

ACC Illinois: Heart Failure Panel Discussion Oct 16, 2021

Panelists:

Sunil Pauwaa, MD, FACC; Advocate Christ Medical Center/Advocate Heart Institute

Sean Pinney, MD, FACC; University of Chicago

Jane Wilcox, MD, FACC; Northwestern University Medical Center

Fellow: Gatha Nair, MD; Rush University Medical Center

CV Team: Alexandra Goncharenko, PharmD; Advocate Aurora Health

Moderators:

Christopher Gans, MD; University of Illinois Chicago

Vicki Groo, PharmD, BCCP, CHC; IL-ACC CV Team Rep, University of Illinois Chicago

Disclosures

- Sunil Pauwaa
 - Consulting/Honoraria: Abbott, Astra Zeneca, Pfizer
- Sean Pinney
 - Consulting: Abbott, CareDx, Medtronic, Procyron, Transmedics
- Jane Wilcox;
 - Consulting: Abiomed, Abbott, Amgen, Novartis
 - Scientific Advisory Board: Cytokinetics, Abiomed
- Gatha Nair, nothing to disclose
- Alexandra Goncharenko, nothing to disclose
- Christopher Gans, nothing to disclose
- Vicki Groo, nothing to disclose

Case 1:
Heart Failure with reduced EF
(HFrEF)

Case 1: Heart Failure with reduced EF

- 63-year-old male presenting to Cardiology clinic for follow up
- Past Medical History:
 - Hypertension
 - Hyperlipidemia
 - Nonischemic cardiomyopathy with HFrEF (15-20%), suspected secondary to long-standing HTN
 - Coronary angiogram with no angiographically significant coronary artery disease
 - Paroxysmal atrial fibrillation
 - Hepatitis B
- Past Surgical History:
 - Status post biventricular ICD placement
- Family history:
 - Mother had heart failure onset age 60

Case 1: HPI

- Presenting for follow up
- Last seen 3 months ago, mild dyspnea on exertion but able to climb one flight of stairs without stopping at that time
- Now with progressive dyspnea with minimal exertion for the last 4 weeks
- Orthostatic lightheadedness
- Review of systems negative for orthopnea, paroxysmal nocturnal dyspnea, lower extremity edema, palpitations, lightheadedness, syncope, ICD shocks
- Compliant with medications and dietary restrictions
- Three hospitalizations for HF within the last 4 months, furosemide increased on recent discharge

Case 1: 63 yo old male with NICM

- Current medications

- Carvedilol 25mg PO bid
- Losartan 75mg PO bid
- Spironolactone 25mg PO daily
- Digoxin 125mcg PO daily
- Furosemide 80mg PO bid (*increased on recent discharge*)
- Apixaban 5 mg bid

Physical exam

Vitals: 97.8°F, HR 70, **BP 87/62**, RR 16, SpO2 97% on RA

Physical exam:

GEN: well appearing male, appears stated age, no acute distress

HEENT: anicteric sclera, MMM

NECK: **jugular venous distension > 15 cm H₂O**

CV: regular rate and rhythm, normal S1, S2, III/VI systolic murmur

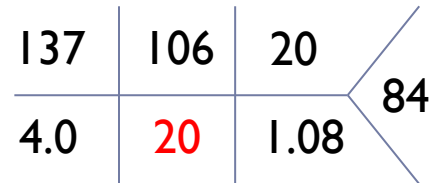
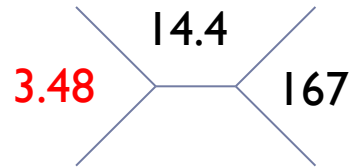
PULM: clear to auscultation bilaterally

EXTREMITIES: warm, no lower extremity edema

NEURO: AOx4, no facial asymmetry, moving extremities spontaneously, sensation to light touch grossly intact

