Learning Objectives

- Define heart failure stages, etiologies, and related altered anatomy
- Recognize heart failure and types through documented physical exam and symptoms in the health record
- Apply coding guidance to clinical scenarios
- Formulate compliant physician queries to clarify types of severity of heart failure
Heart Failure Definition

Heart failure is a clinical syndrome that can result from any structural or functional cardiac disorder that impedes the ability of the ventricle to fill (preserved EF/diastolic HF) or eject (systolic HF) blood.

The cardinal manifestations are dyspnea and fatigue, which may limit exercise tolerance, and fluid retention, which may lead to pulmonary congestion and peripheral edema.


Heart Failure Stages

Stage A
- High risk
- Hypertension
- Atherosclerotic dz
- Diabetes
- Obesity
- Metabolic syndrome
- FH cardiomyopathy
- Using cardiotoxins

Stage B
- LV systolic dysfunction
- Asx valvular dz
- Structural dz
- (+) Symptoms
- MI

Stage C
- Structural dz
- (+) Symptoms
- SNB, fatigue

Stage D
- End-stage

NYHA I
NYHA II-III
NYHA IV
Patients at Risk for Developing Heart Failure

**Stage A**
- Hypertension
- Atherosclerotic disease
- Diabetes mellitus
- Obesity, metabolic syndrome
- Family history of cardiomyopathy
- Using cardiotoxins

Structural Heart Disease But No Symptoms

**Stage B**
- Previous MI
- LV remodeling including LVH, low EF
- Asymptomatic valvular disease

Development of Symptoms

**Stage C**

End-Stage HF
Marked symptoms at rest despite maximal medical therapy

**Stage D**
75% have a history of hypertension

Etiologies of HF

Nonischemic Causes (1/3–1/2)
- Hypertension
- Cardiomyopathies
  - Dilated
    - Idiopathic
    - Chemotherapy
    - Alcohol
    - Cocaine
    - Myocarditis
    - Postpartum
  - Hypertrophic
  - Restrictive
    - Amyloid, sarcoid
    - Hemochromatosis
- Valvular disease
- Thyroid
- Congenital/shunts

Coronary Artery Disease (1/2–2/3)
- Hx of MI
- CAD

Types of Cardiomyopathies

Anatomic Definitions

- Left (most common)
  - Systolic and diastolic
  - Diastolic only
- Right due to left (combined)
- Cor pulmonale (right-sided only)
  - Emphysema/COPD/obstructive sleep apnea
  - Pulmonary hypertension
    - Primary pulmonary hypertension
    - Thromboembolic disease
    - Congenital heart disease with shunting
The Pathway of Blood Flow Through the Heart

1. **Symptoms and Physical Exam**
   - **Symptoms**
     - Dyspnea at rest or exertion
     - Reduced exercise capacity
     - Orthopnea
     - PND, cough
     - Edema
     - Chest pain or equivalent
   - **Less specific Sx**
     - Early satiety
     - Nausea, vomiting, abdominal discomfort
     - Wheezing or cough
     - Fatigue
     - Confusion/delirium
   - **Signs**
     - BP, HR, dry wt, wt change
     - Jugular venous pressure
     - Rales, wheezes
     - Displaced PMI, RV heave, murmurs, S3
     - Hepatomegaly, ascites, hepatojugular reflux
     - Peripheral edema, scrotal edema

2. **Define Heart Failure Type**
   - Systolic (↓EF) and preserved EF heart failure can present with the same Sx and signs:
     - Dyspnea on exertion, orthopnea
     - Paroxysmal nocturnal dyspnea
     - Pulmonary edema
     - Jugular venous distension
     - Rales
     - S3, S4
     - Peripheral edema
     - CARDIOMEGALY
Types of Heart Failure

- **Diastolic Heart Failure** (HFPEF)
- **Systolic Heart Failure** (HFREF)

Diagnostic Criteria: HF With Reduced vs. HF With Preserved EF

- **Clinical evidence of HF**
  - Clear clinical presentation of HF or Framingham or Boston criteria
  - If uncertain: Plasma BNP or chest x-ray or cardipulmonary exercise testing

- **Supportive evidence**
  - Eccentric LVH or remodeling
  - Left atrial enlargement in absence of AF
  - Echo Doppler or catheter evidence of diastolic dysfunction

