



ACC Middle East Conference 2018

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جمعية القلب السعودية
Saudi Heart Association

WHAT IS ADVANCED HEART FAILURE?

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



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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



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The Heart Failure Consult

- Is it Heart Failure (e.g. HFpEF)?
- Cause of Heart Failure (e.g. familial)
- Hemodynamic status (e.g. wet/warm)
- Medical, surgical, device therapy optimized (e.g. doses)
- Big picture (e.g. advanced heart failure)

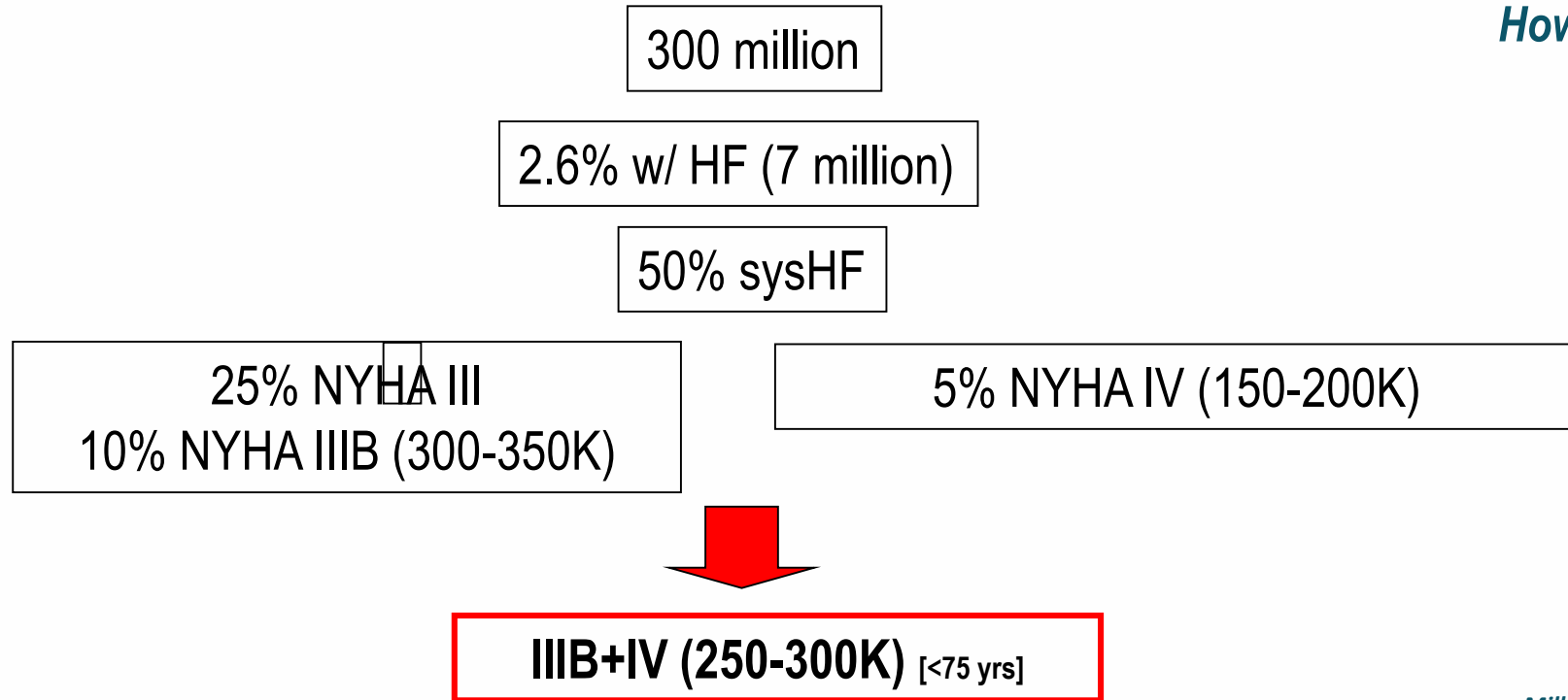


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Advanced Heart Failure

How Many?



