From Optimization of Guidelines-Directed Medical Therapies to Heart Transplantation: Contemporary Management of Heart Failure

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THE EQUITY IN HEART TRANSPLANT PROJECT

HARVARD MEDICAL SCHOOL

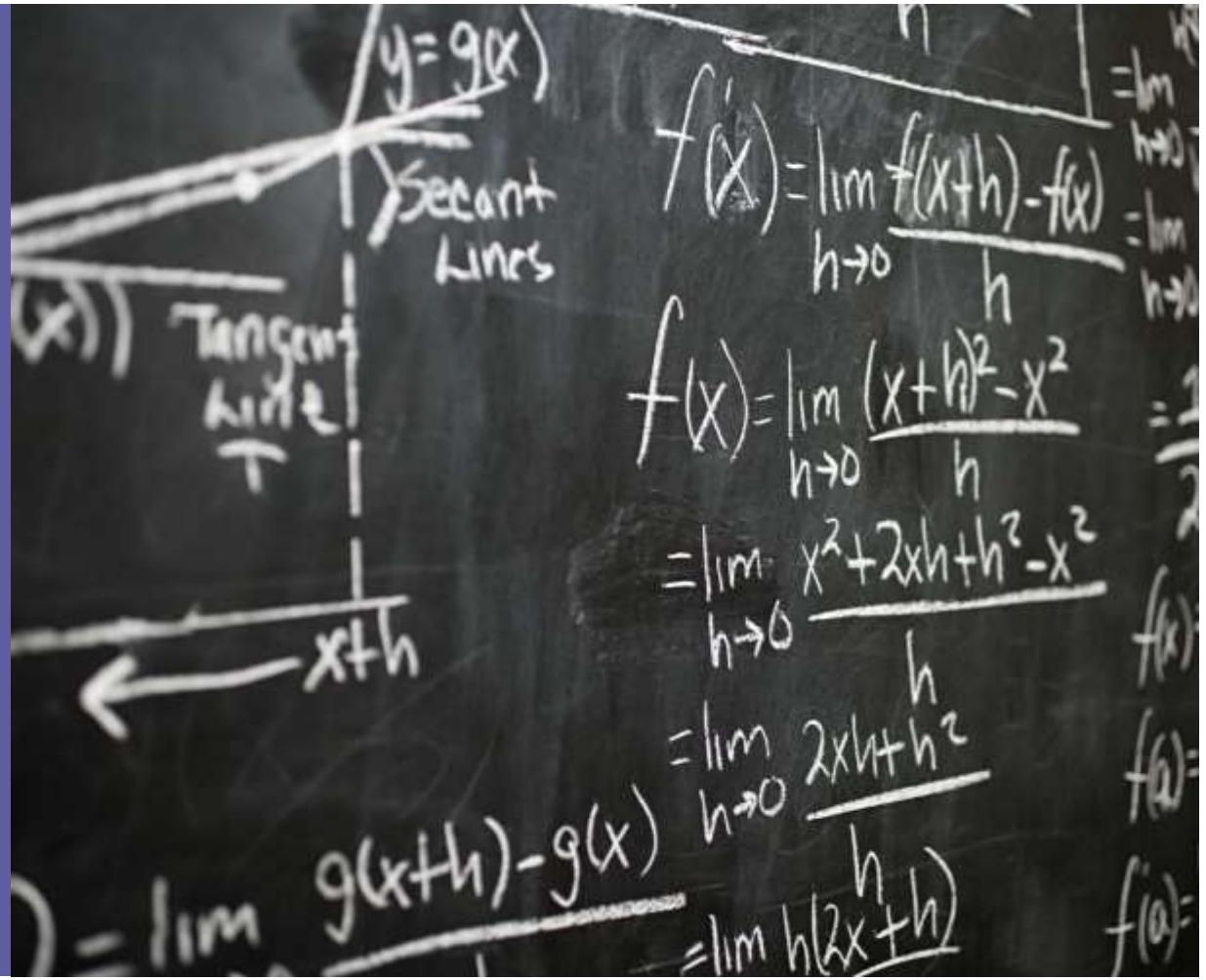
Brigham and Women's Hospital
Founding Member, Mass General Brigham

Disclosures

None relevant to this talk

Three Major Topics

- Overview of the most recent update to the heart failure treatment guidelines
- Cases and practical tips for the management of patients with heart failure
- Strategies to improve inequities in the care of patients with heart failure



