



To the Heart of the Matter: Definitions and Clinical Indicators for Accurate Documentation and Coding of CHF

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Presented By



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Learning Objectives

- At the completion of this educational activity, the learner will be able to:
 - Identify the current national/local clinical performance pressures on heart failure management and outcomes
 - Explain the new definition of CHF and how to clinically apply it
 - Describe documentation nuances of volume overload states and how they apply to proper principal diagnosis/MS-DRG assignment
 - Describe case examples detailing how improved documentation techniques can affect clinical performance data

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USA CHF Facts

- ~6.2 million people currently have CHF diagnosis
- More than 550K new CHF cases diagnosed every year
 - 2/3 attributed to HFrEF: 1/3 attributed to HFpEF
- Accounts for 11 million physician visits/year
- Listed as first diagnosis on 875K hospitalizations/year
 - 50% attributed to HFrEF
 - 50% attributed to HFpEF
- More than 50% of patients newly diagnosed with CHF die within 5 years
- Directly accounts for ~8.5% of all mortalities (i.e., listed as principal diagnosis)
 - Listed as principal or secondary diagnosis in ~13.5% of all mortalities
- Both incidence *and* prevalence **increasing** due to aging population

Source: AHA, Emory Healthcare, UpToDate

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USA CHF Issues

- Overall initial CHF hospitalization rate **decreasing**
- Overall CHF readmission rate **decreasing** (but not as fast as initial rate)
 - ~20% of all CHF hospitalizations still readmitted within 30 days
 - Most CHF readmissions due to other medical condition, **NOT** recurrent CHF
- CMS has **Hospital Readmission Reduction Program (HRRP)** reducing payments for 'excessive' AMI, COPD, **CHF**, PNA, CABG, THA/TKA readmits
- ☹️ **However . . .** overall CHF mortality rate **increasing**
 - Does this mean forced transition from IP to OP arena as part of healthcare reform has negatively impacted CHF outcomes?
 - **Does this mean HRRP has negatively impacted CHF outcomes?**

Bottom Line: Hospitals under tremendous pressure to improve CHF outcomes

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Understanding CHF Data

- Index for CHF outcomes and readmission rates based on **principal diagnosis**
 - **NOT** based on submitted MS-DRG
 - I11.0 HYPERTENSIV HEART DZ w/ HEART FAIL
 - I13.0 HYPER HRT & CKD w/ HRT FAIL & STG 1-4 CKD
 - I13.2 HYPER HRT & CKD w/ HRT FAIL & w/ STG 5 CKD
 - I50.1 LEFT VENTRICULAR FAILURE, UNSPECIFIED
 - I50.9 HEART FAILURE, UNSPECIFIED
 - I50.20 UNSPECIFIED SYSTOLIC HEART FAILURE
 - I50.21 ACUTE SYSTOLIC HEART FAILURE
 - I50.22 CHRONIC SYSTOLIC HEART FAILURE
 - I50.23 ACUTE ON CHRONIC SYSTOLIC HEART FAILURE
 - I50.30 UNSPECIFIED DIASTOLIC HEART FAILURE
 - I50.31 ACUTE DIASTOLIC HEART FAILURE
 - I50.32 CHRONIC DIASTOLIC HEART FAILURE
 - I50.33 ACUTE ON CHRONIC DIASTOLIC HEART FAILURE
 - I50.40 UNSPECIFIED COMB SYSTOLIC & DIASTOLIIC HRT FAIL
 - I50.41 ACUTE COMB SYSTOLIC & DIASTOLIC HRT FAIL
 - I50.42 CHRONIC COMB SYSTOLIC & DIASTOLIC HRT FAIL
 - I50.43 ACUTE ON CHRONIC COMB SYSTOLIC & DIASTOLIC HRT FAIL
- 30-day readmission rate is **all-cause**
 - Index admission principal diagnosis is what counts: **NOT** what second admission was for

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UTMC CHF Data

Year	CHF Cases	Deaths	Death %	Readmissions	Readmit %
2020	863	34	3.94	132	15.30
2021	839	28	3.34	129	15.38

- Critical to make sure every volume overload case is correctly attributed to the true clinical cause
 - Small variances in low numbers have tremendous calculation impacts
 - **Ex:** 24 fewer CHF admissions with only **3** fewer readmissions means the readmission technically increased (**4 fewer readmissions would have meant rate = 15.27% rate**)
 - Medical care rendered and outpatient resources provided after discharge improves both numerator and denominator
 - **CDI ensures index case in right performance bucket lowering denominator further**



What Is CHF?

Surprise!

