HFSTATS SHEET

Incidence, Prevalence, and Lifetime Risk Estimates of Heart Failure in the United States

- Approximately 6.7 million Americans over 20 years of age have HF, and the prevalence is expected to rise to 8.5 million Americans by 2030 (Fig.1).

- The lifetime risk of HF has increased to 24%; approximately 1 in 4 persons will develop HF in their lifetime (Fig. 2).

- The prevalence rate of HF among US adults is approximately 1.9% to 2.6% for the overall population and is higher among older patients. The prevalence rate is expected to increase to 8.5% among 65- to 70-year-olds (Table 1).
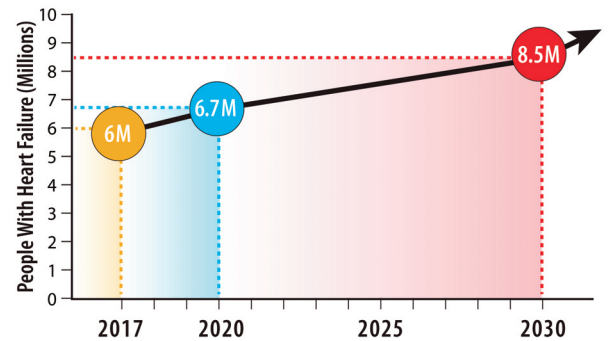
Figure 1: Prevalence of Heart Failure and Future Projection if Current Trends Continue[1,2]

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Table 1: Prevalence of Heart Failure in the United States[3-6]

Author, publication year	Siontis 2022[3]	Siontis 2022[3]	Rethy 2022[4]	Khera, 2017[5]	Chang, 2018[6]
Years studied	1999-2018	1999-2018	1/2001-12/31/2016	2002-2013	2005-2014
Population	NHANES survey (all participants)	NHANES survey of patients over the age of 65	NHANES survey of nonpregnant adults 35 years or older	Medicare beneficiaries over 65 years of age	Participants in ARIC aged 55 or older
Diagnostic criteria	Patient self-report	Patient self-report	Patient self-report	Inpatient or outpatient ICD 9 codes	Random sample of eligible heart failure hospitalizations with ICD 9 codes with manual abstraction
Prevalence	19 per 1000 persons in 1999 26 per 1000 persons in 2017 No significant change over time	55 per 1000 persons in 1999 98 per 1000 persons in 2004 64 per 1000 persons in 2017	31.8 per 1000 persons in 2001-2005 30.4 per 1000 persons in 2013-2016 No significant change over time	162 per 1,000 in 2004 172 per 1,000 in 2013 Significant increase over time	Black Women: 30.5/1,000PY Black Men: 38.1/1,000PY White Women: 15.2/1,000PY White Men: 20.7/1,000PY Significant increase over the study period (+1.9% per year in White women to +4.3% per year in Black women)

ARIC = Atherosclerosis Risk in Communities Study; HF = heart failure; ICD = International Classification of Diseases; NHANES = National Health and Nutrition Examination Survey; PY = person years. *J Card Fail.* 2023; 29 P1412-1415.

Figure 2: Lifetime Risk of Heart Failure[7]

1965-1989   1990-2014

Lifetime risk of heart failure (HF) has increased from 1 in 5 to 1 in 4 people.

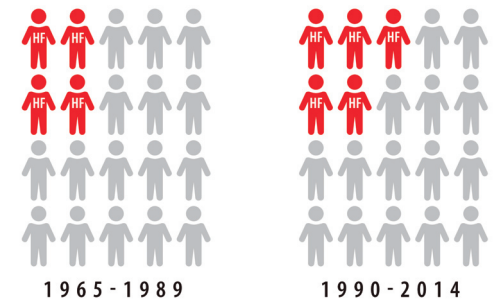*J Card Fail.* 2023; 29 P1412-1415.

- The prevalence of HF with preserved ejection fraction (HFpEF) across populations is increasing, with significant differences by race and ethnicity, and men experience a higher lifetime risk of HFpEF (Fig. 3).

- The risk of developing HF in overweight or obese body mass index categories and participants with intermediate blood pressure (systolic blood pressure ≥130 but <140 mm Hg or diastolic blood pressure ≥80 but <90 mm Hg); and/or hypertension was 24%–62% higher during the second epoch (1990–2014) relative to corresponding risk factor strata in the first epoch (1965–1989).[7]

- The PAR% for hypertension, obesity, diabetes mellitus, and CHD vary according to race and ethnicity (Fig. 3). Not only is the contribution of risk factors of hypertension, diabetes, obesity, hypercholesterolemia, and smoking to incident HF greater in Black patients than White patients, but this difference seems to be increasing over time.

