

**Cardiopatia ischemica: guardare oltre**

# **Fattori di rischio sesso/genere specifici per cardiopatia ischemica**

**Susanna Sciomer**



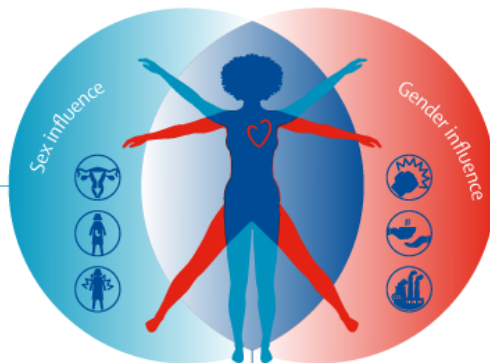
## Risk factors for cardiovascular disease in women

Well-established, sex-specific, and under-recognised risk factors

### Sex-specific risk factors

Premature menopause  
Gestational diabetes  
Hypertensive disorders of pregnancy  
Preterm delivery  
Polycystic ovary syndrome  
Systemic inflammatory and autoimmune disorders

*Polyendocrine Metabolic Ovarian Syndrome*



### Under-recognised risk factors

Psychosocial risk factors  
Abuse and intimate partner violence  
Socioeconomic deprivation  
Poor health literacy  
Environmental risk factors



### Well-established risk factors



Hypertension

Obesity

Smoking or tobacco use



Dyslipidaemia

Unhealthy diet



Diabetes

Sedentary lifestyle

Acknowledging the effects of these risk factors is crucial to understanding cardiovascular disease in women.

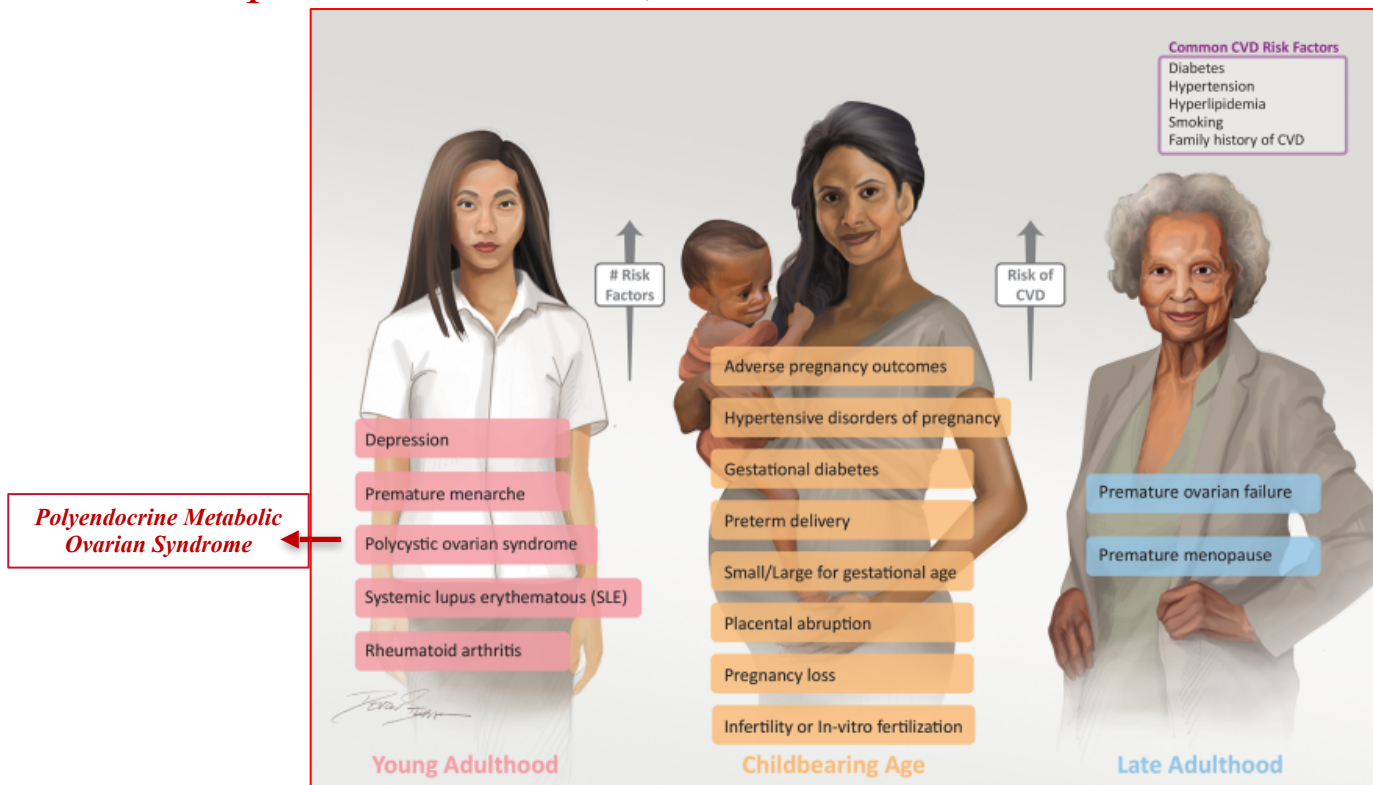
Read more: *The Lancet* women and cardiovascular disease Commission: reducing the global burden by 2030

THE LANCET

The best science for better lives



# Sex-specific risk factors, which increase a women's future risk of CVD



AH Nguyen, M Hurwitz, S A Sullivan, A Saad, JL W Kennedy and G Sharma. Frontiers in Cardiovascular Medicine, February 2024

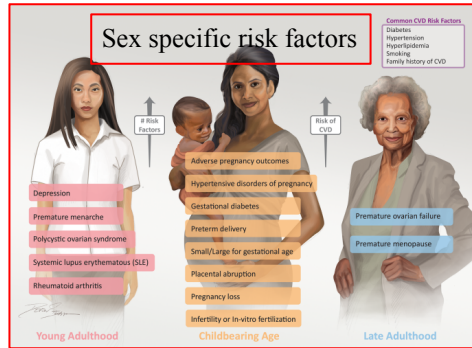


## Risk Factor Profiles in Women

Traditional atherosclerotic cardiovascular (ASCVD) risk factors, and their differential impact in women



>80% midlife women have one or more traditional risk factors  
*Clustering is common after menopause*



Emerging, nontraditional risk factors

*Iatrogenically induced menopause during the premenopausal period is associated with higher CVD risk*

*Earlier age at natural menopause is generally reported as a marker of greater CVD risk*

*Pollution: predominant impact on the female sex/gender*

Unawareness of CVD as the primary cause of mortality in women

M Garcia, S. L. Mulvagh, C. Noel Bairey Merz, J. E. Buring, JAnn E. Manson Circ Research 2016

AH Nguyen, M Hurwitz, S A Sullivan, A Saad, JL W Kennedy and G Sharma. Frontiers in Cardiovascular Medicine , February 2024



## Excess CV Risk

A diagram showing a fetus in the uterus, illustrating the concept of intrauterine growth restriction (IUGR). The fetus is depicted as smaller than the surrounding uterine space, with a label 'IUGR' pointing to it.