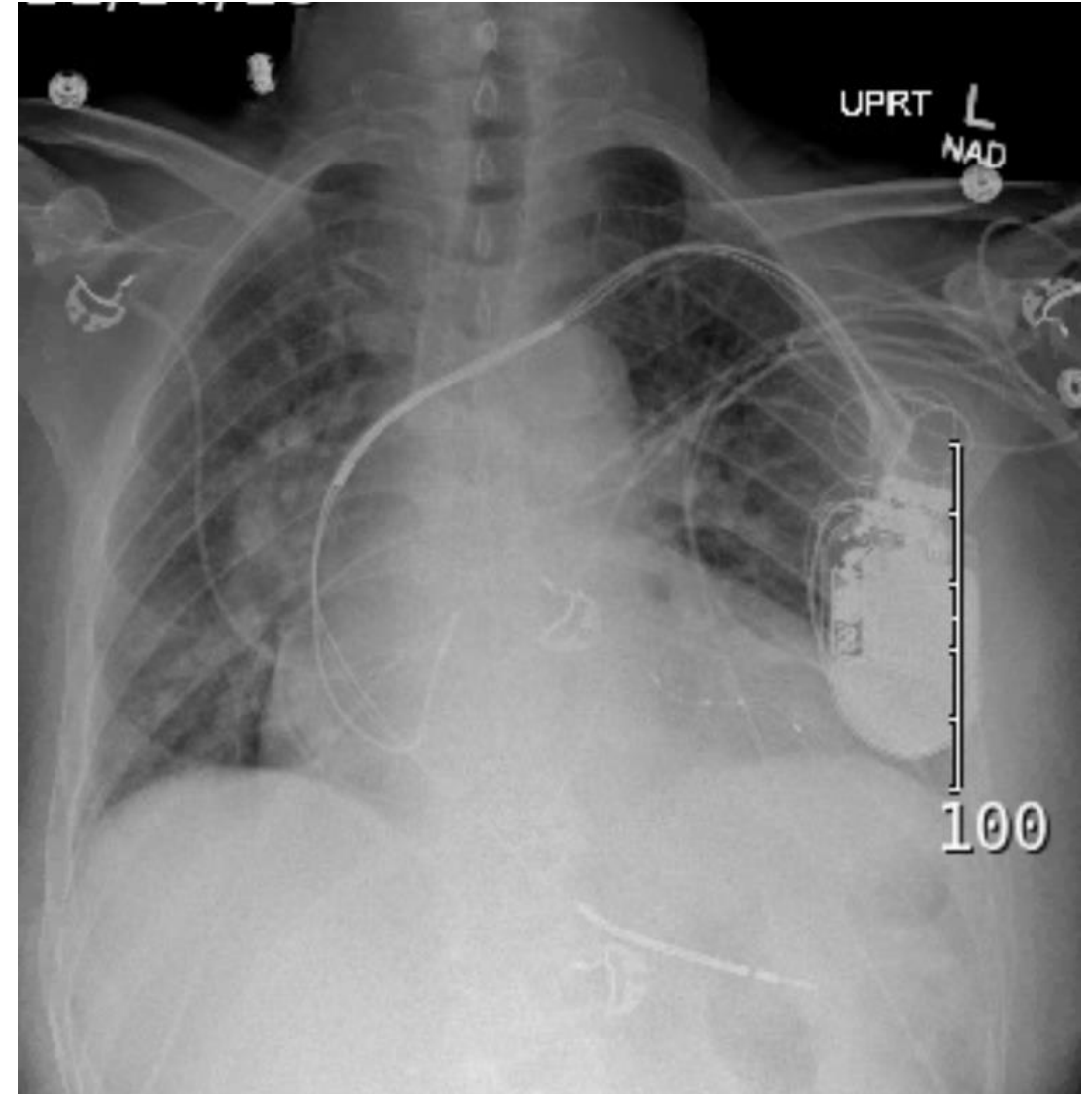
SKIN: no jaundice, warm with capillary refill < 2s

