Cardiovascular Disease in Women- Now is the time to change the statistics !

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- 9 million women died from CVD in 2019
- CV disease responsible for 35% of deaths in women worldwide
- Stagnation in previously favorable CVD trends
  - Women are underdiagnosed, undertreated and understudied

Prevalence :	9.4 million (7.4%)	8.8 million (6.2%)
5 yr mortality after MI:	36%	47%

N.R. Aggarwal, M. J. Wood (Eds.) *Sex Differences in Cardiac Disease 2021* Elsevier

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Cardiovascular disease is the leading cause of death in women

Total Deaths in Women in USA 2016: 1,236,003

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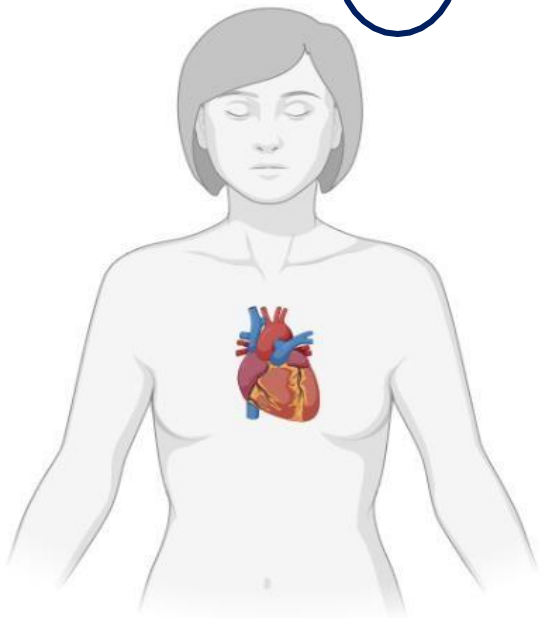

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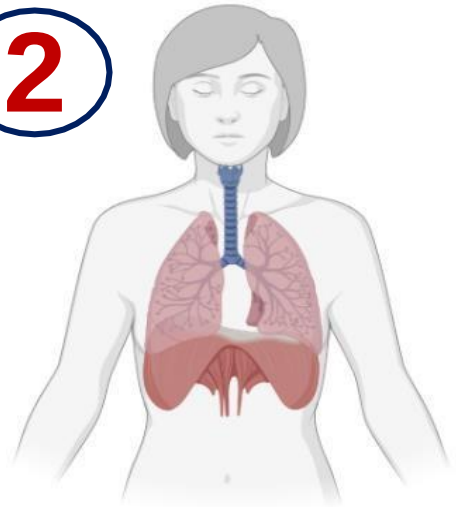

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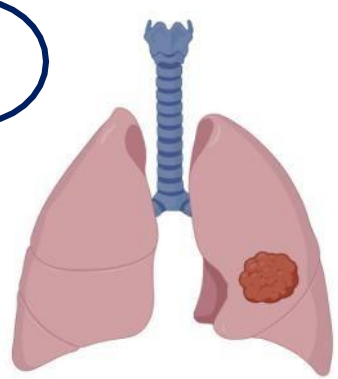

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Cardiovascular disease 412,244 deaths	Chronic Lung Disease 81,551 deaths	Lung Cancer 70,500 deaths	Breast Cancer 40,920 deaths

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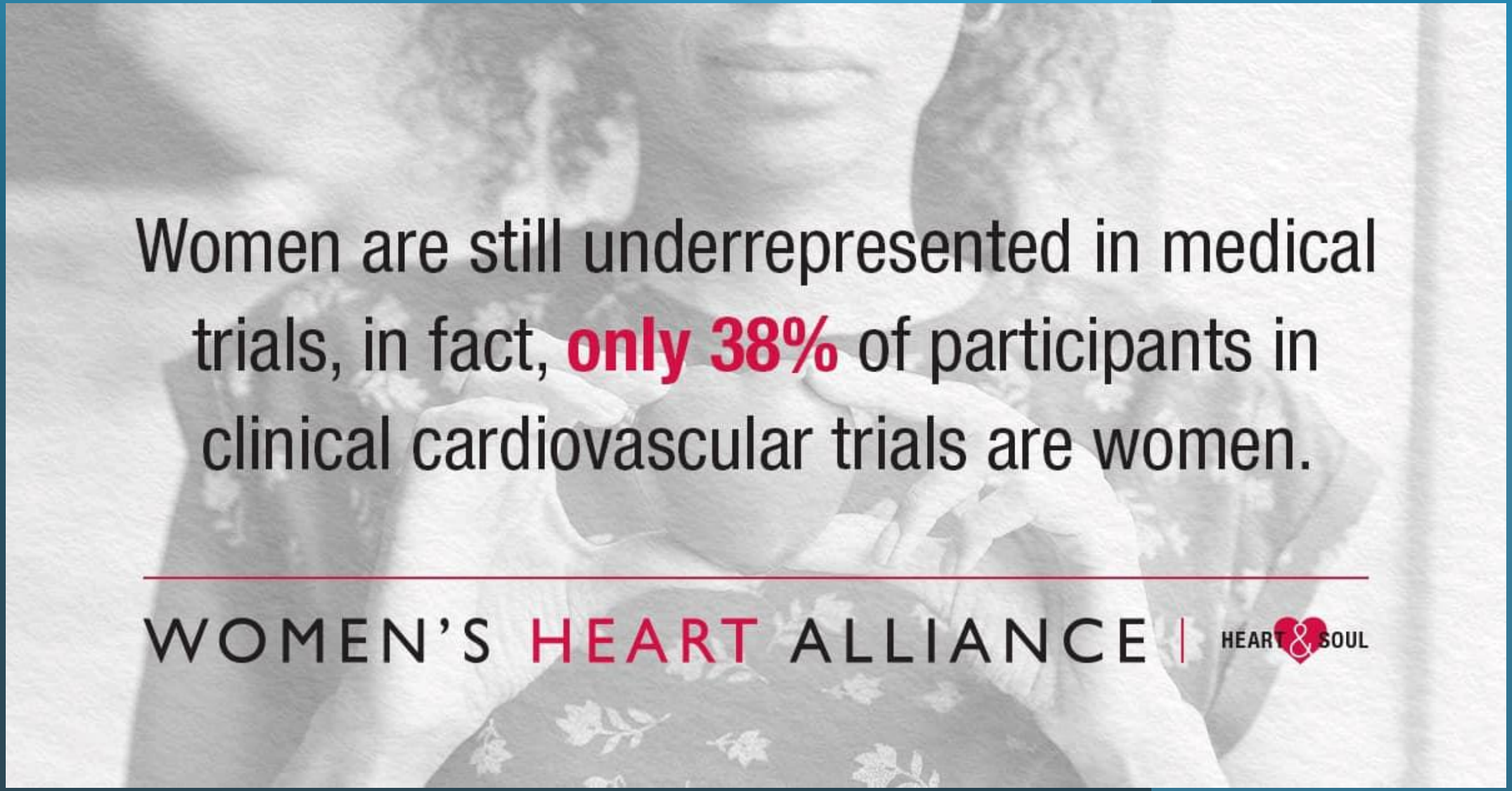
Women are still underrepresented in medical trials, in fact, only 38% of participants in clinical cardiovascular trials are women.
WOMEN'S HEART ALLIANCE | HEART & SOUL

