Spécificités de l'évaluation du risque cardiovasculaire chez la femme

Aude MIGNOT

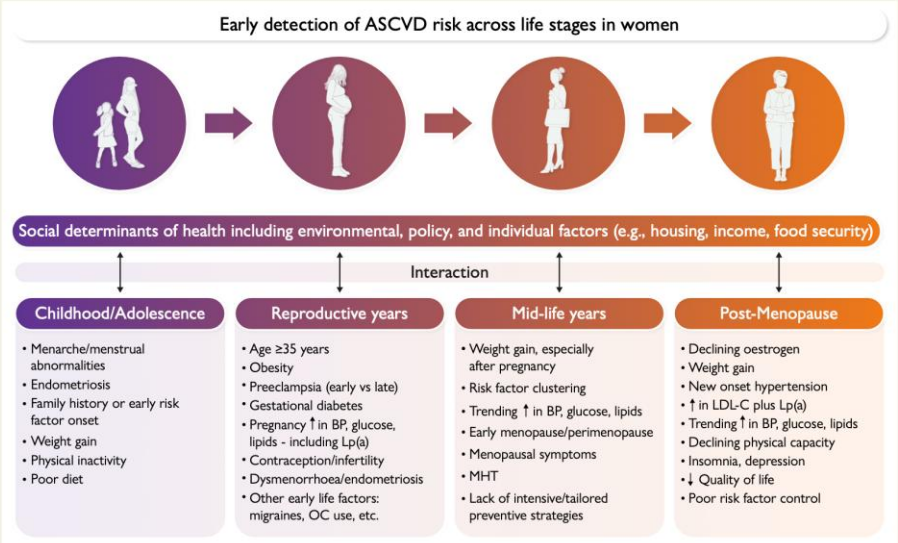
Bordeaux-Mérignac

Conflits d’intérêts

Aucun

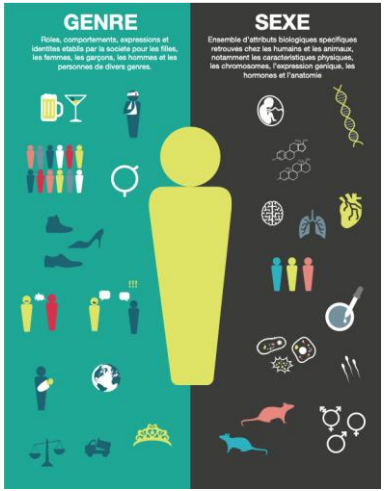
La femme (cisgenre) est un Homme pas comme les autres

Graphical Abstract



ASCVD, atherosclerotic cardiovascular disease; BP, blood pressure; FMD, fibromuscular disease; LDL, low density lipoprotein; Lp(a), lipoprotein (a); MHT, menopausal hormonal therapy; OC, oral contraceptive

Appelman Y, *et al. European Heart Journal.*



ESC European Society of Cardiology
European Heart Journal (2025) 00, 1–16
https://doi.org/10.1093/eurheartj/ehaf1001

STATE OF THE ART REVIEW
Ischaemic heart disease

Cardiovascular disease in women: traditional and sex-specific risk factors

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Le sexe féminin: un marqueur de vulnérabilité

Au-delà des facteurs de risque cardiovasculaire communs à ceux des hommes.

Modulateurs forts du risque cardiovasculaire:

- facteurs hormonaux aux périodes clés de la vie de la femme: grossesse, ménopauses
- Pathologies endocriniennes
- impact plus prononcé du tabac et du diabète,
- une santé mentale plus fragile
- une fréquence plus accrue des maladies auto-immunes.

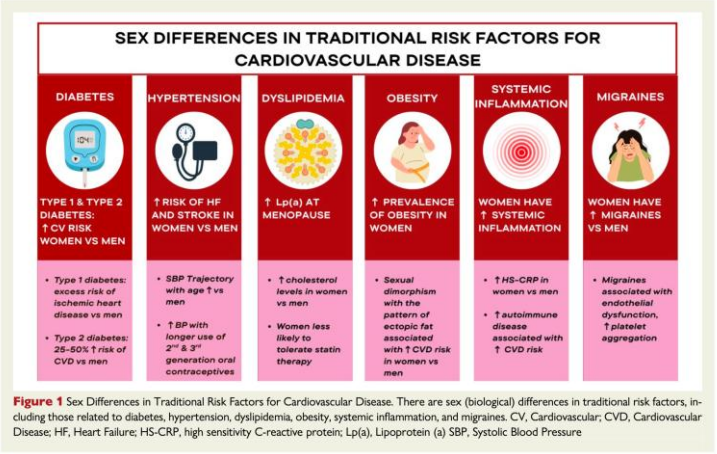


Figure 1 Sex Differences in Traditional Risk Factors for Cardiovascular Disease. There are sex (biological) differences in traditional risk factors, including those related to diabetes, hypertension, dyslipidemia, obesity, systemic inflammation, and migraines. CV, Cardiovascular; CVD, Cardiovascular Disease; HF, Heart Failure; HS-CRP, high sensitivity C-reactive protein; Lp(a), Lipoprotein (a) SBP, Systolic Blood Pressure

Maladies cardiovasculaires des femmes

Maladies cardiovasculaires :
1ère cause de mortalité planétaire
2ème cause de mortalité en France.

76000 décès par an en France.

Une femme meurt toutes les 7 minutes de maladies cardiovasculaires.

200 femmes meurent chaque jour de maladies cardio-vasculaires

Santé Publique France,2025

Pourquoi ont-elles une mortalité CV élevée?

Susceptibilité à certains FDCV élevée

Facteurs spécifiques liés aux hormones féminines
Désordres de la grossesse
Pathologies endocrino-gynécologiques: endométriose
PMA
Ménopause

Retard au diagnostic des IDM :
Atypies des symptômes
Diagnostic tardif, moins de reperfusion, moins de traitement, moins de réadaptation.

Androcentrisme :35% de femmes dans les essais cliniques seulement (2000).
Observatoires, registres+++

Diabète et risque cardiovasculaire chez la Femme

Susceptibilité accrue:

+50% de risques pour les femmes diabétiques,

Circulation
Volume 132, Issue 25, 1 December 2015; Pages 2424-2447
https://doi.org/10.1161/CIR.0000000000000343

AHA SCIENTIFIC STATEMENT

Sex Differences in the Cardiovascular Consequences of Diabetes Mellitus

A Scientific Statement From the American Heart Association

Judith G. Regensteiner, PhD, FAHA, Co-Chair, Sherita Golden, MD, MHS, FAHA, Co-Chair, Amy G. Huebschmann, MD, MSc, Elizabeth Barrett-Connor, MD, FAHA, Alice Y. Chang, MD, MSc, Deborah Chyun, PhD, RN, FAHA, Caroline S. Fox, MD, FAHA*, Catherine Kim, MD, MPH, Nehal Mehta, MD, MSCE, Jane F. Reckelhoff, PhD, FAHA, Jane E.B. Reusch, MD, Kathryn M. Rexrode, MD, MPH, Anne E. Sumner, MD, FAHA, Francine K. Welty, MD, FAHA, Nanette K. Wenger, MD, FAHA, and Blair Anton, MLIS, MS, AHIP on behalf of the American Heart Association Diabetes Committee of the Council on Lifestyle and Cardiometabolic Health, Council on Epidemiology and Prevention, Council on Functional Genomics and Translational Biology, and Council on Hypertension

Table 1. Sex Differences in CVD Risk Factors and Outcomes in DM

	Sex Differences
Risk factor	
Sex hormones: testosterone	High bioavailable or unbound testosterone predicts incident coronary events
	Low levels of total testosterone predict incident coronary events
Generalized obesity	Higher prevalence of obesity in women, particularly postmenopausal women, than men
HDL-C	Women have higher HDL-C compared with men
Hypertension	Women with DM have more hypertension at >60 y of age (ie, postmenopausal)
	Men with DM and hypertension are at greater risk for renal injury than women (perhaps because of sex hormone differences)
Cardiovascular risk profile	More adverse in women with DM: impaired endothelium-dependent vasodilation, worse atherogenic dyslipidemia, prothrombotic coagulation profile, higher metabolic syndrome prevalence
	Compared with men, women have worse HbA_{1c} and blood pressure control
	CHD predictors in T1DM (Pittsburgh Epidemiology of Diabetes Complications Study)
	Women only: abdominal adiposity, insulin resistance, HbA_{1c}
	Men and women: inflammatory markers (fibrinogen, white blood cell count), microalbuminuria
Adiposity	Abdominal adiposity was more strongly associated with cardiovascular mortality in women compared with men with DM in a Finnish population
Outcome	
CHD	Women with DM have a 2-fold excess CHD risk compared with men
	Myocardial infarction occurs earlier and has higher mortality in women with DM compared with men
	Revascularization rates (angioplasty, coronary artery bypass grafting) are lower in women with DM compared with men
Heart failure	Risk of incident heart failure is greater in women than men
Stroke	Male stroke patients have a higher prevalence of DM than female stroke patients
	DM is a stronger risk factor for stroke in women compared with men
PAD	DM is a more significant risk factor for the development of claudication in women compared with men
	Women with PAD and DM respond less well to exercise training compared with women without DM and men with and without DM
	Decreased long-term survival in women undergoing revascularization and increased postsurgical mortality are seen in women but not men with DM

Tabagisme chez la femme

+25% de risques pour les femmes qui fument,

40-49 ans, le RR de maladie coronaire lié au tabagisme: F (x8) H(x5) par rapport aux non fumeurs.

