Summary of Heart Failure Care Model

Definition and Classification of Heart Failure

Clinical syndrome resulting from structural or functional impairment of the heart (myocardium, pericardium, epicardium, valves, great vessels) due to a myriad of causes (ischemic, metabolic, infective, endocrine, genetic, congenital, toxic or other) which results in the symptoms of exercise intolerance, fatigue, dyspnea, and/or fluid overload.

Divided into 2 broad categories based on EF which represent two distinct entities and disease progression.

- **HFrEF:** HF with reduced EF (≤ 40%)
  - Common cause: CAD, MI, valvular heart disease, HTN
  - Higher mortality rate; M > F; effective therapies demonstrated
  - Dilated cardiomyopathy
- **HFpEF** HF with preserved EF (≥ 50%)
  - Common cause: HTN, restrictive / infiltrative disease
  - Lower mortality rate; elderly female; effective therapies not demonstrated - risk factor modification important
  - Hypertrophic cardiomyopathy

Note: those intermediate patients with EF between 41 - 49 are most similar in characteristics and treatment response to HFpEF.

Table 1 lists NYHA and ACCF/AHA classifications

Risk Factors for Developing Heart Failure

Lifetime risk US: 20% (≥ 40 years of age)

Absolute mortality rates: 50% within 5 years of diagnosis.

Incidence increases with age. African Americans > Hispanics > Caucasians. In general, men are more likely to develop HF; however, elderly women are more likely to have HFpEF than elderly men.

In industrialized countries, HTN and ischemic heart disease are most common causes. In developing countries, valvular heart disease and infections are more prevalent.

HTN is single most important modifiable risk factor; long term treatment reduces risk by ≈50%.

Male sex, CAD, HTN, cigarette smoking, physical inactivity, overweight / obesity, DM, valvular heart disease, and lower educational achievement, are all independent risk factors.

Physician's Health study showed that a healthy lifestyle (maintaining a normal body weight, regular exercise, not smoking, moderate alcohol consumption, consumption of breakfast cereals and fruits and vegetables) was associated with a lower lifetime risk of developing HF. The less compliant the individual, the higher the risk.

See table 2 for list of non-cardiac causes of cardiomyopathy.

Diagnosis of New-Onset or Acute Heart Failure

High index of suspicion, based on risk factors. There is no single diagnostic test for HF.

Thorough H&P should be obtained to identify cardiac and noncardiac disorders that might cause or accelerate development or progression of HF. (I:C). Note: symptoms and physical findings are not specific for heart failure. Also, symptom severity does not correlate with severity of cardiac dysfunction.

Table 3 lists Framingham criteria for diagnosis.

- Access for cardiac disease with ECG, CXR and 2-D echo with Doppler (I:C) Consider noninvasive imaging to detect ischemia in patients with CAD if patient candidate for revascularization (IIa;C)
- Initial labs include: CBC, UA, serum electrolytes (including calcium and magnesium), BUN, creatinine, glucose, fasting lipid, liver function and TSH (I:C).
- Measurement of BNP or NT-proBNP is useful to support clinical judgment for the diagnosis of HF or of acutely decompensated HF, especially in the setting of clinical uncertainty and also for establishing prognosis or disease severity. **(I:A)**
- Cardiac troponin is useful for establishing prognosis or disease severity in acutely decompensated HF. **(I:A)**

Diagnosis and Periodic Evaluation

Note: natriuretic peptide elevation is greater in HFrEF than HFpEF. Obesity also results in falsely lower values. Elevated values also seen in advancing age, anemia, renal failure, critical illness, OSA, pulmonary hypertension, other.

Repeat measurement of EF useful in patients who have had a significant change in clinical status. (I:C)

Invasive hemodynamic monitoring should be used in patients with respiratory distress or clinical evidence of impaired perfusion if intracardiac filling pressures cannot be determined from clinical assessment; (I:C) and in select patients who have persistent symptoms despite standard therapies. (IIa:C)

Volume status and vital signs assessed at each patient encounter. Includes weights, estimate of JVP and presence of peripheral edema or orthopnea (I:B)

Serial monitoring should include electrolytes and renal function (I:C)

BNP pr NT-proBNP guided therapy may be useful to achieve optimal dosing of guideline directed medical therapy (GDMT) (IIa:B)

Yancy, CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA Guideline for the management of heart failure: a report of the American College of Cardiology Foundation / American Heart Association task force on practice guidelines. Circulation, 2013; 128: e240-e327.