Work up

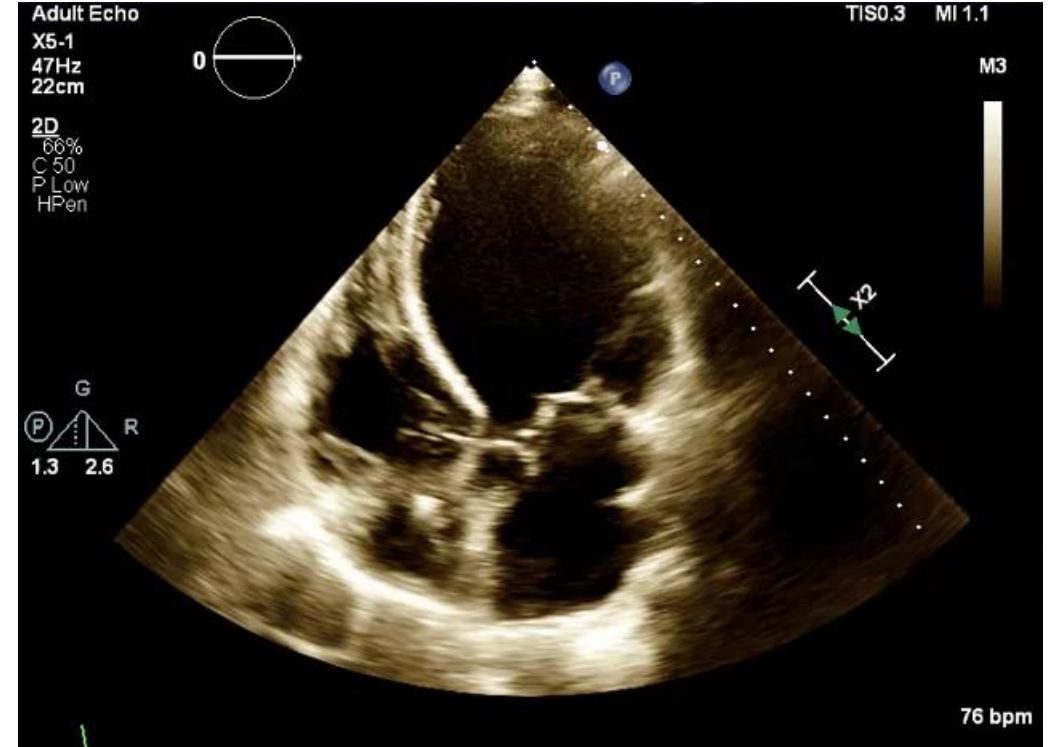


AST 28 IU/L
ALT 19 IU/L
ALP 67 IU/L
Tbili 0.7 mg/dL

eGFR 80 mL/min/1.73m²
BNP 4370 pg/mL
Albumin 3.4 g/dL
Total protein 8.4 g/dL



Case 1: Echocardiogram

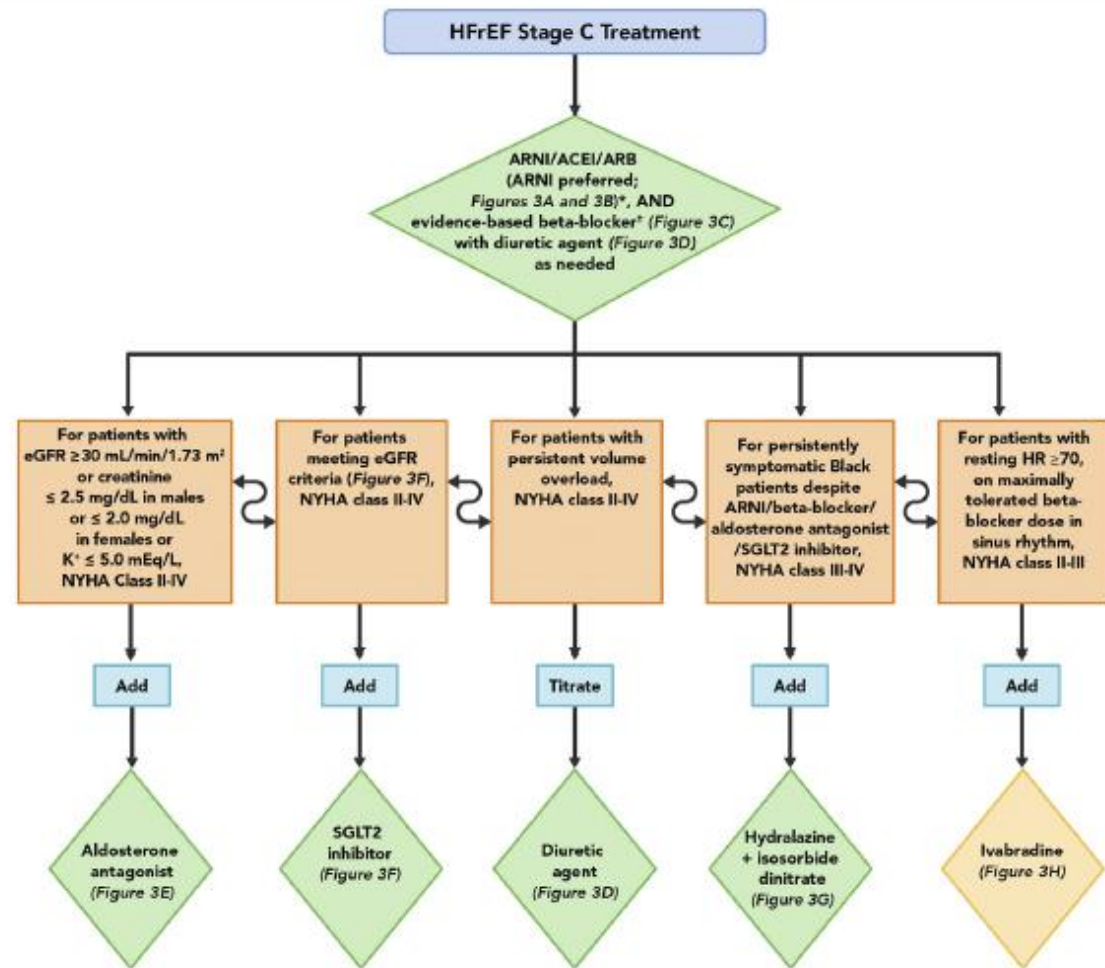


Case 1: Questions for the panel

- Why is the patient deteriorating despite GDMT? (target dose ARB, MRA, BB)
- How should we modify his medication regimen?

Maddox TM, et al. J Am Col Cardiol 2021.
doi.org/10.1016/j.jack.2020.11.022

FIGURE 2 Treatment Algorithm for Guideline-Directed Medical Therapy Including Novel Therapies



*ACEI/ARB should only be considered in patients with contraindications, intolerance or inaccessibility to ARNI. In those instances, please consult Figure 3 and text for guidance on initiation.

†Carvedilol, metoprolol succinate, or bisoprolol.

ACEI = angiotensin-converting enzyme inhibitors; ARNI = angiotensin receptor-neprilysin inhibitors; ARB = angiotensin receptor blocker; eGFR = estimated glomerular filtration rate; HFrEF = heart failure with reduced ejection fraction; HR = heart rate; K⁺ = potassium; NYHA = New York Heart Association; SGLT2 = sodium-glucose cotransporter-2.

Green color identifies a Class I therapy from clinical practice guidelines, whereas yellow color indicates a Class II therapy.

Case 1: Questions for the panel

At what point should he be referred for advanced therapies?

Table 1. Clinical Clues to Help Identify Patients With Advanced HF

Inotrope dependence
LVEF \leq 25%, particularly with high-risk features on echocardiogram (grade III or IV diastolic dysfunction; significant RV dysfunction; high pulmonary artery pressures or severe MR despite attempts at decongestion)