Figure 3: Population-Attributable Risk (PAR)* by Race and Ethnicity for Heart Failure[8]
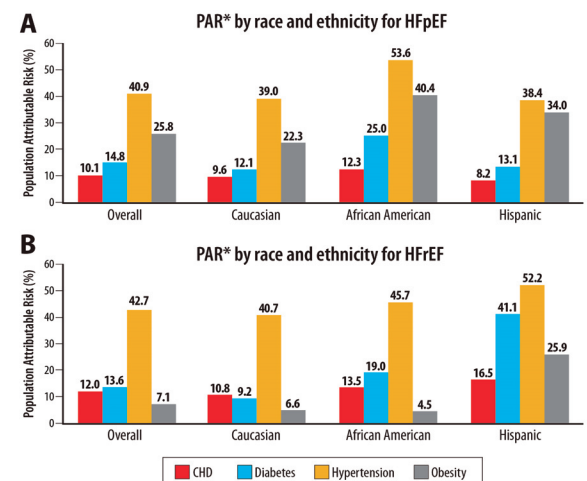
A, Population-attributable risk (PAR)* by race and ethnicity for heart failure (HF) with preserved ejection fraction. *Sum of PAR% within race/ ethnicity may be >100% as incidence rates are not adjusted for other risk factors.

B, PAR* by race and ethnicity for HF with reduced ejection fraction. *Sum of PAR% within race/ethnicity may be >100% as incidence rates are not adjusted for other risk factors. CHD = coronary heart disease; HF = heart failure; PAR = population-attributable risk

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- Approximately 33% of the US adult population without known symptomatic HF is at-risk for HF (Stage A HF) and 24%34% have pre-HF (Stage B HF). The risk of developing HF in individuals with obesity and hypertension has increased (Fig. 4).

- Among HF sub-types, the lifetime risk of HFpEF was greater than the lifetime risk of HFrEF in women (10.7% vs 5.8%, respectively), whereas lifetime risk of HFpEF was similar to HFrEF in men (Fig. 5), but these vary by race and ethnicity.

Table 2: Estimation of Lifetime Risk of Heart Failure[7,12,13]

Author, publication year	Vasan 2022[7]	Huffman 2013[12]	Pandey 2018[13]
Years studied	Framingham Heart Study: 1965-2014	Chicago Heart Association Detection Project in Industry: 1967-2003; Atherosclerosis Risk in Communities: 1987-2005; Cardiovascular Health Study: 1989 - 2004	Cardiovascular Health Study: Multiethnic Study of Atherosclerosis
Methods	Lifetime risk evaluated at up to 45 years of follow up	Lifetime risk for developing HF at index age 45 y to age 95 y (CHA) or through age 75 y (ARIC) with death free of HF as a competing event.	Lifetime risk at index age 45 y determined using a life-table analysis with a modified Kaplan-Meier method using death free of HF as a competing risk
Lifetime Risk for HF	1965-1989: 19.0% 1990-2014: 23.7%	Chicago Heart Association 30.2% for white men, 20.1% for Black men, 32.3% for white women, and 23.7% for Black women. Atherosclerosis Risk in Communities: 19.1% for White men, 21.3% for Black men, 13.4% for White women, 23.9% for Black women	Men: 27.4%; Women: 23.8% Non-Black: 24.9%; Black: 22.4%
Lifetime Risk in HF Subtypes	HF Subtypes from 1990-2014 HFpEF: 19.3% HFrEF: 11.4%	N/A	HFpEF: Men: 10.4%, Women 10.7% Black: 7.7%, Non-Black: 11.2% HFrEF: Men 10.6%; Women 5.8% Black: 7.7%, Non-Black: 7.9%

CHA = Chicago Heart Association Detection Project in Industry; CHS = Cardiovascular Health Study, FHS = Framingham Heart Study; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction (HFpEF); MESA = Multi-Ethnic Study of Atherosclerosis. *J Card Fail.* 2023; 29 P1412-1415.

Table 3: Incidence Estimates of Heart Failure in the US[5,6,14-16]

