

HEART FAILURE – A GROWING DIAGNOSIS

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Education

Medical School

- St. George's University, Grenada, West Indies

Post-Doctorate, Molecular Virology

- UMASS Medical Center, Worcester, MA

Doctorate, Biochemistry

- Indian Institute of Science, Bangalore, India

Clinical Training

- **Fellow, Advanced Heart Failure/Cardiac Transplant,** Stanford University School of Medicine, Stanford, CA
- **Fellow, Cardiovascular Medicine,** Drexel University College of Medicine, Philadelphia, PA
- **Fellow, Vascular Medicine,** Stanford University School of Medicine, Stanford, CA
- **Intern/Resident, Internal Medicine,** Drexel University College of Medicine, Philadelphia, PA



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Cardiology Procedures:

- Advanced Heart Failure
- Medical Management of Mechanical
- Circulatory support--LVADs/ECMOs
- Transplant Cardiology
- Echocardiography
- Nuclear Cardiology
- Vascular Medicine



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DISCLOSURES

FINANCIAL DISCLOSURE:

No financial relationships to disclose

UNLABELED/UNAPPROVED USES DISCLOSURE:

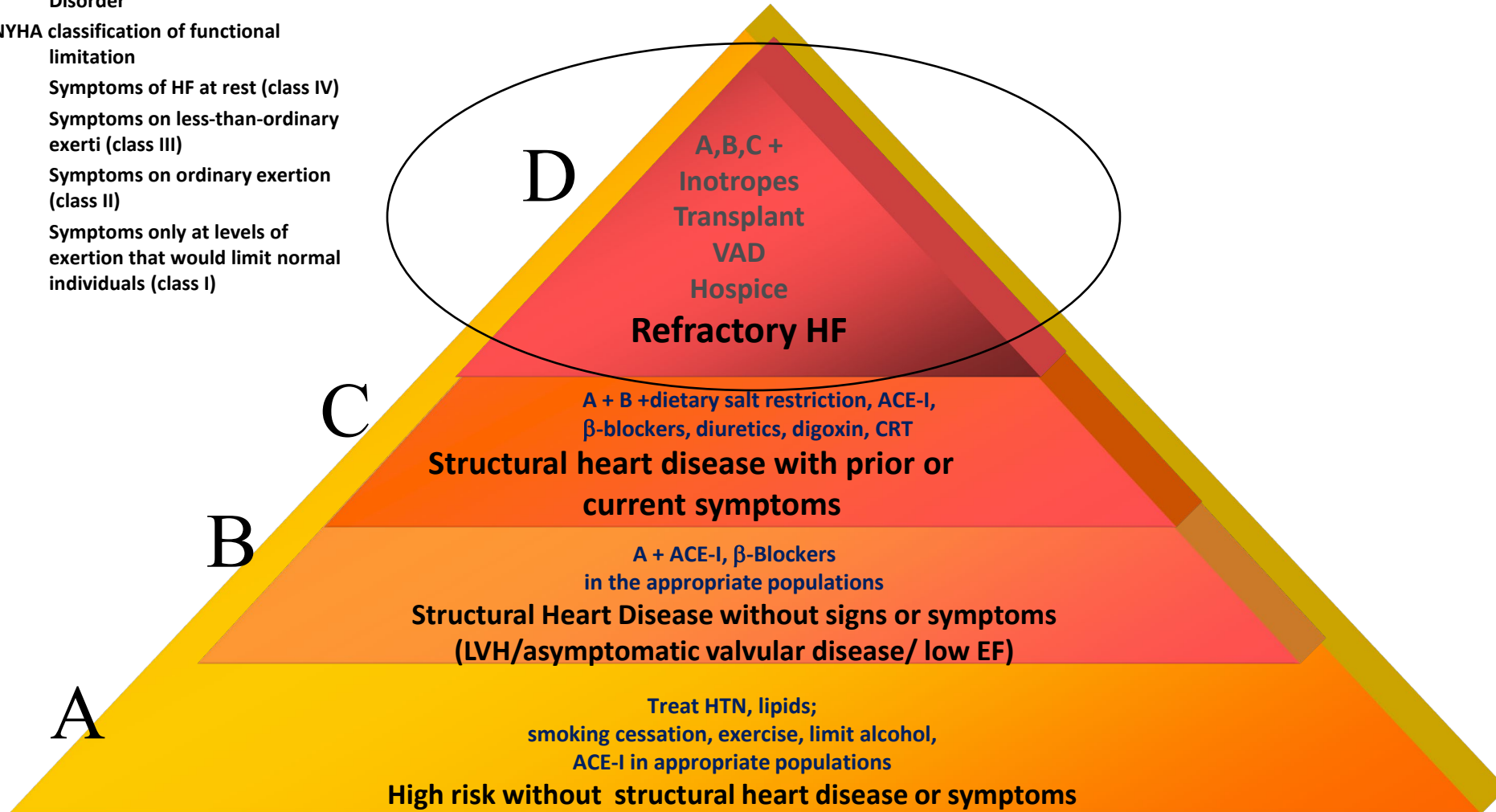
None to disclose

Heart Failure is a Progressive Disorder

Heart Failure As a Symptomatic Disorder

NYHA classification of functional limitation

- Symptoms of HF at rest (class IV)
- Symptoms on less-than-ordinary exertion (class III)