Consensus Statement

Universal Definition and Classification of Heart Failure

A Report of the Heart Failure Society of America, Heart Failure Association of the European Society of Cardiology, Japanese Heart Failure Society and Writing Committee of the Universal Definition of Heart Failure

Endorsed by Canadian Heart Failure Society, Heart Failure Association of India, the Cardiac Society of Australia and New Zealand, and the Chinese Heart Failure Association

Journal of Cardiac Failure Vol. 00 No. 00 2021

- Why the need for change?
 - Significant variability in diagnostic criteria used to diagnose & define CHF between professional societies and **between major clinical trials jeopardizing consistent treatment recs**

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New Universal CHF Definition

- Now considered a **syndrome** composed of **3** parts:
 1. Signs &/or symptoms of active/acute CHF
 2. That are **caused by/attributed to** a structural &/or functional cardiac abnormality (i.e., - on ECHO or other imaging modality)
 3. And are **corroborated** by **either**
 - Elevated **BNP** level OR
 - Objective evidence of **cardiogenic pulmonary or systemic congestion** by diagnostic modalities
- ☑ **Translation:** Can't have/make diagnosis of CHF if have EF = 35% or 'grade II diastolic dysfunction' on ECHO **and no symptomology**

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New Universal CHF Definition

1. Symptoms &/or signs of active/acute CHF:

- Shortness of breath
- Dyspnea on exertion
- Orthopnea
- Paroxysmal nocturnal dyspnea
- Coughing &/or wheezing (may be worse at night)
- Weight gain
- Weakness/fatigue
- Tachycardia
- White or pink-tinged sputum production
- Bilateral lower extremity swelling on PE
- Elevated JVD on PE
- Rales on PE
- Cardiomegaly on CXR

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New Universal CHF Definition

2. Structural &/or functional heart abnormality (usually on ECHO):

- **EF < 50%**
 - Evidence for HFrEF (systolic dysfunction)
- Abnormal cardiac chamber enlargement
- **E/e' ratio > 15** indicating elevated LV filling pressures
 - Evidence for HFpEF (diastolic dysfunction)
 - **Check to see if reported on your ECHOs**
- Moderate or Severe ventricular hypertrophy
 - Evidence for HFpEF (diastolic dysfunction)
- Moderate or Severe valvular obstructive or regurgitant lesion

Need only 1 of the above

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E/e'	<p>Right Atrium The right atrium is normal.</p> <p>Aortic Valve Aortic valve diffuse thickening with preserved cusp opening. No hemodynamically significant valvular aortic stenosis. Mild aortic regurgitation.</p> <p>Mitral Valve The mitral valve appears normal. There is moderate mitral regurgitation.</p> <p>Tricuspid Valve There is moderate tricuspid regurgitation. The RVSP is estimated at 46.5 mmHg .</p> <p>Arteries The aortic root is normal size.</p> <p>Venous The inferior vena cava is normal in size, and collapses normally with respiration.</p> <p>Pericardium/Pleura There is no pericardial effusion.</p> <p>Measurements with Normals</p>																																							
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Total them up & divide by 2

New Universal CHF Definition

3. Must be corroborated by either:

- Elevated **BNP** level (> 100 pg/ml)

OR

- Objective evidence of **cardiogenic pulmonary or systemic congestion** by diagnostic modalities:
 - Pulmonary edema on CXR &/or CT thorax
 - Elevated filling pressures on ECHO
 - i.e. - **E/e' ratio > 15** (use average of two reported values if given)
 - Right heart cath pressure elevations
 - Pulmonary arterial cath pressure elevations

Need only 1 of the above



Meaning for CDI & Coding

- To diagnose **new onset CHF** (i.e., never had CHF diagnosis previous to current hospitalization) =
 1. Signs/symptoms ***PLUS***
 2. Structural/functional heart problem ***PLUS***
 3. Objective evidence of cardiogenic fluid overload

Must have ALL 3

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Potential Meaning for Clinical Validation Denials

- Would consider new definition **necessary to define an ACUTE** (decompensated) **CHF exacerbation**
 - Need active signs/symptoms (#1) **+** objective evidence of cardiogenic fluid overload (#3)
 - Evidence of structural/functional heart problem **can be taken from previous history &/or records (#2)**
- For **CHRONIC** (compensated) **CHF**
 - **DO NOT** need new or active signs/symptoms (#1) **OR** new objective evidence (#3)
 - Evidence of structural/functional heart problem **can be taken from previous history &/or records (#2)**
 - i.e. - CHF dx. in PMH **is sufficient**

***Note:** Acute vs. Chronic **or** Decompensated vs. Compensated **not** addressed in paper but still exists in coding world

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Important New Concepts

- Definition to be applied to **left, right, and combined** CHF
- Definition to be applied **in the setting of/if caused by an acute MI**
 - If clinical situation meets all 3 tenets of new definition, ‘acute CHF exacerbation **due to** acute MI’ should be pursued
 - ☑ Huge for cardiologists who insist on documenting ‘**stunned myocardium**’
 - ***There has never been an ICD-10 CODE for that!***
 - May be useful in recovery auditor denial if told is ‘temporary and should not be coded’
- Definition should be applied if results from **HTN crisis**
- When occurring simultaneously, **BOTH** diagnoses of **acute CHF exacerbation and cardiogenic shock** should be recognized and documented
 - May be useful in recovery auditor denial if told ‘can’t code both’