- ## Strategies to address excess CV risk

- 

- 

- 

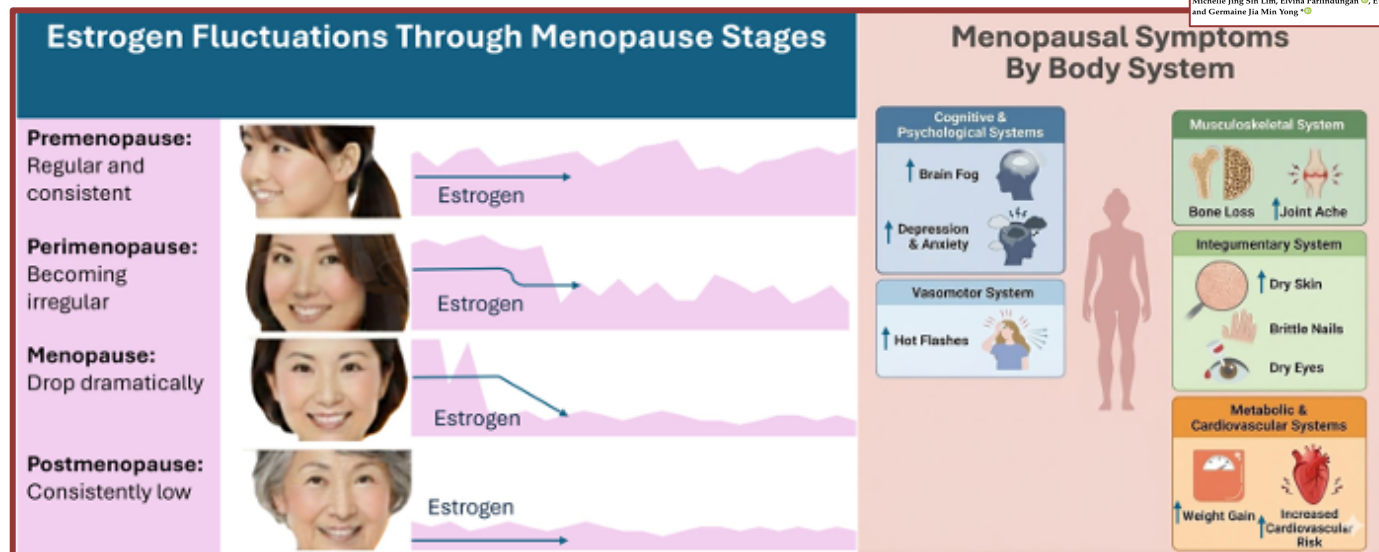
- 

- Measurement of BP
- OGTT
- Fasting lipid profiles
- Screening for GDM in pregnancy.



- All women with POI below the age of 50 should be offered HRT

PMOS



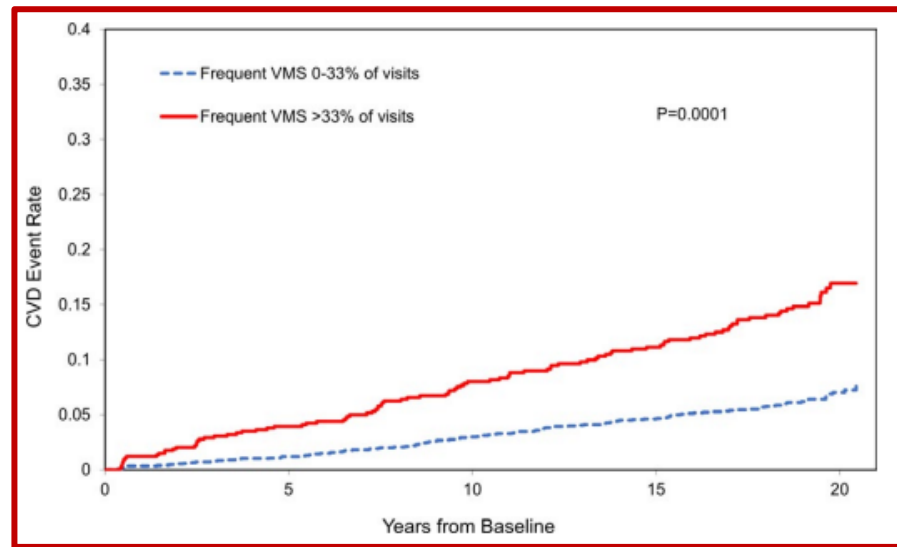
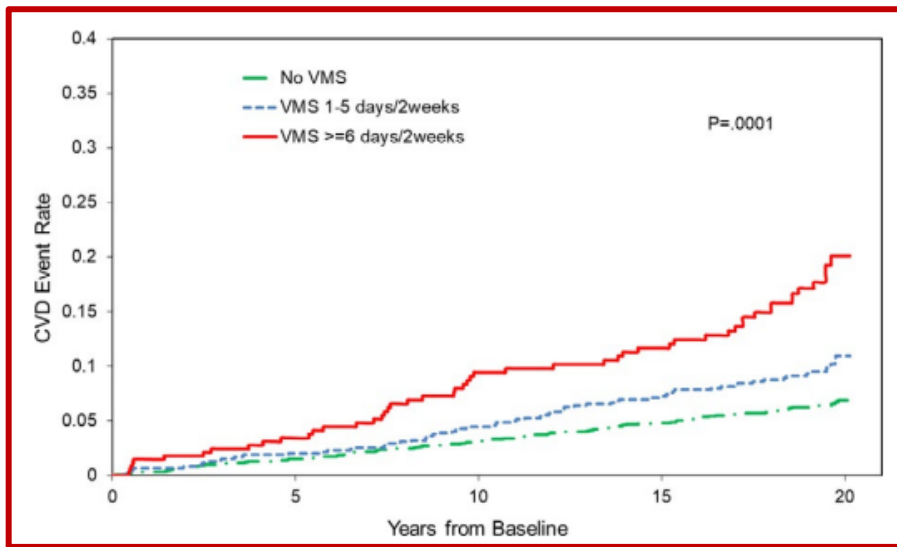
Caucasian women have reported a higher prevalence for the following symptoms compared to Asian women



Brain fog (78.8% vs. 70.4%),  
Depression and anxiety (62.9% vs. 51.9%),  
Hot flashes (65.4% vs. 61.4%),  
Joint ache (65.3% vs. 61.4%),  
Dry skin (61.2% vs. 60.0%),  
Weight gain (80.8% vs. 71.6%), and Increased Cardiovascular Risk (32.1% vs. 30.0%)



## Baseline vasomotor symptoms (VMS) in relation to fatal and nonfatal cardiovascular disease (CVD) events



Journal of the American Heart Association

### ORIGINAL RESEARCH

Menopausal Vasomotor Symptoms and Risk of Incident Cardiovascular Disease Events in SWAN

Rebecca C. Thurston, PhD; Helen E. Alexander-Vachos, MSc; Carol A. Derby, PhD; Elizabeth A. Jackson, MD, MPH; Maria Mist Brooks, PhD; Karen A. Matthews, PhD; Susan Harlow, PhD; Nadine Joffe, MD, MSc; Daniel R. Bandaru, PhD, MPH

Vasomotor symptoms (VMS), the classic menopausal symptom, are linked to **CVD risk factors and subclinical CVD**

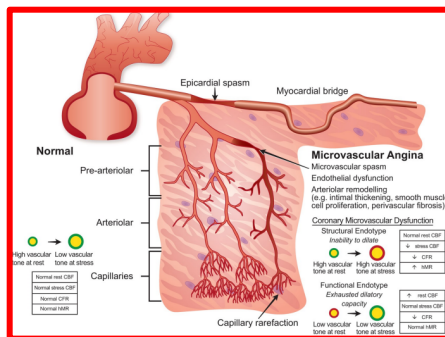
RC Thurston et al J Am Heart Assoc. 2021



Median age of Natural Menopause: 50 yrs  
Natural menopause is considered premature if it occurs before 40 yrs of age and early if it occurs between 40 and 45 yrs of age.