Disparities in Heart Disease Care in Women Persist

Clinical Presentation

Older
More comorbidities
Atypical symptoms more often than men
Present with lower troponins

Pathophysiology

Plaque rupture more common in men
Plaque erosion more common in women
More likely to have normal coronary arteries & MINOCA
Often due to Takotsubo, spasm & SCAD

Sex Specific Disparities in Management

Delay

- Delay in presentation
- Longer door to needle time

Less Pharmacotherapy

- Less likely to get Aspirin during ACS
- Less likely to get Aspirin, ACEI/ARB and statin on hospital discharge
- Less adherent to meds due to higher side effects

Less Revascularization

- More likely to be treated medically
- Less likely to have angiography or PCI
- Less likely to be referred for CABG
- Less likely to receive arterial grafts during CABG

Less Rehabilitation

- Less likely to be referred or enrolled in cardiac rehabilitation
- Less likely to complete cardiac rehabilitation

Sex Specific Disparities in Outcomes

More events & death

Higher risk of rehospitalization
Young women with ACS had 4-fold higher risk of recurrent MI, HF & in-hospital mortality compared to men

More chest pain

Black women more likely to have angina 1 year after MI

Worse QOL

Women have more depressive symptoms & worse QOL after MI

Niti Aggarwal

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Women are More Likely to Experience Less Common Forms of Heart Disease

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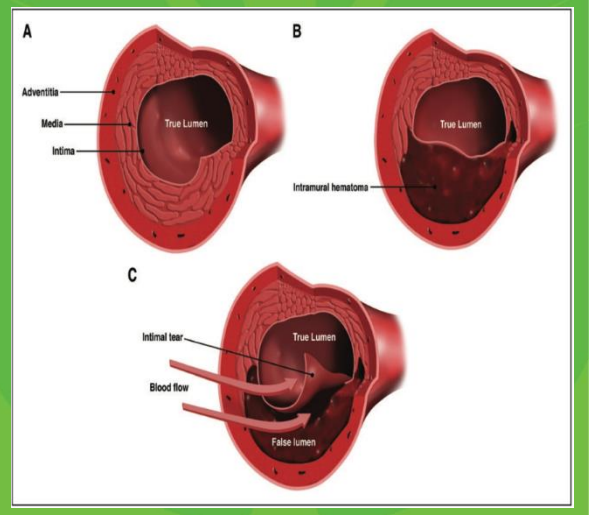
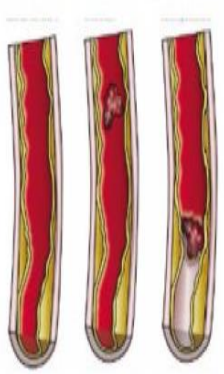
SCAD