Definition of Heart Failure

Journal of Cardiac Failure Vol. 27 No. 4 2021

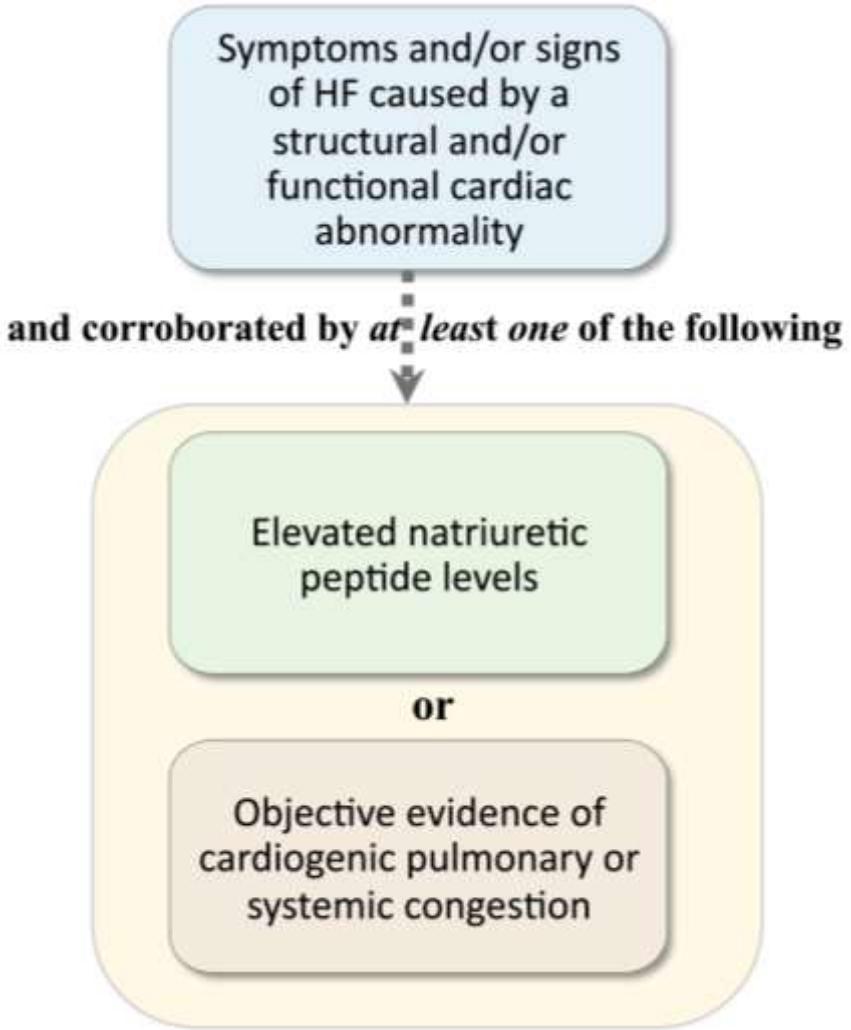
Consensus Statement

Universal Definition and Classification of Heart Failure

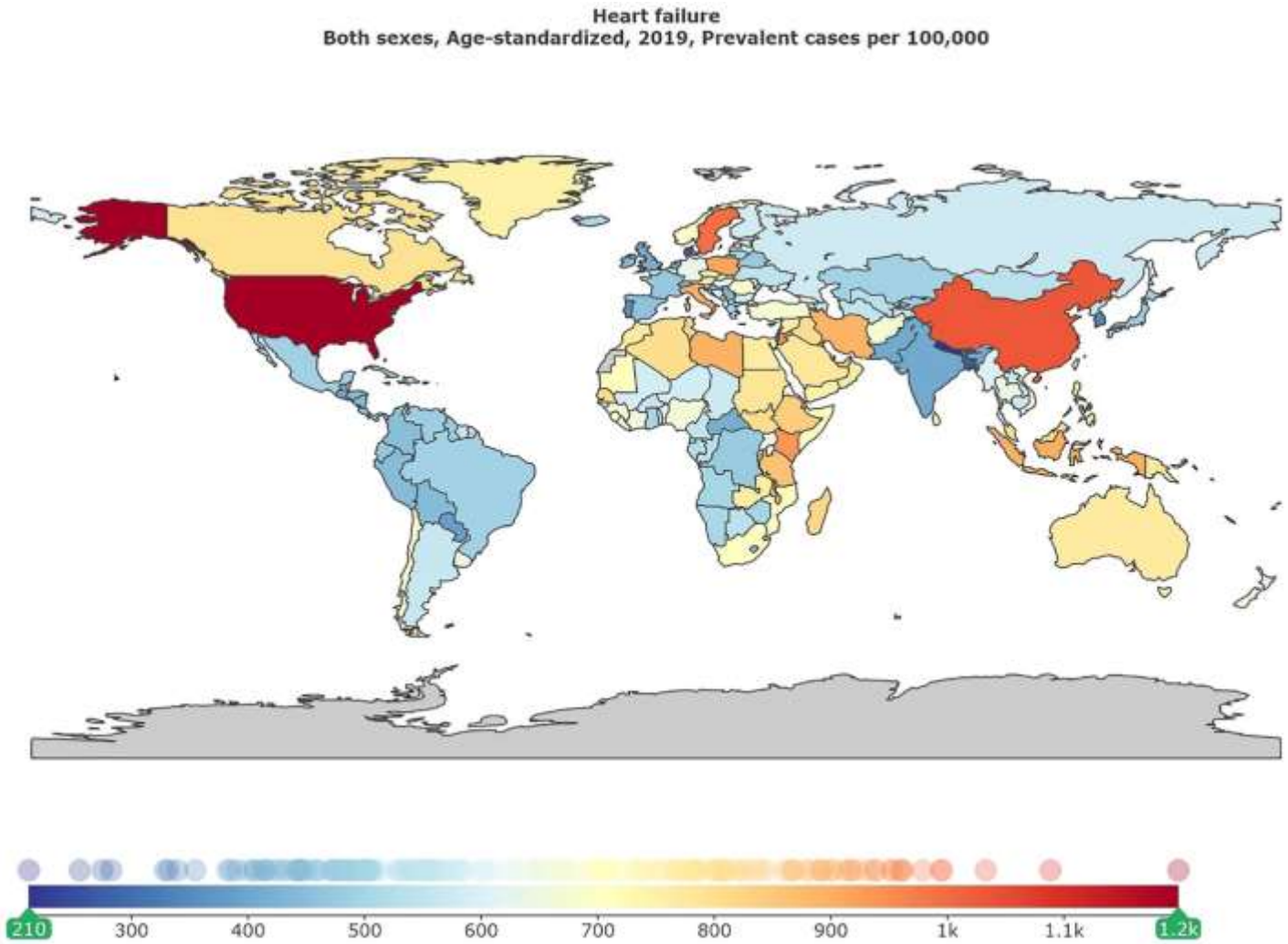
A Report of the Heart Failure Society of America, Heart Failure Association of the European Society of Cardiology, Japanese Heart Failure Society and Writing Committee of the Universal Definition of Heart Failure

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

BIYKEM BOZKURT, MD, PhD, Chair, ANDREW JS COATS, DM, DSC, Co-Chair, HIROYUKI TSUTSUI, MD, Co-Chair, MAGDY ABDELHAMID, MD, STAMATIS ADAMOPOULOS, MD, NANCY ALBERT, PhD, CCNS, CHFN, CCRN, NE-BC, STEFAN D. ANKER, MD, PhD, JOHN ATHERTON, MBBS, PhD, MICHAEL BÖHM, MD, JAVED BUTLER, MD, MPH, MBA, MARK H. DRAZNER, MD, MSc, G. MICHAEL FELKER, MD, MHS, GERASIMOS FILIPPATOS, MD, GREGG C. FONAROW, MD, MONA FIUZAT, PharmD, JUAN–ESTEBAN GOMEZ-MESA, MD, PAUL HEIDENREICH, MD, TERUHIKO IMAMURA, MD, PhD, JAMES JANUZZI, MD, EWA A. JANKOWSKA, MD, PhD, PRATEETI KHAZANIE, MD, MPH, KOICHIRO KINUGAWA, MD, PhD, CAROLYN S.P. LAM, MBBS, FRCP, PhD, YUYA MATSUE, MD, PhD, MARCO METRA, MD, TOMOHITO OHTANI, MD, PhD, MASSIMO FRANCESCO PIEPOLI, MD, PhD, PIOTR PONIKOWSKI, MD, PhD, GIUSEPPE M.C. ROSANO, MD, PhD, YASUSHI SAKATA, MD, PhD, PETAR SEFEROVIĆ, MD, PhD, RANDALL C. STARLING, MD, MPH, JOHN R. TEERLINK, MD, ORLY VARDENY, PharmD, MS, KAZUHIRO YAMAMOTO, MD, PhD, CLYDE YANCY, MD, MSc, JIAN ZHANG, MD, PhD, AND SHELLEY ZIEROTH, MD



Global Burden of Heart Failure

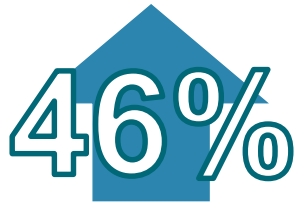


Yan T et al. JAHA. 2023

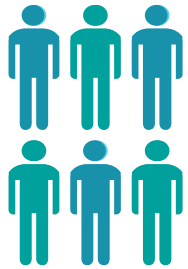
Heart Failure is a Public Health Emergency

An estimated 6 million Americans ≥20 years of age have heart failure, and 1 million new cases occur annually