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New CHF Classifications

- **HFrEF** = CHF w/ LVEF \leq 40%
 - **HFmrEF** = (m = “mildly”) CHF w/ LVEF of 41% - 49%
 - **HFimpEF** = (imp = “improved”) must have all 3 present:
 1. **Baseline LVEF \leq 40%** (from previous)
 2. **\geq 10 point increase in LVEF** (above baseline)
 3. **New LVEF > 40%**
 - ***Preferred categorization** over changing ‘HFrEF’ to ‘HFmrEF’ (or possibly ‘HFpEF’) in the medical record
 - **HFpEF** = CHF w/ LVEF \geq 50%
- ☑ **Remember:** Must still provide **acute** or **chronic** modifiers to the CHF classification to ensure accurate ICD-10 code assignment

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CDI/Coding Implications

- ☑ HFrEF, HFmrEF, and HFimpEF ***should*** map to the I50.2x (**systolic**) series of codes
 - HFrEF definitively still does
 - No official guidance on HFmrEF or HFimpEF ***yet***
 - Will this be addressed in the 2023 fiscal year proposed IPPS rule in April?
 - Will it be addressed in future *Coding Clinic*?
 - 😊 ***UTMC created official internal coding policy stating this UNTIL other guidance received***
- HFpEF still definitively maps to the I50.3x (**diastolic**) series of codes
- **Decompensated** still codes to **acute**
- **Compensated** still codes to **chronic**

What Clinical Entities Can Mimic Acute CHF?

- COPD (*most common*)
- Pulmonary HTN (caused by COPD, OSA, OHS, etc. or idiopathic)
- Acute renal failure
- ESRD
- Cirrhosis/acute liver failure
- Morbid obesity with lymphedema
- **Obtaining accurate, thorough PMH critical** to delineate etiology
- **Medical linkage** (i.e. - '**due to**' or '**caused by**') **critical** for correct attribution (i.e., correct principal diagnosis selection)
 - ⊗ How many providers erroneously ascribe all volume overload states they encounter to decompensated CHF?

Do Providers Help Delineate the Etiology?

- How problematic is it for a clinician to say, ‘**multifactorial** volume overload’?
- How problematic is it for a clinician to say, ‘volume overload due to CHF vs. pulm HTN vs. COPD vs. OSA vs. OHS’?
- How problematic is it for a clinician to say, ‘volume overload due to CHF/pulm HTN/COPD/OSA/OHS’?

“There can be only one!” – Connor MacLeod of the Clan MacLeod

- Providers need to understand that only **one** diagnosis can be the first listed/principal diagnosis on a claim
 - The principal diagnosis is the primary determinant of submitted MS-DRG
- Providers can construct a narrative that directs coders to the most appropriate principal diagnosis **ensuring each case lands in the correct data bucket**

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Please Be Sure It Is CHF!

- If other etiology is cause, providers must clearly state this in the chart
 - Important to make sure case **lands in the correct data bucket**
 - !! **Please pay attention to cardiology/heart failure service consultations and progress notes**
- Must emphasize to all providers **one diagnosis must go first** in the coding of any claim
 - **They must be explicit** as to what is main cause
- Clinically, providers treat all contributing diagnoses to ensure patient has a good outcome
 - They think, “What difference does it make which diagnosis is the biggest contributor if the patient has a good outcome?”

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Case Example #1: Is It CHF?

- 67- year-old female comes to ED complaining of increasing BLE swelling and SOB. She has rales and BLE edema on physical exam. Her BNP = 1,015 pg/mL (URL or normal at UTMC = 100 pg/mL) and pulmonary edema w/ R-sided pleural effusion are seen on her initial CXR. She has an extensive PMH including:
 - Chronic HFpEF (EF= 65%)
 - CAD
 - Bioprosthetic AVR w/ severe aortic stenosis with valve area = 0.5cm²
 - Atrial fibrillation
 - Previous CVA
 - HTN/HLD/DM
 - Bipolar disorder

- Based on this, does she have acute/decompensated CHF?

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Case Example #1: Is It CHF?

- The clinical evidence says:
 1. She has **symptoms/signs** of CHF = SOB & BLE edema & rales on PE
 2. She has known **structural/functional heart abnormality** = PMH of Chronic HFpEF
 3. She has **objective evidence of cardiogenic fluid overload** = elevated BNP & pulmonary edema w/ R-sided pleural effusion on CXR

- **Therefore, this is decompensated CHF, right?**

- What does the chart say?

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Chief Complaint

BILATERAL FEET SWELLING

Time of Initial Assessment

11/24/21 18:44

Date of Service

11/30/2021

ER note**History of Present Illness**

Patient is a 69-year-old female with history of hypertension, diabetes, fibrillation not on anticoagulation, aortic stenosis and CHF presenting with lower extremity edema and a blister over the dorsal left foot. She states that she was discharged from Parkwest about 4 days ago. She states that she was admitted there because someone was trying to diagnose her with dementia but they were not able to do so. Since leaving Parkwest she has had worsening swelling in her legs and feet and today a blister developed on the dorsal aspect of her left foot. Her home health nurse saw her this morning and advised her to come to the ED. She states she does not take any diuretics. She denies anticoagulation. She also notes that she has been having intermittent substernal chest pressure during this time, shortness of breath, subjective fever and chills, dry cough and vomiting. She was vaccinated against COVID-19.

Review of Systems

10+ROS completed and negative except as noted in HPI.