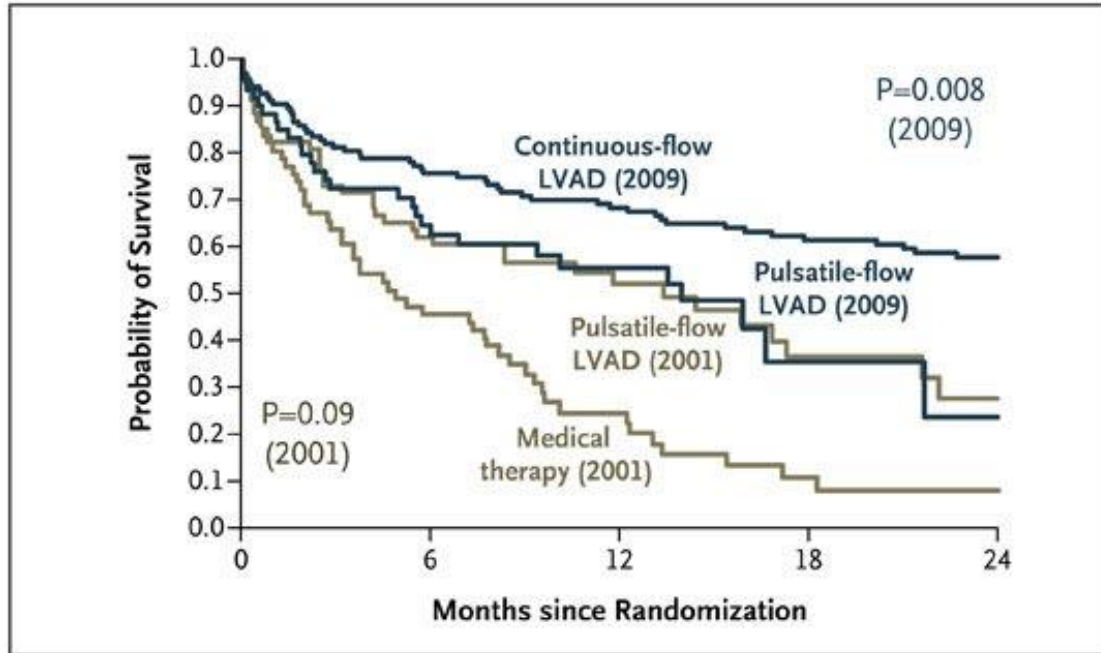
Miller LW. Circulation 2011



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Advanced Heart Failure



Fang JC NEJM 2009

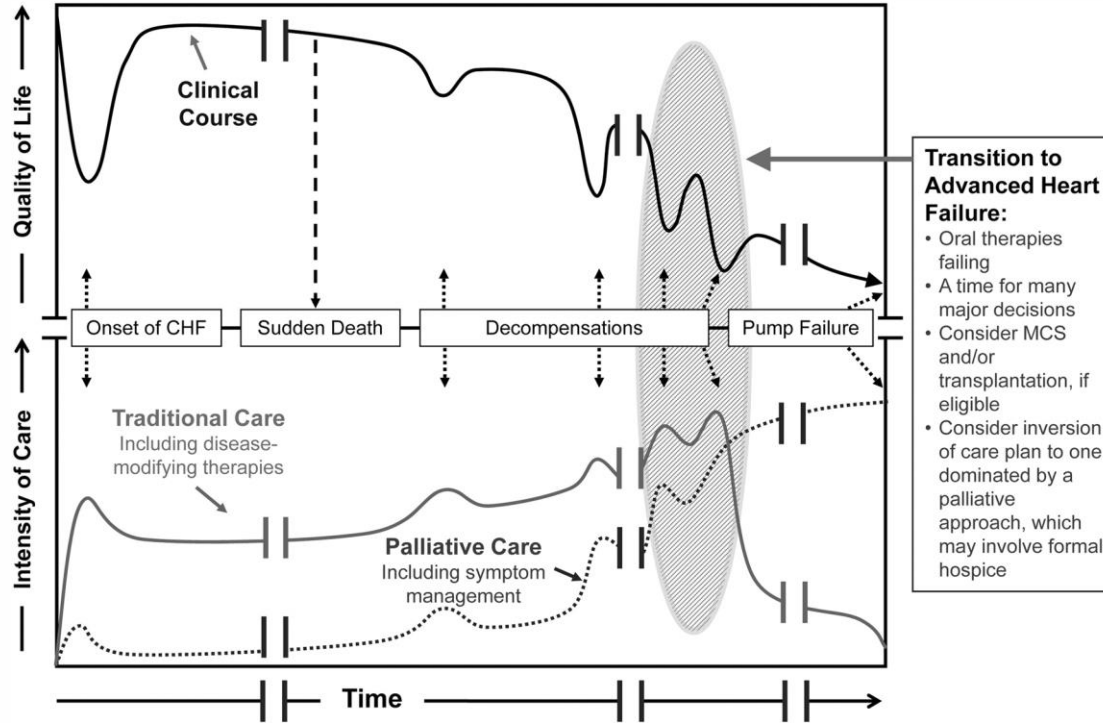


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Chronic Heart Failure

The Big Picture



Allen LA et al. Circulation 2012



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So What is Advanced Heart Failure?

Box 1. Heart Failure Society of America Definition of Advanced (Stage D) Heart Failure

The presence of *progressive and/or persistent* severe signs and symptoms of heart failure despite optimized medical, surgical, and device therapy. It is generally accompanied by frequent hospitalization, severely limited exertional tolerance, and poor quality of life and is associated with high morbidity and mortality. Importantly, the progressive decline should be primarily driven by the heart failure syndrome.

Fang JC, et al. J Card Fail 2015



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“Advanced Heart Failure”

LVAD package insert

- NYHA IIIB or IV symptoms for > 45 of 60 days
- LVEF 25% or less
- Life expectancy < 2 years
- Symptoms failed to respond despite optimal medical management for ≥ 60 of past 90 days
- Peak VO₂ < 14 ml/kg/min (or < 50% predicted) OR continuous IV inotropic therapy

