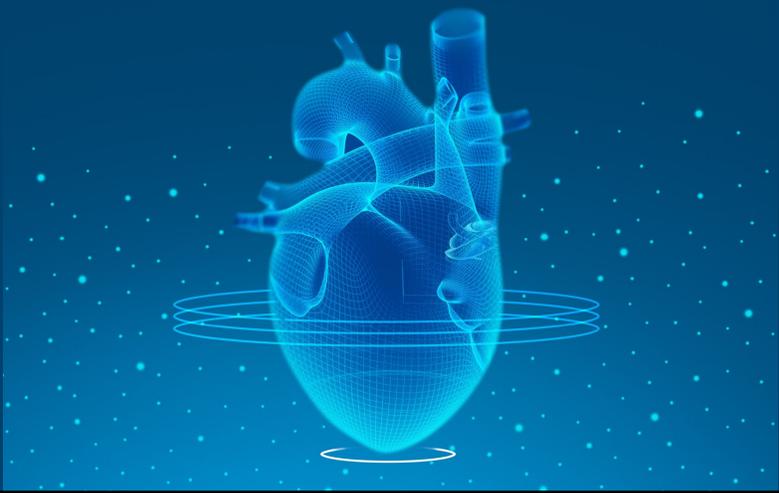




# GRAND ROUNDS



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## Women and Cardiovascular Disease: Is There Really a Sex Difference?

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Professor of Cardiology, Cedars-Sinai Heart Institute  
Anita Friedman Endowed Chair in Women's Cardiovascular Medicine & Research  
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Kevin Graham Prevention Lecture  
Minneapolis Heart Institute  
May 6, 2024

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## Disclosures

Research funded by the Department of Defense (WARRIOR Trial) and the NIH-NHLBI (Mae WEST Study)

Dr Gulati serves on the advisory boards of Novartis, Esperion and Boehringer Ingelheim. She is on the Data Safety Monitoring Committee for an investigational drug by Merck. No products by any of these companies will be discussed here.

## Understanding the "Other" Sex & Their Hearts

Women are NOT small men

Differences Due to Gender

Differences Due to Sex

Where Are the Women?

Thus humanity is male and man defines woman not in herself but as relative to him; she is not regarded as an autonomous being... She is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. **He is the subject, he is the Absolute - she is the other.**  
-Simone de Beauvoir



## Bikini Approach To Women's Health?

"... The medical community has viewed women's health almost with a 'bikini' approach, looking essentially at the breast and reproductive system, and almost ignoring the rest of the woman as part of women's health"

Nanette Wenger, MD  
Emory University

*How do we move beyond the bikini & protect a woman's heart?*

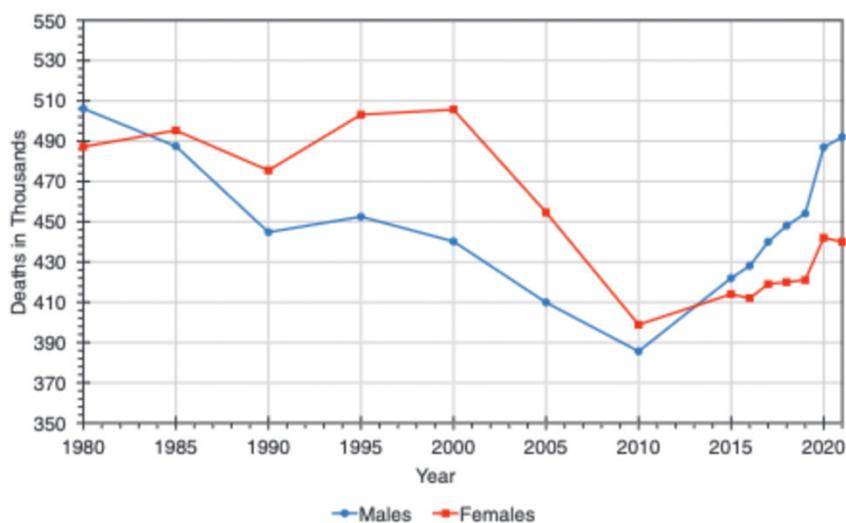


Gulati, M. Improving the Cardiovascular Health of Women in the Nation: *Circulation* 2017;135(6):495-498  
Gulati M. Yentl's Bikini *JAHA* 2019 May 15  
Gulati M. Saving women's hearts: Improving outcomes with prevention & policy. *AJPC* 2023 Jun; 14: 100504.

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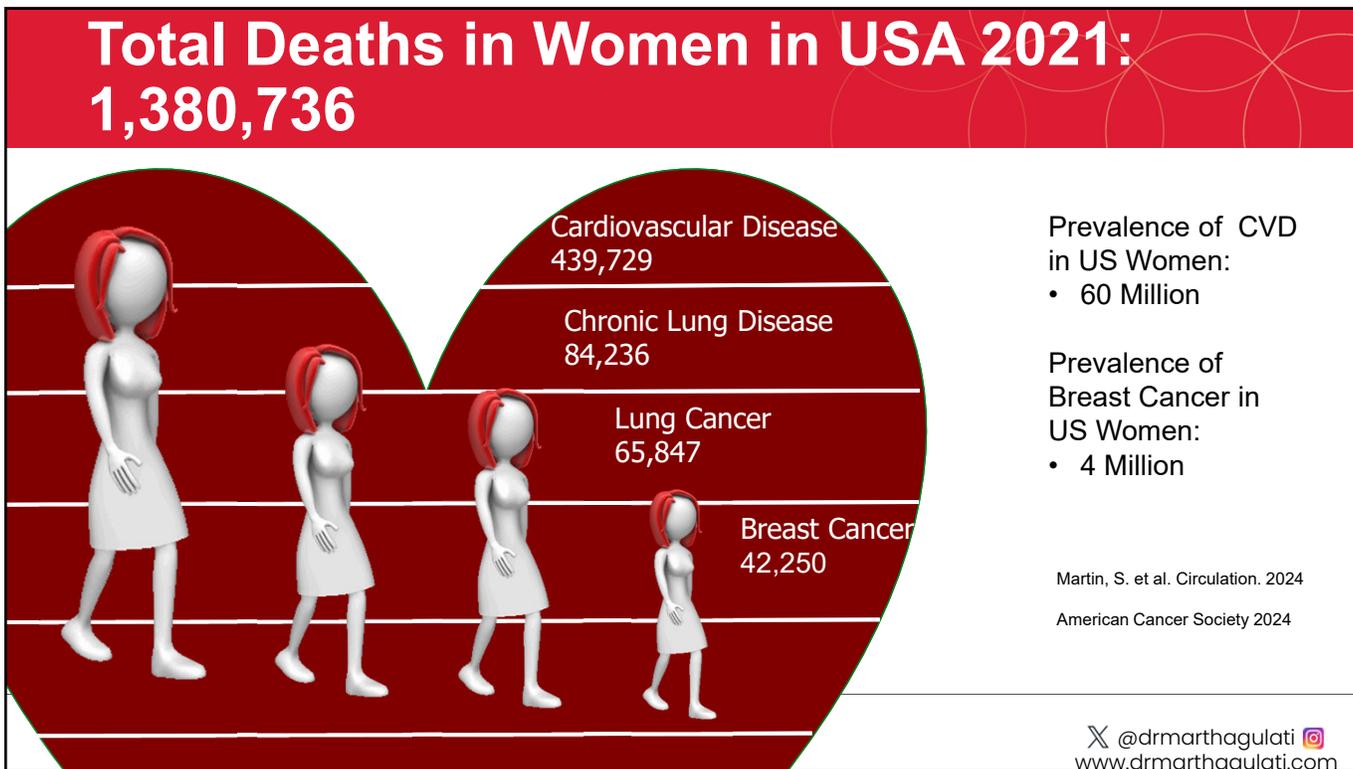
## Cardiovascular Disease is Rising in the USA



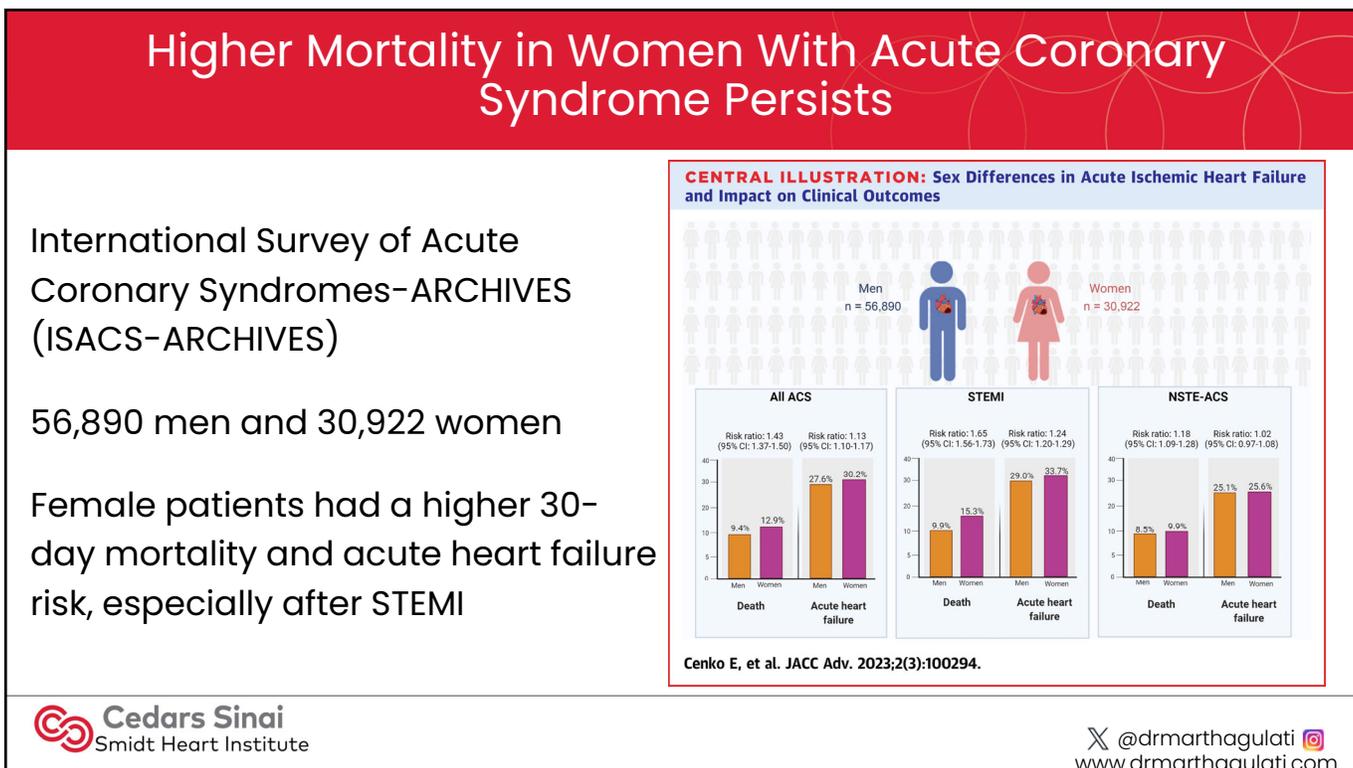
Martin, S et al. *Circulation*. 2024

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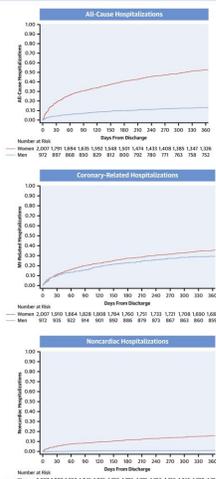
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## Worse Outcomes for Young Women with Acute MI

CENTRAL ILLUSTRATION: Sex Difference in 1-Year Outcomes After Acute MI

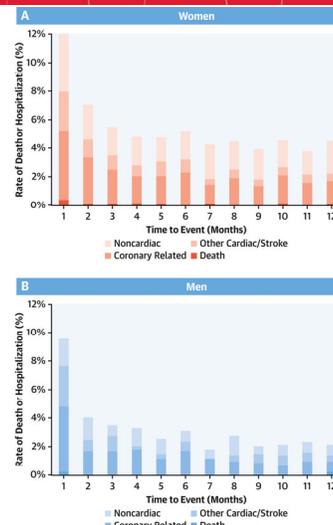


Sawano M, et al. J Am Coll Cardiol. 2023;81(18):1797-1806.