- Symptoms on ordinary exertion (class II)
- Symptoms only at levels of exertion that would limit normal individuals (class I)



Hunt SA et al. *J Am Coll Cardiol.* 2001;38:2101–2113.



American Heart Association.

Heart Failure

- Heart failure happens when the heart cannot pump enough blood and oxygen to support other organs in your body
- Heart failure is a serious condition, but it does not mean that the heart has stopped beating
- About **6.5 million** adults in the United States have heart failure
- Heart failure was a contributing cause of **1 in 8 deaths** in 2017
- Heart failure costs the nation an estimated **\$30.7 billion** in 2012
- This total includes the **cost of health care services, medicines to treat heart failure, and missed days of work.**

TYPES OF HEART FAILURE

- HEART FAILURE CAN BE CLASSIFIED AS LEFT SIDED AND /OR RIGHT SIDED.
- WHEN FLUID BACKS UP INTO THE LUNGS AND TISSUES IT IS CALLED **CONGESTIVE HEART FAILURE** .
- THE PUMPING ACTION OF THE HEART MOVES OXYGEN-RICH BLOOD TO THE REST OF THE BODY.
- THE LEFT SIDE OF THE HEART SUPPLIES MOST OF THE HEART'S PUMPING POWER, SO IT'S LARGER THAN THE OTHER CHAMBERS AND ESSENTIAL FOR NORMAL FUNCTION.
- IN LEFT-SIDED FAILURE, THE LEFT SIDE OF THE HEART MUST WORK HARDER TO PUMP THE SAME AMOUNT OF BLOOD MAKING IT WEAKER AND EVENTUALLY FAIL.
- IN RIGHT SIDED FAILURE THE HEART FAILS TO PUMP BLOOD BACK OUT OF THE HEART INTO THE LUNGS TO BE REPLENISHED WITH OXYGEN.