- **Exclusions: Non-myocardial disease**

Systolic vs. HF With Preserved EF (HFPEF) Heart Failure

- Acute
- Chronic
- Acute on chronic

Heart Failure With Normal LVEF

- Hypertension
- CAD
- Restrictive cardiomyopathy
- Infiltrative cardiomyopathy
- Hypertrophic cardiomyopathy
- Noncompaction cardiomyopathy
- Valvular disease (severe valvular stenosis or regurgitation)
- Right heart failure (severe pulmonary hypertension, ASD, RV infarct, arrhythmogenic right ventricular dysplasia)
- Pericardial disease (cardiac tamponade, constrictive pericarditis)
- Intracardiac mass (atrial myxoma)
- Pulmonary vein stenosis
- Congenital heart disease

Exclusions: Non-myocardial disease

Adapted from: Yturralde FR. Prog Cardiovasc Dis 2005;47:314–19
**Acute Heart Failure**

- Symptoms
- Signs
- CXR
- Echo
- Labs
- Treatment (e.g., intravenous furosemide)

**Framingham Criteria:**
2 major or 1 major + 2 minor

**Major Criteria**
- PND
- Orthopnea
- ↑ JVP
- Rales
- S₃
- CXR cardiomegaly
- CXR pulmonary edema

**Minor Criteria**
- Peripheral edema
- Dyspnea on exertion
- Hematomegaly
- Pleural effusion
- HR > 120
- Weight loss > 4.5 kg/5 days with diuretic

**Chest X-ray**

- Cardiomegaly
- Pulmonary congestion or redistribution
- Pleural effusions most often bilateral
- Interstitial edema
- Pulmonary edema

**Echocardiography**

- Ejection fraction (reduced/systolic vs. preserved/diastolic)
- Valvular disease
- Diastolic dysfunction ≠ Diastolic HF (symptoms and supportive evidence must be present)
Labs
- Elevated (pro) BNP
- Elevated troponin
- Hyponatremia
- Elevated liver function tests (AST, ALT, alkaline phosphatase, bilirubin)
- Hypoxemia (low O2 saturation)

Systolic Heart Failure Rx

<table>
<thead>
<tr>
<th>Medication/Device</th>
<th>↓Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diuretic (furosemide, metolazone)</td>
<td>No</td>
</tr>
<tr>
<td>ACE-I (lisinopril, enalapril, ramipril, captopril)</td>
<td>Yes</td>
</tr>
<tr>
<td>ARB (losartan, candesartan, valsartan)</td>
<td>Yes</td>
</tr>
<tr>
<td>Beta blocker (metoprolol, carvedilol, bisoprolol)</td>
<td>Yes</td>
</tr>
<tr>
<td>Aldosterone antagonist (spironolactone, eplerenone)</td>
<td>Yes</td>
</tr>
<tr>
<td>Digoxin</td>
<td>No</td>
</tr>
<tr>
<td>Nitrile (isordil) + hydralazine</td>
<td>Yes</td>
</tr>
<tr>
<td>ICD (EF&lt; 35%)</td>
<td>Yes</td>
</tr>
<tr>
<td>CRT (biventricular pacemaker)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Congestive Heart Failure: Breaking the “Code”!

HFpEF
Rx Underlying Risk Factors, Comorbidities
HTN, CAD, DM, Obesity, CKD

Congestion
- Diuretics
- Salt diet

BP
- ACE-I
- ARB
- CCB
- B-blockers
- Nitrates

Tachycardia
- B-blockers
- Verapamil
- Diltiazem
- Control Afib

ACE-I/ARB: CVD, DM
BB: Hx Ml, HTN, Afib
CCB: angina, Afib, HTN
**Heart Failure Definition**

Heart failure is a clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill (preserved EF/diastolic HF) or eject (systolic HF) blood.

The cardinal manifestations are dyspnea and fatigue, which may limit exercise tolerance and fluid retention, which may lead to pulmonary congestion and peripheral edema.

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**Heart Failure Stages**

**Stage A**
- High risk
- Hypertension
- Atherosclerotic dz
- Diabetes
- Obesity
- Metabolic syndrome
- FH cardiomyopathy
- Using cardiotonics

**Stage B**
- Structural heart dz
- (-) Symptoms
- Inc MI
- LV systolic dysfunction
- Axs valvular dz

**Stage C**
- Structural dz
- (+) Symptoms
- SOB, fatigue

**Stage D**
- End-stage

**Ventricular Dysfunction Becomes CHF**

Heart dysfunction (structural/functional)

+ Onset of signs and symptoms

+ Treatment

CHF (Stage “C” or “D”)

Acute → Compensated

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**Scenario**

Patient with history of hypertension. Patient has cardiomegaly on chest x-ray. EKG and echocardiogram reveal LVH. Current medication regimen includes beta blockers, ACE inhibitors, and diuretics. Physician documented LV diastolic dysfunction secondary to hypertension.

