10 Essential Points To Remember About Heart Failure
Take Home 1: CHF is an increasing epidemic that carries enormous morbidity, mortality, cost.

United States: 1979-2006 Source: NHDS/NCHS and NHLBI.

J Am Coll Cardiol. 2013;61(12):1209-1221
Take Home 1: CHF is an increasing epidemic that carries enormous morbidity, mortality, cost

- **2012**
  - 5.1 Million Americans with HF
  - $30.7 Billion Annually

- **2030**
  - 8.1 Million Americans with HF
  - $69.7 Billion Annually
  - 825k New Cases Annually
  - 5-Year Mortality ~50%
  - 1 Million Hospital Discharges Annually
Take Home 2: HF by definition is a syndrome that has 2 major types and multiple different causes

- Definition: HF is a complex clinical syndrome that results from any structural or functional impairment of ventricular filling or ejection of blood
- HF with preserved ejection fraction (HFpEF)
- HF with reduced ejection fraction (HFrEF)
- The prevalence of HFrEF and HFpEF is equal

http://dx.doi.org/10.1016/j.jacc.2013.05.019
Take Home 2: HF by definition is a syndrome that has 2 major types and multiple different causes

- CAD
- Valvular Heart disease
- Hypertension
- Genetics
- Cardiotoxins (chemotherapy, drugs)
- Arrhythmia
- Endocrinopathies (obesity, diabetes, thyroid)
- Stress (Takutsubo)
- Radiation
- Infiltrative diseases
- Inflammatory response (infection, rheumatologic)
- Viral (HIV)
- Congenital heart disease
- Peripartum

- Patients can have symptoms with or without (congestion) volume overload
- Hallmark Symptoms
  - Dyspnea
  - Exercise Intolerance
  - Fatigue
- Accompanying symptoms
  - Congestion (pulmonary, splanchnic, peripheral)
- Severe heart failure
  - Cachexia
  - Anorexia
  - Multisystem review of systems abnormal
If you apply guidelines based therapy based upon HF type and severity then your patients will have a greater chance of not only feeling better but living longer.

- **Education on self-care**
- **Diet**
- **Treatment of sleep disordered breathing**
- **Weight loss**
- **Exercise Training-cardiac rehabilitation**

### Therapy Goals
- **Drugs**
  - ACEI or ARB in appropriate patients (see text)
  - Beta-blockers in appropriate patients (see text)

### Devices in Selected Patients
- Implantable defibrillators

### Therapy
- **Stage A**
  - At high risk for HF but without structural heart disease or symptoms of HF.
- **Stage B**
  - Structural heart disease but without symptoms of HF.
- **Stage C**
  - Structural heart disease with prior or current symptoms of HF.
- **Stage D**
  - Refractory HF requiring specialized interventions.

### LCZ696 (Entresto)
- Ivabradine (Corlanor)

### Refractory Symptoms of HF at Rest
- Patients with: own structural heart disease and heart failure, reduced exercise tolerance.
- Patients who have marked symptoms at rest despite maximal medical therapy (e.g., those who are recurrently hospitalized or cannot be safely discharged from the hospital without specialized interventions.)

**Options**
- Compassionate end-of-life care/hospice
- Extraordinary measures
- Heart transplant
- Chronic inotropes
- Permanent mechanical support
- Experimental surgery or drugs
Take Home 4: There should be specific goals of guidelines-based pharmacologic and device therapy

- Improve symptoms
- Reduce the risk of congestion
- Reduce the risk of progression
- Improve the chances of remodeling ("reverse-remodeling")
- Improve mortality
Take Home 4: There should be specific goals of guidelines based therapy

• Use appropriate medications according to NYHA symptoms and AHA class
  – NYHA II-IV, AHA C Choices: Evidenced-based beta blockers, ACE I or ARB or Valsartan/Sacubitril, Aldosterone Antagonists, Isordil-Hydralazine (african-american patients), Ivabradine (if sinus rhythm and sinus rate >80bpm), digoxin (controversial-may improve symptoms)