TYPES OF HEART FAILURE

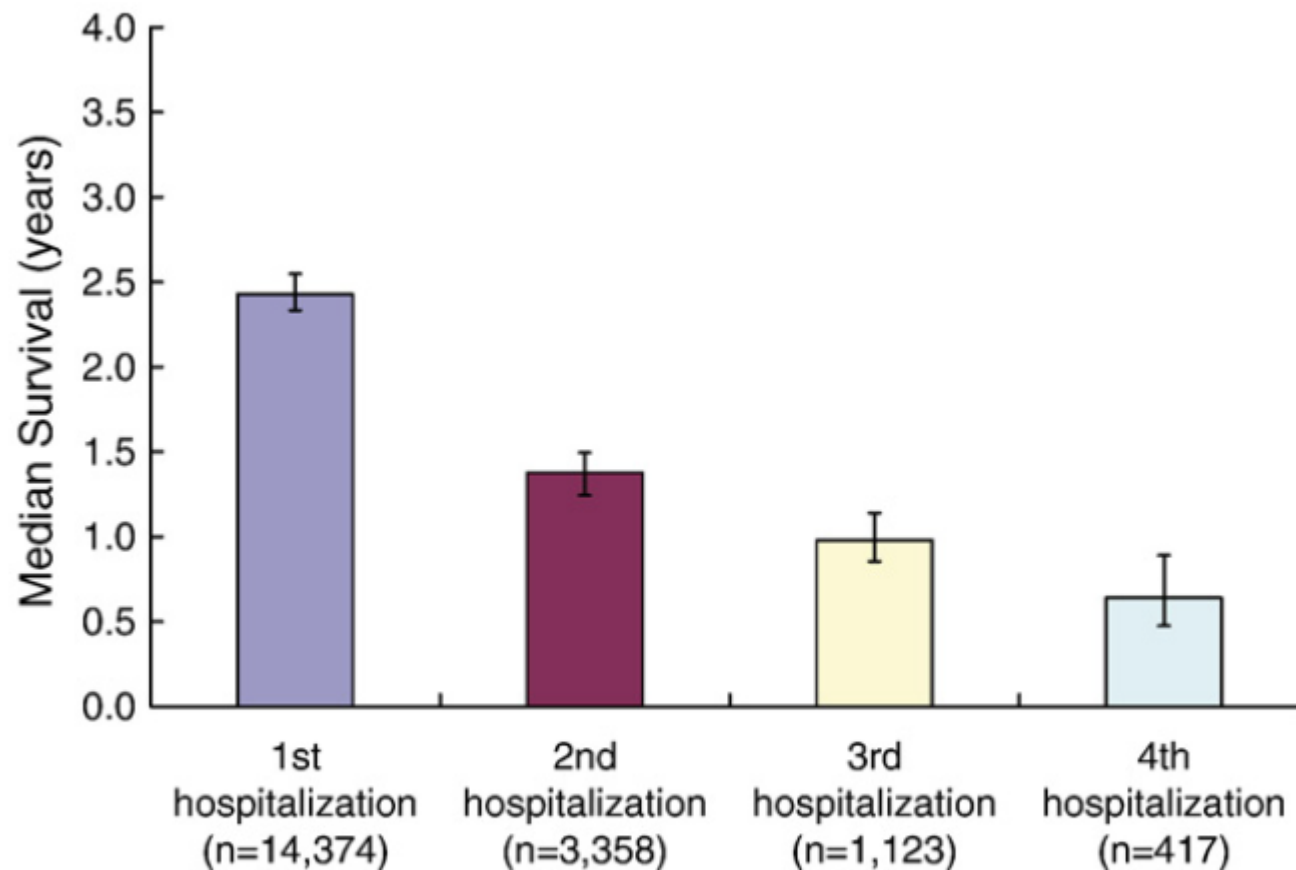
- RIGHT-SIDED HEART FAILURE USUALLY IS A CONSEQUENCE OF LEFT-SIDED FAILURE.
- WHEN THE LEFT SIDE FAILS IT CAUSES INCREASED FLUID PRESSURE DAMAGING THE RIGHT SIDE.
- WHEN THE RIGHT SIDE LOSES PUMPING POWER, BLOOD BACKS UP INTO THE VEINS.
- THIS USUALLY CAUSES SWELLING IN THE LEGS, ANKLES AND ABDOMEN INTESTINES AND THE LIVER. THIS IS WHAT CAUSES LIVER FAILURE.
- HEART FAILURE ALSO AFFECTS THE KIDNEYS CAUSING RETENTION OF SODIUM AND WATER WHICH LEADS TO SWELLING IN THE TISSUES.

