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Get With The Guidelines HF® A review- 2017 Focused Update of the ACC/AHA/HFSA Heart Failure Guidelines

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Professor of Medicine,
Professor, Medical Social Science
Chief, Cardiology
Associate Director, Bluhm CV Institute
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Northwestern University, FSM
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No relevant disclosures

Our Presenter

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DISCLOSURES

- **Consultant/speaker/honoraria: none**

- **Editor duties: JAMA Cardiology*, Deputy Editor;* ; Journal of the American College of Cardiology- *senior associate editor (HF);* American Journal of Cardiology, American Heart Journal, Circulation; Circulation-Heart Failure- *editorial boards***
- **Guideline writing committees: Chair, ACC/AHA, chronic HF; member, atrial fibrillation; hypertrophic cardiomyopathy; syncope guideline committees. Chair, Performance Measures, Sudden Cardiac Death; Chair, ACC HF Consensus Pathways**

- **Federal appointments: FDA: Immediate Past Chair, Cardiovascular Device Panel; ad hoc consultant; NIH – Scientific Management and Review Board; AHRQ- adhoc consultant; NHLBI- consultant; PCORI- former methodology committee member; IOM- writing group member**

- **Volunteer Appointments: American Heart Association- President, American Heart Association, 2009-2010; American College of Cardiology, Founder- CREDO**

2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure

Developed in Collaboration With the American Academy of Family Physicians, American College of Chest Physicians, and International Society for Heart and Lung Transplantation

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A review- 2017 Focused Update of the ACC/AHA/HFSA Heart Failure Guidelines

- Incorporating new clinical practice guidelines
  - What's new?
  - How will practice be changed?
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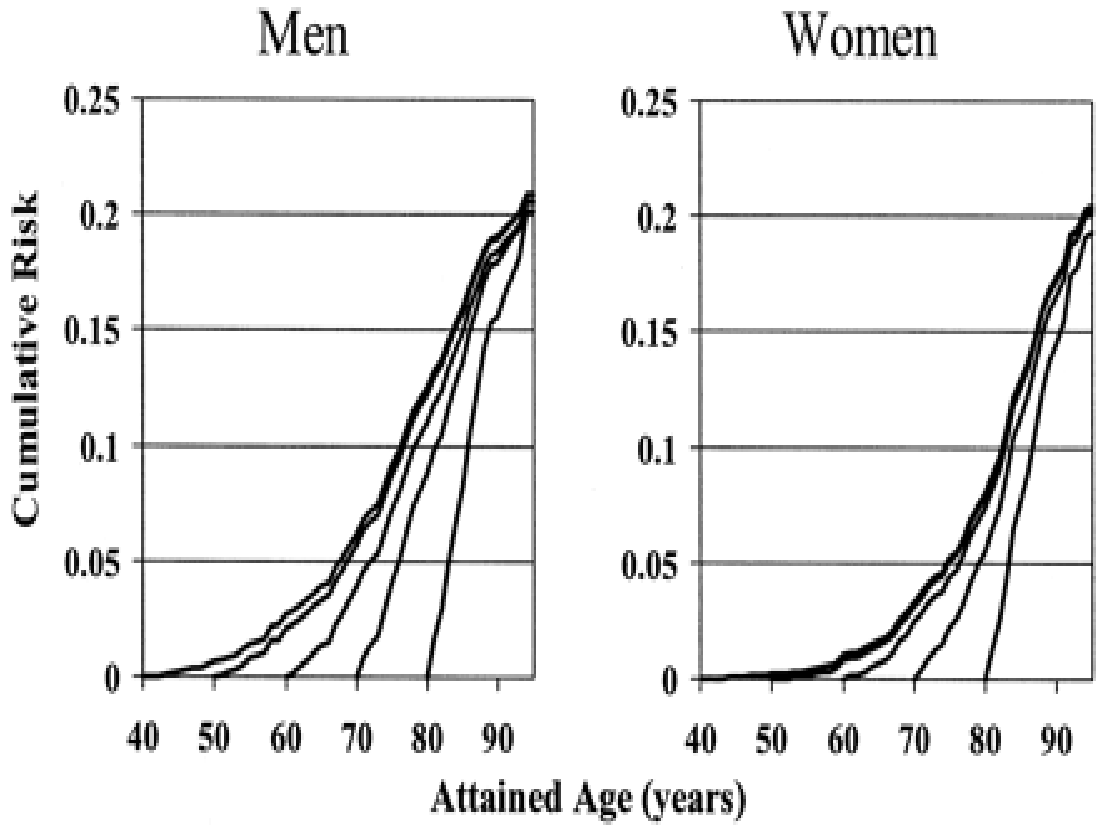
  - What is this?
  - What's the natural history?
  - Can it be manipulated?
- Heart Failure with preserved Ejection Fraction
- Important Co-Morbidities in Heart Failure

Comparison of short-term vs lifetime cumulative risks of CHF for men and women at selected index ages



ONE IN FIVE INDIVIDUALS WILL DEVELOP HF

2017
Benjamin E, et al. Circulation

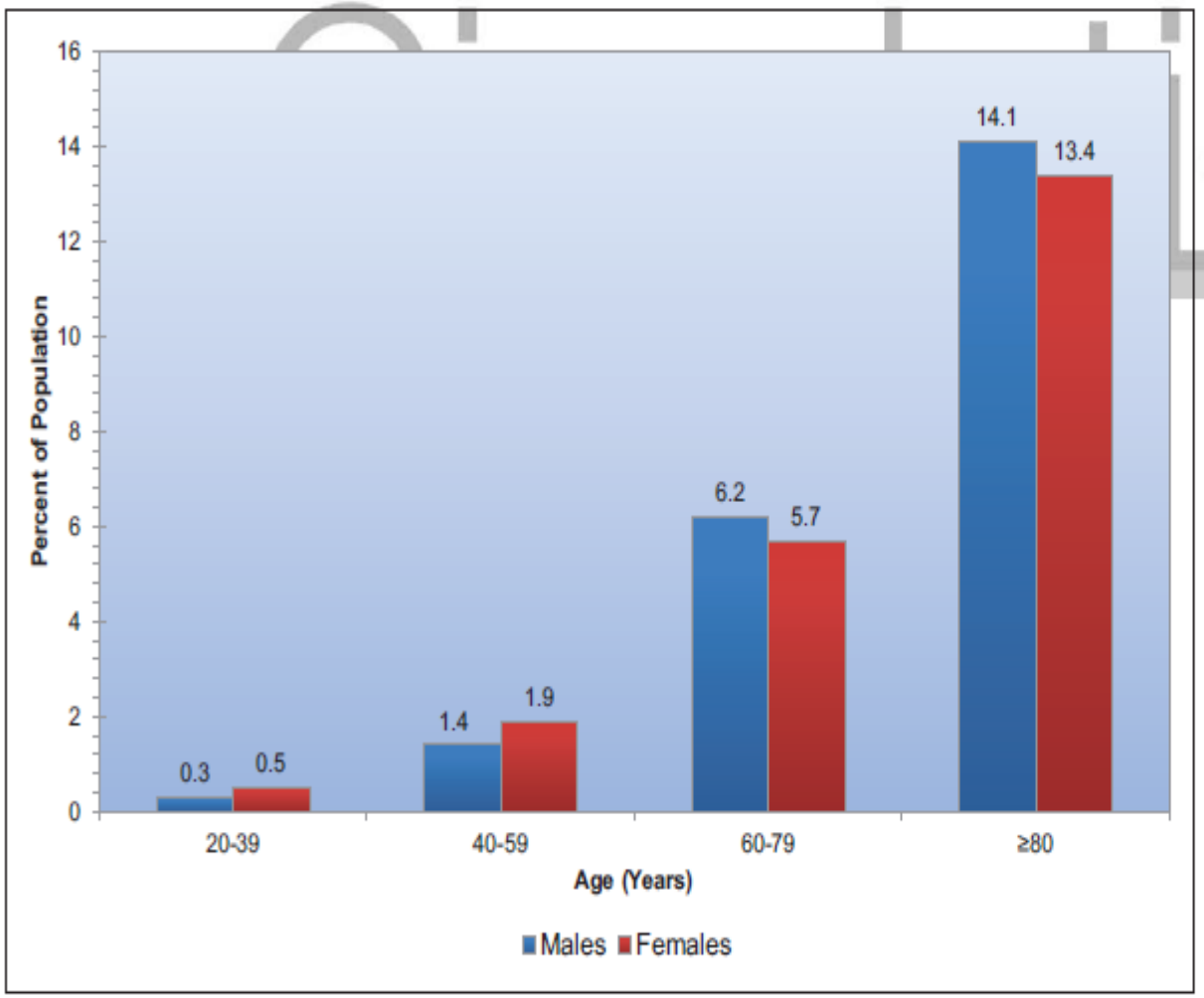


Chart 21-2. Prevalence of heart failure for adults ≥20 years by sex and age (NHANES: 2011–2014).

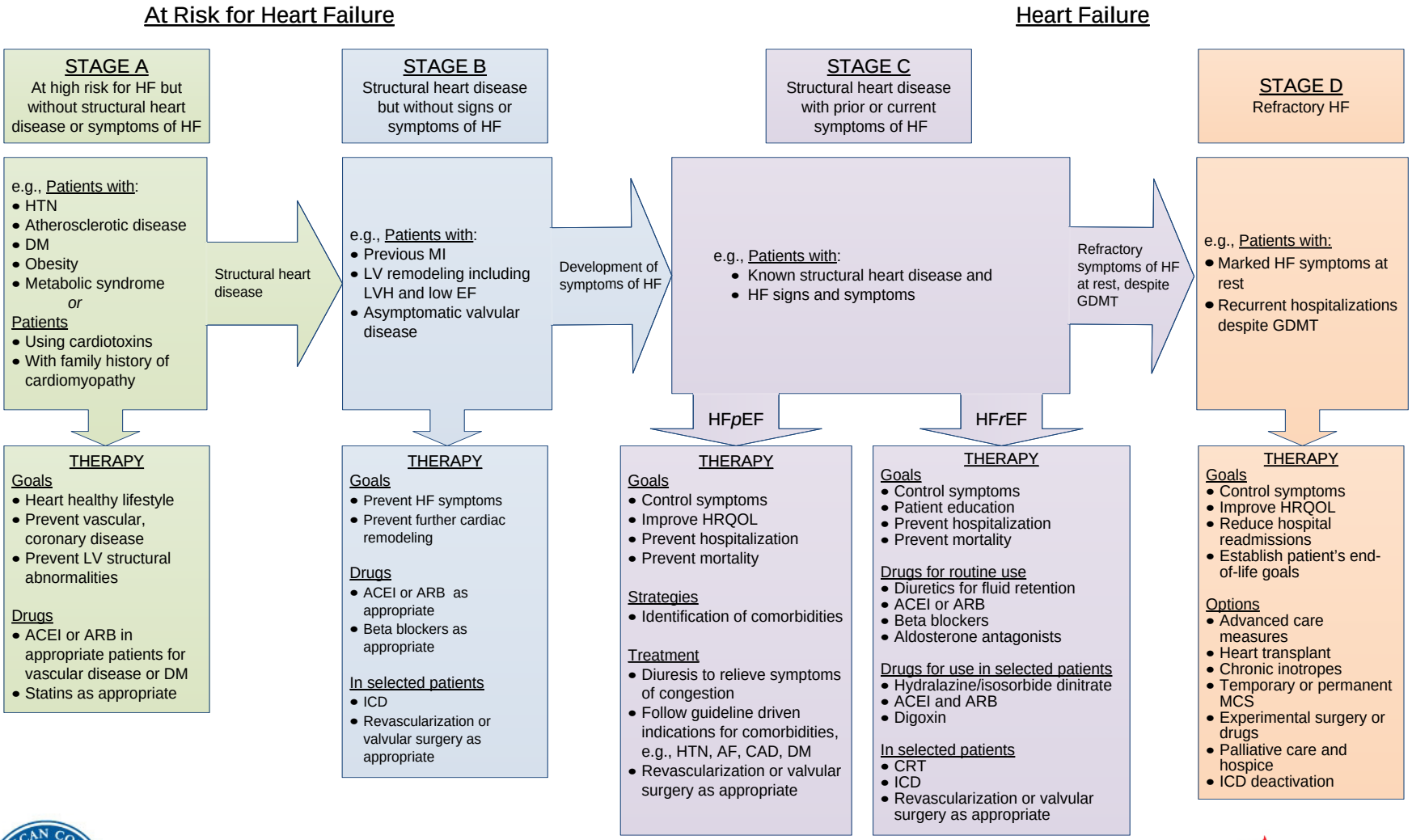
NHANES indicates National Health and Nutrition Examination Survey. Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

AHA Heart and Stroke Facts: 2017

Benjamin E, et al. Circulation, 2017

- HF prevalence: 5.7 million (2009 to 2012) to 6.5 million (2011 to 2014
- Five-year survival of HF s/p MI:
  - improved in 2001 to 2010 versus 1990 to 2000, from 54% to 61%.
- Greater adherence to the AHA's Life Simple 7 guidelines associated with a lower lifetime risk of HF
- *Of incident hospitalized HF events, 53% had HFrEF; 47% had HFpEF*
- *Black males had the highest proportion of hospitalized HFrEF fraction (70%)*
- *white females had the highest proportion of hospitalized HFpEF (59%)*