• Each medication has specific neurohormonal targets and should be used in tandem if tolerated

• Use appropriate medications at appropriate target dosages
  – Beta-blockers
  – ACE or ARBs or Valsartan/Sacubitril

• Diuretics don’t have mortality benefit and should be used if there is congestion
Take Home 5: Know when to refer for implantable defibrillators and/or cardiac resynchronization and how to maintain them

- Ischemic Cardiomyopathy
  - LVEF ≤ 35%, 40 days post MI and NYHA II-III, on GDMT
  - LVEF ≤ 30%, 40 days post MI and NYHA I, on GDMT
  - LVEF ≤ 40%, with NSVT and inducible VT during EPS

- Nonischemic Cardiomyopathy
  - LVEF ≤ 35%, after a minimum of 3-6 months of optimal medical therapy
  - Avoid ICD if expected survival < 1 year
  - Devices should be interrogated at regular intervals to monitor for arrhythmia or shock therapy or pacing
Take Home 5: Know when to refer for implantable defibrillators and/or cardiac resynchronization and how to maintain them

- **CRT is indicated** for patients who have LVEF 35%, sinus rhythm, **LBBB with a QRS 150 ms**, and NYHA class II, III, or ambulatory IV symptoms on GDMT.
- **CRT can be useful** for patients who have LVEF 35%, sinus rhythm, LBBB with a QRS 120 to 149 ms, and NYHA class II, III, or ambulatory IV symptoms on GDMT.
- **CRT can be useful** in patients with AF and LVEF 35% on GDMT if a) the patient requires ventricular pacing or otherwise meets CRT criteria and b) AV nodal ablation or rate control allows near 100% ventricular pacing with CRT.
- **CRT can be useful** for patients on GDMT who have LVEF 35% and are undergoing new or replacement device implantation with anticipated ventricular pacing (>40%).
- **CRT has morbidity and mortality benefit** when used without an ICD.
- **CRT has no benefit** for non-LBBB pattern.
- Devices should be interrogated regularly to monitor for adequate delivery of LV and RV resynchronization (ideally 100%).
Take Home 6: HFpEF is not so straight-forward but requires equal attention

- Increasing incidence
- Same morbidity and mortality as HFrEF
- Clinical signs of HF with or without congestion
- Preserved or nearly preserved LVEF
- Diastolic dysfunction criteria on echocardiography
- Clues elevated natriuretic peptides, left atrial dilatation (from chronic elevation in LV pressure)
- May be more age sensitive (older > younger)
- May be more gender specific (women>men)
- Need to exclude infiltrative diseases (amyloid)
- Need to think about restrictive diseases (example women-breast cancer-radiation)
- Look for CAD
- Limitations in treatment: Drug trials are neutral/negative unlike HFpEF-diverse disease
- Targets:
  - Treat blood pressure to target (not medication specific unless accompanying disease example diabetes and ACE-I)
  - Manage atrial fibrillation (often comorbid disease-no clear consensus on rate/rhythm control
  - Manage congestion
  - EXERCISE!

*Circ Heart Fail. 2015;8:00-00*
Take Home 7: Pearls on outpatient management

• It starts inpatient
  – Appropriate decongestion plan
  – Applying neurohormonal blockade post-decongestion and prior to discharge (ALL of them should be considered)
• Follow up at 1 week and frequent follow-up (weekly, bi-monthly, monthly) leads to better outcomes
• Medications should be titrated to the target dosages
• CRT should be interrogated at regular intervals to assess adequate delivery of therapy
• ICDs should be interrogated at regular intervals to assess for arrhythmia and shocks (appropriate or inappropriate)
• Exercise improves symptoms
• Social support matters
• Education improves outcomes
Take Home 8: When to recognize the failing patient