Length of Stay and 30-day Readmission and Mortality

REDUCTIONS IN LENGTH OF STAY AND INPATIENT/30 DAY MORTALITY AS WELL AS READMISSIONS ARE INVERSELY PROPORTIONAL (BUENO H JAMA 2010 303 --- MEDICARE POP 1993 TO 2006)

VA STUDY FROM 1997 TO 2010 SHOWED NO INCREASE IN READMISSION RATE WITH DECREASE IN LENGTH OF STAY (KABOLI ET AL ANN INTERN MED 2012 157; 837)

Figure 2



Median survival (50% mortality) and 95% confidence limits in patients with HF after each HF hospitalization.

Setoguchi et al AM Heart J 2007 154 260-266

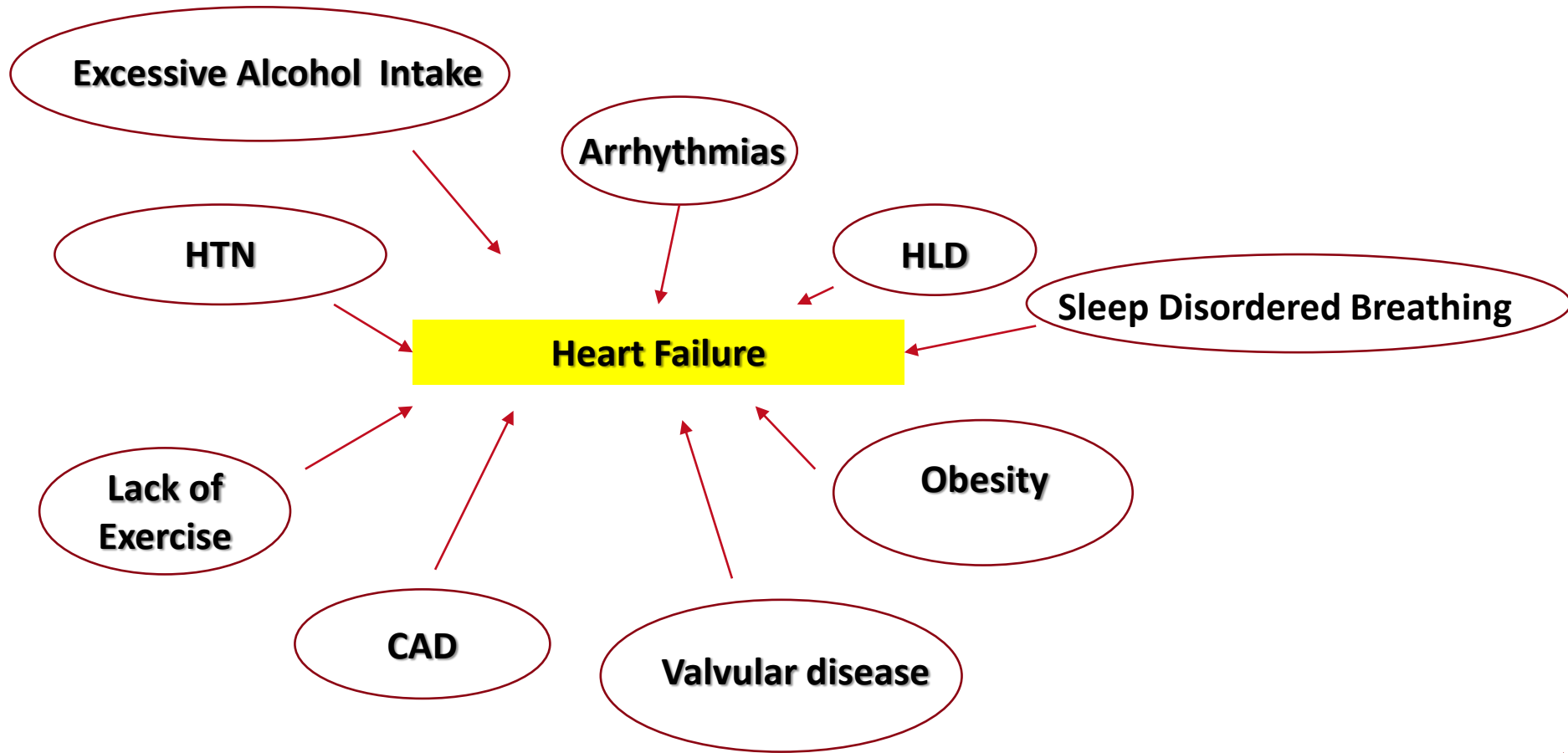
