4212	3883	3579	2922	2123	1488	853	236

McMurray et al. N Engl J Med 2014;371(11):993-1004

2017 Recommendation: ARNI

Recommendation

We recommend that an ARNI be used in place of an ACEi or ARB, in patients with HFrEF, that remain symptomatic despite treatment with appropriate doses of GDMT in order to decrease cardiovascular death, HF hospitalization and symptoms (Strong Recommendation, High Quality Evidence).

Practical tips:

- Drug tolerability, side effects and laboratory monitoring with use of ARNIs is similar to that of ACEi or ARB
- PARADIGM-HF excluded patients with a serum K > 5.2 and eGFR < 30 and SBP < 100mmHg
- ACEi (not ARB) require a washout period of 36 hours to decrease the risk of angioedema

Question 2

What is your next step?

A. Add ivabradine 5 mg bid

B. Substitute ramipril for sacubitril-valsartan 50 mg bid

C. Nothing; this patient feels well, is tolerating meds

Mrs. Ref Next Follow Up: 3 Months

- Feels "ok" but fatigues easily, persistent NYHA II symptoms

- HF meds:
  1. carvedilol 12.5 mg bid
  2. spironolactone 12.5 mg bid
  3. sacubitril-valsartan 100 mg bid

- BP 100/70, HR 84, euvolemic

- CBC normal, creat 104, K 4.3

Question 3

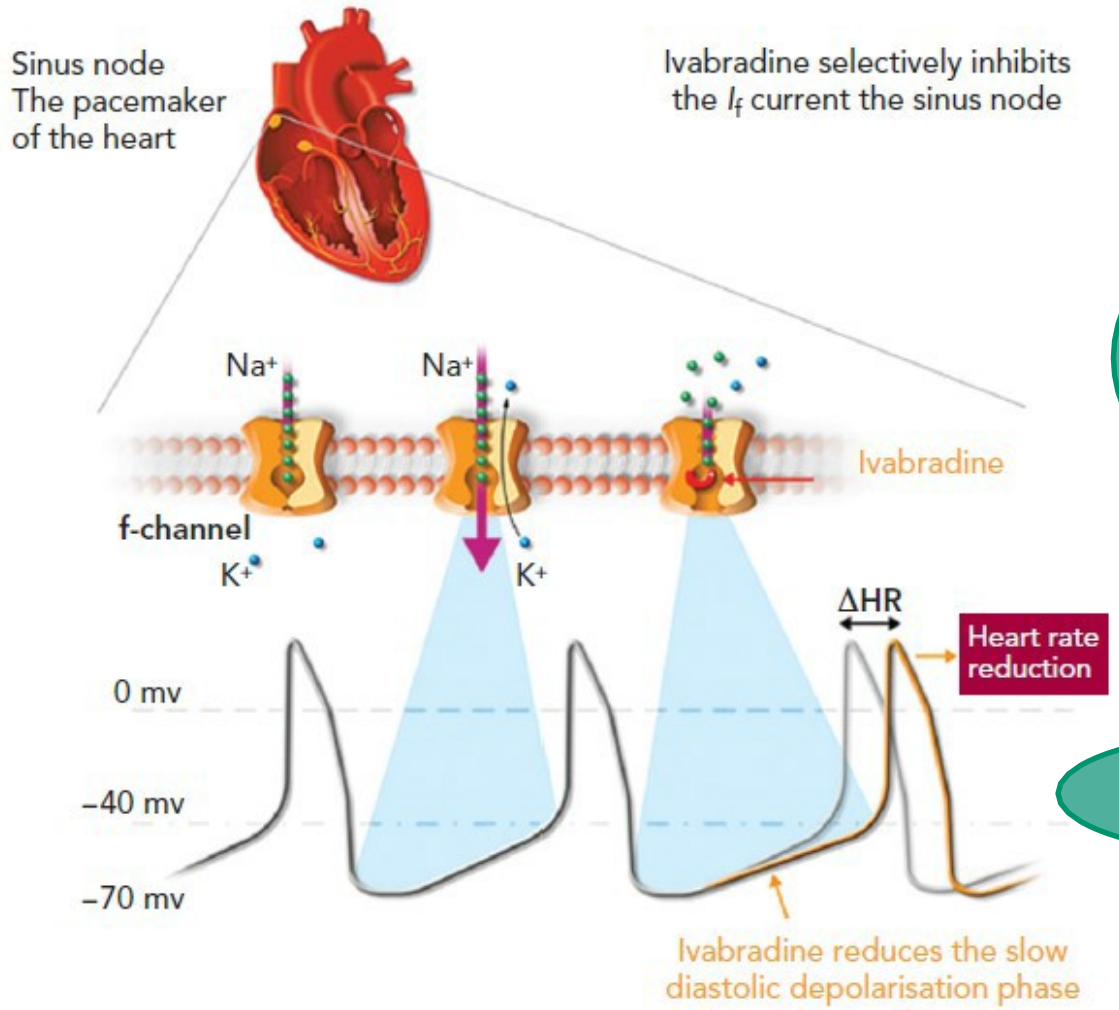
What is your next step?

