ACC Middle East Conference 2018

In partnership with:

جمعية القلب السعودية
Saudi Heart Association

PEARLS IN ACUTE HEART FAILURE MANAGEMENT

James C. Fang, MD, FACC
Professor and Chief
Cardiovascular Division
University of Utah School of Medicine

Disclosures

- Data Safety Monitoring Board
  - SOPRANO (J&J), EVALUATE-HF (Novartis)
- Steering Committee
  - GALACTIC-HF (Amgen), DELIVER-HF (AstraZeneca)
- Adjudication Committee
  - ARCHITECT BNP (Abbott)
- Grants
  - AHA
  - NIH

Mr. Z

53 year old man admitted with weight gain and dyspnea despite increasing loop diuretics

- Third admission this year
- Idiopathic CMP (EF 25%)
- PAF w/ inappropriate ICD shocks
- CRT 6 months prior

Meds: carvedilol, digoxin, torsemide, aldactone, coumadin

- No ACEI/ARB because of worsening renal function

BP 100/80, HR 85, R 22, JVD to jaw, clear lungs, S3, TR, MR, loud P2, palp liver edge, distended abd, no edema

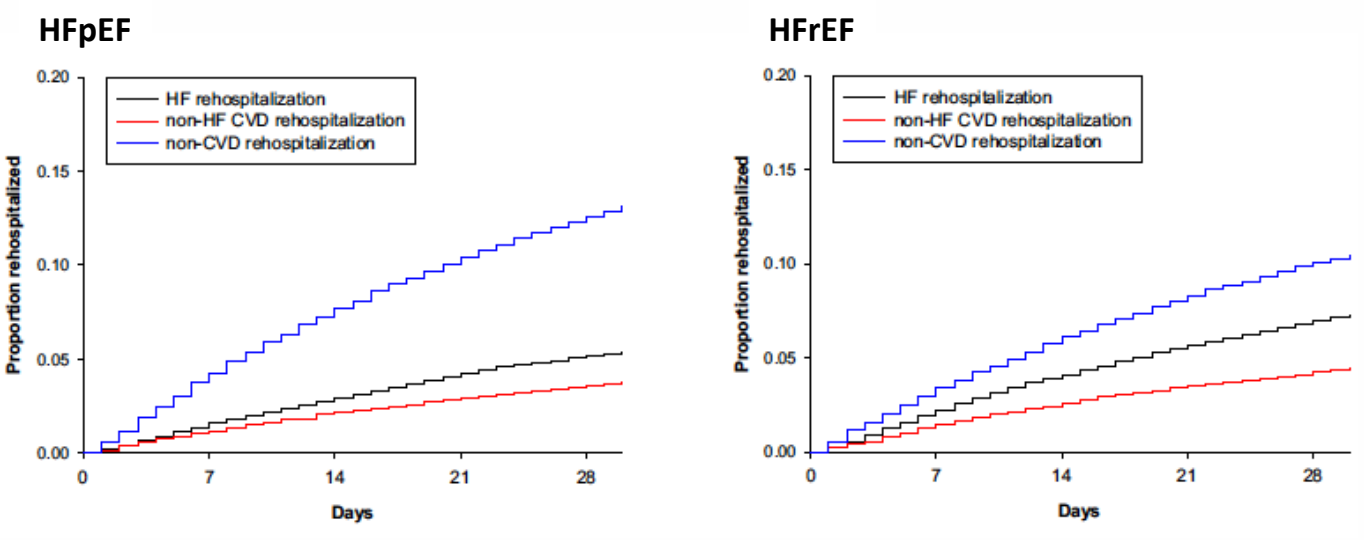
Hct 30%, Na 130, BUN 55, Cr 2.5, EKG afib, QRS 130 msec

Acute Decompensated Heart Failure
The Problem

- 1,000,000 admissions per year (and rising)
  - average LOS 6 days
- High readmission rates
  - 15-30% at 90 days
- Poor prognosis
  - mortality 11% at 30 days, 33% at 1 year
- Costs more than $20 billion annually
  - HF costs equal to MI and cancer combined

‘Heart Failure’ Readmission

A medical issue



Goyal P, et al. JAHA 2018

ADHF Management

No Standard of Care

- Wide variability in clinical practice
- Limited randomized controlled trials
- Guidelines focus on:
  - stable outpatients
  - systolic (“low EF”) HF
- Heterogeneous disorder
- Unclear endpoints to hospitalization
- What is appropriate post-discharge care?