Stages, Phenotypes and Treatment of HF



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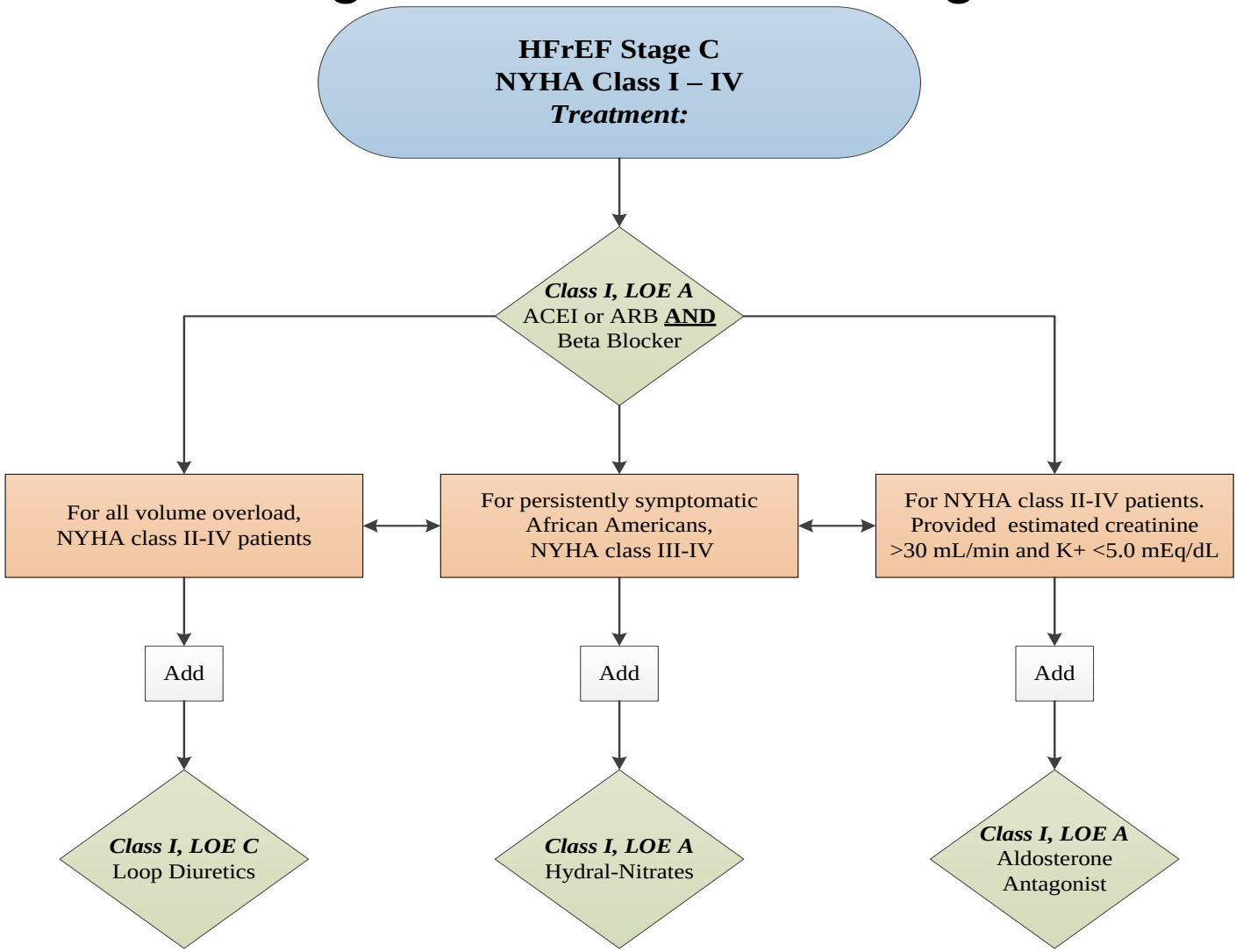
Yancy C, et al. JACC, 2013

2013 ACCF/AHA Heart Failure Guidelines Pharmacologic Treatment for Stage C HFrEF



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Yancy C et al. Circulation, 2013

Medical Therapy for Stage C HF*r*EF: Magnitude of Benefit Demonstrated in RCTs

GDMT	RR Reduction in Mortality	NNT for Mortality Reduction (Standardized to 36 mo)	RR Reduction in HF Hospitalizations
ACE inhibitor or ARB	17%	26	31%
Beta blocker	34%	9	41%
Aldosterone antagonist	30%	6	35%
Hydralazine/nitrate	43%	7	33%

Fonarow, G, … Yancy, C. American Heart Journal, 2012.

A review- 2017 Focused Update of the ACC/AHA/HFSA Heart Failure Guidelines

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  - **What's new?**
  - **How will practice be changed?**
- **PREVENTION; a new reality in heart failure**
- **Identifying a new phenotype- heart failure with improved ejection fraction**
  - **What is this?**
  - **What's the natural history?**
  - **Can it be manipulated?**
- **Heart Failure with preserved Ejection Fraction**
- **Important Co-Morbidities in Heart Failure**

New ACC/AHA/HFSA Guidelines

Yancy et al
2017 ACC/AHA/HFSA Heart Failure Focused Update

2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America

Developed in Collaboration With the American Academy of Family Physicians, American College of Chest Physicians, and International Society for Heart and Lung Transplantation

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Citation

This slide set was adapted from the 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure (*Journal of the American College of Cardiology).* Published on April 28, 2017, available at:

Yancy, et. al. ACC/AHA/HFSA 2017 Heart Failure Focused Update

The full-text guidelines are also available on the following Web sites:

- American College of Cardiology (www.acc.org)
- American Heart Association (professional.heart.org)
- Heart Failure Society of America(www.hfsa.org)

Special Thanks To

The Heart Failure Focused Update Writing Committee Members

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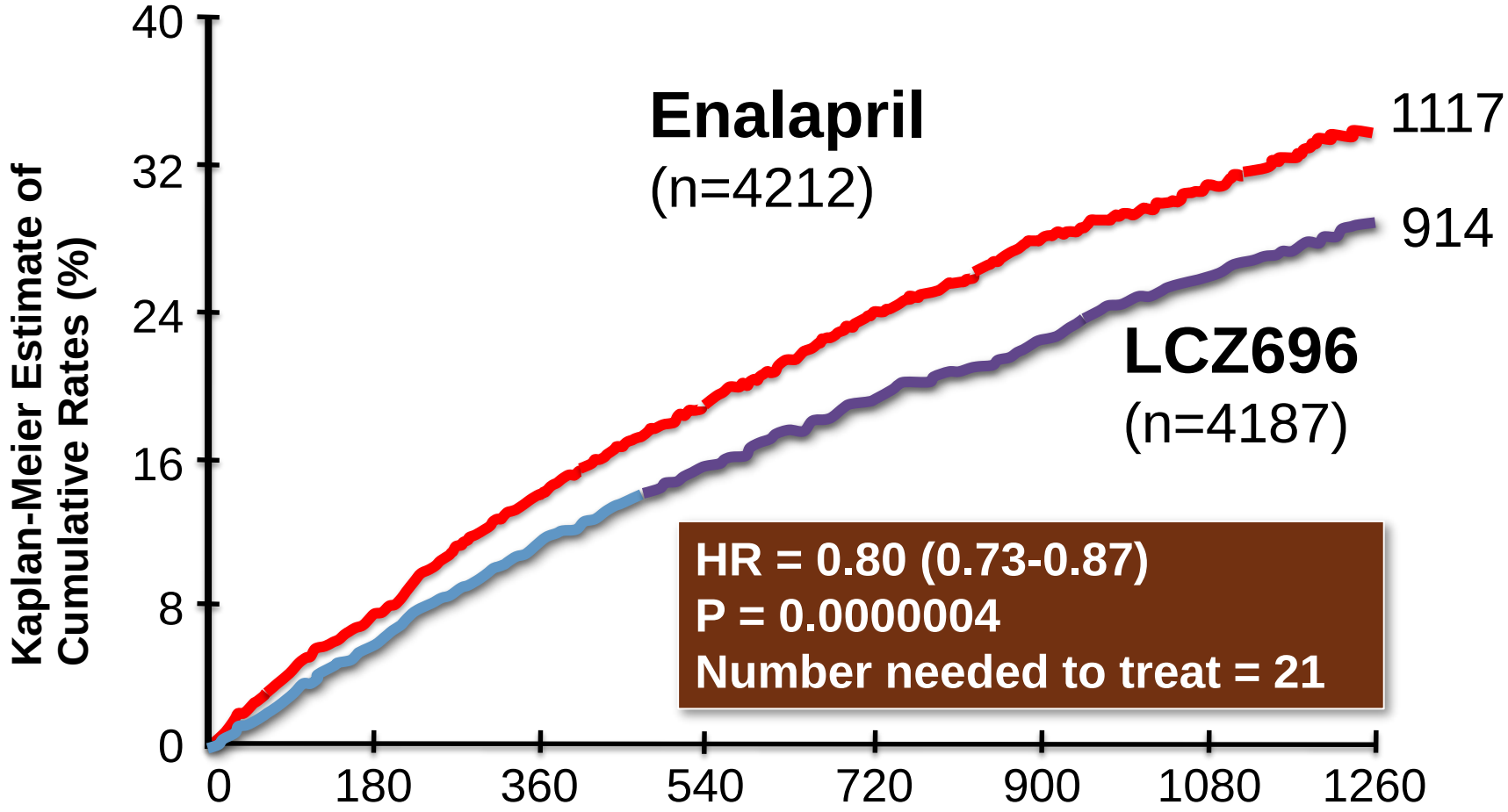
PARADIGM-HF: Cardiovascular Death or Heart Failure Hospitalization (Primary Endpoint)



Patients at Risk

LCZ696	4187	3922	3663	3018	2257	1544	896	249
Enalapril	4212	3883	3579	2922	2123	1488	853	236

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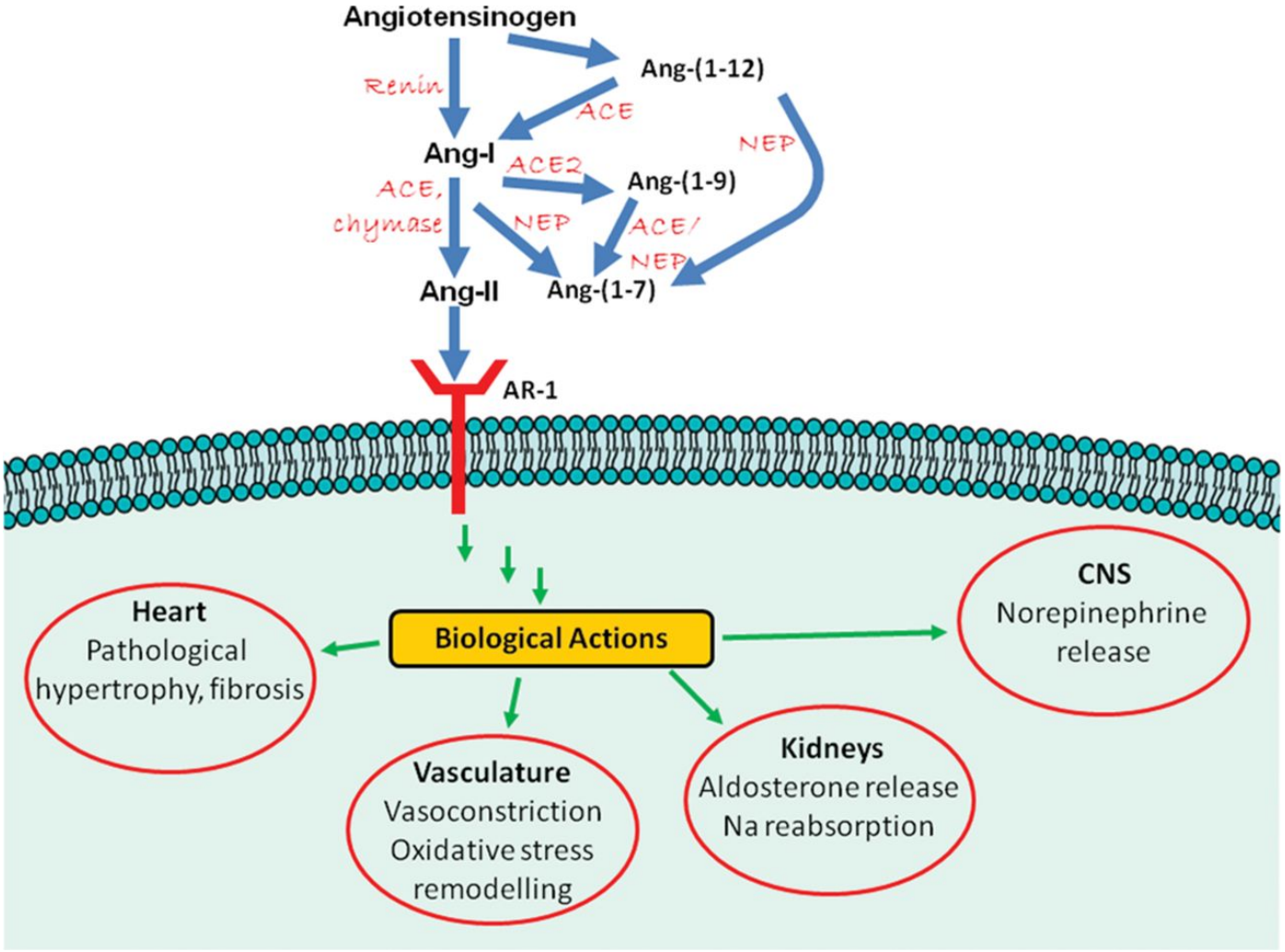
Simplified Schematic of the Renin–Angiotensin–Aldosterone System



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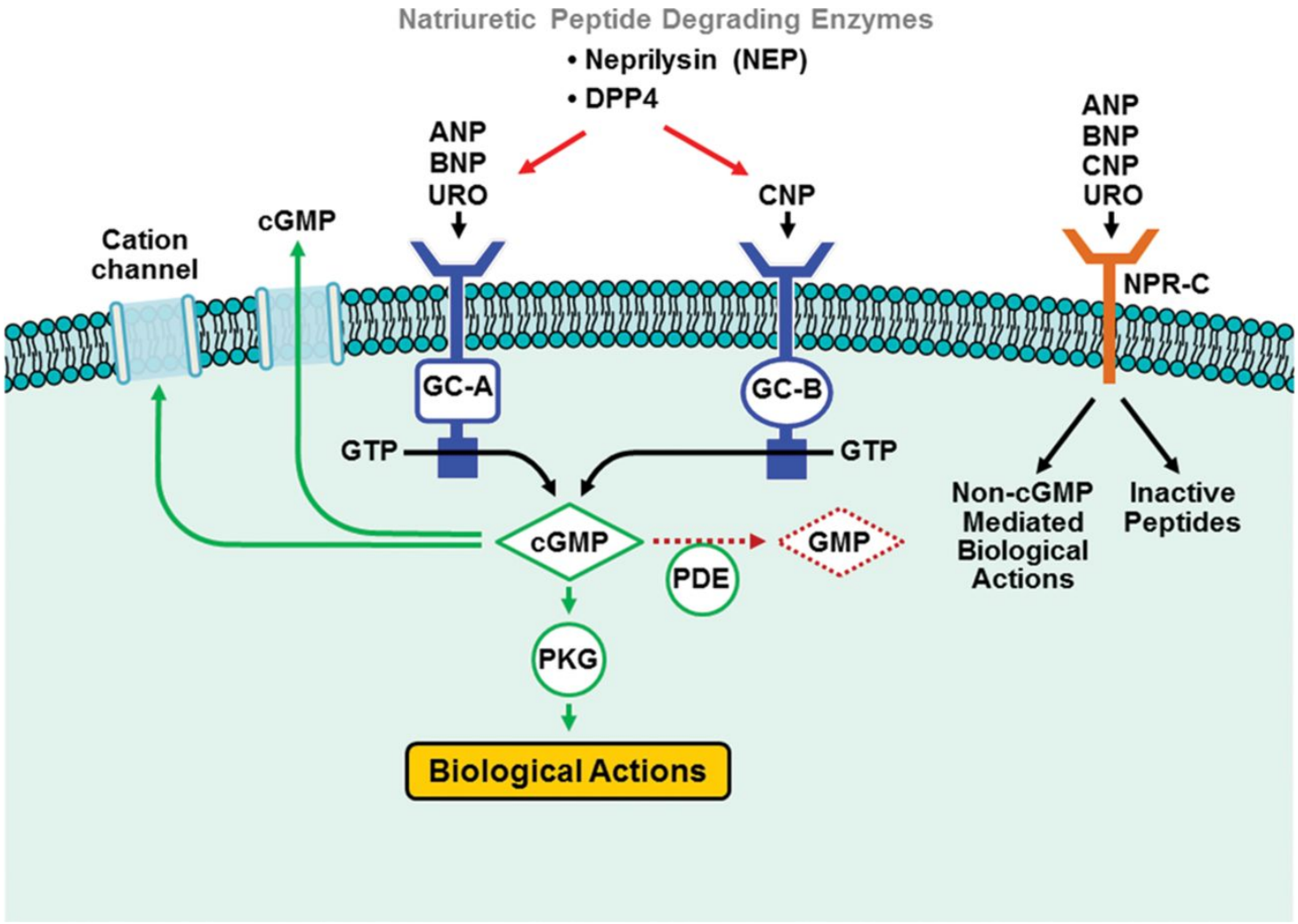
von Lueder T G et al. Circ Heart Fail. 2013;6:594-605