The number of Americans living with HF will increase



from 2012 to 2030 owing to an aging population and advances in HF therapies



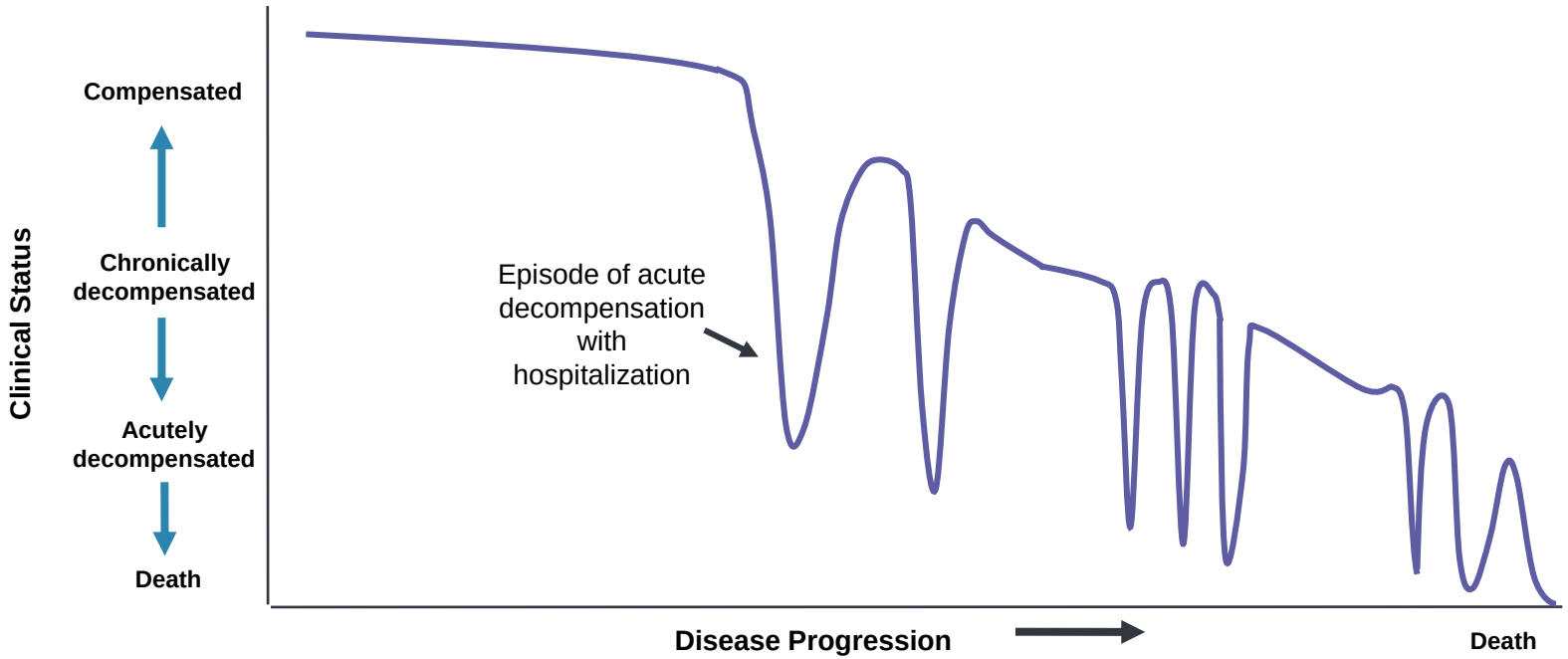
50%

of people diagnosed with HF will die within 5 years

The total cost of HF will increase from 2012 to 2030, to $69.7 billion

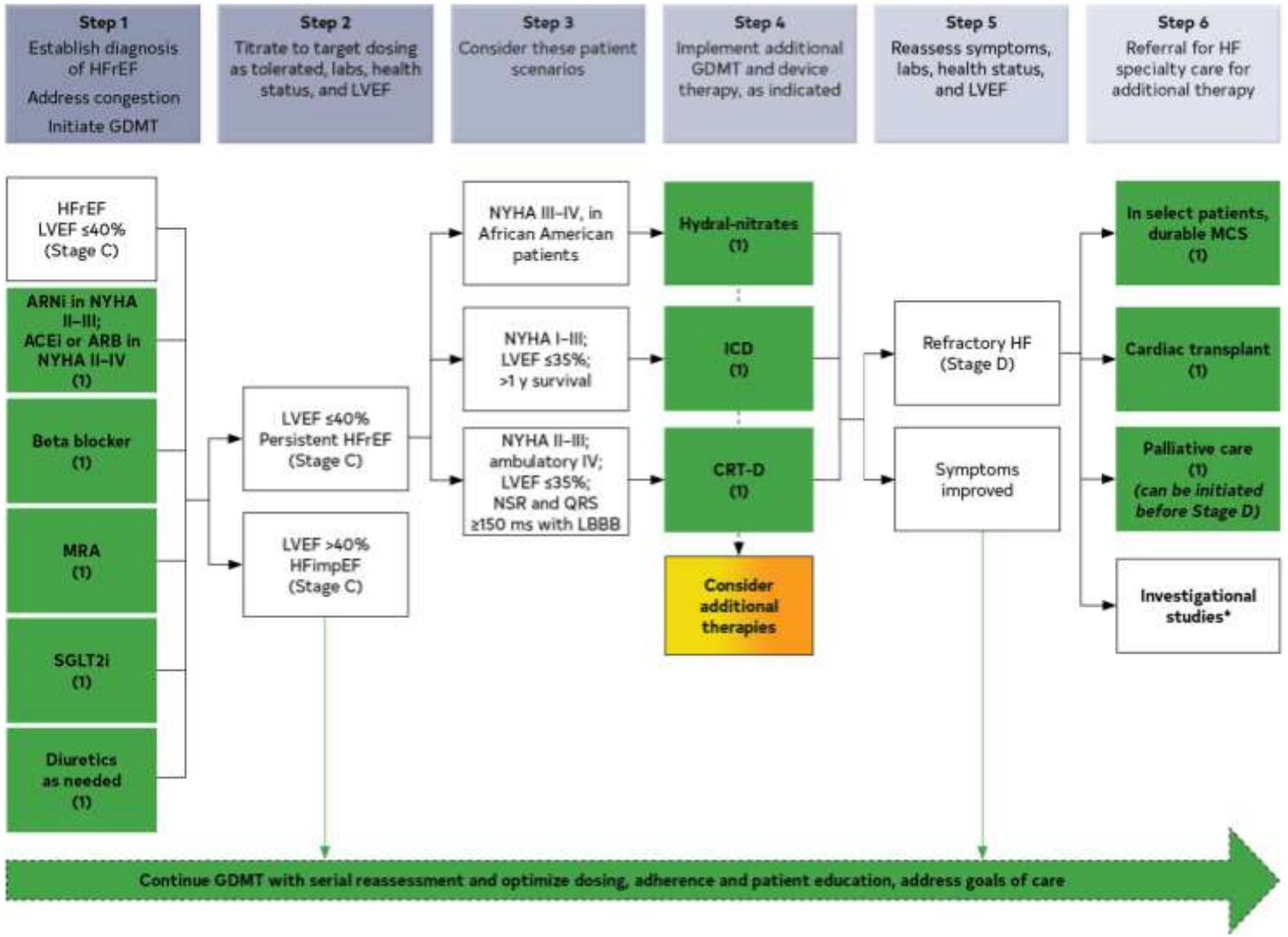
Benjamin EJ et al. Circulation. 2018
Heidenreich PA et al. Circ Heart Fail. 2013

Heart Failure is a Progressive Disease



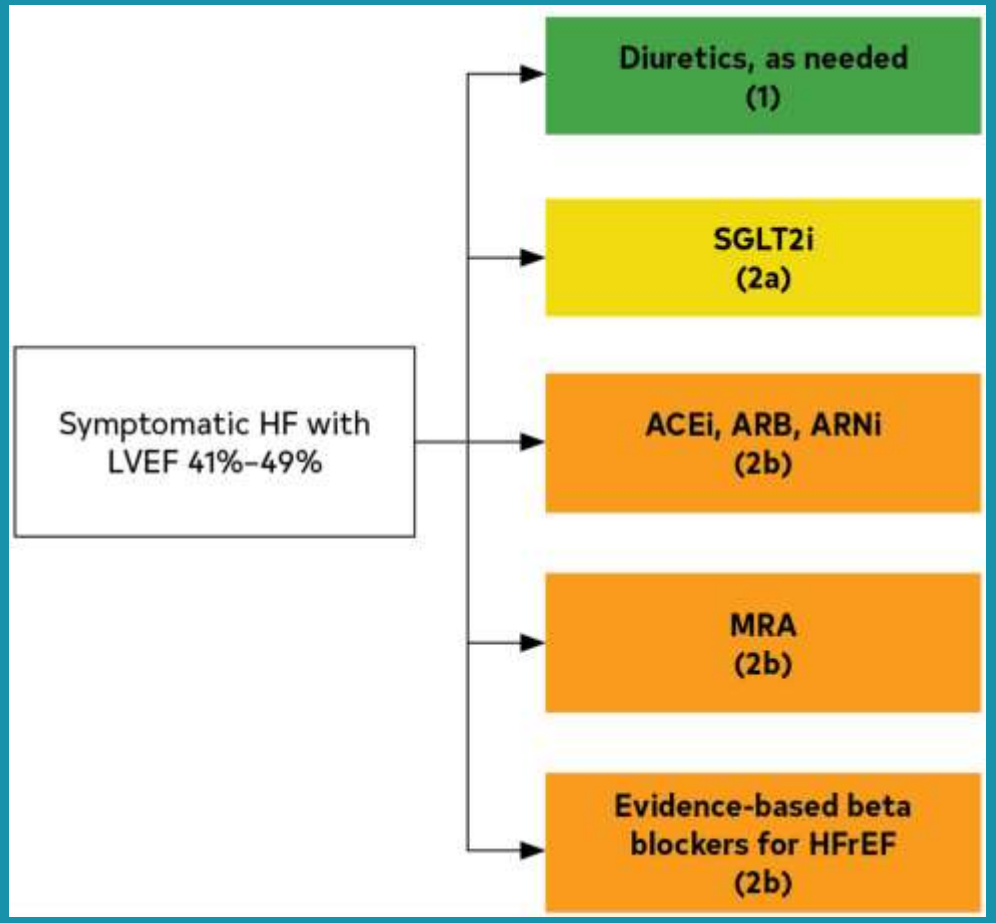
González A et al. J Am Coll Cardiol. 2011
Gheorghiade M et al. Am J Cardiol. 2005
Allen LA et al. Circulation. 2012

Heart Failure with Reduced Ejection Fraction (HFrEF; EF ≤40%)

