

Heart Failure...It's About The Journey




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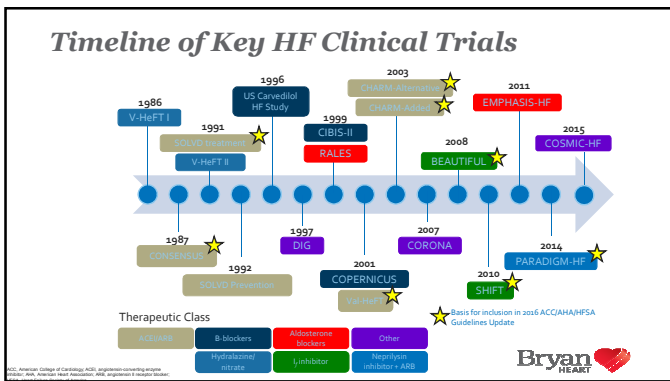

Key Terminology Updates

- **GDEM:** guideline-directed evaluation and management refers to care defined primarily by ACC/AHA Class I recommendations. Used in place of the previous term, guideline-directed medical therapy^{1,2}
- **HF:** preferred over congestive HF, because patients may present without signs or symptoms of fluid overload²
- **CHF:** Chronic Heart Failure
- **HF_{rEF}:** LVEF ≤40%. Also referred to as systolic HF³
- **HF with preserved ejection fraction (HF_{pEF}):** LVEF ≥50%. Also referred to as diastolic HF³
- **HF with midrange ejection fraction (HF_{mrEF}):** LVEF between 40% and 50%³



1. Yancy CW et al. Circulation. 2016;134:e282-293. 2. Yancy CW et al. Circulation. 2013;128:1305-1302. 3. Pankowski Patel et al. Eur J Heart Fail. 2016;18:915-925.





From here..... To where??

• PRE 1986

- Rest...don't move
- Nurses didn't need stethoscopes
- Doctor was King
- Very few medications
- Minimal technology, computers new...but not in healthcare

• The New Millennium

- Exercise is key to health
- Doctors don't need stethoscopes
- Team approach to care
- Three new drugs in past 2 years
- Technology, Technology, Technology.....




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Where are we going??



- Heart failure has become a specialty within the specialty of Cardiology
- New Treatment Guidelines (newly updated!!!)
- New technology (Cardiomems, Life Vest)
- New Imaging Options (Cardiac MRI)
- New Drugs.....

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What is Heart Failure??



- What do you think of when I say "Heart Failure"?
- Old People
- Edema
- Death
- Fluid in the Lungs

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According to the American Heart Association...



Heart failure occurs when the heart muscle is weakened and cannot pump enough blood to meet the body's needs for blood and oxygen.



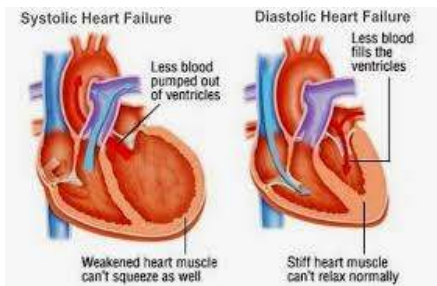
ACC/AHA Definitions

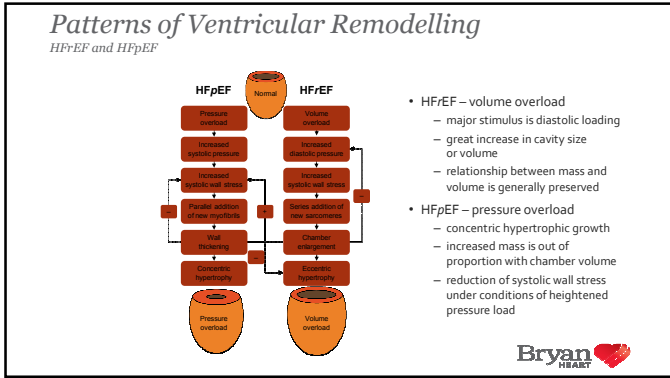
Heart Failure with Reduced or Preserved Ejection Fraction