Dissection

Embolism



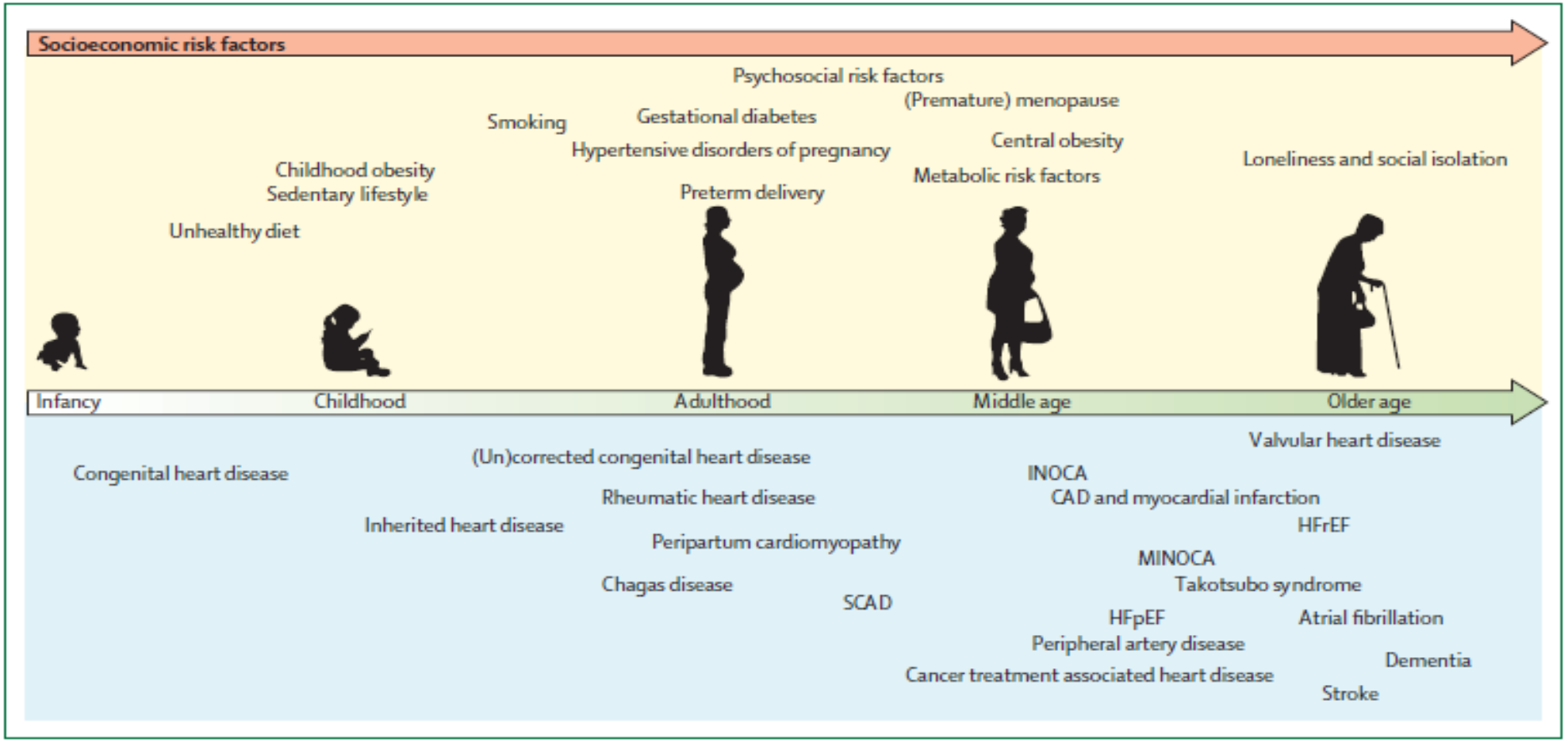
Can be mis – look carefully

Takotsubo cardiomyopathy

More common in women; 1.2% of all ACS

Women in Cardiology MEMBER SECTION

Forms of Heart Disease are Different Throughout A Woman's Life

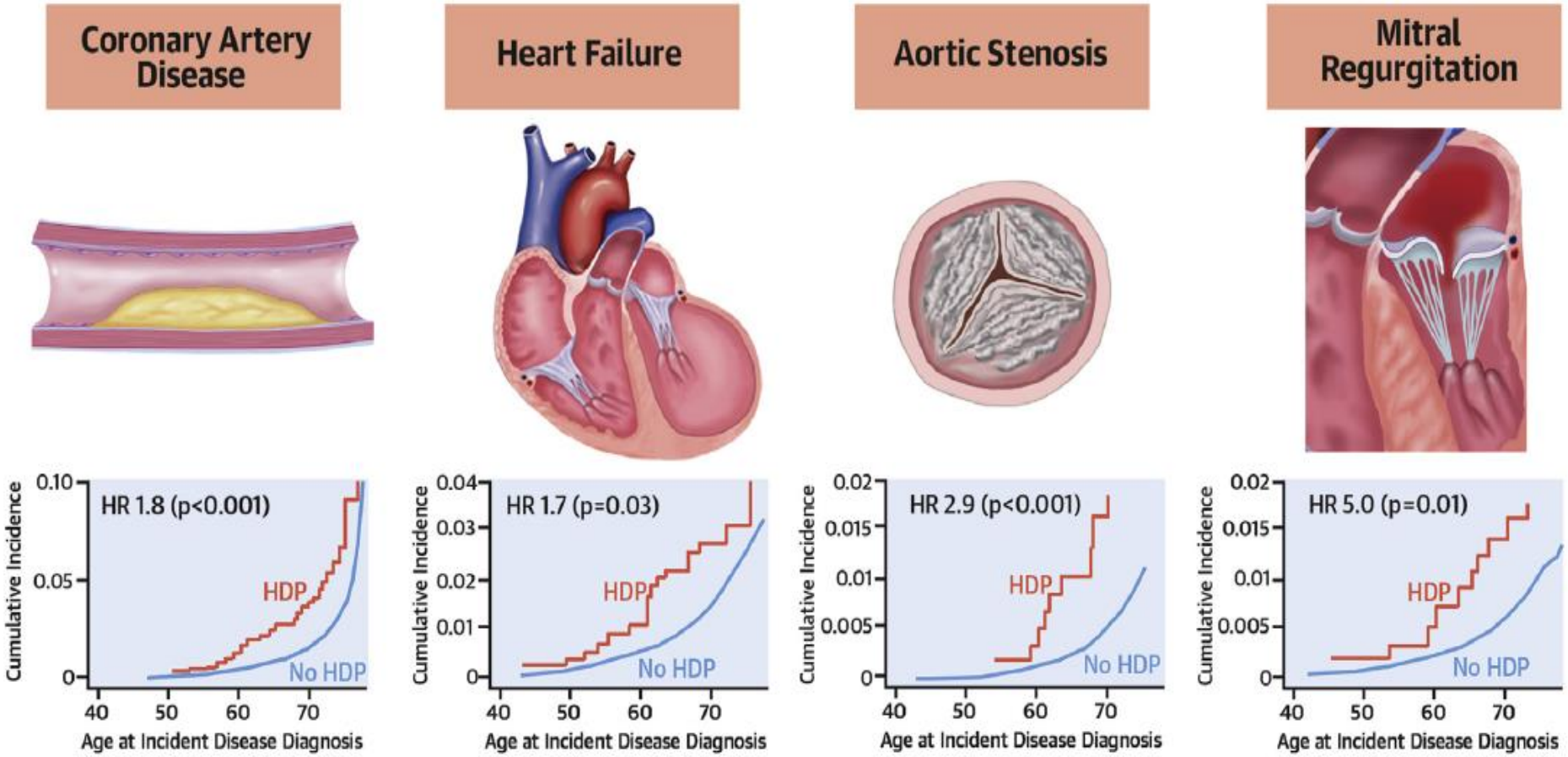


Vogel B, et al Lancet 2021

Figure 8: **Cardiovascular diseases and their risk factors and modifiers during the lifecycle of a woman: opportunities to deliver comprehensive care and intervene**

CAD=coronary artery disease. HFpEF=heart failure with preserved ejection fraction. HFrEF=heart failure with reduced ejection fraction. INOCA=ischaemia with non-obstructive coronary arteries. MINOCA=myocardial infarction in the absence of obstructive coronary artery disease. SCAD=spontaneous coronary artery dissection.

CENTRAL ILLUSTRATION **Hypertensive Disorders of Pregnancy Are Associated With Long-Term Risk of Diverse Cardiovascular Diseases**



Honigberg, M.C. et al. J Am Coll Cardiol. 2019;74(22):2743-54.

Hypertensive pregnancy was associated with long-term risk of incident coronary artery disease, heart failure, aortic stenosis, and mitral regurgitation. The cumulative incidence plots on the **bottom** reflect incident cardiovascular disease diagnoses among women without each prevalent condition plotted against participant age on the x-axis. The hazard ratios displayed reflect results of the primary survival (Cox proportional hazards) analysis, which were adjusted for age at study enrollment and race.