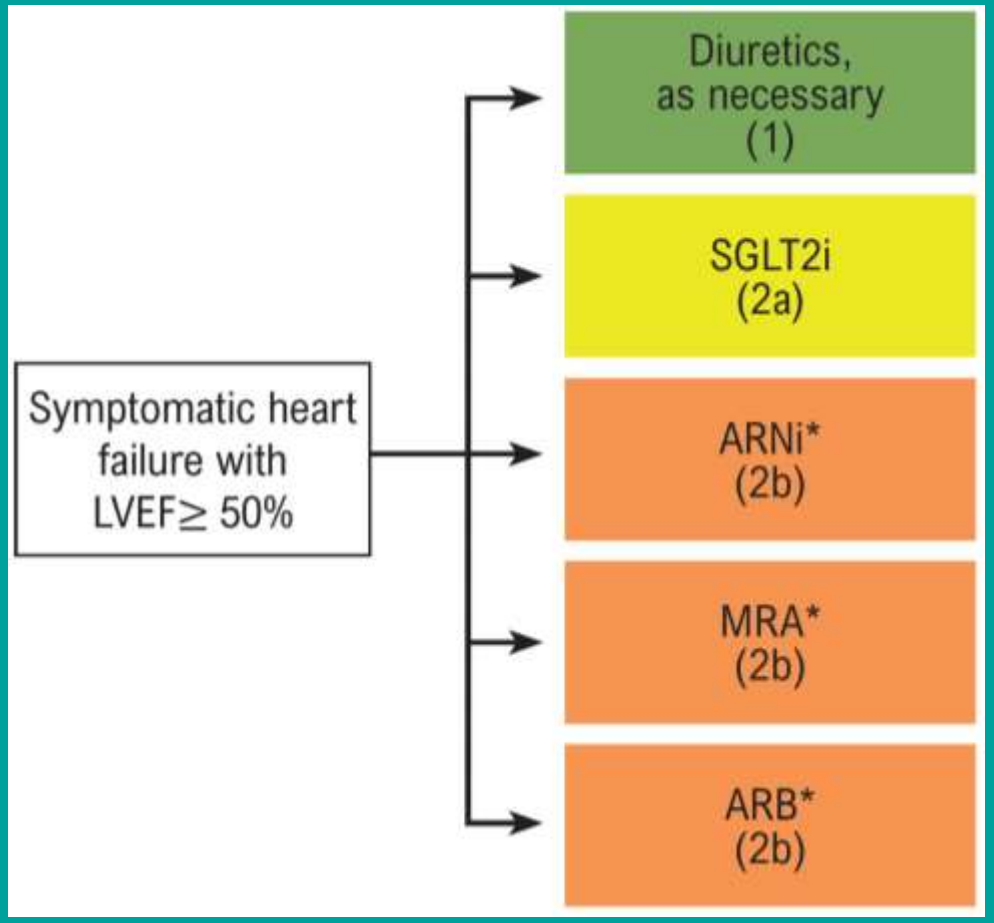


Heidenreich PA et al. Circulation. 2022

Heart Failure with Mildly Reduced Ejection Fraction (HFmrEF; EF 41-49%)



Heart Failure with Preserved Ejection Fraction (HFpEF; EF ≥50%)



Heidenreich PA et al. Circulation. 2022

Case 1

A 68 yo man with HFrEF attributed to ischemic cardiomyopathy is admitted to the CCU with acute decompensated HF. He was on dobutamine during the initial part of his admission but has been off it for 72 hours.

His current vitals include BP 96/62 mmHg, HR 98 bpm. His current medications include metoprolol succinate 25mg twice daily, lisinopril 10mg daily, and furosemide 80mg daily. Laboratory data are unremarkable.

Which of the following is the best next step?

a) Increase lisinopril to 20mg daily

b) Stop lisinopril, add sacubitril/valsartan 24/26mg twice daily

c) Add spironolactone 25mg daily

d) Increase metoprolol succinate to 50mg twice daily

Case 2

A 67 yo Black man with HFrEF (LVEF 22%) attributed to ischemic cardiomyopathy presents to your clinic with NYHA II symptoms. He continues to work as a school superintendent. His medications include carvedilol 25mg twice daily, sacubitril/valsartan 97/103mg bid, spironolactone 25mg daily, and torsemide 10mg daily.

Which of the following medications do you add next?

a) Dapagliflozin 10mg daily

b) Hydralazine 25mg tid

c) Isosorbide dinitrate 10mg tid

d) Hydralazine 25mg tid + isosorbide dinitrate 10mg tid

Case 3

- A 58 yo woman with newly-discovered HFrEF (LVEF 28%) attributed to idiopathic cardiomyopathy presents to your clinic. On exam she is warm, JVP 12 cmH2O, trace lower extremity edema. BP 108/62 mmHg, HR 71 bpm. Labs reveal NT-proBNP 1050 pg/mL, creatinine 1.3 mg/dL. Her medications include carvedilol 25mg twice daily, amlodipine 10mg daily, spironolactone 25mg daily, and torsemide 10mg daily.
- **Which of the following is the best next step?**

  a) Increase torsemide to 20mg daily

  b) Add lisinopril 10mg daily

  c) Add sacubitril/valsartan 24/26mg twice daily

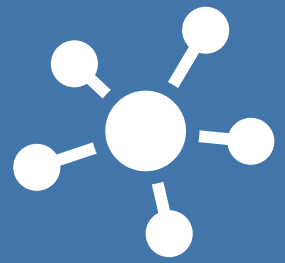
  d) Switch to metoprolol succinate 100mg twice daily

GDMT for Patients with Heart Failure

ARNI

Beta Blockers

(HFrEF)



MRA

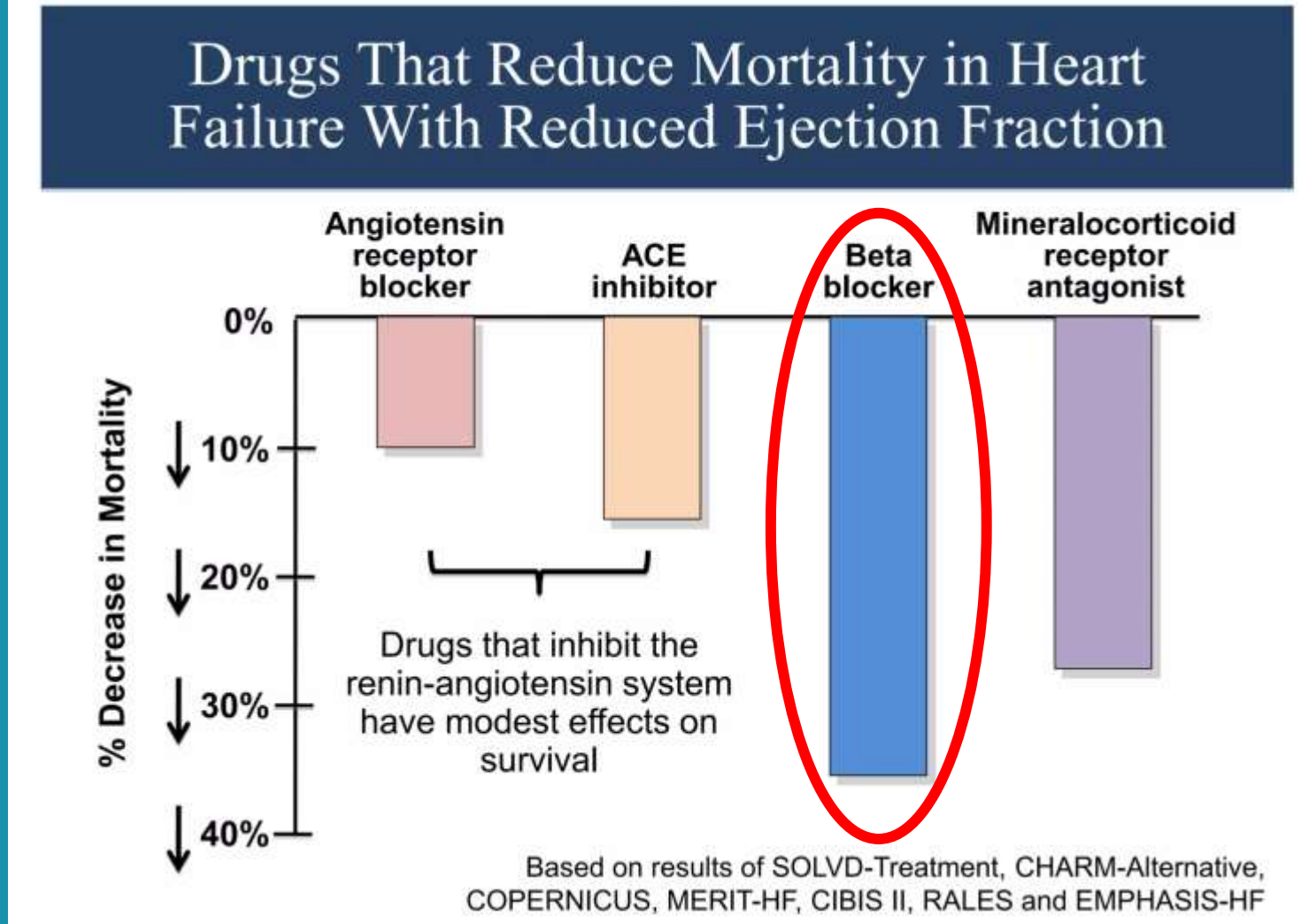
SGLT2i

Strategies for Success

- Discuss 4-drug strategy with patient at initial contact
- Start low doses if concerned about blood pressure
- Wet patients are ideal!!! 
- May need to back off diuretics when initiating ARNI and SGLT2i (use BNP/NT-proBNP)
- In-hospital initiation for hospitalized patients 
- Multidisciplinary GDMT clinics + telehealth
- Patient self-titration? 