Refer to article for Classification of Recommendation and Level of Evidence

Treatment Stage A, Stage B, and Stage C (Non-Pharmaceutical)

Stage A: Risk factors

- HTN and lipid disorders should be controlled to lower the risk of developing HF. **(I:A)**
- Other risk factors should be controlled or avoided, such as obesity, DM, tobacco use, cardiotoxic agents, atrial fibrillation. (I:C)
- Influenza and Pneumococcal vaccines

Stage B: Structural changes without signs / symptoms

- HFrEF
  - ACEi (ARBs) **(I:A)** and beta-blockers (I:C) should be used to prevent symptomatic HF
  - ACEi (ARBs) **(I:A)** and beta-blockers (I:B) should be used to reduce mortality with history of MI or ACS.
- Patients with MI or ACS should use statins to prevent HF and CV events **(I:A)**
- Patients with LVH should have HTN controlled to prevent symptomatic HF. **(I:A)**

Stage C: Signs and Symptoms of HF - Non-Pharmaceutical

- Specific education to facilitate self-care including: symptom monitoring, weight changes, sodium restriction, medication compliance, physical activity. (I:B)
- Sodium restriction is reasonable for to reduce congestive symptoms. (I:C)
- CPAP can be improve LVEF and functional status in patients with OSA and HF. (I:B) Central or OSA common in patients with HF.
- Exercise training or regular physical activity is recommended to improve functional status **(I:A)**
- Cardiac rehabilitation can be useful in clinically stable patients to improve QOL and mortality (IIa:B)

Treatment Stage C: HFrEF (Pharmacological)

Table 4 lists guideline directed medical therapy

Diuretics are recommended in patients with evidence of fluid retention to improve symptoms (I:C) Adverse effects: electrolyte depletion (K and Mg - can lead to arrhythmia), hypotension, azotemia.

ACEi recommended to reduce morbidity and mortality (unless contraindication - including angioedema). **(I:A)** Start low dose, monitor renal function and K, titrate to target dose (based on clinical trials). Reasonable to add beta-blockade before full target dose ACEi reached.

ARBs recommended to reduce morbidity and mortality in those who are ACEi intolerant (unless contraindicated) **(I:A)** ARBs may be alternative to ACEi for patients already taking ARB for other indication (IIa:A). Same dosing strategy as ACEi.

Addition of ARB to ACEi and beta-blocker may be considered in persistently symptomatic patient who cannot take aldosterone antagonist. (IIb:A)

Beta-blockers (bisoprolol, carvedilol, SR metoprolol succinate: NOT a class effect) recommended to reduce morbidity and mortality (unless contraindicated) **(I:A)** Start low and cautiously titrate to target dose. To minimize hypotension, separate dosing from ACEi.

Treatment Stage C: HFrEF (Pharmacological) Cont.

Aldosterone antagonists recommended add on to ACEi and beta blocker in patient with EF $\leq$ 35% (unless contraindicated) to reduce morbidity and mortality. Patients with NYHA II should have history of prior cardiac hospitalization or elevated natriuretic peptide levels. Creatinine $\leq$ 2.5 mg/dl men / $\leq$ 2.0 mg/dl women (or creatinine clearance > 30 ml/min/1.73 m^2) and K < 5.0 mEq/l. Careful and frequent monitoring of K and renal function and diuretic dosing required. **(I:A)** Also recommended to reduce morbidity and mortality after acute MI with LVEF $\leq$ 40% and symptoms of HF or with DM. (I:B) Hyperkalemia is major risk - careful monitoring important. Advise patients to stop during episode of diarrhea or dehydration and to watch out for salt substitutes and rehydration beverages.

Hydralazine and Isosorbide Dinitrate recommended to reduce morbidity and mortality for African Americans with NYHA class III - IV receiving optimal therapy (unless contraindicated) **(I:A)** May be useful if ACEi/ARB not tolerated (IIa:B)

Digoxin can be beneficial to reduce hospitalizations (unless contraindicated - sinus or AV block) (IIa:B) Low serum concentrations (0.5 - 0.9 ng/ml) effective

Treatment Stage C: HFrEF (Pharmacological) Cont.