What the Guidelines Say

Table 28. Recommendations for Therapies in the Hospitalized HF Patient

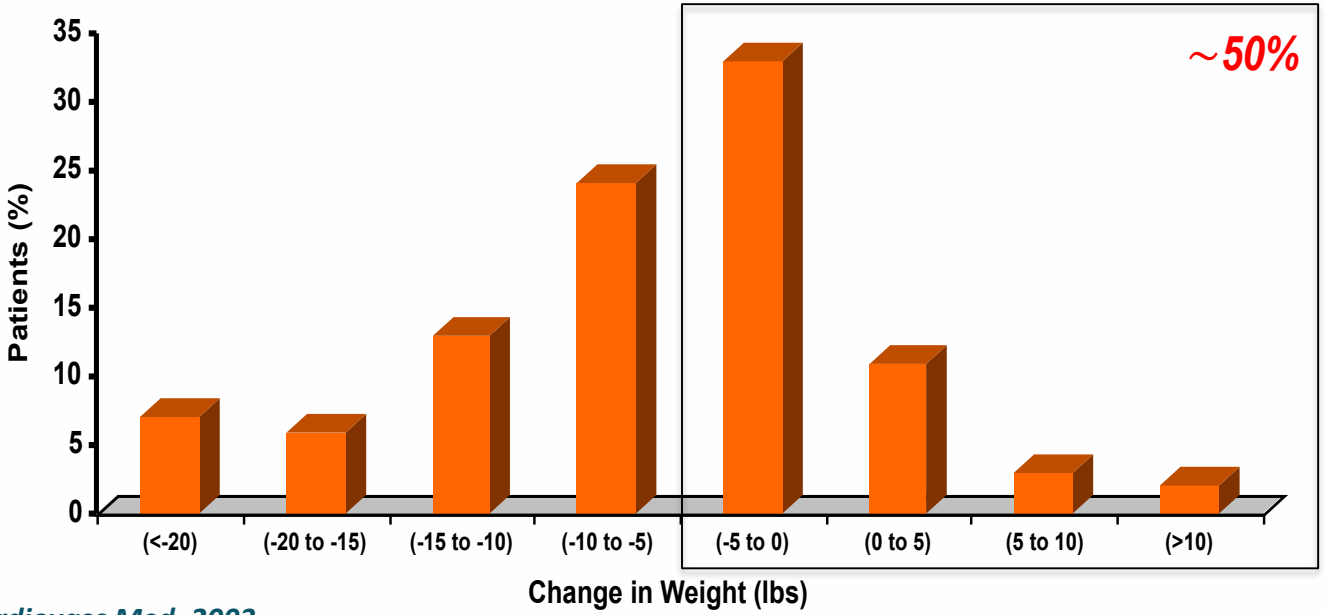
Recommendations	COR	LOE
HF patients hospitalized with fluid overload should be treated with intravenous diuretics	I	B
HF patients receiving loop diuretic therapy should receive an initial parenteral dose greater than or equal to their chronic oral daily dose; then dose should be serially adjusted	I	B
HF/EF patients requiring HF hospitalization on GDMT should continue GDMT except in cases of hemodynamic instability or where contraindicated	I	B
Initiation of beta-blocker therapy at a low dose is recommended after optimization of volume status and discontinuation of intravenous agents	I	B
Thrombosis/thromboembolism prophylaxis is recommended for patients hospitalized with HF	I	B
Serum electrolytes, urea nitrogen, and creatinine should be measured during titration of HF medications, including diuretics	I	C

ADHF Management

The Questions

- *How best to get volume off?*
- Other medications?
- How to prevent readmission?
- Where is this headed?

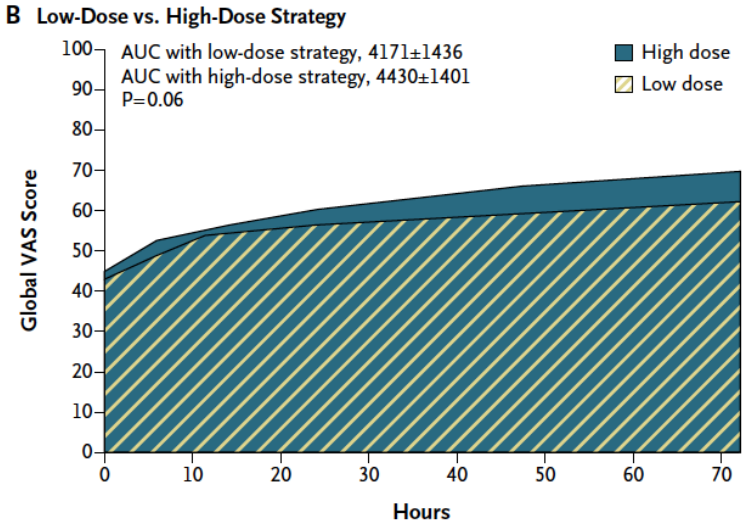
Weight Changes During HF Hospitalizations