1ere cause d'AVC et d'AOMI chez la femme de moins de 50ans

Tabagisme et grossesse 16,2 % de femmes enceintes risque majeur de morbidité maternelle et fœtale.

- **Evaluer** la consommation, son ancienneté et les tentatives de sevrage antérieures
- **Expliquer** : risque d'IDM proportionnel à la consommation, x3 par rapport à un non-fumeur.
- **Rappeler** qu'il n'y a pas de seuil ,quel que soit le type de tabagisme
- **Proposer** un accompagnement avec SN combinées dès la1 ere consultation

QUEL REMBOURSEMENT POUR LES SUBSTITUTS NICOTINIQUES ?

Depuis le 1er janvier 2019, les substituts nicotiniques sont remboursés à 65 % par l'Assurance Maladie (1). Le ticket modérateur peut être pris en charge par votre complémentaire santé.

Le remboursement de ces traitements a été simplifié car il n'est plus soumis à un plafonnement annuel (150 € par an auparavant), et **les pharmacies peuvent désormais pratiquer la dispense d'avance de frais pour ces produits**.

Consultez la Liste des substituts nicotiniques pris en charge par l'Assurance Maladie (PDF).

N'hésitez pas à demander conseil à un professionnel de santé.

Activité physique et sédentarité

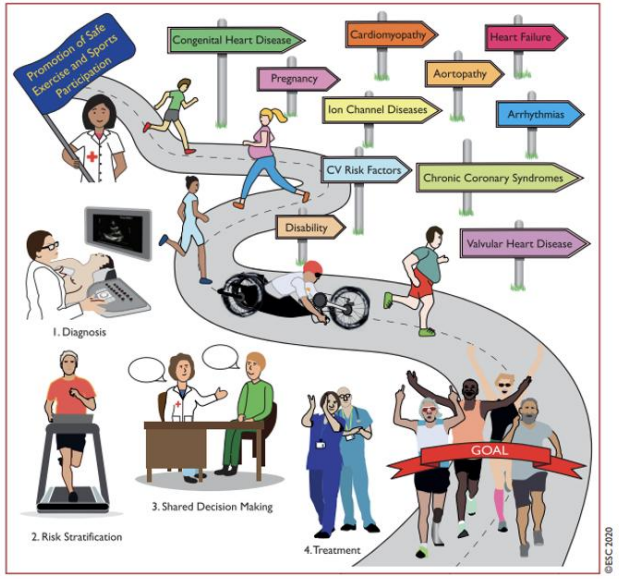


Figure Central illustration Moderate physical activity should be promoted in all individuals with cardiovascular disease. Appropriate risk stratification and optimal therapy are essential for providing exercise prescription for more vigorous activity. Individuals should be involved in the decision making process and a record of the discussion and exercise plan should be documented in the medical records.

Les bénéfices pour la santé de la pratique régulière d'une activité physique sont avérés, quels que soient l'âge et le sexe.

ESC European Society of Cardiology
European Heart Journal (2021) **42**, 17–96
doi:10.1093/eurheartj/ehaa605
ESC GUIDELINES

2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease

The Task Force on sports cardiology and exercise in patients with cardiovascular disease of the European Society of Cardiology (ESC)

4.3 Exercise and sports in ageing

Recommendations for exercise in ageing individuals

Recommendations	Class[a]	Level[b]
Among adults aged 65 years or older who are fit and have no health conditions that limit their mobility, moderate-intensity aerobic exercise for at least 150 min/week is recommended.[212,214,215]	I	A
In older adults at risk of falls, strength training exercises to improve balance and coordination on at least 2 days a week are recommended.[201,212,214,215]	I	B
A full clinical assessment including a maximal exercise test should be considered in sedentary adults aged 65 years or older who wish to participate in high-intensity activity.	IIa	C
Continuation of high- and very high-intensity activity, including competitive sports, may be considered in asymptomatic elderly athletes (master athletes) at low or moderate CV risk.	IIb	C

CV = cardiovascular.
[a]Class of recommendation.
[b]Level of evidence.

Table 6 Potential risks for older people during exercise

- Arrhythmias, increase in blood pressure, myocardial ischaemia
- Musculoskeletal injuries and fractures
- Muscle soreness or swollen joints
- Increased risk of falls and subsequent injuries

Table 8 Exercise activities for older people according to exercise type and intensity

Age-related moderate effort activities

- walking
- water aerobics
- ballroom and line dancing
- riding a bicycle on level ground or with few hills
- doubles tennis
- pushing a lawn mower
- canoeing
- volleyball

Age-related intense effort activities

- jogging or running
- aerobics
- swimming fast
- riding a bicycle fast or on hills
- singles tennis
- football
- hiking uphill
- energetic dancing
- martial arts

Muscle-strengthening activities

- carrying or moving heavy loads
- groceries activities that involve stepping and jumping
- dancing
- heavy gardening, such as digging or shovelling
- exercises that use your body weight for resistance, such as push-ups or sit-ups
- yoga
- pilates
- lifting weights

5. Exercise in clinical settings

EXERCISE PRESCRIPTION FOR THE MENOPAUSAL YEARS

Promoting and Enhancing Well-Being

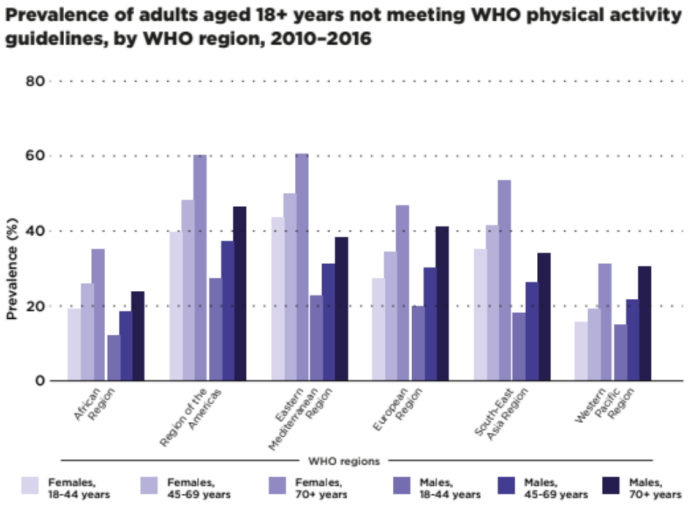
Perez, Kimberly S. M.A.; Garber, Carol Ewing Ph.D., FACSM, FAHA

Author Information

ACSM's Health & Fitness Journal 15(3):p 8-14, May 2011. | *DOI:* 10.1249/FIT.0b013e3182160f2f

week. The American College of Sports Medicine also recommends incorporating a variety of exercises such as aerobic, resistance, neuromotor or flexibility exercises during menopause (Perez & Garber, 2011). Statements from the International Menopause Association recommend at least 150 min of moderate-intensity aerobic activity and incorporating at least 2 or more days of strength/resistance training every week. These recommendations are in line with general adult physical activity guidelines, and it does not appear that menopause status affects these global exercise recommendations. As such, women during menopause can use these guidelines to set their weekly activity targets. Despite this, practitioners should ensure they are using a stepwise approach. Slowly increasing the workload and intensity to reduce exercise-related injuries may be particularly important in previously sedentary women (Mishra et al., 2011).

Inactivité physique chez la femme

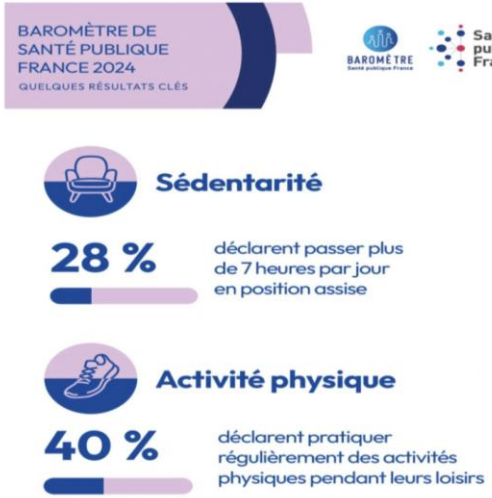


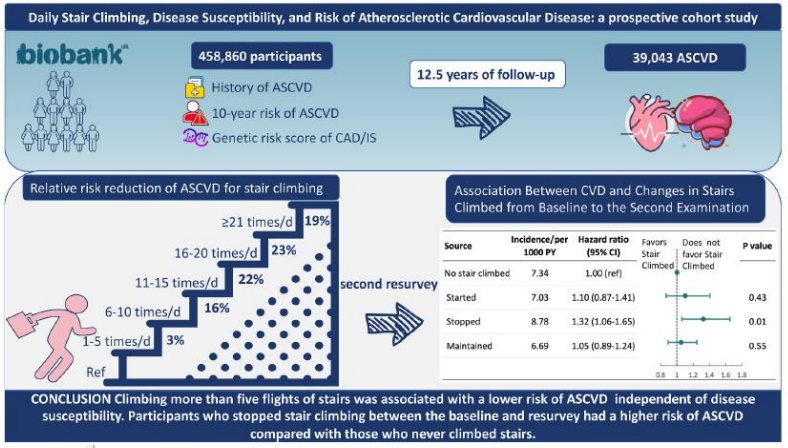
50 000 décès par an liés à la sédentarité/an.