What If You Have to Choose?

Beta blockers offer the largest reduction in mortality



Viewpoint

ONLINE FIRST

March 31, 2021

Simultaneous or Rapid Sequence Initiation of Quadruple Medical Therapy for Heart Failure—Optimizing Therapy With the Need for Speed

Stephen J. Greene, MD[1,2]; Javed Butler, MD, MPH, MBA[3]; Gregg C. Fonarow, MD[4,5]

> Author Affiliations

JAMA Cardiol. Published online March 31, 2021. doi:10.1001/jamacardio.2021.0496

Figure. Simultaneous or Rapid Sequence Initiation of Comprehensive Disease-Modifying Medical Therapy (CDMMT) for Heart Failure

Early relative risk reduction			Initiation and optimization of medication dosing				
Outcomes	Change, %	CDMMT	Day 1	Days 7-14	Days 14-28	Days 21-42	After day 42
CV death or HF hospitalization	-42	ARNI	Initiate at low dose	Continue	Titrate, as tolerated	Titrate, as tolerated	Maintenance or additional titration of the 4 foundational therapies
Death	-25	β-Blocker	Initiate at low dose	Titrate, as tolerated	Titrate, as tolerated	Titrate, as tolerated	Consideration of EP device therapies or transcatheter mitral valve repair
CV death or HF hospitalization	-37	MRA	Initiate at low dose	Continue	Titrate, as tolerated	Continue	Consideration of add-on medications or advanced therapies, if refractory
Death, HF hospitalization,or emergency/ urgent visit for worsening HF	-58	SGLT2i	Initiate	Continue	Continue	Continue	Manage comorbidities

Strategy, timeline, and clinical benefits for simultaneous initiation of comprehensive disease-modifying therapy in patients who are hospitalized or outpatients. Data were obtained from the COPERNICUS, EMPHASIS-HF (NCT00232180), PIONEER-HF (NCT02554890), and EMPEROR-Reduced (NCT03057977) trials. Low starting doses should be used, with β-blocker uptitration prioritized. Clinical benefits of all medications are apparent within 30 days of initiation. This strategy could be tested in randomized clinical trials, but available evidence suggests the benefits of this strategy outweigh the risks. ARNI indicates angiotensin receptor–neprilsyin inhibitor; CV, cardiovascular; EP, electrophysiological; HF, heart failure; MRA, mineralocorticoid receptor antagonist; SGLT2i, sodium glucose cotransporter 2 inhibitor.

Why the Need for Speed?

- Rapid improvement in health status (within 1 to 8 weeks)[1]
- Rapid improvement in LVEF (within 12 weeks)[2]
- Rapid reduction in HF hospitalizations (within 2 to 4 weeks)
- Rapid reduction in HF rehospitalizations (within 2 to 4 weeks)[3]
- Rapid reduction in mortality (within 2 to 4 weeks)
- Improved use, adherence, persistence, overcoming inertia[4]

Slide created by Dr. Gregg Fonarow. Presented at ACC 2021

1. Khariton Y, et al. JACC Heart Fail. 2019;7:933-941; 2. Desai AS, et al. JAMA. 2019. doi:10.1001/jama.2019.12843;
3. Morrow DA, et al. Circulation. 2019;139:2285-2288; 4. Bhatt AS, et al. Eur J Heart Fail. 2020;22:313-314

When to Refer to an Advanced Heart Failure & Transplant Cardiologist

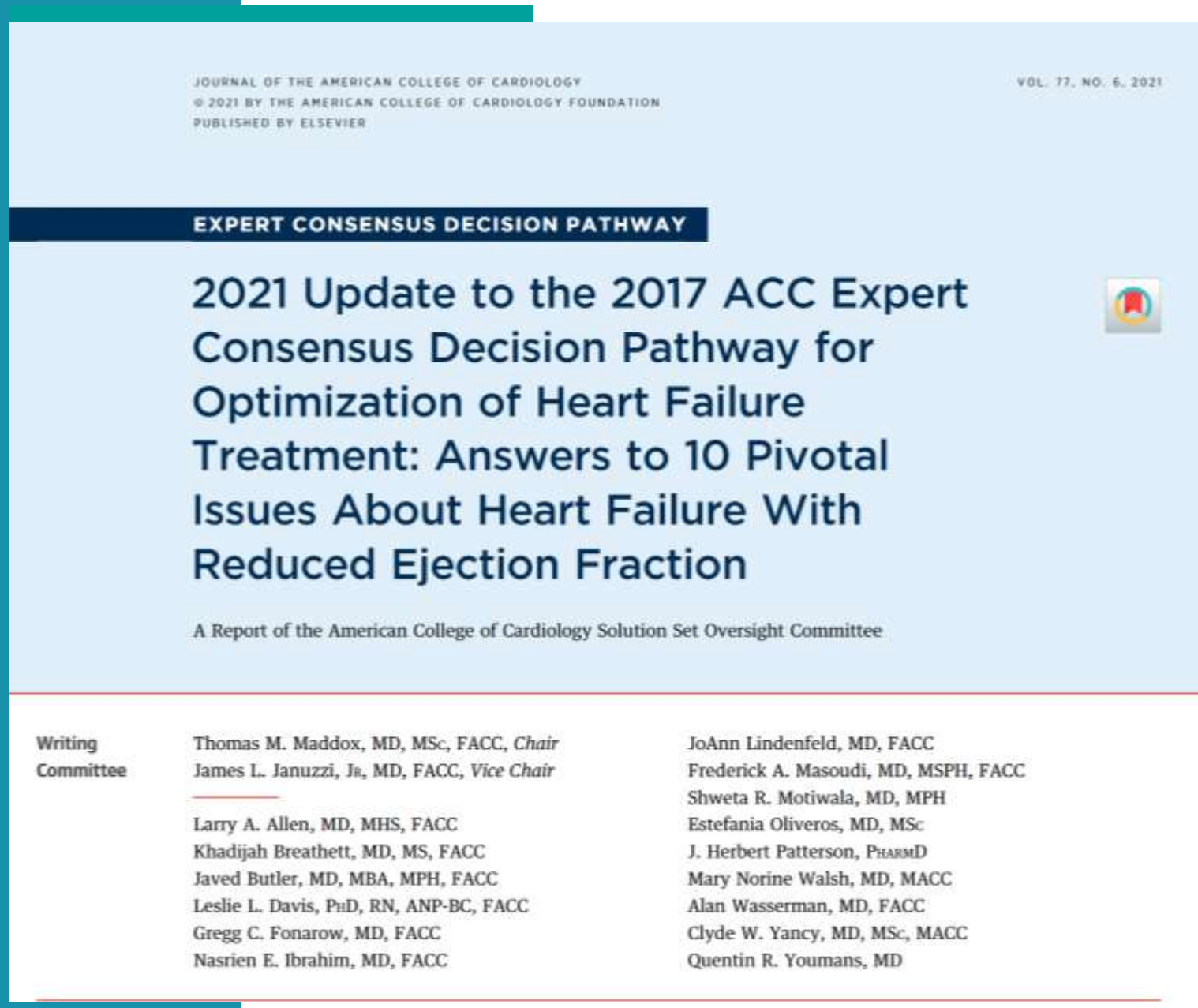
The earlier the referral the better!!!

I	Need for **inotropes**
N	**New** York Heart Association Class IV
E	Worsening **end-organ** dysfunction
E	**Ejection fraction** <20%
D	**Defibrillator** shocks for ventricular arrhythmias
H	Recurrent **HF** hospitalizations
E	**Escalating** diuretic dose
L	**Low blood pressure**
P	**Progressive** intolerance of GDMT

Maddox TM et al. JACC. 2021
https://www.acc.org/Latest-in-Cardiology/Articles/2022/07/01/12/42/Focus-on-Heart-Failure-Existing-Disparities-and-Improving-Access-to-Advanced-Heart-Failure-Care-Among-Underrepresented-Populations

ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment

Be on the look out for the 2023 update!