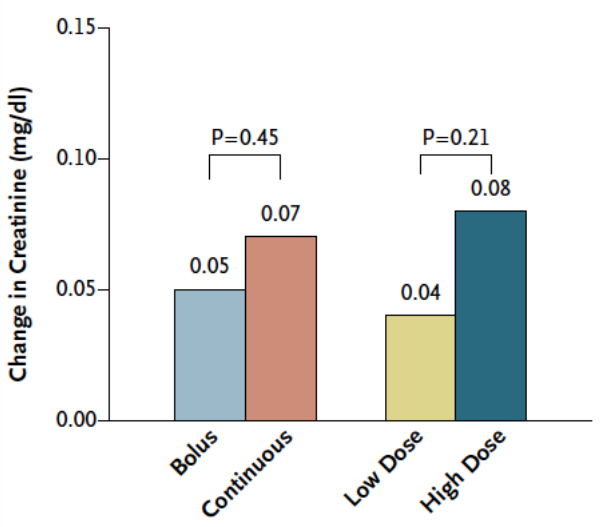


Fonarow GC. Rev Cardiovasc Med. 2003

DOSE Trial

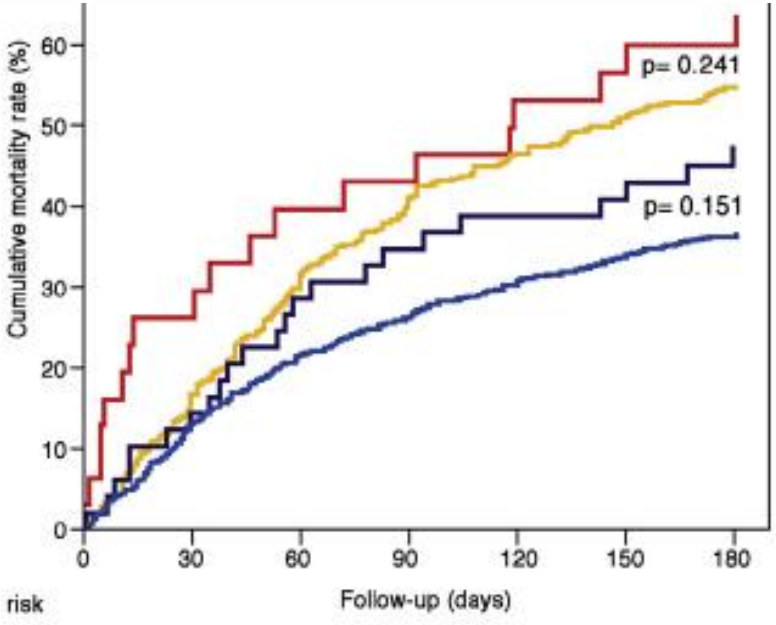
High (2.5x) vs Low Dose; Bolus vs Infusion