Physical Exam**Vital Signs**

Temperature Temporal Artery: 98.1 DegF Pulse Rate: 117 bpm High Heart Rate Monitor: 113 bpm High Respiratory Rate: 25 rpm High Systolic Blood Pressure: 108 mmHg Diastolic Blood Pressure: 58 mmHg Low
 SpO2: 90 % Oxygen Flow Rate: 2 L/min O2 Delivery: Nasal Cannula Daily Weight lbs: 196.3 lb Scale Used Wt: Bed Daily Weight kg: 89.227 kg

VS: reviewed

GEN: alert, no acute distress

HEENT: no conjunctival injection, moist mucous membranes, edentulous

NECK: supple with normal ROM, trachea midline

CARDIO: regular rate and rhythm, +JVD

RESP: bibasilar crackles, no increased work of breathing or obvious respiratory distress

ABD: soft, non-tender, non-distended

Ext: warm and well perfused, bilateral lower extremity edema, large bullae over the left dorsal foot with no surrounding erythema, warmth, or crepitus. Pulses and sensation intact in the foot. No calf tenderness.

Skin: no pallor, no rashes

Neuro: AOX3, moving all extremities equally, no facial droop, no dysarthria, gait not tested

Psych: appropriate mood and affect, attends to conversation

EKG

Normal sinus rhythm @ 100bpm. Normal axis. Normal intervals. No prolonged QT. Inferolateral ST depressions.

MDM/Progress Notes

Patient presenting with volume overload, suspect blistering is secondary to this, does not appear acutely infected. Will diurese and admit to the hospitalist service for further management.

Assessment/Plan

1. Volume overload
2. Blister of left foot
3. Chest pain
4. Dyspnea

Assessment/Plan**Diagnosis list**

Heart failure with preserved ejection fraction with acute exacerbation
 Volume overload
 Moderate right pleural effusion
 Pulmonary edema
 Dyspnea, likely secondary to above

Chest pain with typical and atypical symptoms

Paroxysmal atrial fibrillation, prescribe Xarelto but generally noncompliant with Xarelto

Bipolar disorder

Bioprosthetic aortic valve

Hypertension

Hyperlipidemia

CKD stage II

Type 2 diabetes mellitus with hyperglycemia

Bullous diabetorum

Cirrhosis secondary to chronic hepatitis C with thrombocytopenia

Thrombocytopenia

Urinary incontinence

Chronic diarrhea

DJD

History of T9/10 osteomyelitis/discitis 5/20

Plan:

-Admit to UT H service on telemetry.

-Initiate on heart failure exacerbation pathway. Given 40 mg of Lasix in the ED. We will continue with 40 mg of Lasix every 24 hours for diuresis. Strict I's and O's and daily weights. 2 g sodium heart healthy diet.

-For her moderate right pleural effusion, suspect that this is also contributing to her dyspnea but is likely secondary to her volume overload. Continue to monitor closely.

-For her chest pain, typical and atypical symptoms noted. Patient did not note some chest pressure that have been occurring earlier with dyspnea. However, she was unable to characterize this further and notably did not mention it until after she was asked directly about it. Initial EKG did show potential ST depressions in the inferior leads, however tracing was notably poor. Will repeat EKG at this time. Patient reports that her chest pain has since resolved. Continue to trend troponin.

-For her paroxysmal atrial fibrillation, patient previously was not compliant with her Xarelto. Currently is not aware of the medications that she takes as she continually stated that "a woman comes by and fixes them for me".

She previously refused to take her Xarelto due to dyspnea. Suspect that she has not been compliant with her Xarelto regimen.

-For her bipolar disorder, psychiatry follow throughout her most recent admission and she was eventually discharged on Depakote and citalopram. Aripiprazole is now listed on her home regimen. We will continue home regimen at this time. Low threshold for psychiatry consultation in the coming days if patient worsens.

-For her type 2 diabetes mellitus with hyperglycemia, hold home metformin. Continue NPH 20 units twice daily as this was what when she was discharged on after her most recent admission. Moderate sliding scale insulin ordered.

-For her left lower extremity bullous blister, suspect that this is secondary to bullous diabetorum as she does not have any significant erythema surrounding and she does have uncontrolled hyperglycemia. We will continue to monitor closely.

-Continue remaining home medications as appropriate.

-Monitor and replete electrolytes as appropriate.

-Monitor and replete electrolytes as appropriate.

FEN: Heart healthy, 2 g sodium, 1800 mL fluid restriction

DVT prophylaxis: Full anticoagulation with Xarelto

CODE STATUS: Full code by default

Admit H&P

Assessment/Plan

69F with history of atrial fibrillation, prosthetic valve AS, CAD s/p CABG and subsequent PCI, DM2, hyperlipidemia, hypertension who presented to this hospital initially with worsening shortness of breath and found to have atrial fibrillation with RVR and decreased EF.

Paroxysmal Atrial fibrillation with RVR
prosthetic aortic valve stenosis. mean pressure gradient 37 mmHg this admission.
--Last echo mean PG 41 mm Hg
CAD s/p CABG x2 (2016)
--SVG-OM, SVG-distal RCA
--PCI to LAD 2019 - 3 x 18mm Xience Sierra drug-eluting stent
Cardiomyopathy, presumably ischemic
--EF 30-35% this admission
--last echo 10/2021 EF 50-55%
--previous echo 8/2021 LVEF 60-65%
Elevated troponin
History PFO
Diabetes type 2
hyperlipidemia
hypertension
history bipolar disorder

Cardiology Consult

Does this say anything useful?