Simplified Schematic of the Natriuretic Peptide System (NPS)



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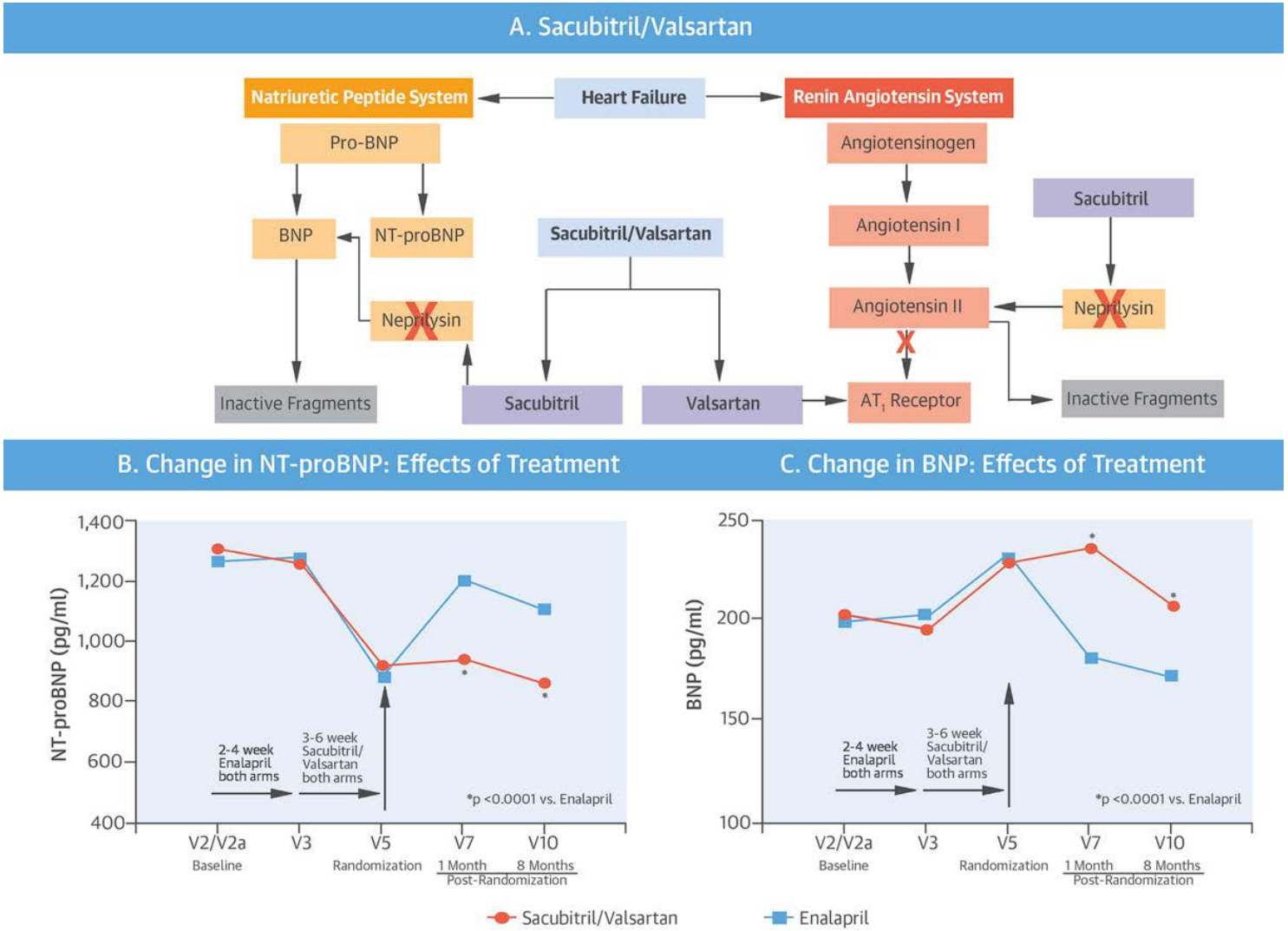
von Lueder T G et al. Circ Heart Fail. 2013;6:594-605



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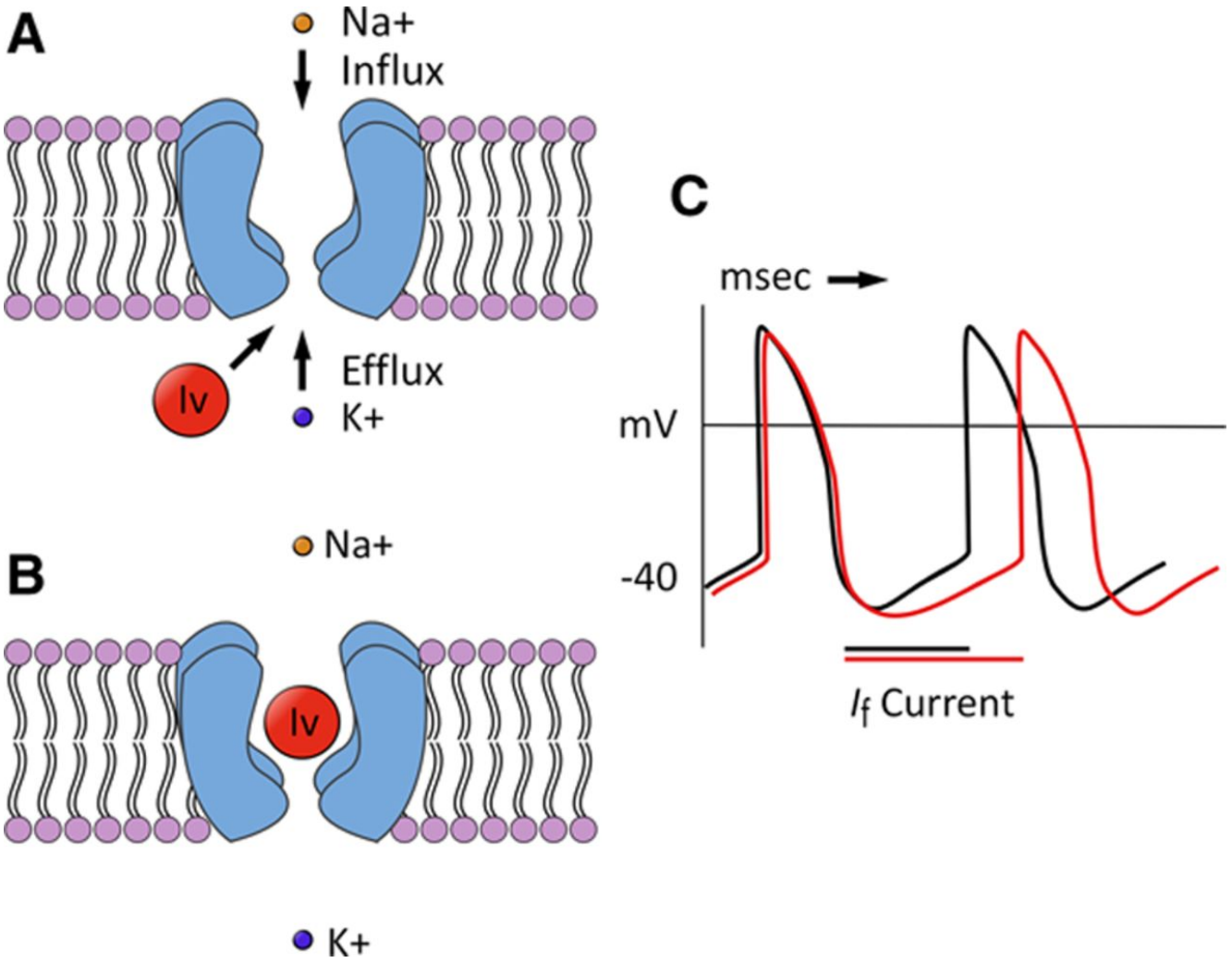
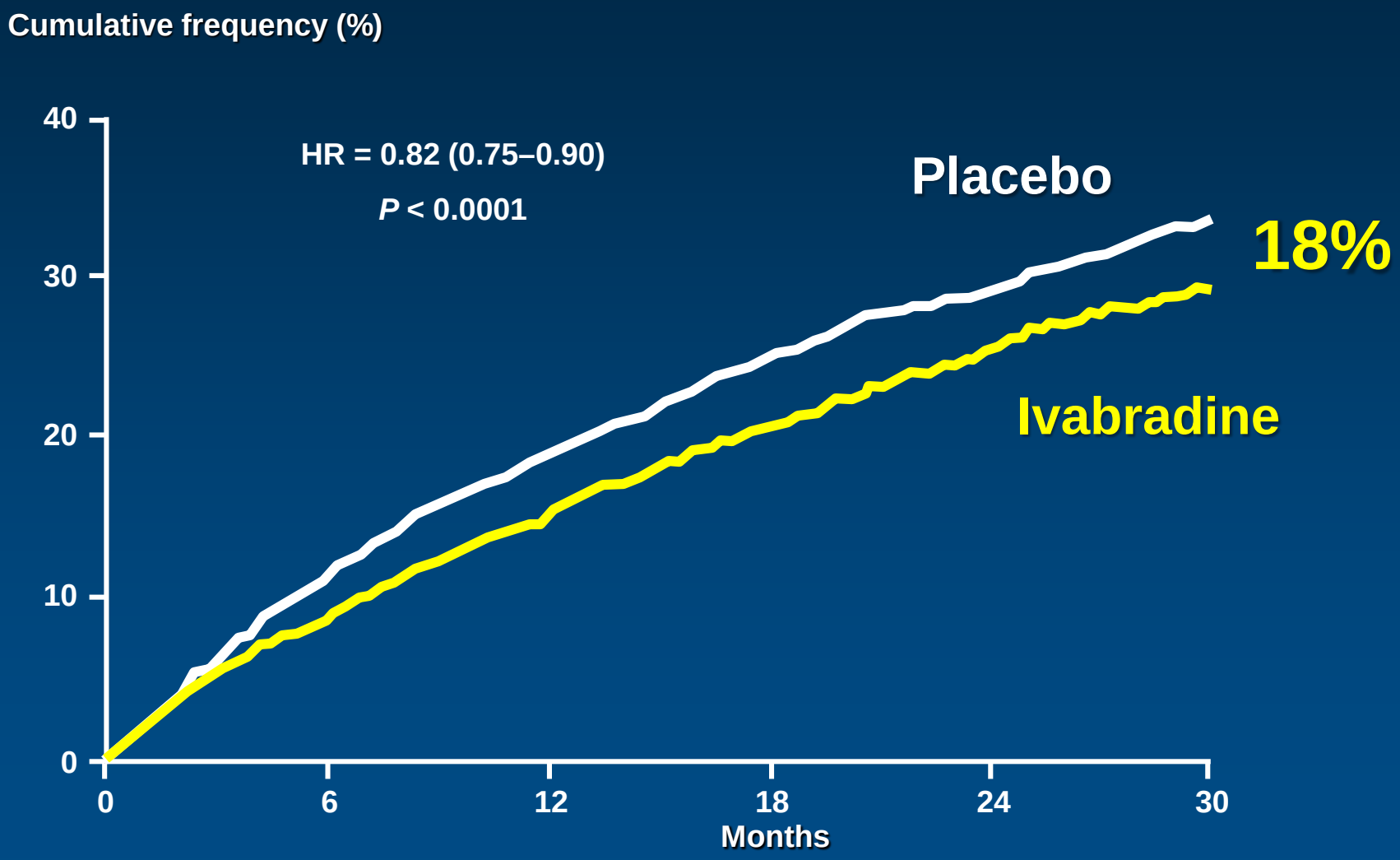
Ivabradine Inhibition of hyperpolarization-activated cyclic nucleotide–gated (HCN) channels.