CMS PENALTIES

BASED ON 3-YEAR DISCHARGE DATA

MAX PENALTY 3% IN 2015 ONWARDS FOR ALL CMS
HOSPITAL PAYMENTS NOT DISEASE SPECIFIC PAYMENTS

www.cms.gov

Risk Factors for Heart Failure

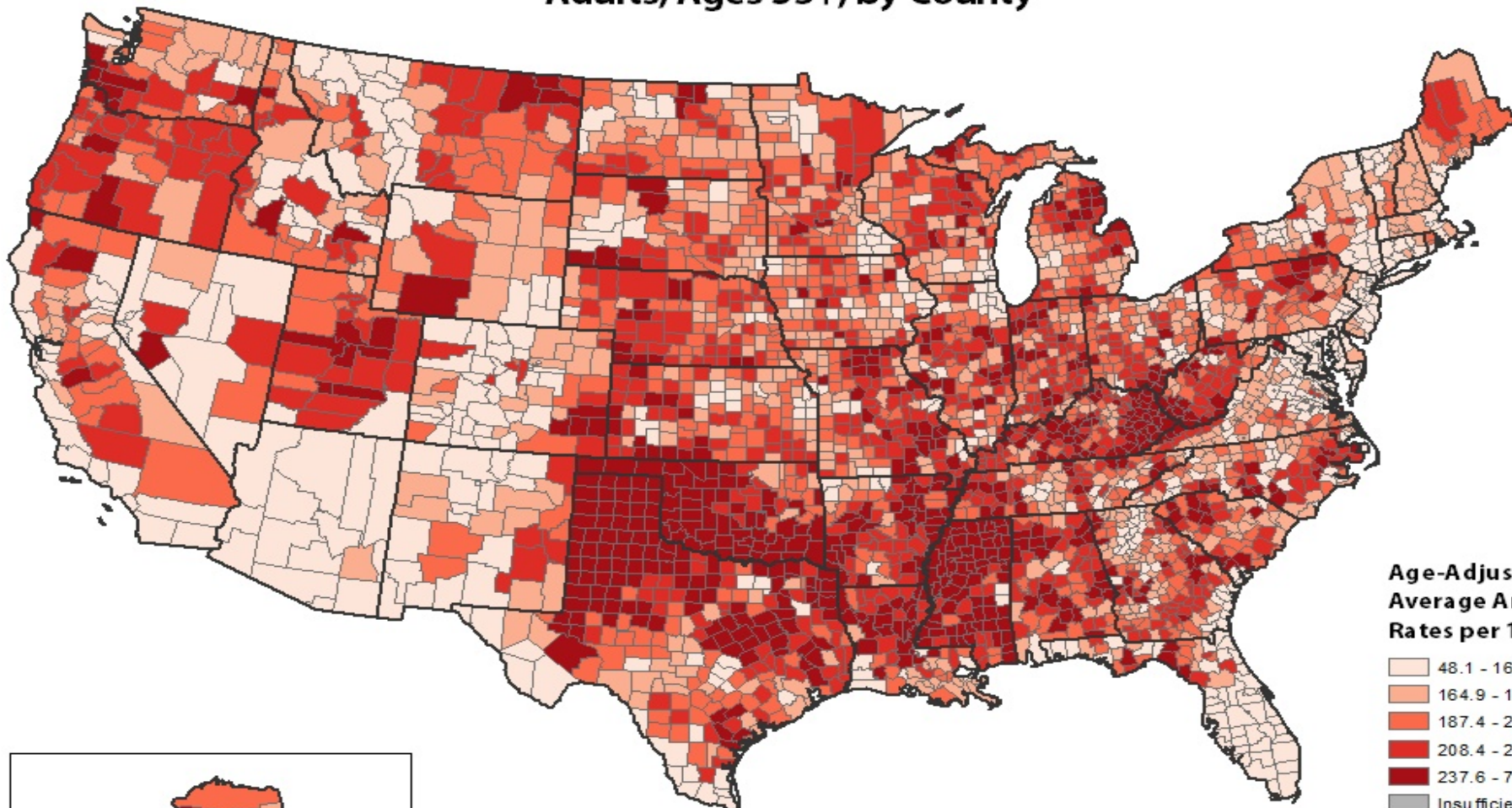


RISK FACTORS

Unhealthy behaviors can also increase your risk for heart failure, especially for people with risk factors

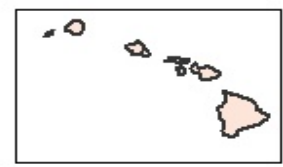
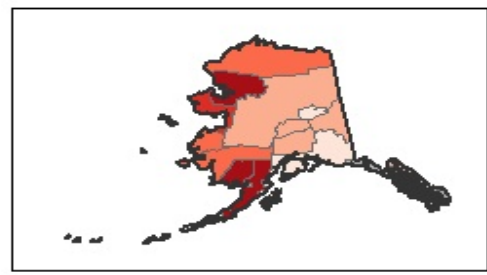
- Smoking tobacco
- Eating foods high in fat, cholesterol, and [sodium](#)
- Not getting enough physical activity