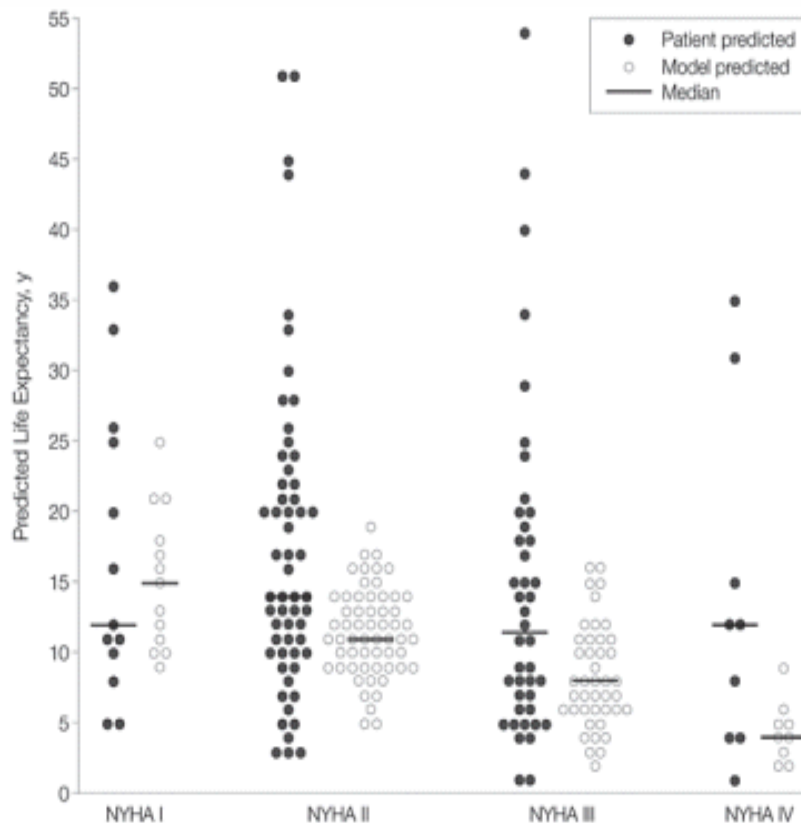


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Predicting HF Survival

The patient's perspective



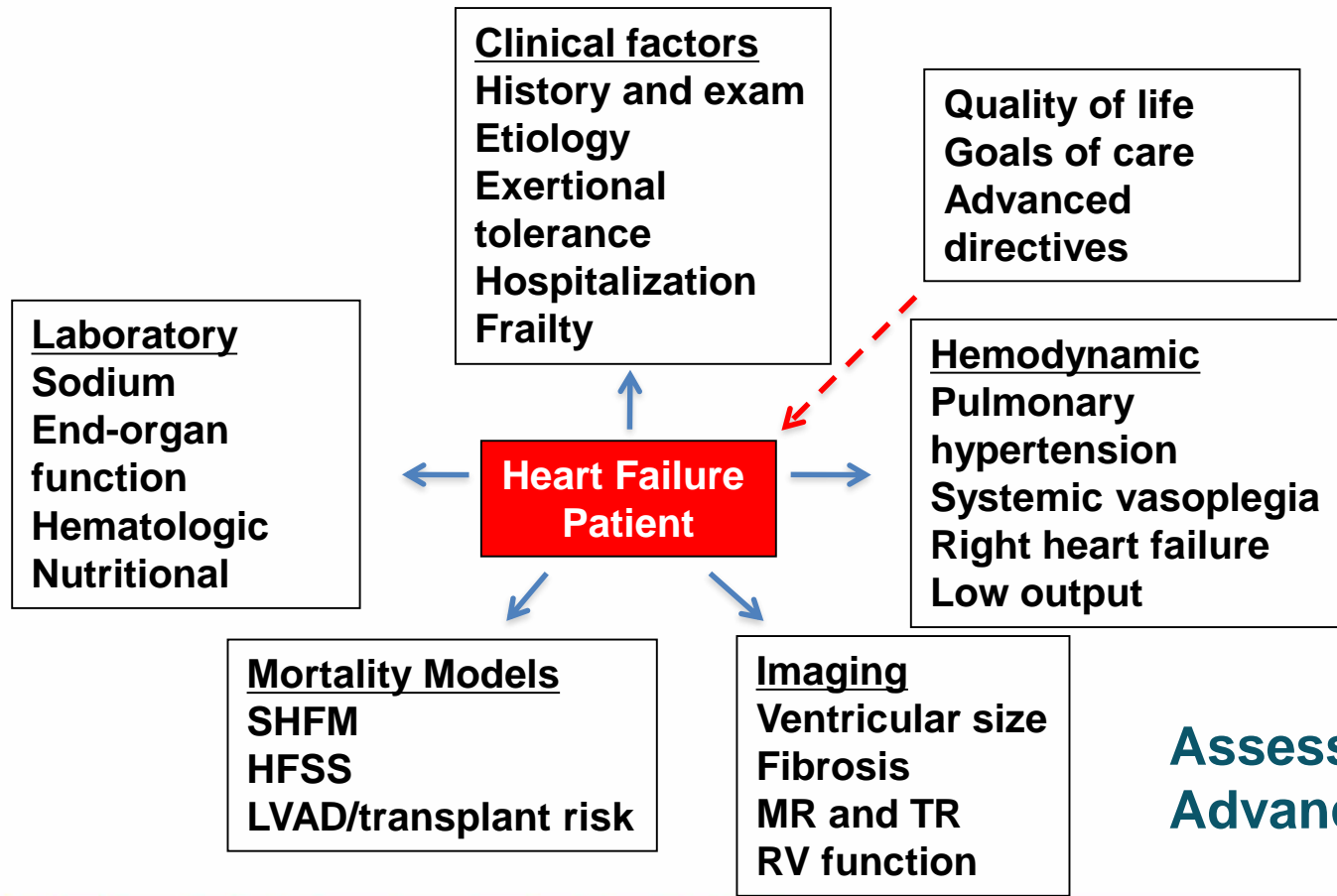
Allen LA, et al. JAMA 2008



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Assessment Domains in Advanced Heart Failure



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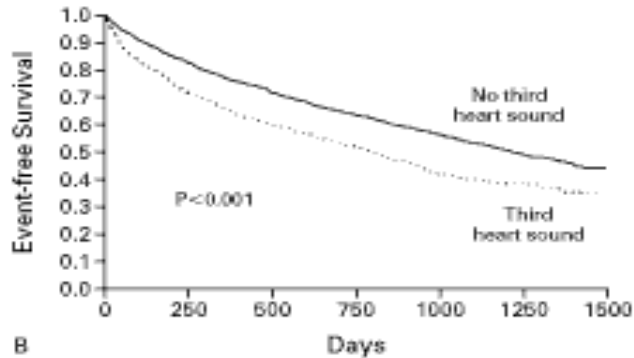
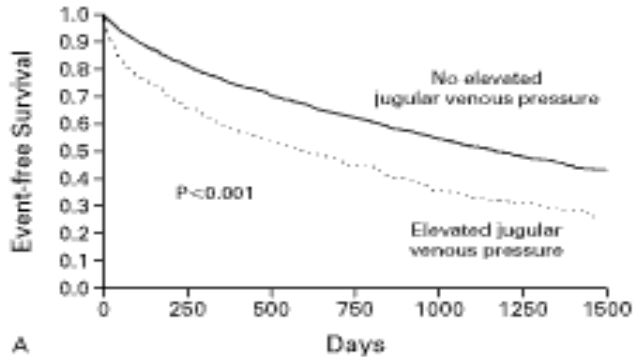