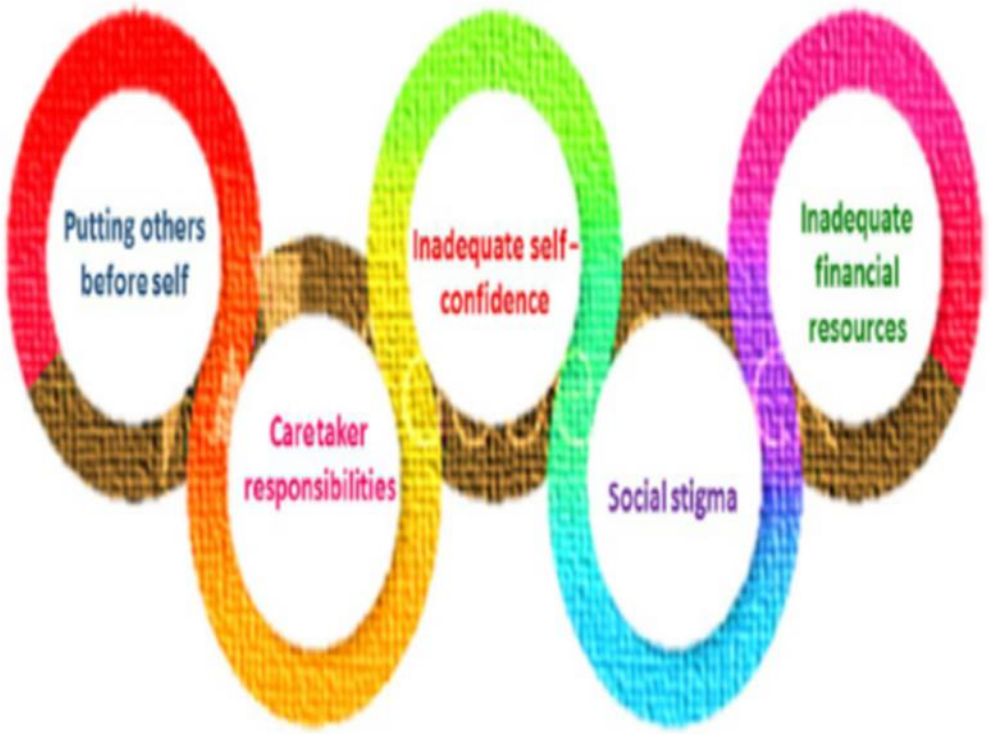


FIGURE 4 Potential Barriers for Women Seeking Care. Women often do not prioritize their cardiovascular health and reported several barriers that account for this behavioral trend. *Data from [11].*