Would you query for hypertensive heart disease with compensated diastolic heart failure?
Yes, a Query Is Appropriate …

Indicators for CHF:
- Has documentation of structural (cardiomegaly, LVH) and/or functional (diastolic dysfunction)
- On multiple drug therapy

What we do not know from the documentation is:
- Has the patient ever had symptoms of CHF (stage C or D)?
  Patient does not require symptoms to make the diagnosis of compensated CHF (once a stage C or D, always a C or D)

Types of Heart Failure

Anatomical
- Left heart failure
- Combined (biventricular): Right heart failure due to left heart failure
- Right heart failure only

Performance
- Diastolic
  - Heart failure with preserved ejection fraction ("HFpEF")
- Systolic
- Combined (diastolic and systolic)

Diastolic Heart Failure

All congestive heart failure has a diastolic component (impaired ventricular filling) otherwise the patient would not have had “congestive symptoms.”

Elevated ventricular filling pressures, diastolic dysfunction, diagnosed by history and physical examination, can be nearly as accurate as non-invasive testing (Echocardiogram; NT-pro-BNP levels). *Amer J Med* 2011; 124:1051–57.

Clinical Definition of Diastolic Dysfunction

Left
- S3 or S4 gallops (left-sided)
- Rales
- Pulmonary venous congestion
- Interstitial edema (K-B lines)
- Pleural effusions
- Alveolar/pulmonary edema
- Peripheral edema

Right
- Distended neck veins
- Ascites
- Swollen liver
- Peripheral edema (no other cause)
- S3 or S4 gallops (right-sided)

Non-myocardial diseases of the heart such as constrictive pericarditis and mitral/aortic stenosis can result in diastolic heart failures. Additionally, high output failures such as severe anemia and thyroid storm can result in diastolic heart failure states.
Scenario

Patient with long-standing hypertension is admitted for acute SOB. There were no signs of right heart failure (e.g., ascites, JVD, etc.). Exam revealed rales in both lungs and an S3 gallop. Chest x-ray demonstrates acute pulmonary edema. The EKG shows LVH and the BNP was >5000. Decompensated CHF was documented by the attending physician.

Would you query for type of heart failure? If a menu option was used, what clinically viable options would you present?

Yes, Query for Type of CHF ...

Your menu format should include the following clinically viable options based on the limited examination:

- Diastolic heart failure
- Systolic heart failure
- Diastolic and systolic heart failure
- Left heart failure (type unknown)
- Other __________________
- Clinically undeterminable

Acuity of CHF

- Acute only
- Chronic ("compensated")
- Acute on chronic ("decompensated")
- Unspecified

Acute CHF

Treatment of decompensation:
There are multiple treatments for HF; however, there are some treatments that support the diagnosis of acute HF.

- Initiation/intensification of any medical regimen (e.g., IV Lasix, etc.) – refer to Dr. Sueta’s previous slide
- Dialysis
- Emergency cardioversion
- Biventricular or AV sequential pacing
- Circulatory support devices (e.g., IABP) or LV assist devices (e.g., Heart Mate II)
### Acuity of CHF

**Compliance consideration**
- If you do a query regarding the specification of CHF using a menu format, I would recommend that you **do not** include any menu option with the term “acute” unless they have indicators documented in the chart that would support acute.
- An elevated BNP by itself does not justify a query for acute. There needs to be signs of decompensation and the appropriate treatment rendered.

### Pulmonary Edema

<table>
<thead>
<tr>
<th>Cardiogenic (Circulatory Overload)</th>
<th>Non-cardiogenic (ARDS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused by increased capillary hydrostatic pressures</td>
<td>Caused by increased permeability of alveolar membrane</td>
</tr>
<tr>
<td>- CHF: due to heart dysfunction (systolic/diastolic) and/or valvular heart disease (ECHO abnormal)</td>
<td>- Direct injury caused by infections, fatty emboli, aspirations</td>
</tr>
<tr>
<td>- Volume overload: no cardiac dysfunction or significant structural disorder (e.g., ESRD, TACO)</td>
<td>- Indirect injury due to toxins such as in sepsis, chemicals, etc.</td>
</tr>
</tbody>
</table>