Anticoagulation for AF (permanent / persistent / paroxysmal) and additional risk for stroke (HTN, DM, prior stroke or TIA, age $\geq$ 75). (I:A) Anticoagulation may be reasonable for AF without additional risk for stroke. (IIa:B) Anticoagulation without AF, prior embolic event or cardioembolic source is not recommended. (III:B) Selection of agent should be individualized. (I:C)

Statins are not beneficial when prescribed solely for the diagnosis of HF in the absence of other indication for use. (III:A)

Omega-3 poly unsaturated fatty acids reasonable to use as adjunctive treatment to reduce mortality and CV hospitalizations (IIa:B)

Drugs which cause harm:(III;B)

- Most antiarrhythmic drugs
- Calcium channel blockers
- NSAIDs
- Thiazolidinediones

Treatment Stage C: HFpEF (Pharmacological)

Most of the recommendations for therapies for HFpEF are directed at symptoms and risk factors, as clinical trials have not shown the same degree of benefit of guideline directed medical therapy.

Systolic and diastolic blood pressure should be controlled to prevent morbidity. (I:B)

The use of ACEi, ARBs or beta blockers is reasonable to control blood pressure. (IIa:C) Choice of therapy dependent on comorbidities. Dosage titrated to effect, not target dose.

Diuretics should be used to relieve symptoms of fluid overload. (I:C)

Revascularization, valvular surgery and management of AF may be appropriate to improve symptoms in appropriate patients. (IIa:C)

Omega-3 poly unsaturated fatty acids reasonable to use as adjunctive treatment to reduce mortality and CV hospitalizations (IIa:B)

Device Therapy: Stage C: HFrEF Implantable Cardioverter-Defibrillator / Cardiac Resynchronous Therapy

ICD

- Primary prevention sudden cardiac death: indication non-ischemic DCM or ischemic heart disease (with EF $\leq$ 35%, at least 40 d post-MI, and NYHA class II or III on GDMT, with expected survival $\geq$ 1yr. (I:A)
- Indication EF $\leq$ 30%, at least 40 d post-MI, on GDMT, with expected survival $\geq$ 1yr. (IIa:B)
- ICDs may be associated with decreased QOL if frequent shocks occur

CRT (multisite or biventricular pacing)

- LVEF $\leq$ 35% , sinus rhythm, LBBB with QRS $\geq$ 150 ms and NYHA class II, III, IV (ambulatory) on GDMT. (**I:A** for NYHA III and IV; I;B for NYHA II)
- LVEF $\leq$ 35% , GDMT and:
  - Sinus rhythm and non-LBBB with QRS $\geq$ 150 ms, NYHA III / IV (IIa:A)
  - Sinus rhythm, LBBB with QRS 120 - 149 ms, NYHA II, III, IV (IIa:B)
  - AF, if patient requires ventricular pacing and AV nodal ablation or pharmacological rate control will allow near 100% ventricular pacing with CRT (IIa:B)

Treatment Stage D: HFrEF

Assumes maximum GDMT and device therapy as well as management of comorbidities.

Palliative and supportive care is effective to improve quality of life. (I:B)

Fluid restriction (1.5 - 2.0L/d) especially in patients with hyponatremia reasonable to reduce congestive symptoms. (IIa:C)

Inotropic Support (for end-organ hypoperfusion)

- Patients with cardiogenic shock should receive temporary IV inotropic support to maintain systemic perfusion. (I:C)
- Continuous IV inotropic support may be reasonable as "bridge therapy" for those who are awaiting mechanical circulatory support or transplantation. (IIa:B)

Mechanical Circulatory Support

- Beneficial in carefully selected patients in whom cardiac transplantation or recovery is expected. (IIa:B) Non-durable MCS (ventricular assist devices) reasonable as "bridge to recover" or "bridge to decision." (IIa:B) Durable MCS may be reasonable in carefully selected patients to prolong survival. (IIa:B)

Cardiac Transplantation

- Evaluation may be appropriate for carefully selected patients receiving optimal therapy. (I:C)

Hospitalized Patient: Presentation

May be for de novo presentation or worsening of previously stable HF

Note: HF leading cause of hospitalization > 65 year olds. Associated with high rate of recurrence (50% at 6 months - all cause rehospitalization) and high mortality rate (30% 1 year mortality)

ACS precipitating acute decompensation should be promptly identified and treated (I:C)

Common precipitating factors should be identified and managed. (I:C)

- Non-adherence with medications, sodium and/or fluid restriction
- Acute myocardial ischemia
- Uncorrected high blood pressure
- AF or other arrhythmias
- Medication change: addition of negative inotropes (certain calcium channel blockers or beta blockers) or addition of drugs which cause salt retention (steroids, NSAIDs, thiazolidinediones)
- Pulmonary embolism
- Excessive alcohol or illicit drug use
- Endocrine abnormalities (DM, thyroid)
- Acute infection
- Other cardiovascular disorders