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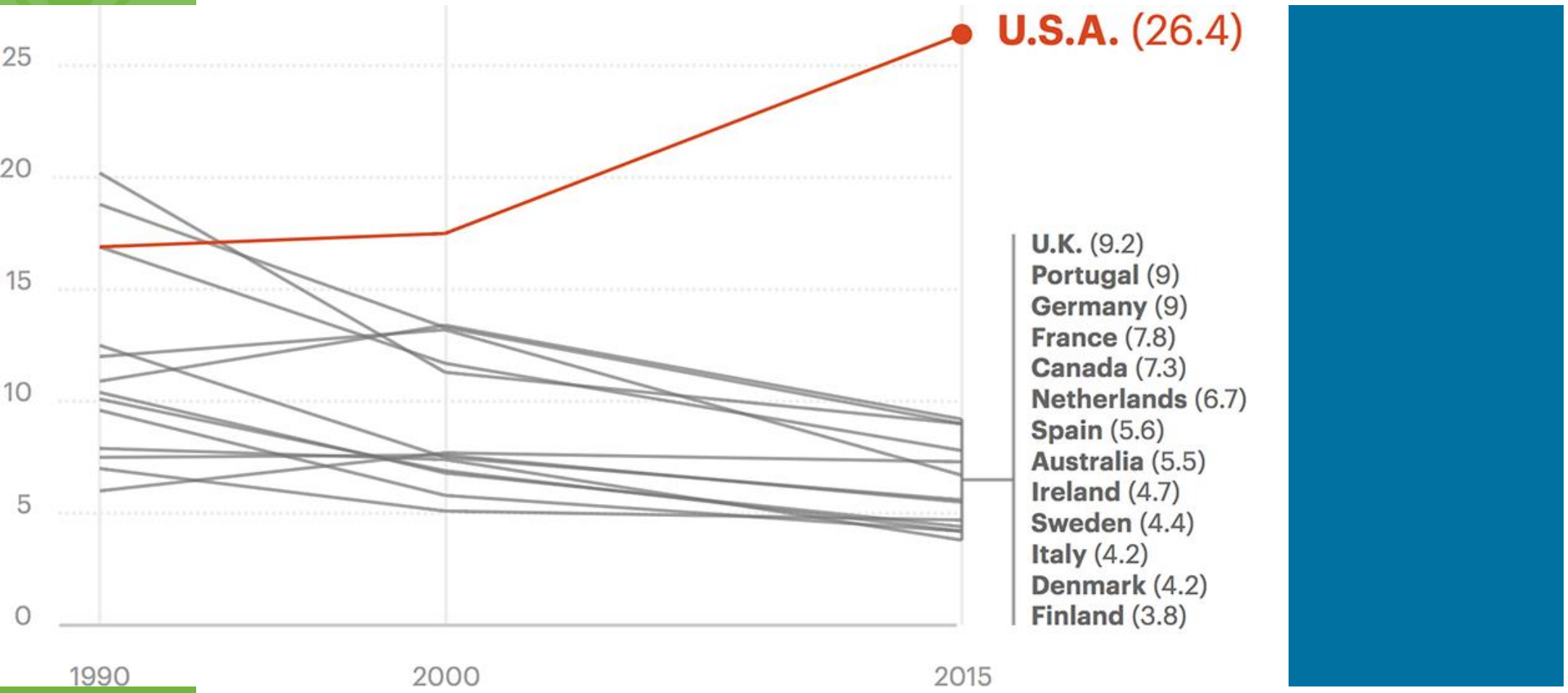
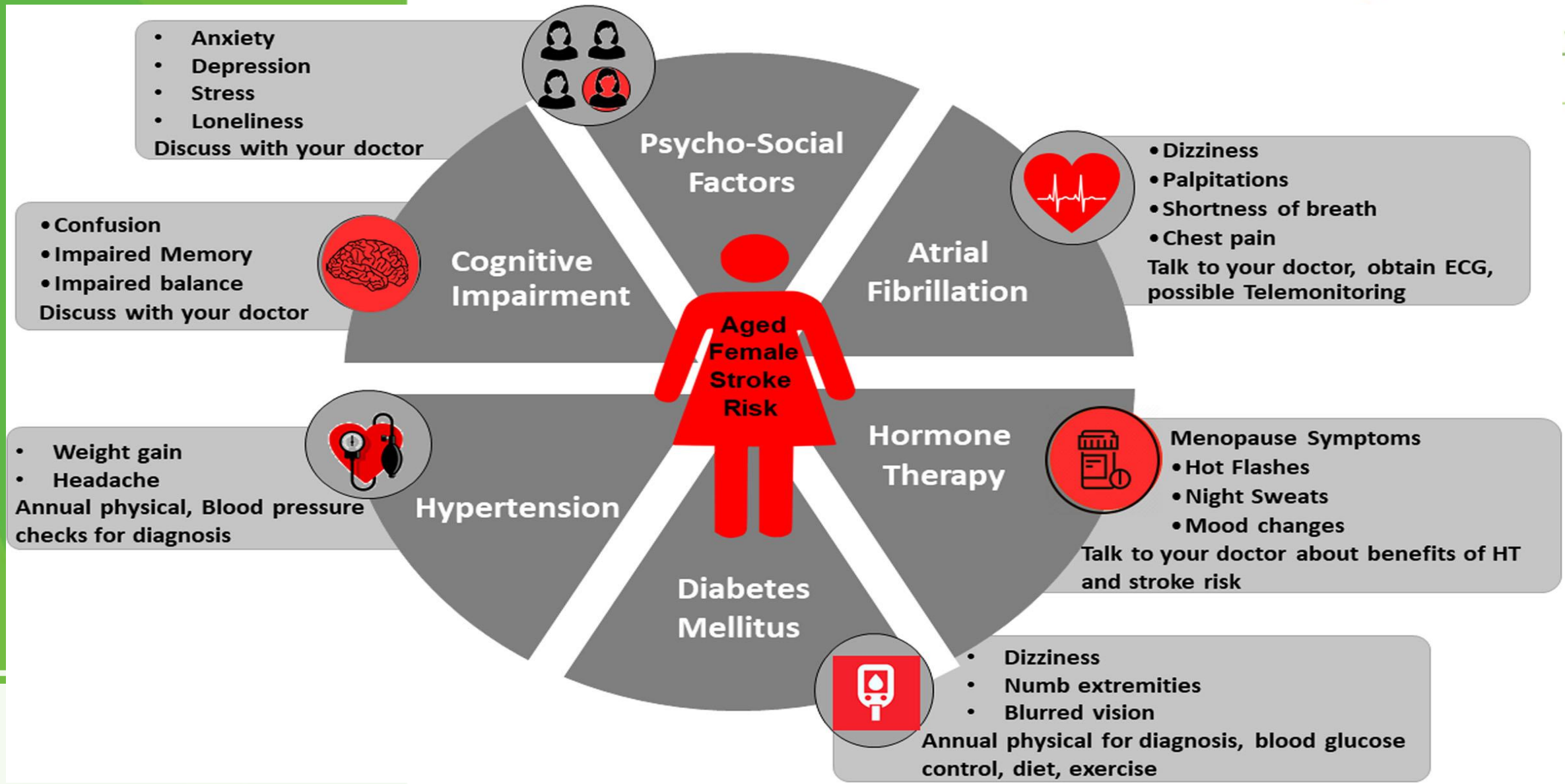
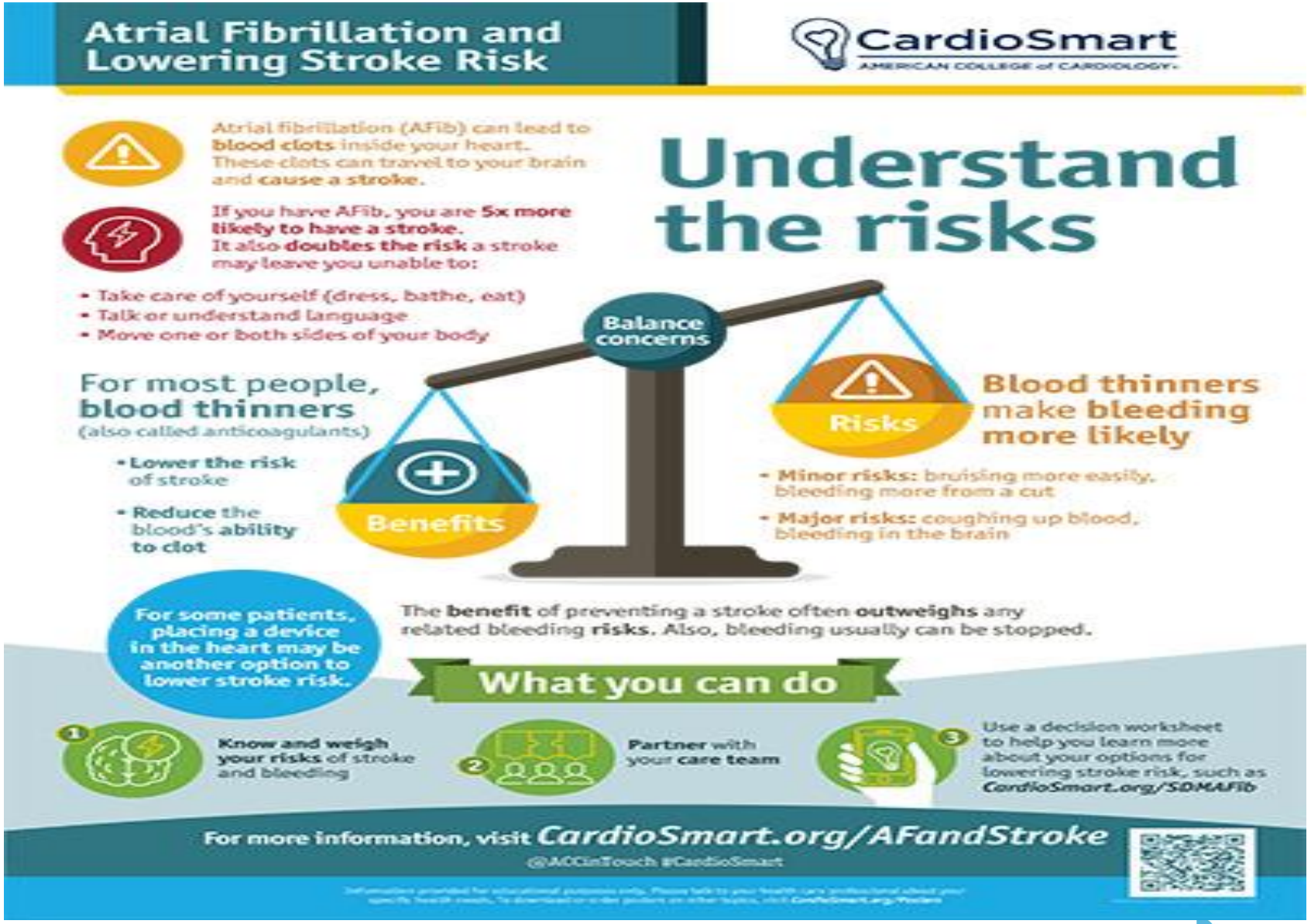
Cardiac Conditions are the leading Cause of Pregnancy Related Death



Davis, M.B. et al. J Am Coll Cardiol. 2021;77(14):1763–77.