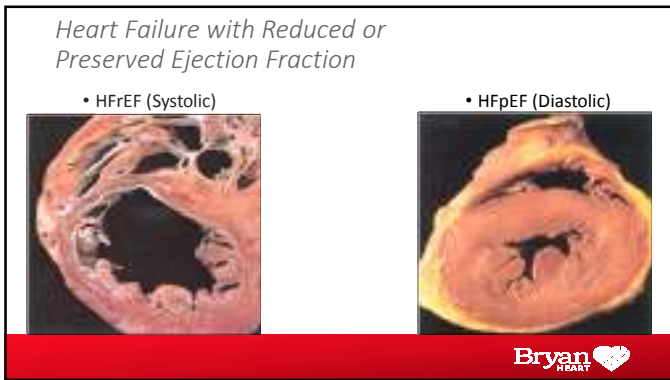
Classification	EF (%)	Description
Heart failure with reduced ejection fraction (HFrEF)	<40	Also referred to as systolic HF. Randomized clinical trials have mainly enrolled patients with HFrEF, and it is only in these patients that efficacious therapies have been demonstrated to date.
Heart failure with preserved ejection fraction (HFpEF)	≥50	Also referred to as diastolic HF. Several different criteria have been used to further define HFpEF. The diagnosis of HFpEF is challenging because it is largely one of excluding other potential noncardiac causes of symptoms suggestive of HF. To date, efficacious therapies have not been identified.
a. HFpEF, borderline	41 to 49	These patients fall into a borderline or intermediate group. Their characteristics, treatment patterns, and outcomes appear similar to those of patients with HFpEF.
b. HFpEF, improved	>40	It has been recognized that a subset of patients with HFpEF previously had HFrEF. These patients with improvement or recovery in EF may be clinically distinct from those with persistently preserved or reduced EF. Further research is needed to better characterize these patients.

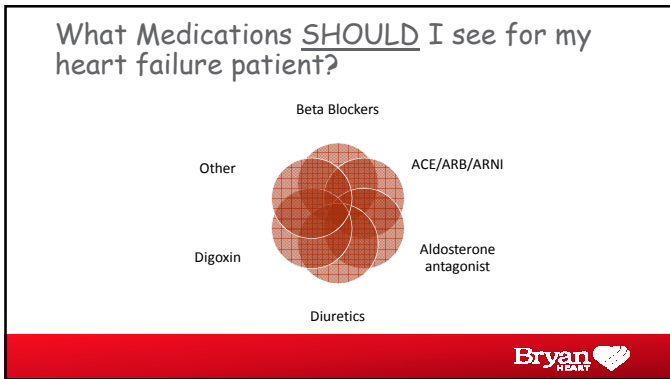


Systolic vs Diastolic Heart Failure









Beta Blockers

- Carvedilol (Coreg)
- Bisoprolol (Zebeta)
- Metoprolol Succinate (Toprol XL)

What do they do?

- Slows down the heart rate
- Lowers blood pressure and
- It can even improve pump function!!
- BUT.....

They can also cause fatigue!
Carvedilol>Bisoprolol>Metoprolol Succinate



Why one and not another??

- Studies show.....
 - (i) in comparable high doses of carvedilol, metoprolol and bisoprolol, carvedilol was associated with significantly lower all-cause mortality risk; and
 - (ii) was also the only dose regimen to significantly lower all-cause hospitalization.
- Availability
- Cost
 - Carvedilol \$4
 - Bisoprolol \$10-20
 - Metoprolol Succinate \$10-20

<https://www.goodrx.com/>



Other Beta Blockers

- Nebivolol (Bystolic)
 - Not studied in heart failure
 - Decreases Blood pressure
 - Decreases Heart Rate
 - Beneficial in patients with Pulmonary Hypertension



Blood Pressures:

- Most effect from Carvedilol
- Least effect from Metoprolol Succinate

Heart Rate:


- Most effect from Metoprolol Succinate
- Least effect from Carvedilol

Kidney Function:

- Isn't effected by Beta Blockers

Other Side Effects:

- Dizziness (usually resolves after 2-3 days)
- Increase in glucose levels
- High initial doses of beta blockers can be dangerous, start low


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Angiotensin Converting Enzyme (ACE) Inhibitors

- Lisinopril (Prinivil)
- Enalapril (Vasotec)
- Captopril (Capoten)

• What do they do?

- Lowers blood pressure
- Can help improve heart strength
- Protects the kidneys
- BUT.....



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Blood Pressures:


- Decrease in blood pressure (more at first)
- Takes about 2 weeks to get to steady state

Kidney Function:

- Can be a bump in creatinine when started
- Can effect potassium in patients (increase)

Other Side Effects:

- Dizziness (usually resolves after 2-3 days)



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Angiotension Receptor Blocker (ARB)

- Valsartan (Diovan)
- Losartan (Cozaar)
- Irbesartan (Avapro)
- Olmesartan (Benicar)



What do they do for my patients?