The Office Physical Exam Still Matters

SOLVD Treatment Trial

- 2569 pts w/ HFrEF
- Enalapril vs placebo
- Baseline examinations
- Death or Hospitalization for CHF
- RR 1.30 (1.11-1.53, $p < 0.005$)
- Adjusted for EF, NYHA, BP, HR, Na, Cr, Age

Drazner MH, NEJM 2001

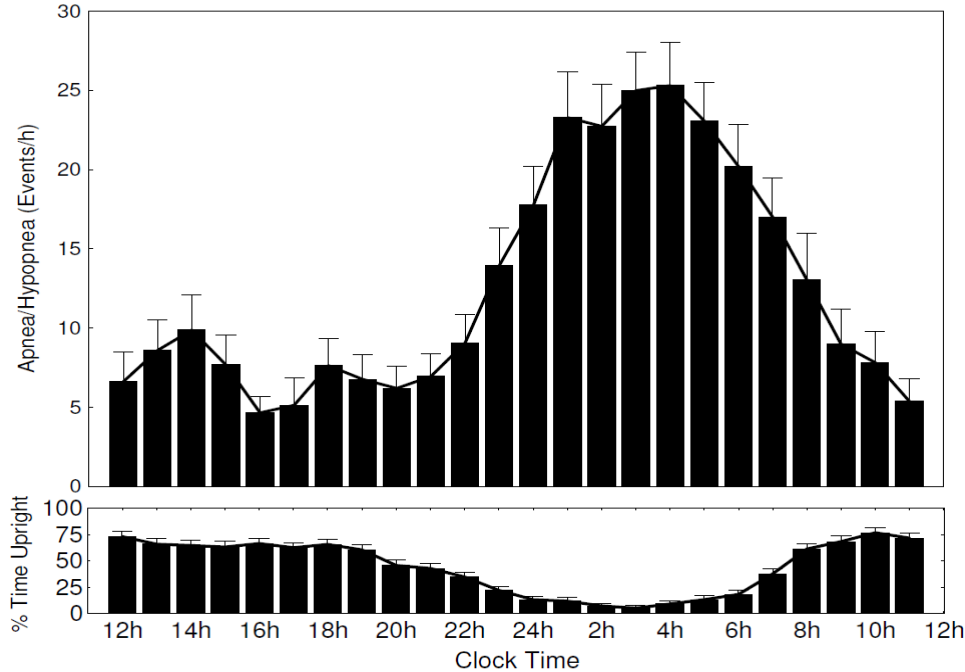


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Daytime CSR

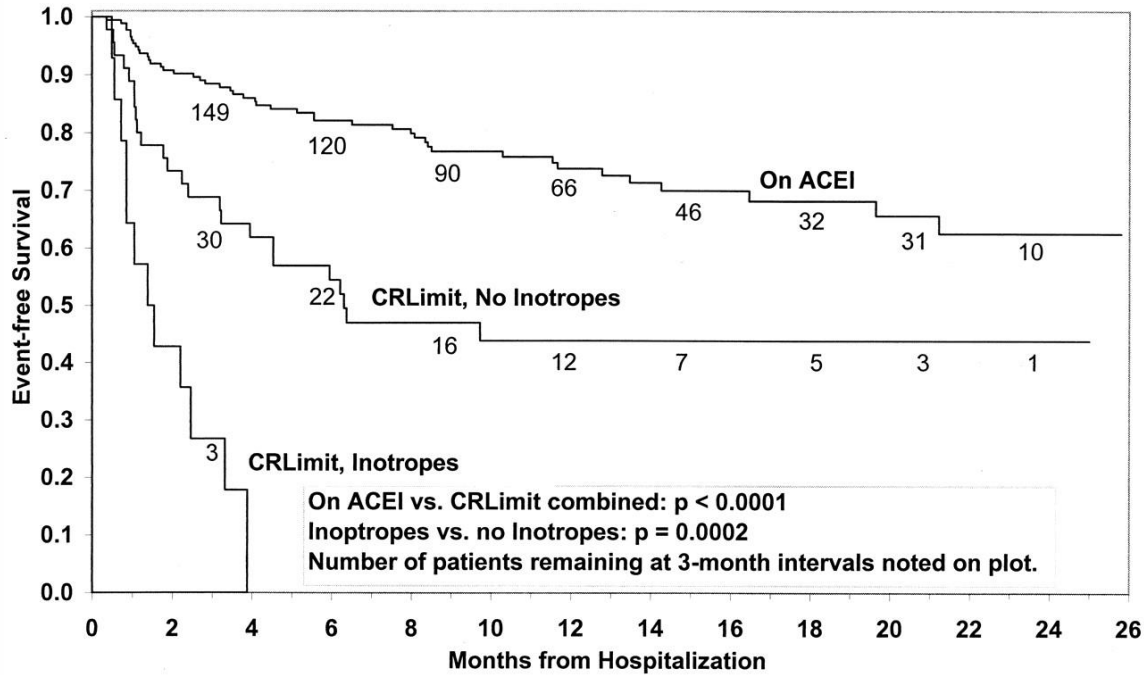
And portends worse prognosis



- 4-fold increase in mortality
- 40% 2-yr mortality

ACE Inhibitor Intolerance