Plan
--would avoid diltiazem with decreased EF and amiodarone as she cannot verify compliance with her anticoagulation
--start digoxin loading dose
--holding home BP meds
--agree with anticoagulation w/ elevated CHADS2-VASC score
--appears volume up, will give IV lasix and monitor response
--anticoagulated on Xarelto
--daily weights, fluid restriction
--likely will recommend ischemic workup, will discuss timing pending clinical course

Date of Service
12/02/2021

Subjective
feels somewhat improved historical details are limited however

Physical Exam
Vital Signs
Temperature Temporal Artery: 97.8 DegF Pulse Rate: 103 bpm High Heart Rate Monitor: 110 bpm High Respiratory Rate: 22 rpm High Systolic Blood Pressure: 101 mmHg Diastolic Blood Pressure: 54 mmHg Low SpO2: 97 % Oxygen Flow Rate: 2 L/min O2 Delivery: Nasal Cannula Daily Weight lbs: 194.9 lb Scale Used Wt: Bed Daily Weight kg: 88.591 kg
Ill appearing lady kept her eyes closed during our conversation
Right IJ Swan in place hemodynamics reviewed
Systolic murmur appreciated, telemetry reviewed
Lungs diminished without rales
Abdomen nontender
Distal lower extremity with bilateral 2+ edema and sizable blister --appears to be fluid filled, over dorsum of left foot

Assessment/Plan
Bioprosthetic aortic valve stenosis
Obstructive/Cardiogenic shock intermittent Levophed requirement
Atrial fibrillation with RVR
Acute renal failure present on admission
Severe pulmonary hypertension (predominantly WHO II)
Anemia thrombocytopenia
Multiple medical comorbidities

Heart Failure Specialist

Does this say anything useful?

--Anree with diuresis with Bumex infusion.
--I have requested structural valve NP to assist with formalizing interventional options from aortic stenosis standpoint.
--Continue aggressive attempted optimization in the ICU
--If no interventional options for aortic valve would not be unreasonable to request palliative care to on board for advanced care planning and for patient support as anticipated trajectory of medical management of severe aortic stenosis for which anticipated to be challenging in addition to multiple other comorbidities that confound.

Patient new to me, I spent over 30 minutes of critical care time spent and extensive review of data bedside evaluation and management. Spoke with chronic critical care team at bedside critical care and nephrology note reviewed.

Discharge Diagnoses

Ventricular tachycardia
 Asystole
 Cardiogenic shock
 A. fib with RVR
 Severe valvular aortic stenosis
Acute on chronic heart failure
 Volume overload
 Moderate right pleural effusion
 Pulmonary edema
 Chest pain with typical and atypical symptoms with a positive troponin
 Patent foramen ovale
 Paroxysmal atrial fibrillation
 Bipolar disorder
 Hypertension
 Hyperlipidemia
 CKD stage II
 Type 2 diabetes mellitus with hyperglycemia
 Bullous diabeticorum
 Cirrhosis secondary to chronic hepatitis C with thrombocytopenia
 Thrombocytopenia
 Urinary incontinence
 Chronic diarrhea
 DJD
 History of T9/10 osteomyelitis/discitis 5/20

Consultations

Cardiology
 Hospital Medicine
 Medical Critical Care
 Nephrology
 Palliative Care
 Psychiatry

Hospital Course

69-year-old female with history of CVA, systolic and diastolic heart failure, diabetes mellitus type 2, hepatitis C, cirrhosis, atrial fibrillation on Xarelto, moderate to severe aortic stenosis with history of bioprosthetic aortic valve that presented 11/25/2021 with lower extremity edema. She was admitted to the general medicine floor for heart failure exacerbation. She was transferred to the ICU on 11/26 after she was found to be in atrial fibrillation with RVR and hypotensive. She underwent direct-current cardioversion on 11/26, that was unsuccessful. She was initiated on an amiodarone infusion. Her Xarelto was stopped, and she was initiated on a heparin drip. She was initially receiving regular diuresis, however this was held due to worsening AKI. She was evaluated by nephrology secondary to this. MAP goal was greater than 70, and she required intermittent vasopressor support. She was transitioned to p.o. amiodarone. On 11/30, she underwent right heart catheterization and placement of a pulmonary artery catheter. She required a Bumex drip for diuresis. She was evaluated by cardiology, and underwent TEE/cardioversion 12/6, which she tolerated well. Overnight, she became hypotensive, and became short of breath. She was noted to then be unresponsive, and CODE BLUE event was called. She was noted to be in V. tach, and shocks were delivered. Family was called, and requested to stop ACLS. Patient expired at 0512 on 12/8/2021.



Case Example #1: Is It CHF?

- Is the chart coded correctly with CHF as the principal diagnosis?
 - Clinically, it looks like this patient had CHF based on the evidence
 - The documentation certainly says it is CHF
- **YES!!!**
- ☹️ **Hospital now has another mortality with CHF as the principal diagnosis**

Case Example #1: Is It CHF?

