



Cardiopatía isquémica en la mujer. ¿Hace falta un enfoque de género?

Dr. Pedro Hidalgo Useche

Cardiólogo Intervencionista.

Doctor en ciencias Médicas L.U.Z

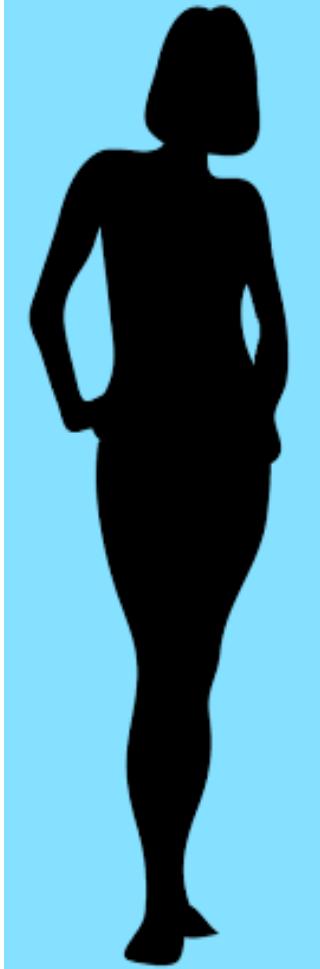
Ex presidente de la SOVECI, actual secretario de la SOLACI.

Director del laboratorio de hemodinamia Policlínica Amado.





Conflictos de interés



Estoy convencido que
la mujer es el ser más extraordinario
que existe en la Tierra

Pedro Hidalgo Useche.





¿Fisiopatología?

¿Síntomas?

¿Tratamiento?

¿Resultados?

¿Qué es diferente?



CONTEXTO HISTÓRICO

Comparative Study > Am Heart J. 1986 Feb;111(2):383-90. doi: 10.1016/0002-8703(86)90155-9.

Patterns of coronary heart disease morbidity and mortality in the sexes: a 26-year follow-up of the Framingham population

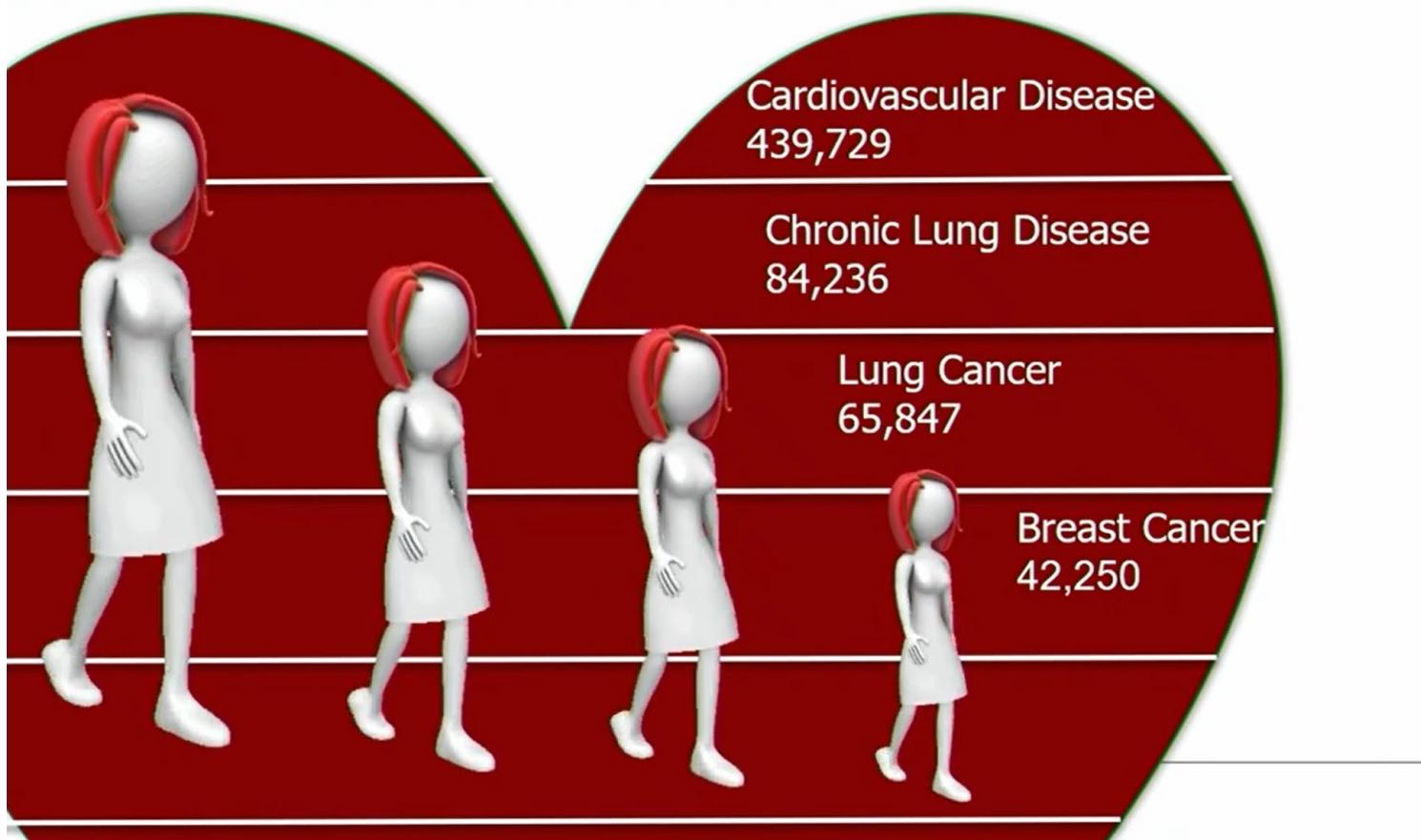
D J Lerner, W B Kannel

PMID: 3946178 DOI: 10.1016/0002-8703(86)90155-9

- Entre los sujetos de 35 a 84 años, los hombres tenían aproximadamente el doble de incidencia total de morbilidad y mortalidad que las mujeres.
- La brecha sexual en la morbilidad tiende a disminuir durante los últimos años del rango de edad, principalmente debido a un aumento repentino en el crecimiento de la morbilidad femenina después de los 45 años.
- La ventaja relativa en salud que poseen las mujeres, sin embargo, se ve amortiguada por una tasa de letalidad por ataques coronarios que supera la tasa masculina (32% frente a 27%).



Total Deaths in Women in USA 2021: 1,380,736



Prevalence of CVD
in US Women:

- 60 Million

Prevalence of
Breast Cancer in
US Women:
• 4 Million

Martin, S. et al. Circulation. 2024





“... 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

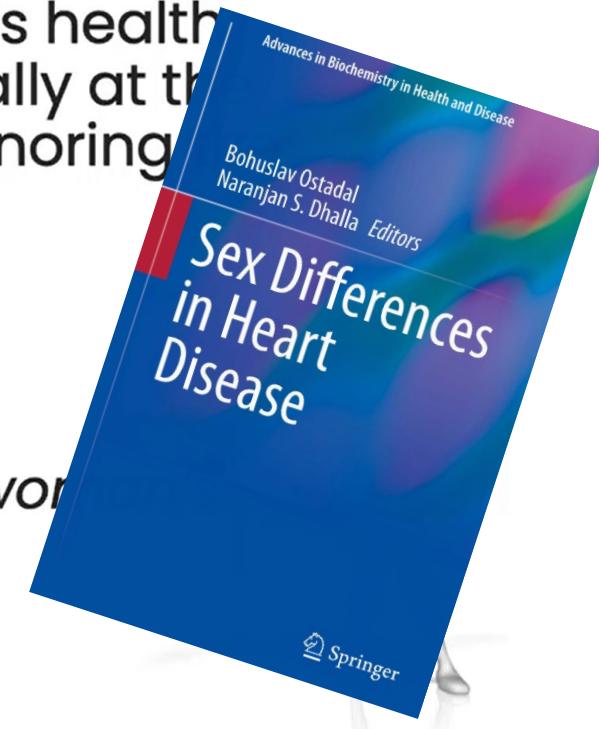
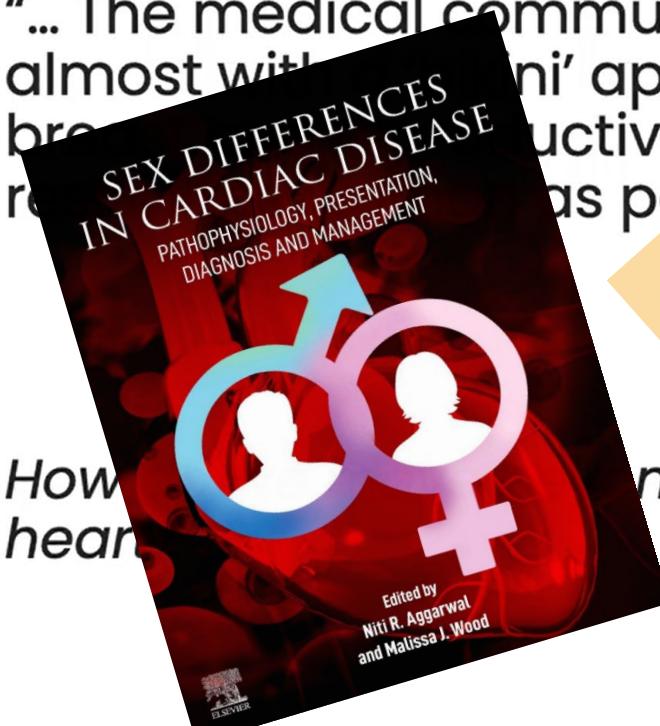
How do we move beyond the bikini & protect a woman’s heart?



LIV CONGRESO VENEZOLANO DE CARDIOLOGÍA



"... The medical community has viewed women's health almost with a 'bikini' approach, focusing essentially at the reproductive system as part of women's health"

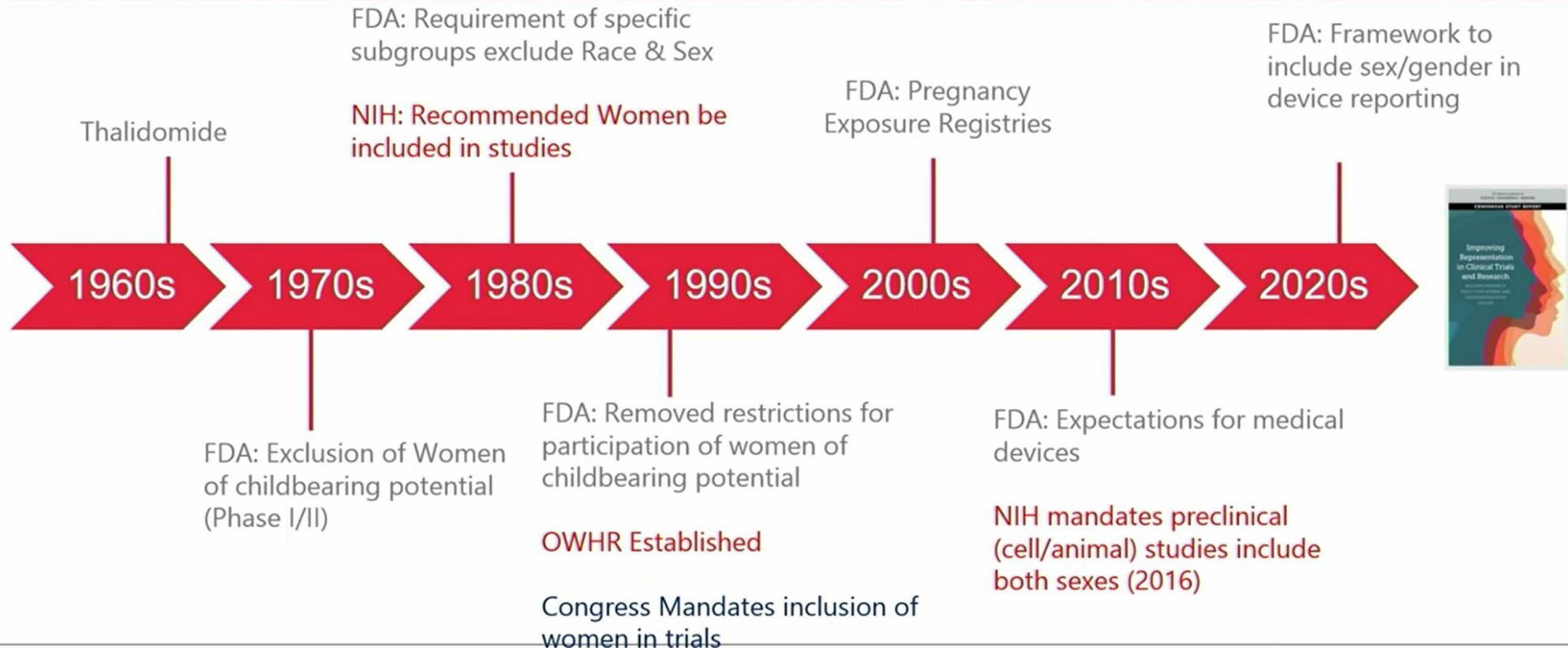


How can we improve the cardiovascular health of women?

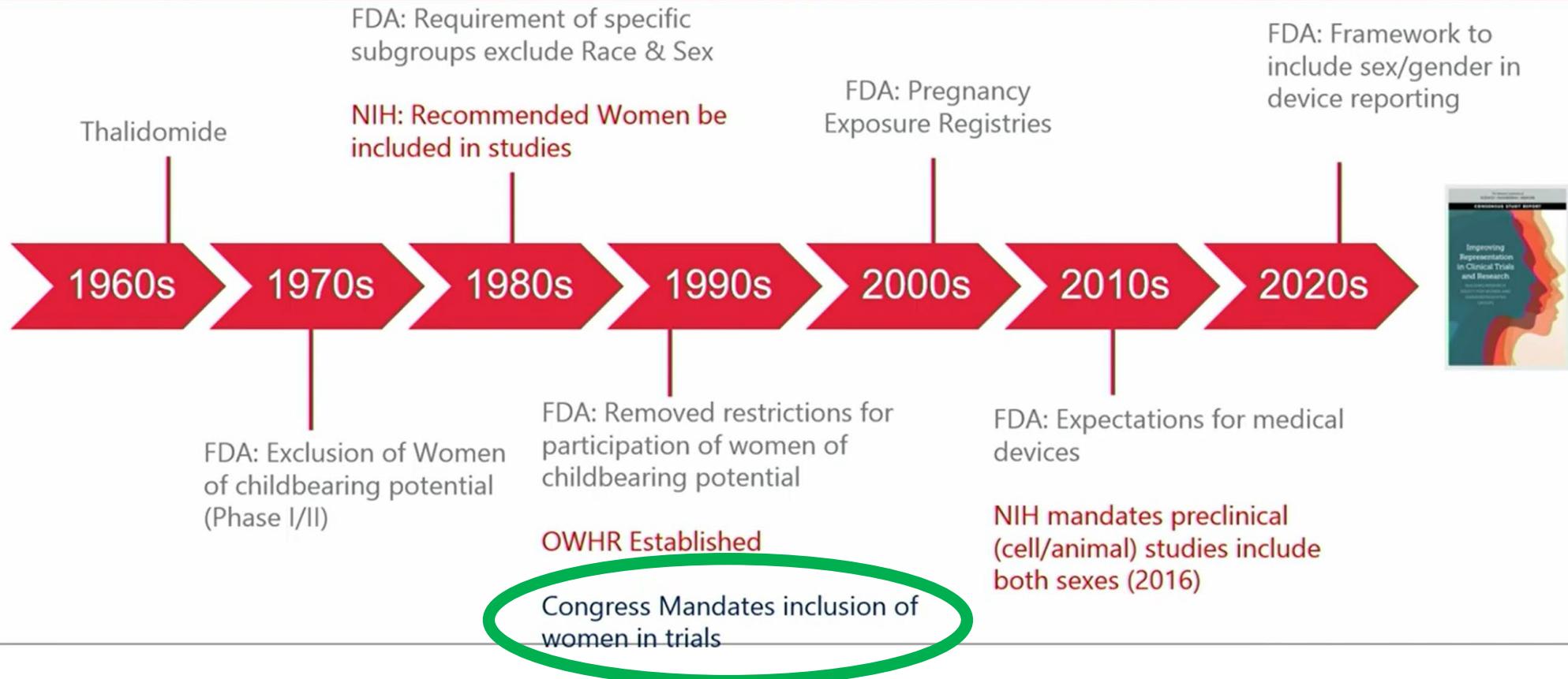
Gulati, M. Improving the Cardiovascular Health of Women in the Nation: Circulation 2017;135(6):495-498
Gulati M. Yentl's Bikini JAHA 2019 May 15



Timeline of Requirements of Inclusion of Women: FDA, NIH, Congress



Timeline of Requirements of Inclusion of Women: FDA, NIH, Congress

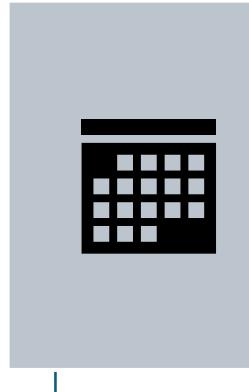


CASO CLINICO



46 años

- consulta por mareo y sensación de peso epigástrico de 20 min de duración, inicio en reposo, sin atenuantes.