Marker of Severe Disease



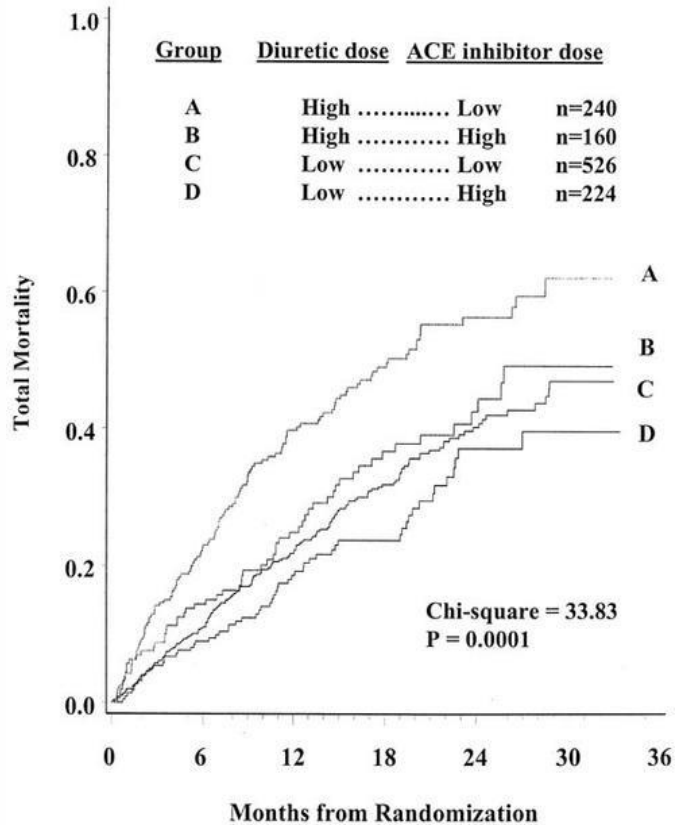
Kittleson, M. et al. JACC 2003



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High Diuretics Doses Are Worrisome



- Diuretics (high dose)
 - furosemide >80 mg/d
 - bumetidine >2 mg/d
- ACEi (high dose)
 - captopril >75 mg/d
 - enalapril >10 mg/d
 - lisinopril >10 mg/d

Metolazone HR 1.37, $p=0.16$

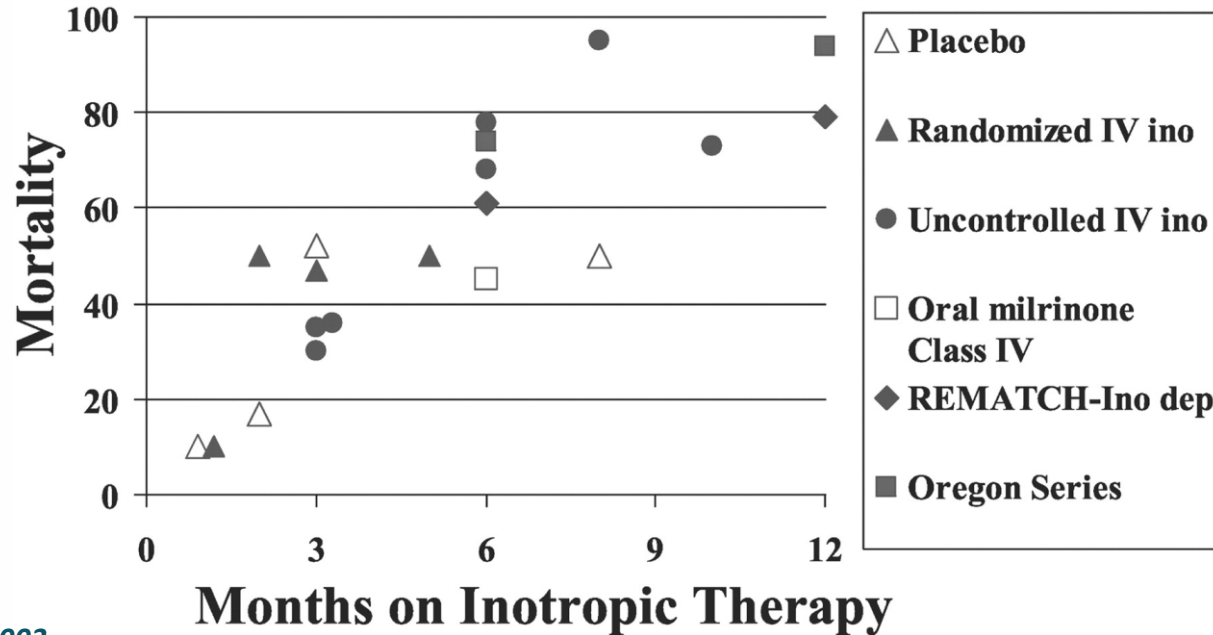
Neuberg, et al. AHJ 2002



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Inotropes are 'Terminal' Therapy