**Because of the trends for increases in overall life expectancy in the US and in Western Countries, a significant proportion of women will spend up to 40% of their lives postmenopausal.**

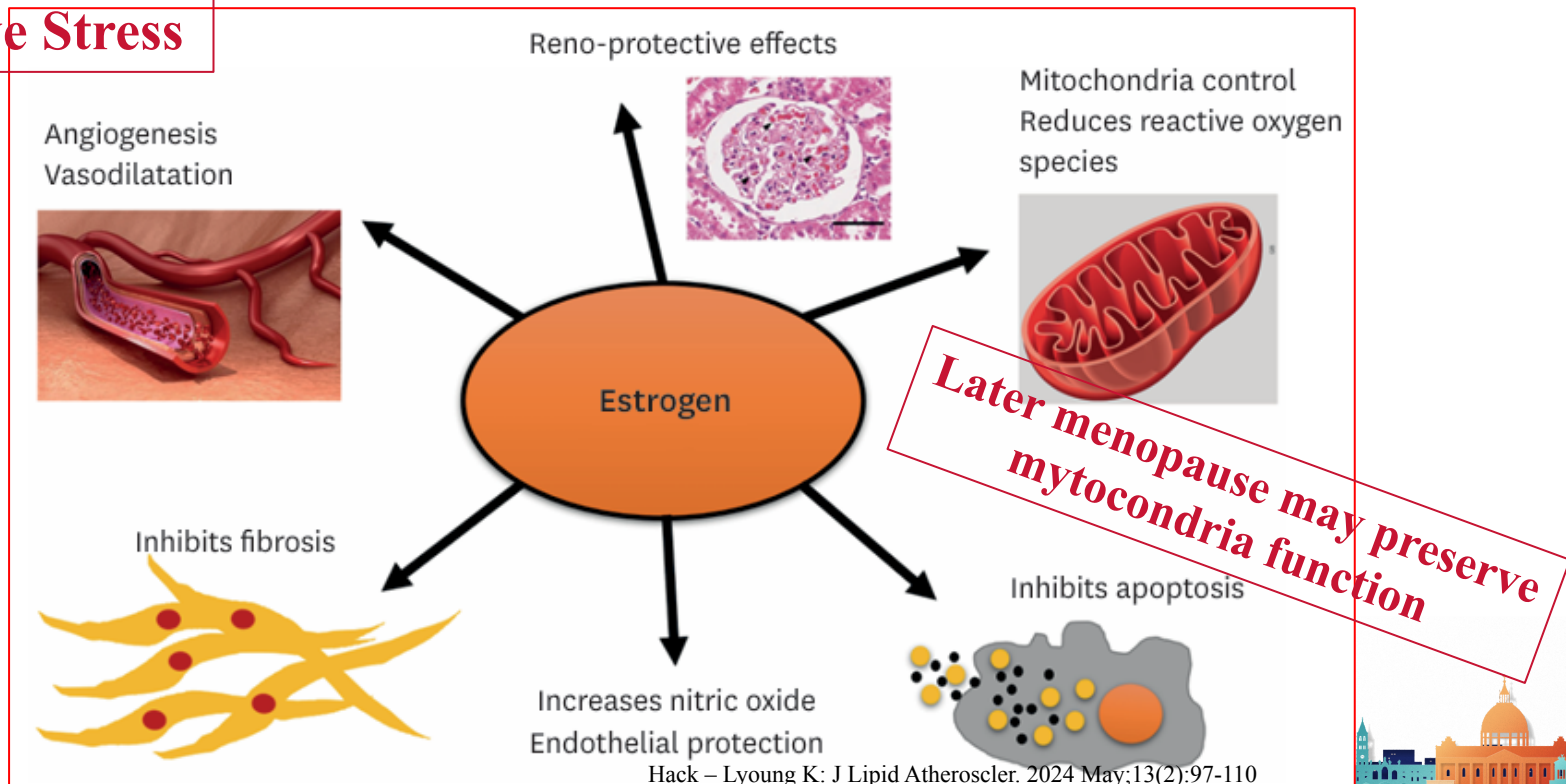


Reynolds HR et Al: Circulation Research 2022



# Cardiovascular protective effects of estrogen

**↓ Oxidative Stress**



Hack – Lyoung K: J Lipid Atheroscler. 2024 May;13(2):97-110



## Menopause Transition: a time when key CVD risk factors and indices of vascular health worsen, *independent of the effects of aging alone*

The risk of CVD increases significantly during the menopause transition, in part due to the decline in *endogenous oestrogen, which plays a crucial role in maintaining vascular tone, lipid metabolism, endothelial function, and modulating inflammatory pathways.*

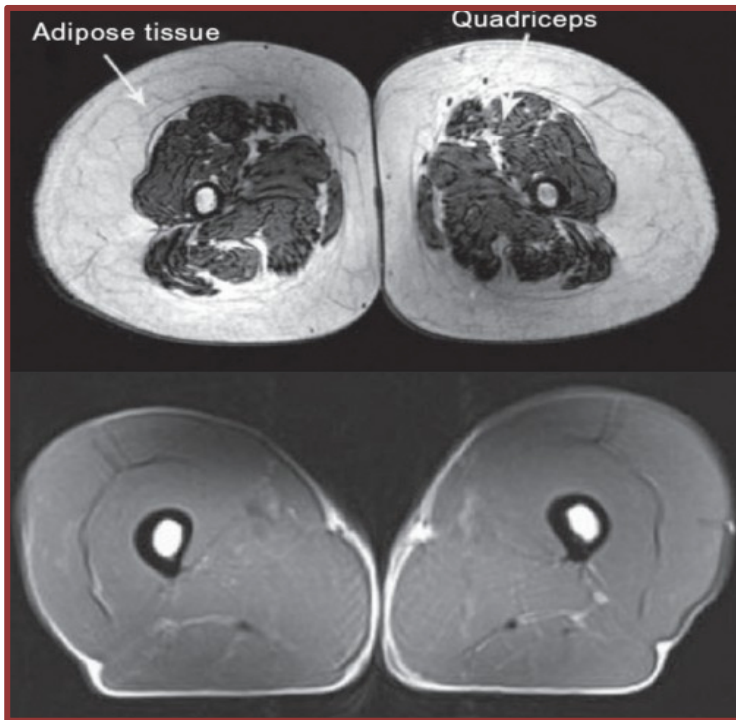
*Menopause, aging, and the increase in CVD risk occur somewhat synchronously*

*Early menopause and postmenopausal status are independent risk factors for CVD, separate from the effects of chronological ageing.*



## Risk Factors in Women: Physical Inactivity

According to data from a 2011 National Health Interview Survey (NHIS) in adults, **inactivity was higher among women than men** (33.2% versus 29.9%, age-adjusted) and increased with age (from 26.1% to 52.4%).