- *But what if the chart had said . . .*
 1. CHF specialist said in initial consult that volume overload state was **'due to patient's worsening severe aortic stenosis** and **NOT** due to decompensated CHF'
 2. From then on, primary hospitalist stopped documenting 'acute CHF exacerbation' and started documenting **'volume overload due to worsening AS'**
 - Is there some reason CHF specialist can't have brief conversation with hospitalist or send a secure text saying this to get correct diagnosis/attribution?
 3. **'Volume overload due to worsening AS'** is given as reason for admission in D/C summary (as opposed to CHF exacerbation)
 4. Hospital course section of D/C summary says 'while **initially** thought to be admitted for a CHF exacerbation, patient was seen by the HF specialist **who determined her volume overload was actually due to her worsening AS'**
- **What would the principal diagnosis be now?**

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Case Example #1: Is It CHF?

- The definition of principal diagnosis is . . .

Section II. Selection of Principal Diagnosis

The circumstances of inpatient admission always govern the selection of principal diagnosis. The principal diagnosis is defined in the Uniform Hospital Discharge Data Set (UHDDS) as "that condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care."

- So, **after study**, the principal diagnosis for this case could have been aortic stenosis **IF** the documentation supported this, correct?
 - 🟢 While no change in MS-DRG would have resulted (Type 2 AMI diagnosis drives the final DRG assignment for this case), the principal diagnosis would **NOT** have been CHF

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Case Example #2: Is It CHF?

- 72-year-old male sent to ED by PCP for ‘abnormal labs.’ He does not know why he was sent to ED and is unable to add much additional history but is complaining of SOB. In the ED, he has very decreased breath sounds on physical exam. His BNP > 5,000 pg/mL (URL or normal at UTMC = 100 pg/mL) and pulmonary edema is seen on his initial CXR. He has an extensive PMH including:
 - Chronic HFrEF (EF < 20%)
 - ESRD w/ M,W,F HD
 - PAD s/p BLE AKAs
 - CAD
 - DM 2/HTN/HLD
- Based on this, does he have acute/decompensated CHF?

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Case Example #2: Is It CHF?

- The clinical evidence says:
 1. He has **symptoms/signs** of CHF = SOB
 2. He has known **structural/functional heart abnormality** = PMH of Chronic HFrEF
 3. He has **objective evidence of cardiogenic fluid overload** = elevated BNP & pulmonary edema on CXR
- **Therefore, this is decompensated CHF, right?**
- What does the chart say?

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History of Present Illness
72-year-old male presents for evaluation via EMS for abnormal labs. Patient does not exactly know why he is here today. He states his wife told him he needed to come to the hospital. Therefore, they called EMS. EMS state he is here likely for an elevated potassium. Patient is end-stage renal disease. He is on dialysis. His last session was yesterday.

Review of Systems
Constitutional: No fevers, chills
Eye: No vision changes
EENT: No ear pain, nasal congestion, sore throat
Respiratory: No shortness of breath, cough
Cardiovascular: No chest pain or palpitations
Gastrointestinal: No nausea, vomiting, or diarrhea
Genitourinary: No dysuria or hematuria
Musculoskeletal: No back pain, neck pain, joint pain, muscle pain, decreased range of motion
Integumentary: No rash, lacerations, or abrasions
Neurologic: No altered mental status, numbness, or weakness
Psychiatric: No anxiety, depression, or suicidal ideations

Physical Exam
Vital Signs
Temperature Temporal Artery: 98.9 DegF Pulse Rate: 117 bpm High Respiratory Rate: 22 rpm High Systolic Blood Pressure: 132 mmHg Diastolic Blood Pressure: 63 mmHg SpO2: 95 % Oxygen Flow Rate: 2 L/min
O2 Delivery: Nasal Cannula Admission Weight lbs: 107 lb Height: 0 in IBW Calculation: -88 kg Dosing Weight: 48.53 kg
Nursing Triage Note reviewed. Vital signs reviewed.
General: Alert, no acute distress
HEENT: Atraumatic, normal external examination
Chest: Decreased breath sounds bilateral bases.
Cardiovascular: Tachycardia without auscultated murmurs
Abdomen: Soft, nontender, no distention
Neurologic: No altered mental status
Psych: Normal mood and affect
Extremities: Bilateral above-the-knee amputations.
Skin: No lesions or rashes noted

EKG
EKG and rhythm strip are interpreted by myself at 06/29/2021 23:50:36
EKG: Sinus tachycardia at heart rate of 116, normal QRS duration, nonspecific ST segments and T wave changes
Rhythm Strip: Lead II with sinus tachycardia at a heart rate of 116, normal QRS duration, nonspecific ST segment and T wave changes, no ectopy

MDM/Progress Notes
72-year-old male with possible abnormal lab. Patient is also tachycardic and has decreased breath sounds.
Chart review shows previous admission with significant elevated BNP and pulmonary edema.
Lab returned to creatinine of 3.14. Potassium 4.9. White count 21. Lactic acid 2.3.
Chest x-ray shows pulmonary edema.
Patient's wife arrives. She is able to provide us more history about the patient. She states he has been having nausea and vomiting today.
Hospital medicine consulted for admission. Patient received sepsis bundle in the ED with cefepime. I do give him 500 cc of fluid for his lactic acidosis and tachycardia. I am using small volumes of fluid given his end-stage renal disease and pulmonary edema. Will consider more fluids based on his response to this initial bolus.