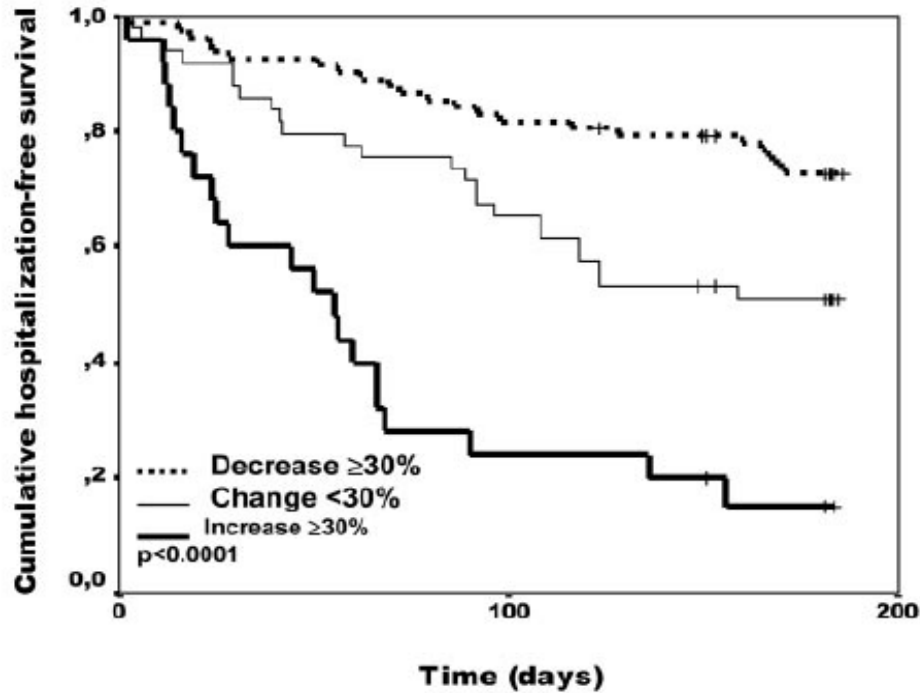
Stevenson LW Circ 2003



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When NP don't fall...



Bettencourt P, et al. *Circ* 2004

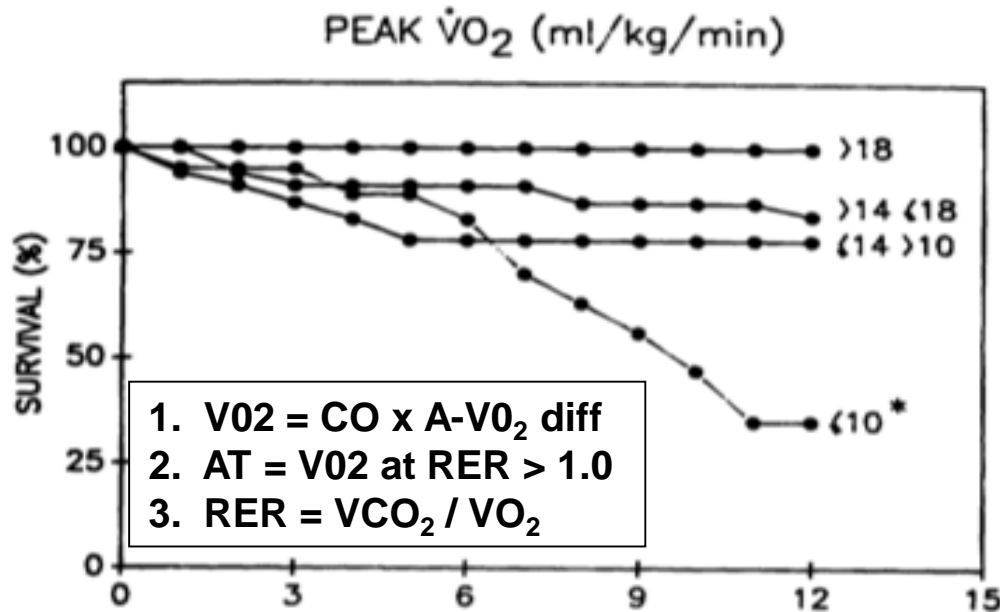


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Assessing Prognosis in Heart Failure