\geq 2 Hospitalizations or emergency department visits for decompensated HF in 12 mo
Persistent NYHA class III or IV symptoms, including fatigue and confusion
High-risk biomarker profile (eg, hyponatremia, very elevated natriuretic peptides or troponin)
Escalating doses of diuretics (eg, $>$ 160 mg/d furosemide) or persistent edema despite escalating diuretic doses
Downtitration of GDMT as a result of hemodynamic intolerance such as hypotension (SBP $<$ 90 mm Hg), dizziness, excessive fatigue, or nausea
Discontinuation of ACE inhibitor/ARB/ARNI because of hypotension or renal intolerance
Progressive renal failure with rising creatinine/BUN
Recurrent atrial fibrillation or VT with ICD shocks
Nonresponse to cardiac resynchronization therapy
Cardiac cachexia (ie, unintentional loss of $>$ 5% of body weight attributable to HF)
High mortality risk from validated risk prediction models or calculators

Refer to HF Specialist:

- I:** Intravenous Inotropes
- N:** NYHA FC IIIB/IV or persistently elevated natriuretic peptides
- E:** End-organ dysfunction
- E:** EF \leq 35%
- D:** Defibrillator shocks
- H:** Hospitalizations $>$ 1
- E:** Edema despite escalating diuretics
- L:** Low systolic BP \leq 90, high heart rate
- P:** Prognostic medication; progressive intolerance or downtitration of GDMT

Case 1: Summary of recommendations

- Patient with HFrEF deteriorating despite optimal GDMT with target doses
 - Carvedilol, Losartan, Spironolactone, Digoxin and Furosemide
- Next steps:
 - Consider transition to ARNI
 - Consider initiation of SGLT-2 inhibitor
 - Place referral to Advanced Heart Failure team for consideration of advanced therapies
- Patient's clinical course