VIRGO (Variation in Recovery: Role of Gender on Outcomes of Young AMI Patients) study:

Young women with AMI experience more adverse outcomes than men in the year after discharge

Sex difference in coronary-related hospitalizations (SHR: 1.33;  $P = 0.02$ ) and noncardiac hospitalizations (SHR: 1.51;  $P = 0.01$ ).

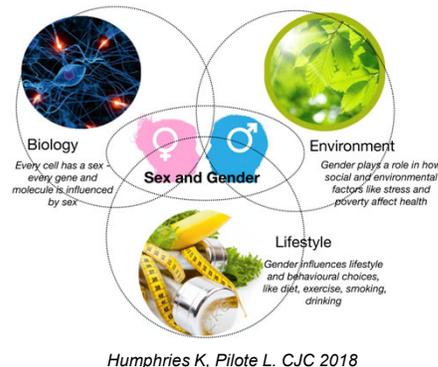
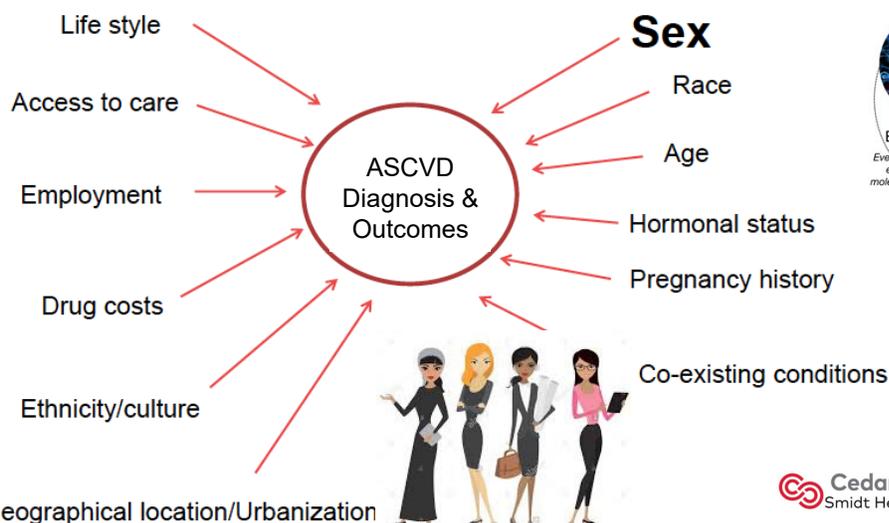


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## Is it Sex or Is it Gender?

Gender influences ↔ Biological influences



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## Women Less Likely to Receive Guideline Recommended Medical Therapy After Acute Myocardial Infarction



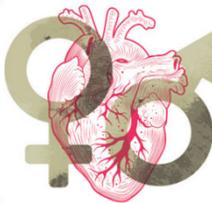
Global Problem



↓ Cath/PCI  
↑ DTB Time



↓ Thrombolytics  
↑ DTN Time





↑ Mortality: STEMI  
↑ Mortality in Young Women



↓ GDMT (24H or D/C)



↑ Readmissions in Women  
Trends Persist over Time



Jneid, H. et al. *Circulation* 2008;118:2803-2810  
 Ainsley ED et al. *Clin Card* 2016; 39:585-95  
 Matetic A et al. *CJOpen* 2021  
 de Miguel-Yanes JM *J Clin Med*. 2021 Apr 20;10(8):179  
 Cader A, Banerjee S, Gulati M. *J Cardiovasc Dev Dis* 2023;13(1):1-11

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## Women with Chest Pain: Less Timely Care

*National Hospital Ambulatory Medical Care Survey*  
 2014-2018

- Represents ~ 29 million emergency department visits
- Young adults, ages 18 to 55, who presented to an emergency department with chest pain
- Women and people of color with CP waited longer to be seen by physicians, independent of clinical features
- Women were independently less likely to be admitted when presenting with CP

**Women in the ER were:**

significantly <b>less likely</b> to be triaged as an emergent case  <b>19.1%*</b> vs 23.3%**	waited about <b>10 minutes longer†</b> to be evaluated  <b>45.0* min</b> vs 37.2** min
less likely to undergo an electrocardiogram (EKG)  <b>74.2%*</b> vs 78.8%**	less likely to receive cardiac monitoring  <b>24.9%*</b> vs 30.0%**
less likely to be seen by a consulting physician, like a cardiologist  <b>8.5%*</b> vs 12.3%**	were <b>less likely</b> to be admitted to the hospital or to observation  <b>12.4%*</b> vs 17.9%**



*Banco D et al. JAHA 2022; e024199*

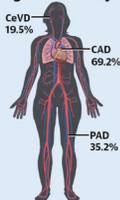
12

# Secondary Preventive Care Underused in Women

## CENTRAL ILLUSTRATION: Statin Use in 601,934 Patients With Atherosclerotic Cardiovascular Disease on January 31, 2019

### Study Population

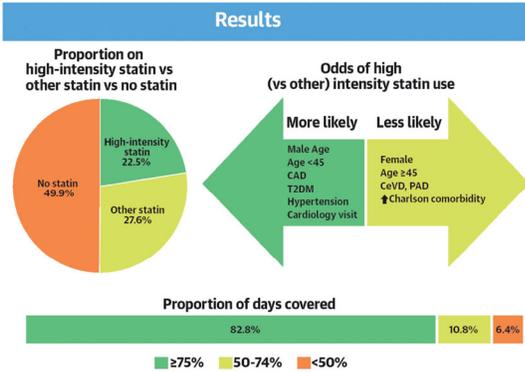
601,934 patients with ASCVD  
Mean age: 67.5 ± 13.3 years



### Outcomes

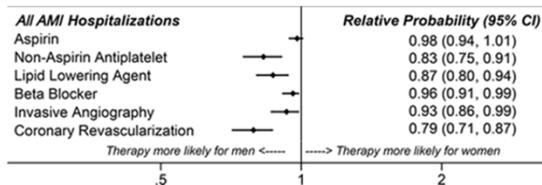
Statin usage on January 31, 2019 ± 30 days

Proportion of days covered



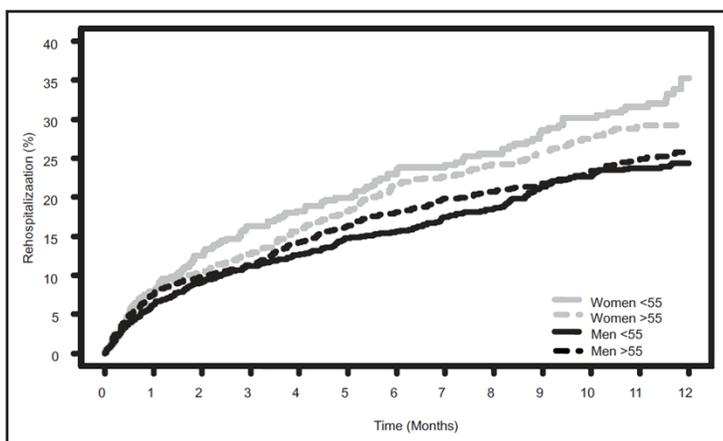
Nelson AJ, et al. J Am Coll Cardiol. 2022;79(18):1802-1813.

## Young Women after AMI: Less Likely to Receive GDMT



Arora S et al Circulation 2019;139:1047-56

# Sex Differences: Rehospitalization after AMI



31% rehospp ♀  
25% rehospp ♂

<55 Years: 28% greater risk ♀ v ♂

≥55 Years: 8% greater risk ♀ v ♂

Women of all age groups have a higher crude risk of rehospitalization, compared with men, over the 1<sup>st</sup> year post AMI

## The Sickest Women Are Treated Less Aggressively Than Men

- NIS 2006-2015: STEMI & Cardiogenic Shock
- Women were less likely to undergo invasive cardiac procedures, including revascularization and MCS
- Highest Mortality in Women, as well as Black and Hispanic

### CENTRAL ILLUSTRATION: Racial, Sex, and Ethnic Disparities in Outcomes of Patients With ST-Segment Elevation Myocardial Infarction and Cardiogenic Shock

	In-Hospital Mortality	Revascularization	Mechanical Circulatory Support	Right Heart Catheterization	
Men	White	33.3%	82.4%	57.6%	16.7%
	Black	33.6%	77.8%	56.3%	16.5%
	Hispanic	34.7%	82.4%	61.1%	19.3%
	Other	30.4%	81.7%	62.9%	22.4%
Women	White	40.9%	72.7%	44.4%	15.1%
	Black	40.0%	69.8%	49.5%	15.5%
	Hispanic	45.4%	69.2%	47.2%	16.1%
	Other	43.2%	69.7%	47.4%	17.9%

Ya'qoub, L. et al. *J Am Coll Cardiol Intv.* 2021;14(6):653-60.