Peak oxygen consumption



*Mancini, et al,
Circulation 1991*

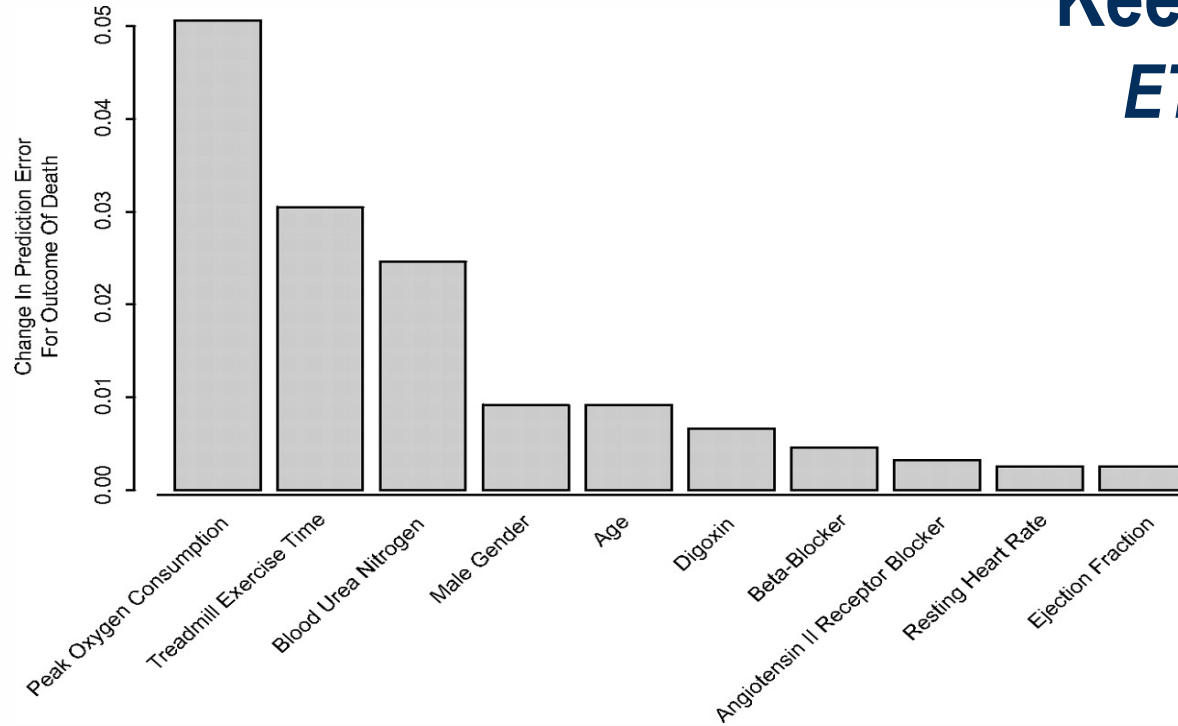


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Keeping It Simple

ETT exercise time



Hsich E et al.
Circulation 2009



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LVADs

Targeting more than survival

ADULT PROFILES	Current CMS - DT Functional Indication	IV INO*	Official Shorthand	NYHA CLASS Assumed	Modifier option
INTERMACS LEVEL 1	Met	X	“Crash and burn”	IV	TCS A
INTERMACS LEVEL 2	Met	X	“Sliding fast” on inotropes	IV	TCS A
INTERMACS LEVEL 3	Met	X	“Stable” continuous inotrope dependent * Can be in hospital or at home	IV	TCA if hosp FF if home A
INTERMACS LEVEL 4	+ Peak $VO_2 \leq 12$		<u>Resting symptoms</u> on oral therapy at home	AMB IV	FF A
INTERMACS LEVEL 5	+ Peak $VO_2 \leq 12$		“Housebound”, Comfortable at rest, symptoms with minimum activity ADL	AMB IV	FF A
INTERMACS LEVEL 6			“Walking wounded”-ADL possible but meaningful activity limited	IIIB	FF A
INTERMACS LEVEL 7			Advanced Class III	III	A only

* Intravenous inotropic therapy only approved for refractory Class IV symptoms

REMATCH trial

ADVANCE trial

ROADMAP study

Stevenson and Hunt, Circulation 2012



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Predicting Outcomes in Heart Failure

	<u>Key covariates</u>	<u>Outcome</u>
<u>Ambulatory</u>		
HFSS	V02, EF, Na, BP, CAD, QRS	All-cause mortality
Seattle HFM	NYHA, CAD, diuretics, EF, BP, Hgb, lymphs, UA, chol	All-cause mortality, transplant, VAD
<u>Hospitalized</u>		
EVEREST	Age, DM, CVA, arrhythmia, BB, BUN, Na, BNP, QoL	Mortality + QoL 6 mos after d/c
EFFECT	Age, BP, RR, Na, hgb, BUN, CVA, dementia, COPD, cirrhosis, cancer	30 d and 1 yr mortality
ADHERE	BUN, BP, Cr	In-hospital mortality
ESCAPE	BNP, CPR/intub, BUN, Na, age>70, diuretic, (-)BB, 6MWT	6 mo mortality

Allen LA,
Circ 2012



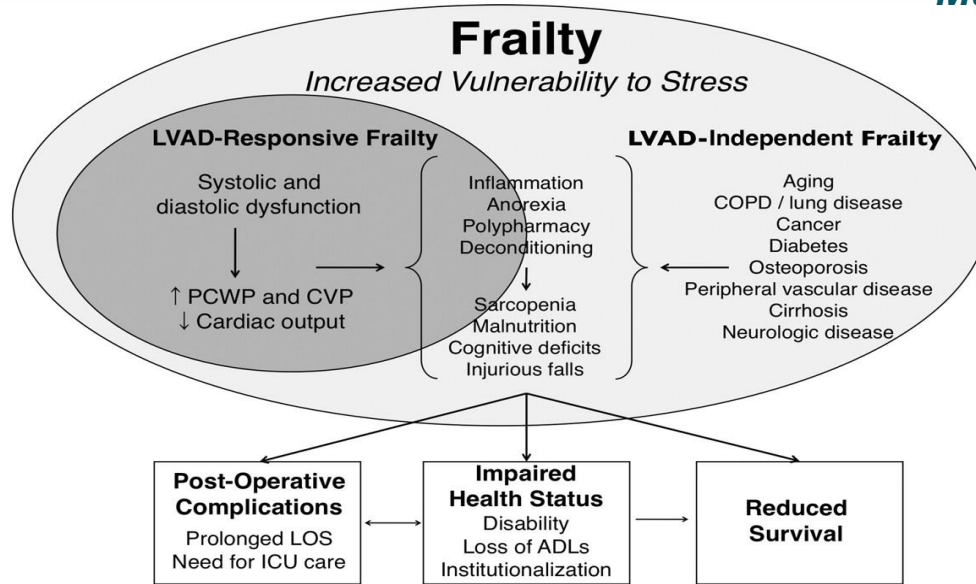
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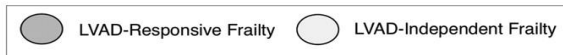
Frailty

Multimorbidity, Aging, and Disability

A



B



Flint KM et al. Circ HF 2012



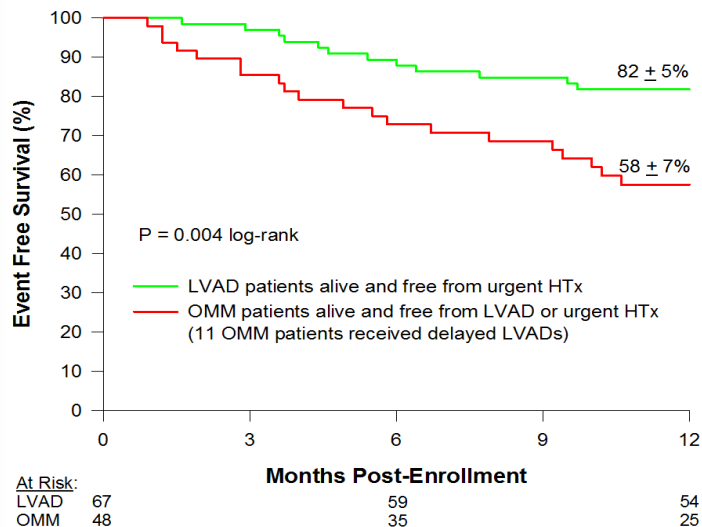
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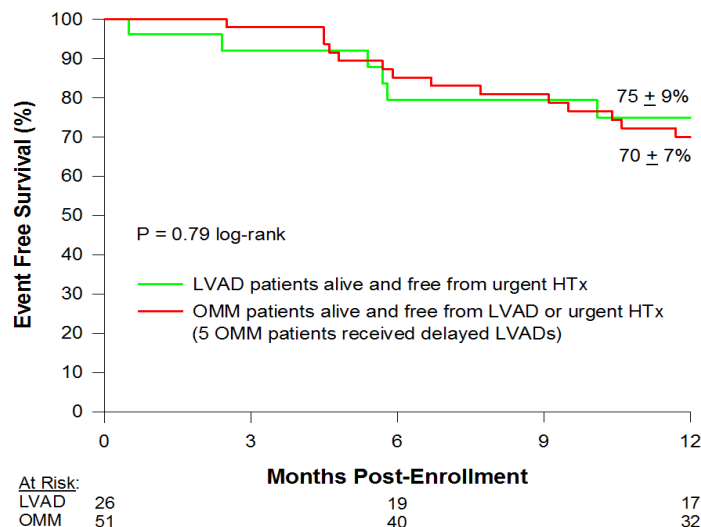
Impact of QoL on LVAD outcomes