73 year old Female  
(BMI = 24.5 kg/m<sup>2</sup>)

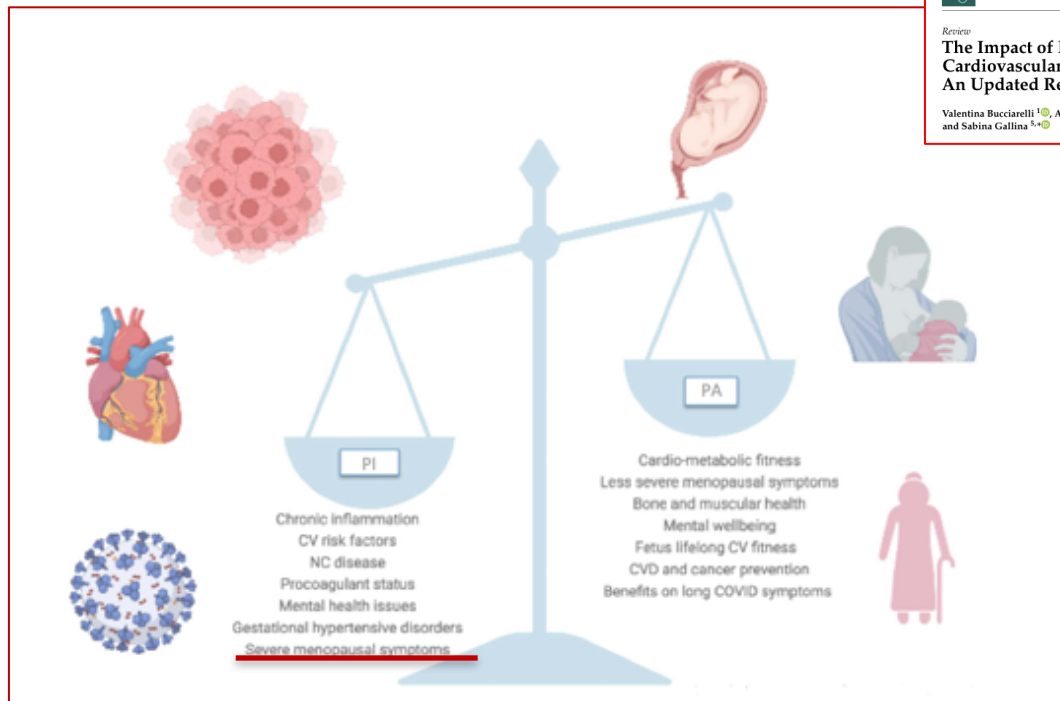
Muscle mass reduction after  
menopause (from 0.6-1%/year):

- Activity reduction
- Hypercortisolemia
- Vit D reduction

21 year old Female  
(BMI = 24.3 kg/m<sup>2</sup>)



# Physical inactivity: a significant, modifiable risk factor, more frequent and severe in the female population worldwide for all age groups



## The Impact of Physical Activity and Inactivity on Cardiovascular Risk across Women's Lifespan: An Updated Review

Valentina Bucciarelli <sup>1</sup>, Anna Vittoria Mattioli <sup>2,3</sup>, Susanna Sciomè <sup>4</sup>, Federica Moscucci <sup>4</sup>, Giulia Renda <sup>5</sup> and Sabina Gallina <sup>6,\*</sup>



Maturitas 193 (2025) 108170

Contents lists available at ScienceDirect



ELSEVIER

Maturitas

journal homepage: [www.elsevier.com/locate/maturitas](http://www.elsevier.com/locate/maturitas)

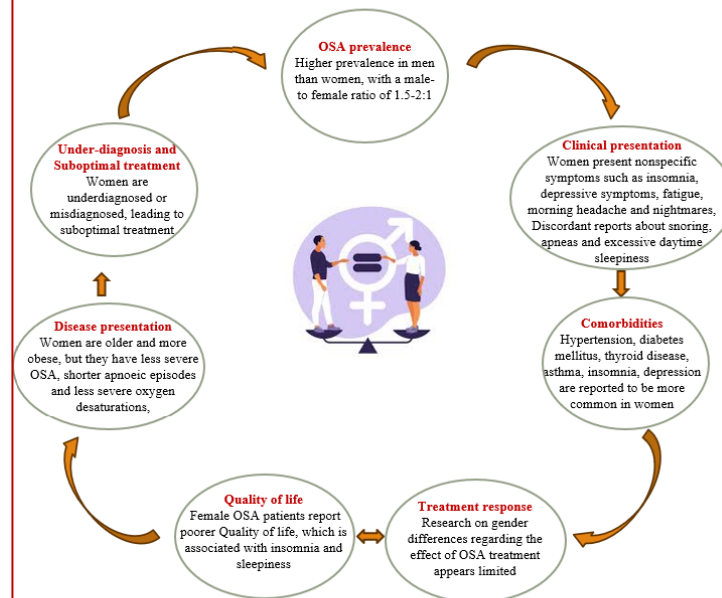
Review article

Obstructive sleep apnea syndrome (OSAS) in women: A forgotten cardiovascular risk factor

## Highlights

- **Women suffer from respiratory sleep problems increasingly after menopause.**
- Obstructive sleep apnea syndrome (OSAS) is an important cardiovascular risk factor.
  - This condition is underdiagnosed and undertreated.
- Symptoms and clinical presentation are often peculiar, but with no specific pattern.
  - Awareness among clinicians and the general population has to be increased.

## Obstructive Sleep Apnea (OSA) in Female Patients: time to mind the gap



Specific risk factors: small pharyngeal airways, loss of estrogens after menopause, sleep fragmentation, oxidative stress.

Obstructive sleep apnea syndrome (OSAS) in women: A forgotten cardiovascular risk factor Federica Moscucci, Valentina Bucciarelli, Sabina Gallina, Susanna Sciomer, Anna Vittoria Mattioli, Silvia Maffei, Savina Nodari, Roberto Pedrinelli, Paola Andreoli, Stefania Basili, On behalf of the Gender Cardiovascular Disease Study Group of the Italian Society of Cardiology (SIC), Gender Working Group of the Italian Society of Internal Medicine (SIMI)

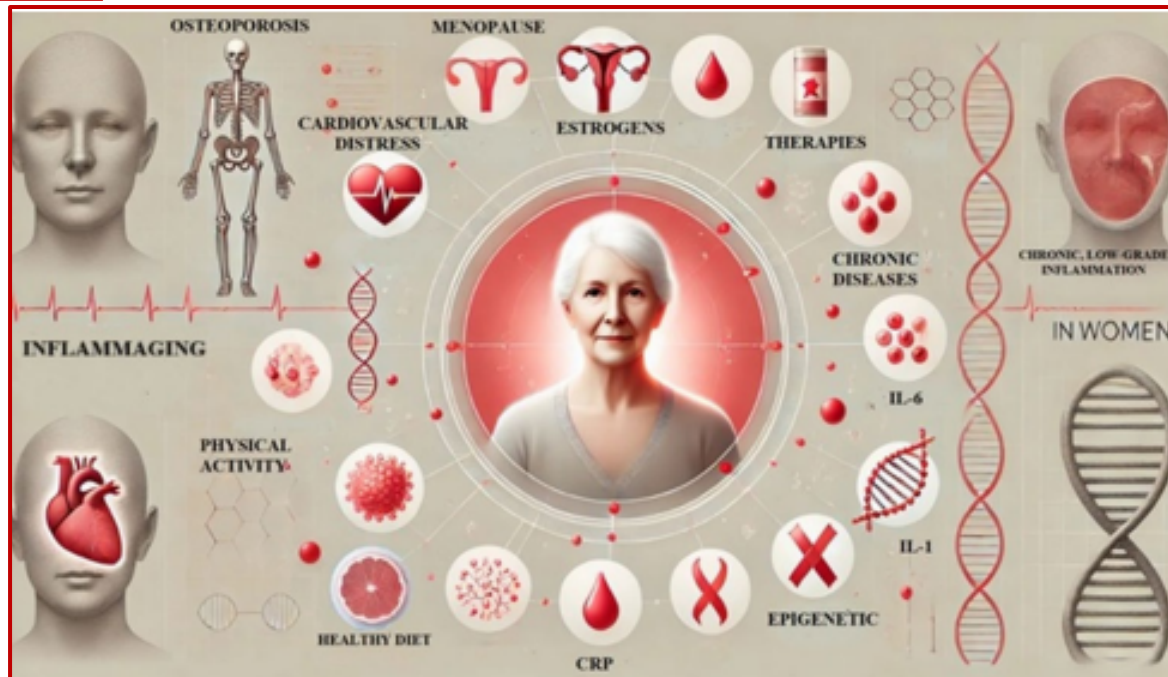
# Inflammaging and Cardiovascular Risk in Old Women