Mitchell A. Psotka, and John R. Teerlink Circulation. 2016;133:2066-2075

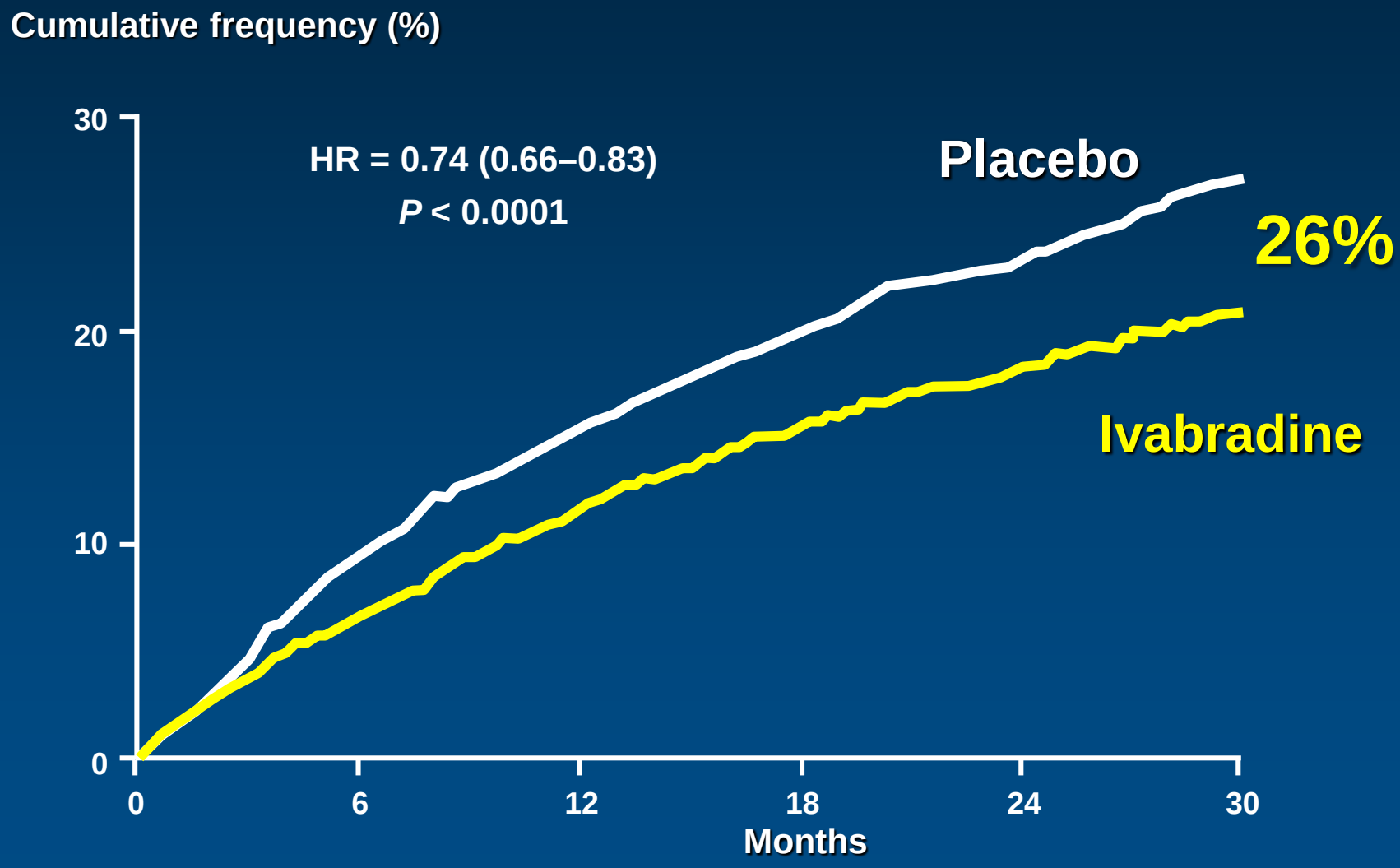
Primary composite endpoint

(CV death or hospital admission for worsening HF)



Swedberg K, et al. *Lancet*. 2010;376(9744):875-885

Hospitalization for HF



Swedberg K, et al. *Lancet*. 2010;376(9744):875-885

SUMMARY OF ACC/AHA/HFSA 2016 HF Guidelines; Focused Update

Table 1 | **Pharmacological treatment recommendations for patients with stage C HFrEF**[5,6]

Patient population	Treatment	Recommendation and LOE
2013 ACC/AHA guidelines		
For all patients with HFrEF with volume overload, NYHA class II–IV	• Loop diuretics • In addition to ACE inhibitor or ARB and β-blocker	Class I, LOE C
For persistently symptomatic African American patients, NYHA class III–IV, to reduce morbidity and mortality	• Hydral-nitrates • In addition to ACE inhibitor, or ARB and β-blocker	Class I, LOE A
For patients with NYHA class II–IV with eGFR >30 ml/min/1.73m^2 and K^+ <5.0 mEq/l, to reduce morbidity and mortality	• Mineralocorticoid-receptor antagonists • In addition to ACE inhibitor or ARB in conjunction with β-blocker	Class I, LOE A
2016 ACC/AHA/HFSA guideline update		
For patients with chronic HFrEF, to reduce morbidity and mortality	• ARNI in conjunction with β-blocker	Class I, LOE B-R
For patients with chronic symptomatic HFrEF, NYHA class II–III, who tolerate an ACE inhibitor or ARB	• ARNI to replace an ACE inhibitor or ARB	Class I, LOE B-R
For patients with stable chronic HFrEF (LVEF ≤35%), NYHA class II–III, who are in sinus rhythm with a heart rate ≥70 bpm at rest, to reduce heart failure hospitalization	• Ivabradine in addition to ACE inhibitor or ARB and β-blocker	Class IIa, LOE B-R

Treatment of HF Stages A Through D

Stage C

Pharmacological Treatment for Stage C HF With Reduced EF

Renin-Angiotensin System Inhibition With ACE-Inhibitor or ARB or ARNI

COR	LOE	Recommendations	Comment/ Rationale
I	ACE-I: A	The clinical strategy of inhibition of the renin-angiotensin system with ACE inhibitors (Level of Evidence: A), OR ARBs (Level of Evidence: A), OR ARNI (Level of Evidence: B-R) in conjunction with evidence-based beta blockers, and aldosterone antagonists in selected patients, is recommended for patients with chronic HF*r*EF to reduce morbidity and mortality.	NEW: New clinical trial data prompted clarification and important updates.
	ARB: A		
	ARNI: B-R		

Pharmacological Treatment for Stage C HF With Reduced EF

Renin-Angiotensin System Inhibition With ACE-Inhibitor or ARB or ARNI

COR	LOE	Recommendations	Comment/ Rationale
I	ACE-I: A	The use of ACE inhibitors is beneficial for patients with prior or current symptoms of chronic HF*r*EF to reduce morbidity and mortality.	2013 recommendation repeated for clarity in this section.
I	ARB: A	The use of ARBs to reduce morbidity and mortality is recommended in patients with prior or current symptoms of chronic HF*r*EF who are intolerant to ACE inhibitors because of cough or angioedema.	2013 recommendation repeated for clarity in this section.

Pharmacological Treatment for Stage C HF With Reduced EF

Renin-Angiotensin System Inhibition With ACE-Inhibitor or ARB or ARNI

COR	LOE	Recommendations	Comment/ Rationale
I	**ARNI: B-R**	In patients with chronic symptomatic HF*r*EF NYHA class II or III who tolerate an ACE inhibitor or ARB, replacement by an ARNI is recommended to further reduce morbidity and mortality.	NEW: New clinical trial data necessitated this recommendation.

Pharmacological Treatment for Stage C HF With Reduced EF

Renin-Angiotensin System Inhibition With ACE-Inhibitor or ARB or ARNI

COR	LOE	Recommendations	Comment/ Rationale
III: Harm	**B-R**	ARNI should not be administered concomitantly with ACE inhibitors or within 36 hours of the last dose of an ACE inhibitor.	NEW: Available evidence demonstrates a potential signal of harm for a concomitant use of ACE inhibitors and ARNI.
III: Harm	**C-EO**	ARNI should not be administered to patients with a history of angioedema.	NEW: New clinical trial data.

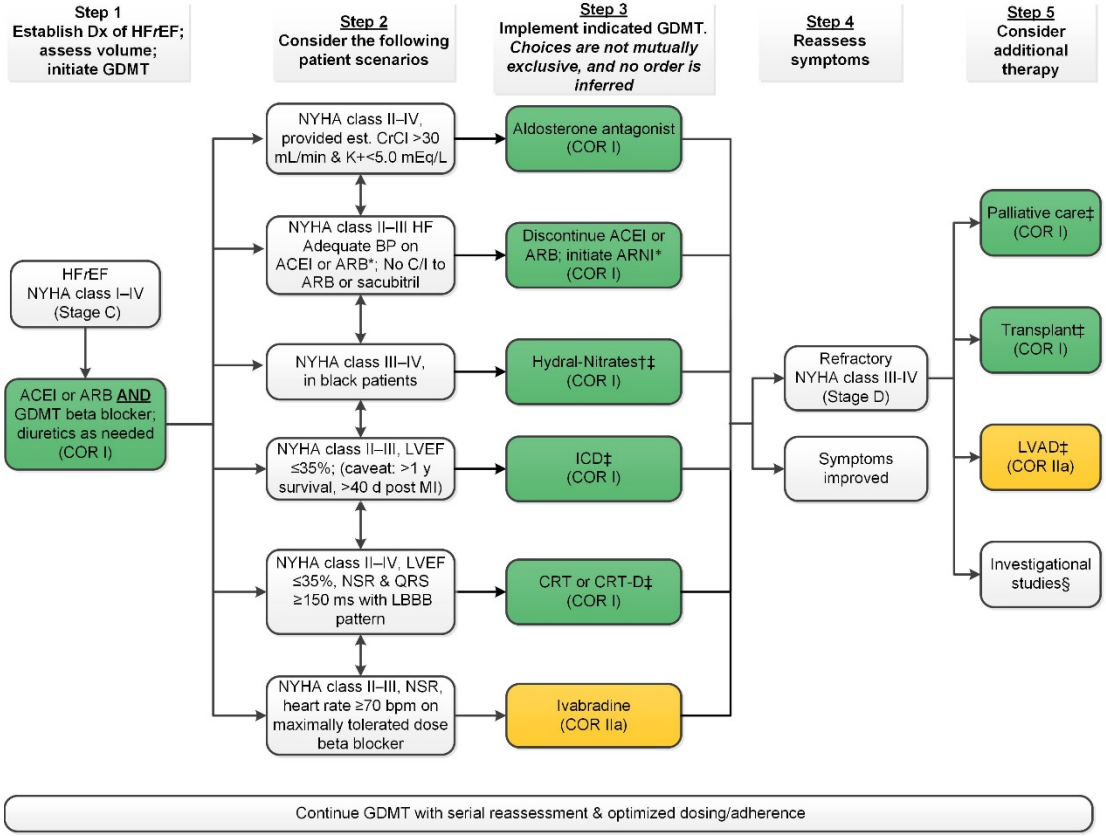
Pharmacological Treatment for Stage C HF With Reduced EF

Ivabradine

COR	LOE	Recommendations	Comment/ Rationale
IIa	**B-R**	Ivabradine can be beneficial to reduce HF hospitalization for patients with symptomatic (NYHA class II-III) stable chronic HF*r*EF (LVEF ≤35%) who are receiving GDEM*, including a beta blocker at maximum tolerated dose, and who are in sinus rhythm with a heart rate of 70 bpm or greater at rest.	NEW: New clinical trial data.

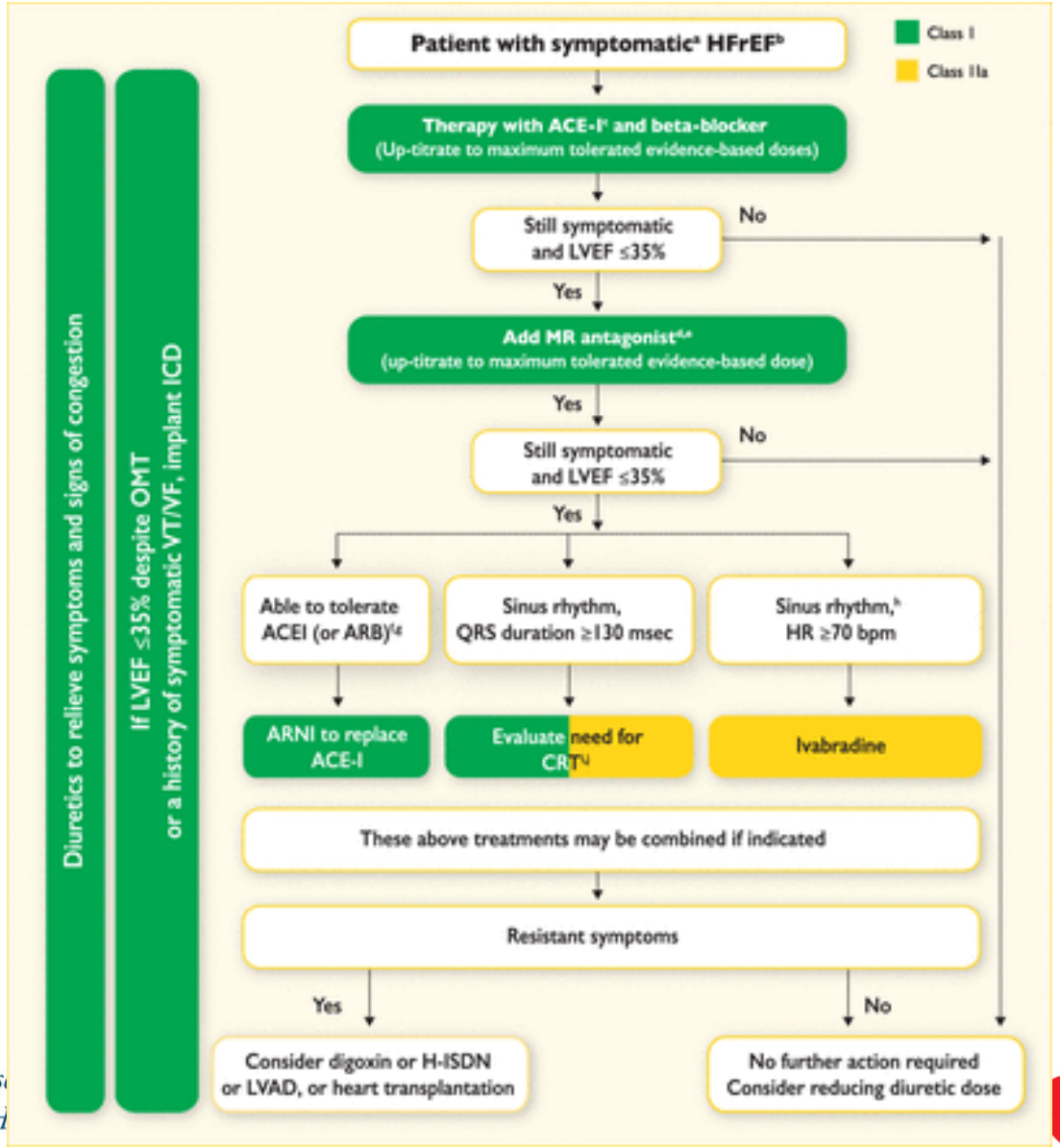
*In other parts of the document, the term "GDMT" has been used to denote guideline-directed management and therapy. In this recommendation, however, the term "GDEM" has been used to denote this same concept in order to reflect the original wording of the recommendation that initially appeared in the "2016 ACC/AHA/HFSA Focused Update on New Pharmacological Therapy for Heart Failure: An Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure".