Baisse de la capacité physique : marqueur actuel le plus puissant du risque de mortalité précoce;

Toute amélioration de 1 MET diminue le risque de mortalité de 17 % dans les deux sexes.

Sédentarité et inactivité physique





www.forumeuropeen.com

Findings: We included seven cohorts from Norway, Sweden, and the USA (n=40 327; 4895 deaths). Data from the UK Biobank (n=94 719; 3487 deaths) were analysed separately. A 5-min/day increase in MVPA in the least active participants might prevent 6·0% (95% CI 4·3-7·4) of all deaths. A similar increase in MVPA in all participants except the most active might prevent 10·0% (6·3-13·4) of all deaths. Reducing sedentary time by 30 min/day might prevent 3·0% (2·0-4·1) of all deaths in the high-risk approach and 7·3% (4·8-9·6) in the population-based approach. Results from the UK Biobank were of a smaller magnitude but still substantial-eg, reducing sedentary time by 30 min/day in all except the most active participants was associated with preventing 4·5% (2·8-6·1) of total deaths.

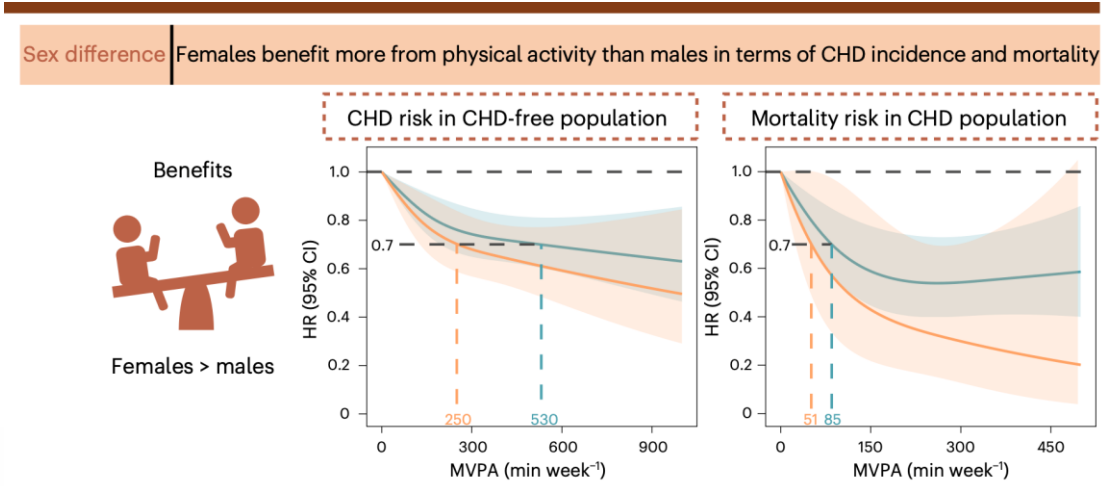
Interpretation: Small and realistic increases in MVPA of 5 min/day might prevent up to 6% of all deaths in a high-risk approach and 10% of all deaths in population-based approach. Reducing sedentary time by 30 min/day might prevent a smaller, but still meaningful, proportion of deaths in the two risk scenarios.

nature cardiovascular research

Article

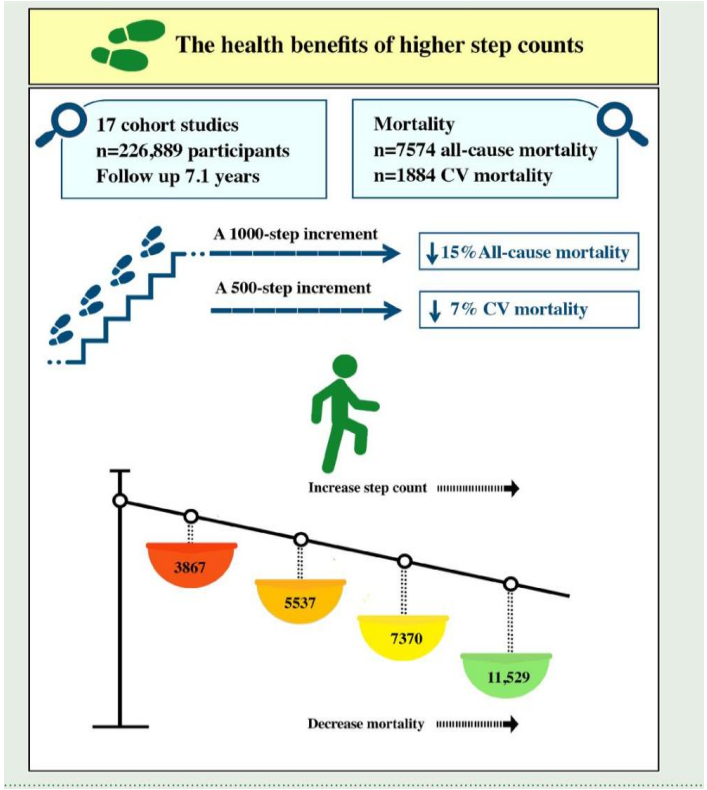
https://doi.org/10.1038/s44161-025-00732-z

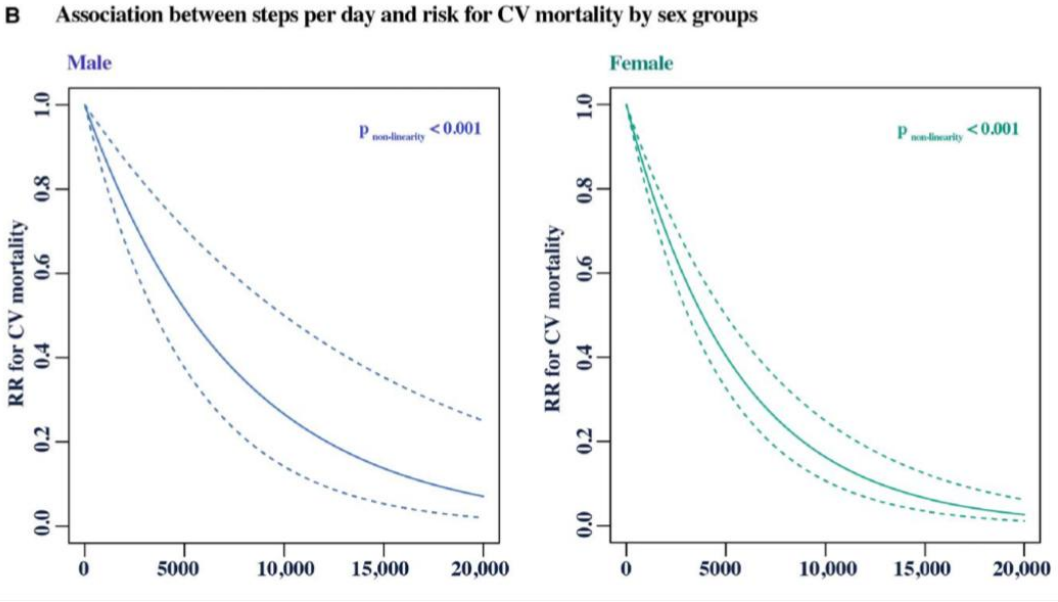
Sex differences in the association of wearable accelerometer-derived physical activity with coronary heart disease incidence and mortality



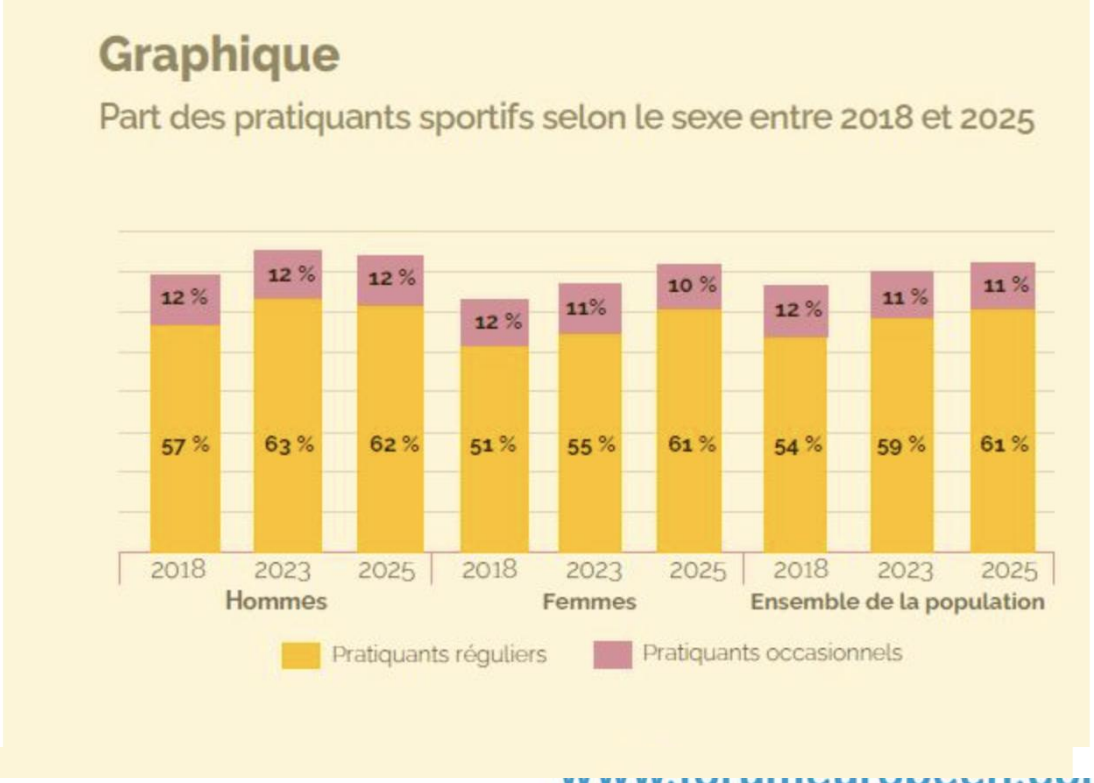
Bénéfice équivalent pour moins d'effort chez la femme