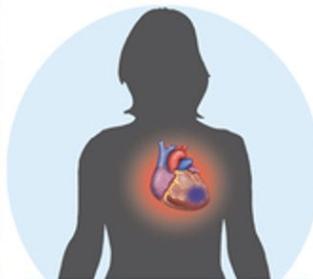
ISACS-ARCHIVES: Women with STEMI are more likely to present with acute HF and this may explain sex differences in mortality  
*Cenco E et al. JACC Adv.* 2023 May, 2 (3) 100294

## Adding Insult to Infarct

### Disparities in Acute Myocardial Infarction (AMI) in Women

#### Factors Contributing to Disparities

- ↑ Comorbidities
- ↑ Depression
- Socioeconomic Factors
- ↓ Symptom Awareness
- Delays in Presentations



- ↓ Guideline-Directed Medical Therapy (GDMT)
- ↓ Cardiac Rehab Referral
- ↑ In-Hospital Mortality
- ↑ Rehospitalization
- ↓ Health Status

#### Next Steps and Solutions

- Attention to Psychosocial Factors
- Focus on Health Literacy
- Electronic Medical Records (EMR) Prompts for GDMT
- Virtual Care-Team Guided Strategies
- Adequate Insurance for All Income Levels

## GDMT in Heart Failure Underused in Women



	Women N=188	Men N=1970	
Any GDMT Rx within 12M of Dx	40%	62%	P<0.0001
Any GDMT Rx within 90 days of Dx	30%	54%	P<0.0001
Any GDMT Rx within 30 days of Dx	22%	37%	P<0.0001

US Veteran Women with incident HF had a lower odds of receiving GDMT: OR=0.54 (95% CI, 0.37–0.79) for woman with incident HF receiving at least 1 HF medication vs men

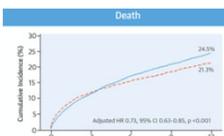
*Any of ACE inhibitor, ARB, bisoprolol, carvedilol, metoprolol, or mineralocorticoid receptor antagonist*

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## Underutilization of Effective Cardiac Therapies in Women

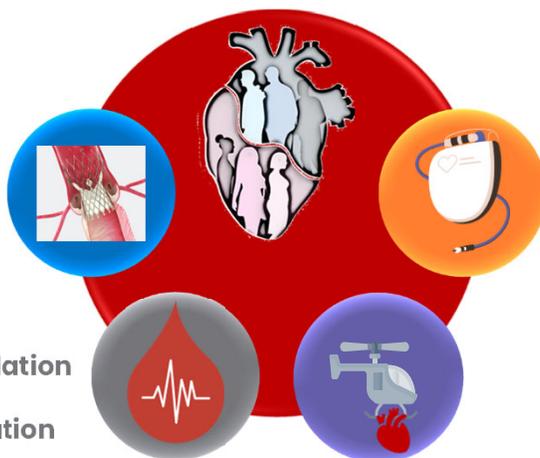
### TAVR

♀ **have better outcomes vs** ♂



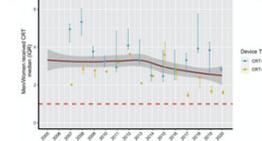
### AFib

- ↓ Adequate Anticoagulation
- ↓ NOAC
- ↓ Rhythm control/ Ablation



### ICD/CRT

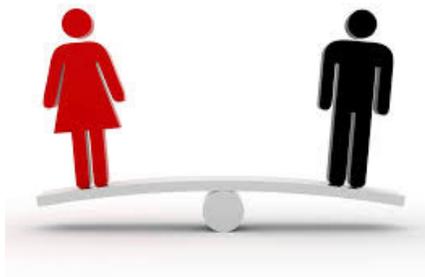
↓ ICD/CRT use in ♀ vs ♂



### Heart Transplant

**Women:**  
 25% of LVAD  
 25% of Transplant

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# Do Women Experience CVD Like Men?

*Sex Differences in Presentation*

## Sex Differences in the Presentation of Myocardial Infarction



There are likely nuances with angina symptoms particularly as they relate to sex

Artificial intelligence that uses natural language processing is a sensitive tool able to capture nuances in expression of cardiac symptoms

Symptoms	Total Women		Total Men		Women vs. Men
	N	%	N	%	P-value
Chest pain/ sensation	231	89.9	330	86.8	0.80
Breathing affected	171	66.5	241	63.4	0.42

VIRGO Study  
 (Young Women & Men)



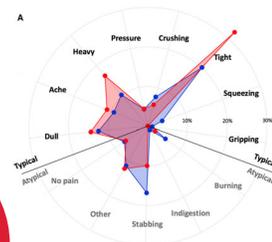
Acute Myocardial Infarction:  
 90% of Women & Men Reported Chest Pain

- Women report 3 or more accompanying symptoms
- Women who sought care prior to MI more likely to be told it was not cardiac

Do Women Have Different Symptoms?

HERMES (AI)

High-STEACS Trial



Myocardial Infarction

# Redefine Chest Pain



Noncardiac  
Is In.  
Atypical Is  
Out.



Chest pain should not be described as atypical, because it is not helpful in determining the cause and can be misinterpreted as benign in nature (Class 1).



Chest pain should be described as cardiac, possibly cardiac, or noncardiac because these terms are more specific to the potential underlying diagnosis (Class 1).

## “Atypical” Chest Pain

Misused; often used to refer to communicate that pain is not cardiac rather than an atypical presentation. This fosters less intensive care

90% of women and men with myocardial ischemia have “typical” symptoms

# Accompanying Symptoms Occur Frequently in Women

Women who present with chest pain are at risk for underdiagnosis, and potential cardiac causes should always be considered (Class 1).\*

In women presenting with chest pain, it is recommended to obtain a history that emphasizes accompanying symptoms that are more common in women with ACS (Class 1).\*\*

## Narrow the Gap

Women have more accompanying symptoms than men

Women are less likely to have timely & appropriate care

Gulati, M. et al. 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain. *Circulation*.



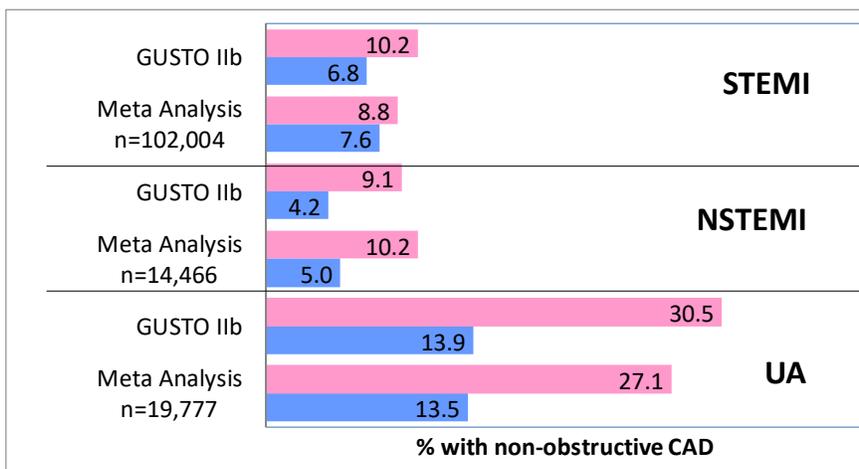
Accompanying  
Symptoms  
Occur  
Frequently in  
Women



# What About the Sex Differences in CVD?

## Prevalence of Non-Obstructive Coronary Artery Disease

p<0.02 for all comparisons



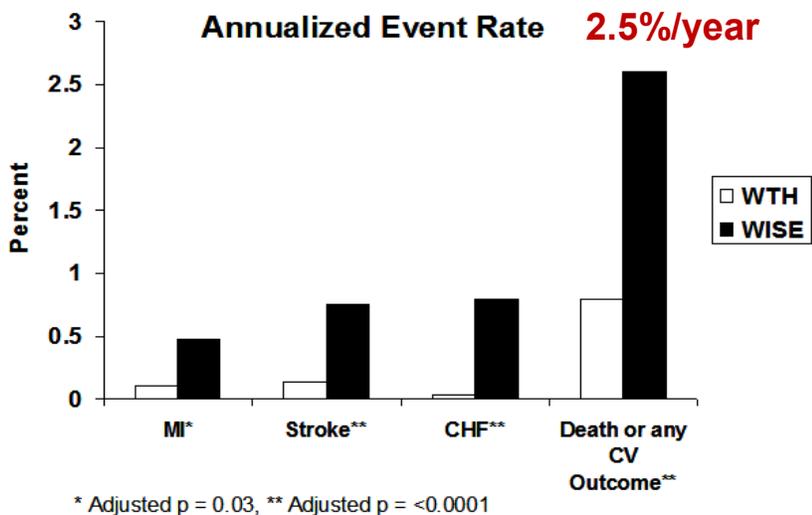
ISCHEMIA Trial:  
 8518 patients with  
 moderate or severe ischemia  
 on stress testing



14% had no obstructive CAD

## INOCA is Not a Benign Condition in Women

- WISE (n=540 women with INOCA, mean age 52 yrs)
- Compared to 1000 age and race-matched controls (St. James WTH)



Gulati M et al. Arch Intern Med 2009;169:843-850  
 Bakir M et al. Int J Cardiol. 2016;223:936-939

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## Obstructive CAD is Just One Phenotype of IHD!

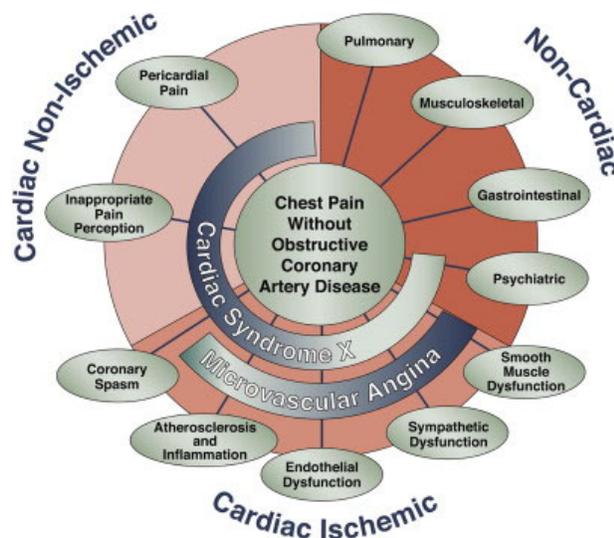


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## Ischemia with No Obstructive Coronary Arteries (INOCA)

- Signs and symptoms of ischemia but no obstructive CAD (stenosis < 50%)
- Estimated to affect at least 3-4 million women and men in the US
- Healthcare costs related to angina and heart failure hospitalizations and repeat testing/angiography



Bairey Merz CN et al. Circulation. 2017;135(11):1075-1092  
Marinescu MA et al. JACC Cardiovascular Imaging. 2015;8(2):210-220.

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## MINOCA/INOCA: Invisible to the Eye

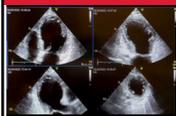
Good News! It wasn't a heart attack after all!  
Normal Coronary Arteries!