Federica Moscucci<sup>1,2</sup> · Francesco Baratta<sup>3</sup> · Valentina Bucciarelli<sup>1</sup> · Anna Vittoria Mattioli<sup>4</sup> · Marcello Pini<sup>1</sup> · Giada Zanini<sup>5</sup> et al. (full author details at the end of the article)

Received: 21 September 2025 / Accepted: 21 October 2025  
© The Author(s) 2025



A chronic, low-grade inflammation that accompanies aging and contributes to the development of age related diseases.





nutrients



Nutrients 2026, 18, 632 <https://doi.org/10.3390/nu18040632>

Review

## A Narrative Review on GLP-1 Receptor Agonists for Obesity in Older Women: Maximizing Weight Loss While Preserving Lean Mass

Federica Moscucci <sup>1,2,\*</sup>, Francesco Baratta <sup>1,\*</sup>, Daniele Pastori <sup>3,4</sup>, Danilo Menichelli <sup>5</sup>, Anna Vittoria Mattioli <sup>6</sup>, Sabina Gallina <sup>7</sup>, Ilaria Lospinuso <sup>1</sup>, Susanna Sciomer <sup>8</sup>, Gianfranco Piccirillo <sup>1,3</sup> and Giovambattista Desideri <sup>1,3</sup>

*Obesity in women over 65: a growing clinical challenge particularly due to association with increased risk of*

- a) cardiovascular disease,
- b) osteoarthritis,
- c) frailty,
- d) sleep breathing disorders,
- e) sarcopenia



## Air Pollution and Ischemic Heart Disease: a Widely Underestimated Cardiovascular Risk Factor

### Sources of Air Pollution

- Fine particulate matter
- NO<sub>2</sub>
- Sulfur dioxide



### Mechanisms

- Oxidative stress
- Systemic inflammation
- Endothelial dysfunction



### Public Health Imperative

- Over 7 million deaths annually attributable to air pollution



Elderly



CAD



Woman

Sciomer S et al, J Cardiovasc Med, 2025



# Sex/Gender-specific impact of air pollution on cardiovascular health

Review

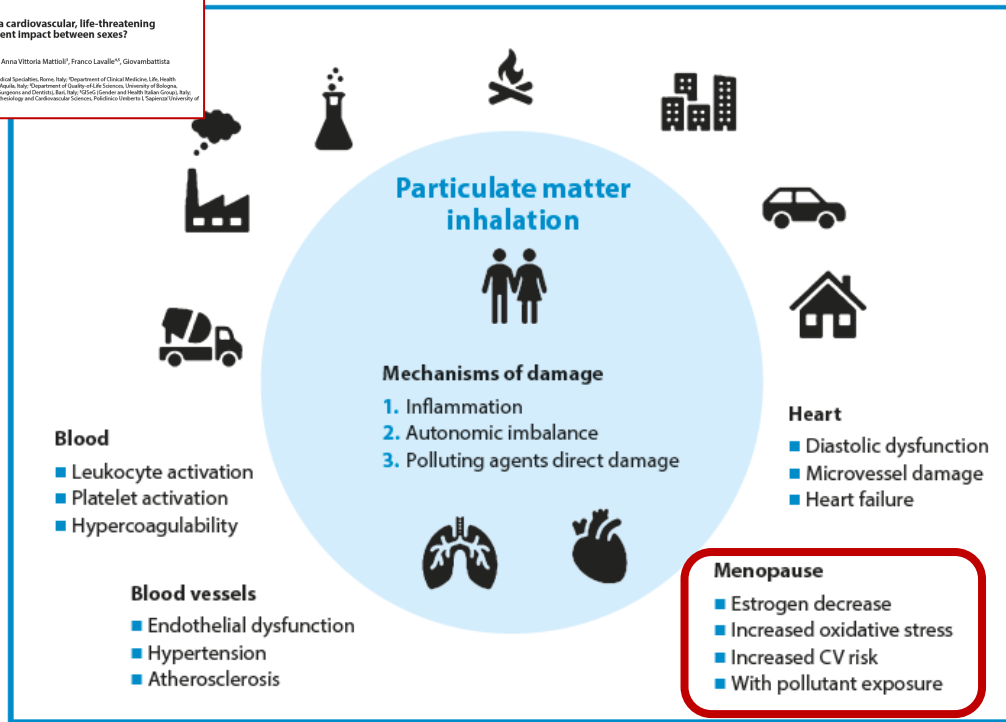
J Sex Gender Spec Med (2025) 15(2): 150-167

**Environmental pollution: a cardiovascular, life-threatening risk factor. Is there a different impact between sexes? A narrative review**

Federica Moscarelli<sup>1</sup>, Francesco Baratta<sup>2</sup>, Anna Vittoria Mattioli<sup>3</sup>, Franco Lavalle<sup>4</sup>, Giovambattista Desideri<sup>5</sup>, Susanna Sciomer<sup>6</sup>

<sup>1</sup>Università Umbra, Dipartimento di Medicina e Specialità, Roma, Italy; <sup>2</sup>Department of Clinical Medicine, Life, Health and Environmental Sciences, University of Naples, Naples, Italy; <sup>3</sup>Department of Quality of Life Sciences, University of Bologna, Bologna, Italy; <sup>4</sup>POB202 Physical Order Council of Senegalese and Dorelli, Bari, Italy; <sup>5</sup>POB202 Gender and Health Stake Group, Bari; <sup>6</sup>Department of Clinical and Internal Medicine, Nephrology and Cardiovascular Sciences, Sapienza University, University of Rome, Rome, Italy

Received 14 November 2024; accepted 18 March 2025



Cardiovascular disease among women and pollution: a dangerous link

+ Climate Change

Main mechanisms underlying the pathogenesis of CVD at extreme temperatures:

*Several regulatory pathways are involved* (temperature-sympathetic reactivity, the cold-activated renin-angiotensin system, dehydration, electrolyte imbalances, heat - induced systemic inflammatory responses)



**Sex and gender and cardiovascular  
medicine: impact in diabetes, acute  
coronary syndromes, and heart failure**

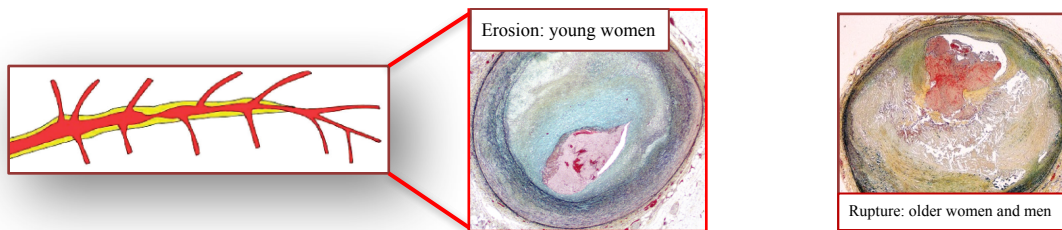


Thomas F. Lüscher<sup>1,2,3</sup>, MD, FESC

**Cardiovascular disease:  
the leading cause of death *and disability* in women**

Gender, sex differences and age affect vascular biology,  
clinical presentation, and outcomes of ACS

Sex differences in baseline coronary anatomy and function



***Women (for all age groups, regardless of sex/gender specific risk factors, menopausal transition and age at menopause) and men are treated the same based on guidelines that were established from experimental and clinical trial data: over-represented by male***