A. Add ivabradine 5 mg bid

B. Reassess LVEF

C. Refer for ICD

New Therapies for HFrEF: Ivabradine



SHIFT

90% beta-blockers

91% ACEi or ARB

60% MRA

ivabradine

placebo

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Swedberg K, et al. Eur j Heart Fail 2010;12:75-81

Effects of Ivabradine on Primary and Secondary Endpoints in the SHIFT Study

	Ivabradine group (n=3241)	Placebo group (n=3264)	HR (95% CI)	p value
Primary endpoint				
Cardiovascular death or hospital admission for worsening heart failure	793 (25%)	937 (29%)	0.82 (0.75-0.90)	<0.0001
Mortality endpoints				
All-cause mortality	503 (16%)	552 (17%)	0.90 (0.80-1.02)	0.092
Cardiovascular mortality	449 (14%)	491 (15%)	0.91 (0.80-1.03)	0.128
Death from heart failure	113 (3%)	151 (5%)	0.74 (0.58-0.94)	0.014
Other endpoints				
Hospital admission for worsening heart failure	514 (16%)	672 (21%)	0.74 (0.66-0.83)	<0.0001
Any cardiovascular hospital admission	977 (30%)	1122 (34%)	0.85 (0.78-0.92)	0.0002
Data are number of first events (%), hazard ratio (HR; 95% CI), and p values.				

- Ivabradine resulted in 18% reduction in the primary end point
- Effect mainly driven by reduction in hospital admissions for worsening HF (26%) and deaths due to HF (26%)

Swedberg K, et al. Eur j Heart Fail 2010;12:75-81

2017 Recommendation: Ivabradine

Recommendation

We recommend that ivabradine be considered in patients with HFrEF, who remain symptomatic despite treatment with appropriate doses of GDMT with a resting HR > 70 BPM, in sinus rhythm and a prior HF hospitalization within 12 months, for the prevention of cardiovascular death and HF hospitalization (Strong Recommendation, Moderate Quality Evidence).

Practical tips:

- Every effort should be made to achieve target or maximally tolerated doses of beta-blockers prior to initiation of ivabradine
- Ivabradine has no effect on BP or myocardial contractility

Take Home - 3

- The new fancy medications are add-on or substitution Rx
  - very promising
  - likely more specialist domain, but familiarity helps
  - value is placed on relevant outcomes (e.g. hospitalization)

- The ”old” meds are still mentioned
  - hydralazine-ISDN: African ancestry, CKD w/ hyperK
  - digoxin: still debated; (SR) no mortality benefit, dec. HF hosp

- ICDs (implantable cardioverter defibrillators) underused
  - a LOT of HF patients meet criteria

Question 3

What is your next move?

A. Add ivabradine 5 mg bid

B. Reassess LVEF

C. Refer for ICD

Key Messages

- **Big role for primary care in HF management**
  - HF adds to chronic disease burden and complexity
  - symptoms present first to primary care
  - collaboration and networking benefit the patient and the system

- **Emphasis will be on community-based care**
  - tertiary academic groups struggle with volume and triaging
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Thank you!

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