Felker GM, et al. NEJM 2011

Decongestion and Renal Function

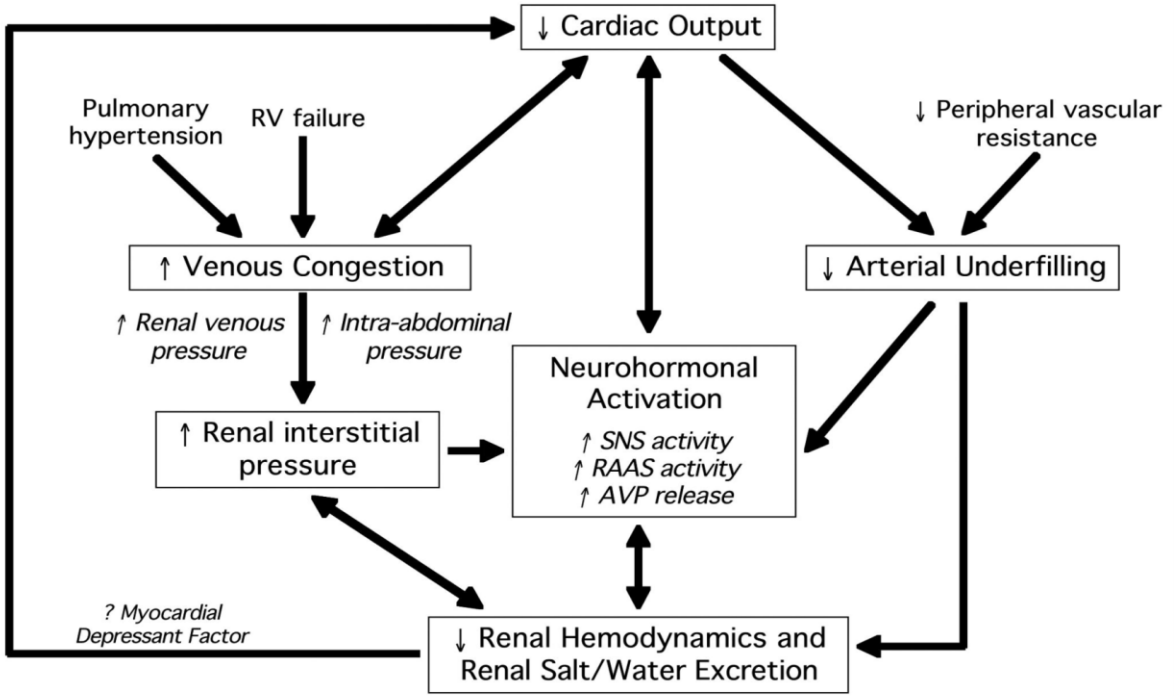


- NT-proBNP reduction ≤30% & sWRF during hospitalization
- NT-proBNP reduction ≤30% & No sWRF during hospitalization
- NT-proBNP reduction >30% & sWRF during hospitalization
- NT-proBNP reduction >30% & No sWRF during hospitalization

Salah K, et al. JACC-HF 2015

Cardiorenal Syndrome

It's complicated…



Tang W, et al Heart 2009

ADHF Management

The Questions

- How best to get volume off?
- *Other medications?*
- How to prevent readmission?
- Where is this headed?

Tested Strategies for ADHF

...that didn't work

- Renal dose dopamine (ROSE)
- Ultrafiltration (CARESS)
- Nesiritide (ROSE)
- High dose spironolactone (ATHENA)
- Furosemide infusions (vs bolus) (DOSE)
- Vaptans (EVEREST)
- Milrinone (OPTIME-HF)

Guideline-directed Medical Therapy

Reduces HF Hospitalizations

Therapy	RR Red Mortality (%)	NNT (36 mo)	RR Red Hosp (%)
ACEI or ARB	17	26	31
Beta Blocker	34	9	41
Aldo antagonist	30	6	35
Hydralazine/Isordil	43	7	33

Yancy C, et al. 2013 ACC AHA HF Guidelines

Beta-blockers in ADHF

Clinical picture	Recommendation
• Mild-Mod ADHF	• Continue BB
• Sev ADHF	• Decrease or stop BB
• Sev ADHF w DB or DP	• Stop BB
• Sev ADHF w milrinone	• Continue low dose
• Pulm edema w tachy/HTN	• Start BB
• ADHF w ⇧BB	• Decrease by 50%
• New onset HF	• Initiate prior to d/c

Stay Tuned…

- Sacubritril/Valsartan (LIFE)
- Torsemide (TRANSFORM-HF)
- Cardioxyl
- Omecantiv (GALACTIC-HF)

ADHF Management

The Questions

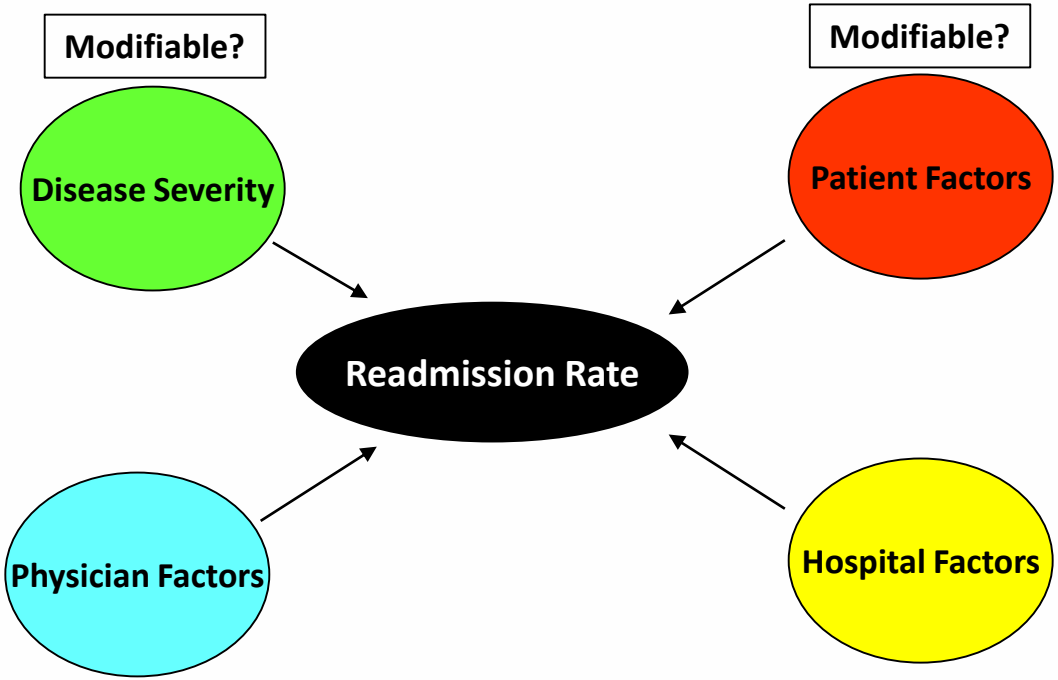
- How best to get volume off?
- Other medications?
- *How to prevent readmission?*
- Where is this headed?