## Increased Risk of Cardiovascular Disease in Women: a complex scenario



*Among reproductive risk factors, both history of pregnancy complications (including gestational diabetes and HTN, preterm delivery, preeclampsia, recurrent miscarriage) and menopausal transition are associated with increased risk of HTN and Cardiovascular diseases*

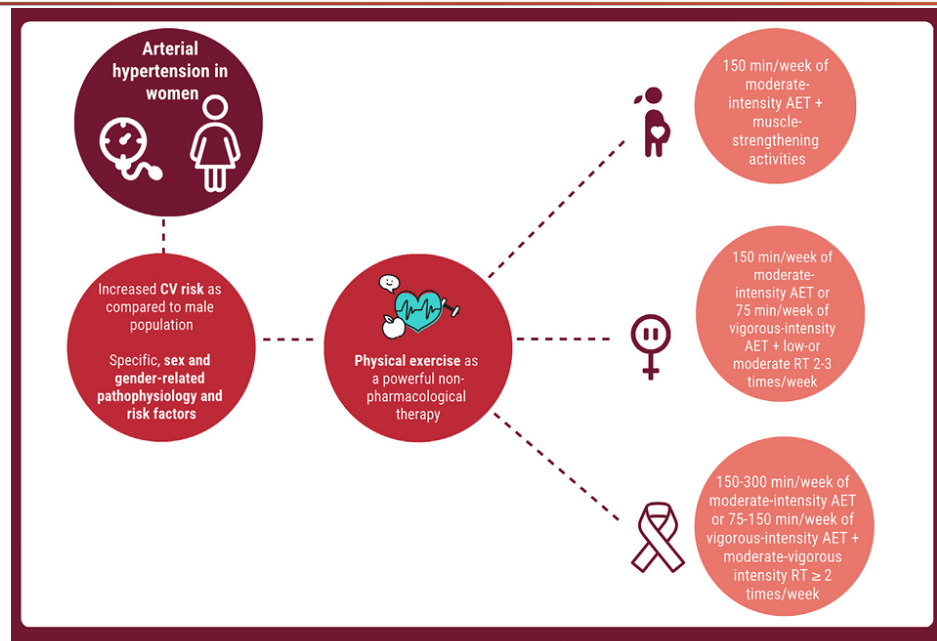
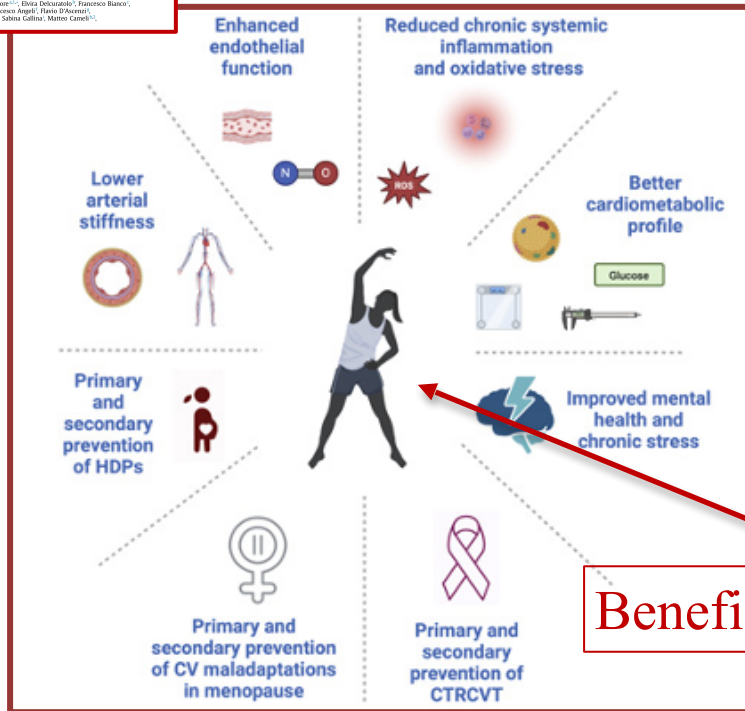
Physical activity , any bodily movement produced by skeletal muscles that determine energy expenditure, and physical exercise are advocated as powerful non-pharmacological interventions to prevent and treat HTN

### *Physical Activity:*

*reduce arterial pressure, counteract LV remodeling,  
improve quality of life and prognosis*

European Society of Cardiology (ESC) 2024





**Beneficial effects of exercise on CV Risk Factors**



## Physical Exercise: a powerful, non-pharmacological intervention to counteract CV risk factors

### Aerobic Exercise Training + Resistance Training (the combination)

- a significant improvement in PA status,
- sleep quality,
- morning BP,
- lipid profiles,
- urinary microalbumin-to-creatinine ratios,
- **pregnancy outcomes.**

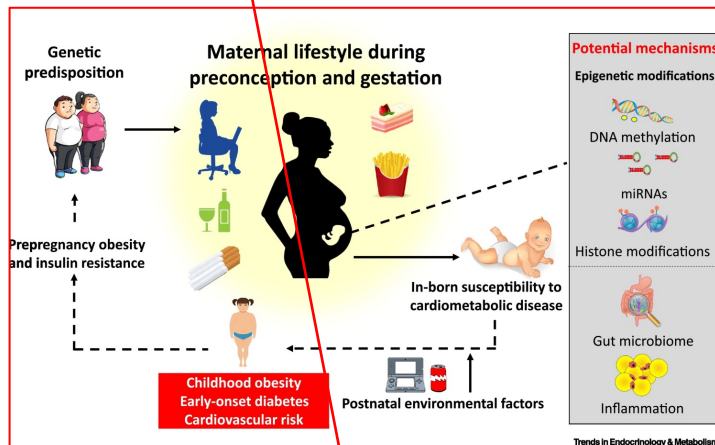


## 2025 ESC Guidelines for the management of cardiovascular disease and pregnancy

Developed by the task force on the management of cardiovascular disease and pregnancy of the European Society of Cardiology (ESC)  
Endorsed by the European Society of Gynecology (ESG)

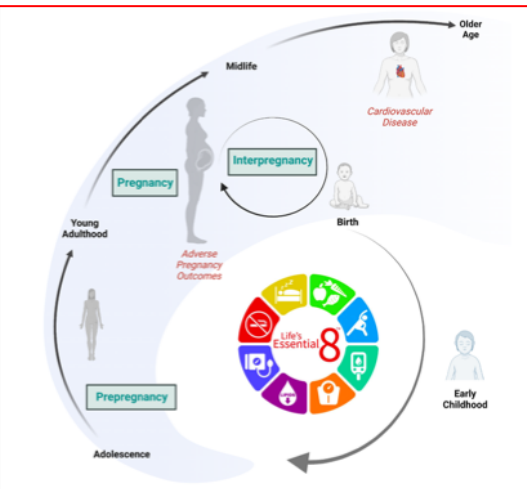
# From Preconception to.....