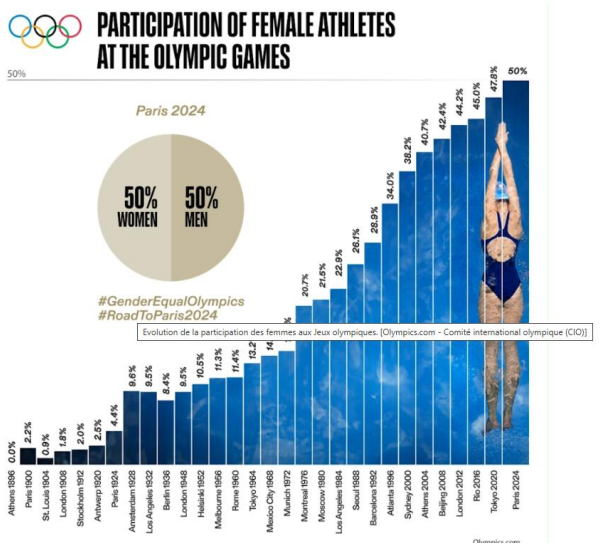
Banach M et al, Eur J Prev Cardiol 2023





La pratique sportive en France, après les JO de Paris 2024 :





Marqueurs de risque CV propres au sexe féminin et pathologies endocriniennes

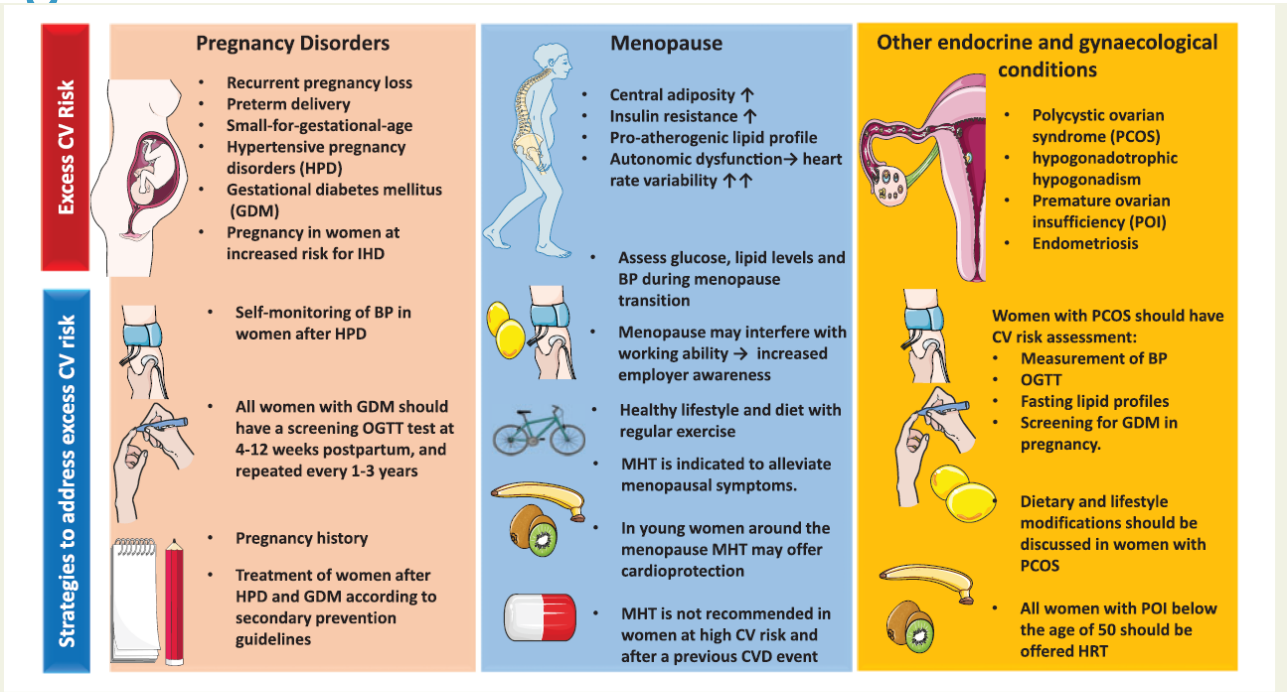


Figure 1 Female-specific risk factors and strategies for prevention. BP, blood pressure; CVD, cardiovascular disease; GDM, gestational diabetes mellitus; HPD, hypertensive pregnancy disorders; IHD, ischaemic heart disease; MHT, menopausal hormone therapy; OGTT, oral glucose tolerance test; PCOS, polycystic ovarian syndrome; POI, premature ovarian insufficiency.

Elder et al.American Journal Preventive of preventive Cardiology 2020

Age des 1ères règles

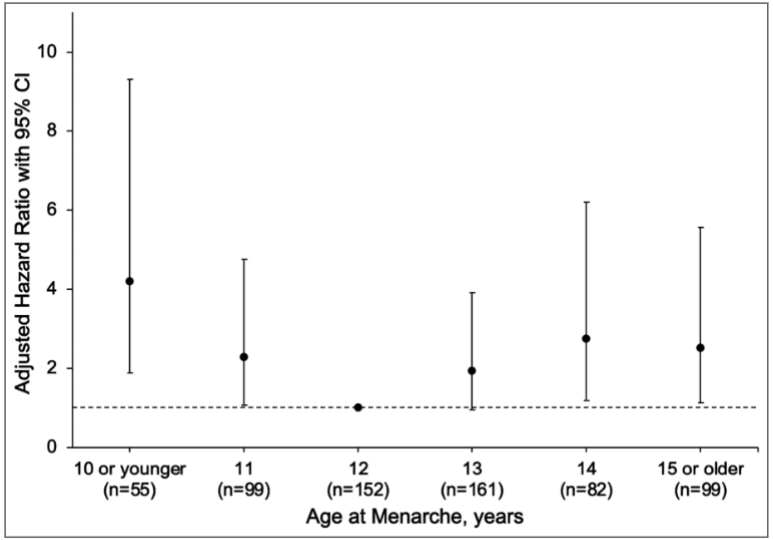


Figure 1. Adjusted relative hazard (with TET) and 95% CI of major adverse cardiac events (MACE) by age at menarche. TET indicates total estrogen time.

ORIGINAL RESEARCH

Age at Menarche and Risk of Cardiovascular Disease Outcomes: Findings From the National Heart Lung and Blood Institute-Sponsored Women's Ischemia Syndrome Evaluation

Julie J. Lee, MD, MPH; Galen Cook-Wiens, MS; B. Delia Johnson, PhD; Glenn D. Braunstein, MD; Sarah L. Berga, MD; Frank Z. Stanczyk, PhD; Carl J. Pepine, MD; C. Noel Bairey Merz, MD; Chrisandra L. Shufelt, MD, MS

BACKGROUND: Previous studies have reported an association between the timing of menarche and cardiovascular disease (CVD). However, emerging studies have not examined the timing of menarche in relation to role of estrogen over a lifetime and major adverse cardiac events (MACE).

METHODS AND RESULTS: A total of 648 women without surgical menopause undergoing coronary angiography for suspected ischemia in the WISE (Women's Ischemia Syndrome Evaluation) study were evaluated at baseline and followed for 6 years (median) to assess major adverse CVD outcomes. MACE was defined as the first occurrence of all-cause death, nonfatal myocardial infarction, nonfatal stroke, or heart failure hospitalization. Age at menarche was self-reported and categorized (≤10, 11, 12, 13, 14, ≥15 years) with age 12 as reference. Total estrogen time and supra–total estrogen time were calculated. Cox regression analysis was performed adjusting for CVD risk factors. Baseline age was 57.9 ± 12 years (mean ± SD), body mass index was 29.5 ± 6.5 kg/m^2, total estrogen time was 32.2 ± 8.9 years, and supra–total estrogen time was 41.4 ± 8.8 years. MACE occurred in 172 (27%), and its adjusted regression model was J-shaped. Compared with women with menarche at age 12 years, the adjusted MACE hazard ratio for menarche at ≤10 years was 4.53 (95% CI 2.13-9.63); and at ≥15 years risk for MACE was 2.58 (95% CI, 1.28-5.21).