Aged Female Stroke Risk
Psycho-Social Factors
Atrial Fibrillation
Hormone Therapy
Diabetes Mellitus
Hypertension
Cognitive Impairment
• Anxiety
• Depression
• Stress
• Loneliness
Discuss with your doctor
• Dizziness
• Palpitations
• Shortness of breath
• Chest pain
Talk to your doctor, obtain ECG, possible Telemonitoring
Menopause Symptoms
• Hot Flashes
• Night Sweats
• Mood changes
Talk to your doctor about benefits of HT and stroke risk
• Dizziness
• Numb extremities
• Blurred vision
Annual physical for diagnosis, blood glucose control, diet, exercise
• Weight gain
• Headache
Annual physical, Blood pressure checks for diagnosis
• Confusion
• Impaired Memory
• Impaired balance
Discuss with your doctor

Personalized Medicine



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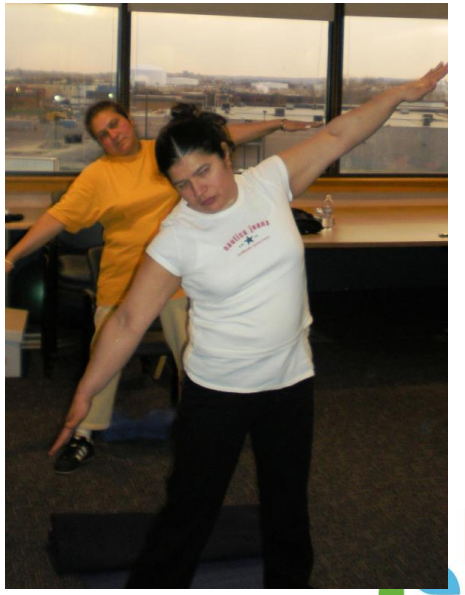
Heart Awareness and Primary Prevention in Your Neighborhood- HAPPY Heart

- Unique heart disease prevention model
- Low income women, 40-60 years of age
- Integration of individual and group health education/coaching, exercise, nutrition and stress management in a community health center



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HAPPY Heart Program

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Community-Based Primary Prevention Programs Decrease the Rate of Metabolic Syndrome Among Socioeconomically Disadvantaged Women

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Abstract

Background: Metabolic Syndrome (MetSyn) is one of the strongest predictors of type 2 diabetes (DM2) and cardiovascular disease (CVD). It is associated with a 4- to 10-fold increased risk of DM2 and a 2- to 3-fold increased risk of CVD. Low income and minority women have some of the highest rates of MetSyn. This study examines the effect of a unique, community based, primary prevention program on the rates of MetSyn and health habits.

Methods: Sixty-four low income and minority women were enrolled in the HAPPY (Health Awareness and Primary Prevention in Your neighborhood) Heart Program in an eastern suburb of Boston. Over these 2 years, patients were evaluated by an interdisciplinary medical team: their primary physician, cardiologist, nutritionist, physical therapist, and health coach. The rate of MetSyn was measured at baseline, year 1, and year 2. Comparisons were made either using the paired t test for normally distributed variables or the Wilcoxon Sign test for non-normal variables.

Results: The rate of MetSyn fell from 64.7% at baseline to 34.9% at year 1 ($p=0.01$) and 28.2% at year 2 ($p<0.001$). This was driven by increases in high-density lipoprotein (HDL-C) ($p<0.001$) and decreases in blood pressure ($p=0.05$). Fasting blood glucose trended down, but the hemoglobin A1c (HbA1c) reached significance (decreasing from 6 to 5.8, $p<0.01$). Nutrition and exercise habits trended toward improvement. There were significant decreases in anxiety ($p<0.001$), depression ($p=0.006$) and stress ($p=0.002$).

Conclusions: This lifestyle intervention program is effective at decreasing MetSyn in a socioeconomically disadvantaged, largely minority, female population. This program also decreases anxiety, stress, and depression among participants.

Introduction

In the United States, more than 80 million Americans (30% of the population) currently live with cardiovascular disease (CVD).[1] In addition, 68 million have high blood pressure (HTN) and 71 million have high cholesterol (HL).[2] In recent decades, the mortality from CVD has decreased. However, the prevalence continues to be disproportionately high among women, racial and ethnic minorities, and socioeconomically disadvantaged groups.[3]

Metabolic syndrome (MetSyn) includes risk factors for both type 2 diabetes (DM2) and CVD. Using the National Cholesterol Education Program/Adult Treatment Panel III (NCEP/ATP) 3 criteria, the presence of three of the following: abdominal obesity, hyperglycemia, dyslipidemia, and/or hypertension[4] confers a diagnosis of MetSyn and is an early risk factor for both DM2 and CVD. A diagnosis of MetSyn can identify "at risk" patients appropriate for aggressive lifestyle intervention.[5–7] Even modest improvements in modifiable risk factors, such as the components of MetSyn, have exponential long-term benefits.[8–10]

Lifestyle intervention programs decrease CVD risk factors but it is unclear what, if any, effect they have on the rate of MetSyn. These programs contend that improvements in health will be more sustained if they result from fundamental changes in behavior, rather than pharmacologic temporizing. One of the first large lifestyle intervention programs for women, the WISEWOMAN study, showed a 7%–8% decrease in