## Preconception Counseling and genetic aspects

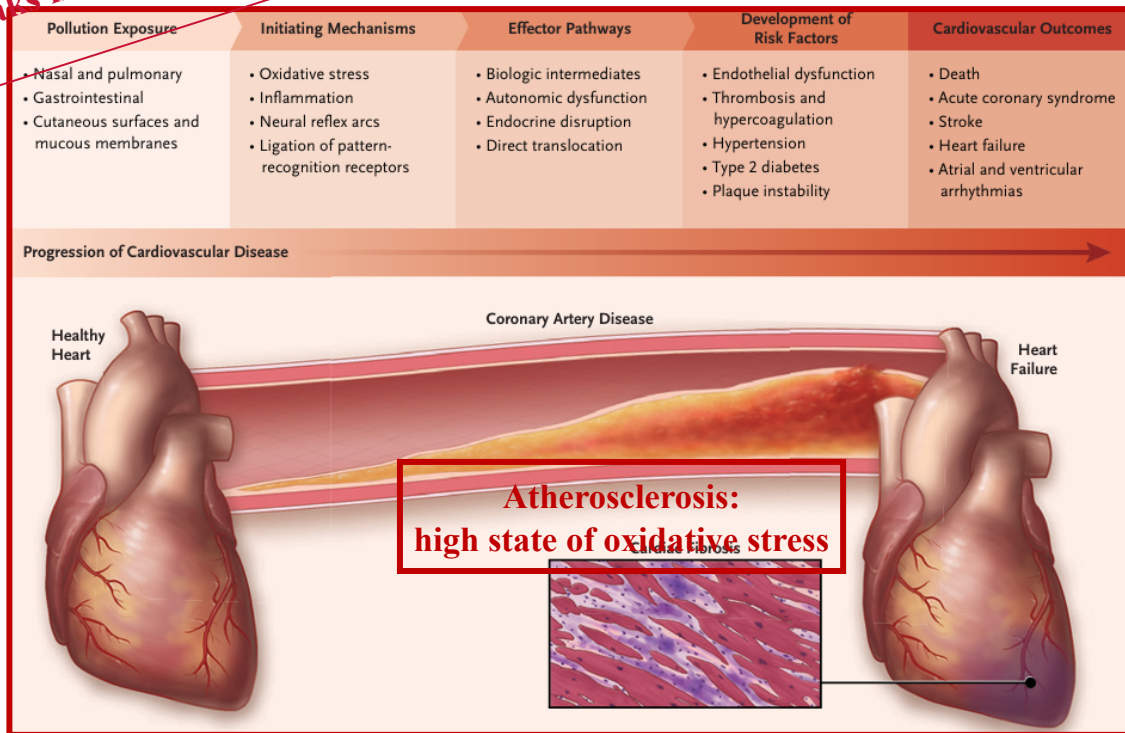


## Reproductive Technology

|                                                                           |  | Yield of genetic testing | Gene/variant impact on pregnancy management |
|---------------------------------------------------------------------------|--|--------------------------|---------------------------------------------|
| <b>Aortic disease</b><br>E.g. Marfan, vascular Ehlers-Danlos, Loeys-Dietz |  | 15% – 90%                | Strong                                      |
| <b>Cardiac channelopathies</b><br>E.g. LQTS, CPVT, Brugada syndrome       |  | 15% – 90%                | Moderate                                    |
| <b>Cardiomyopathies</b><br>E.g. HCM, DCM, ARVC                            |  | 30% – 60%                | Mild                                        |
| <b>Congenital heart disease and PAH</b><br>E.g. 22q11 syndrome            |  | 2% – 15%                 | No                                          |

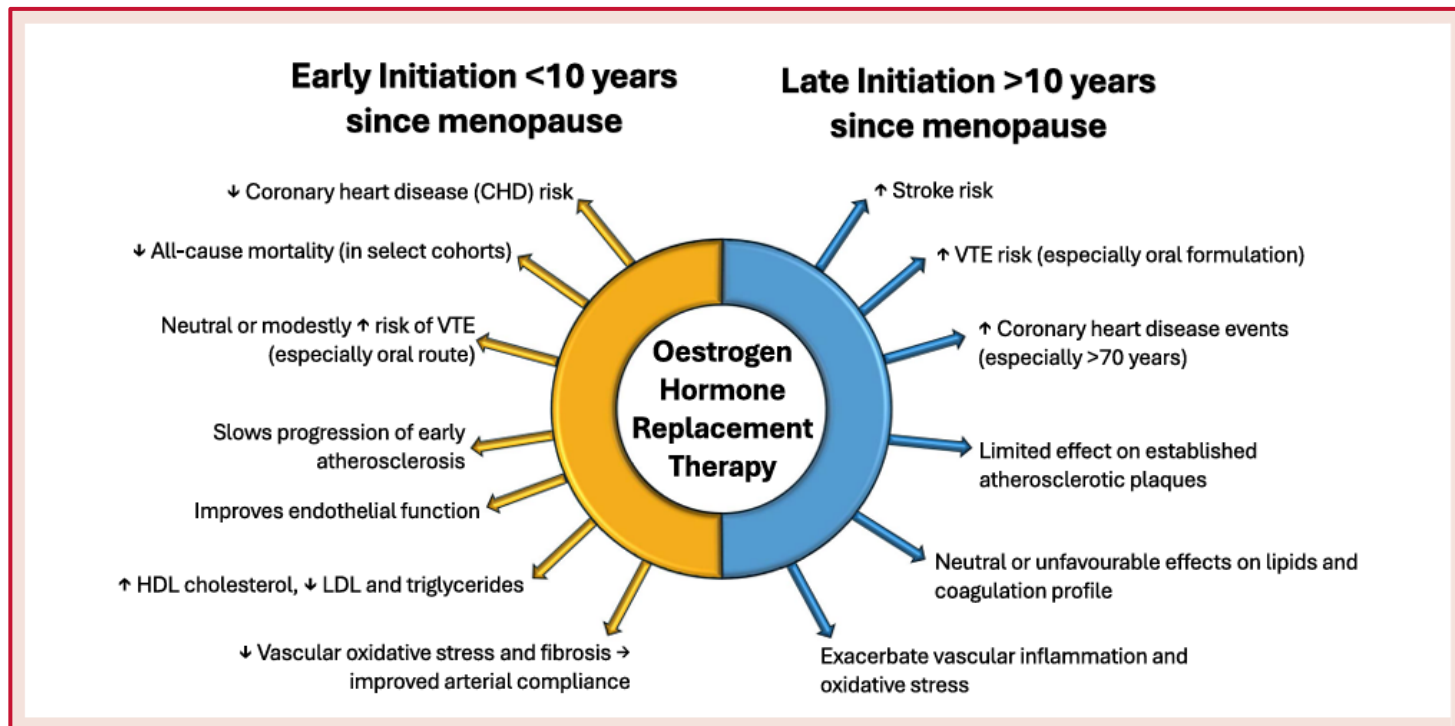


**Oestrogen therapy**  
early initiated in the  
postmenopausal period  
may slow the progression of  
coronary artery atherosclerosis