CONCLUSIONS: History of early or late menarche was associated with a higher risk for adverse CVD outcomes. These findings highlight age at menarche as a potential screening tool for women at risk of adverse CVD events.

CLINICAL TRIAL REGISTRATION: URL: http://www.clinicaltrials.gov. Unique identifier: NCT00000554.

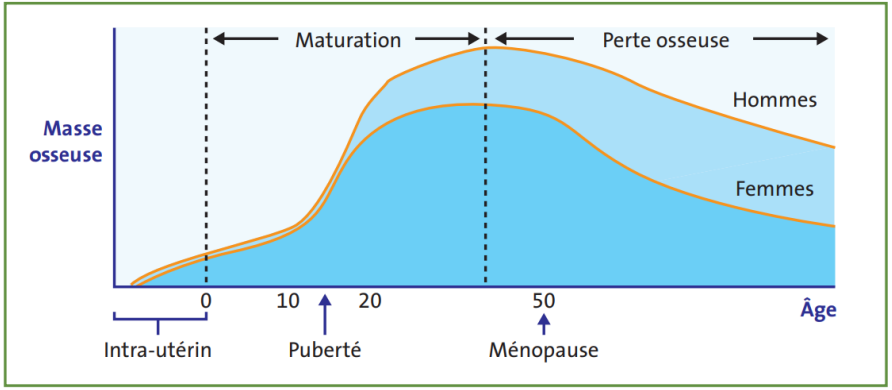


Fig. 1: Évolution de la masse osseuse au cours de la vie (d'après 5 Fordham J, 2004).

PMA

Failure of fertility therapy and subsequent adverse cardiovascular events

Jacob A. Udell MD MPH, Hong Lu PhD, Donald A. Redelmeier MD MSHSR

Cite as: *CMAJ* 2017 March 13;189:E391-7. doi: 10.1503/cmaj.160744

CMAJ Podcasts: author interview at https://soundcloud.com/cmajpodcasts/160744-res

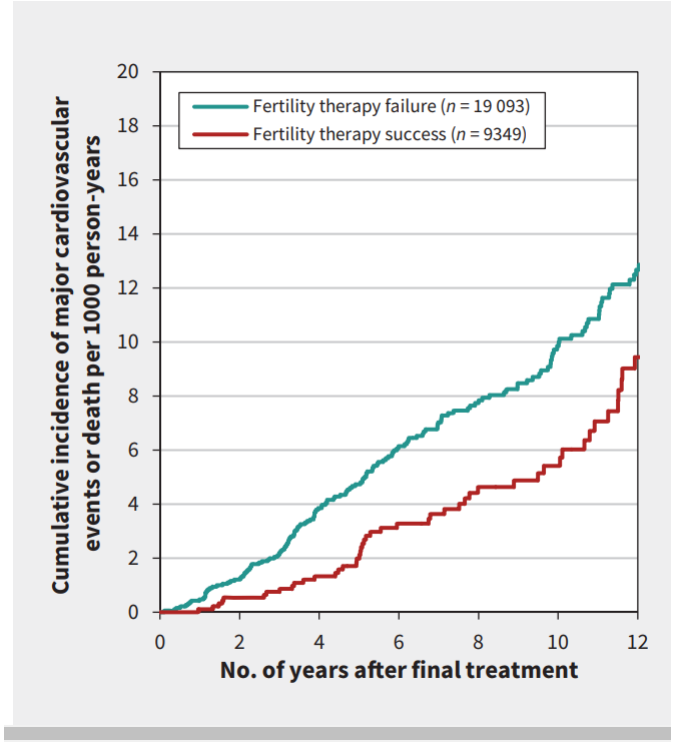
ABSTRACT

BACKGROUND: Infertility may indicate an underlying predisposition toward premature cardiovascular disease, yet little is known about potential long-term cardiovascular events following fertility therapy. We investigated whether failure of fertility therapy is associated with subsequent adverse cardiovascular events.

METHODS: We performed a population-based cohort analysis of women who received gonadotropin-based fertility therapy between Apr. 1, 1993, and Mar. 31, 2011, distinguishing those who subsequently gave birth and those who did not. Using multivariable Poisson regression models, we estimated the relative rate ratio of adverse cardiovascular events associated with fertility therapy failure, accounting for age, year, baseline risk factors, health care history and number of fertility cycles. The primary outcome was subsequent treatment for nonfatal coronary ischemia, stroke, transient ischemic attack, heart failure or thromboembolism.

RESULTS: Of 28 442 women who received fertility therapy, 9349 (32.9%) subsequently gave birth and 19 093 (67.1%) did not. The median number of fertility treatments was 3 (interquartile range 1–5). We identified 2686 cardiovascular events over a median 8.4 years of follow-up. The annual rate of cardiovascular events was 19% higher among women who did not give birth after fertility therapy than among those who did (1.08 v. 0.91 per 100 patient-years, $p < 0.001$), equivalent to a 21% relative increase in the annual rate (95% confidence interval 13%–30%). We observed no association between event rates and number of treatment cycles.

INTERPRETATION: Fertility therapy failure was associated with an increased risk of long-term adverse cardiovascular events. These women merit surveillance for subsequent cardiovascular events.



SOPK

- Prévalence : 10%
- Première cause d'infertilité
- Déséquilibre des hormones sexuelles, avec un taux élevé d'androgènes
- Dysfonction ovarienne
- Ovaires contenant de multiples follicules immatures visibles à l'échographie

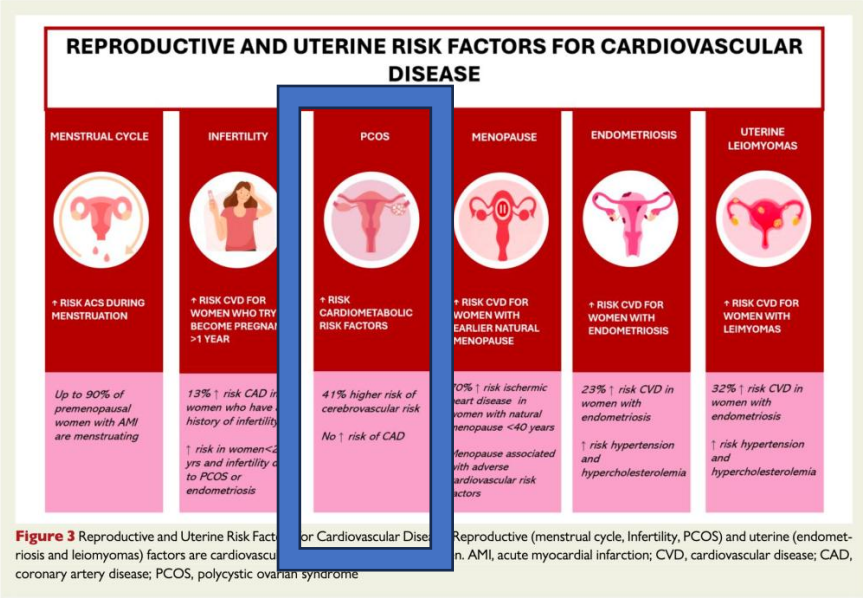


Figure 3 Reproductive and Uterine Risk Fact… or Cardiovascular Dise… Reproductive (menstrual cycle, Infertility, PCOS) and uterine (endometriosis and leiomyomas) factors are cardiovascu… n. AMI, acute myocardial infarction; CVD, cardiovascular disease; CAD, coronary artery disease; PCOS, polycystic ovarian syndrome

Endométriose

10% des femmes en âge de procréer à l'échelle mondiale

30% des causes d'infertilité

Développement de tissu semblable à la muqueuse utérine en dehors de l'utérus.

Peut apparaître dès les premières règles et durer jusqu'à la ménopause.