Role of CV Team in Heart Failure Medication Optimization

Alexandra Goncharenko, PharmD, BCPS, BCCP

Clinical Pharmacy Specialist (Heart Failure)

Advocate Medical Group / Advocate Aurora Health

Role of CV Team Member



GDMT UTILIZATION



CLINICAL
MONITORING

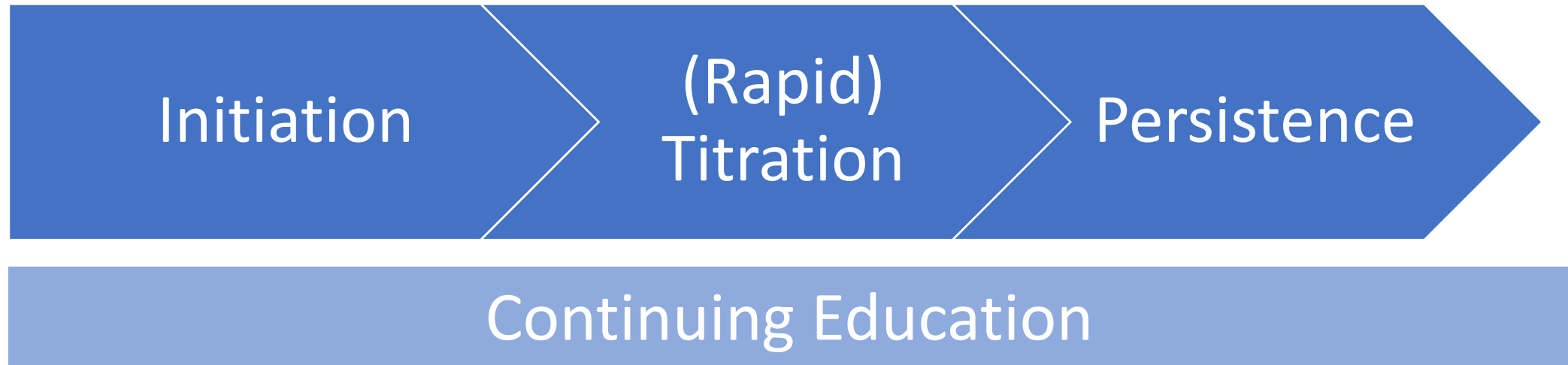


PATIENT
EDUCATION



CHRONIC DISEASE
MANAGEMENT

Role of CV Team: GDMT Utilization



Role of CV Team: Clinical Monitoring

Adverse drug reactions

Laboratory monitoring

Diagnostic exams (TTE)

CardioMems

Signs and symptoms of disease progression

Role of CV Team: Patient Education

In depth medication counseling

Navigating insurance and pharmacy

Lifestyle considerations (diet and fluid)

Shared-decision making

Goals of care

Chronic Disease Management

Type 2 diabetes

Hypertension

Primary and
secondary
prevention of
ASCVD

Smoking cessation

Asthma/COPD

Anticoagulation

Weight
Management

Case 2:
Heart Failure with preserved EF
(HFpEF)

Case 2: Heart Failure with preserved EF

- 75-year-old female presenting to Cardiology clinic for follow up
- Past Medical History:
 - Hypertension
 - Hyperlipidemia
 - Type 2 diabetes mellitus
 - HFpEF
 - Minimal non-obstructive coronary artery disease
 - Morbid obesity (BMI 47)
 - GERD

Case 2: 75 yo female with HFpEF - HPI

- Recently admitted for volume overload and discharged with increased diuretic dosing
- Started on metolazone one week prior for intensification of diuretic regimen
- Dyspnea on exertion when ambulating 5-6 steps across the room
- Review of systems positive for 3 pillow orthopnea, lower extremity edema, abdominal bloating, early satiety and poor appetite, 5 pound weight gain in 4 days
- Endorses adherence to medications and diet

Case 2: 75 yo female with HFpEF

- Medications

- Amlodipine 10mg PO daily
- Spironolactone 50mg PO daily
- Metolazone 2.5mg PO daily (*added at last visit*)
- Torsemide 100mg PO bid (*increased on recent hospital discharge*)
- Potassium chloride sustained release 20mEq PO daily
- Atorvastatin 40mg PO daily
- Aspirin 81mg PO daily
- Insulin basal bolus
- Pantoprazole 40mg PO daily