Hospitalized Patient: Management

Maintenance of GDMT

- Recommended that GDMT be continued in absence of hemodynamic instability or contraindications. (I:B) Worsening renal function may require dosage reduction or holding of ACEi /ARB /aldosterone antagonist. Marked volume overload or low cardiac output may require dosage reduction or holding of beta blocker

Diuretics

- Fluid overload should be treated promptly with IV diuretics; loop diuretic dosage should initially be ≥ chronic daily oral dosage, given by continuous infusion or intermittent bolus and then adjusted based on results. (I:B) Serial measurements include I:O's, vital signs, daily weights, signs /symptoms of systemic perfusion and congestions, daily labs (electrolytes, renal function) (I:C)
- If diuresis is inadequate, reasonable to increase dose IV loop diuretic or add thiazide diuretic (IIa:B) or low-dose dopamine (IIb:B)
- Ultrafiltration may be considered if all diuretic strategies are unsuccessful (IIb:C)

Vasodilators

- IV nitroglycerin, nitroprusside, or nesiritide may be considered may be considered as ad adjuvant to diuretic therapy for relief of dyspnea, if patient hemodynamically stable. (IIb:A)

Beta Blockers

- If patient not already on, initiation of low dose beta-blocker therapy recommended after optimization of volume status and discontinuation of IV agents.

Inotropic and mechanical circulatory support (for shock or impending shock - see recommendations Stage D)

Hospitalized Patient: Management and Transitions of Care

Venous Thrombosis Prophylaxis

- Thromboembolism prophylaxis recommended for hospitalized patients. (I:B)

Vasopressin Antagonists

- In patients with volume overload, hyponatremia and cognitive symptoms from hyponatremia despite maximized GDMT and water restriction, short term use of vasopressin antagonist may be considered to improve serum sodium concentration. (IIb:B)

Transitions of Care: prior to discharge, early post-discharge and routine visits (I:B)

- Initiation and / or optimization of GDMT (unless contraindicated)
- Review causes of HF, barriers to care and limitations in support
- Assess volume status and blood pressure (orthostatic) with adjustment of therapy
- Appropriate assessment of electrolytes and renal function
- Assessment and management of comorbidities
- Reinforce HF education, self-care, emergency plans, need for adherence, advanced directives
  - Education: activity level, diet, medications, appointments, weight monitoring, and worsening symptoms (1 hour one-on-one with nurse educator)
- Consideration for palliative care or hospice care in appropriate patients.
- Multidisciplinary disease management programs recommended for patients at high risk for hospital readmission

FU visit in 7-14 days and telephone FU within 3 days of discharge is reasonable. (IIa:B)

Use of clinical risk prediction tools and biomarkers to identify higher risk patients reasonable. (IIa:B)

Common Comorbidities

Table 5 lists most common comorbidities

Ischemic and Valvular Heart Disease

- Revascularization indicated for patients with angina and HF on GDMT (especially left main stenosis). (I:C)
- CABG to improve survival reasonable in patients with LVED 35 - 50% with significant multivessel CAD or proximal LAD. (IIa:B) CABG or medical therapy is reasonable to improve morbidity and mortality in patients with EF < 35%, HF and significant CAD (IIa:B)
- Surgical aortic valve replacement is reasonable for patients with critical aortic stenosis and predicted surgical mortality < 10%. (IIa:B)

Atrial Fibrillation

- Patients with HF more likely to develop AF; Patients with AF more likely to develop HF.
- Main goals are prevention of thromboembolism and symptom control. If possible, correct underlying cause of AF.
- 2 management strategies: rate control and rhythm control (refer to AHA/ACC/HRS 2014 AF Guideline)

Anemia

- Common (25 - 40% HF patients); multiple causes.
- Associated with increased morbidity and mortality.
- Trials ongoing using IV iron or erythropoiesis-stimulating agent.

Depression

- Very prevalent

Care Coordination / Quality Metrics

Effective systems of care coordination facilitate GDMT and prevent hospitalization. (I:B)

Every patient and/or caregiver should have clear, detailed, evidence based plan of care, updated regularly, communicated widely, detailing: (I:C)

- GDMT goals
- Management of comorbidities, including secondary prevention of CV disease
- Timely follow-up
- Dietary and physical activities

Table 6 lists ACCF/AHA/AMA-PCPI 2011 HF measurement set.