Alive on original therapy by baseline VAS

A) Patients with Baseline EQ-5D VAS < 55



B) Patients with Baseline EQ-5D VAS ≥ 55

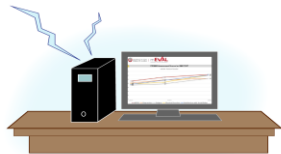


Stehlik et al; Circulation HF 2017

Novel Approaches to Health Status Assessment



Patient completes
PRO instrument



PRO results wirelessly uploaded
to server, scored, graphed
and linked to patient's EHR



Provider reviews
PRO results



PRO results
used in
decision-making

Instrument-

Kansas City Cardiomyopathy Questionnaire-12 (KCCQ-12)

NIH Patient Reported Outcome Measurement Information System Computer Adaptive Testing (PROMIS CAT):

- **Fatigue** – bank v1.0
- **Depression** – bank v.1.0
- **Physical Function** – bank v1.2.
- **Satisfaction with Social Roles and Activities** – bank v.2.0.

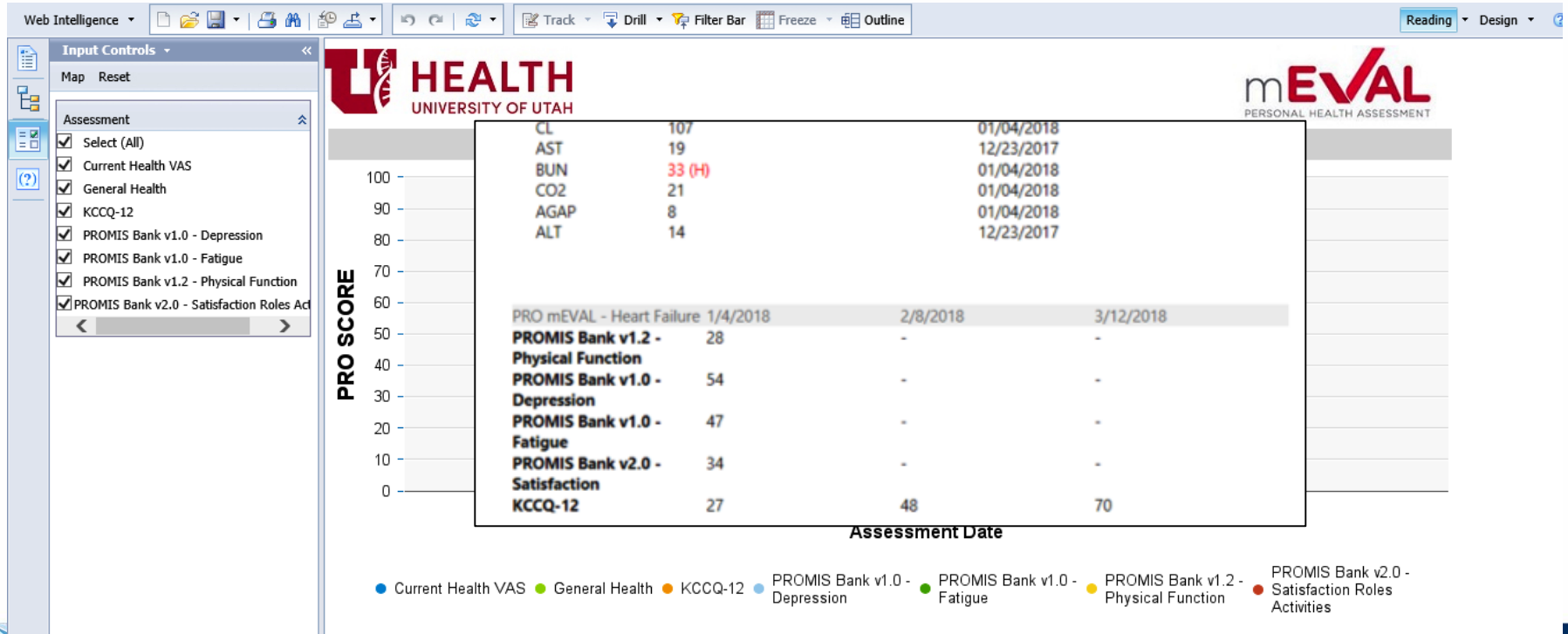


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**American
Heart
Association**
Supports research
and heart health

Integrated into our daily practice



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Acute Decompensated HF

When to Worry

- Recurrent hospitalizations
 - Persistence of S3 and JVD on exam
 - Inability to tolerate HF medications
 - Cardiorenal syndrome
 - CRT nonresponders
-
- Poor or worsening functional capacity
 - RV dysfunction
 - Persistently high BNP levels
 - Recurrent VT and/or ICD shocks
 - Need for inotropes



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