Treatment of HFrEF Stage C and D



†Hydral-Nitrates green box: The combination of ISDN/HYD with ARNI has not been robustly tested. BP response should be carefully monitored.
‡See 2013 HF guideline.
§Participation in investigational studies is also appropriate for stage C, NYHA class II and III HF.
ACEI indicates angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor-blocker; ARNI, angiotensin receptor-neprilysin inhibitor; BP, blood pressure; bpm, beats per minute; C/I, contraindication; COR, Class of Recommendation; CrCl, creatinine clearance; CRT-D, cardiac resynchronization therapy–device; Dx, diagnosis; GDMT, guideline-directed management and therapy; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; ICD, implantable cardioverter-defibrillator; ISDN/HYD, isosorbide dinitrate hydral-nitrates; K+, potassium; LBBB, left bundle-branch block; LVAD, left ventricular assist device; LVEF, left ventricular ejection fraction; MI, myocardial infarction; NSR, normal sinus rhythm; and NYHA, New York Heart Association.

ESC HFrEF Treatment Algorithm



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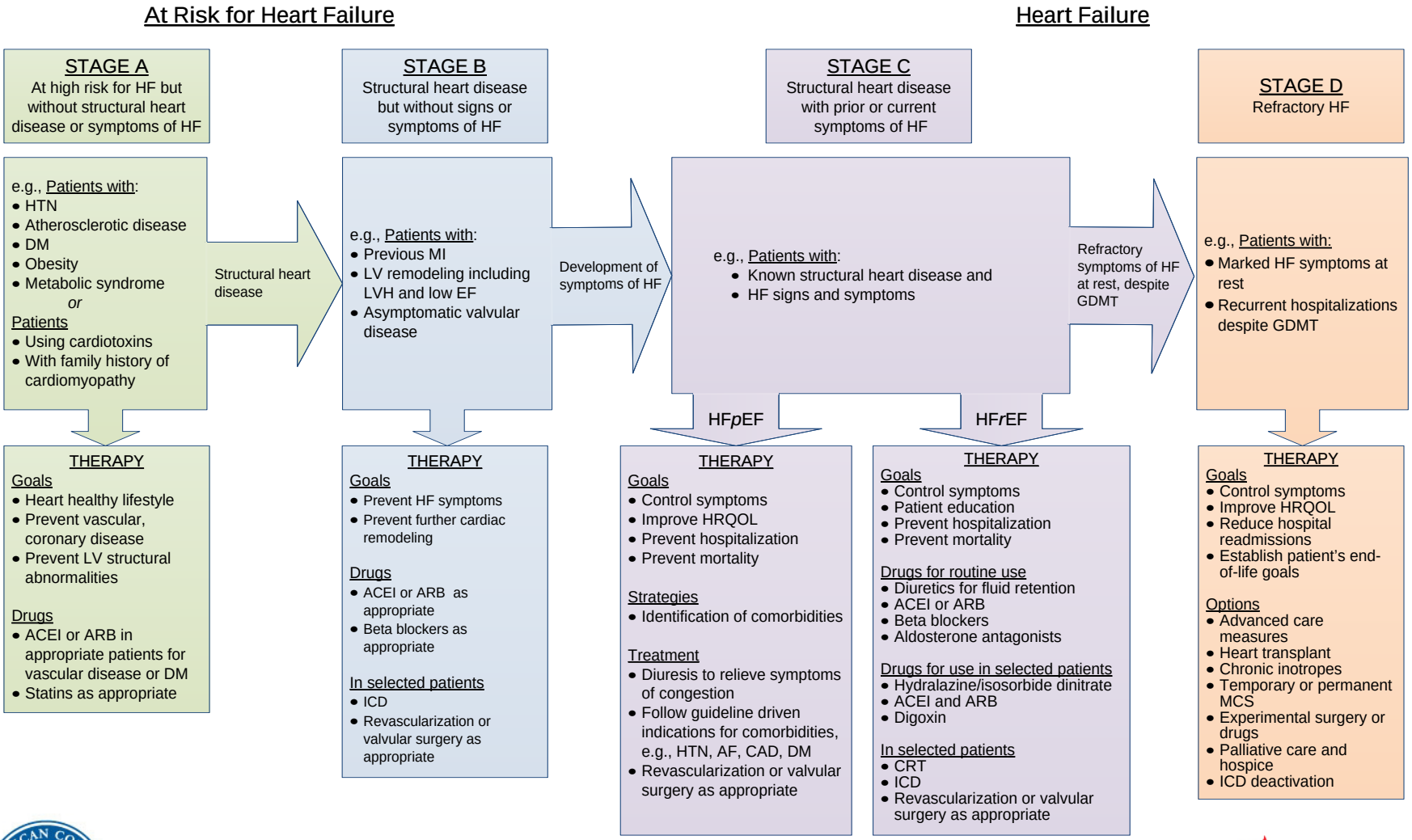
Stages, Phenotypes and Treatment of HF



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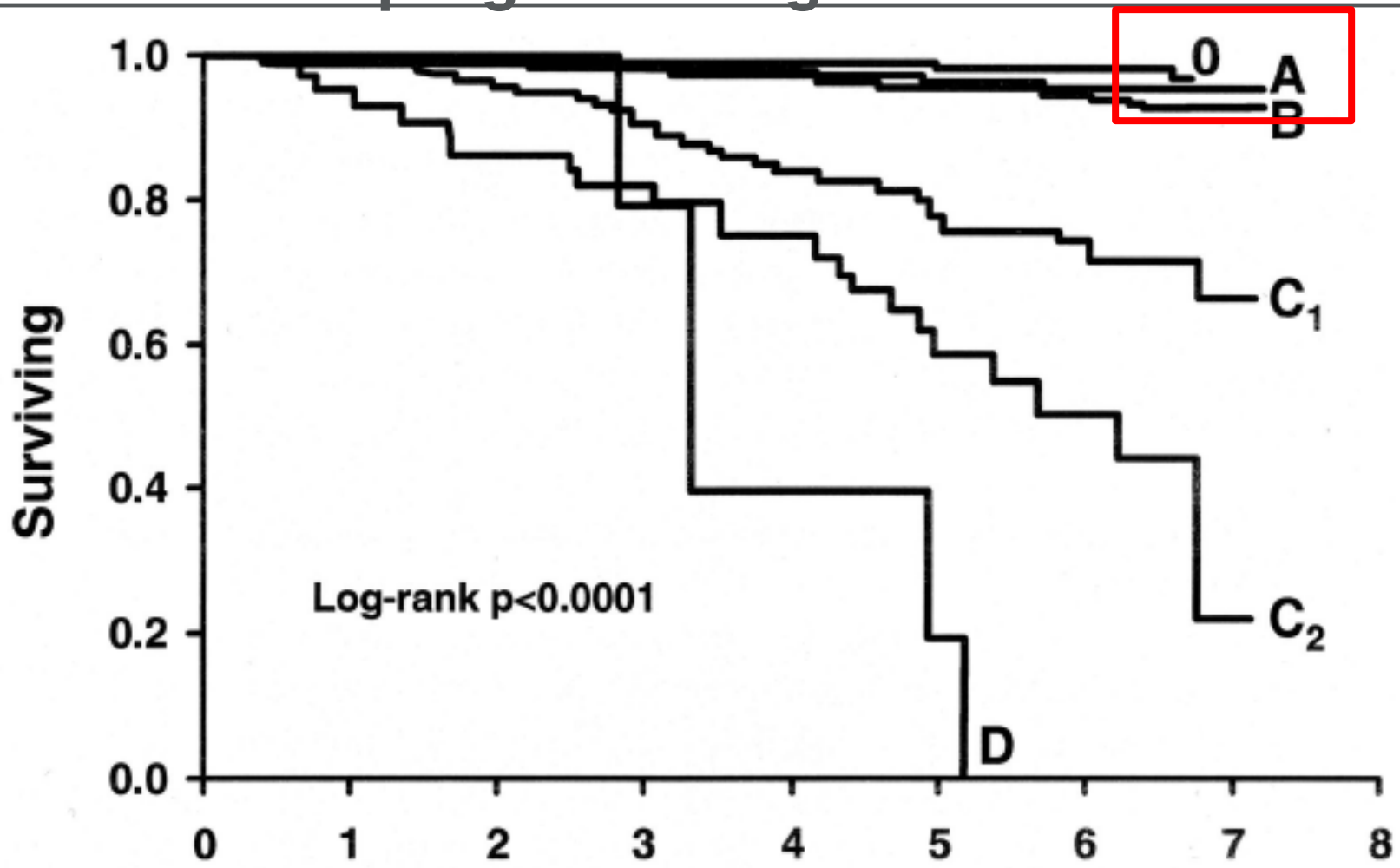
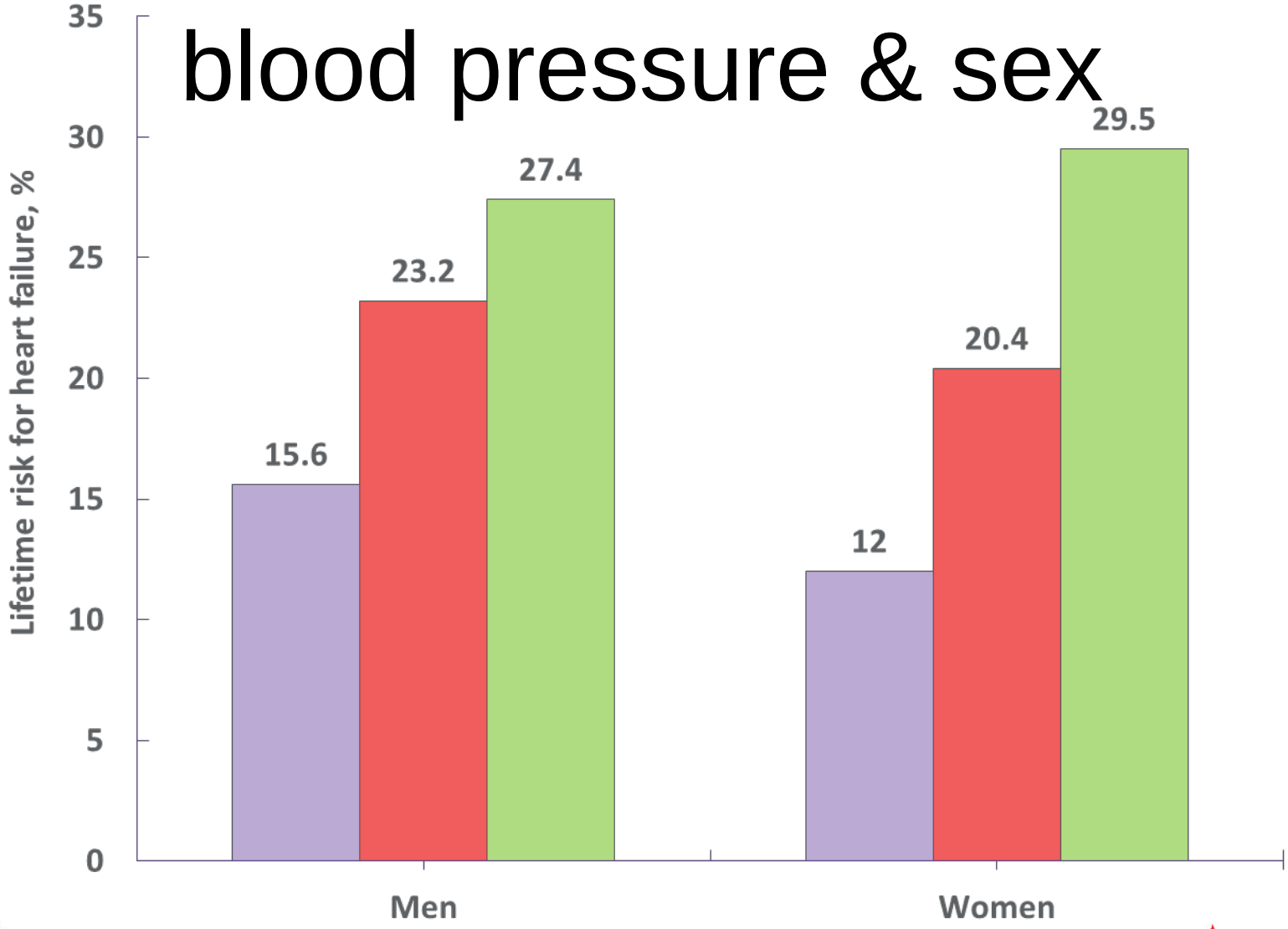
Yancy C, et al. JACC, 2013

Prevalence and prognostic significance of HF Stages



Ammar et al. *Circulation* 2007; 115:1563

Lifetime risk for HF; indexed to blood pressure & sex



Primary and Secondary Outcomes and Renal Outcomes.

Table 2. Primary and Secondary Outcomes and Renal Outcomes.*

Outcome	Intensive Treatment		Standard Treatment		Hazard Ratio (95% CI)	P Value
	no. of patients (%)	*% per year*	*no. of patients (%)*	*% per year*		
All participants	**(N=4678)**		**(N=4683)**			
Primary outcome†	243 (5.2)	1.65	319 (6.8)	2.19	0.75 (0.64–0.89)	<0.001
Secondary outcomes						
Myocardial infarction	97 (2.1)	0.65	116 (2.5)	0.78	0.83 (0.64–1.09)	0.19
Acute coronary syndrome	40 (0.9)	0.27	40 (0.9)	0.27	1.00 (0.64–1.55)	0.99
Stroke	62 (1.3)	0.41	70 (1.5)	0.47	0.89 (0.63–1.25)	0.50
Heart failure	62 (1.3)	0.41	100 (2.1)	0.67	0.62 (0.45–0.84)	0.002
Death from cardiovascular causes	37 (0.8)	0.25	65 (1.4)	0.43	0.57 (0.38–0.85)	0.005
Death from any cause	155 (3.3)	1.03	210 (4.5)	1.40	0.73 (0.60–0.90)	0.003
Primary outcome or death	332 (7.1)	2.25	423 (9.0)	2.90	0.78 (0.67–0.90)	<0.001
Participants with CKD at baseline	**(N=1330)**		**(N=1316)**			
Composite renal outcome‡	14 (1.1)	0.33	15 (1.1)	0.36	0.89 (0.42–1.87)	0.76
≥50% reduction in estimated GFR§	10 (0.8)	0.23	11 (0.8)	0.26	0.87 (0.36–2.07)	0.75
Long-term dialysis	6 (0.5)	0.14	10 (0.8)	0.24	0.57 (0.19–1.54)	0.27
Kidney transplantation	0		0			
Incident albuminuria¶	49/526 (9.3)	3.02	59/500 (11.8)	3.90	0.72 (0.48–1.07)	0.11
Participants without CKD at baseline‖	**(N=3332)**		**(N=3345)**			
≥30% reduction in estimated GFR to <60 ml/min/1.73 m^2§	127 (3.8)	1.21	37 (1.1)	0.35	3.49 (2.44–5.10)	<0.001
Incident albuminuria¶	110/1769 (6.2)	2.00	135/1831 (7.4)	2.41	0.81 (0.63–1.04)	0.10

* CI denotes confidence interval, and CKD chronic kidney disease.
† The primary outcome was the first occurrence of myocardial infarction, acute coronary syndrome, stroke, heart failure, or death from cardiovascular causes.
‡ The composite renal outcome for participants with CKD at baseline was the first occurrence of a reduction in the estimated GFR of 50% or more, long-term dialysis, or kidney transplantation.
§ Reductions in the estimated GFR were confirmed by a second laboratory test at least 90 days later.
¶ Incident albuminuria was defined by a doubling of the ratio of urinary albumin (in milligrams) to creatinine (in grams) from less than 10 at baseline to greater than 10 during follow-up. The denominators for number of patients represent those without albuminuria at baseline.
‖ No long-term dialysis or kidney transplantation was reported among participants without CKD at baseline.