- Excessive alcohol intake

Heart Failure Death Rates, 2014-2016 Adults, Ages 35+, by County



**Age-Adjusted
Average Annual
Rates per 100,000**

- 48.1 - 164.8
- 164.9 - 187.3
- 187.4 - 208.3
- 208.4 - 237.5
- 237.6 - 706.1
- Insufficient Data

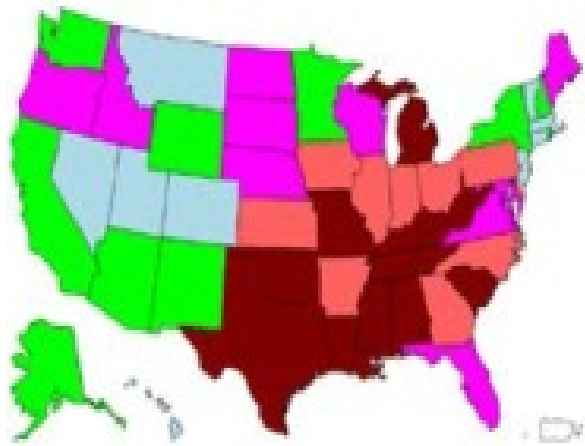


Rates are spatially smoothed to enhance the stability of rates in counties with small populations.

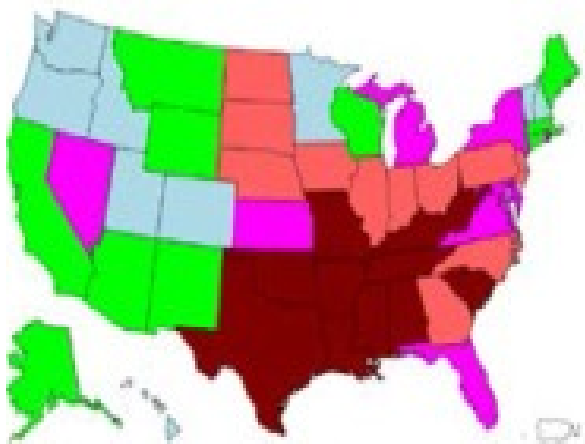
Data Sources:
National Vital Statistics Systems
National Center for Health Statistics.
Includes deaths with any mention of heart failure.