NYHA CLASS

- Class III
  - 25% of HF Patients
  - Frequent hospitalizations
  - Worsening symptoms despite drug therapy
  - Significant opportunity for new therapies

Adapted from Bristow, MR Management of Heart Failure, Heart Disease: A Textbook of Cardiovascular Medicine, 6th edition, ed. Braunwald et al.
Take Home 9: Simple tools to assess HF risk

• **Subjective is important**
  – Poor QOL, persistent Class III
  – Minnesota Living with Heart Failure Score
  – Kansas City Cardiomyopathy Score

• **Objective**
  – **Hospitalizations**
  – Inability to titrate medications, down-stepping therapy

• **Exercise the patient**
  – 6MWT (easy to do, reproducible, reimbursable)
  – Cardiopulmonary exercise testing—requires expertise—available at Holy Cross Hospital
Take Home 10: When to refer to disease management clinics or a HF specialty team

Consider Heart Failure Specialty Referral

- Status post hospitalization
- Multiple hospitalizations
- Class III symptoms despite therapy
- Inability to titrate therapy
- CRT non-responders
- Non-eligibility for CRT
- Persistently low EF

Variable Time Course “Patient Specific”

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>J Am Coll Cardiol. 2013;61(12):1209-1221</td>
</tr>
</tbody>
</table>
Take Home 10: When to refer to disease management clinics or a HF specialty team

Advanced HF
EF<25%
Optimal medical management
CRT if QRS>120 msec
- NYHA III-IV
- Six minute walk <300 m
- Peak VO2<14 mL/kg/min
- Frequent hospital admissions

Heart transplant/LVAD Evaluation

Eligible for transplant, donor available
Heart Transplant

Eligible for transplant, donor not available
LVAD as a bridge to transplant

Not eligible for transplant
- Too old
- High BMI
- High PVR
- Recent malignancy
- HIV
- Renal insufficiency
- Hepatic insufficiency

Consider LVAD
CHF Disease Management Program

Two Nurse Practitioners
CHF Trained MD Oversight
Holy Cross Hospital CHF Council

Primary Care
Admitted CHF
ER referrals
Cardiology
• Employed
• Non-employed
Community

2015 GET WITH THE GUIDELINES®
HEART FAILURE
TARGET: HF HONOR ROLL
GOLD PLUS

BEST REGIONAL HOSPITALS
U.S. News
MIA-MI FT. LAUDERDALE
RECOGNIZED IN 9 TYPES OF CARE
2016-17

American Heart Association
American Stroke Association
life is why®

American Heart Association CERTIFICATION
Meets standards for Advanced Certification in Heart Failure

Jim Moran Heart and Vascular Research Institute
Education
- Diet (nutrition support)
- Lifestyle
- Medicines
- Self-management
- “teach-back”

Social Support
- Support groups
- Identify and teach team
  - Family
  - Nursing home
- High-risk patients
- Home health

Risk Assessment
- NP goal is to help patient and MD understand HF risk
  - MLWHF
  - Seattle Heart Failure Model
  - Enrollment in an internal registry
  - 6 minute walk testing
  - Cardiopulmonary exercise testing

Pharmacotherapy
- Help identify optimal medical therapy
- Feedback to referring MD
- Medicine titration (achieve target therapies)
- Diuretic management
- Home inotropes

Telemedicine
- Phone calls to patient
- Communication with out of hospital team

Liason Care
- With referring MD
  - Provide an alternative to ER->admit
  - Cardiac rehabilitation
  - Hospice (if appropriate)
  - Partnership with Transplant/Implant Centers

Cardiac Devices
- CRT clinic
- LVAD shared care

Research
- 7 active HF clinical trials

Social Support: Patient

Risk Assessment: Patient

Pharmacotherapy: Patient

Telemedicine: Patient

Liason Care: Patient

Cardiac Devices: Patient

Research: Patient
End