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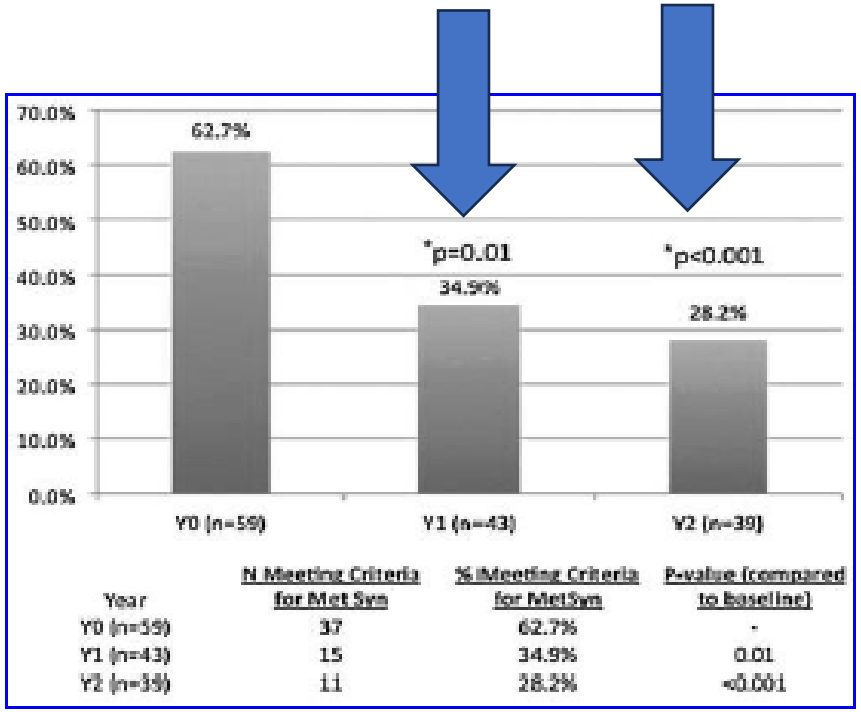

Year	N Meeting Criteria for Met Syn	% Meeting Criteria for MetSyn	P-value (compared to baseline)
Y0 (n=59)	37	62.7%	-
Y1 (n=43)	15	34.9%	0.01
Y2 (n=39)	11	28.2%	<0.001

FIG. 2. Rates of meeting diagnostic criteria for metabolic syndrome, i.e. having 3 of 5 components of metabolic syndrome, at baseline, year 1 and year 2. This figure displays the significant decrease from baseline to year 1 and from baseline to year 2 in the rate of metabolic syndrome. *Denotes significant value.

Gilstrap J Women's Health, 2013

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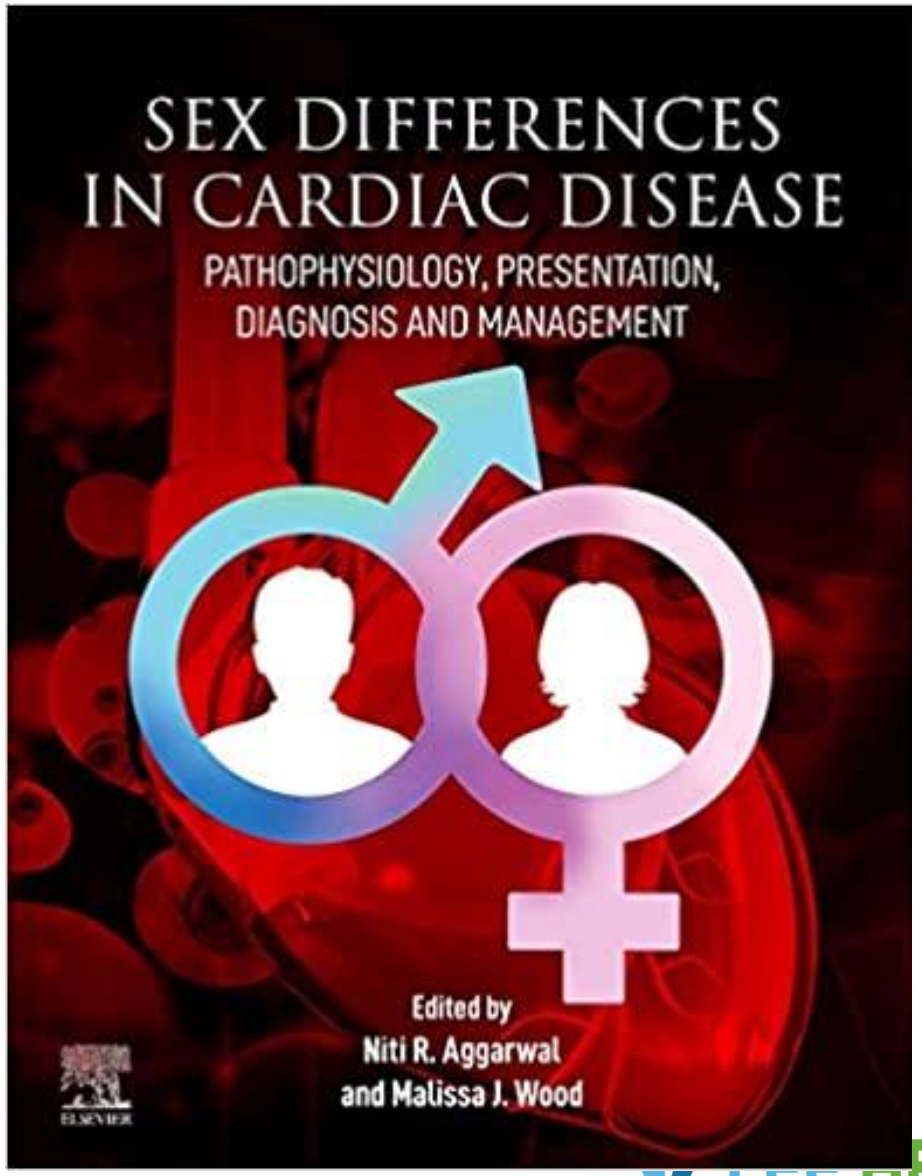
- Goal is to raise awareness of sex-related and gender-related differences in CVD
- To help transform the care of women
- Provide a springboard for future research
- Improve outcomes



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Integrating Cardiovascular Care