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# Takotsubo Syndrome (TTS)



No established Tx for TTS

No specific treatment proven to reduce the risk of recurrent TTS

10% of TTS patients experience recurrent episodes of acute TTS

90% Women



Postmenopausal Women: 10% of all acute chest pain



~5% In-hospital Mortality in TTS



~20% left with persistent abnormalities in cardiac function



Survivors: ↑MACE & Mortality



## Do CVD Risk Factors affect Women in the same way as Men?

Sex Differences in Cardiac Risk Factors

# Sex Differences in Traditional ASCVD Risk Factors





- Diabetes

↑ CVD Risk for Women
- HTN

SBP Trajectory Differ by Sex
- Lipids

Lp(a): Women
- Tobacco

↑ Risk for Women
- Exercise

↓ Fitness in Women, ↑ Mortality Risk
- Inflammation

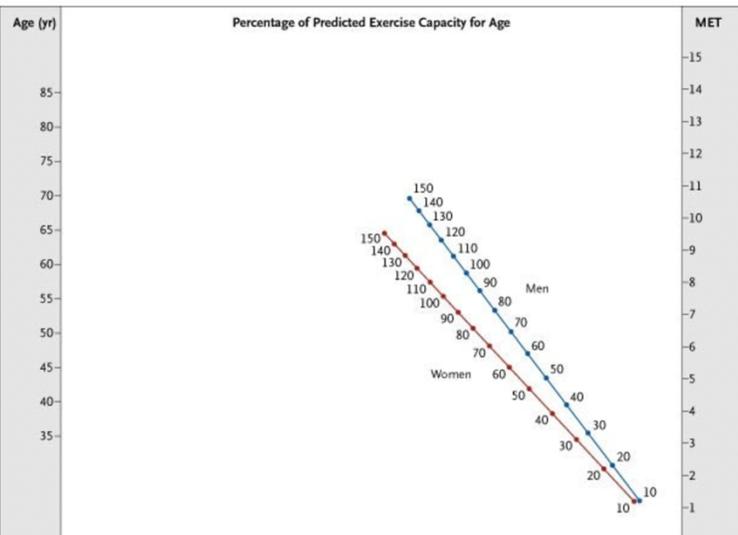
↑ RA/SLE



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# Exercise Capacity in Women





**Table 2. Hazard Ratios for Death from Any Cause and from Cardiac Causes among Women, According to the Deviation from the Expected Exercise Capacity for Age.**

Exercise Capacity	Death from Any Cause		Death from Cardiac Causes	
	Asymptomatic Women	Symptomatic Women	Asymptomatic Women	Symptomatic Women
<i>hazard ratio (95 percent confidence interval)</i>				
Exercise capacity <85% of predicted value for age*	2.03 (1.51–2.71)	2.37 (1.90–2.97)	2.44 (1.46–4.09)	2.02 (1.43–2.85)
Observed exercise capacity minus predicted exercise capacity				
>3 MET†	1.0	1.0	1.0	1.0
0–3 MET	1.70 (0.84–3.44)	1.89 (1.44–2.48)	2.02 (0.46–8.82)	2.21 (1.31–3.27)
<0 MET	2.63 (1.33–5.19)	3.28 (2.47–4.35)	4.27 (1.03–17.6)	3.80 (2.26–6.38)

\* The reference group is women whose exercise capacity was at least 85 percent of that predicted for age.  
 † This group served as the reference group.

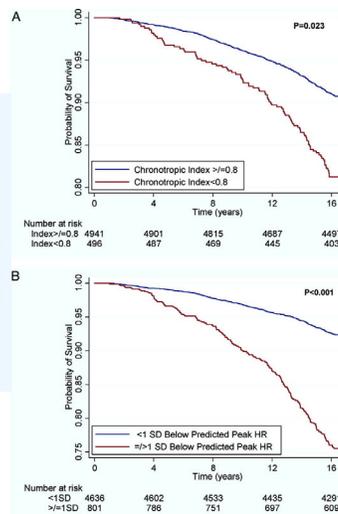
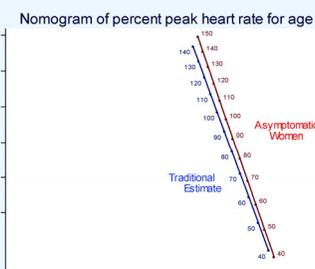
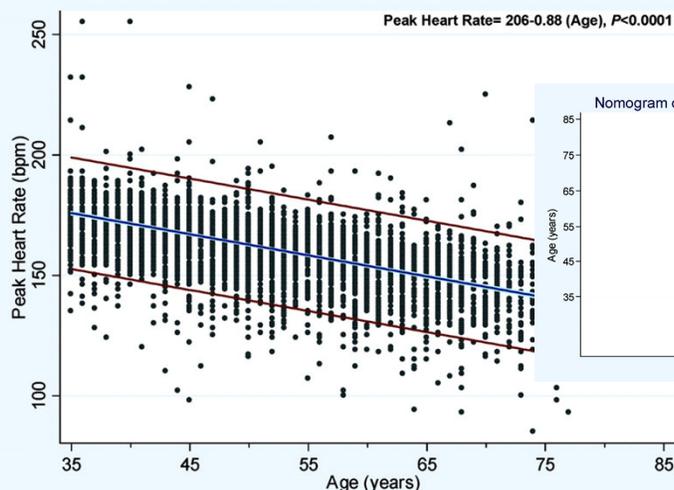


**Gulati M et al. Circulation 2003; 108: 1554– 1559**  
**Gulati M et al. N Engl J Med 2005; 353:468–475**

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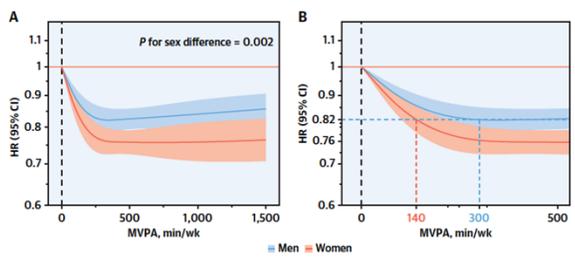
## Age-Predicted Heart Rate for Women: Not 220-Age!



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## Sex Differences in Physical Activity & Mortality

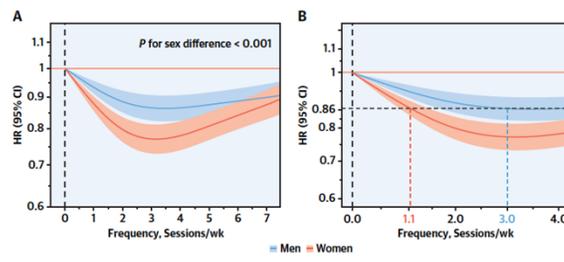
FIGURE 1 Sex-Specific Association of MVPA With All-Cause Mortality



♂: Greatest mortality benefit achieved at 300 min/wk MVPA- 18% lower all-cause mortality.

♀: Similar magnitude of benefit at 140 min/wk of MVPA, continued benefit with increasing min/wk of MVPA until 300min/wk with 24% lower risk of death (HR: 0.76; 95% CI: 0.72-0.80)

FIGURE 2 Sex-Specific Association of Muscle Strengthening Physical Activity With All-Cause Mortality



♂: Greatest mortality benefit from 3 sessions/wk of muscle strengthening with a 14% lower hazard in all-cause mortality

♀: equivalent or greater benefit by engaging in only a single muscle strengthening/week

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# JACC

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

VOL. 83, NO. 8, 2024

**ORIGINAL RESEARCH**

## Sex Differences in Association of Physical Activity With All-Cause and Cardiovascular Mortality

Hongwei Ji, MD,<sup>1,2\*</sup> Martha Gulati, MD, MS,<sup>1,2\*</sup> Tzu Yu Huang, MS,<sup>1,2</sup> Alan C. Kwan, MD,<sup>3</sup> David Ouyang Joseph E. Ebinger, MD, MS,<sup>4</sup> Kaitlin Casaleto, PhD,<sup>5</sup> Kerrie L. Moreau, PhD,<sup>4,6</sup> Hicham Skali, MD, MS,<sup>7</sup> Susan Cheng, MD, MMSc, MPH<sup>8</sup>

**ABSTRACT**

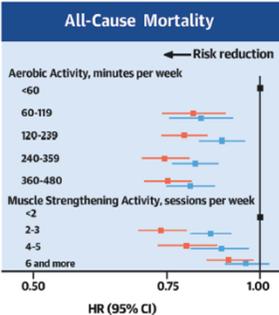
**BACKGROUND** Although physical activity is widely recommended for reducing cardiovascular and all-cause risks, female individuals consistently lag behind male individuals in exercise engagement.

**OBJECTIVE** The goal of this study was to evaluate whether physical activity-derived health benefits were similar in men and women.

**CENTRAL ILLUSTRATION** Sex Differences in Physical Activity-Associated Mortality Risk Reduction

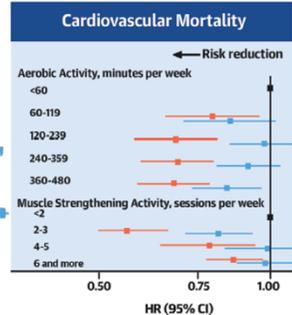
**All-Cause Mortality**

← Risk reduction



**Cardiovascular Mortality**

← Risk reduction



Ji H, et al. J Am Coll Cardiol. 2024;83(8):783-793.

We studied 412,413 U.S. adults and found that women compared with men derived greater gains in all-cause and cardiovascular mortality risk reduction from equivalent doses of leisure-time physical activity.



Ji, H, Gulati, M et al. JACC 2024;83:783-793

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Estimator    Clinicians    Patients    About

ASCVD Risk Estimator\*

10-Year ASCVD Risk	Lifetime ASCVD Risk
11.5%	50%
calculated risk	calculated risk
0.3%	8%
risk with optimal risk factors**	risk with optimal risk factors**

Recommendation Based On Calculation >

Gender:  Male  Female

Age:  years

Race:  White  African American  Other

Total Cholesterol (mg/dL):

HDL-Cholesterol (mg/dL):

Systolic Blood Pressure (mmHg):

Diabetes:  Yes  No

Treatment for Hypertension:  Yes  No

\*Intended for use if there is not ASCVD and the LDL cholesterol is <190 mg/dL.  
\*\*Optimal risk factors include: Total cholesterol of 170 mg/dL, HDL cholesterol of 50 mg/dL, Systolic BP of 110 mmHg, no medications for hypertension, Not a diabetic, Not a smoker

PREVENT™ Online Calculator

Welcome to the American Heart Association Predicting Risk of cardiovascular disease EVENTS (PREVENT™). This app should be used for primary prevention patients (those without atherosclerotic cardiovascular disease or heart failure) only.