Physical exam

Vitals: 98.7°F, HR 62, BP 132/83, RR 18, SpO2 98% on RA
BMI 47.3 kg/m²

Physical exam:

GEN: morbidly obese female, appears stated age, no acute distress,
+conversational dyspnea

HEENT: anicteric sclera, MMM

NECK: unable to assess secondary to habitus

CV: regular rate and rhythm, normal S1, S2, no murmur

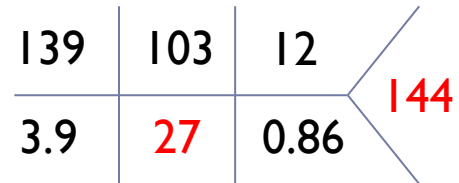
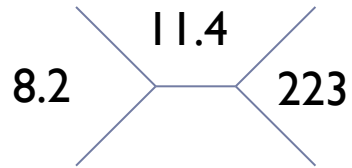
PULM: fine bibasilar crackles

EXTREMITIES: warm, **2+ pitting edema of bilateral lower extremities to thighs**

NEURO: AOx4, no facial asymmetry, moving extremities spontaneously, sensation to light touch grossly intact

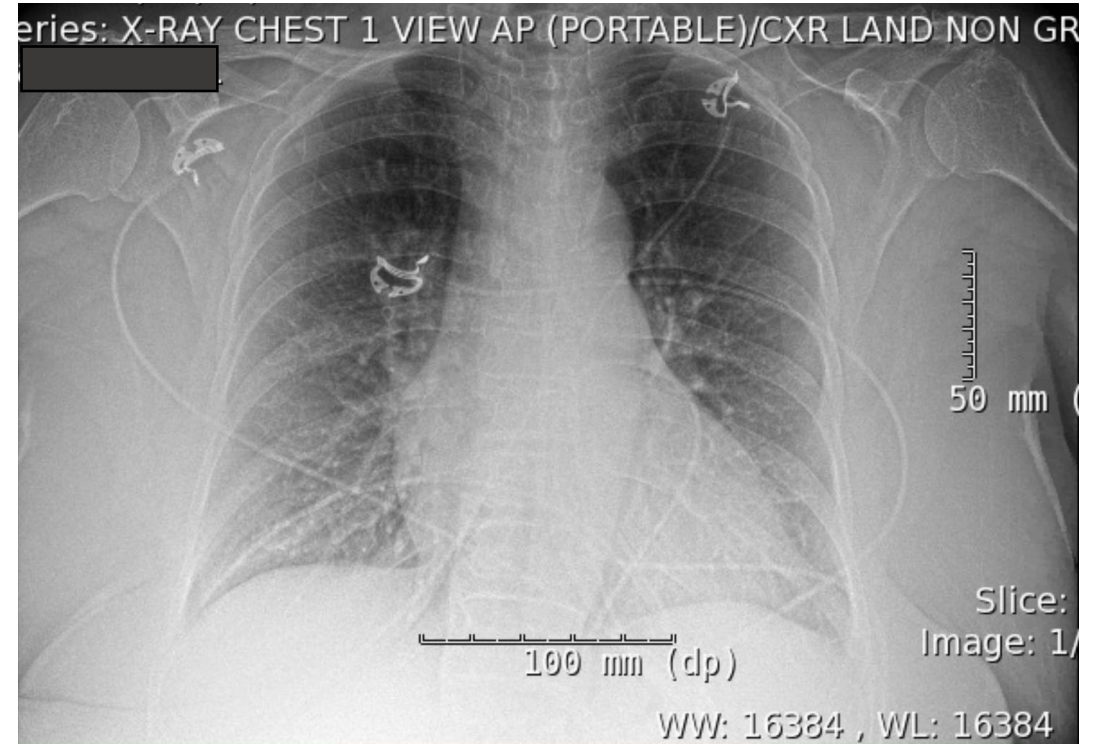
SKIN: no jaundice, warm with capillary refill < 2s