**Elevated BNP**

**BNP normal**

### Volume Overload vs. CHF

- Volume overload and acute pulmonary edema are integral to CHF and not coded separately unless MD says “not due to heart failure”
  - Coding Clinic for ICD-9-CM, 3rd Qt. 2007, p. 11
  - Coding Clinic for ICD-9-CM, 2nd Qt. 2001, p. 13
  - Coding Clinic for ICD-9-CM, 3rd Qt. 1996, p. 9

- Acute pulmonary edema with heart disease is coded to CHF unless the physician states the pulmonary edema is not related
  - ICD-9-CM tabular direction found under codes
    - >514 (chronic and unspecified pulmonary edema)
    - >518.4 (acute pulmonary edema)

### Volume Overload vs. CHF (cont.)

- If neither CHF or LVH is documented and indicators of LV dysfunction are not present, code volume overload (and the manifestations of the volume overload, e.g., acute pulmonary edema, etc.) and do not query for CHF.
  - Coding Clinic for ICD-9-CM, 4th Qt. 2006, p. 136

- Acute pulmonary edema due to volume overload without mention of heart disease requires two codes: 518.4 (acute lung edema) and 276.69 (volume overload). There is no directive or guideline regarding sequencing of these two codes.
  - Coding Clinic for ICD-9-CM, 3rd Qt. 1988, p. 3
Volume Overload vs. CHF (cont.)

- TACO syndrome (Transfusion Associated Circulatory Overload) is a form cardiogenic pulmonary edema due to circulatory overload (purely volume overload) resulting from transfusion. Acute pulmonary edema is not coded separately since it is integral to this syndrome.

  * Coding Clinic for ICD-9-CM, 4th Qt. 2010, p. 79

  This must be distinguished from the following:
  - Acute exacerbation of CHF due to volume overload (look for documentation of CHF or clinical indicators of LV dysfunction or structural heart disease)
  - Acute lung injury due to a transfusion aka “TRALI“ (BNP will be normal)

Volume Overload vs. CHF (cont.)

- If no documented history of CHF or indicators of LV dysfunction or significant structural heart disease, then use volume overload and acute pulmonary edema, if present.
- If a person has signs and symptoms of volume overload and no documentation of CHF, but does have an elevated BNP and/or signs of LV dysfunction and significant structural heart disease, clarify (in a compliant format) whether this is:
  - Heart failure due to or exacerbated by volume overload
  - Purely volume overload

Clarifications of CHF ... WHY?

Payment accuracy
- MS-DRG
- APR-DRG

Profiling
- APR-DRG, etc.
- Under current methodologies further specification of CHF does not add to risk adjustment for:
  - 30-day mortality
  - 30-day readmission

Patient care

MS-DRG Impact of CHF as an ODX

<table>
<thead>
<tr>
<th>Specification</th>
<th>MCC</th>
<th>CC</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF NOS or any acuity</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Left HF NOS or any acuity</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right HF NOS or any acuity</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biventricular HF (NOS or any acuity)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic (unspecified or chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic (Acute or acute on chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic (unspecified or chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic (acute or acute on chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S&amp;D HF (unspecified or chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S&amp;D (acute or acute on chronic)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MS-DRG Impact of CHF as a PDX

Further specification of CHF (428.0; 428.1; 428.9) when used as principal diagnosis usually does not impact MS-DRG assignment:
- Specification of CHF as diastolic and/or systolic (428.2x–428.4x) will remove the CC exclusion of nonischemic cardiomyopathy (425.x category) and generate a CC.

Re-Sequencing CHF as ODX

If the CHF has been specified (or could be clarified to a more specific type) that could serve as a CC or MCC, then consider re-sequencing the heart failure code as an ODX:
- Using hypertension heart and renal disease (404.xx) as PDX
- Using acute MI initial episode of care (410.x1) as PDX (this is helpful only if no interventions)

ICD-10: Heart Failure (I50-)

Currently documentation requirements UNCHANGED:
- No change in the axis of classification
- No change in coding guidelines
- Probably no changes in MS-DRG impact

Changes:
- All forms (acute, chronic, unspecified) of lung/pulmonary edema with heart disease are coded to I50-
- A specific heart failure code (I50-) can be added as an ODX with rheumatic heart failure

Thank you. Questions?

In order to receive your continuing education certificate(s) for this program, you must complete the online evaluation. The link can be found in the continuing education section at the front of the workbook.