Menarquia 11 años

- Menopausia 42 años
- 2G, 2P, 0A
- Fumadora 1 caja/día 13-40 años
- HTA: candesartan HCT: 16/12.5 mg



TA: 128/76 mmHg Resp: 14 FC: 78x' SAT: 97%

- Ex CV normal
- Troponina normal
- ECG sin cambios agudos

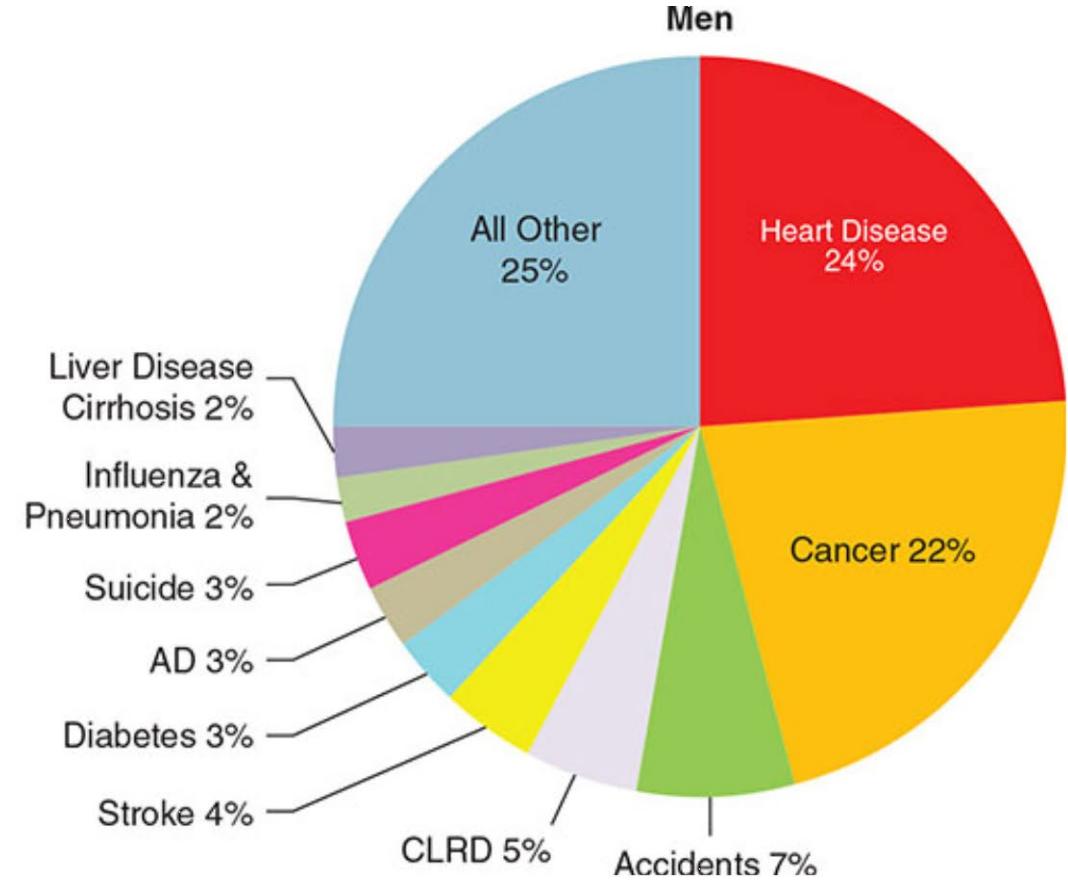
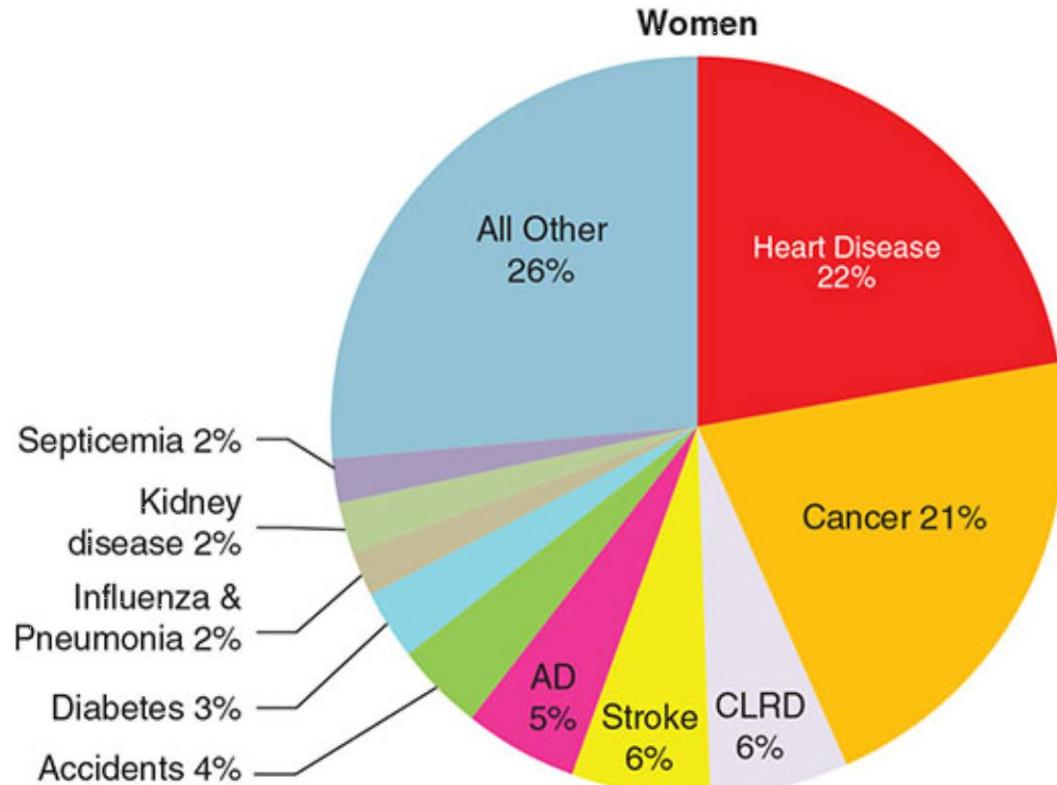


Preguntas

- a. La da de alta, no se preocupe
- b. La ingresa para repetir la troponina
- c. Llama al Dr. Mario Araya de inmediato.
- d. No se que hacer.
- e. Llama a Moisés Rivera y Jorge Castañeda para cateterizarla.

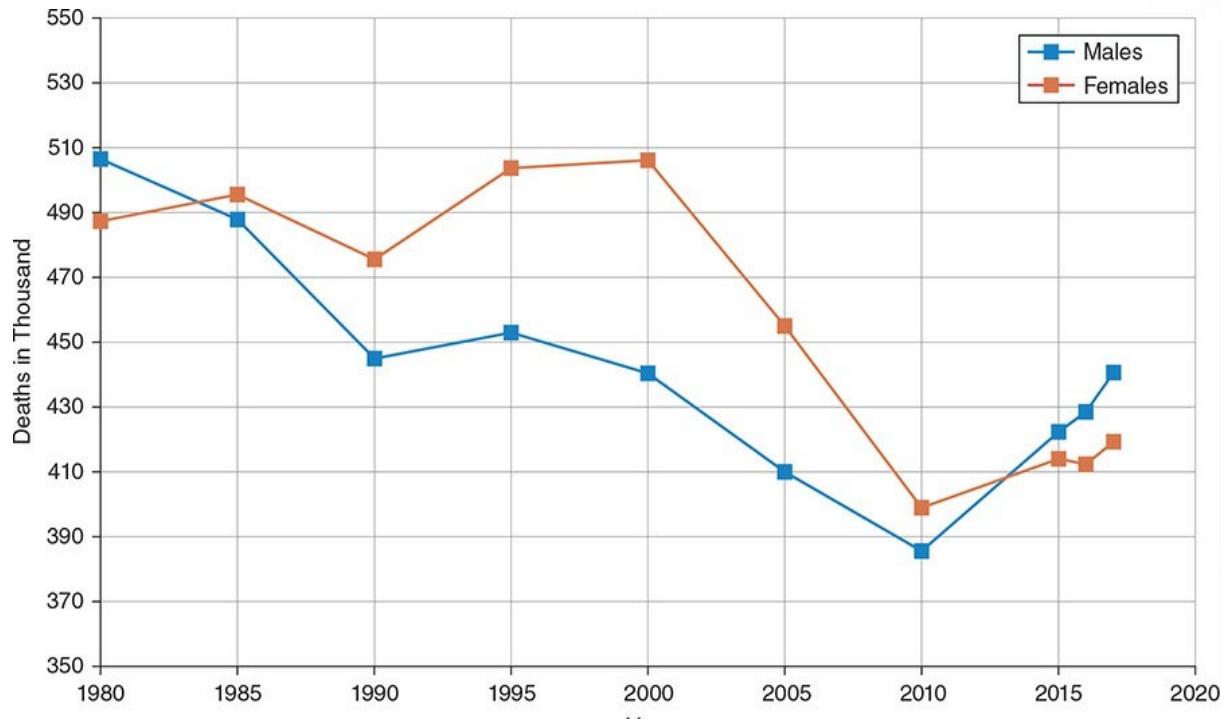


Mortalidad en USA 2018



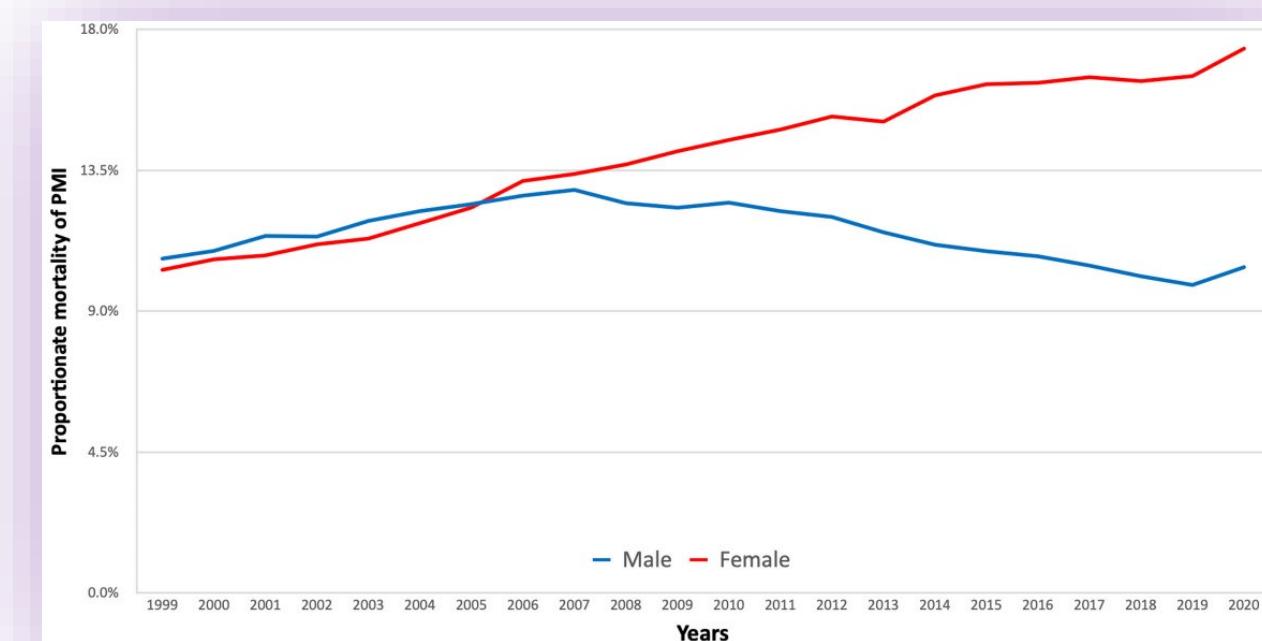


Mortalidad por EAC



EAC: enfermedad CV aterosclerótica

Gonuguntla K, et al Sex and Racial Disparities in Proportionate Mortality of Premature Myocardial Infarction in the United States: 1999 to 2020.
J Am Heart Assoc. 2024;13:e033515



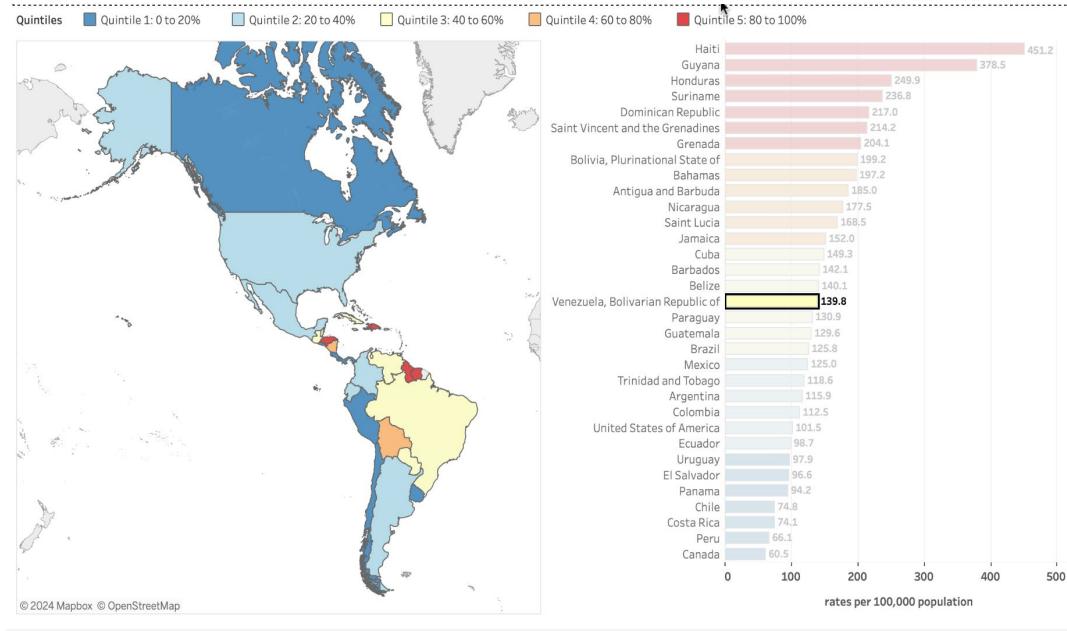
IM prematuro



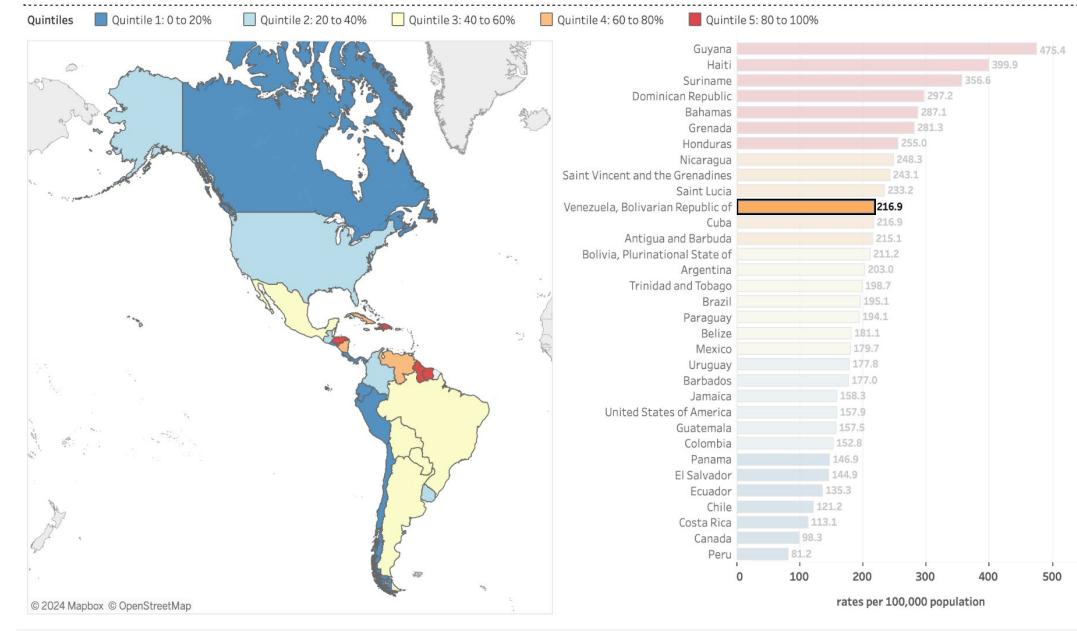


Mortalidad CV en América

Año 2019



Mujeres



Hombres

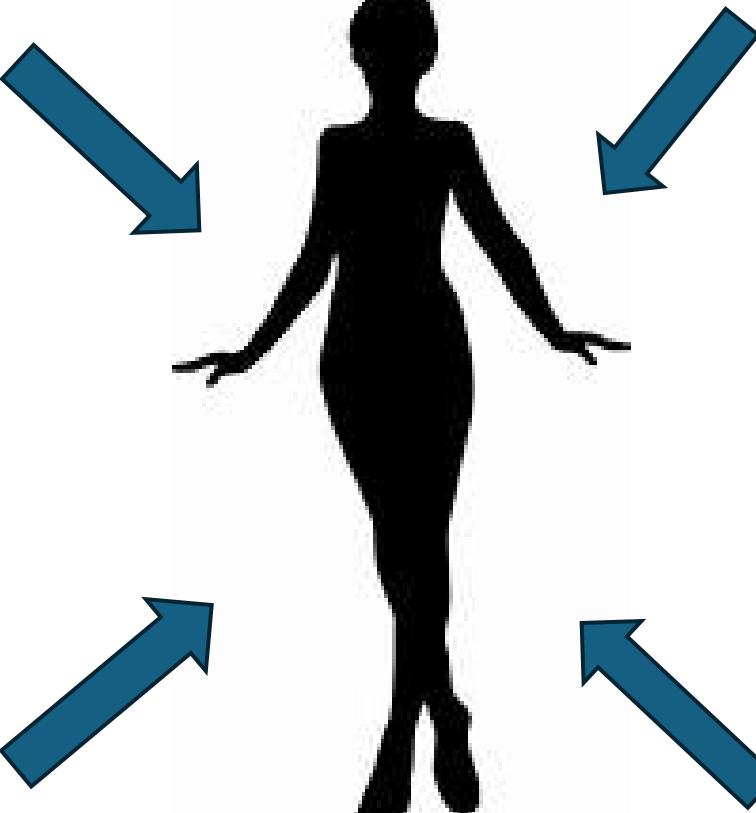
Factores de riesgo en la mujer

FR tradicionales

- HTA
- DM
- Dislipidemia
- Tabaquismo
- Obesidad
- Inactividad física

FR no tradicionales

- Enfermedad autoinmune
- Enfermedades inflamatorias
- Disfunción diastólica del VI
- QTc
- Factores genéticos
- Radiación por CA de mama



Factores reproductivos

- Menarquia <12 años
- Menopausia temprana (<45 a)
- Multiparidad (>3)
- Pretérmino
- Bajo peso al nacer
- Sind ovario poliquístico
- Preeclampsia
- HTA inducida por el embarazo

Factores psico-sociales

- Abuso por el conyuge
- Estres por maternidad
- Conflictos con la suegra
- Bajo status económico
- Bajo status educativo
- Factores ambientales
- Ideología patriarcal
- Analfabetismo

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Thrombotic Stroke and Myocardial Infarction with Hormonal Contraception

Øjvind Lidegaard, Dr. Med. Sci., Ellen Løkkegaard, Ph.D., Aksel Jensen, M.Sc., Charlotte Wessel Skovlund, M.Sc., and Niels Keiding, M.Sc.