Table 29. Recommendations for Hospital Discharge

Recommendations or Indications	COR	LOE
Performance improvement systems in the hospital and early postdischarge outpatient setting to identify HF for GDMT	I	B
Before hospital discharge, at the first postdischarge visit, and in subsequent follow-up visits, the following should be addressed: a. initiation of GDMT if not done or contraindicated; b. causes of HF, barriers to care, and limitations in support; c. assessment of volume status and blood pressure with adjustment of HF therapy; d. optimization of chronic oral HF therapy; e. renal function and electrolytes; f. management of comorbid conditions; g. HF education, self-care, emergency plans, and adherence; and h. palliative or hospice care	I	B
Multidisciplinary HF disease-management programs for patients at high risk for hospital readmission are recommended	I	B
A follow-up visit within 7 to 14 d and/or a telephone follow-up within 3 d of hospital discharge are reasonable	IIa	B
Use of clinical risk-prediction tools and/or biomarkers to identify higher-risk patients are reasonable	IIa	B

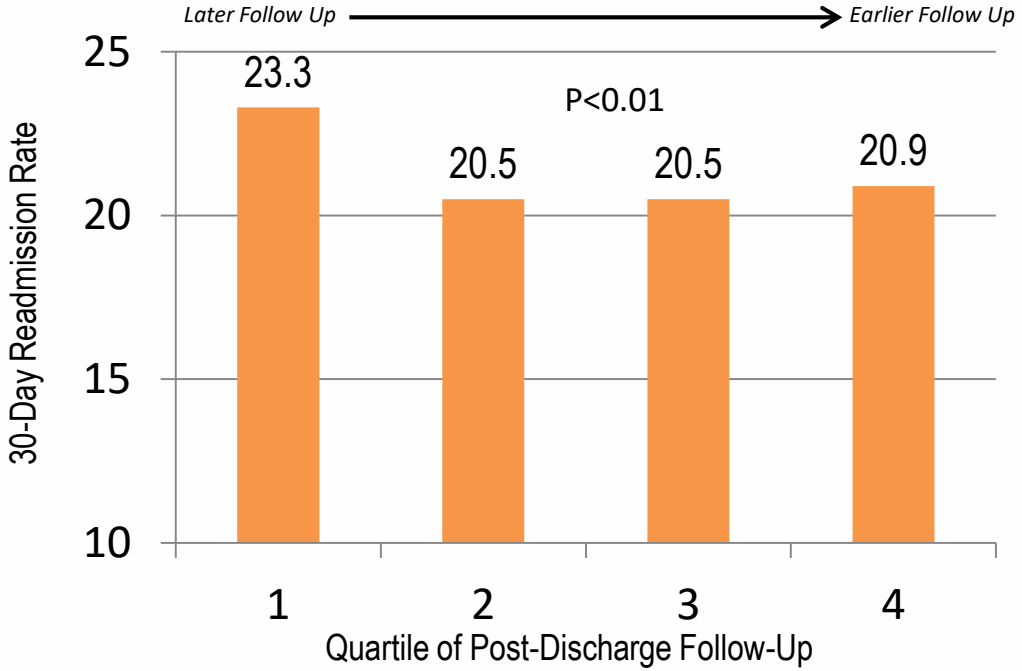
HF Readmissions

A Multifactorial Issue



Courtesy of Anju Nohria

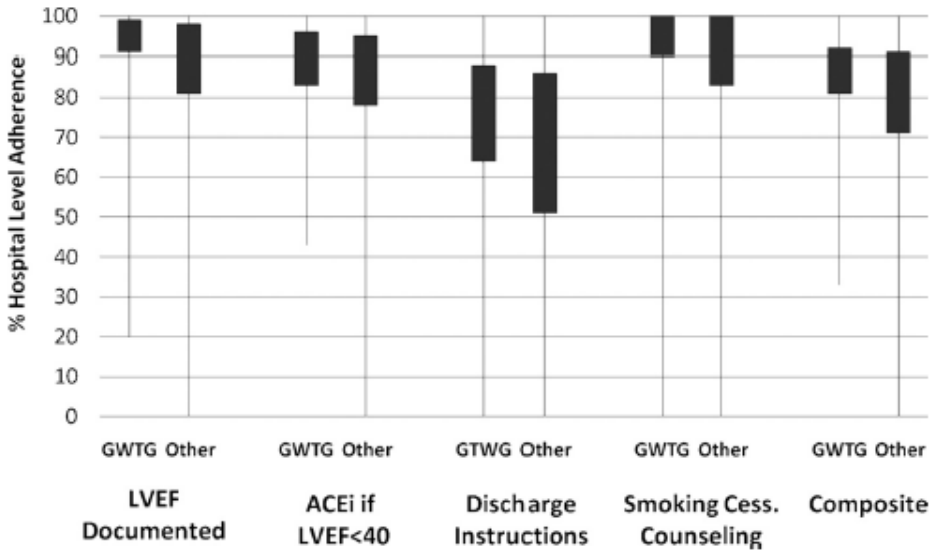
Early Follow-up Is Associated with Decreased HF Readmission



N=225 Hospitals
OPTIMIZE/GWTG Registries

Hernandez, et al. JAMA 2010

Do Processes of Care Decrease HF Readmission?



Outcome	GWTG-Heart Failure Participation		
	Yes	No	*P* Value
30-d All-cause readmission			
Mean±SD	24.2±2.2	24.6±2.0	0.0009
Median (IQR)	24.0 (22.8–25.6)	24.4 (23.2–25.8)	
30-d All-cause mortality			
Mean±SD	11.1±1.5	11.1±1.4	0.87
Median (IQR)	11.0 (10.1–11.9)	11.0 (10.2–11.9)	

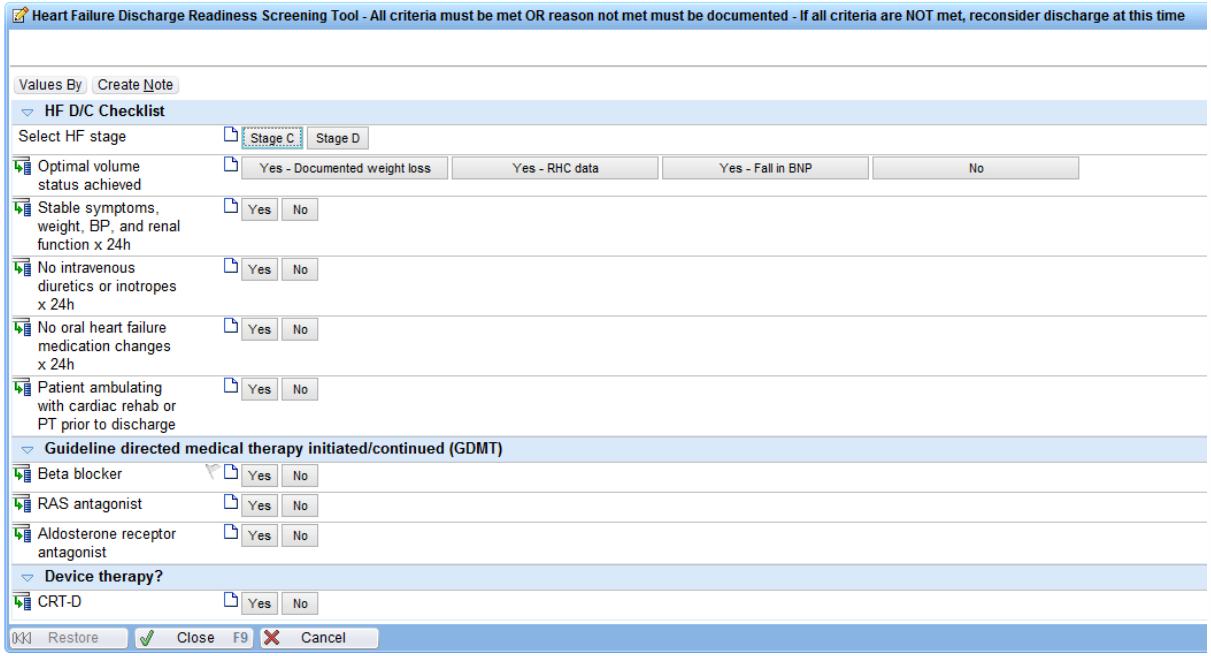
Heidenreich et al. CircCVQO 2012

Preventing HF Readmission

Strategies that work

- Guideline Directed Medical Therapy
- Comprehensive Heart Failure Programs
- Early Follow-up