38% RR

TheSPRINT Research Group. N Engl J Med 2015;373:2103-2116

Treatment of Hypertension to Prevent HF:

Treatment effects of blood pressure lowering on heart failure outcomes in landmark hypertension trials

Study	Number of participants	Inclusion criteria	Intervention	Duration (yr)	Mean BP difference between groups (mmHg)	Absolute rates of heart failure	Relative reduction of heart failure (95% CI)
SHEP 1997	4,736	≥ 60 yrs; SBP ≥ 160 mmHg	Chlorthalidone ± atenolol	4.5	-26.0 / -8.9	2.3% vs. 4.4%	RR 0.51 (0.37-0.71)
HYVET 2008	3,845	≥ 80 yrs; SBP ≥ 160 mmHg	Indapamide ± perindopril	2.1	-15.0 / -6.1	5.3% vs. 14.8%	RR 0.36 (0.22-0.58)
ALLHAT 2002	33,357	≥ 55 years; HTN + 1 CV risk factor	Chlorthalidone vs. Amlodipine; Chlorthalidone vs. Lisinopril	4.9	-0.8 / +0.8 -2.0 / 0	7.7% vs. 10.2% 7.7% vs. 8.7%	RR 0.62 (0.48-0.75) RR 0.81 (0.69-0.93)
HOPE 2000	9,297	≥ 55 years; vascular disease or DM + 1 CV risk factor	Ramipril	4.5	-3 / -2	9.0% vs. 11.5%	RR 0.77 (0.67-0.87)
SPRINT 2015	9,361	SBP ≥ 130 mmHg; increased CVD risk without DM	SBP target <120 mmHg vs. SBP target <140 mmHg	3.3	-18.2 / -9.4	1.3%/yr vs. 2.1%/yr	HR 0.62 (0.45-0.84)

For ALLHAT, mean blood pressure differences. Data for the chlorthalidone vs. doxazosin comparison is not presented since this arm was terminated early due to harm from doxazosin.

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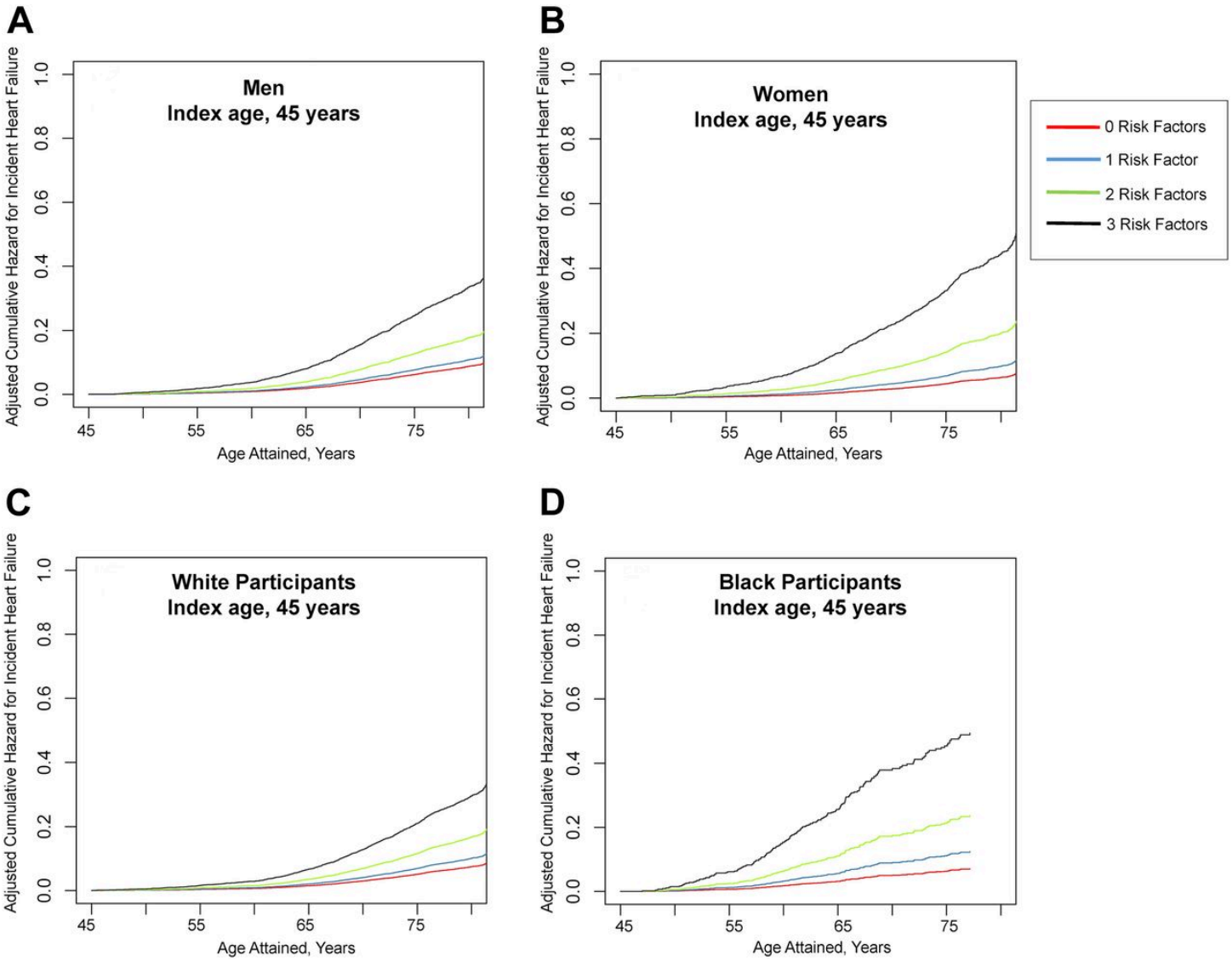

Faraz S. Ahmad et al. JCHF 2016;4:911-919

Treating Hypertension to Reduce the Incidence of HF

COR	LOE	Recommendations	Comment/ Rationale
I	B-R	In patients at increased risk, stage A HF, the optimal blood pressure in those with hypertension should be less than 130/80 mm Hg.	NEW: Recommendation reflects new RCT data.

New Guideline Takeaway messages: ***Part I***

- New effective medical therapies have now been fully incorporated in evidence based guideline directed treatment algorithms
- There is an increasing complexity in the treatment of HFrEF; this will require careful assessment of the clinical context/scenario
- Powerful new data should drive the PREVENTION of heart failure
- Avoiding entry into the “HF Club” is the best therapeutic approach

A review- 2017 Focused Update of the ACC/AHA/HFSA Heart Failure Guidelines

- Incorporating new clinical practice guidelines
  - What's new?
  - How will practice be changed?
- PREVENTION; a new reality in heart failure
- Identifying a new phenotype- heart failure with improved ejection fraction
  - What is this?
  - What's the natural history?
  - Can it be manipulated?
- Heart Failure with preserved Ejection Fraction
- Important Co-Morbidities in Heart Failure

A new classification?

ESC HF GUIDELINES 2016

Table 3.1

Definition of heart failure with preserved (HFpEF), mid-range (HFmrEF) and reduced ejection fraction (HFrEF)

Type of HF		HFrEF	HFmrEF	HFpEF
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF <40%	LVEF 40–49%	LVEF ≥50%
	3	–	1. Elevated levels of natriuretic peptides[b]; 2. At least one additional criterion: a. relevant structural heart disease (LVH and/or LAE), b. diastolic dysfunction (for details see Section 4.3.2).	1. Elevated levels of natriuretic 2. At least one additional criter a. relevant structural heart di b. diastolic dysfunction (for d

2013 ACCF/AHA Guideline for the Management of Heart Failure

Developed in Collaboration With the American Academy of Family Physicians, American College of Chest Physicians, Heart Rhythm Society, and International Society for Heart and Lung Transplantation

Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation

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Definition of Heart Failure

Classification	Ejection Fraction	Description
I. Heart Failure with Reduced Ejection Fraction (HF*r*EF)	≤40%	Also referred to as systolic HF. Randomized clinical trials have mainly enrolled patients with HF*r*EF and it is only in these patients that efficacious therapies have been demonstrated to date.
II. Heart Failure with Preserved Ejection Fraction (HF*p*EF)	≥50%	Also referred to as diastolic HF. Several different criteria have been used to further define HF*p*EF. The diagnosis of HF*p*EF is challenging because it is largely one of excluding other potential noncardiac causes of symptoms suggestive of HF. To date, efficacious therapies have not been identified.
a. HF*p*EF, Borderline	41% to 49%	These patients fall into a borderline or intermediate group. Their characteristics, treatment patterns, and outcomes appear similar to those of patient with HF*p*EF.
b. HF*p*EF, Improved	>40%	It has been recognized that a subset of patients with HF*p*EF previously had HF*r*EF. These patients with improvement or recovery in EF may be clinically distinct from those with persistently preserved or reduced EF. Further research is needed to better characterize these patients.

Research

JAMA Cardiology | Original Investigation

Characteristics and Outcomes of Adult Outpatients With Heart Failure and Improved or Recovered Ejection Fraction

Andreas P. Kalogeropoulos, MD, MPH, PhD; Gregg C. Fonarow, MD; Vasiliki Georgiopoulou, MD, MPH, PhD; Gregory Burkman, MD; Sarawut Siwamogsatham, MD; Akash Patel, MD; Song Li, MD; Lampros Papadimitriou, MD, PhD; Javed Butler, MD, MPH, MBA

Heart Failure with Improved EF?

Kalogeropoulos, A. et al. JAMA Cardiology 2016

- **2166 patients followed over 3 years**
- **62% HFrEF**
- **38% HFpEF**
- **16.2% had HFpEF with previous evidence of LVEF < 0.40**
- **Mortality at 3 years: 16.3%; 13.2%; 4.8%**

From: **Characteristics and Outcomes of Adult Outpatients With Heart Failure and Improved or Recovered Ejection Fraction**