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VOL. 77, NO. 6, 2021

EXPERT CONSENSUS DECISION PATHWAY

2021 Update to the 2017 ACC Expert Consensus Decision Pathway for Optimization of Heart Failure Treatment: Answers to 10 Pivotal Issues About Heart Failure With Reduced Ejection Fraction

A Report of the American College of Cardiology Solution Set Oversight Committee

Writing Committee

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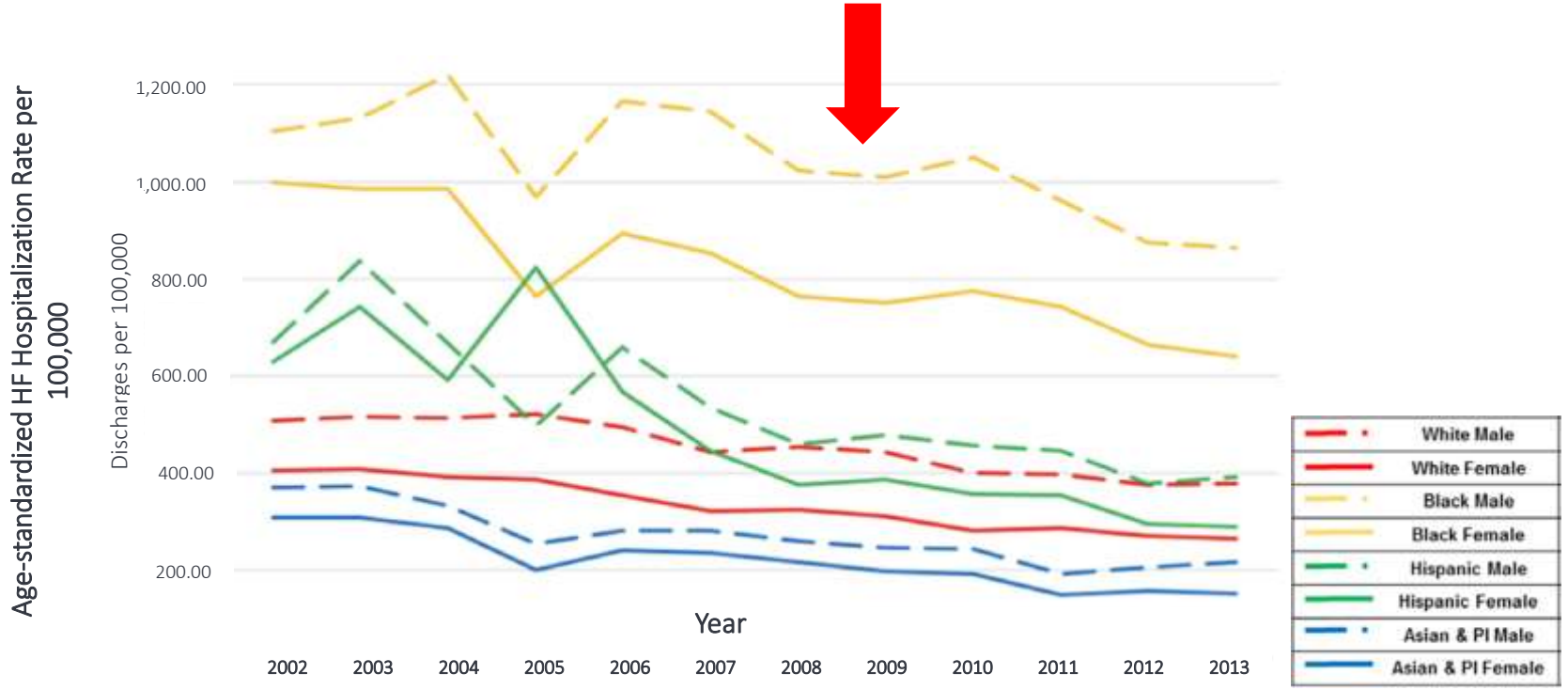
To Achieve Health Equity, We Must Understand What These Words Mean

https://www.linkedin.com/in/david-paton-30713916/

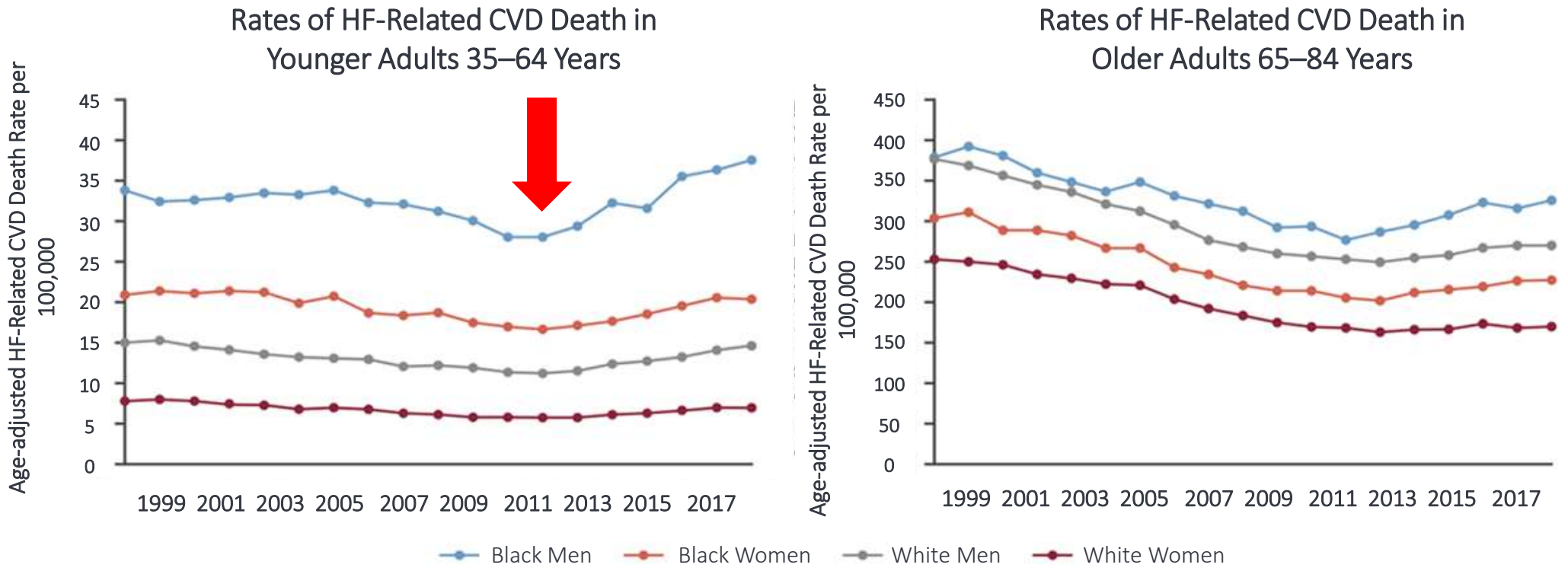
Heart Failure Hospitalization Rates Vary Across Sex, Racial, and Ethnic Groups



Heart failure hospitalization rates are high for Black and Hispanic patients, with hospitalization rates approximately 2.5 times higher for Black patients than for White patients