15 años de duración
Mujeres no embarazadas de 15 a 49 años
Sin antecedentes de ECV o CA

Conclusiones:

Aunque los riesgos absolutos de accidente cerebrovascular trombótico e infarto de miocardio asociados con el uso de anticonceptivos hormonales fueron bajos, el riesgo aumentó en un factor de 0,9 a 1,7 con anticonceptivos orales que incluían etinilestradiol en una dosis de 20 µg y en un factor de 1,3 a 2,3 con aquellos que incluían etinilestradiol en dosis de 30 a 40 µg, con diferencias relativamente pequeñas en el riesgo según el tipo de progestina.



ESC

European Society
of Cardiology

European Heart Journal (2021) 42, 967–984
doi:10.1093/eurheartj/ehaa1044

ESC REPORT

Cardiovascular health after menopause transition, pregnancy disorders, and other gynaecologic conditions: a consensus document from European cardiologists, gynaecologists, and endocrinologists

Contraception in women at high cardiovascular disease risk

Practice points

- Combined OCP should be avoided in women with a history of VTE, stroke, CVD, or any other PVD
- Use of OCP is contraindicated in 35 plus women who smoke and in women with severe dyslipidaemia or obesity
- POCs, administered by oral, sub-cutaneous, or intra-uterine routes can be prescribed in women at elevated cardiovascular risk



Early Menopause Predicts Future Coronary Heart Disease and Stroke: The Multi-Ethnic Study of Atherosclerosis (MESA)

Melissa Wellons, MD, MHS, NCMP¹, Pamela Ouyang, MBBS², Pamela J Schreiner, PhD³, David M Herrington, MD⁴, and Dhananjay Vaidya, MBBS, PhD²

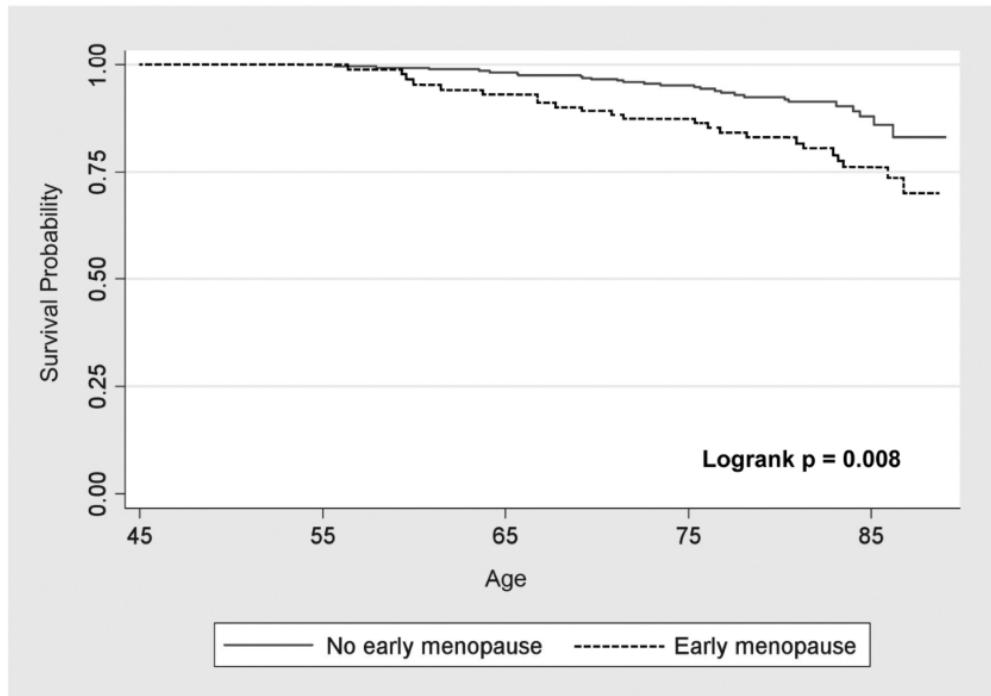


Figure 2.
Kaplan Meier Survival Curves for Coronary Heart Disease in Women with and without Early Menopause.

Enfermedad Coronaria

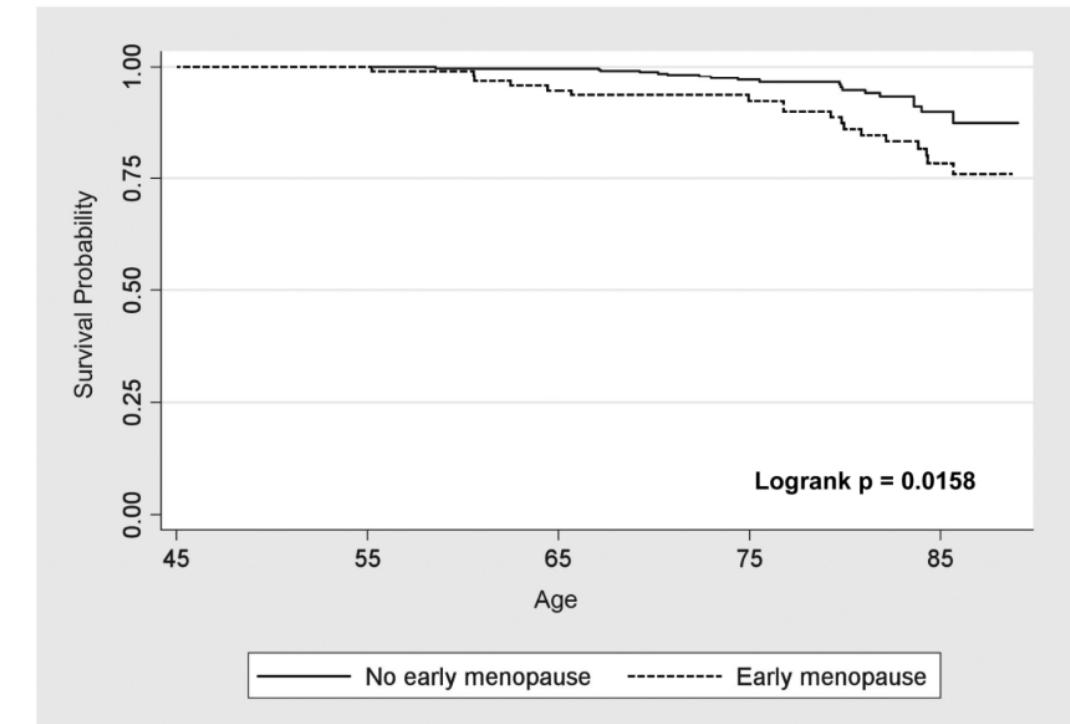
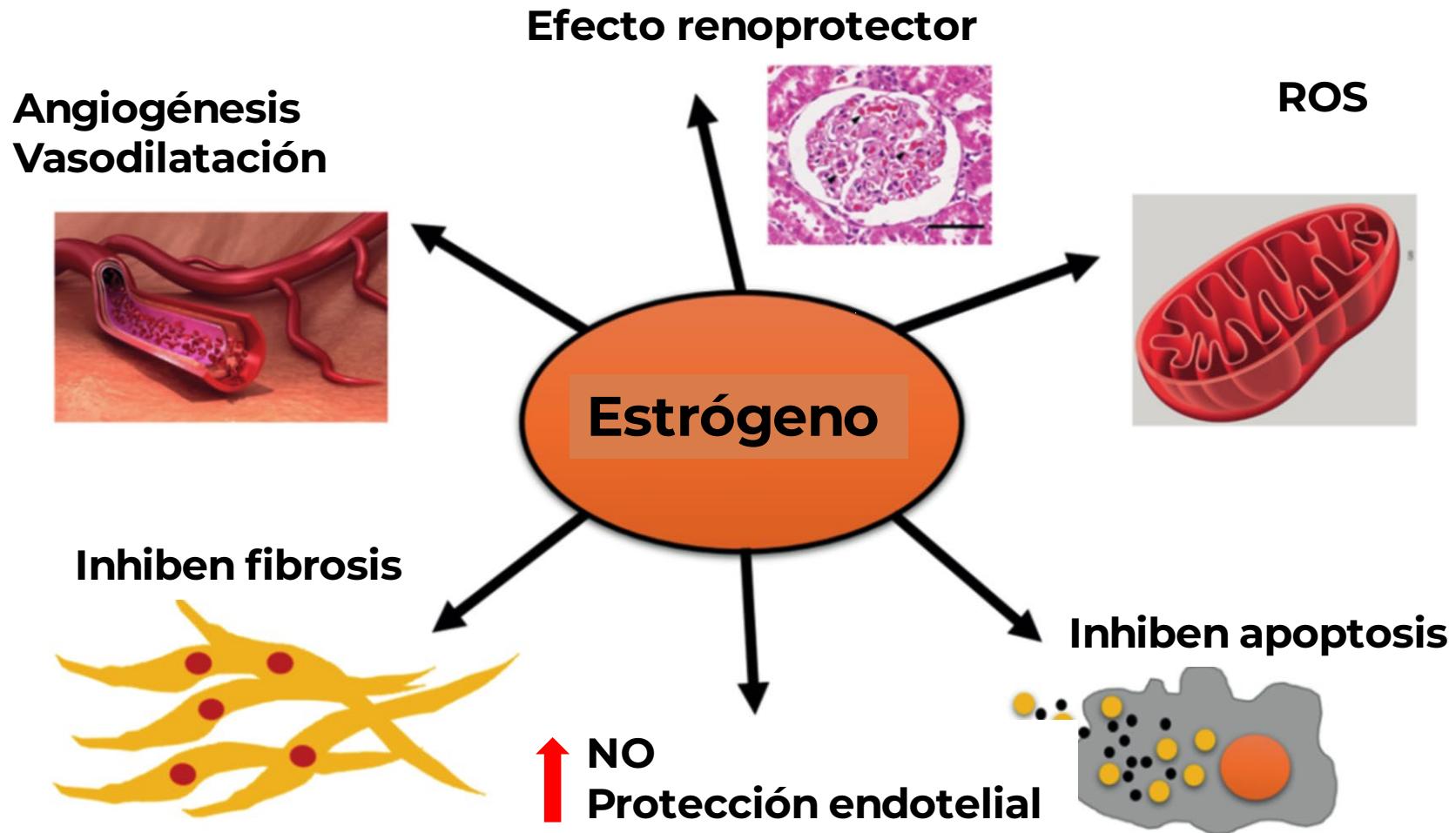


Figure 3.
Kaplan Meier Survival Curves for Stroke in Women with and without Early Menopause.

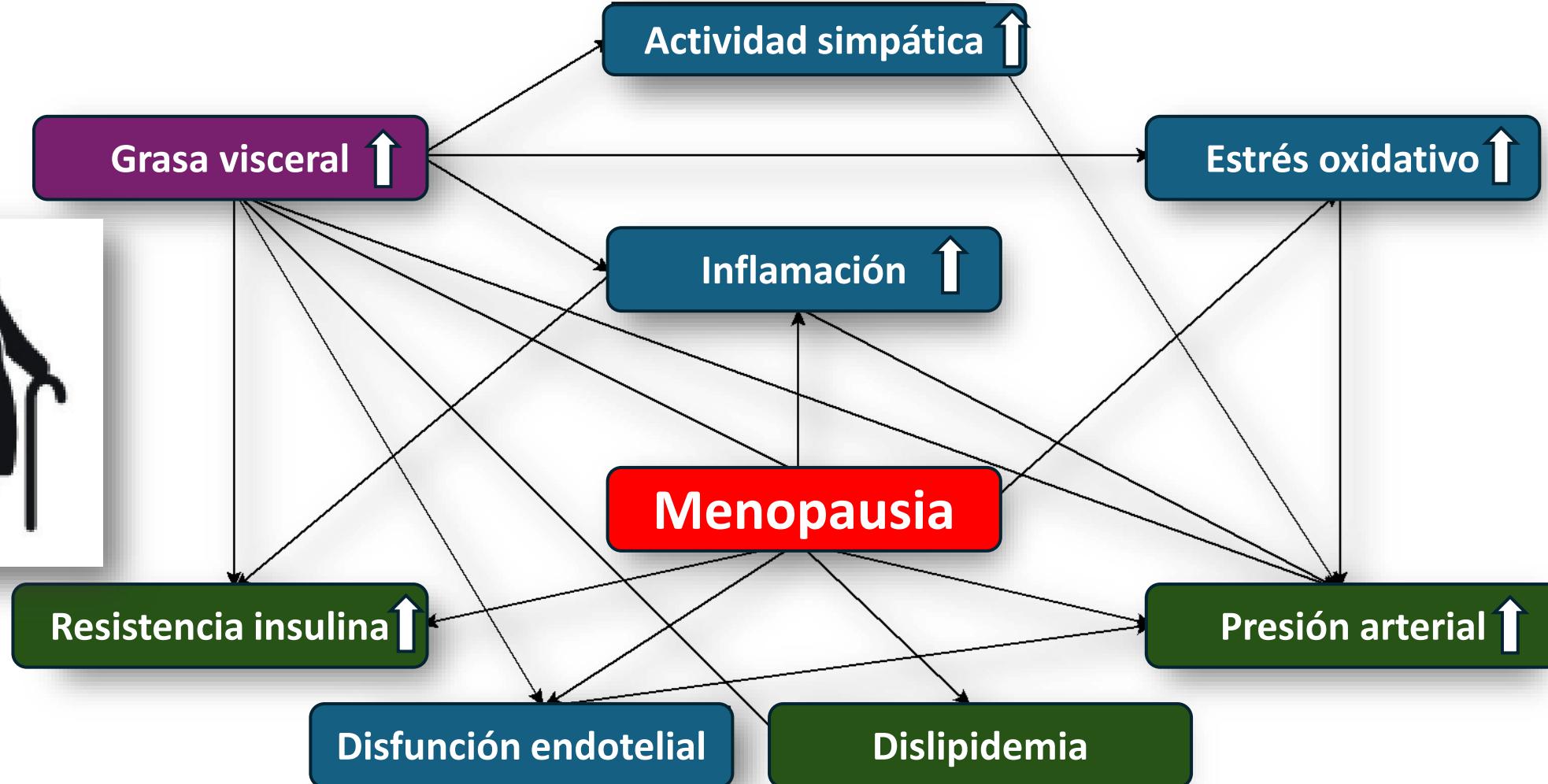
ictus



Efecto protector CV de los estrógenos



¿Qué pasa en la menopausia?



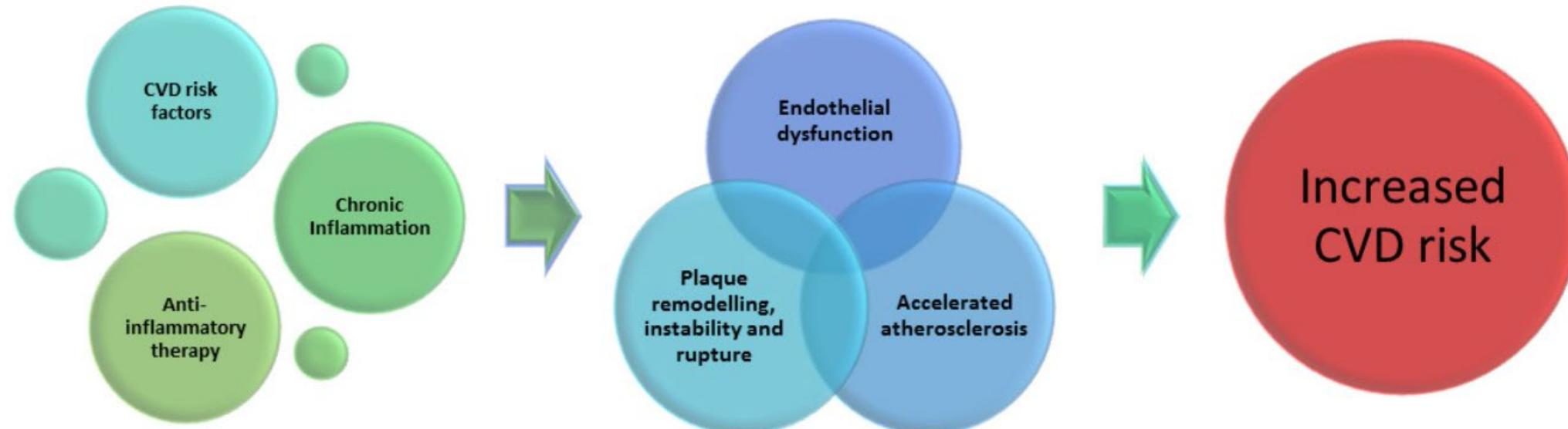


Figure 1 Contributors to cardiovascular disease (CVD) risk in immune-mediated inflammatory diseases.

En las mujeres es más probable la presencia de trastornos autoinmunitarios

La cardiopatía isquémica es la primera causa de mortalidad en el LES.

En la AR, hay un aumento del riesgo de mortalidad por ECV del 50%.

McMahon M, Hahn BH, Skaggs BJ. Systemic lupus erythematosus and cardiovascular disease: prediction and potential for therapeutic intervention. Expert Rev Clin Immunol 2011;7:227-41.