Inflammation et la formation de tissu cicatriciel dans la région pelvienne

Dysfonction endothéliale, augmentation du stress oxydatif, dysfonctionnement microvasculaire

Profil lipidique athérogène

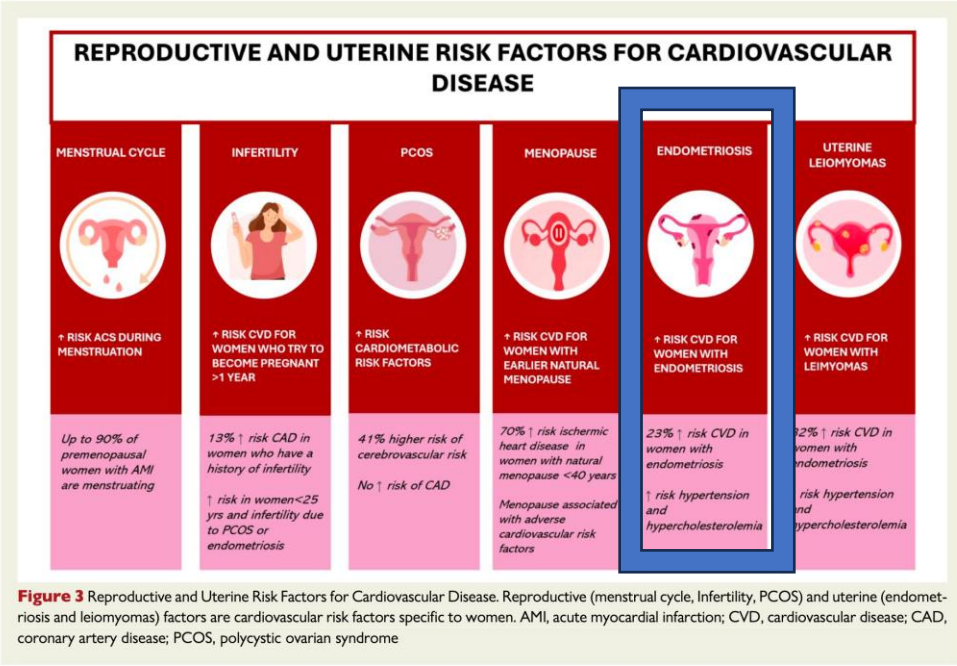


Figure 3 Reproductive and Uterine Risk Factors for Cardiovascular Disease. Reproductive (menstrual cycle, Infertility, PCOS) and uterine (endometriosis and leiomyomas) factors are cardiovascular risk factors specific to women. AMI, acute myocardial infarction; CVD, cardiovascular disease; CAD, coronary artery disease; PCOS, polycystic ovarian syndrome

Insuffisance Ovarienne Prématurée

Menopause

Age of natural menopause is inversely associated with CVD risk.[97,98] Women with premature ovarian insufficiency, defined as a natural menopause before the age of 40 years, have an approximately 1.7-fold increased risk of fatal or non-fatal IHD risk compared to women who had their menopause at 50–54 years of age.[98] However, it is uncer-

JAMA Cardiology | Original Investigation

Association of Age at Onset of Menopause and Time Since Onset of Menopause With Cardiovascular Outcomes, Intermediate Vascular Traits, and All-Cause Mortality

A Systematic Review and Meta-analysis

Taulant Muka, MD, PhD; Clare Oliver-Williams, PhD; Setor Kunutsor, MD, PhD; Joop S. E. Laven, MD, PhD; Bart C. J. M. Fauser, MD, PhD; Rajiv Chowdhury, MD, PhD; Maryam Kavousi, MD, PhD; Oscar H. Franco, MD, PhD

IMPORTANCE As many as 10% of women experience natural menopause by the age of 45 years. If confirmed, an increased risk of cardiovascular disease (CVD) and all-cause mortality associated with premature and early-onset menopause could be an important factor affecting risk of disease and mortality among middle-aged and older women.

OBJECTIVE To systematically review and meta-analyze studies evaluating the effect of age at onset of menopause and duration since onset of menopause on intermediate CVD end points, CVD outcomes, and all-cause mortality.

Editor's Note page 778 and Invited Commentary page 776

Author Audio Interview at jamacardiology.com

Supplemental content at jamacardiology.com

Âge <40ans

Origine génétique

0,01% des femmes de 20ans

0,1% des femmes de 30ans

1% des femmes de 40ans

THM

Grossesse et risque cardiovasculaire

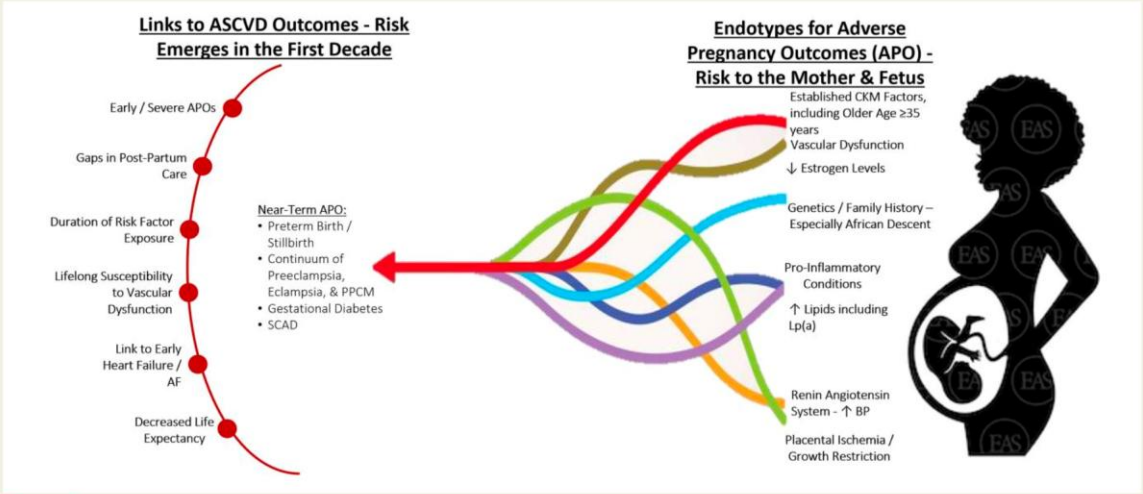


Figure 5 Pregnancy-related risk factors for cardiovascular disease. Emerging literature of Traditional and Sex-specific Risk Factors to improve CVD prevention, detection, diagnosis, and treatment for women. APO, Adverse Pregnancy Outcomes; PPCM, Peripartum Cardiomyopathy; AF, Atrial Fibrillation; CKM, Cardiovascular-Kidney Metabolic; Lp(a), Lipoprotein(a); BP, Blood Pressure; ASCVD, atherosclerotic cardiovascular disease; SCAD, spontaneous coronary artery dissection

THG et pré éclampsie

5-15% des femmes enceintes en France:

1-5% HTA chronique

5-6% HTA gestationnelle

1-4% pré-éclampsie

Prévalence en augmentation

Associé à 20% des décès maternels

Versant maternel cardiovasculaire

- <u>À long terme</u> : les THG sont associées à un **risque accru d'hypertension chronique et d'événements cardiovasculaires ou rénaux**
  - x 4 d'arrêt cardiaque ; x 2,5 de pathologies coronariennes ; x 2,2 de décès par pathologies cardiovasculaire
  - x 2,5 d'HTA ; x 5 de pathologie rénale terminale
  - x 1,8 d'AVC ; x 3 de démence vasculaire

Kristensen et al. BMJ. 2019
Vikse et al. NEJM. 2008
Basit et al. BMJ. 2018

- La physiopathologie de ces complications à long terme reste encore mal comprise.

*La prééclampsie est une **maladie vasculaire systémique de la grossesse** représentant un facteur de risque de survenue de pathologie cardiovasculaire à long terme*

Diabète gestationnel

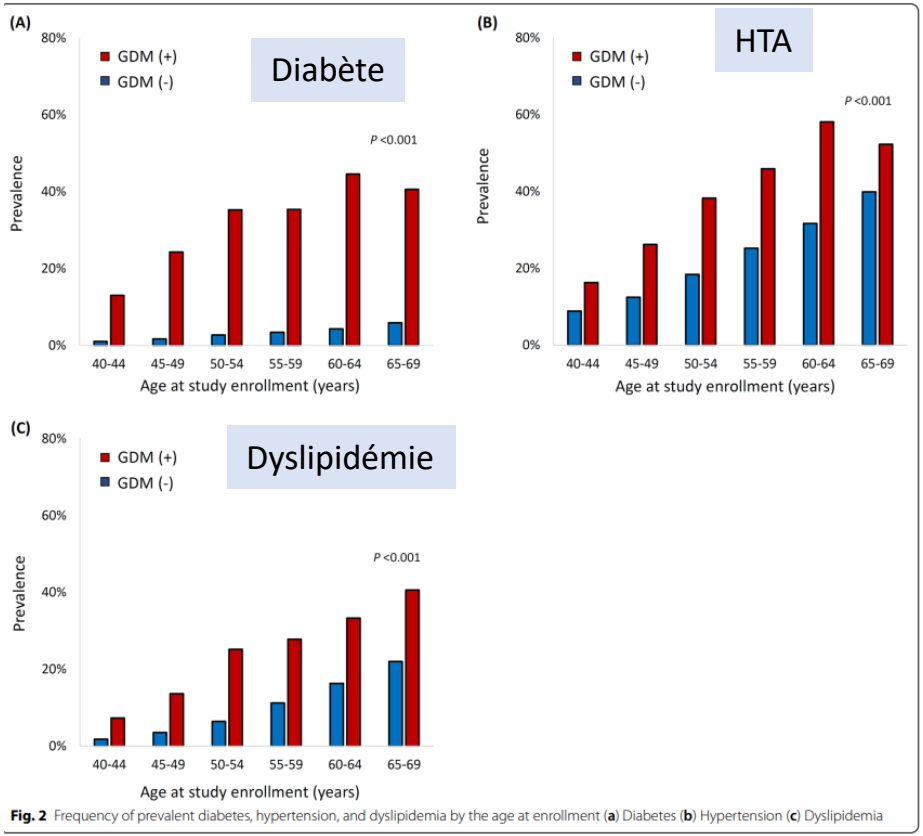


Fig. 2 Frequency of prevalent diabetes, hypertension, and dyslipidemia by the age at enrollment (**a**) Diabetes (**b**) Hypertension (**c**) Dyslipidemia