Assessment/Plan
1. Sepsis
2. Pulmonary edema
3. Nausea and vomiting
4. ESRD on dialysis

ER note

History of Present Illness
Roger Mason is a 72-year-old male who presents to the ED as he was recently seen by his PCP and had some abnormal lab results. Unfortunately, there is no family at the bedside, there are no phone numbers available aside from the patient's own cell phone and there was no answer, and the patient is unable to participate in an interview. Patient is arousable to voice but only temporarily and almost immediately falls back asleep. He is able to follow commands but very weakly. When asked orientation questions, patient is difficult to understand but seems to be oriented to self and place but not time. Patient states that he has been short of breath but it is not clear for how long. Patient's breathing pattern is shallow and rapid but maintains an oxygen saturation of 96%.

Work-up in the ED included a chest x-ray which revealed pulmonary edema secondary to congestive heart failure. In the ED, patient received Bumex, cefepime, lyrica, and a 500 ml LR bolus.

UTH has been asked to evaluate the patient's abnormal lab results.

Admit H&P

Physical Exam
Vital Signs
Temperature Temporal Artery: 98.9 DegF Pulse Rate: 117 bpm High Heart Rate Monitor: 120 bpm High Respiratory Rate: 20 rpm Systolic Blood Pressure: 134 mmHg Diastolic Blood Pressure: 73 mmHg SpO2: 98 %
Oxygen Flow Rate: 2 L/min O2 Delivery: Nasal Cannula Admission Weight lbs: 107 lb Height: 0 in IBW Calculation: -88 kg Dosing Weight: 48.53 kg

General: **Appears older than stated age, ill-appearing**
HEENT: PERRL, nose, mouth, and throat clear and unremarkable, trachea midline, neck supple with no thyromegaly or masses palpable
Chest: **Crackles throughout bilaterally, respirations mildly labored on 2 L NC**
Cardiovascular: **Sinus tachycardia with HR in 120's, nS1S2, loud murmur auscultated at the left midclavicular line, no r/g, 2+ peripheral pulses**
Abdomen: Soft, nontender, nondistended, +bowel sounds, no hepatosplenomegaly or masses palpable
Lymphatic: No cervical or supraclavicular lymphadenopathy palpable
Extremities: No clubbing, cyanosis, or ischemia, no LE edema, **bilateral AKA noted**
Neurologic: **Weakly follows commands with upper extremities, GCS 11-13**
Psych: **Obtunded, oriented x 2**
Musculoskeletal: Symmetrical with normal range of motion, no apparent deformity
Skin: No lesions or rashes noted

Assessment/Plan
72-year-old male with
SIRS as evidenced by leukocytosis, tachycardia, and tachypnea
Altered mental status
Lactic acidosis, improved
Nausea/vomiting, according to wife per ED documentation
Transaminitis
Elevated total alk-phos
Acute exacerbation of chronic systolic HF/EF, 20-25 %, last echo 1/5/21
Pseudohyponatremia - Na+ corrected for hyperglycemia is 130
Anemia

- Patient arrests while still in ED; ROSC obtained and sent to ICU

Assessment/Plan

Mr. Mason is a 72-year-old male with a past medical history of coronary artery disease s/p CABG x4, systolic heart failure with ejection fraction less than 20%, hypertension, diabetes mellitus type 2, severe peripheral vascular disease s/p bilateral lower extremity amputation, and end-stage renal disease on dialysis that presented with abnormal labs. Cardiology was consulted following cardiac arrest and suspected ventricular tachycardia.

Problem list:

Cardiac arrest
Reported ventricular tachycardia
Junctional escape
Acute respiratory failure
Systolic heart failure
Hypertension
Diabetes mellitus type 2
Severe peripheral vascular disease s/p bilateral AKA
ESRD on hemodialysis
Hyperkalemia

Cardiology Consult

Does this say anything useful?

Plan:

-Patient was seen and evaluated with Dr. [REDACTED] No indication for left heart catheterization. Recommend continuing IV amiodarone. Post cardiac arrest care per primary team.

- Patient passes shortly after this note

I was called to patient's bedside to pronounce that [REDACTED] has died. Patient is lying motionless. Patient is unresponsive to verbal/tactile stimuli. Pupils are fixed and dilated. No spontaneous breath sounds. Absent peripheral pulse. No heartbeat on auscultation.

Patient's major medical illness:

Cardiac arrest
Unspecified shock, possible cardiogenic
V. tach

Death Note

This sounds cardiac, right?