Nayak A, et al. Circ Heart Fail. 2020

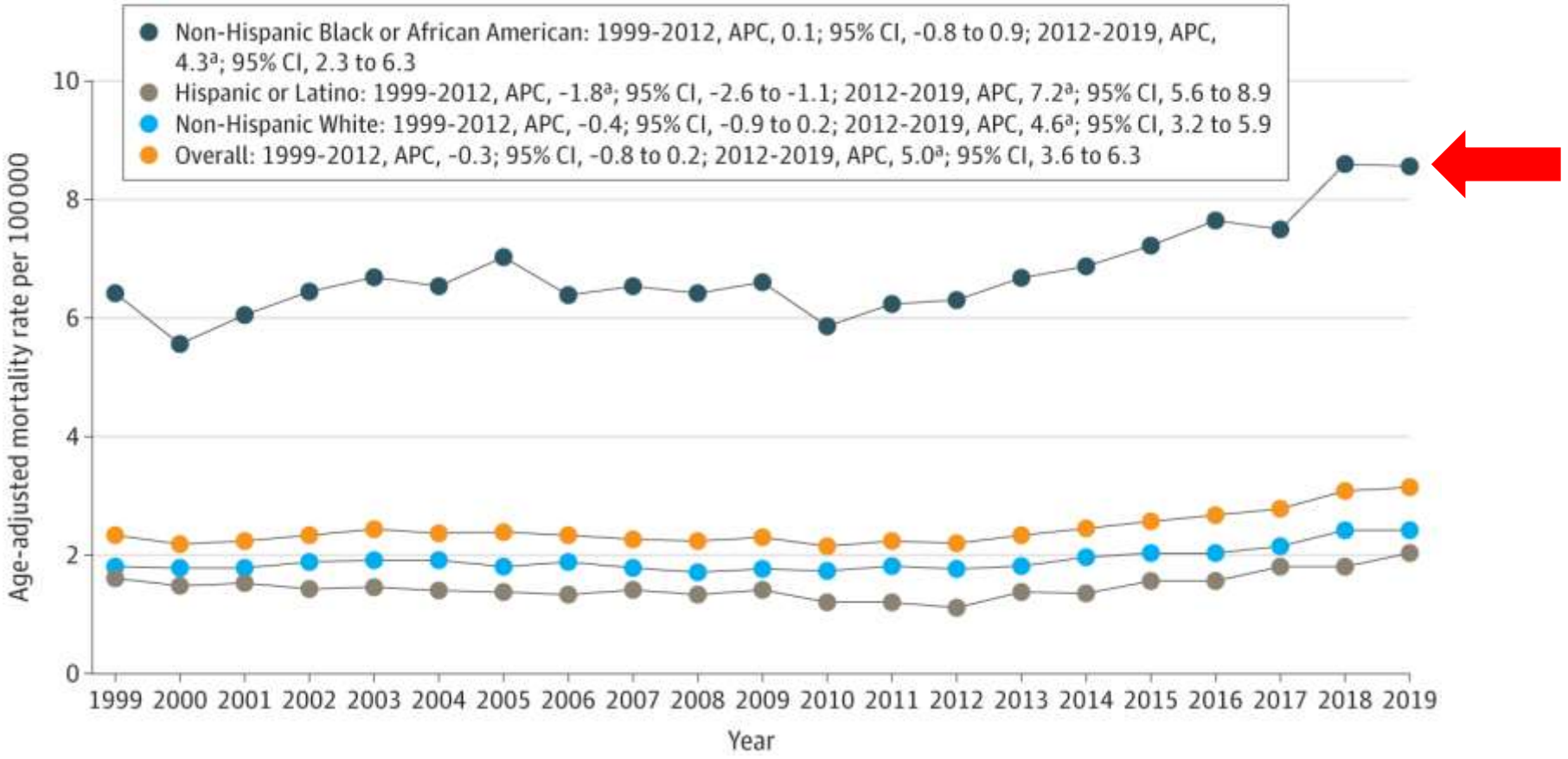
Heart Failure-Related Death Rates Increase With Age and Are Higher in Black Men



Black patients have the highest risk of heart failure-related death among young adults; however, the risk of HF-related death is highest for men among older adults

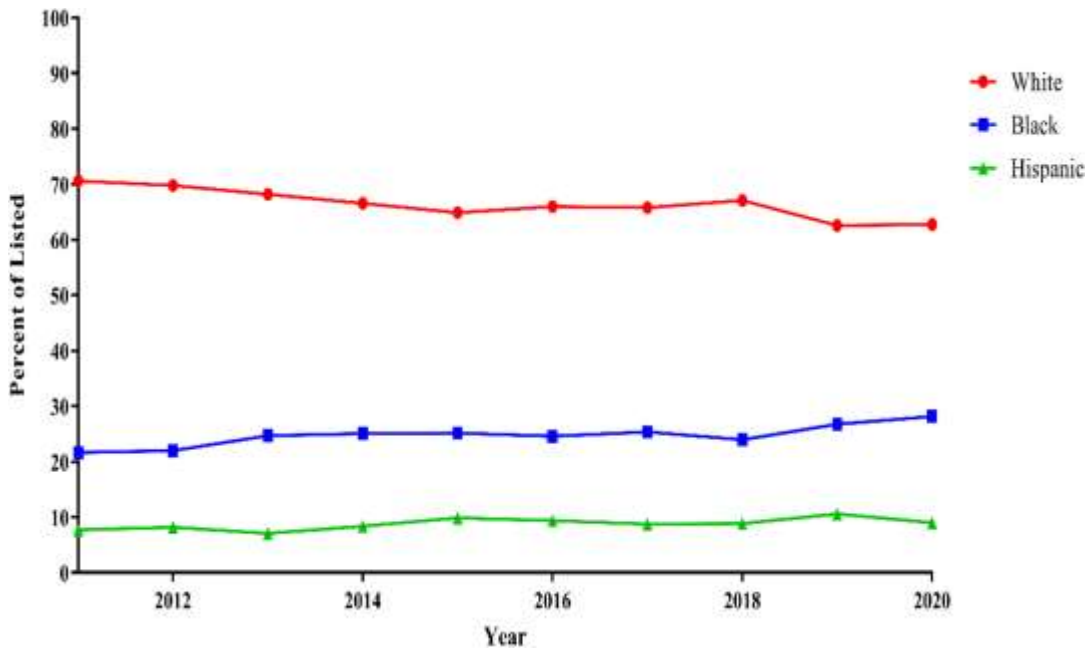
Nayak A, et al. Circ Heart Fail. 2020

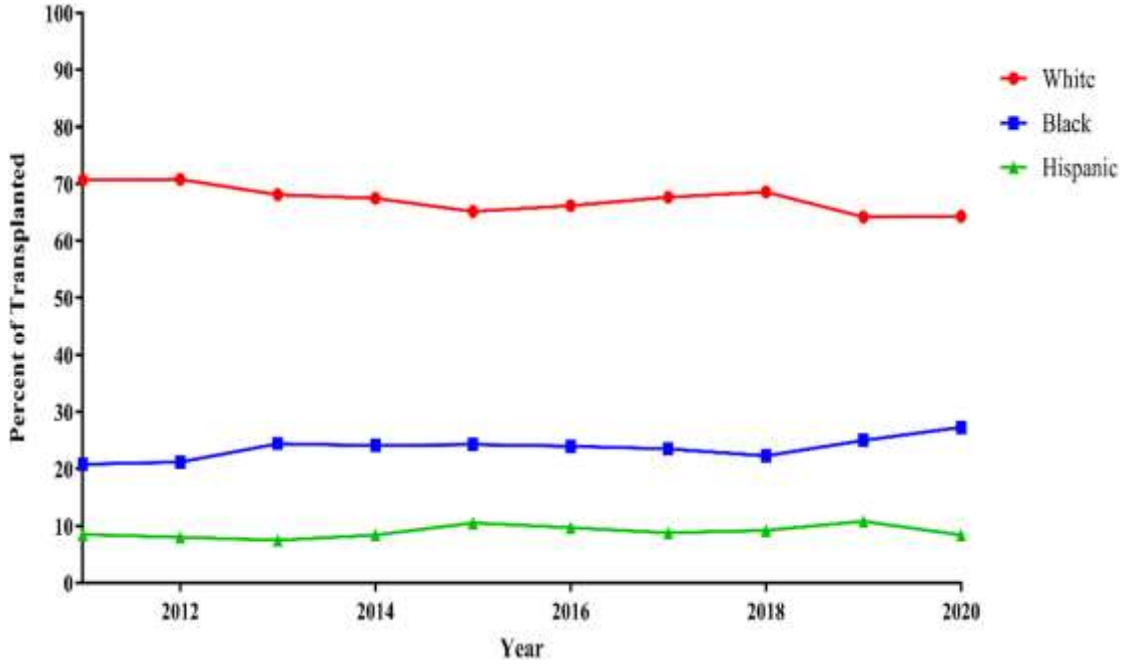
Among Those Aged 15-44, Black Individuals Have the Highest Heart Failure-Related Age-Adjusted Mortality Rates



Jain V et al. JAMA Cardiology. 2022

The Proportion of Black and Hispanic Patients Listed for Heart Transplant Have Increased but Significant Disparities Remain





Chouairi F et al. JAHA. 2021

The God Squad and the Origins of Transplantation Ethics and Policy

Albert R. Jonsen

First Published May 1, 2007 | Meeting Report | Find in PubMed
https://doi.org/10.1111/j.1748-720X.2007.00131.x

Article information

SYMPOSIUM

The God Squad and the Origins of Transplantation Ethics and Policy

Albert R. Jonsen

This is the God Squad. It is faceless, impersonal, unmoved by tragedy, almost terrorist in aspect. The photo appeared in *LIFE* magazine on November 9, 1962,[1] and it depicted the Admissions and Policy Committee of the Seattle Artificial Kidney Center. The Committee had been established in 1962 to select those few persons who would be admitted to the new and tiny dialysis unit that was created by Dr. Belding Scribner, inventor of the arteriovenous shunt. It consisted of seven anonymous members – a minister, a lawyer, a businessman, a homemaker, a labor leader, and two physicians. Each month they received a pile of charts about persons with end-stage renal disease. A prior medical evaluation had rated them all medically suitable for dialysis. The Committee's task was to select one or two out of a dozen or so to take the available spots. The others were left to die. After several years of this agonizing work, the amendments to the Social Security Act provided financial support for renal dialysis and transplant, allowing the Admission Committee some peace of mind.