Agca R, et al. Heart 2022;108:73-79. doi:10.1136/heartjnl-2019-316378



DEPRESIÓN Y PROBLEMAS PSICOLÓGICOS EN LAS

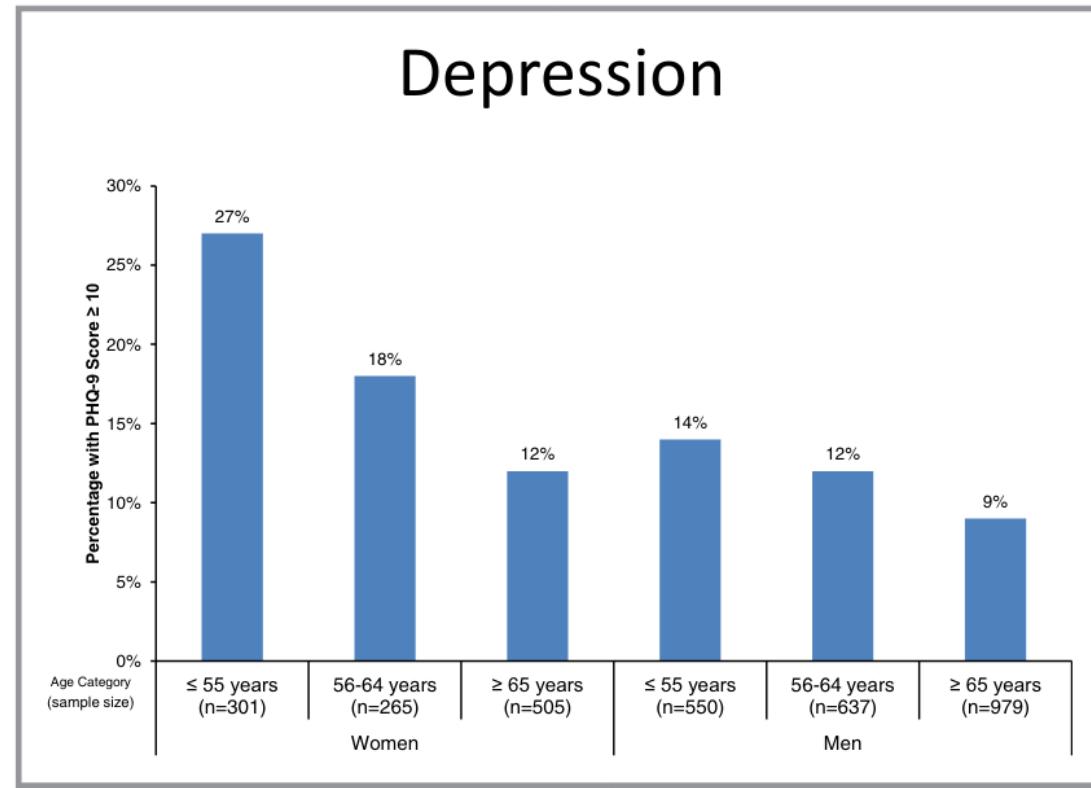


Figure 1. Proportion of patients with moderate or higher severity depressive symptoms (PHQ-9 \geq 10) according to age and sex. PHQ-9 indicates Patient Health Questionnaire-9.

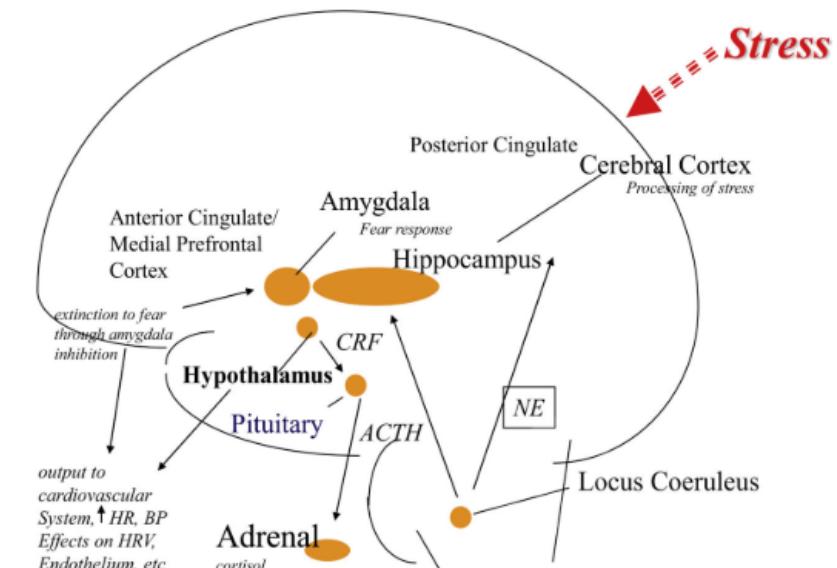
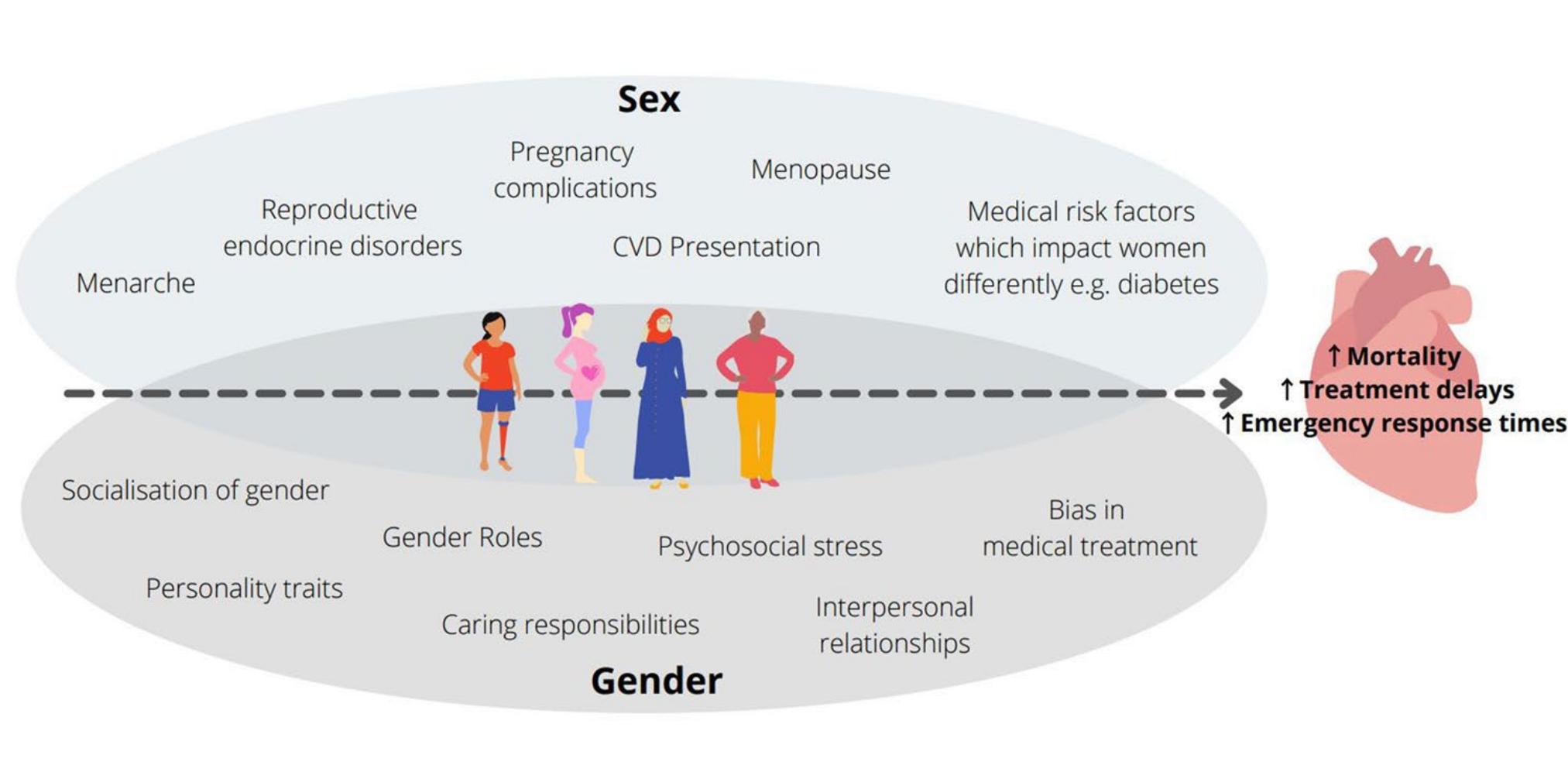


Fig. 1.
Neurobiology of stress and cardiovascular function. Brain regions involved in stress and



LIV CONGRESO VENEZOLANO DE CARDIOLOGÍA

70
AÑOS

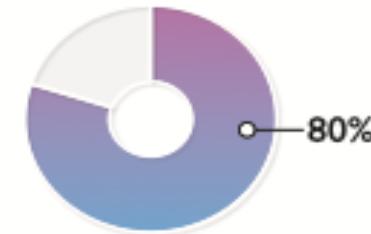






Síntomas de SCA. Iguales y diferentes

Dolor torácico o presión



of women and men with ACS present with chest pain or pressure

Diáforesis



Dolor epigástrico
indigestión



Hombro / brazo



Other symptoms, like diaphoresis, indigestion/epigastric pain and shoulder/arm pain occur commonly in both women and men with ACS

Mareo



Nausea/
vómito



Mandíbula/
cuello



Disnea



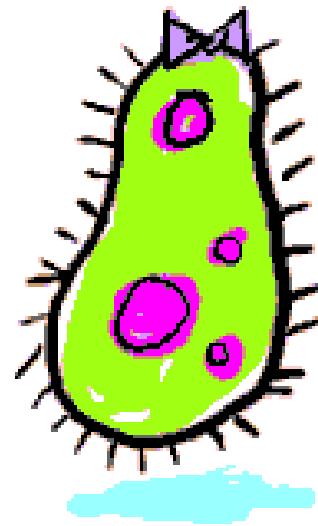
Some symptoms may be more common in women with ACS, including:

- Dizziness/Syncope
- Nausea/Vomiting
- Jaw/Neck pain
- Shortness of breath
- Pain between the shoulder blades
- Palpitations
- Fatigue

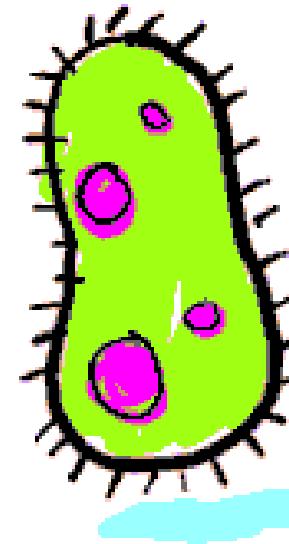




Evolución del hombre y la mujer



Mujer



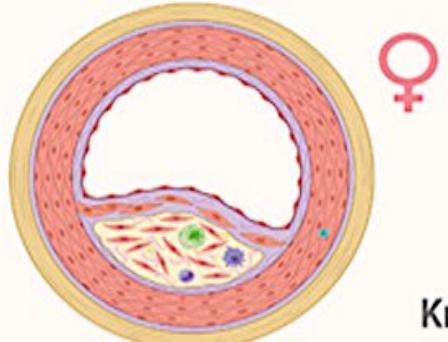
Hombre

Enfermedad coronaria 10 años más tarde que el hombre

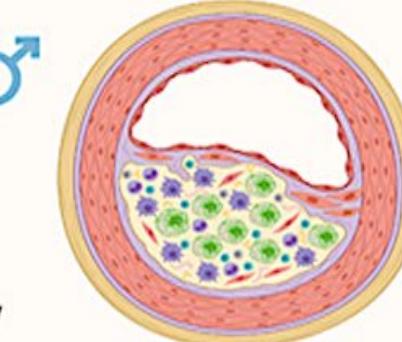


Diferencias en EAC según el sexo

Placa fibrosa



Placa ateromatosa



Known sex differences in plaque biology

>40 genes
13 en loci CAD

↓
Remodelado vascular
Metabolismo lipídico
Disfunción endotelial

Más pequeña
Más fibrosa
Más estable
Colágeno y cel musc liso
Disfunción microvascular
Erosión

Más ateromatosa
Más cel inflamatorias
Calcificación
Lípidos
Hemorragia
Mayor estenosis
Presentación más temprana
Ruptura



Sí saben todo esto ...

Por qué no logran ayudarnos?



Causas de MINOCA

Prevalencia: 1-15%

UNDERLYING CAUSES OF MINOCA

ATHEROSCLEROTIC CAUSES



- Plaque rupture
- Plaque erosion
- Calcific nodules

NONATHERSCLEROTIC CAUSES



SPONTANEOUS CORONARY ARTERY DISSECTION



EMBOLISM



VASOSPASM

OTHER MECHANISMS



Coronary Microvascular Dysfunction

NONISCHEMIC CAUSES/MIMICKERS



TAKOTSUBO CARDIOMYOPATHY

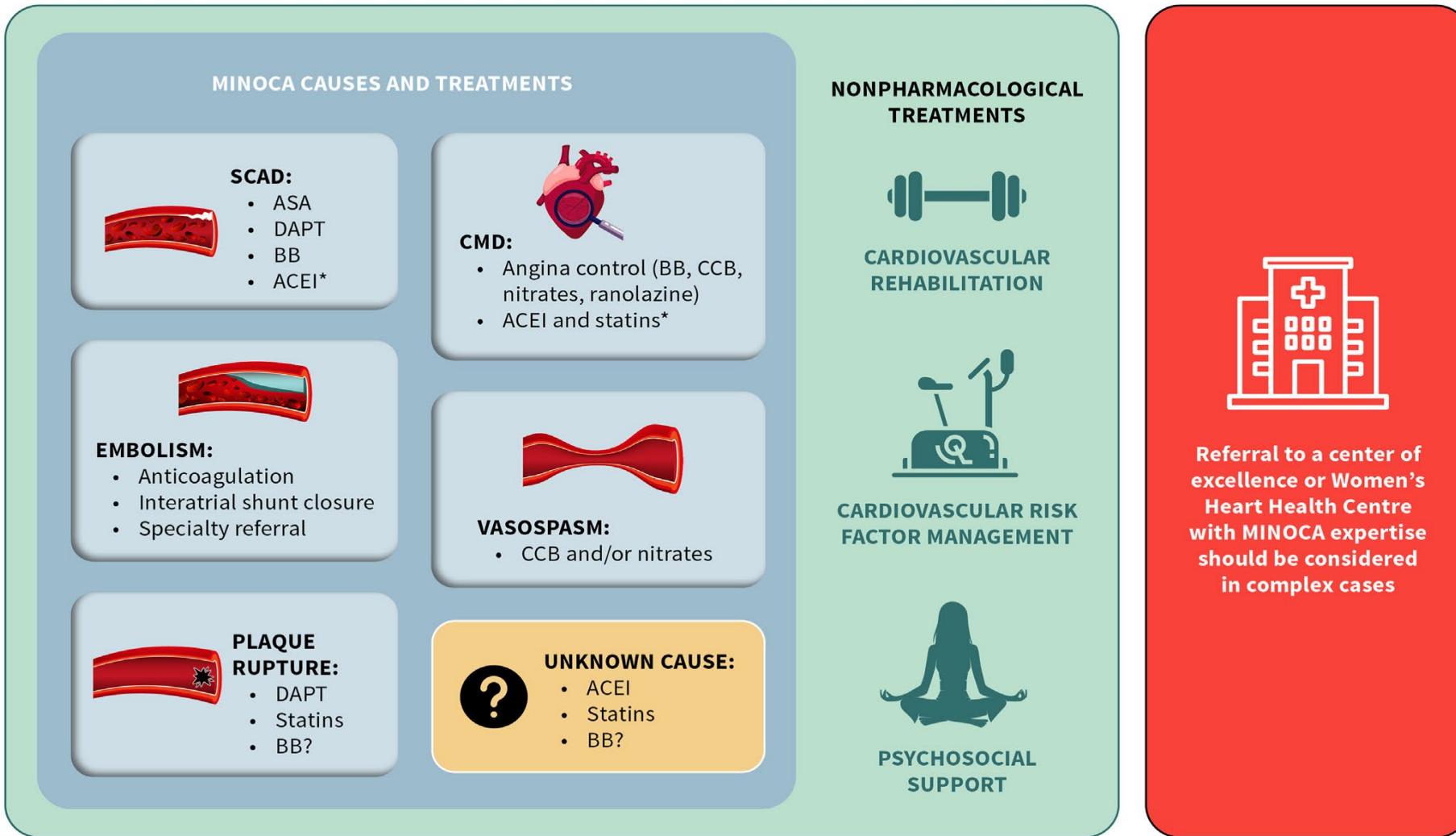


MYOCARDITIS



SUPPLY-DEMAND MISMATCH

Tratamiento de MINOCA



Pacheco C, et al. Canadian Cardiovascular Society/Canadian Women's Heart Health Alliance Clinical Practice Update on Myocardial Infarction With No Obstructive Coronary Artery Disease (MINOCA). Canadian J Cardiol 2024; 40: 953-968

Necesidad de revascularización en EAC obstructiva

CABG

Hypertension: OR (1.92 [1.47-2.50], $P < 0.05$)*
Overall pooled 0.71 (0.62, 0.80)

Diabetes: OR (1.94 [1.55-2.42], $P < 0.05$)*
Overall pooled 0.47 (0.41, 0.54)

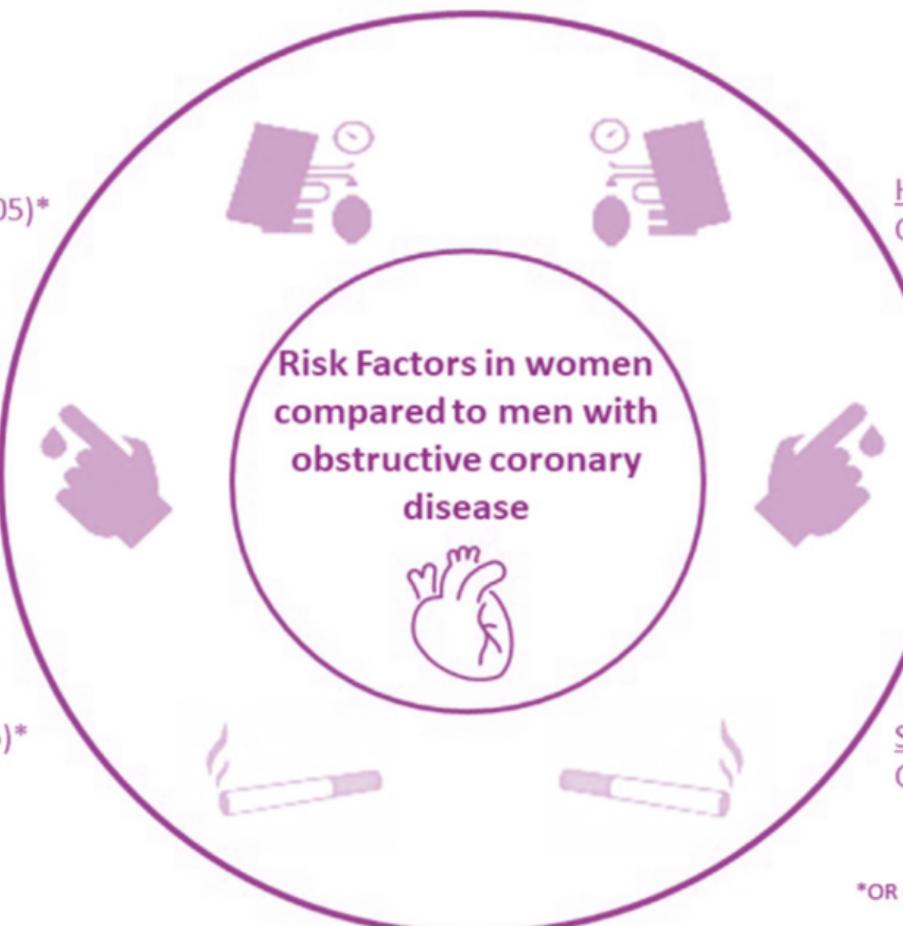
Smoking: OR (0.17 [0.06-0.52], $P < 0.05$)*
Overall pooled 0.16 (0.08, 0.24)