CMS, PQRS and /or ACO

- HF 30-d mortality rate **(CMS)**
- HF 30-d risk-standardized readmission rate **(CMS)**
- ACEi or ARB for LVSD: % HF Patients ≥ 18 YO with a current or prior LVEF < 40% who were prescribed ACEi or ARB therapy either within a 12 month period when seen in the outpatient setting OR at each hospital discharge (**Both**)
- Beta blocker for LVSD: % HF Patients ≥ 18 YO with a current or prior LVEF < 40% who were prescribed beta blocker therapy either within a 12 month period when seen in the outpatient setting OR at each hospital discharge (**Both**)
- LVEF assessment: % HF Patients ≥ 18 YO for whom the quantitative or qualitative results of a recent or prior (any time in the past) LVEF assessment is documented within a 12 month period (**PQRS**)
- Ambulatory sensitive admission: % HF Patients ≥ 18 YO with risk adjusted comparison of observed discharges to expected discharges (excludes transfers and ESRD) (**ACO**)

Table 1: Comparison between New York Heart Association (NYHA) Functional Classes and ACCF/AHA Stages of HF

NYHA Functional Classification NYHA		ACCF/AHA Stages of HF Hunt	
I	No limitation in physical activity and no symptoms with normal activity.	A	Risk factors for HF, but without symptoms or structural heart disease. (No corresponding NYHA)
II	Slight limitation in physical activity and symptoms with normal activity but comfortable at rest.	B	No signs or symptoms of HF, but structural heart disease present. (NYHA I)
III	Marked limitation in physical activity and symptoms with reduced intensity activity but comfortable at rest.	C	Prior or current symptoms of HF, structural heart disease present. (Can be NYHA I - IV)
IV	Unable to carry on any physical activity without symptoms or symptoms occurring at rest.	D	Refractory HF requiring specialized interventions. (NYHA IV)

Table 3: Framingham Criteria (concurrent presence of 2 major or 1 major and 2 minor criteria)McKee

Major	Minor
Paroxysmal nocturnal dyspnea	Ankle edema
Neck vein distention	Nocturnal cough
Rales	Dyspnea on ordinary exertion
Cardiomegaly	Hepatomegaly
Acute pulmonary edema	Pleural effusion
S_3 gallop	Decreased vital capacity by 1/3 the maximal value recorded
Increased venous pressure > 16 cm water	Tachycardia (rate > 120 bpm)
Circulation time of 25 seconds	
Hepatojugular reflux	
Weight loss >4.5 kg in 5 days in response to treatment	

Table 2: Cardiomyopathy

Type	Subtype	Comment
Familial	-	Screen first degree relatives, consider genetic testing 3 generational family history (I:C)
Endocrine	Obesity	Independent risk
	DM	Independent risk; certain medications may exacerbate
	Thyroid	Hyper- or hypo-. May be related to cardiac arrhythmias
	Growth hormone	Excess or deficiency
Toxic	Alcohol	Consumption 7 - 8 standard drinks for over 5 years
		increases risk in men (less for women)
	Cocaine	Long term abuse
	Cancer therapies	Anthracyclines, trastuzumab, high-dose cyclophosphamide, taxoids, mitomycin-C, 5-fluorouracil, interferons.
	Other	Ephedra, cobalt, anabolic steroids, chloroquine, clozapine, amphetamine, methylphenidate, catecholamines
Tachycardia induced	-	Virtually any supraventricular tachycardia with rapid ventricular response
Myocarditis	HIV	Extent of immunodeficiency influences incidence
	Chagas' Disease	Important cause of death in Central and South America
	Other	Variety of infectious organisms (frequently viral), toxins and medications
Inflammation -induced	Hyper-sensitivity	Allergic reaction involving myocardium; sulfonamides, PCN, methyldopa and others
	Rheumatologic	SLE, scleroderma, and RA are rare causes of cardiomyopathy
Peripartum	-	Last trimester or early puerperium
Iron Overload	-	Primary hemochromatosis or with increased lifetime transfusion requirements
Amyloidosis	-	Deposition of insoluble proteins in the heart
Sarcoidosis	-	May affect as many as 25% of patients with sarcoidosis
Stress (Takotsubo)	-	Acute reversible LV dysfunction triggered by emotional or physical stress

Table 4: Guideline Directed Medical Therapy HFrEF (derived from table 15 2013 ACCF/AHA HF Guidelines)