JAMA Cardiol. Published online July 06, 2016. doi:10.1001/jamacardio.2016.1325

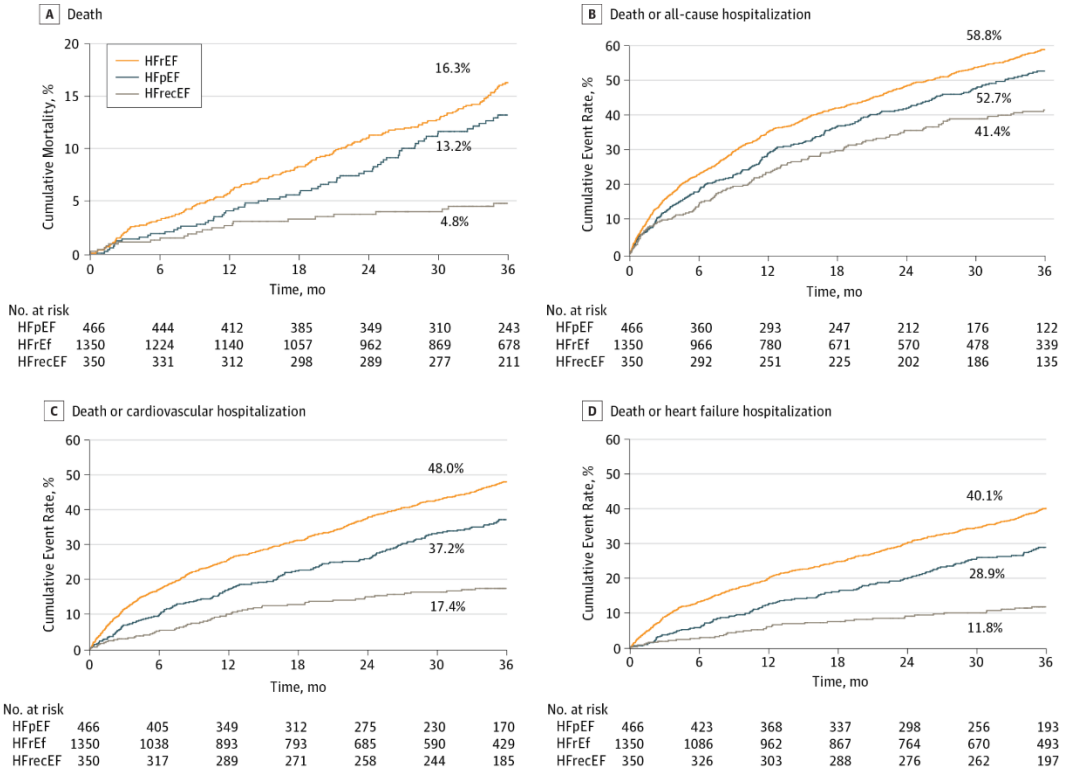
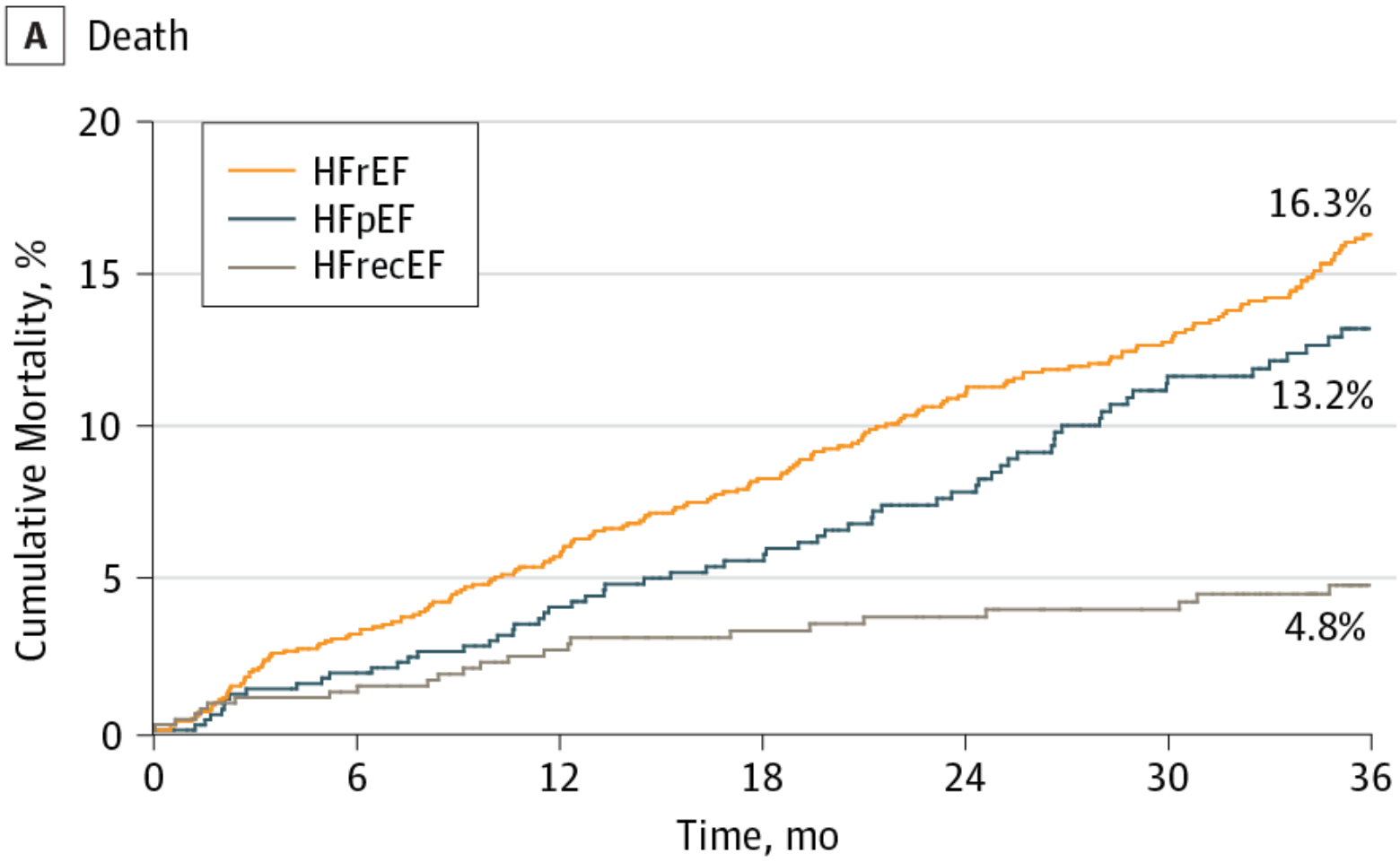
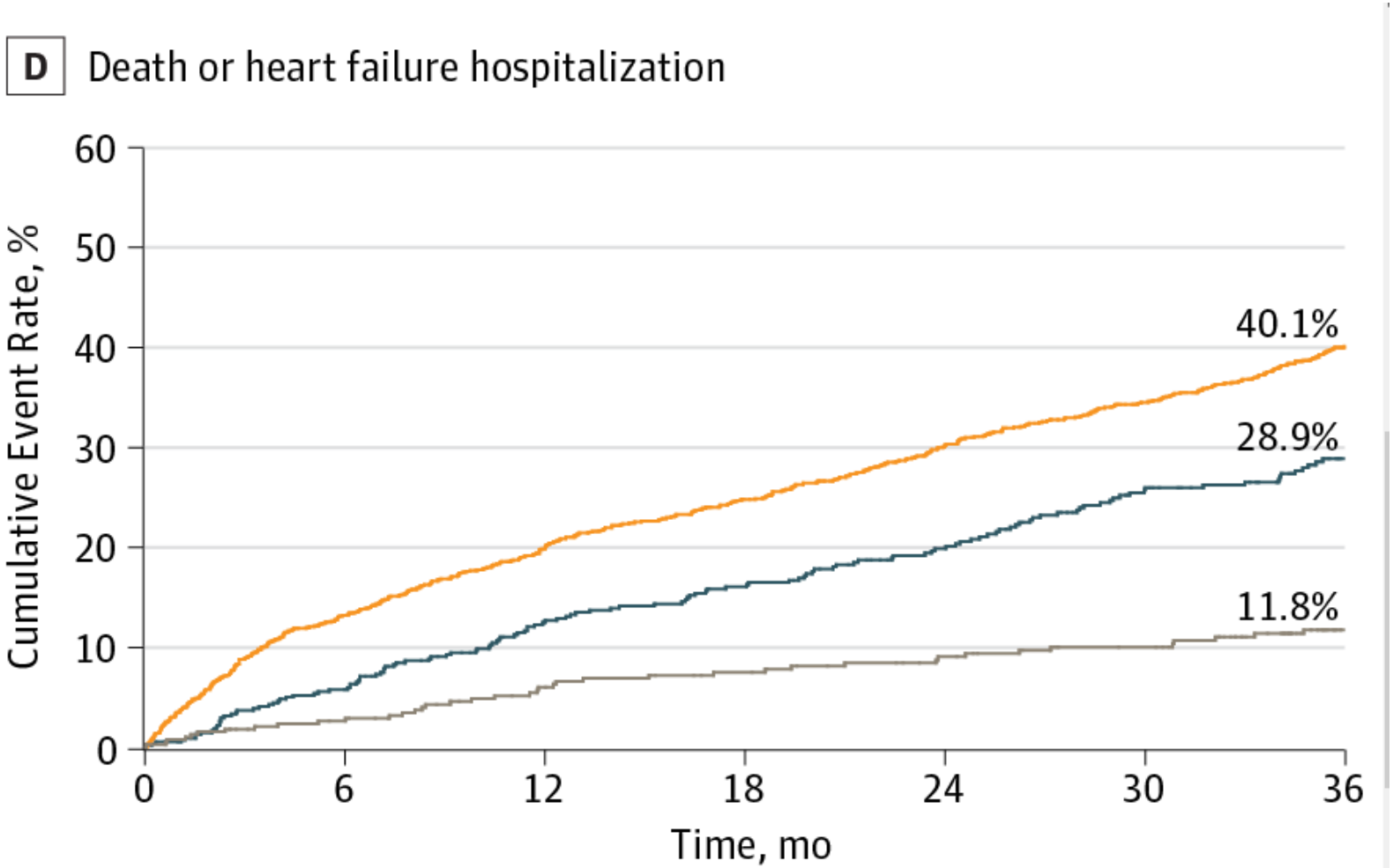


Figure Legend:

Kaplan-Meier Curves, Adjusted for Age and Sex, Across the 3 Heart Failure GroupsThe stratified log-rank χ^2_2 was 15.0 ($P < .001$) for difference in mortality between groups. HFpEF indicates heart failure with preserved ejection fraction; HFrecEF, heart failure with recovered ejection fraction; and HFrEF, heart failure with reduced ejection fraction.





Advancing the Science of Myocardial Recovery with Mechanical Circulatory Support: a Working Group of the National, Heart, Lung and Blood Institute

Stavros G. Drakos, Francis D. Pagani, Martha S. Lundberg, J. Timothy Baldwin

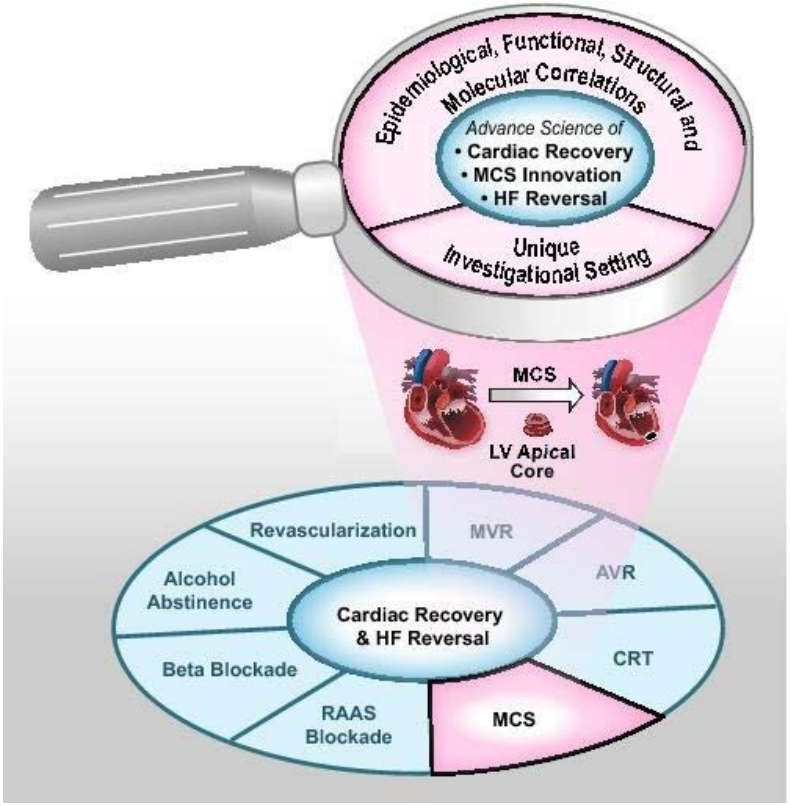


Figure 1. The MCS investigational setting is a unique transformative “research vehicle” that could help advance the science of cardiac recovery, HF reversal and MCS innovation. AVR: Aortic valve replacement/repair, CRT: Cardiac resynchronization, HF: Heart fai...

Journal of Cardiac Failure, 2017, Available online 19 April 2017

http://dx.doi.org/10.1016/j.cardfail.2017.04.005

A new HF phenotype 2016

Online First >

Editorial | July 06, 2016

Heart Failure—A New Phenotype Emerges FREE

ONLINE FIRST

Jane E. Wilcox, MD, MSc[1]; Clyde W. Yancy, MD, MSc[1,2]

[+] Author Affiliations

JAMA Cardiol. Published online July 06, 2016. doi:10.1001/jamacardio.2016.1356

Text Size: A A A

HF*improved*EF?- (***Takeaways, Part II)***

Wilcox J, Yancy CW. JAMA Cardiology 2016

- Spontaneous Myocardial Recovery/Repair
  - Ischemia/revascularization
  - Arrhythmia management; AF/VT ablation
  - Neuregulin pathways
- Reverse Remodeling – super-responders
  - Restoration of beta receptor density
  - Active collagen turnover
  - Pharmacogenomics
- Reversible illnesses; e.g., myocarditis, metabolic cardiomyopathies, peripartum cardiomyopathy
- Myocardial Recovery LVAD supported
  - Restoration of calcium handling; restored mitochondrial function
- ***TREATMENT?***
  - ***Similar to HFrEF or HFpEF or both?***

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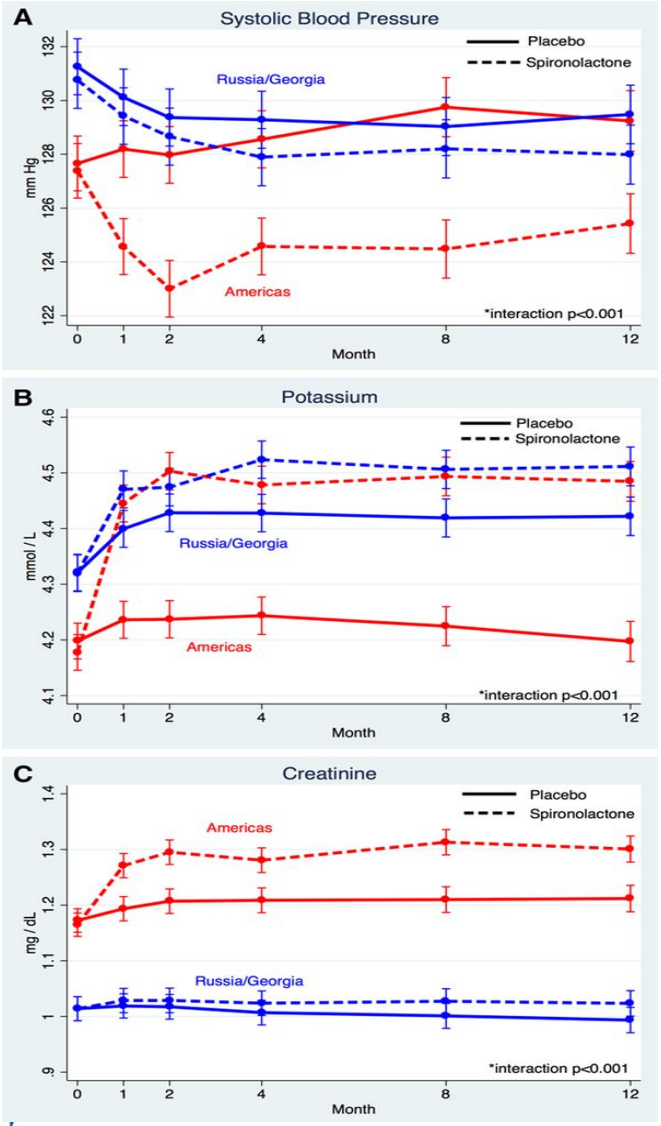
2017 ACC AHA HFSA HEART FAILURE GUIDELINES

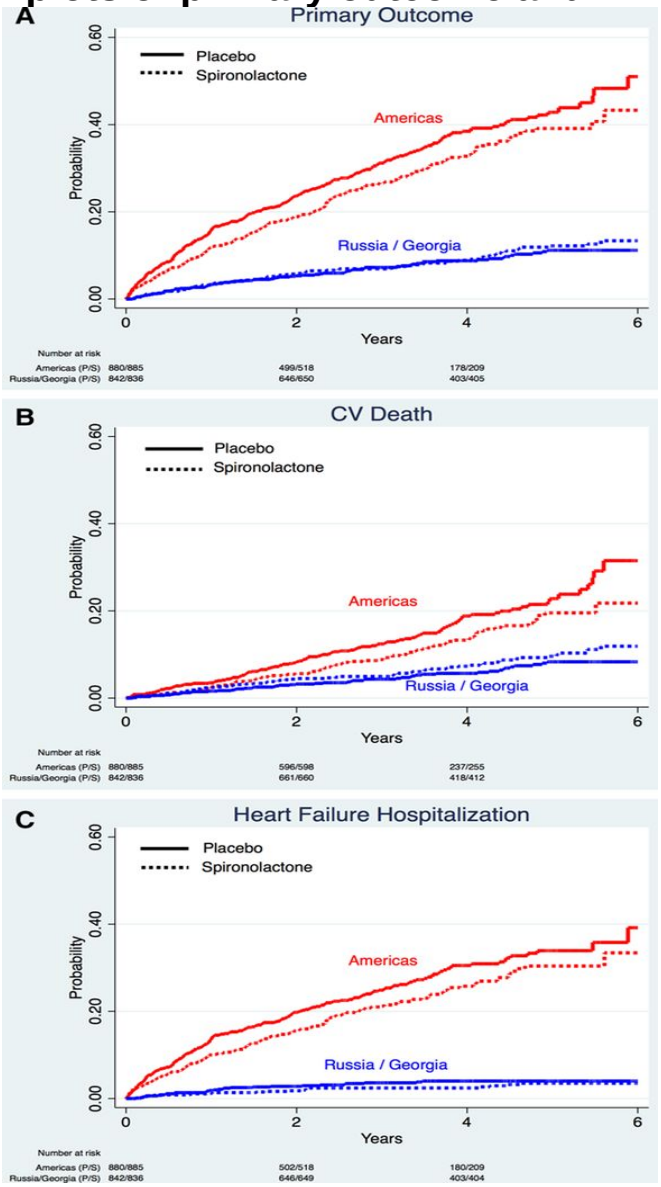
Treatment of HFpEF & the important co-morbidities

Longitudinal plots of blood pressure, potassium, and creatinine over the first 12 months of follow-up by treatment and region.