Author, publication year	Tsao, 2018[14]	Gerber, 2015[15]	Khera, 2017[16]	Chang, 2018[6]	Khera, 2020[5]
Years studied	1990-2009	2000-2010	2002-2013	2005-2014	2011-2016
Population	Participants in FHS and CHS	Olmsted County, Minnesota	Medicare beneficiaries over 65 years of age	Participants in ARIC aged 55 or older	Participants in FHS and CHS
Diagnostic criteria	Physician adjudicated	Inpatient or outpatient ICD 9 codes with case validation in a subset of patients	Inpatient or outpatient ICD 9 codes	Random sample of eligible heart failure hospitalizations with ICD 9 codes with manual abstraction.	Medicare beneficiaries over 65 years of age
Incidence of All Heart Failure	1990-1999: 19.7 per 1,000PY 2000-2009: 18.9 per 1,000 PY	Age and sex-adjusted incidence of HF 3/1000PY in 2000 to 2/1000PY in 2010	38.7 per 1,000 persons in 2002 to 26.2 per 1,000 persons in 2013	*All Heart Failure:* Black Women: 17.2/1,000 PY; Black Men: 19.9/1000 PY; White Women: 10.8/1000 PY; White Men: 14/1000 PY	Inpatient or outpatient ICD 9 and 10 codes
Change in HF Incidence	No statistically significant change	Mean annual percentage change: -4.6% 37.5% decline over study term	32% decline	Over the 10-year study period: +4.3% in Black women, +3.7% in Black men, +1.9% in White women, +2.6% in White men	35.7 per 1,000 persons in 2011 to 26.5 per 1,000 persons in 2016.
Incidence of HF Subtype (per 1,000PY)	HFpEF: 2000-2009: 6.8 HFrEF: 2000-2009: 6.2	HFpEF: in Women: 2002: 1.7; 2010: 1.4 HFpEF: in Men: 2002: 1.4; 2010: 1.0 HFrEF: for Women: 2002: 1.5; 2010: 0.8 HFrEF: in Men: 2002:1.8; 2010:1.5	N/A	HFpEF: Black Women 12.3, Black men 9.7 White Women 7.8, White Men 6.3 HFrEF: Black Women 13.9, Black Men: 24.8 White Women: 5.5, White Men 12.3	26% reduction
Change in HF Subtype Incidence over time	Comparing 2000-2009: HFpEF: +53% HFrEF: -20%	From 2000-2010 HFpEF: -28% HFrEF: -45%	N/A	HFpEF: Black Women: +8.2%, Black men: +5.7% White Women: +5.9%, White Men: +4.6% HFrEF: Black Women: +2%, Black men: +2.8% White Women: no change, White Men: +2.6%	N/A

ARIC = Atherosclerosis Risk in Communities Study; CHS = Cardiovascular Health Study; FHS = Framingham Heart Study; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction (HFpEF); ICD = International Classification of Diseases; PY = patient years

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Figure 4: Prevalence Across HF Stages[9-11]

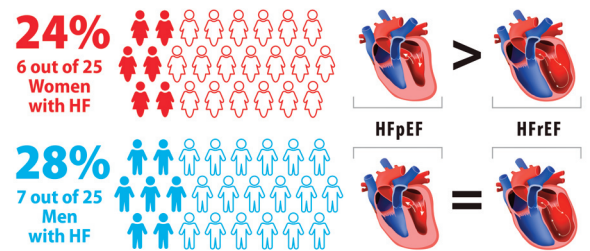|	Stage 0 No HF/Risk	Stage A At-Risk	Stage B Pre-HF	Stage C HF	Stage D Advanced HF
Olmsted County (age ≥45 years)	32%	22%	34%	12%	0.2%
Framingham Heart Study (mean age: 51±16 years)	38%	36.5%	24.2%	1.2%	1.2%
Atherosclerosis Risk in Communities Study (age: 67-91 years)	5%	52%	30%	13%	
Pooled cohorts (MESA, CHS, ARIC) using updated 2023 definitions	16.7%	37.4%	43.2%	2.7%	2.7%

ARIC = Atherosclerosis Risk in Communities Study; CHS = Cardiovascular Health Study; HF = heart failure; FHS = Framingham Heart Study; MESA = Multi-Ethnic Study of Atherosclerosis. *J Card Fail.* 2023; 29 P1412-1415.

Figure 5: Lifetime Risk Heart Failure with Preserved Ejection Fraction Versus Heart Failure with Reduced Ejection Fraction by Sex[13]

24% 6 out of 25 Women with HF

28% 7 out of 25 Men with HF

HFpEF > HFrEF

HFpEF = HFrEF

HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction. *J Card Fail.* 2023; 29 P1412-1415.

- The incidence of HF varies according to different populations and different time frames (Table 3). Differences in data sources, population demographics and composition (including age, comorbidities, sex, race, and ethnicity), HF ascertainment methodology, and periodic differences likely play a role in this variation. A decline in overall HF incidence has been reported in Medicare beneficiaries over the age of 65 from 35.7/1000 person-years (PY) to 6.5/1000 PY from 2011 to 2016 (Table 3).

- The incidence and burden of risk factors for HF is increasing over time. The proportion of individuals with HF exhibiting 3 or more comorbidities increased from 68% in 2002–2004 to 87% in 2012–2014. The risk factors with the greatest increases in prevalence are hypertension, obesity, and smoking.[17]

For more information visit https://hfsa.org/hf-stats

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