Sex:  Male  Female

Age:  years

Total Cholesterol:  mg/dL

HDL Cholesterol:  mg/dL

SBP:  mmHg

BMI:

eGFR:

Diabetes:  No  Yes

Current Smoking:  No  Yes

Anti-hypertensive medication:  No  Yes

Lipid-lowering medication:  No  Yes

Risk of CVD     Risk of ASCVD     Risk of Heart Failure






Published jointly by ACC and AHA | © 2014

## Atherosclerotic Cardiovascular Disease (ASCVD) Risk Calculator



## PREVENT Risk Calculator

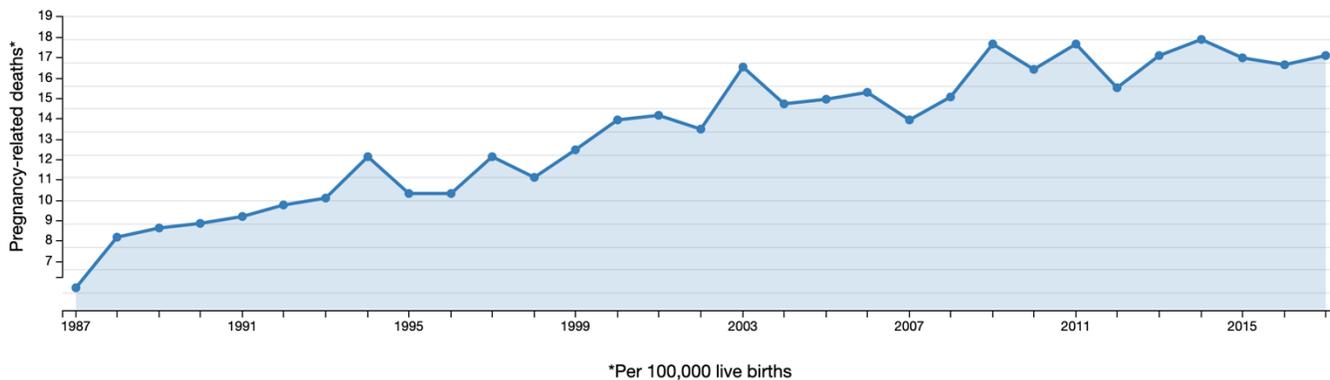
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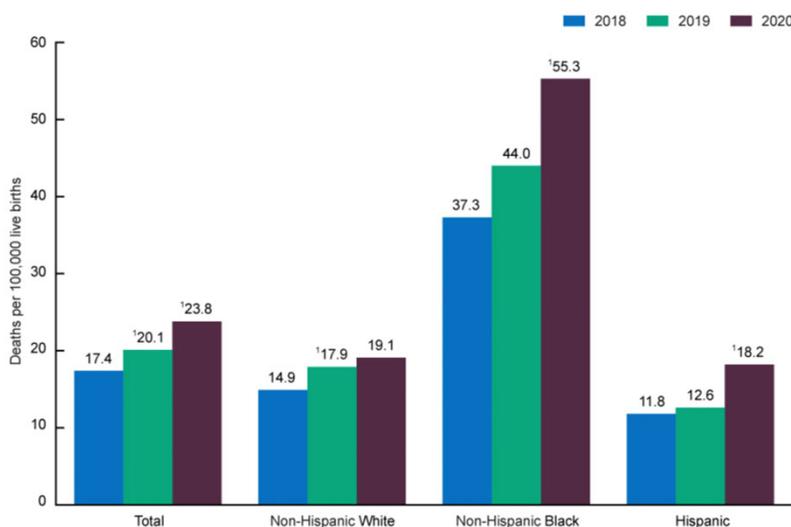
## Pregnancy-Related Mortality Continues to Rise in USA

Trends in pregnancy-related mortality in the United States: 1987-2017



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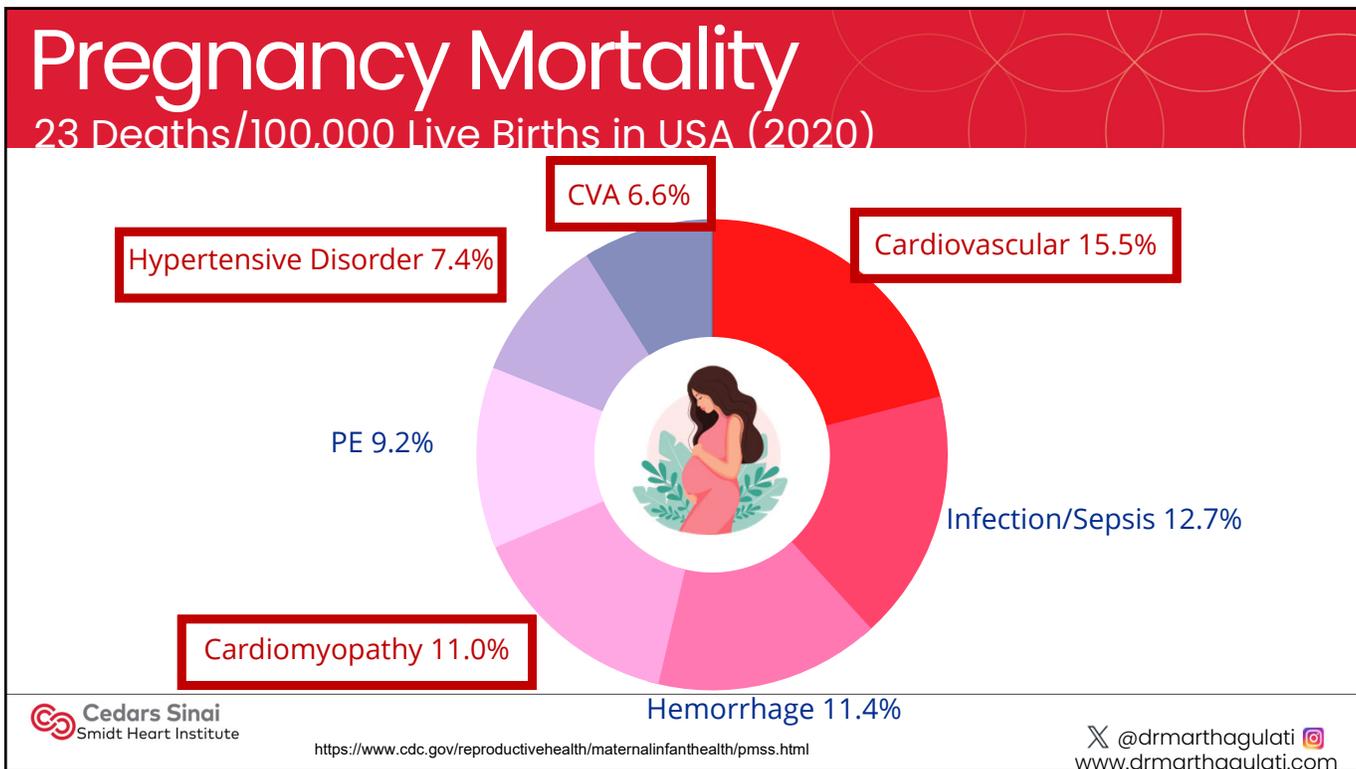
## Maternal Mortality Rates Continue to Rise