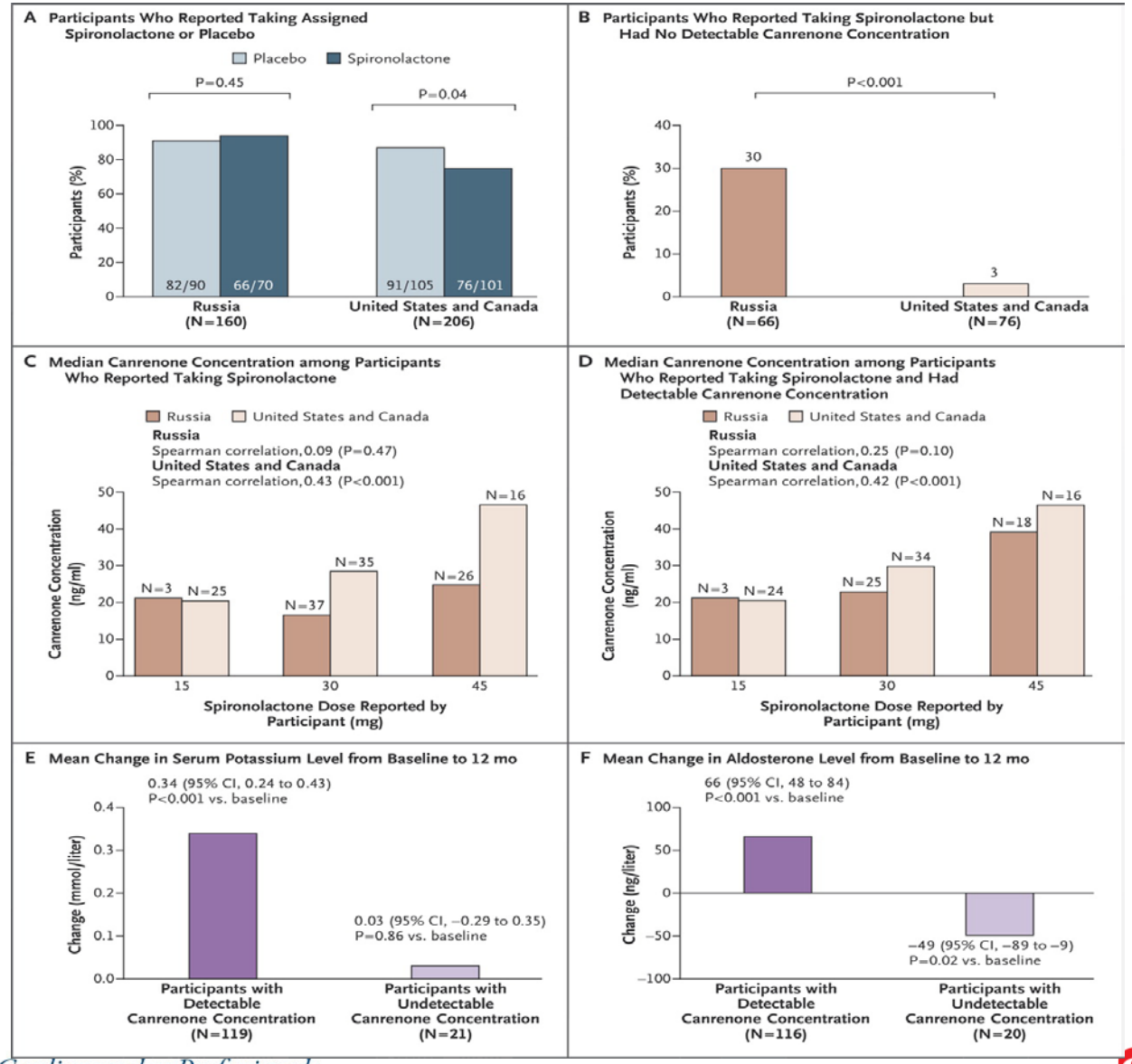
Pfeffer M A et al. Circulation. 2015;131:34-42

Kaplan-Meier plots of primary outcome and 2 major components.



Pfeffer M A et al. Circulation. 2015;131:34-42

Spironolactone among Repository Participants in the TOPCAT Trial.



Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
I	B	Systolic and diastolic blood pressure should be controlled in patients with HF*p*EF in accordance with published clinical practice guidelines to prevent morbidity	2013 recommendation remains current.
I	C	Diuretics should be used for relief of symptoms due to volume overload in patients with HF*p*EF.	2013 recommendation remains current.

Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
IIa	C	Coronary revascularization is reasonable in patients with CAD in whom symptoms (angina) or demonstrable myocardial ischemia is judged to be having an adverse effect on symptomatic HF*p*EF despite GDMT.	2013 recommendation remains current.
IIa	C	Management of AF according to published clinical practice guidelines in patients with HF*p*EF is reasonable to improve symptomatic HF.	2013 recommendation remains current.
IIa	C	The use of beta-blocking agents, ACE inhibitors, and ARBs in patients with hypertension is reasonable to control blood pressure in patients with HF*p*EF.	2013 recommendation remains current.

Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
IIb	**B-R**	In appropriately selected patients with HF*p*EF (with EF ≥45%, elevated BNP levels or HF admission within 1 year, estimated glomerular filtration rate >30 mL/min, creatinine <2.5 mg/dL, potassium <5.0 mEq/L), aldosterone receptor antagonists might be considered to decrease hospitalizations.	NEW: Current recommendation reflects new RCT data.
IIb	**B**	The use of ARBs might be considered to decrease hospitalizations for patients with HF*p*EF.	2013 recommendation remains current.

Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
III: No Benefit	**B-R**	Routine use of nitrates or phosphodiesterase-5 inhibitors to increase activity or QoL in patients with HF*p*EF is ineffective.	NEW: Current recommendation reflects new data from RCTs.
III: No Benefit	**C**	Routine use of nutritional supplements is not recommended for patients with HF*p*EF.	2013 recommendation remains current.

Important Comorbidities in HF

Important Comorbidities in HF

Anemia

Anemia

COR	LOE	Recommendations	Comment/ Rationale
IIb	**B-R**	In patients with NYHA class II and III HF and iron deficiency (ferritin <100 ng/mL or 100 to 300 ng/mL if transferrin saturation is <20%), intravenous iron replacement might be reasonable to improve functional status and QoL.	NEW: New evidence consistent with therapeutic benefit.
III: No Benefit	**B-R**	In patients with HF and anemia, erythropoietin-stimulating agents should not be used to improve morbidity and mortality.	NEW: Current recommendation reflects new evidence demonstrating absence of therapeutic benefit.

Important Comorbidities in HF

Hypertension (New Section)

Treating Hypertension to Reduce the Incidence of HF

COR	LOE	Recommendations	Comment/ Rationale
I	B-R	In patients at increased risk, stage A HF, the optimal blood pressure in those with hypertension should be less than 130/80 mm Hg.	NEW: Recommendation reflects new RCT data.

Treating Hypertension in Stage C HF*r*EF

COR	LOE	Recommendations	Comment/ Rationale
I	C-EO	Patients with HF*r*EF and hypertension should be prescribed GDMT titrated to attain systolic blood pressure less than 130 mm Hg.	NEW: Recommendation has been adapted from recent clinical trial data but not specifically tested per se in a randomized trial of patients with HF.

Treating Hypertension in Stage C HF*p*EF

COR	LOE	Recommendations	Comment/ Rationale
I	C-LD	Patients with HF*p*EF and persistent hypertension after management of volume overload should be prescribed GDMT titrated to attain systolic blood pressure less than 130 mm Hg.	NEW: New target goal blood pressure based on updated interpretation of recent clinical trial data.

“ A mediocre physician treats advanced disease… A good physician treats disease … A great physician prevents disease” **– Chinese proverb**

<u>We should all aim to be great physicians</u>

Important Comorbidities in HF

Sleep Disorders

(Moved from Section 7.3.1.4, Treatment of Sleep Disorders in the 2013 HF guideline)

Sleep Disorders

COR	LOE	Recommendations	Comment/ Rationale
IIa	**C-LD**	In patients with NYHA class II–IV HF and suspicion of sleep disordered breathing or excessive daytime sleepiness, a formal sleep assessment is reasonable.	NEW: Recommendation reflects clinical necessity to distinguish obstructive versus central sleep apnea.
IIb	**B-R**	In patients with cardiovascular disease and obstructive sleep apnea, CPAP may be reasonable to improve sleep quality and daytime sleepiness.	NEW: New data demonstrate the limited scope of benefit expected from CPAP for obstructive sleep apnea.
III: Harm	**B-R**	In patients with NYHA class II–IV HF*r*EF and central sleep apnea, adaptive servo-ventilation causes harm.	NEW: New data demonstrate a signal of harm when adaptive servo-ventilation is used for central sleep apnea.

COMORBIDITY	BIDIRECTIONAL IMPACT ON DISEASE PROGRESSION	HEART FAILURE SPECIFICS
Chronic obstructive pulmonary disease	Inflammation; hypoxia; parenchymal changes; airflow limitation, leading to pulmonary congestion; abnormal left ventricular (LV) diastolic filling; inhaled beta-agonist cardiovascular effects Elevated LV end-diastolic pressure and beta-blocker use may compromise lung function	More prevalent in preserved ejection fraction (HFpEF), compared to reduced (HFrEF) Higher mortality risk in HFpEF
Anemia	Adverse LV remodeling; adverse cardiorenal effects; increased neurohormonal and inflammatory cytokines Inflammation; hemodilution; renal dysfunction; metabolic abnormalities exacerbate	More prevalent in HFpEF Similar increased risk for mortality in both groups
Diabetes	Diabetic cardiomyopathy; mitochondrial dysfunction; abnormal calcium homeostasis; oxidative stress; renin-angiotensin-aldosterone system (RAAS) activation; atherosclerosis; coronary artery disease Incident and worsening diabetes mellitus via sympathetic and RAAS activation	More prevalent in HFpEF Similar increased risk for mortality in both groups
Renal dysfunction	Sodium and fluid retention; anemia; inflammation; RAAS and sympathetic activation Cardiorenal syndrome through low cardiac output; accelerated atherosclerosis; inflammation; increased venous pressure	Similar prevalence in both groups Similar increased risk for mortality in both groups
Sleep-disordered breathing	Hypoxia; systemic inflammation; sympathetic activation; arrhythmias; hypertension (pulmonary and systemic); RV dysfunction; worsening congestion Rostral fluid movement may worsen pharyngeal obstruction; instability of ventilatory control system	Similar prevalence in both groups Unknown mortality differential associated with HFpEF vs. HFrEF
Obesity	Inflammation; reduced physical activity and deconditioning; hypertension; metabolic syndrome; diabetes mellitus Fatigue and dyspnea may limit activity; spectrum of metabolic disorders including nutritional deficiencies	More prevalent in HFpEF Obesity paradox; potential for a U-shaped association with mortality

Fig. 1. Associations between heart failure with preserved ejection fraction (HFpEF) and heart failure with reduced ejection fraction (HFrEF), with comorbidities. Pathways linking several common comorbidities to disease progression in both HFpEF and HFrEF are p...

Targeting Comorbidities in Elderly Patients With Heart Failure: The OPTIMIZE-HFPEF Trial

Journal of Cardiac Failure, Volume 22, Issue 7, 2016, 545–547 Robert J. Mentz, Thomas M. Maddox

http://dx.doi.org/10.1016/j.cardfail.2016.03.002

New Guideline Takeaways- HFpEF & the Important Co-Morbidities; ***Part III***

THE FIRST EVIDENCE BASED GUIDELINE DIRECTED THERAPY FOR HfpEF HAS BEEN ENDORSED (MODESTLY); MORE RESEARCH IS NEEDED

- Anemia
  - - Fe deficiency; intravenous iron preferable to oral iron
- Sleep Apnea
  - - Do NOT use servo control support for central sleep apnea
  - CPAP only for OSA
  - Sleep studies are indicated
  - No impact on HF outcomes but sleep quality is improved
- Hypertension
  - New target: < 130/80 mmHg in HF with HTN
- Bidirectional effect
  - Co0morbidities exaggerate adverse clinical outcomes and symptoms
- Causative inferences
  - - especially with HFpEF

Final Takeaways

- The treatment of heart failure continues to evolve with new therapies and emerging new devices
- New treatment algorithms address the increasing complexity of HF therapy
- A specific intervention is now indicated for HFpEF
- Co-Morbidities matter; overzealous treatment may lead to harm
- PREVENTION is a new reality

CLOSING THOUGHT-

***“ A mediocre physician treats advanced disease… A good physician treats disease … A great physician prevents disease”* – Chinese proverb**

<u>We should all aim to be great physicians</u>

Questions?

Thank you!

More Questions about Get With The Guidelines?

Visit heart.org/quality to find your local Get With The Guidelines representative.

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