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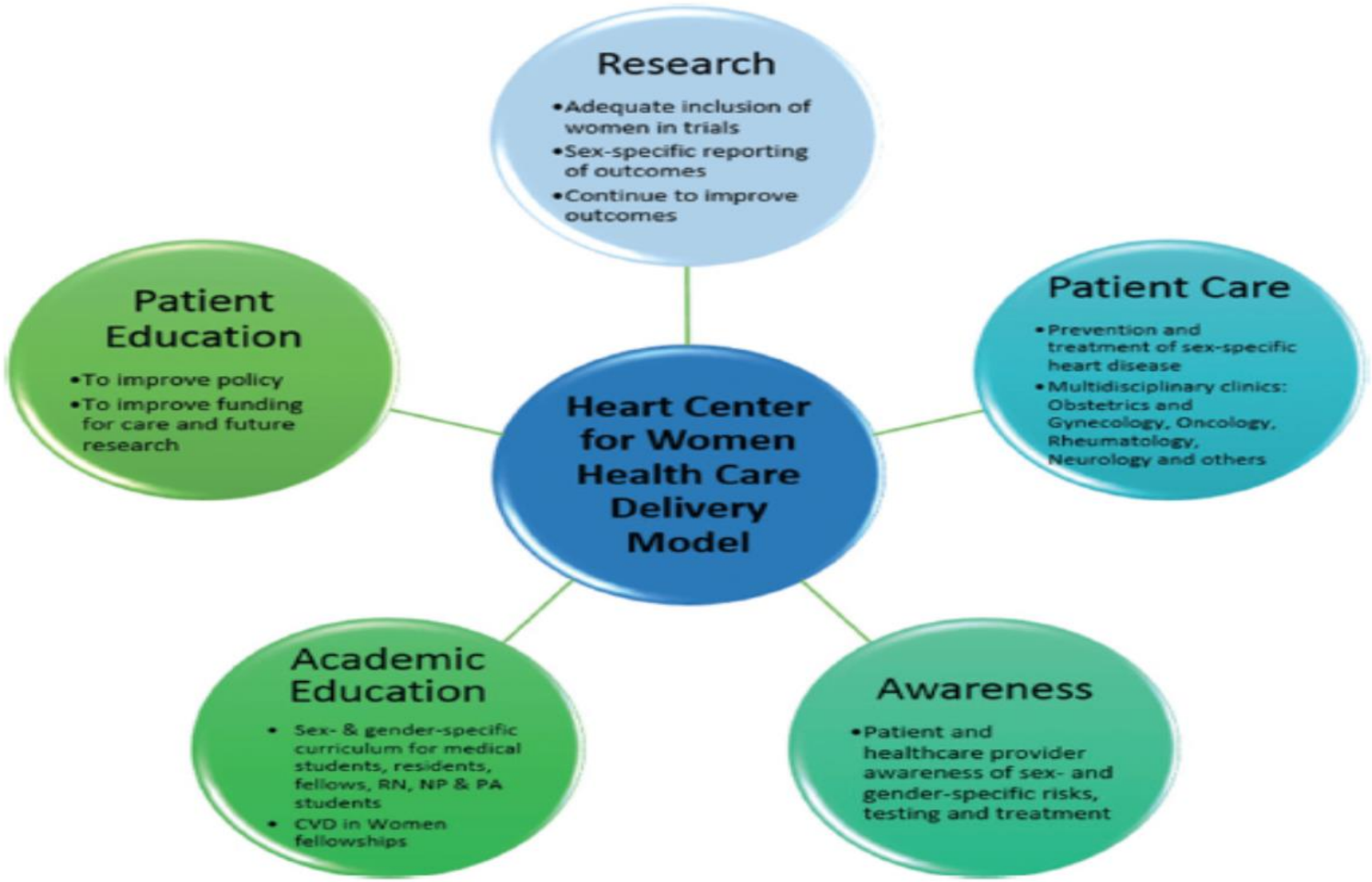

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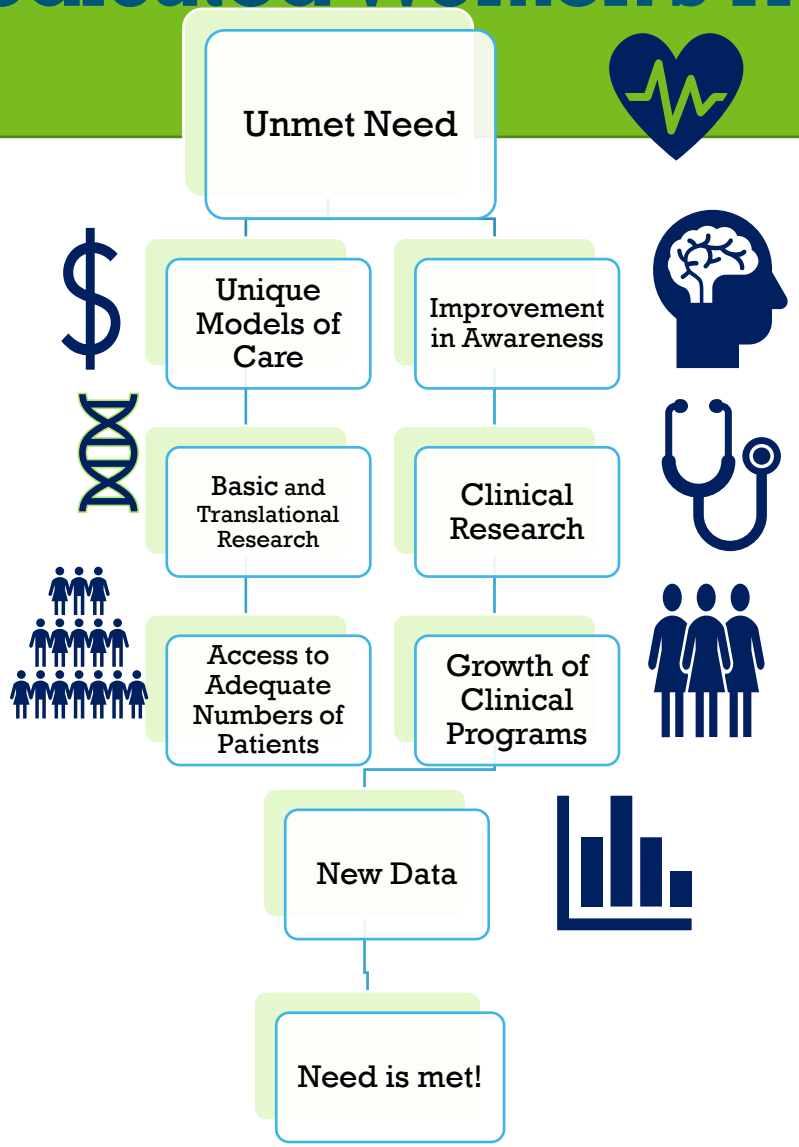
Why Do We Need Dedicated Women's Heart Programs?



Excellence in Healthcare- Four Legged Stool

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Research

Community

Thank you !

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