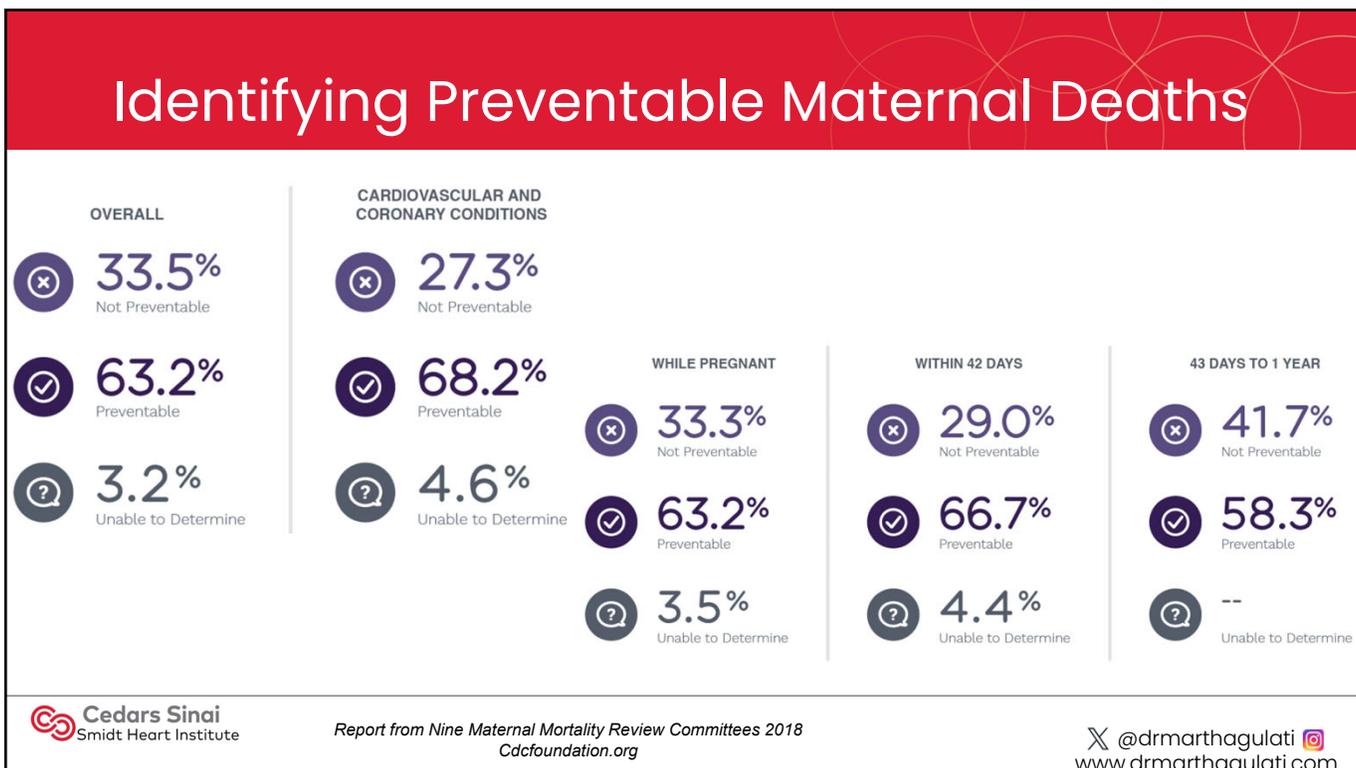
With persistent racial inequities



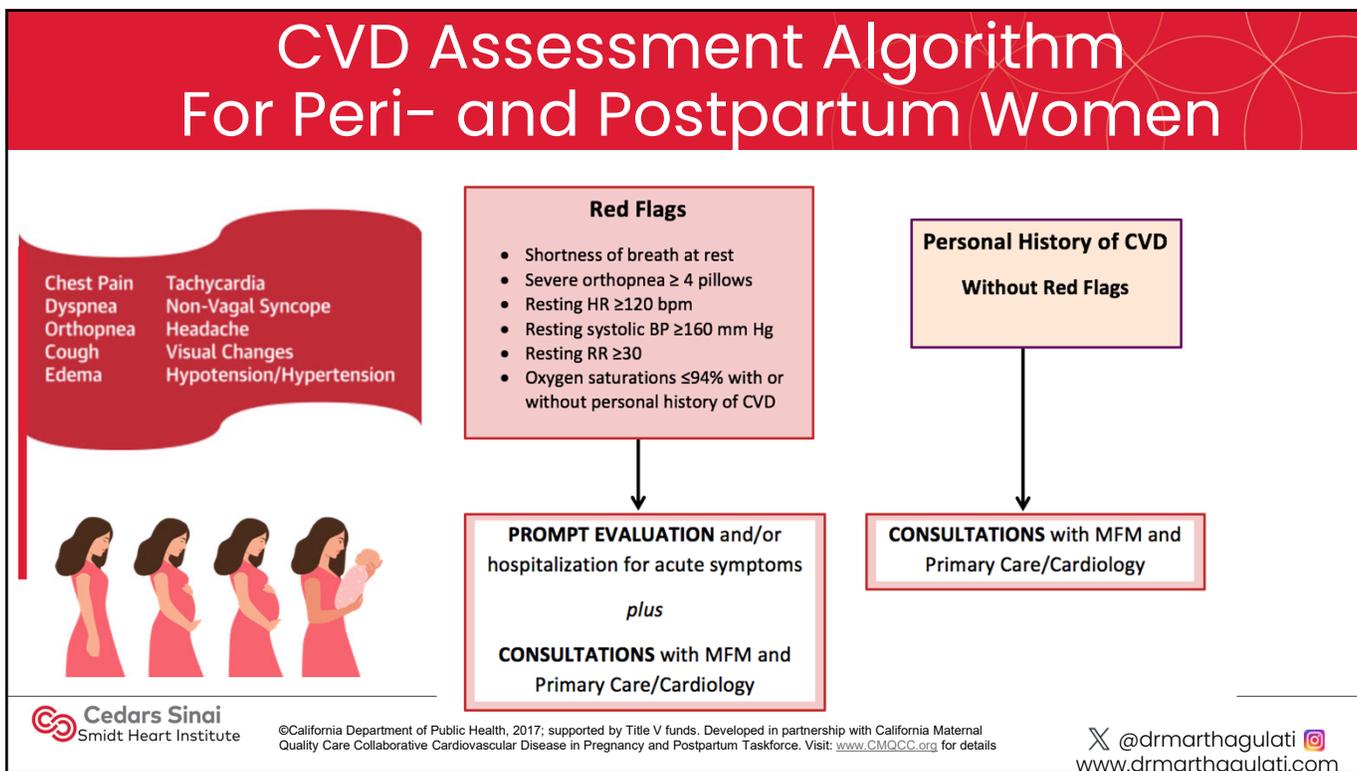
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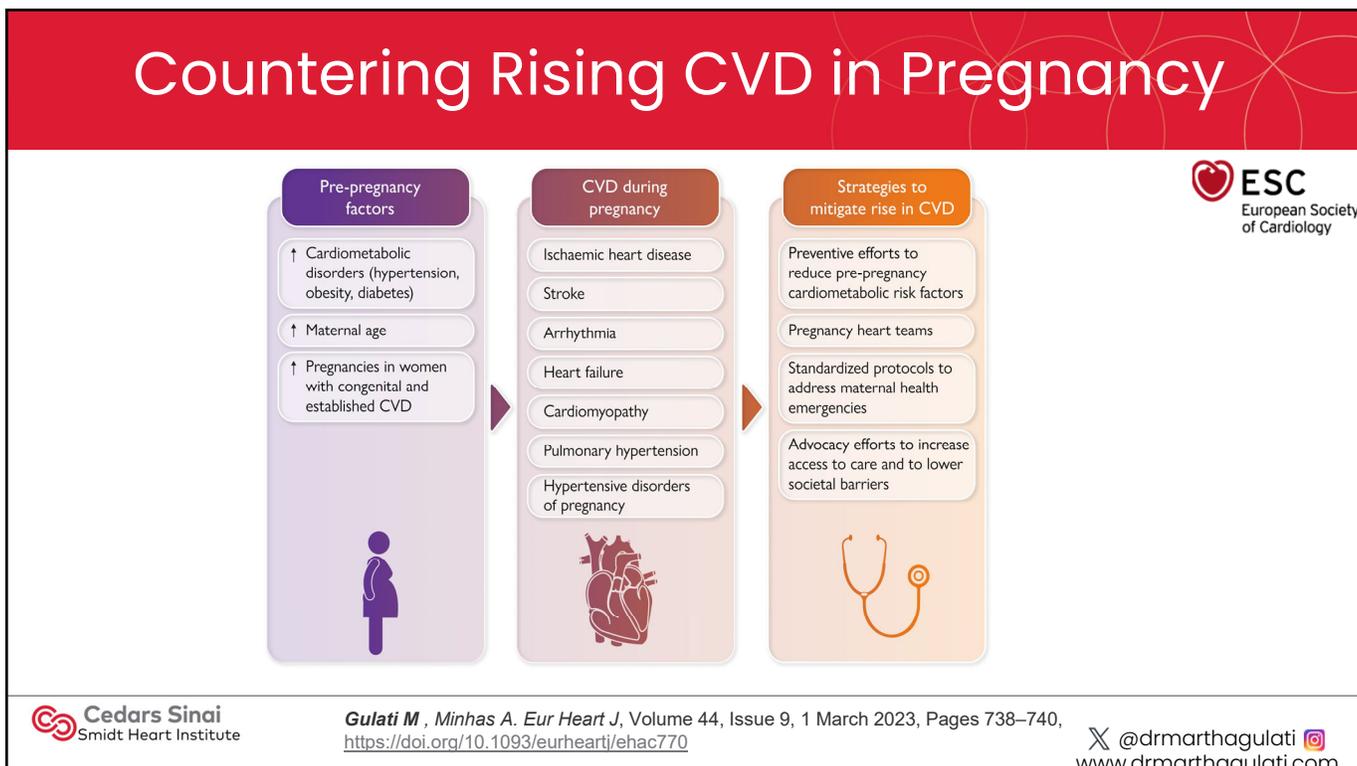
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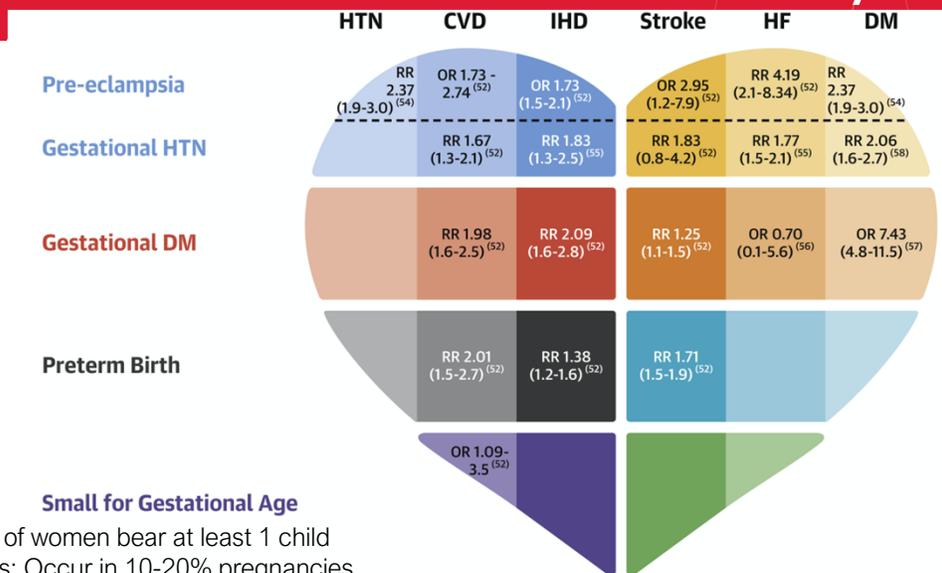
# Pregnancy = Nature's Free Stress Test

Pregnancy complications  
 =  
 Effective CVD risk "stress tests"

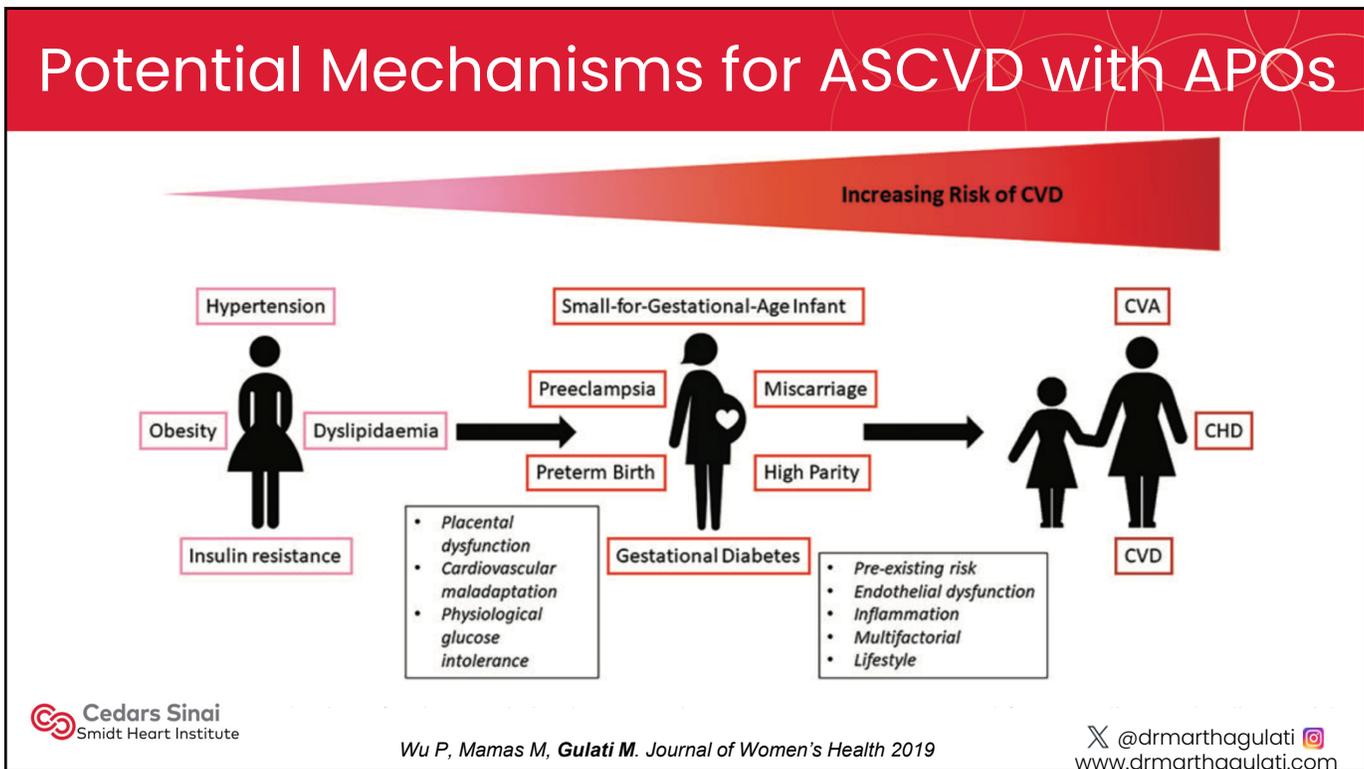


Identify Women Who Would Benefit from  
 Primary Prevention Efforts to Reduce ASCVD  
 Risk