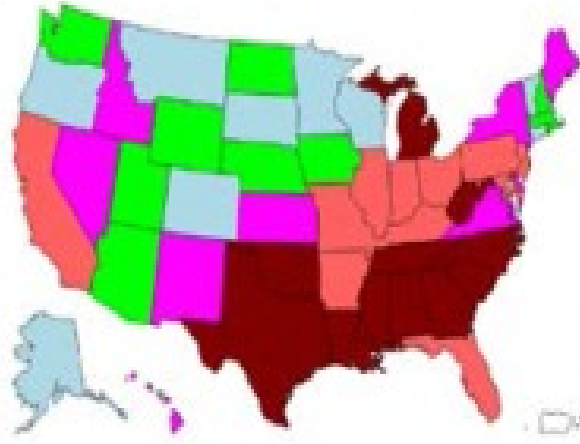
A Obesity rate



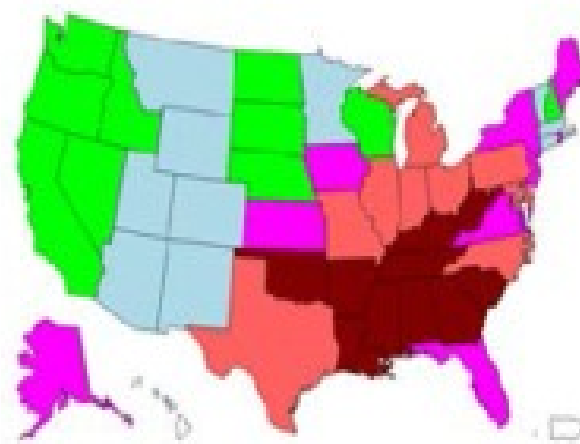
B Physical inactivity rate



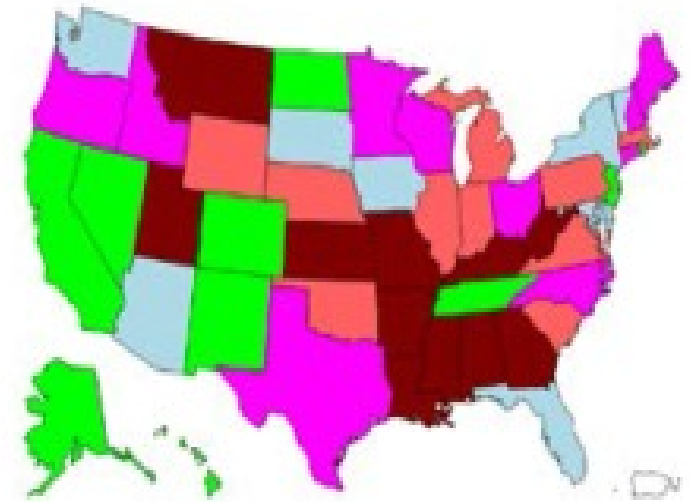
C Diabetes rate



D High blood pressure rate



E Heart failure mortality



Obesity	P-Inactivity	Diabetes	HBP	HF
20.9 - 23.2	17.4 - 19.1	6.1 - 7.0	24.1 - 25.0	8.7 - 19.2
23.3 - 26.0	19.2 - 22.2	7.1 - 8.0	25.1 - 28.2	19.3 - 33.1
26.1 - 28.2	22.3 - 24.6	8.1 - 8.9	28.3 - 30.2	33.2 - 44.2
28.3 - 30.6	24.7 - 27.8	9.0 - 10.0	30.3 - 32.5	44.3 - 59.3
30.7 - 34.1	27.9 - 33.0	10.1 - 11.7	32.6 - 37.0	59.4 - 85.0



QUESTIONS

American Heart Association