PCI

Hypertension: OR (1.86 [1.76-1.97], $P < 0.05$)*
Overall pooled 0.59 (0.50, 0.69)

Diabetes: (OR (1.97 [1.54-2.53], $P < 0.05$)*
Overall pooled 0.43 (0.25, 0.60)

Smoking: (OR (0.22 [0.06-0.86], $P < 0.03$)*
Overall pooled 0.16 (0.08, 0.24)



*OR of risk factors at presentation in women compared to men

Women who underwent either surgical or percutaneously revascularization had a higher number of cumulative cardiovascular risk factors than men

Berbach L. et al, 2024



Tratamiento



CÓMO COMPARTEN LA CAMA



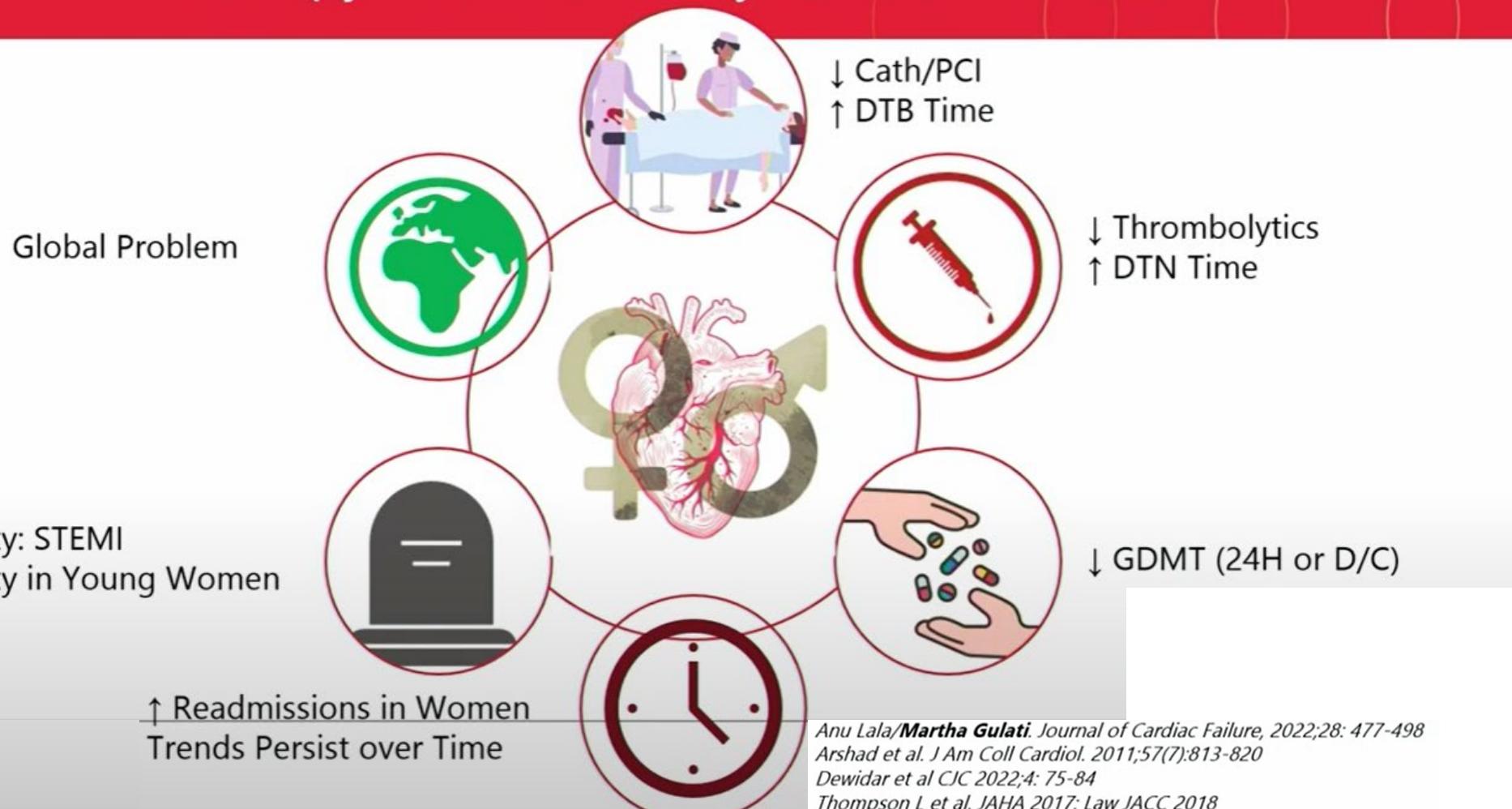
**LIV CONGRESO VENEZOLANO
DE CARDIOLOGÍA**



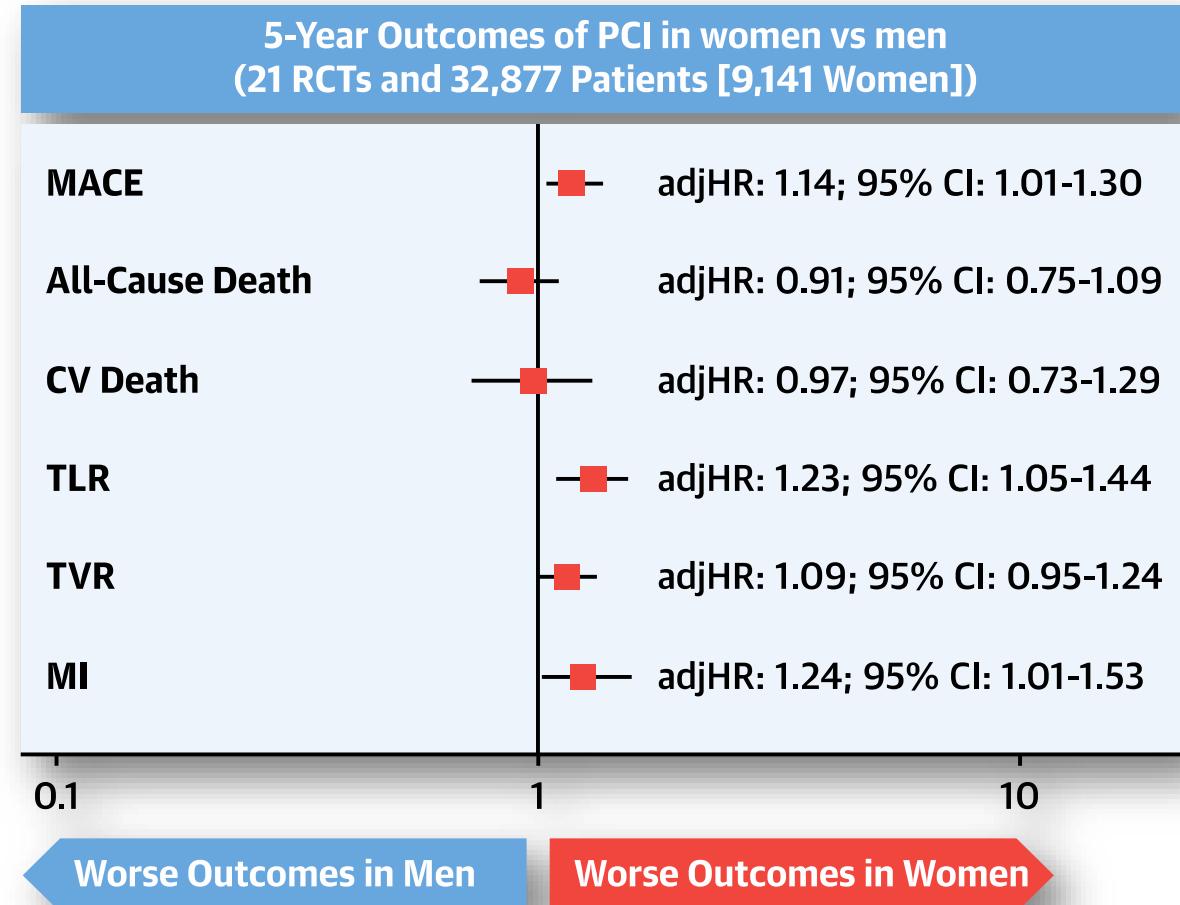
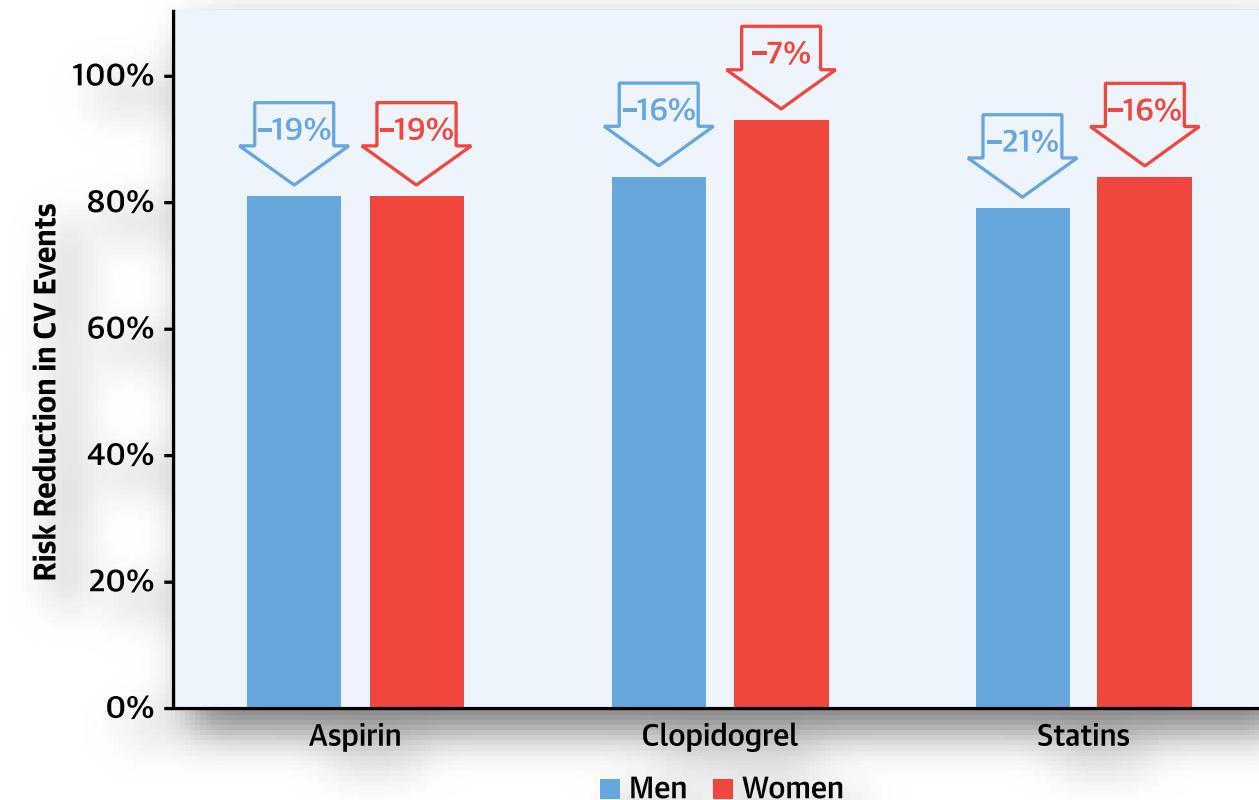
Intervencionismo Coronario



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



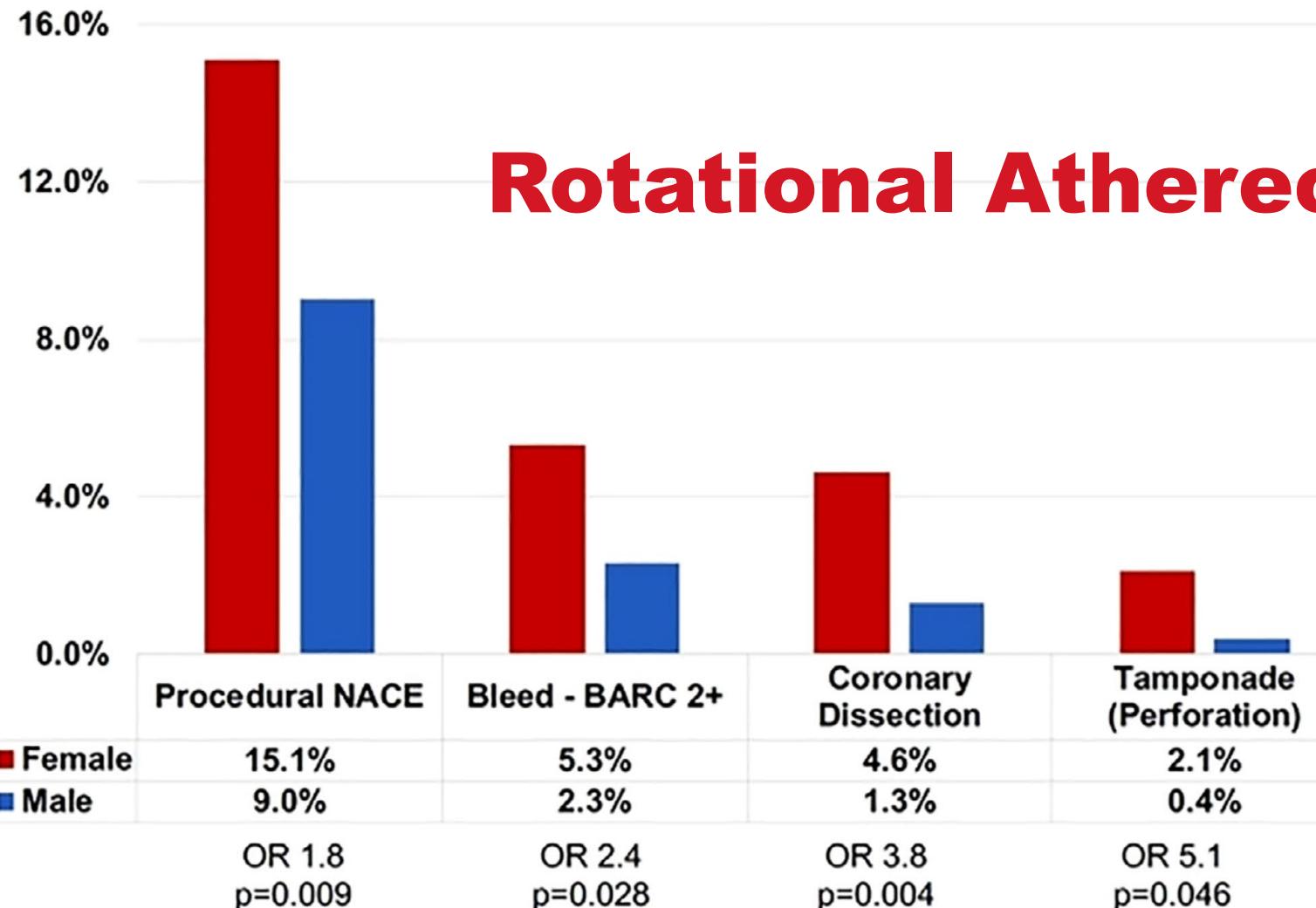
Efecto del tratamiento



TVR: revascularización vaso culpable

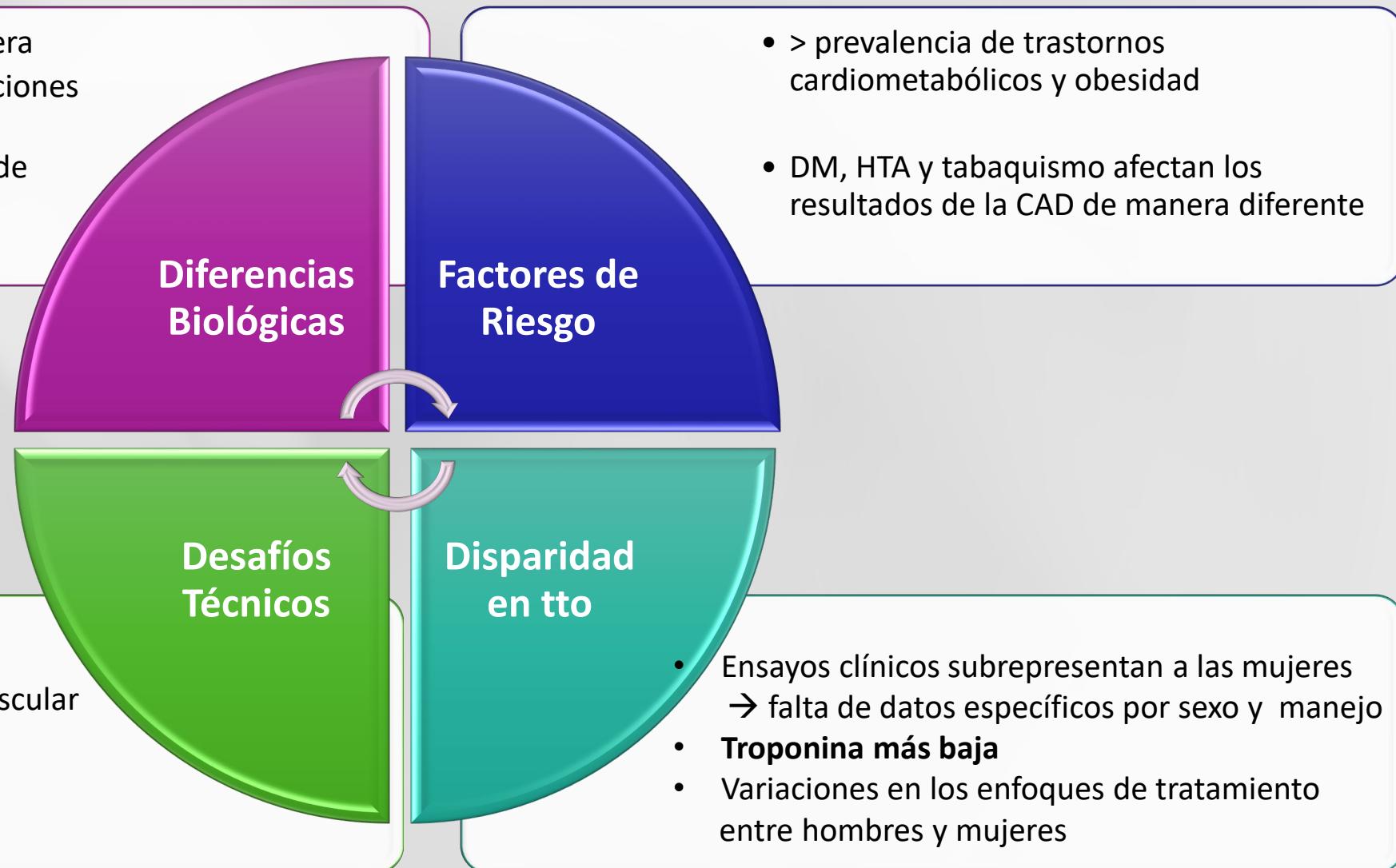
TLR: revascularización dirigida por isquemia