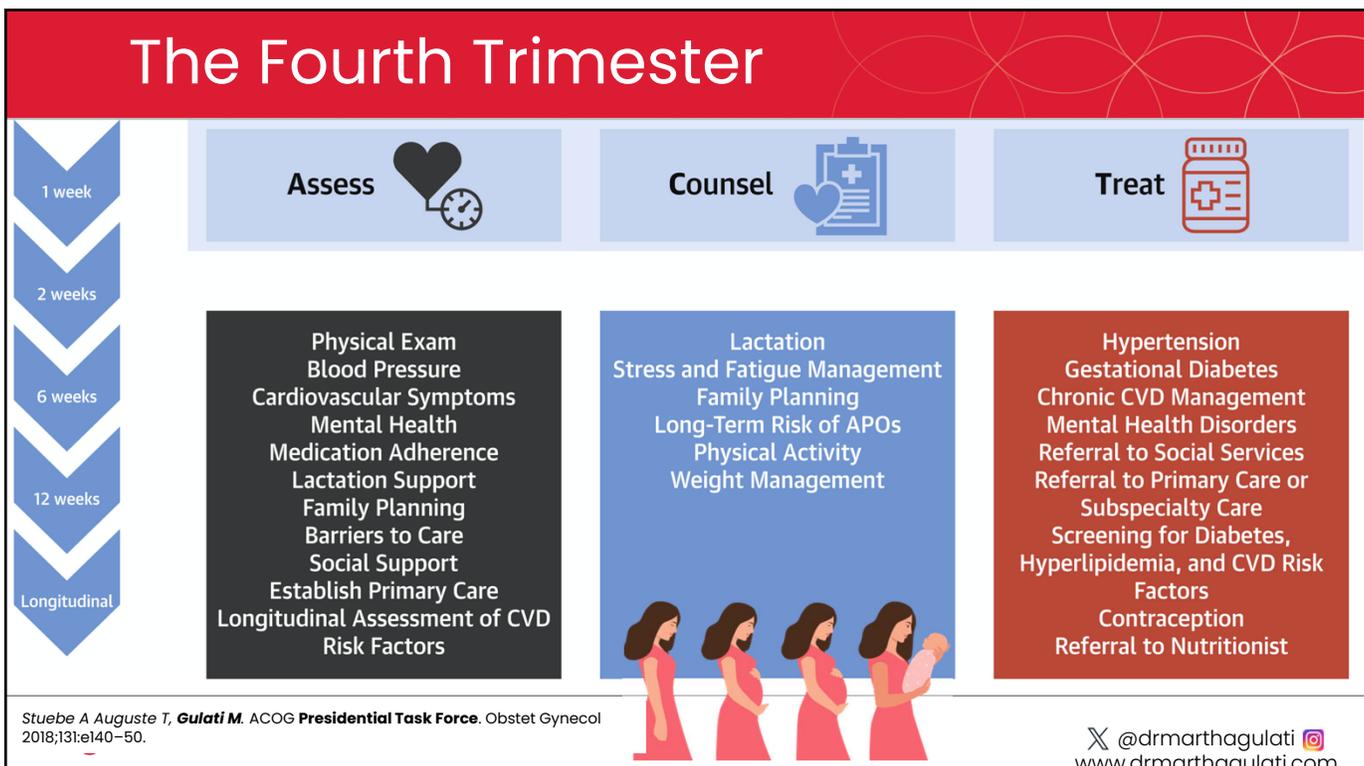
# Future Risk of ASCVD by APOs



- 80% of women bear at least 1 child
- APOs: Occur in 10-20% pregnancies



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# Sex-Specific Risk Factors for ASCVD: Across the Lifespan



**Young Women**

- Age of Menarche
- PCOS
- OCP + Smoking



**Reproductive Years**

- Age of 1<sup>st</sup> Birth
- APOs
- Fertility Treatment
- Premature Menopause/ Ovarian Insufficiency/ FHA



**Older Women**

- Menopause
- HRT Use

LIFETIME FEMALE SPECIFIC RISK FACTORS FOR ASCVD

YOUNGER WOMEN

- Menarche
- PCOS
- OCPs
- Preterm Menopause

PREGNANCY

- Gestational diabetes
- Gestational hypertension
- Preeclampsia
- Preterm birth

OLDER WOMEN

- Menopause
- Hormone replacement therapy



Petal Elder, Garima Sharma, **Martha Gulati**, Erin D. Michos  
*American Journal of Preventive Cardiology* · June 2020

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## Inclusion of Women in Cardiovascular Trials



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### THE YENTL SYNDROME

YENTL, the 19th-century heroine of Isaac Bashevis Singer's short story,<sup>1</sup> had to disguise herself as a man to attend school and study the Talmud. Being "just like a man" has historically been a price women have had to pay for equality. Being different from men has meant being second-class and less than equal for most of recorded time and throughout most of the world. It may therefore be sad, but not surprising, that women have all too often been treated less than equally in social relations, political endeavors, business, education, research, and health care.

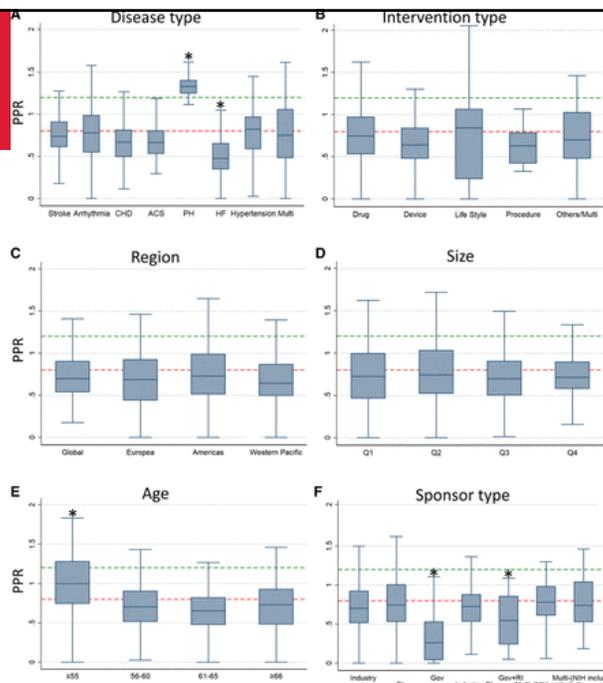
*"... overall strategic commitment of the NIH to make women's health a priority, not just in the interest of women but for the well-being of the American people. And it is our hope that the bold and charming heroine Yentl will survive, but that her syndrome will slip back into history as a curiosity of times gone by."*

Dr. Bernadine Healy

## Women Remain Underrepresented in Cardiovascular Trials

### Globally:

- ↓ Enrollment esp **Heart Failure, CAD Trials**
- ↓ Enrollment in **Device Trials**
- ↓ Enrollment with **Government Funding**
- Relatively Unstudied**



*Xurui Jin. Circulation 2020 (141), 540-548, DOI: (10.1161/CIRCULATIONAHA.119.043594) S*

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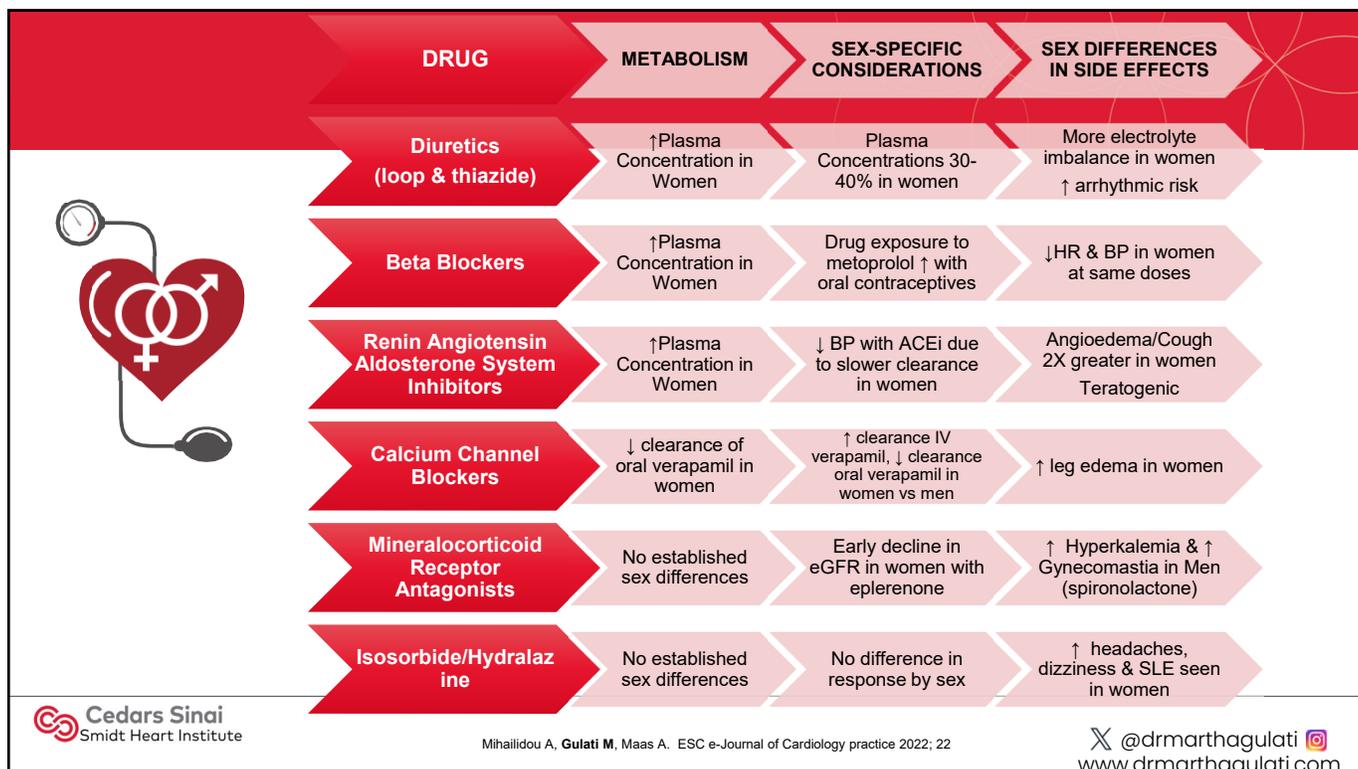
# Pharmacologic Therapies

Parameter	Physiologic Differences	Pharmacokinetic Impact
<b>ABSORPTION</b>		
<ul style="list-style-type: none"> <li>Intestinal Transit Times</li> <li>Transdermal Absorption</li> </ul>		Slower Intestinal Transit in Women ↑Transdermal Absorption in Women
<b>DISTRIBUTION</b>		
<ul style="list-style-type: none"> <li>Total Body Water</li> <li>Women Greater Adipose Tissue</li> <li>Plasma proteins modulated by Estrogen</li> </ul>		↑Total Body Water in Pregnant Women & Men ↑Adiposity in Women ↑Free Concentrations in Women (modulated by estrogen)
<b>METABOLISM</b>		
<ul style="list-style-type: none"> <li>Organ Blood Flow</li> <li>Cardiac Output</li> <li>Body Fat</li> </ul>		↓Hepatic Blood Flow in Women ↑Cardiac Output/ Rate of Distribution in Men vs Women ↑Body Burden of Lipid Soluble Drugs in Women
<b>ELIMINATION</b>		
<ul style="list-style-type: none"> <li>Renal Excretion</li> <li>Liver Metabolism</li> </ul>		↑Glomerular Filtration Rate, Tubular Secretion & Resorption in Men ↑Renal Blood Flow in Pregnancy by 50% ↓Liver Enzyme Activity in presence of Estrogen: metabolism varies through pregnancy, menstrual cycle, use of contraceptives, after menopause in women