Work up

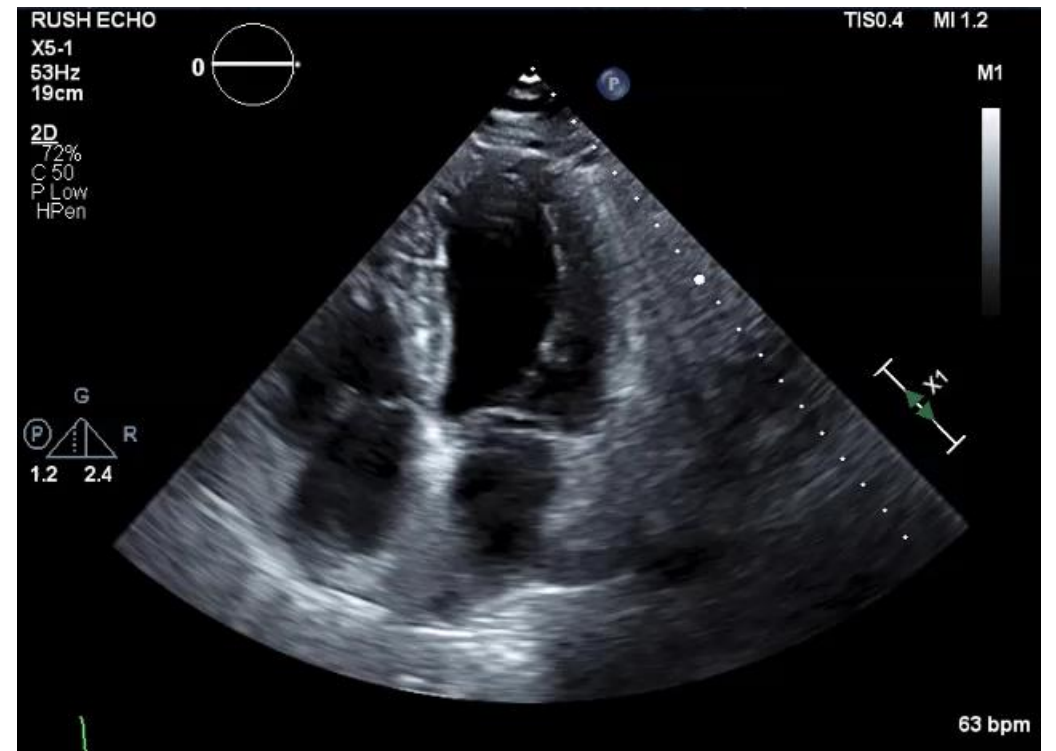
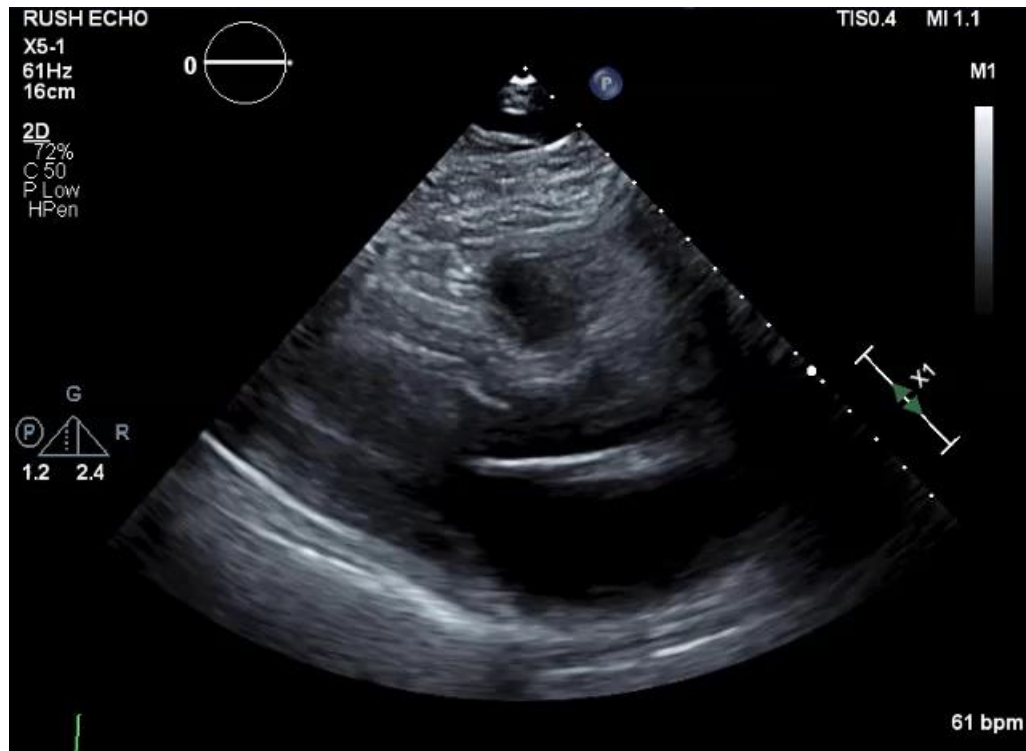