Time of death: 1043

Discharge Diagnoses

post cardiac arrest
v tach, monomorphic
shock, unspecified
sepsis, with pneumonia
encephalopathy
Lactic acidosis, improved
Nausea/vomiting, according to wife per ED documentation
Transaminitis
Elevated total alk-phos
Acute exacerbation of chronic systolic HF/EF, 20-25 %, last echo 1/5/21
Pseudohyponatremia - Na+ corrected for hyperglycemia is 130
Anemia
Coronary artery disease, s/p CABG x 4
Heart failure
Hypertension
Hyperlipidemia
Type II diabetes mellitus, uncontrolled
ESRD, dialysis on MWF
Peripheral vascular disease
Chronic osteomyelitis
Cervical discitis
Chronic pain

Consultations

Hospital Medicine
Nephrology
Wound Care - Pressure Ulcer

Hospital Course

Was called to PCU for consult for Mr Mason. Mr. Mason is a 72-year-old male with history of status post CABG, bilateral above-the-knee amputations, end-stage renal disease on dialysis that presented 6/30/2021 after being sent to the ED by his PCP for abnormal labs. He was admitted for volume overload, possible pneumonia to the general medicine floor. Placed on broad-spectrum antibiotics. Earlier this morning he was found to have agonal respirations. Unclear what his initial rhythm was. Reported PEA versus V. tach. CPR was initiated. He was defibrillated x1. After approximately 3 rounds of CPR he had ROSC. Continued to be in V. tach with a pulse and underwent cardioversion. I arrived at this time. Patient was noted to be moving all 4 extremities. Blood pressure appeared stable at that time. Cardiology was consulted for significant ST depression and possible V. tach arrest. He was then transferred to the ICU. After arrival, he had additional episodes of PEA arrest. After which the first 1 he was found to be bradycardic and was temporarily paced. Vasopressors were started for worsening shock. He was also given additional dose of amiodarone for nonsustained V. tach. He then went back into cardiac arrest. PEA this time as well. After several rounds of CPR he again regained ROSC. He was simply hypotensive during this time despite multiple vasopressors. It was felt that further CPR was futile. Family arrived at the bedside around this time and wished to stop any further resuscitation. They wish to be at his bedside during his last few minutes. He then lost his pulse again and pronounced at 1043.

D/C summary

So . . what is the correct principal diagnosis?

Chart initially coded with Acute HFrEF as Principal Diagnosis

Case Example #2: Is It CHF?

- Is the chart coded correctly with CHF as the principal diagnosis?
 - Clinically, it looks like this patient had CHF based on the evidence
 - The documentation is very inconsistent as to what was this patient’s primary clinical problem (**to say the least**)
- **Maybe???**
- Would documentation have been better with a longer LOS?
 - ☺ **Absolutely as CDI specialist would have recognized this mess and insisted it be cleaned up!**

Case Example #2: Is It CHF?

- CHF COE champion reviews case and says, “**This patient DID NOT die due to CHF. Fix it!**”
 - Case discussed with CDI PA and ICU attending responsible for D/C summary
- ICU attending clinically agrees and asks how the documentation can be fixed:

Addendum by [REDACTED] on July 26, 2021 07:24:16 EDT (Verified)

Additional Discharge Diagnoses:

NSTEMI, type II

Acute respiratory failure with hypoxia and hypercapnea

His CXR does have a peripheral density in the RLL (consistent with pneumonia) in addition to his interstitial changes (consistent with pulmonary edema). He developed respiratory failure which led to cardiac arrest. After his death, his blood cultures which were drawn on admission grew MRSA.

In my clinical judgement this is a complicated case of pneumonia complicated by volume overload in the setting of ESRD with subsequent respiratory failure leading to cardiac arrest and ultimately death. His initial presenting symptoms of tachypnea with shallow breathing, tachycardia are consistent with SIRS and sepsis criteria. There is a likely component of volume overload given his other chronic medical issues, most notably HFREF and ESRD. He likely has a component of acute on chronic HFREF related to his underlying sepsis. The most prominent of the diagnoses is pneumonia with acute respiratory failure with severe sepsis with septic shock. He developed a type II NSTEMI subsequent to his cardiac arrest.

- Sepsis now correct principal diagnosis and case no longer in CHF bucket
 - MS-DRG change (283 to 871) resulted in ~\$21.00 increase. **Think an RA is interested?**

Key Takeaways

- I. Must have **3** things to diagnose **new onset CHF** or **acute** CHF exacerbations:
 1. Signs &/or symptoms of CHF
 2. Structural &/or functional cardiac abnormality (that is causing the signs/symptoms)
 3. Objective evidence of cardiogenic fluid overload
 - !! Can no longer diagnose CHF solely based on ECHO abnormality **without** other evidence (i.e., signs/symptoms & objective fluid overload)
 - ☑ *Therefore, need all 3 criteria before querying* for new onset CHF
- II. HFrEF expanded to HFrEF, HFmrEF, & HFimpEF
 - All code to systolic (I50.2x) (*hopefully!*)

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Key Takeaways

- III. May diagnose acute CHF exacerbations **in the setting of an acute MI**
 - as opposed to nothing or ‘stunned myocardium’
- IV. Probably time to drop systolic/diastolic terminology given expansion of HFrEF diagnostic descriptions
 - *Still OK for now in coding world*
- V. **All volume overload states are not due to CHF!**
 - ***Critical to optimize publicly reported performance data by ensuring correct attribution of volume overload states to appropriate etiology***

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Thank you. Questions?

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