Univ of Utah Discharge Checklist



Heart Failure Discharge Readiness Screening Tool - All criteria must be met OR reason not met must be documented - If all criteria are NOT met, reconsider discharge at this time

Values By | Create Note

HF D/C Checklist

Select HF stage	Stage C	Stage D		
Optimal volume status achieved	Yes - Documented weight loss	Yes - RHC data	Yes - Fall in BNP	No
Stable symptoms, weight, BP, and renal function x 24h	Yes	No		
No intravenous diuretics or inotropes x 24h	Yes	No		
No oral heart failure medication changes x 24h	Yes	No		
Patient ambulating with cardiac rehab or PT prior to discharge	Yes	No		

Guideline directed medical therapy initiated/continued (GDMT)

Beta blocker	Yes	No
RAS antagonist	Yes	No
Aldosterone receptor antagonist	Yes	No

Device therapy?

CRT-D	Yes	No

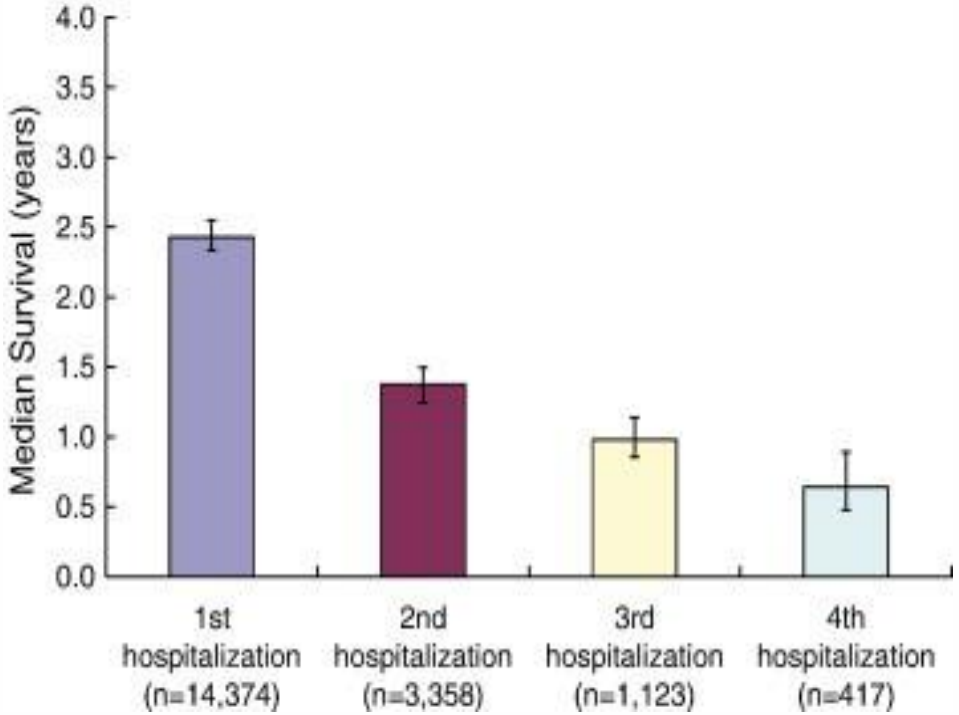