AST 14 IU/L
ALT 17 IU/L
ALP 35 IU/L
Tbili 0.6 mg/dL

eGFR 66 mL/min/1.73m²
BNP 89 pg/mL
Total protein 8.4 g/dL
Albumin 3.8 g/dL



Case 2: Echocardiogram



Case 2: Questions for the panelists?

What else can we do to manage symptoms and rehospitalizations for this HFpEF patient?

- **Neprilysin Inhibition (ARNI)**
 - PARAGON trial: HF hospitalization or CV death p = 0.06
 - Less decline in renal function / Improvement in NYHA FC
 - Subgroup analysis: + benefit in women or EF ≤ 57%
 - FDA label for sacubitril/valsartan updated in 2021 to remove ejection fraction as a criteria for use
- **SGLT2i**

	Empa N=2997	Placebo N=2991	Hazard Ratio
1° Outcome	13.8%	17.1%	0.79 (0.69-0.90)
Hospitalization	8.6%	11.8%	0.71 (0.63-0.83)
CV Death	7.3%	8.2%	0.91 (0.76-1.09)
Total HF hosp.	407	541	0.73 (0.61-0.88)
eGFR*	-1.25	-2.62	1.36 (1.06-1.66)

	Empa	Placebo	HR
LVEF at baseline			
<50%	145/995	193/988	0.71 (0.57-0.88)
≥50% to <60%	138/1028	173/1030	0.80 (0.64-0.99)
≥60%	132/974	145/973	0.87 (0.69-1.10)

Case 2: Questions for the panelists?

How can we better manage her volume overload symptoms?

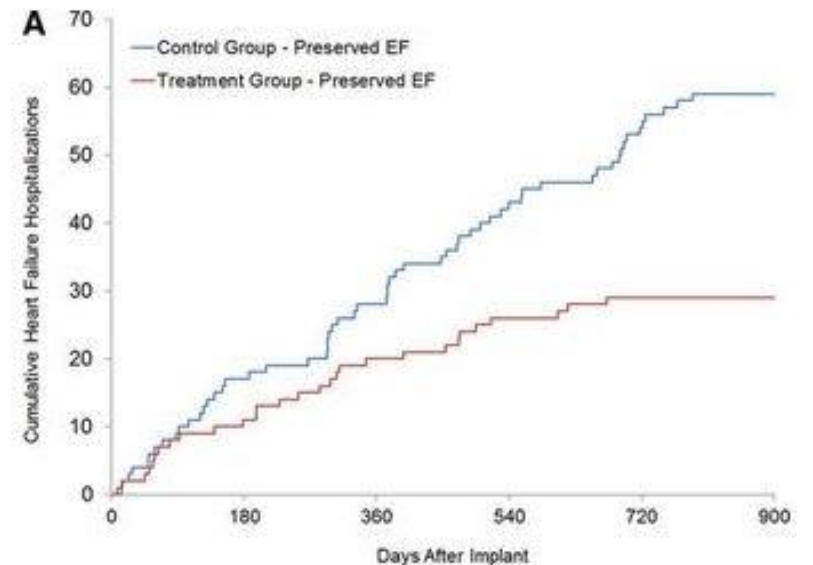
<https://www.cardiovascular.abbott/us/en/hcp/products/heart-failure/pulmonary-pressure-monitors/cardiomems/about.html>

Abraham WT, et al. Lancet 2016 387;453-61
Adamson PB, et al. Circulation: Heart Failure 2014;7:935-44

Cardiomems



- PA pressure sensor → remote monitoring
- Indication:
 - NYHA FC III + 1 HF hospitalization in past 12 months
 - Can take DAPT x 1 month
- Common patient features
 - Fluid volumes that are hard to know or manage
 - Challenging physical assessment
 - Compliant with HF medical care
 - Longer distances from home to clinic



Case 2: Summary of recommendations

- Consider initiation of SGLT-2 inhibitor
- Device implantation for volume assessment, monitoring and management
- Patient's clinical course