Morbidité CV

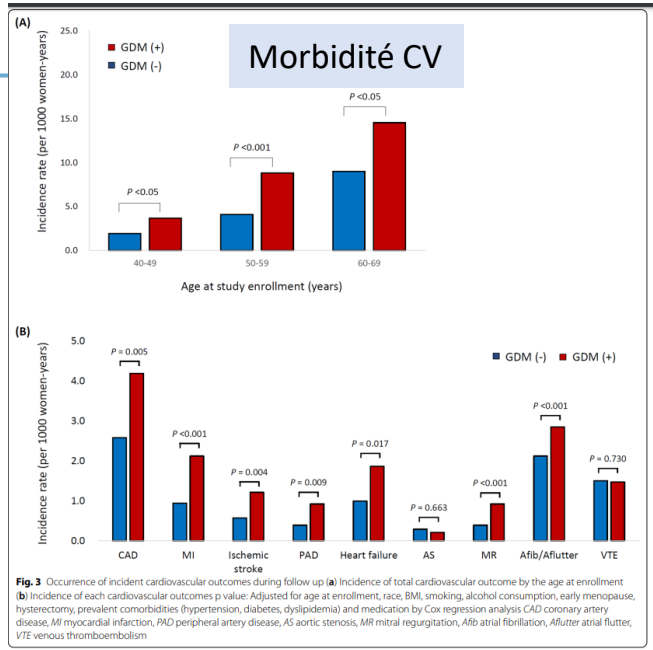


Fig. 3 Occurrence of incident cardiovascular outcomes during follow up (**a**) Incidence of total cardiovascular outcome by the age at enrollment (**b**) Incidence of each cardiovascular outcomes p value: Adjusted for age at enrollment, race, BMI, smoking, alcohol consumption, early menopause, hysterectomy, prevalent comorbidities (hypertension, diabetes, dyslipidemia) and medication by Cox regression analysis *CAD* coronary artery disease, *MI* myocardial infarction, *PAD* peripheral artery disease, *AS* aortic stenosis, *MR* mitral regurgitation, *Afib* atrial fibrillation, *Aflutter* atrial flutter, *VTE* venous thromboembolism

RESEARCH Open Access

Long-term cardiovascular outcomes of gestational diabetes mellitus: a prospective UK Biobank study

Seung Mi Lee[1,2,3], Manu Shivakumar[3], Ji Won Park[3,4], Young Mi Jung[1,2], Eun Kyung Choe[2,5], Soo Heon Kwak[6,7], Sohee Oh[8], Joong Shin Park[1,2], Jong Kwan Jun[1,2], Dokyoon Kim[3*†] and Jae-Seung Yun[9*†]

Abstract

Background: Previous studies showed that gestational diabetes mellitus (GDM) can be a risk factor for subsequent atherosclerotic cardiovascular disease. However, there is a paucity of information regarding diverse cardiovascular outcomes in elderly women after GDM. In the current study, we examined whether women with a history of GDM have an increased risk for long-term overall cardiovascular outcomes.

Methods: Among the UK participants, we included 219,330 women aged 40 to 69 years who reported at least one live birth. The new incidence of diverse cardiovascular outcomes was compared according to GDM history by multivariable Cox proportional hazard models. In addition, causal mediation analysis was performed to examine the contribution of well-known risk factors to observed risk.

Results: After enrollment, 13,094 women (6.0%) developed new overall cardiovascular outcomes. Women with GDM

Diabète gestationnel

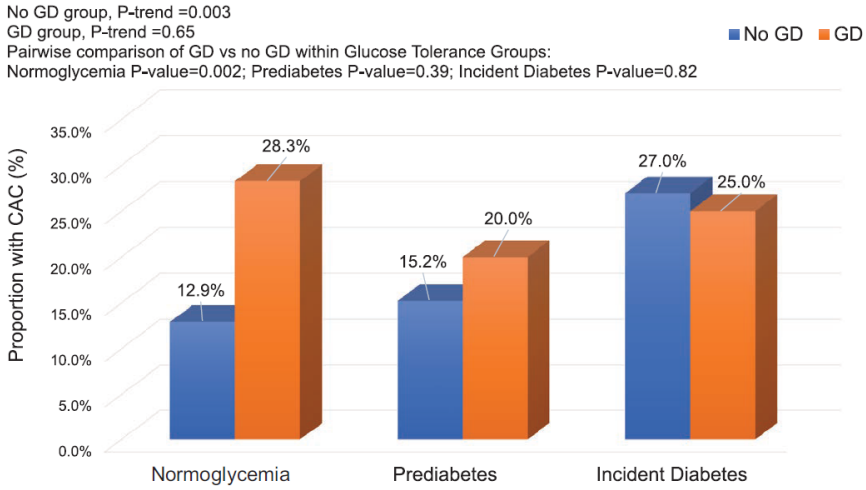
Circulation

ORIGINAL RESEARCH ARTICLE

Gestational Diabetes History and Glucose Tolerance After Pregnancy Associated With Coronary Artery Calcium in Women During Midlife

The CARDIA Study

Risque x2 calcifications coronaires malgré une glycémie normale 15ans après la grossesse compliquée de diabète gestationnel



GD Status:		No GD				GD			
Subsequent Glucose Tolerance Groups	Total	Normoglycemia	Prediabetes	Incident Diabetes	trend p-value†	Normoglycemia	Prediabetes	Incident Diabetes	trend p-value†
Entire Sample, N	1133	557	348	89		53	50	36	
Any CAC, N (%)	183 (16.2)	72 (12.9)	53 (15.2)	24 (27.0)	0.003	15 (28.3)	10 (20.0)	9 (25.0)	0.65

Pairwise comparisons chi-square test for GD vs no GD within each Glucose Tolerance Group: Normoglycemia, p-value=0.002; Prediabetes p-value=0.39; Incident Diabetes p-value =0.82,
† Cochran–Armitage test for trend.

La ménopause et risque cardiovasculaire

Interruption de la production ovarienne folliculaire. Diagnostic clinique: aménorrhée> 12M

Inévitable, une expérience individuelle propre pour chaque femme

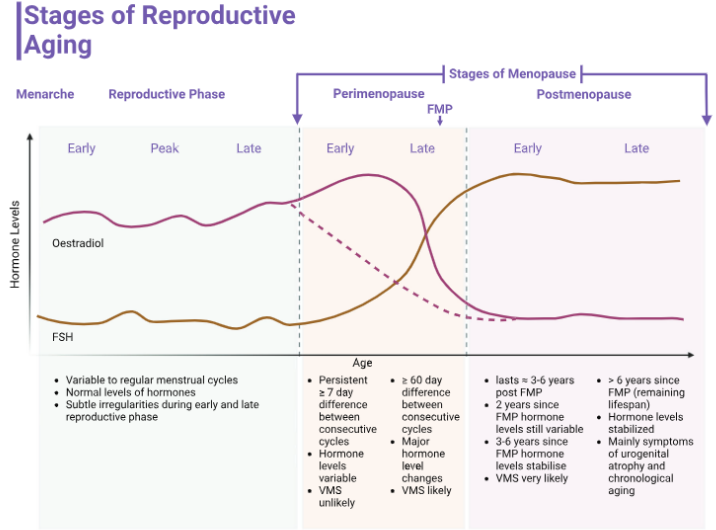


FIGURE 1 Stages of Reproductive Aging. Adapted from (Harlow et al., 2012) and (Tepper et al., 2012) with permissions from Oxford University Press on behalf of the Endocrine Society, Elsevier, Taylor & Francis, and Wolters Kluwer. Changes in oestradiol levels during perimenopause often present heterogeneously between women and although the transient increase during early perimenopause before a steep decline in late perimenopause is of one phenotype (depicted by a solid line), some women may experience a more progressive decline in oestradiol without the increase during early perimenopause (depicted by a dotted line). VMS: vasomotor symptoms, FMP: Final menstrual period, FSH: Follicle stimulating hormone. Created in BioRender. Shing, C. (2024) BioRender.com/u37t658.

500 000 femmes chaque année
Age moyen: 51 ans
Post -ménopause durera en moyenne 35ans

Oestradiol : power hormon

-reproduction

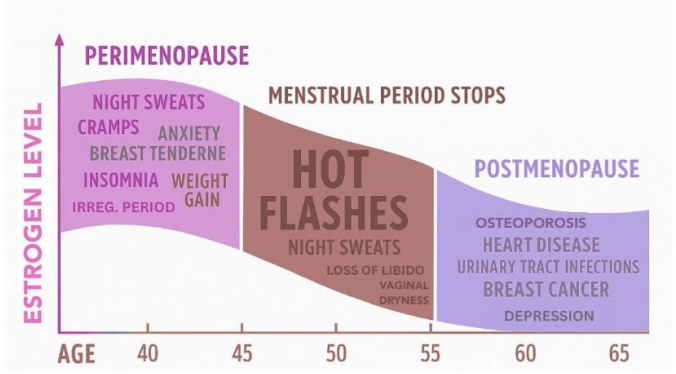
-santé CV

-densité osseuse et musculaire

-fonction cognitive

Stages of Ovarian Aging

(aka. Menopause)



Hormones drive **longevity**.