Restore | Close F9 | Cancel

ADHF Management

The Questions

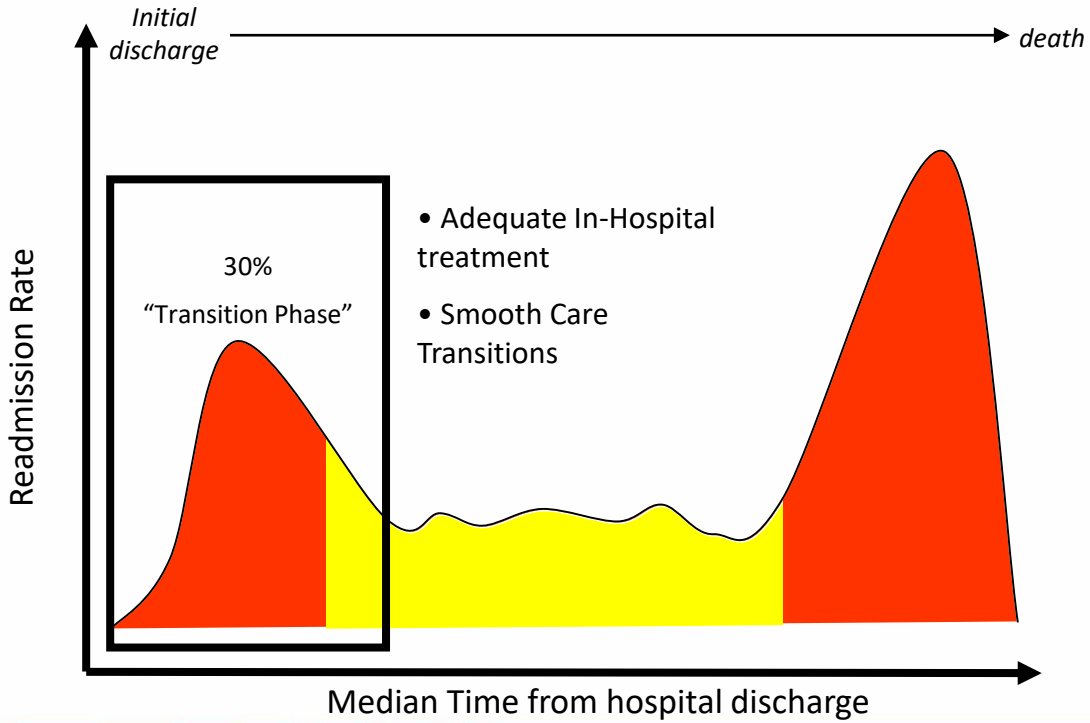
- How best to get volume off?
- Other medications?
- How to prevent readmission?
- *Where is this headed?*

HF hospitalization is ominous



Setoguchi S, et al. Am Heart J 2007

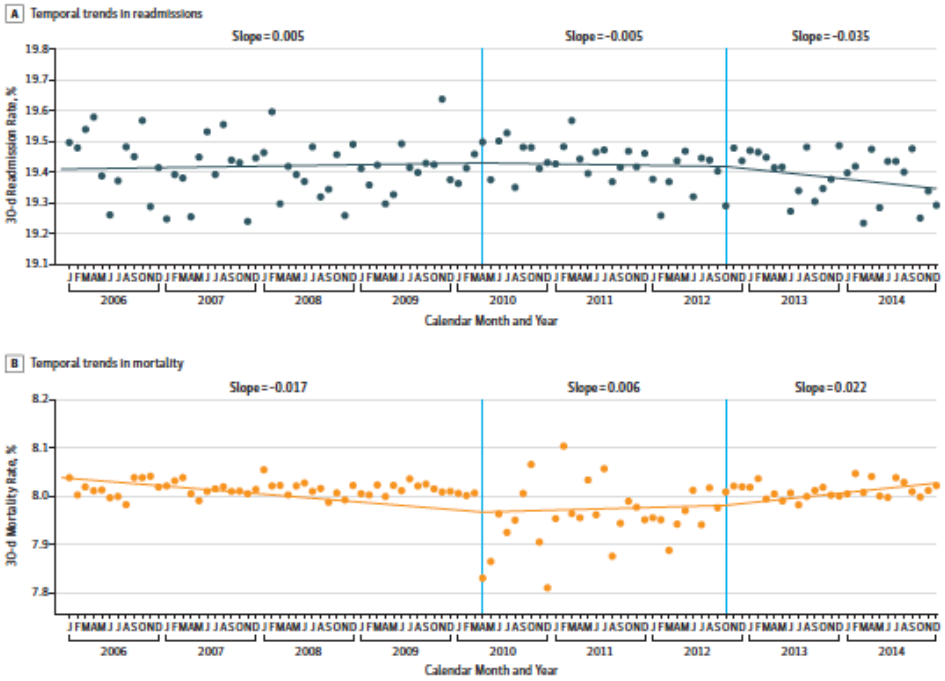
When Do HF Patients Get Readmitted?



Desai AS, Stevenson LW. CircHF 2012

CMS penalties for HF readmission

unintended consequences?



Trends in Readmissions

Trends in Mortality

- *Gupta A, et al. JAMA Cardiology 2018*

ADHF Management

The Questions

- How best to get volume off?
  - Use adequate dosing
  - Changes in Cr are often transient
- Other medications?
  - Use GDMT
- How to prevent readmission?
  - Effective inpt mgt, early f/u, Disease Mgt Programs
- Where is this headed?
  - Come to my next talk ☺