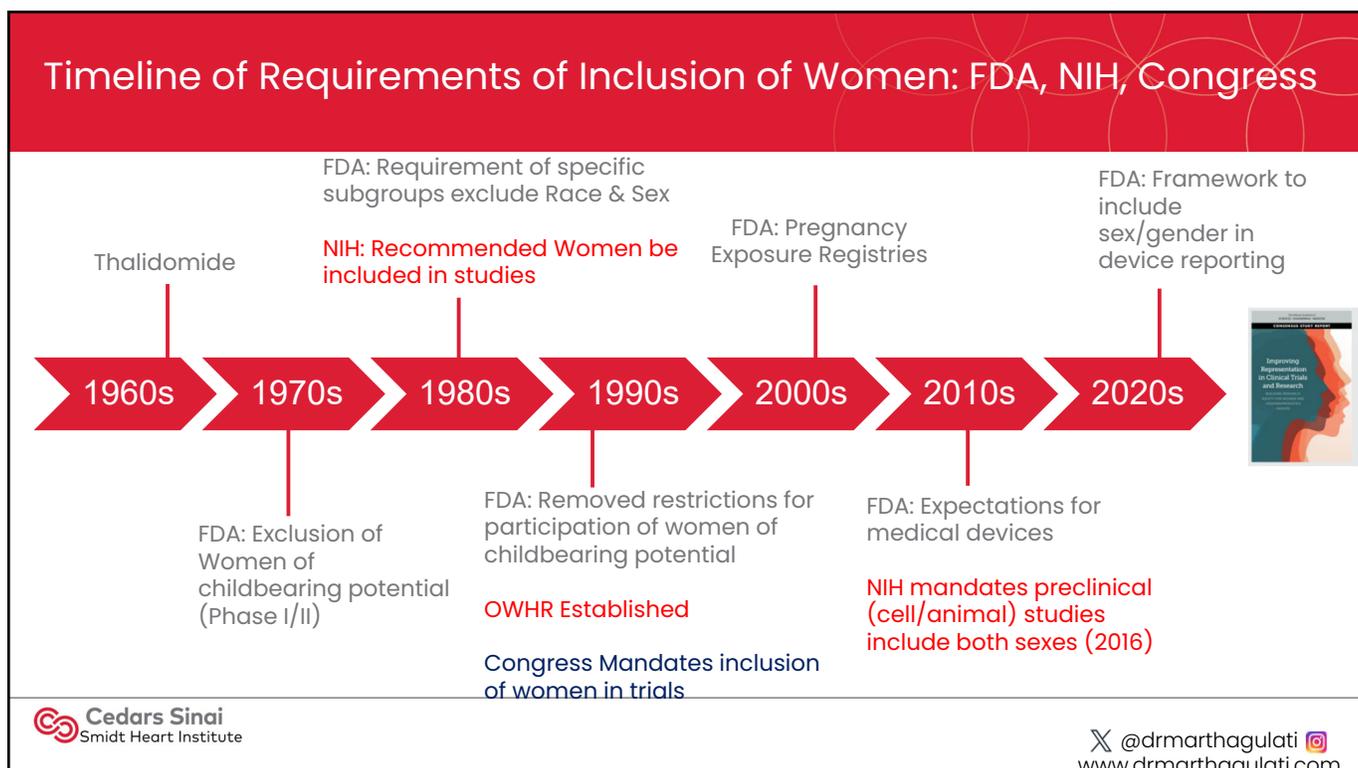


Anu Lala, ..., **Martha Gulati**. *Journal of Cardiac Failure*, 2022;28: 477-498

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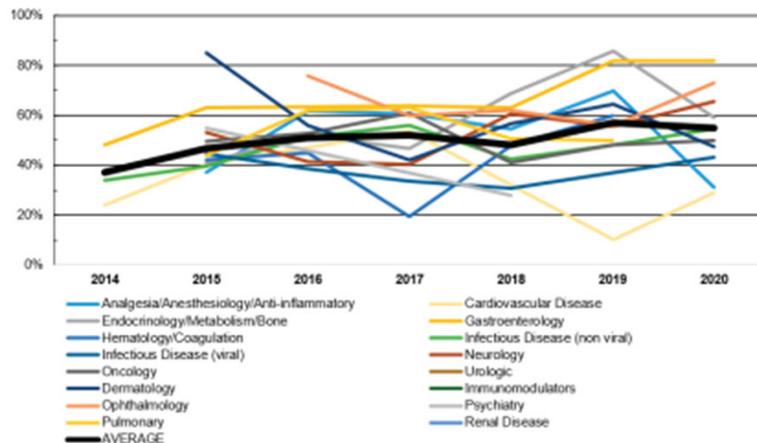
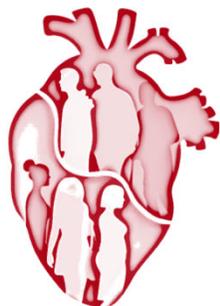


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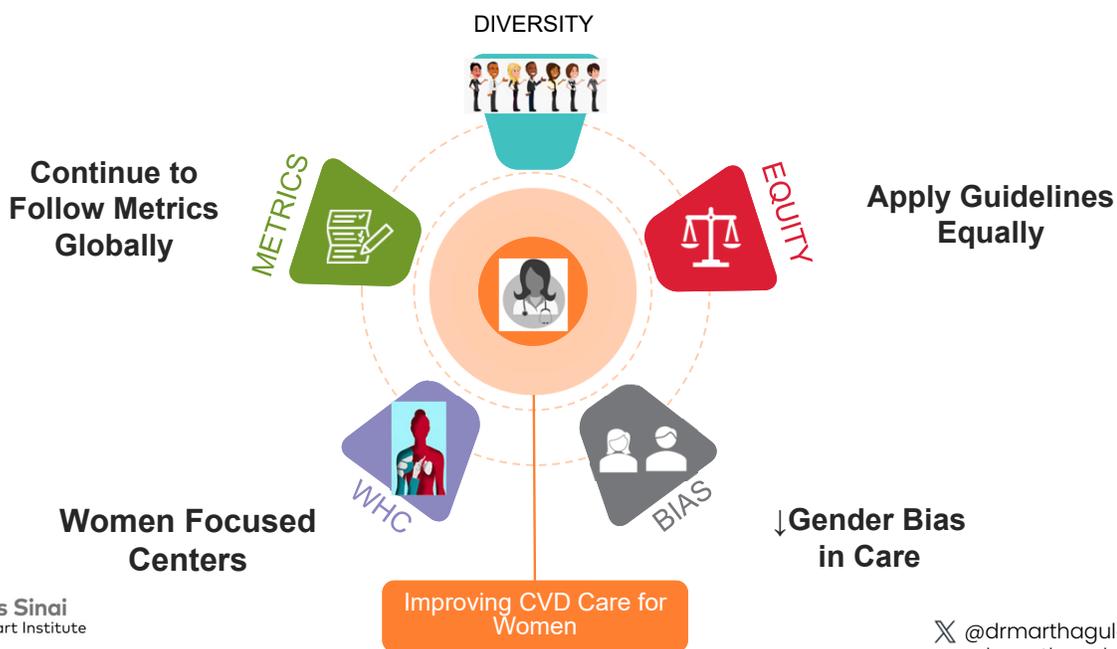
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# And Still Women Remain Understudied, While No One is Held Accountable....



**FIGURE B-1** Average % of females in trials by year of FDA approval and therapeutic area (n = 287).  
 SOURCE: Analysis of FDA Drug Trials Snapshots as of May 2021.

## Increase the Diversity in Trials to Understand Sex & Gender Differences



# Understanding Sex Differences in CVD

- Women remain underrecognized, underdiagnosed, undertreated & understudied in CVD
- Women Have Worse Outcomes after AMI: Women are **Less likely to received Guideline Directed therapies**
- How can we harness the power of EHR & AI to improve the care and remove the bias?
- Women Need to Be Studied; Sex-Differences Exist if We Look

## WOMEN'S HEART ARE SPECIAL

Saving Women's Hearts



### 1 HEART DISEASE IS THE #1 KILLER OF WOMEN

Based on our most recent data, of the 1.3 million deaths of women in the USA, more than 420,000 deaths were due to HEART DISEASE



### 2 WOMEN & THEIR HEARTS REMAIN UNDERSTUDIED

In the past, it was common for women to be excluded in research. Women had that annoying problem of getting pregnant, having hormone fluctuations and being different than men!



### 3 WOMEN REMAIN UNDERTREATED

Women who have a heart attack are treated less aggressively with life saving medications. There are delays in opening women's heart arteries and restoring blood flow. Women are less likely to be referred to cardiac rehab. It is worse to be a woman, but especially a Black woman.



### 4 WOMEN ARE NOT SMALL MEN

Sex Matters. Women respond to cardiac risk factors differently than men. Women also respond to medications differently to men. It is not just body size. It is due to the biological differences in women compared with men. Women often will get pregnant. Men can't. But pregnancy is nature's stress test and often identifies women at greater risk for heart disease in the future.



### 5 STOP BIKINI MEDICINE

We need to move away from bikini medicine, meaning when we focus on women's health, we need to get past just the breast and the reproductive system when talking about women's health. Heart Disease is the #1 Killer of Women. Women need to know if they are at risk for heart disease.



### 6 WE CAN DO BETTER

February is Heart Month. February 5th is National Go Red Day. Heart disease claims 1 in 3 women's lives. Go Red to increase awareness of heart disease in women. And get the women in your lives to get screened for heart disease and know if they are at risk. Heart disease remains the #1 killer of Women. Lack of awareness is a close second.

CREATED BY DR. MARTHA GULATI MD, MSc, FAHA, FACP, FACC, FESC

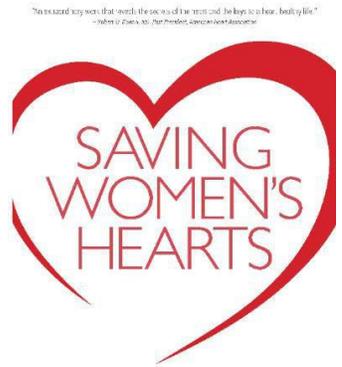
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# Women's Cardiovascular Health National Priority



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# Thank you!



How You Can Prevent and Reverse Heart Disease  
With Natural and Conventional Strategies

MARTHA GULATI MD, MS, FACC, FAHA  
SHERRY TORKOS BSc PHd



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