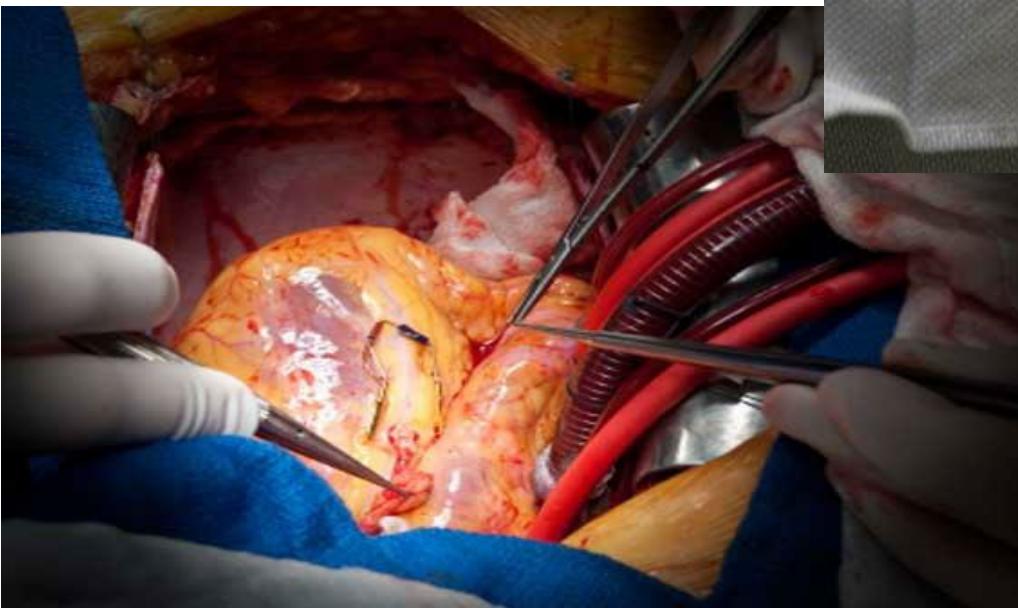
Razones de diferentes resultados

- Edades > avanzadas = enfermedad > severa
- Coronarias más pequeñas → > complicaciones
- Diferencias hormonales (estrógeno y menopausia) → desarrollo y progresión de CAD.





Dos Estrategias de Revascularización...



**LIV CONGRESO VENEZOLANO
DE CARDIOLOGÍA**



Intervencionismo Estructural

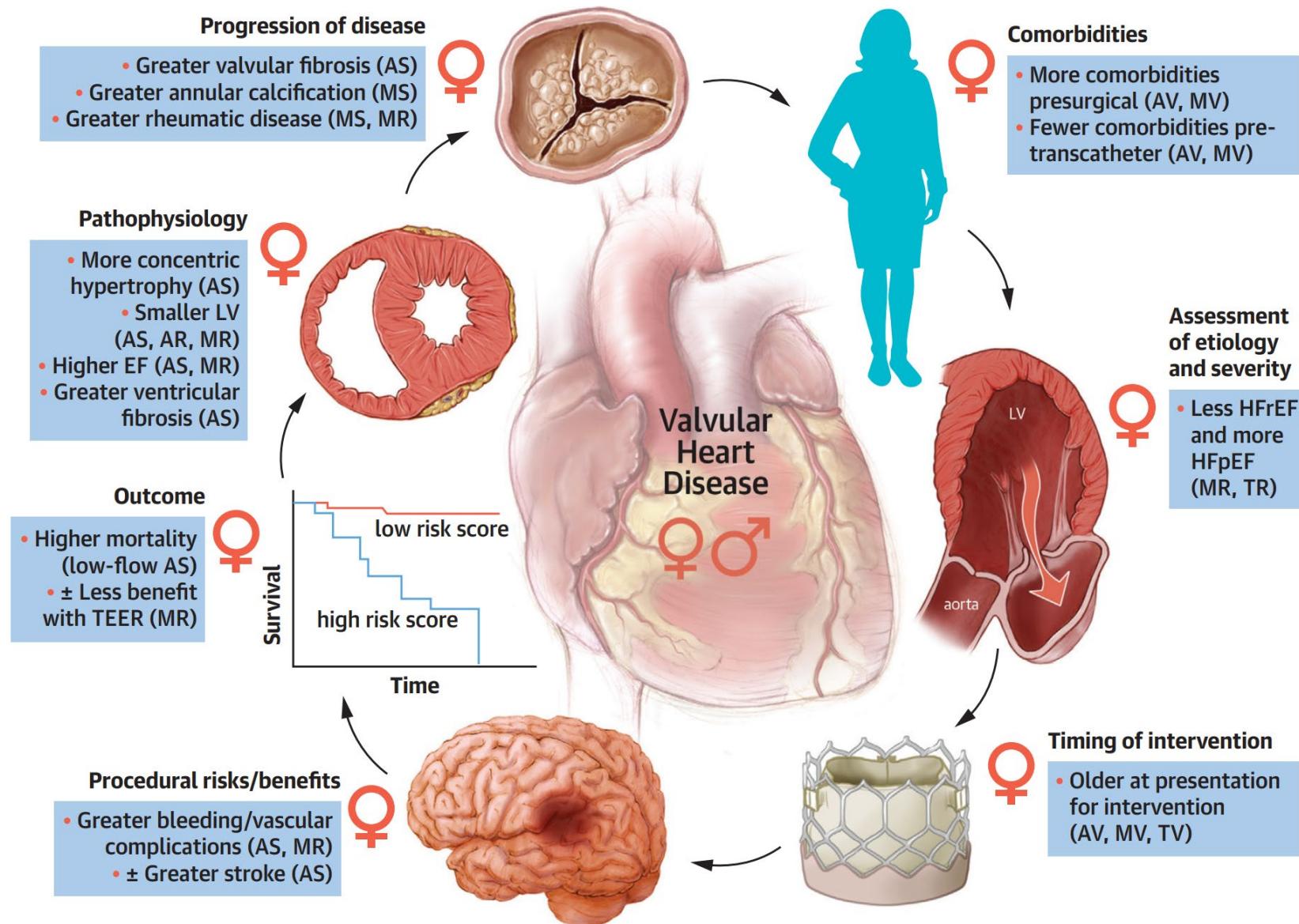


1ER IMPLANTE DE VALVULA AORTICA TRANSCATETER

HOSPITAL UNIVERSITARIO-MARACAIBO JUNIO 2011



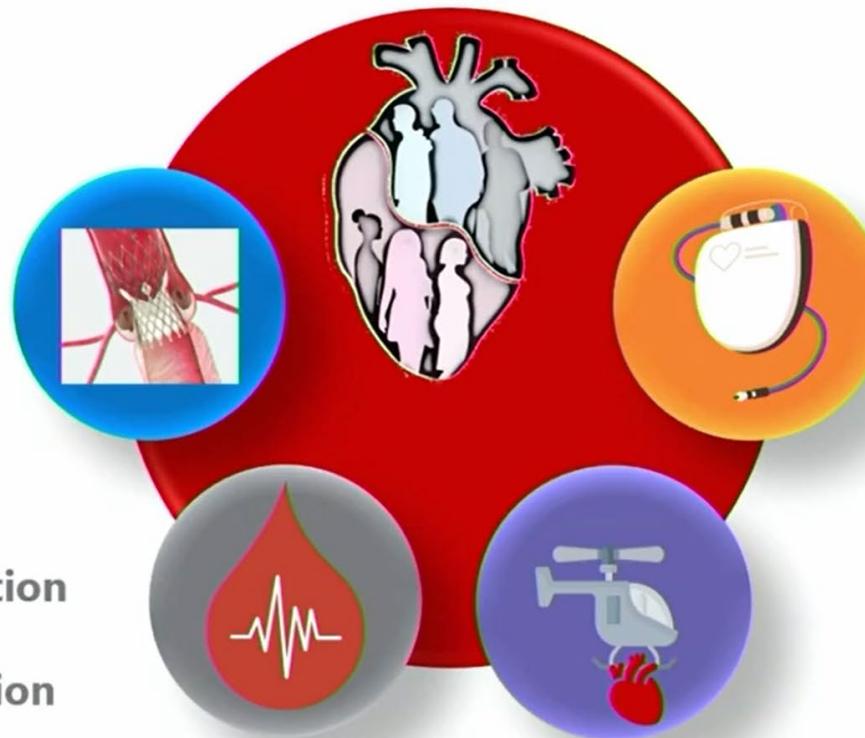
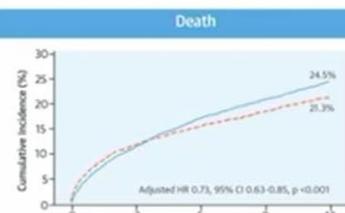




Underutilization of Effective Cardiac Therapies in Women

TAVR

♀ have better outcomes vs ♂

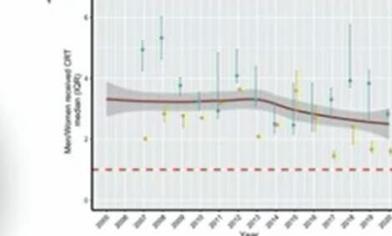


AFib

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

ICD/CRT

↓ ICD/CRT use in ♀ vs ♂



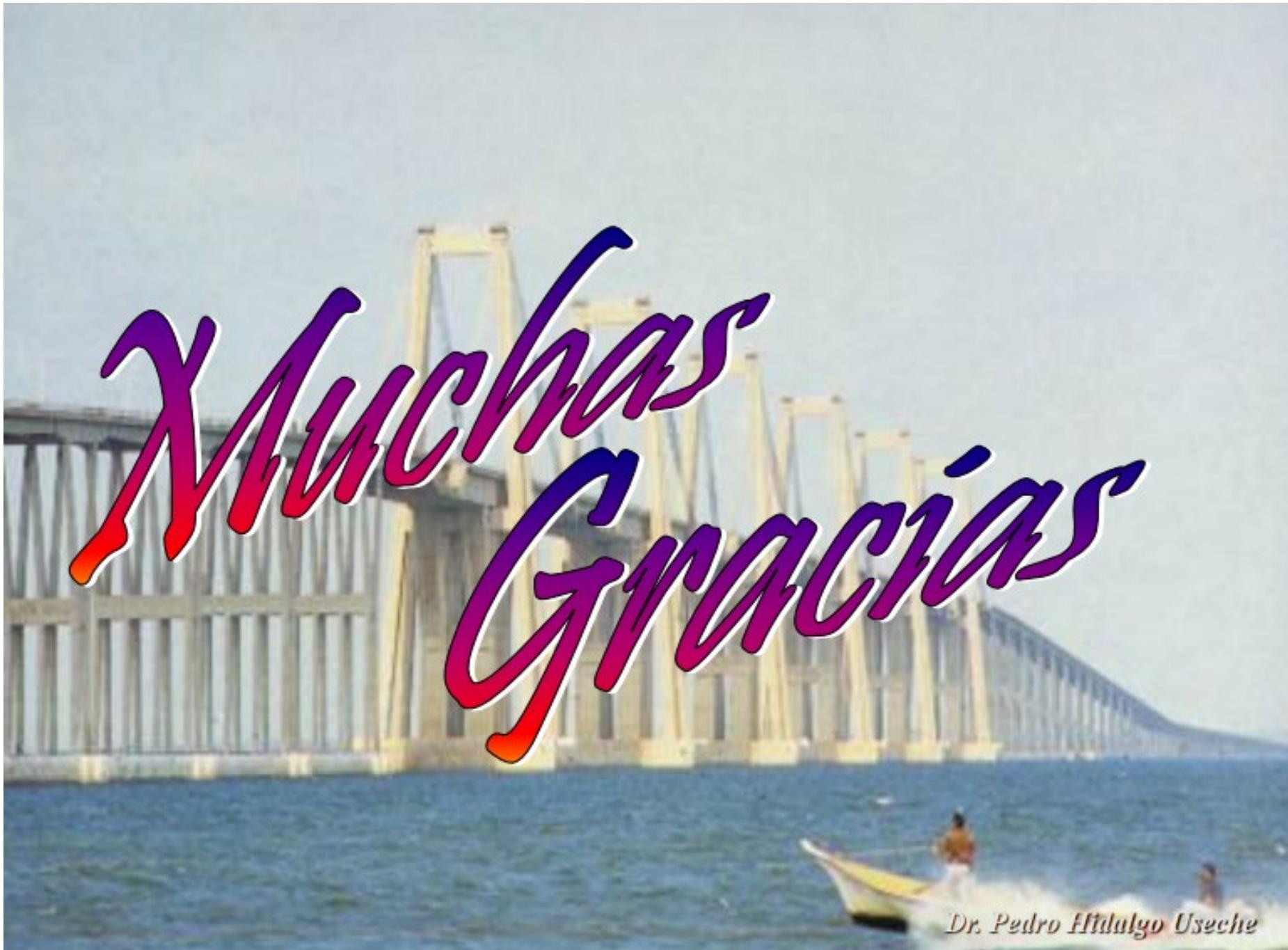
Heart Transplant

Women:
25% of LVAD
25% of Transplant

No olvidemos

- La mujer es un ser especial.
- FR tradicionales y FR propios.
- Las placas son diferentes (FP)
- La presentación clínica es diferente.
- La enfermedad coronaria la afecta después que al hombre.
- MINOCA e INOCA >frecuente
- Tto farmacológico es menos efectivo.
- El tratamiento intervencionista debe ser precoz y por vía radial.





Dr. Pedro Hidalgo Uscche



Diferencias en EAC según el sexo

Table 1 Summary of major sex differences in CAD

Issue	Sex-specific characteristic
CAD prevalence	CAD prevalence is higher in men.
Age	The CAD risk in postmenopausal women continues to rise with age.
Clinical presentation	Atypical symptoms are more frequent in women.
Cardiac biomarkers	Women usually have lower levels of troponin and higher levels of BNP.
Noninvasive tests	Diagnostic value of noninvasive test is lower in women compared to men.
ICA findings	Men typically have more severe CAD and left main disease.
Traditional risk factors	Cardiovascular risk associated with smoking and diabetes mellitus is higher in women than men.
Nontraditional risk factors	Left ventricular diastolic dysfunction are more closely associated with CAD in women.
Psychological stress	Psychological stress has a greater influence on women.
Pregnancy and reproductive factors	Early or late menarche, early menopause, multiparity (>3), preterm birth, and low birth weight are associated with an increased cardiovascular risk in women.
In-hospital outcomes	There is no sex difference in in-hospital outcome, however, post-PCI bleeding complications are more common in women than in men.
Long-term outcomes	There is ongoing debate about whether sex differences exist in the long-term prognosis of patients with CAD.
Sex disparity	Delayed diagnosis or misdiagnosis of CAD is more common in women than in men. Cardiovascular protective medications are prescribed less frequently to women. PCI and coronary artery bypass grafting are conducted less frequently in women. Women participate less frequently in clinical studies.

BNP = B-type natriuretic peptide; CAD = coronary artery disease; ICA = invasive coronary angiography; PCI = percutaneous coronary intervention.