# HRT and CV Risk: let's clarify

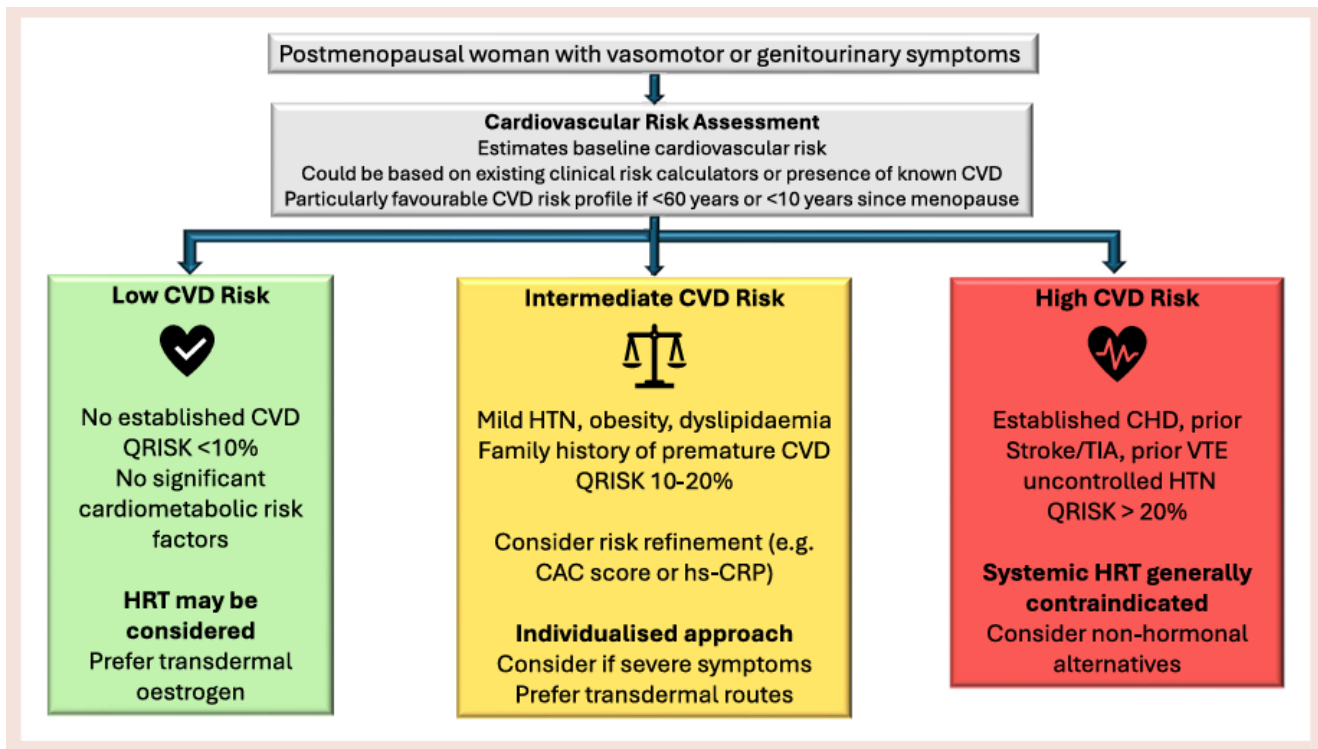
## Timing hypothesis of HRT and cardiovascular risk



I Blackburn and V Kunadian European Heart Journal Open (2026) 6, oeag054 <https://doi.org/10.1093/ehjopen/oeag054>



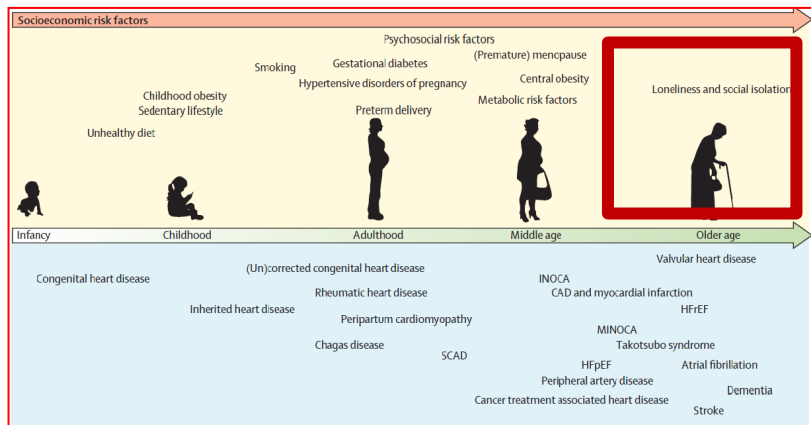
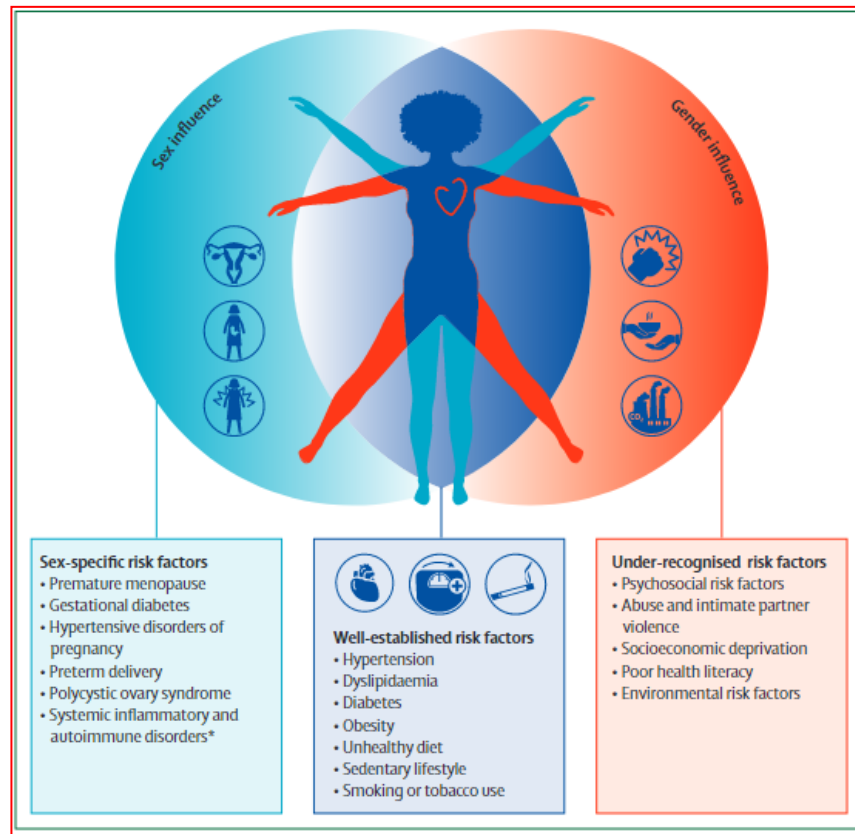
# HRT and CV Risk: let's clarify



## The Lancet women and cardiovascular disease Commission: reducing the global burden by 2030

Birgit Vogel, Monica Acevedo, Yolande Appelman, C Noel Bairey Merz, Alaide Chieffo, Gemma A Figtree, Mayra Guerrero, Vijay Kunadian, Carolyn S P Lam, Angela H E M Maas, Anastasia S Mihailidou, Agnieszka Olszanecka, Jeanne E Poole, Clara Saldarriaga, Jacqueline Saw, Liesl Zuhlke, Roxana Mehran

Cardiovascular disease is the leading cause of death in women. Decades of grassroots campaigns have helped to raise awareness about the impact of cardiovascular disease in women, and positive changes affecting women and their health have gained momentum. Despite these efforts, there has been stagnation in the overall reduction of cardiovascular disease burden for women in the past decade. Cardiovascular disease in women remains understudied, under-recognised, underdiagnosed, and undertreated. This Commission summarises existing evidence and identifies knowledge gaps in research, prevention, treatment, and access to care for women. Recommendations from an international team of experts and leaders in the field have been generated with a clear focus to reduce the global burden of cardiovascular disease in women by 2030. This Commission represents the first effort of its kind to connect stakeholders, to ignite global awareness of sex-related and gender-related disparities in cardiovascular disease, and to provide a springboard for future research.



for updates

*Commentary*

European Journal of  
**Preventive  
Cardiology**

 **ESC**  
European Society  
of Cardiology

# **Prevention of cardiovascular risk factors in women: The lifestyle paradox and stereotypes we need to defeat**

**S Sciomer<sup>1</sup>, F Moscucci<sup>1</sup>, S Maffei<sup>2</sup>, S Gallina<sup>3</sup> and AV Mattioli<sup>4</sup>**

European Journal of Preventive  
Cardiology

2019, Vol. 26(6) 609–610

© The European Society of  
Cardiology 2018

Article reuse guidelines:

[sagepub.com/journals-permissions](https://sagepub.com/journals-permissions)

DOI: 10.1177/2047487318810560

[journals.sagepub.com/home/ejpc](https://journals.sagepub.com/home/ejpc)

 **SAGE**