They Decide Who Lives, Who Dies:
Medical Miracle Puts Moral Burden on Small Committee
LIFE, November 9, 1962

Selection of Patients for Transplant

1. Medical
2. Financial
3. Psychosocial

DeFilippis, EM... Ibrahim, NE. *Am J Cardiol.* 2022;180:170-172

CNN health Life, But Better Fitness Food Sleep Mindfulness Relationships

‘Wallet biopsy’: Organ transplant often depends on patient’s finances

By JoNel Aleccia, Kaiser Health News

Published 6:52 AM EST, Mon December 24, 2018

SPECTRUM HEALTH

Heart and Lung Specialized Care Clinics
330 Barclay Ave NE Ste 200
Grand Rapids MI 49503-2525
616-391-2802Fax:616-391-2840
www.spectrumhealth.org

/VAD

MD

11/20/2018

Hedda Elizabeth Martin
[redacted]

on, MD

Dear Ms. Martin,

Your medical situation was presented to our multidisciplinary heart transplant committee on Tuesday October 20, 2018. The decision made by the committee is that you are not a candidate at this time for a heart transplant due to needing more secure financial plan for immunosuppressive medication coverage. The Committee is recommending a fundraising effort of $10,000.

If you have any concerns or questions, please call the transplant office at 616-391-2802.

We thank you for the opportunity to participate in your care. If you have any questions, please do not hesitate to contact me.

MD Please see the attached UNOS letter for details about information on resources and services.

Sincerely,

K. V. A RN

Katie S Vandenakker, RN
SPECTRUM HEALTH RICHARD DEVOS HEART AND LUNG TRANSPLANT CLINIC
330 Barclay Ave NE Ste 200
Grand Rapids MI 49503-2525
Dept: 616-391-2802
Fax: 616-391-2840

Structural Interventions are Needed to Dismantle Disparities

Health Disparities are a Symptom of Broader Social and Economic Inequities

Social and Economic Factors Drive Health Outcomes

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Racism and Discrimination					
Employment Income Expenses Debt Medical bills Support	Housing Transportation Safety Parks Playgrounds Walkability Zip code / geography	Literacy Language Early childhood education Vocational training Higher education	Food security Access to healthy options	Social integration Support systems Community engagement Stress Exposure to violence/trauma	Health coverage Provider availability Provider linguistic and cultural competency Quality of care

Health Outcomes: Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

KFF
HENRY J KAISER FAMILY FOUNDATION

https://www.kff.org/wp-content/uploads/2020/06/Figure-2-Social-Economic-Factors-Drive-Health-Ou.png

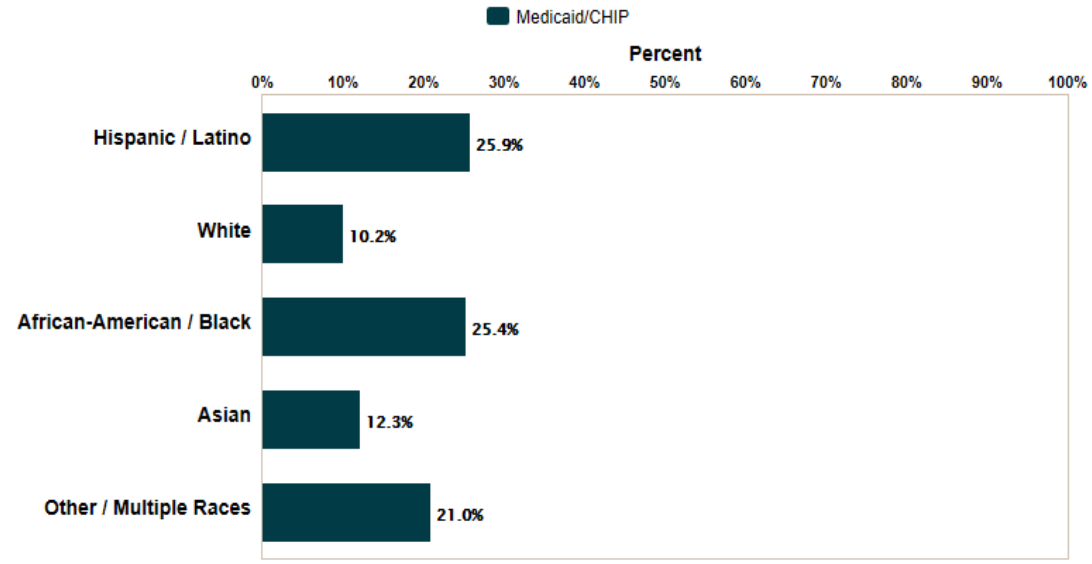
Policies at Every Level Influence Equity in Organ Allocation

- Georgia Medicaid does not cover heart transplant for adults ≥21 years

- Approximately 90% of those covered by Georgia Medicaid are non-white

Health Insurance Coverage Type

State:	Coverage Type:	Timeframe	Data Type:
United States	Medicaid/CHIP	2021	Percent
	Race / Ethnicity:		
	All Selected		



Source
SHADAC analysis of the American Community Survey (ACS) Public Use Microdata Sample (PUMS) files.

The Equity in Heart Transplant Project, Inc

501(c)(3) public charity founded May 2022

www.TEHTP.com

THE EQUITY IN HEART TRANSPLANT PROJECT

What We Do

We provide financial assistance to patients with end-stage heart failure who need a heart transplant. These are patients who medically qualify for transplant but lack the financial means. Lack of finances is a matter of life or death for some patients. We assist any patient in the United States who needs it.

Medication Copayments

Insurance does not always cover 100% of medications

Housing & Transportation

Patients may be asked to move closer to their transplant center for 3-6 months post-transplant

Unmet Needs

We are flexible when it comes to support. We will fund anything that will help the patient and their families through this journey

WE BEGAN ACCEPTING

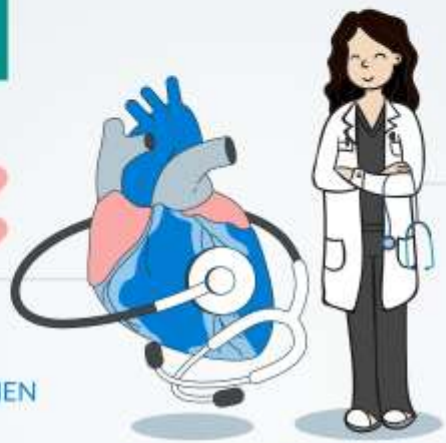
APPLICATIONS FOR ASSISTANCE

ON SEPTEMBER 1, 2022,
AND TO DATE **WE HAVE HELPED**

Get Listed For a Heart Transplant in the U.S.

16 PATIENTS

1 WOMAN **15** MEN



Average Age of Grant Recipients

47 YEARS

9 BLACK

3 HISPANIC/LATINX

3 WHITE

1 AMERICAN INDIAN/ ALASKA NATIVE

8 patients from GEORGIA

4 patients from ILLINOIS

2 patients from CALIFORNIA

1 patients from MASSACHUSETTS

1 patients from NORTH CAROLINA

75% HAVE AN ANNUAL HOUSEHOLD INCOME OF **<$40,000**

$ Grants Have Been For

- HOUSING
- MEDICATION CO-PAYMENTS
- INSURANCE DEDUCTIBLES
- TRANSPORTATION
- UTILITY BILLS

THE EQUITY IN HEART TRANSPLANT PROJECT

“Health is a fundamental human right. Health equity is achieved when everyone can attain their full potential for health and well-being.”

https://www.who.int/health-topics/health-equity#tab=tab_1

Three Major Take Home Points

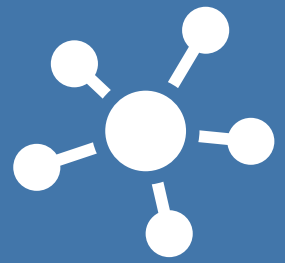
- Patients with HFrEF should be on all 4 classes of GDMT. Patients with HFmrEF and HFpEF should be on all but BB
- Rapid, simultaneous titration is doable. Stop non-GDMT antihypertensives. Reduce diuretics when appropriate
- Be part of the solution to reducing inequities in the care of patients with heart failure

GDMT for Patients with Heart Failure

ARNI

Beta Blockers

(HFrEF)



MRA

SGLT2i

Thank you!