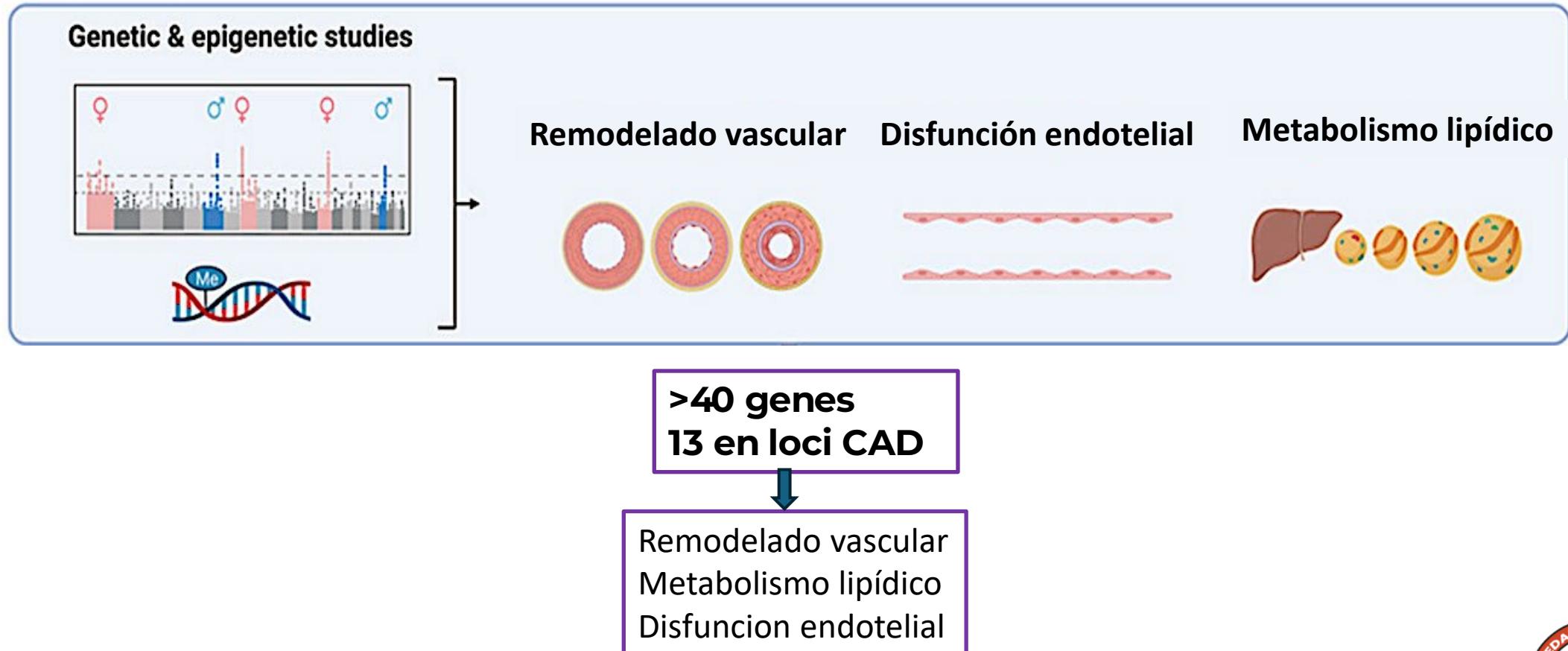


¡Sí Podemos!

b

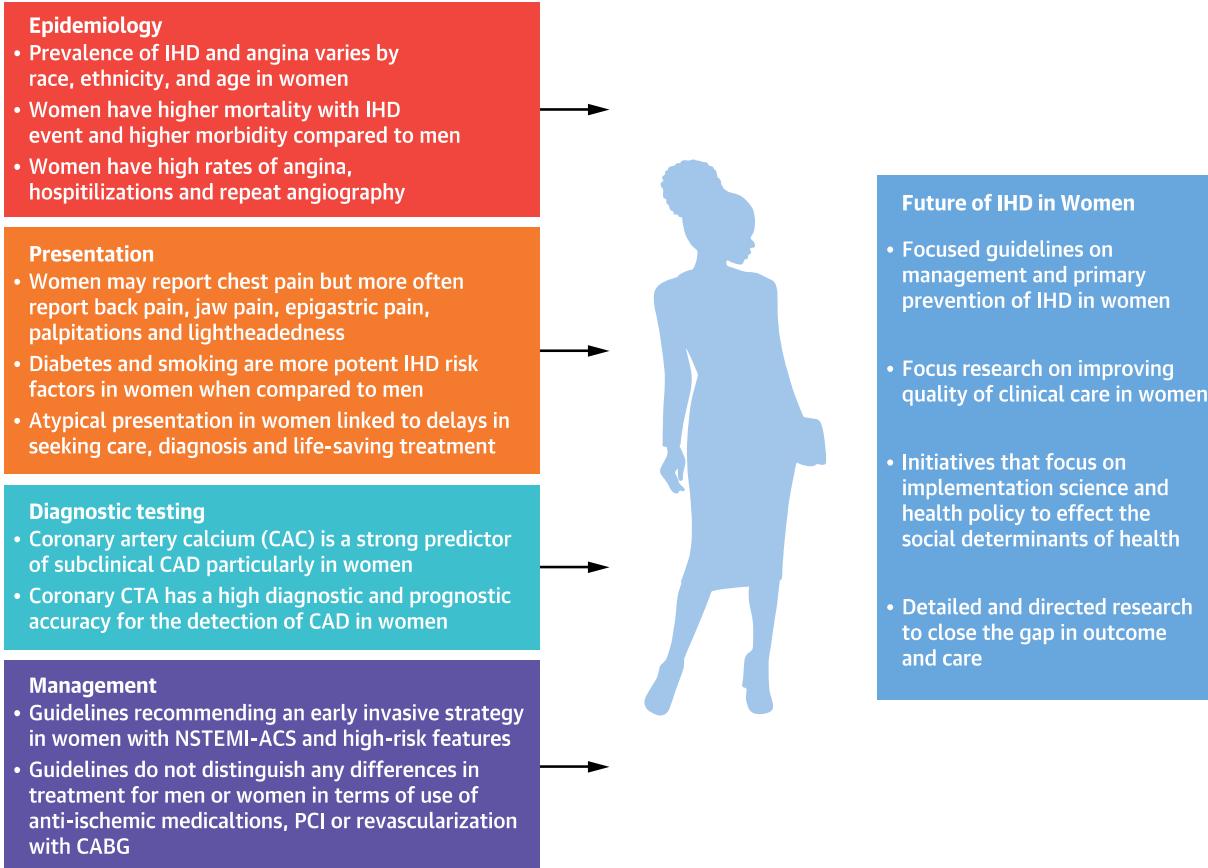


Diferencias en EAC según el sexo



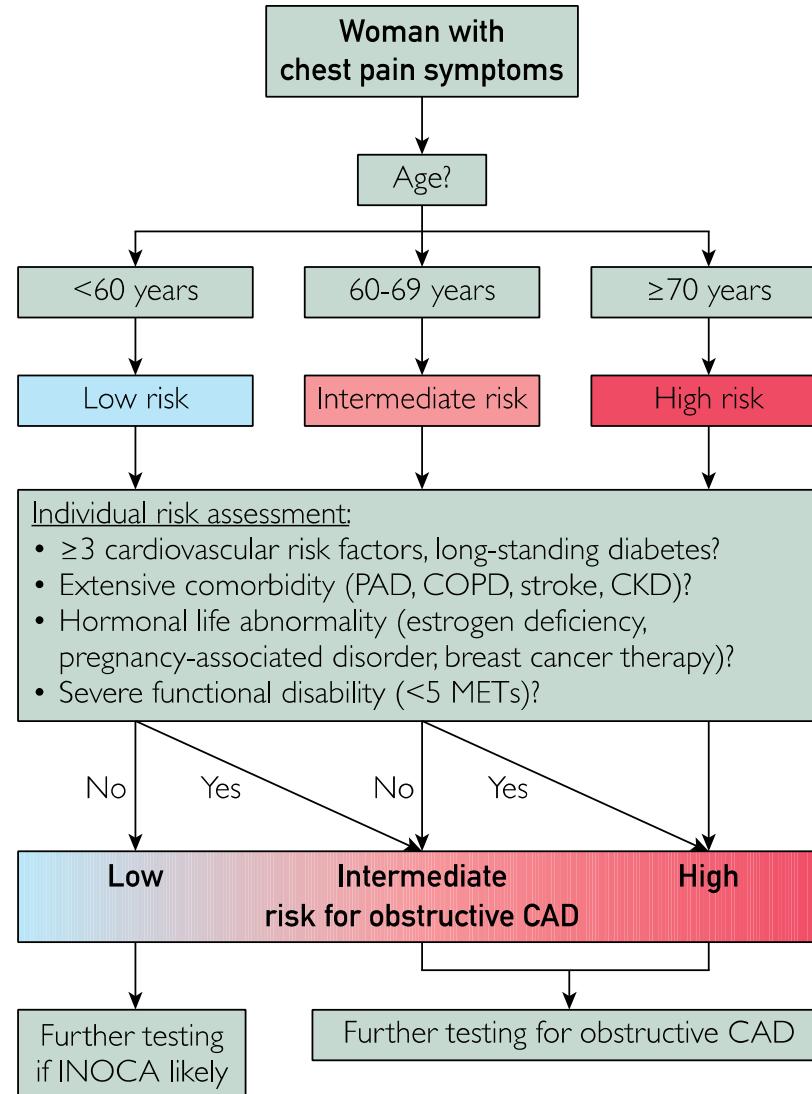
Como estudiar la pte con isquemia aguda o crónica

CENTRAL ILLUSTRATION Sex-Related Differences in Ischemic Heart Disease





¿Qué hacer cuando tiene dolor?



Meyer MR. Chronic Coronary Syndromes in Women: Challenges in Diagnosis and Management. Mayo Clin Proc 2021; 96:1058-1070

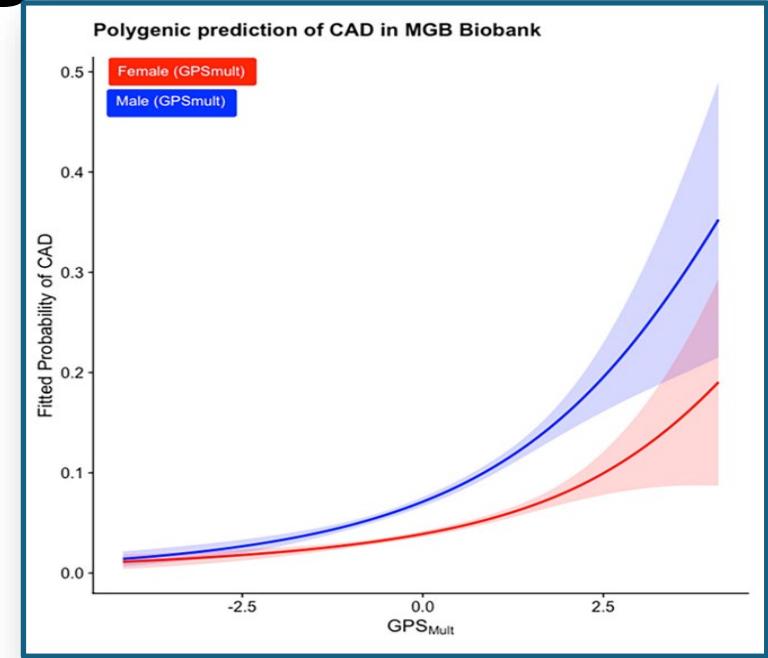
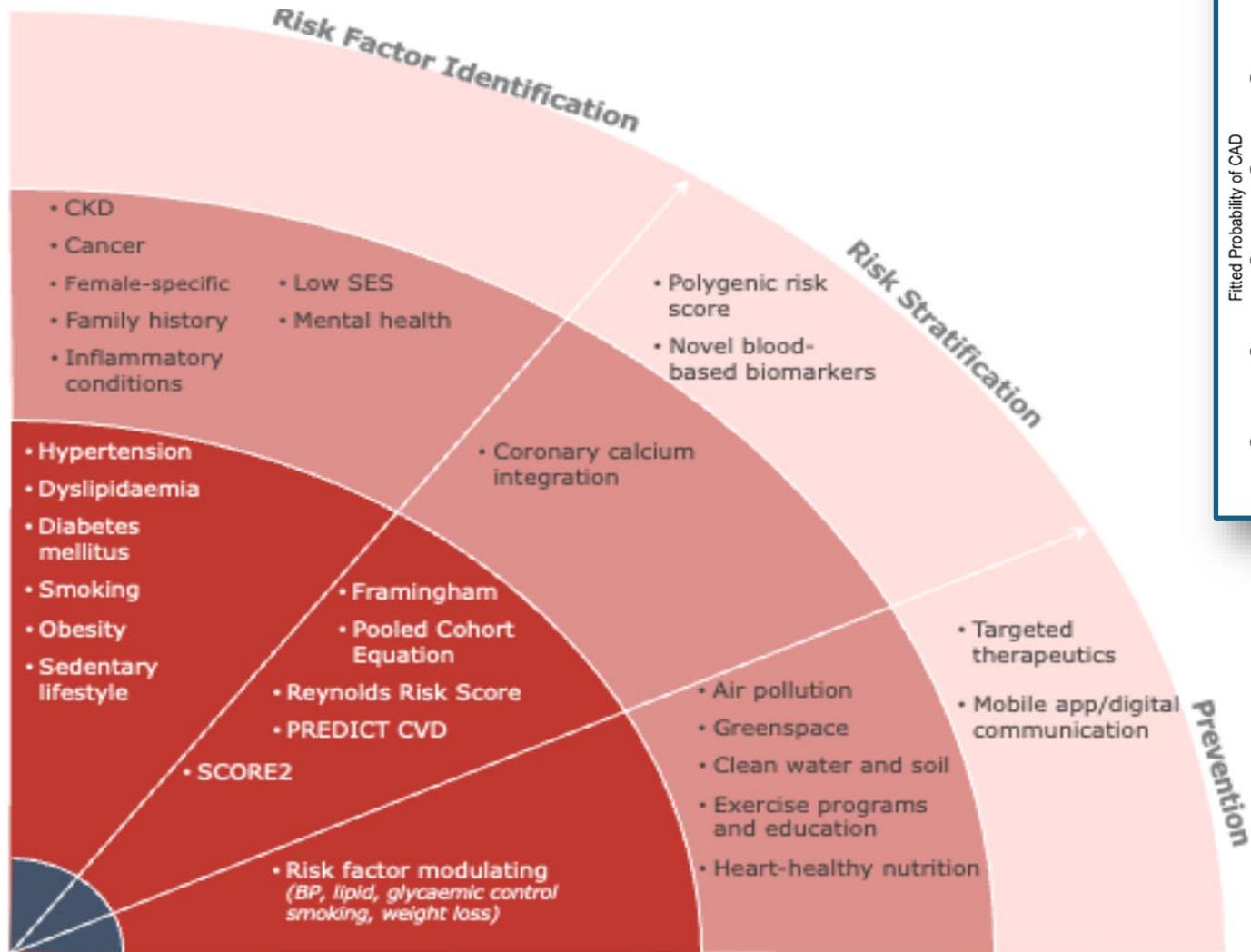


FR establecidos y emergentes

Development

Emerging

Established



Gray MP, et al. Primary prevention of cardiovascular disease in women. Climacteric 2024; 27: 104-112

Paruchuri K, et al. Using Sex-Specific Polygenic Risk to Prognosticate Coronary Artery Disease in Women. J Am Heart Assoc. 2024;13:e034946



Did You Know...

- Nearly 1 in every 2 women is living with some form of CVD?



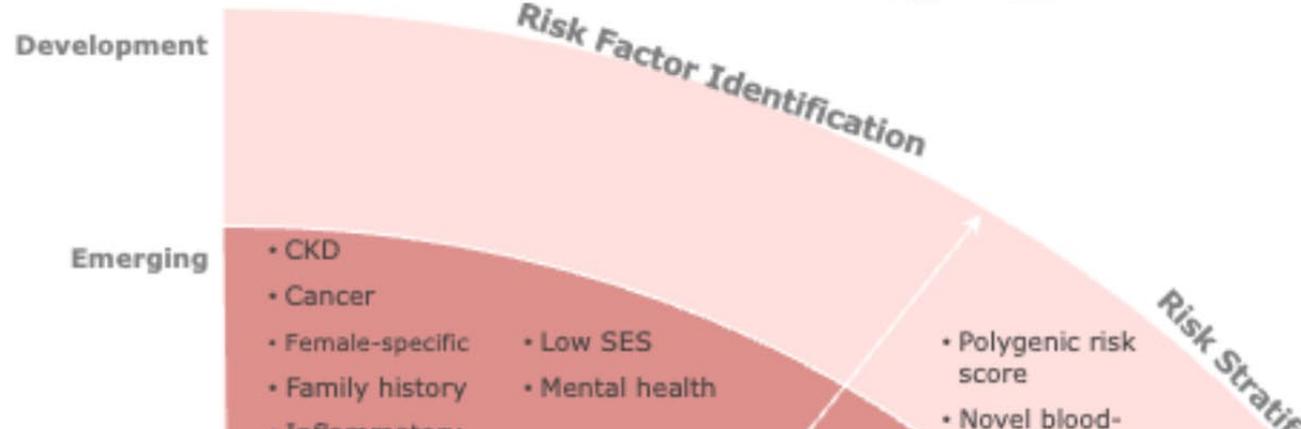
- CVD is responsible for 1 in every 3 deaths in women in 2019?

Global collaborative efforts have the opportunity to identify biologically important differences in CVD between men and women.

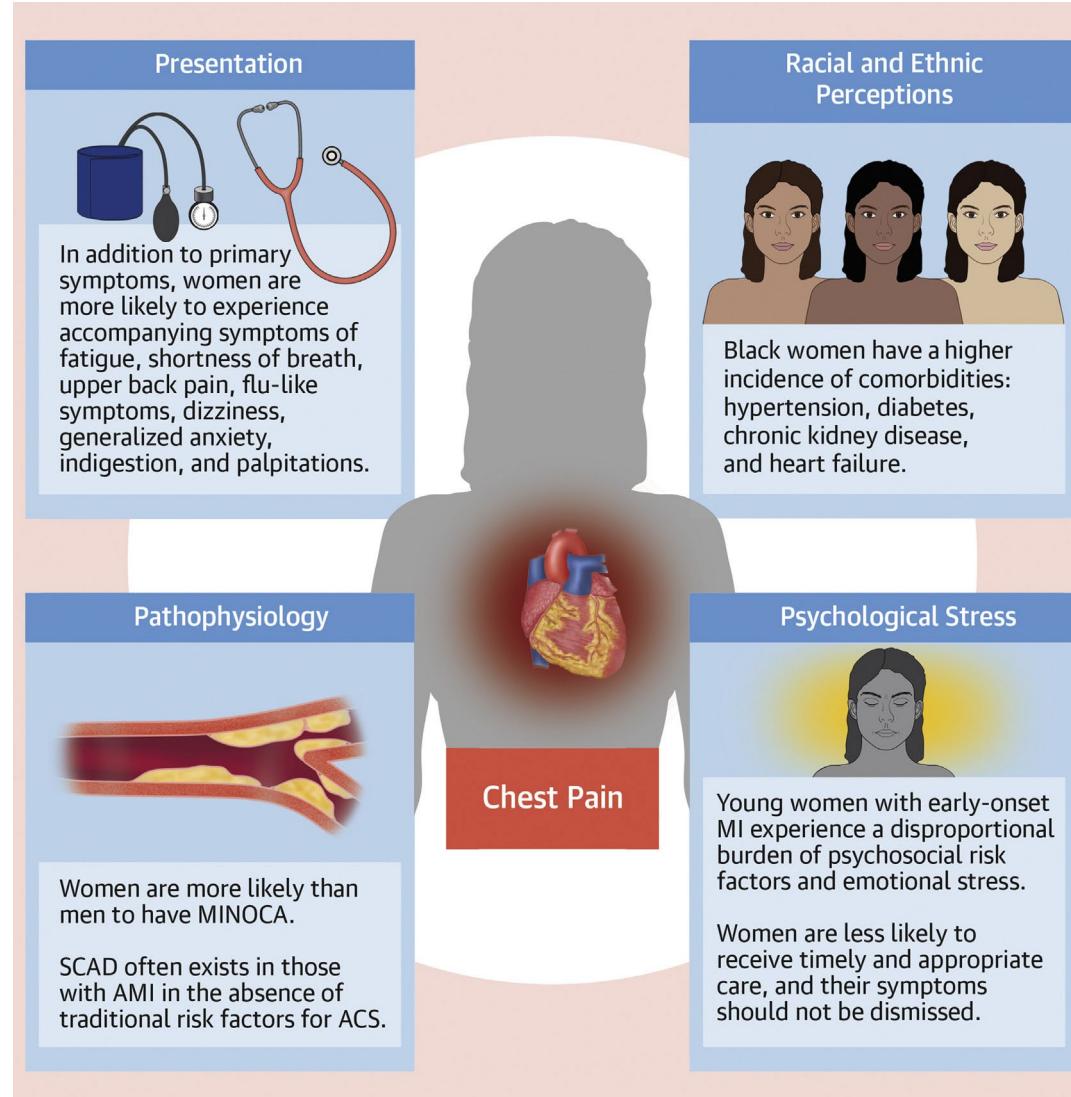
This begins by identifying traditional and novel approaches to disease prevention