- Lowers blood pressure
- Protects the kidneys
- Improves pump function
- Psstt.....and no cough!!

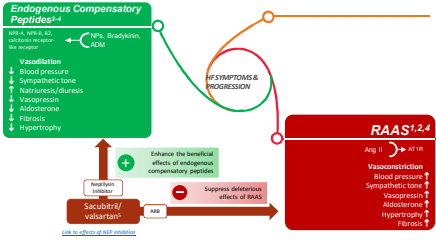



Angiotensin Receptor Neprilysin Inhibitor (ARNI)

- There is only One:
 - Entresto
 - Combination of Sacubitril/Valsartan
- Used **IN ADDITION** to your current heart failure medications
- There are special instructions when Entresto is started

Effects of Sacubitril/valsartan in HFrEF



Endogenous Compensatory Peptides⁺


↓ Blood pressure
↓ Sympathetic tone
↓ Neurohormonal drive
↓ Vasopressin
↓ Aldosterone
↓ Fatigue
↓ Hypertrophy

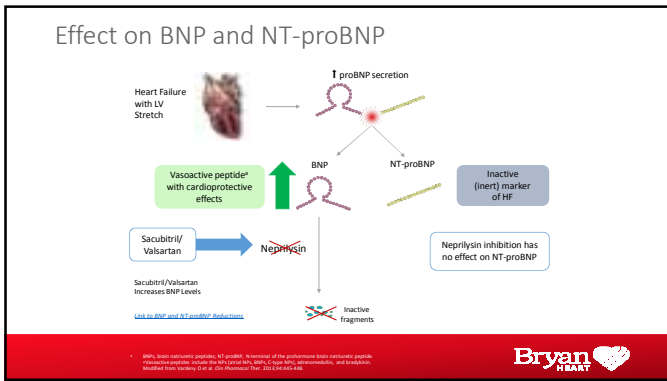
RAAS^{1,2,4}

Vasoconstriction
Blood pressure ↑
Sympathetic tone ↑
Vasopressin ↑
Aldosterone ↑
Hypertrophy ↑
Fibrosis ↑

Sacubitril/valsartan

Enhance the beneficial effects of endogenous compensatory peptides
Suppress deleterious effects of RAAS









Diuretics

•AKA: "The Water Pill"

- Furosemide (Lasix)
 - How available it in the presence of fluid?
- Torsemide (Demadex)
 - Half as much
- Bumetanide (Bumex)
 - ??
- Amiloride (Midamor)
 - Potassium sparing
- Metolazone (The Power Pee Pill)
 - THE BIG DOG
 - Should rarely see this being used daily

I ❤️ Toilets



Aldosterone Antagonist

Aldosterone antagonists are drugs that block harmful effects on the heart and blood vessels caused by the hormone aldosterone.

- Spironolactone (aldactone)
- Eplerenone (Inspra)



- #1-LESS or NO Potassium Supplement
 - Decreases Blood Pressure
 - Works as a wimpy water pill

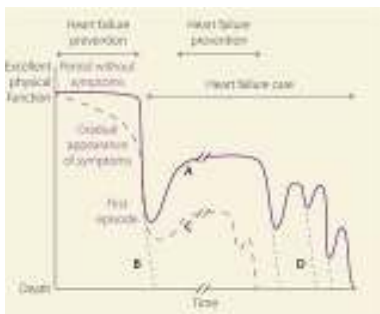


Corlanor® (ivabradine) Indication

- Corlanor® is indicated to reduce the risk of hospitalization for worsening heart failure in patients who meet all of the following conditions
 - Stable, symptomatic chronic heart failure with left ventricular ejection fraction ≤ 35%
 - In sinus rhythm with resting heart rate ≥ 70 bpm
 - On maximally tolerated doses of beta-blockers or have a contraindication to beta-blocker use



Heart Failure Progression



Heart Failure is....

- A progressive disease
 - 50% of patients will die within the first 5 years of diagnosis
- Worsening symptoms
 - Fatigue
 - Shortness of Breath
 - Chest Pain
 - Confusion
 - Other organ failure
- Medications have to be titrated
- Medications have to be stopped



BRYAN HEART IMPROVEMENT PROGRAM (BHIP)

- Physician Director: John Steuter, MD
- Physician: Matt Baker, MD
- Nurse Practitioner: Colleen Carpenter, DNP, APRN
- Nurse Practitioner: Heather Mosley, MSN, APRN



RESOURCES

- <https://www.uptodate.com/contents/search>
- <https://www.goodrx.com/>