Drug	Dose Range	Mean Dose in Trial
ACEi		
Captopril	6.25-50 mg TID	122.7 mg/d
Enalapril	2.5 – 20 mg BID	16.6 mg/d
Fosinopril	5 – 40 mg QD	NA
Lisinopril	2.5 – 40 mg QD	35 mg/d
Perindopril	2 – 16 mg QD	NA
Quinapril	5 – 20 mg BID	NA
Ramapril	1.25 – 10 mg QD	NA
Trandolapril	1 mg – 4 mg QD	NA
ARBs		
Candesartan	4 – 32 mg QD	24 mg/d
Losartan	25 – 150 mg QD	129 mg/d
Valsartan	20 – 160 mg BID	254 mg/d
Aldosterone Antagonists		
Spironolactone	12.5 mg QD – 25 mg BID	26 mg/d
Eplereone	25 – 50 mg QD	42.6 mg/d
Beta-blockers		
Bisoprolol	1.25 – 10 mg QD	8.6 mg/d
Carvedilol	3.125 – 50 mg BID	37 mg/d
Carvedilol CR	10 – 80 mg QD	NA
Metoprolol succinate ER	12.5 – 200 mg QD	159 mg/d
Hydralazine and isosorbide dinitrate		
Fixed dose combination	37.5 mg/ 20mg – 75 mg / 40 mg TID	175 mg hydralazine / 90 mg isosorbide
Separate	Hydralazine 75 – 300 mg TID or QID and Isosorbide 60 – 120 mg TID or QID	NA

Table 5: Most Common Comorbidities among Medicare Beneficiaries(derived from table 31 ACCF/AHA 2013 HF Guidelines)

Condition	%	Condition	%
Hypertension	84.2	Arthritis	43.5
Ischemic Heart Disease	71.9	Chronic Kidney Disease	42.3
Hyperlipidemia	60.0	COPD	30.0
Anemia	50.3	Atrial Fibrillation	28.5
Diabetes	46.3	Alzheimer's / Dementia	27.6

Table 6: ACCF/AHA/AMA-PCPI 2011 HF Measurement Set
J Am Coll Cardiol. 2012; 59: 1812-1832.

LVEF Assessment	% Patients ≥ 18 YO with a diagnosis of HF for whom the quantitative or qualitative results of a recent or prior (any time period in past) LVEF assessment is documented within a 12 month period	Out-patient
LVEF Assessment	% Patients ≥ 18 YO with a principle diagnosis of HF with documentation in the hospital record of the results of an LVEF assessment that was performed either before arrival or during hospitalization OR documentation in the hospital record that LVEF assessment is planned for after discharge	In-patient
Symptom and Activity Assessment	% Patients ≥ 18 YO with a diagnosis of HF with quantitative results of an evaluation of both current level of activity and clinical symptoms documented	Out-patient
Symptom Management	% of patient visits for those patients aged ≥ 18 YO with a diagnosis of HF and with quantitative results of an evaluation of both level of activity AND clinical symptoms documented in which patient symptoms have improved or remained consistent with treatment goals since last assessment OR patient symptoms have demonstrated clinically important deterioration since last assessment with a documented plan of care.	Out-patient
Patient Self-Care Education (NEW)	% Patients ≥ 18 YO with a diagnosis of HF who were provided with self-care education on ≥ 3 elements of education during ≥ 1 visit within a 12 month period	Out-patient
Beta-blocker therapy for LVSD (outpatient and inpatient setting)	% Patients ≥ 18 YO with a diagnosis of HF with a current or prior LVEF < 40% who were prescribed beta-blocker therapy with bisoprolol, carvedilol, or sustained release metoprolol succinate either within a 12 month period when seen in the outpatient setting or at hospital discharge	In- and Out-patient
ACEi or ARB therapy for LVSD (outpatient and inpatient setting)	% Patients ≥ 18 YO with a diagnosis of HF with a current or prior LVEF < 40% who were prescribed an ACEi or ARB therapy either within a 12 month period when seen in the outpatient setting or at hospital discharge	In- and Out-patient
Counseling about ICD implantation for patients with LVSD receiving combination medical therapy (NEW)	% Patients ≥ 18 YO with a diagnosis of HF with a current or prior LVEF ≤ 35% despite ACEi/ARB and beta blocker therapy for at least 3 mo who were counseled about ICD implantation as a treatment option for the prophylaxis of sudden death	Out-patient
Post discharge appointment for HF patients	% Patients, regardless of age, discharged from an inpatient facility to ambulatory care or home health care with a principal discharge diagnosis of HF for whom a follow-up appointment was scheduled and documented, including location, date and time for a follow-up office, visit or home healthcare visit (as specified)	In-patient