Established and Emerging Risk Factors



Evaluación del dolor torácico en la mujer



Enfermedad CV en la mujer

Principal causa de muerte

420,184
1:4 muertes
(2018)

Prevalencia

60 millones

Riesgo a lo largo de la vida

40 años → 50% riesgo de desarrollar ECV

Riesgos específicos

1/3 riesgo de enfermedad coronaria

1/5 riesgo de IC

1/5 riesgo de ACV

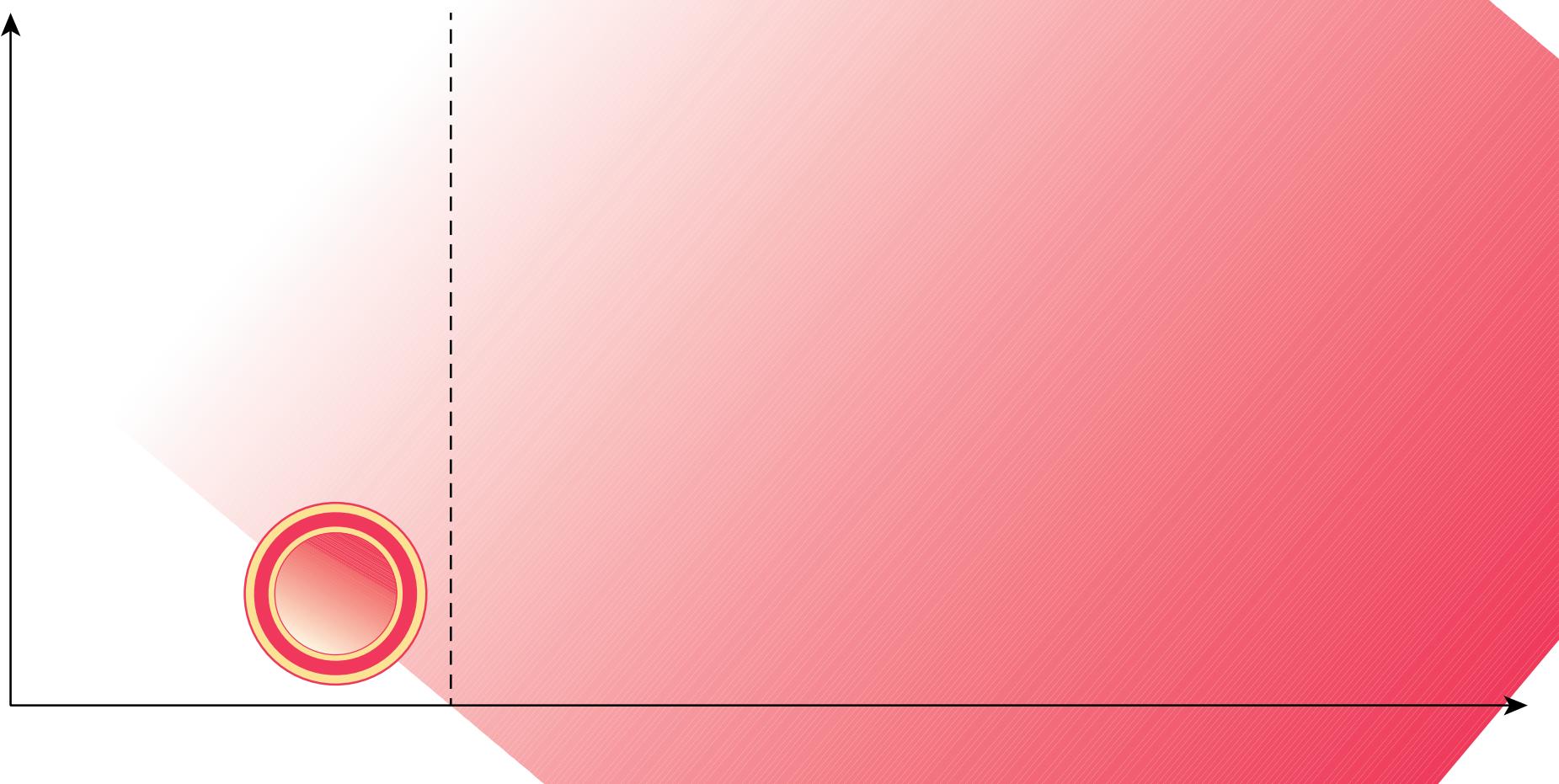
Tendencias

mortalidad disminuyó hasta 2010 y luego aumentó en ambos sexos.

No mejoría en mortalidad en <55 años



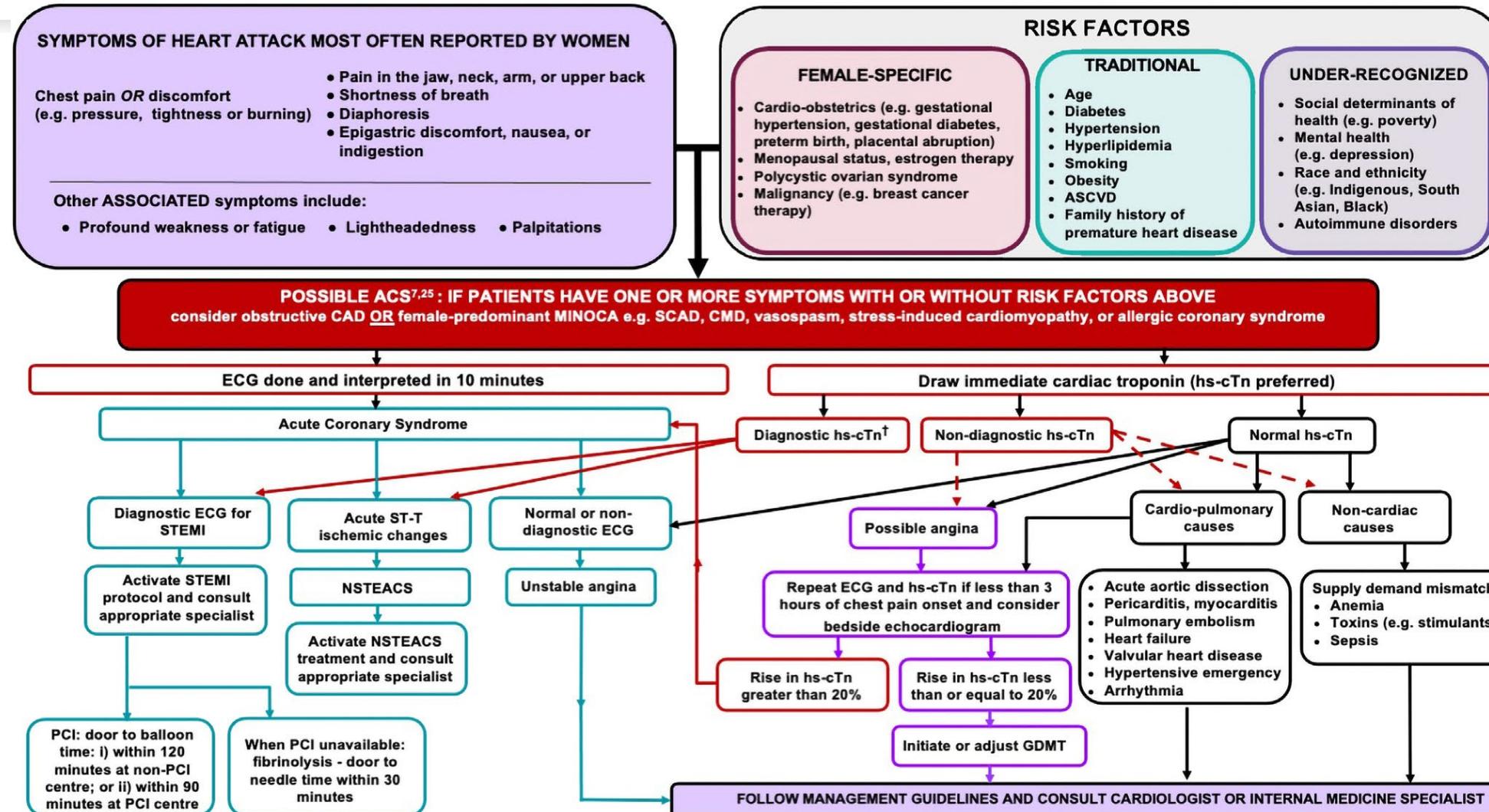
Papel de los factores de riesgo



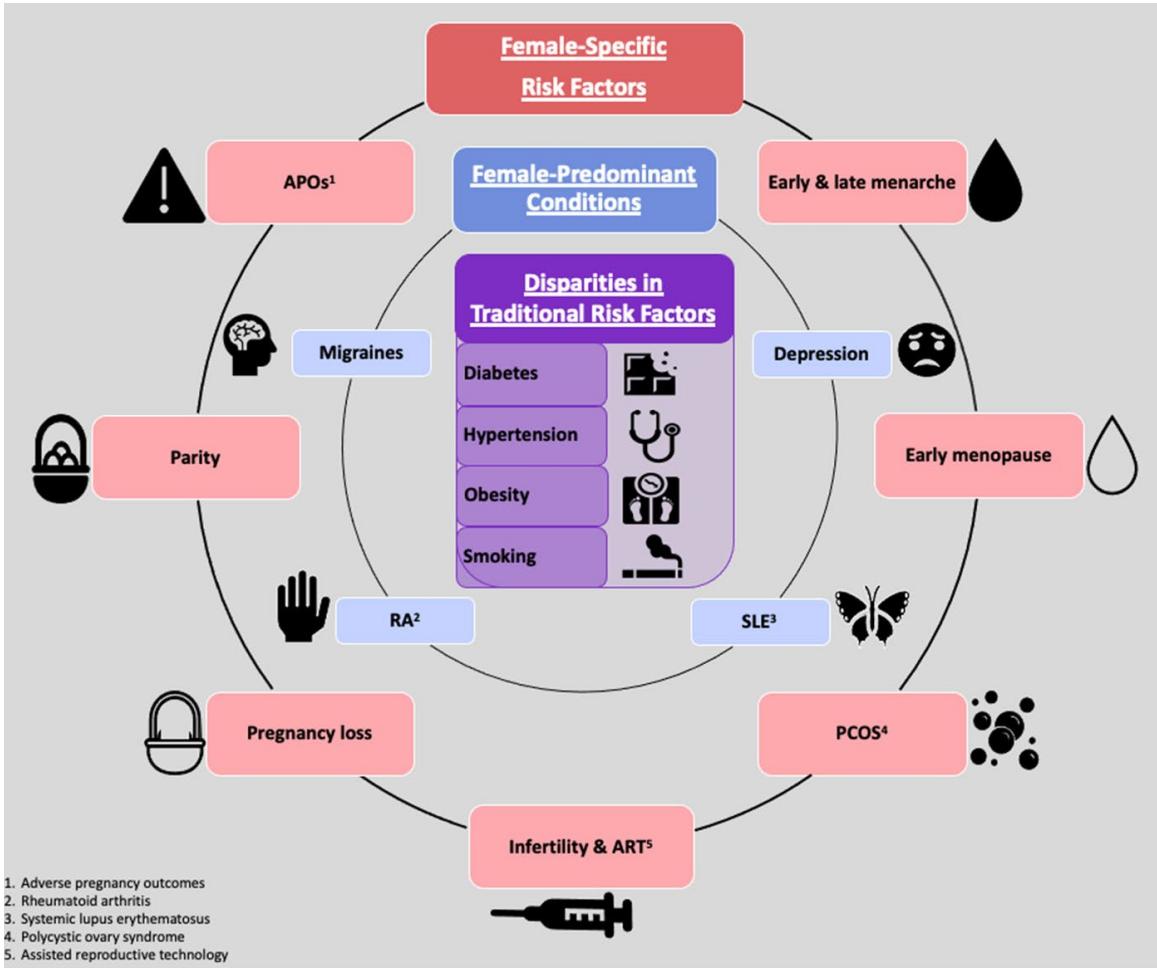
Meyer MR. Chronic Coronary Syndromes in Women: Challenges in Diagnosis and Management. Mayo Clin Proc 2021; 96:1058-1070



Diagnóstico de dolor torácico en la mujer



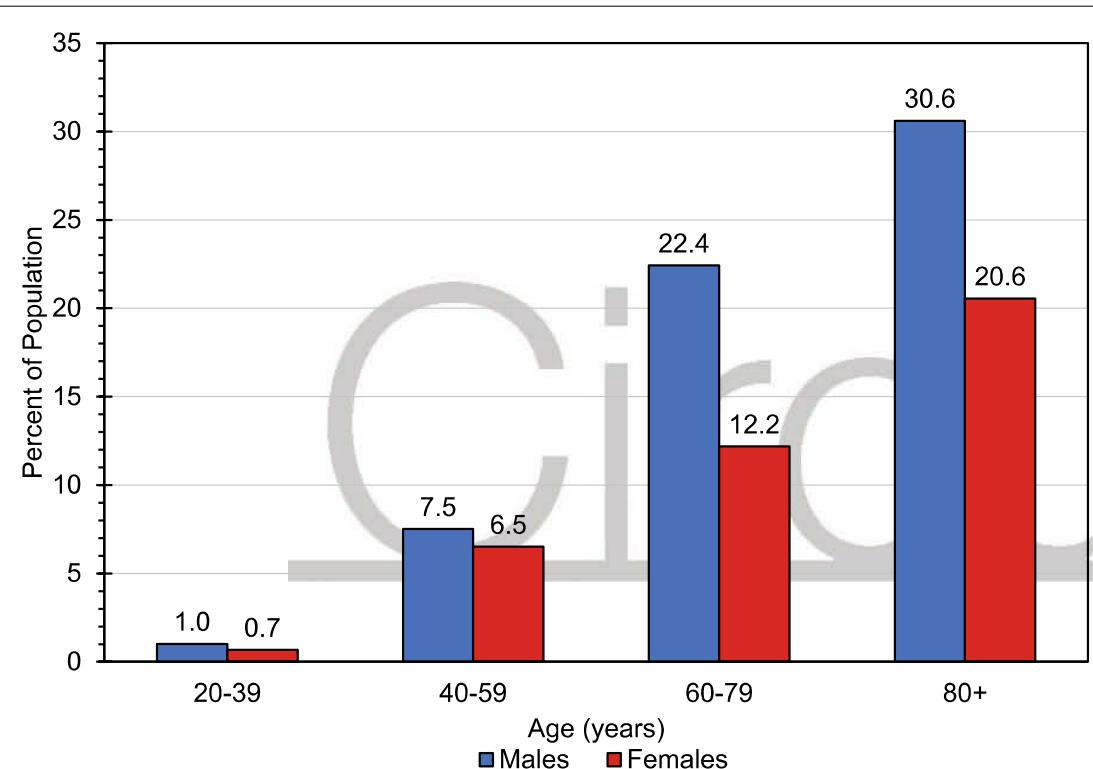
Diferencias en FR en la mujer



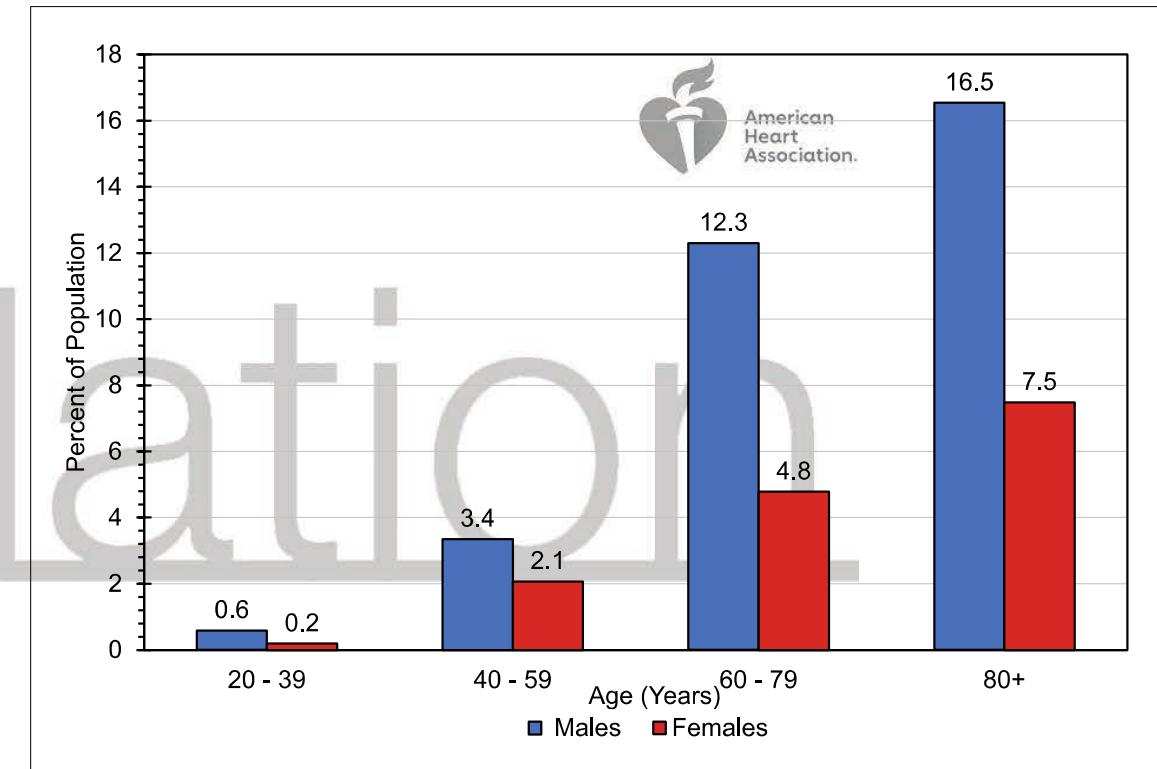
Rajendran A, et al. Sex-specific differences in cardiovascular risk factors and implications for cardiovascular disease prevention in women. Atherosclerosis 2023. doi.org/10.1016/j.atherosclerosis.2023.117269



Prevalencia de EAC e IM



EAC



IM

2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association.
Circulation. 2024;149:e00–e00. DOI: 10.1161/CIR.0000000000001209



Enfermedad isquémica en la mujer