Pré-ménopause: 3-9 ans avec des symptômes mixtes et hétérogènes

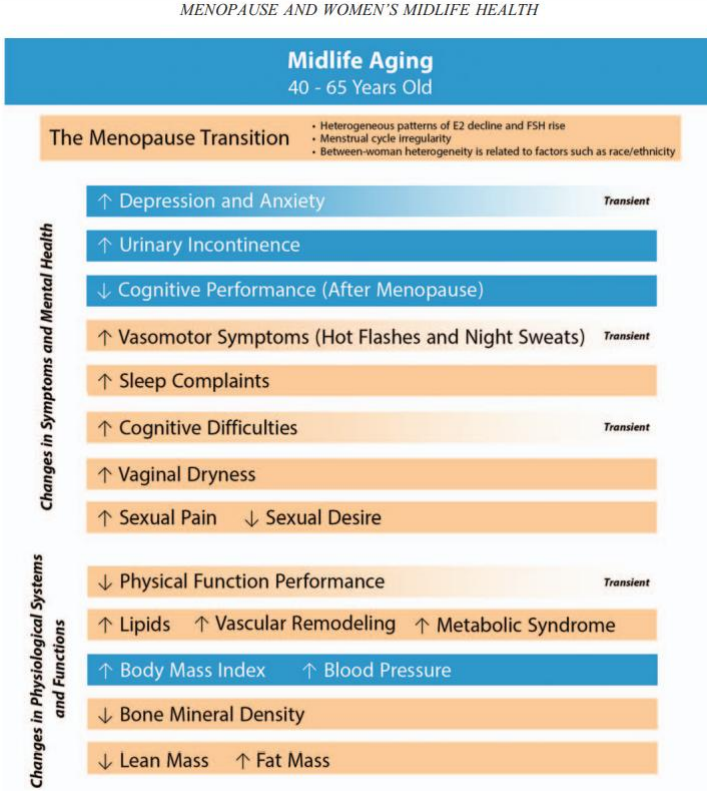
En consultation, préciser:

Age de sa ménopause

Syndrome climatérique

Education:

- risque CV: HTA, dyslipidémies
- conséquences du syndrome climatérique sur la santé CV
- Traitement/lifestyle



Menopause: The Journal of The North American Menopause Society
Vol. 26, No. 10, pp. 1213-1227
DOI: 10.1097/GME.0000000000001424

OPEN

INVITED REVIEW

The menopause transition and women's health at midlife: a progress report from the Study of Women's Health Across the Nation (SWAN)

Samar R. El Khoudary, PhD, MPH, FAHA,[1] Gail Greendale, MD,[2] Sybil L. Crawford, PhD,[3] Nancy E. Avis, PhD,[4] Maria M. Brooks, PhD,[1] Rebecca C. Thurston, PhD,[1,5,6] Carrie Karvonen-Gutierrez, PhD, MPH,[7] L. Elaine Waetjen, MD,[8] and Karen Matthews, PhD[1,5,6]

BVM et risque cardiovasculaire

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. Aslanidou Vlachos, MSc; Carol A. Derby, PhD; Elizabeth A. Jackson, MD, MPH; Maria Mori Brooks, PhD; Karen A. Matthews, PhD; Sioban Harlow, PhD; Hadine Joffe, MD, MSc; Samar R. El Khoudary, PhD, MPH

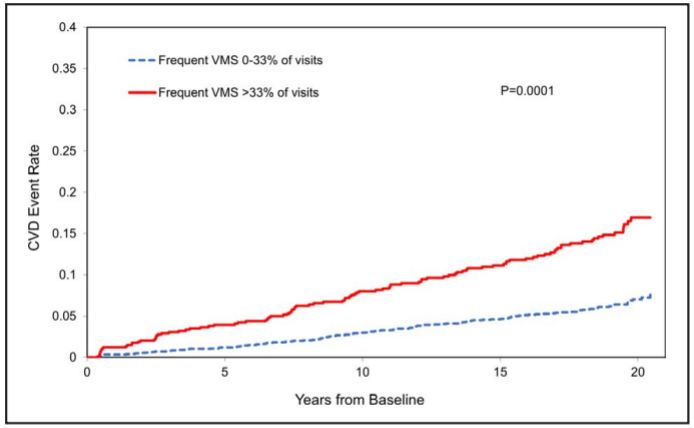


Figure 2. **Vasomotor symptoms (VMS) over the transition in relation to fatal and nonfatal cardiovascular disease (CVD) events, N=3083, 231 events.**

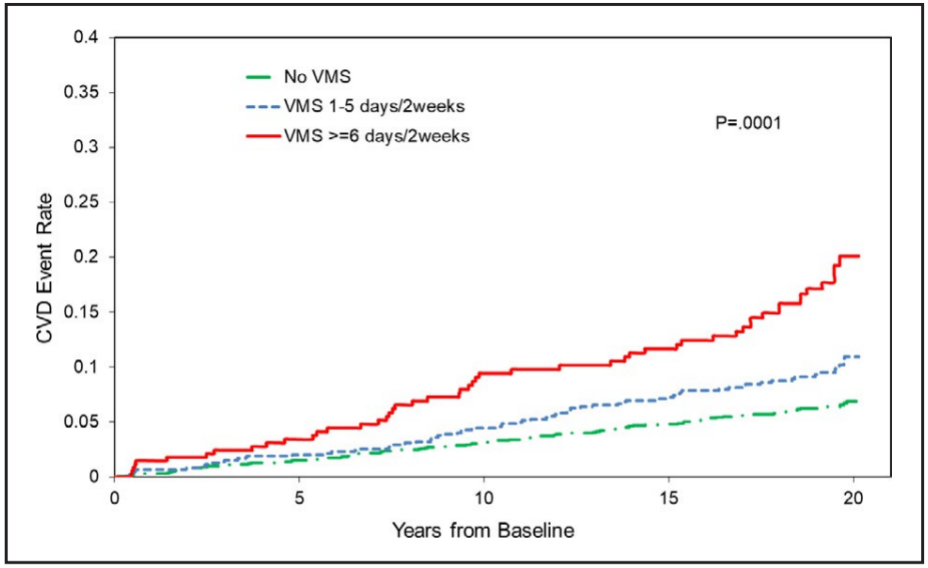
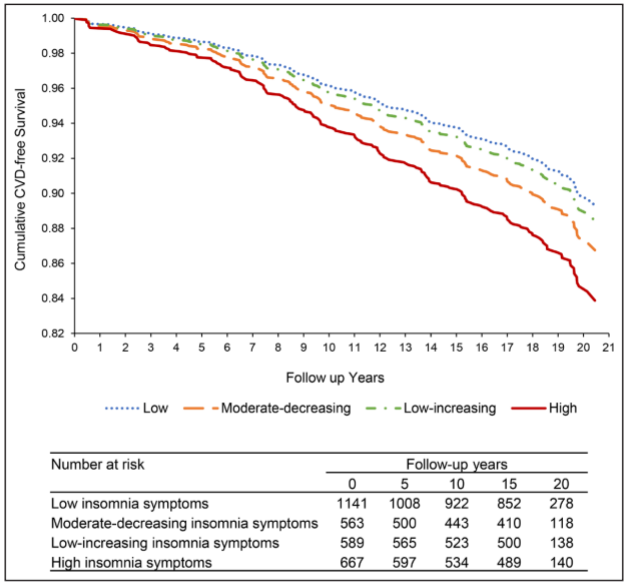


Figure 1. **Baseline vasomotor symptoms (VMS) in relation to fatal and nonfatal cardiovascular disease (CVD) events, N=3083, 231 events.**



Number at risk	Follow-up years				
	0	5	10	15	20
Low insomnia symptoms	1141	1008	922	852	278
Moderate-decreasing insomnia symptoms	563	500	443	410	118
Low-increasing insomnia symptoms	589	565	523	500	138
High insomnia symptoms	667	597	534	489	140

Figure 2. Relationship of trajectories of insomnia symptoms to incident CVD events (adjusted for site, age, race and ethnicity, education, and atherosclerotic CVD risk score).
CVD indicates cardiovascular disease.

Circulation. 2024;149:545–555. DOI: 10.1161/CIRCULATIONAHA.123.066491

Circulation

ORIGINAL RESEARCH ARTICLE

Trajectories of Sleep Over Midlife and Incident Cardiovascular Disease Events in the Study of Women's Health Across the Nation

Rebecca C. Thurston, PhD; Yuefang Chang, PhD; Christopher E. Kline, PhD; Leslie M. Swanson, PhD; Samar R. El Khoudary, PhD, MPH; Elizabeth A. Jackson, MD, MPH; Carol A. Derby, PhD

5. Menopause and Pregnancy

Differences between men and women in the prevalence of OSA decrease as age increases, largely as a result of a marked increase in the prevalence and severity of SDB in women after menopause [22, 46, 47]. Therefore, it has been suggested that female sex hormones have some sort of protective effect on upper airway patency and/or ventilatory drive [39]. The hormone progesterone is a known respiratory stimulant which increases chemoreceptor responses to hypercapnia and hypoxia and has been shown to increase upper airway muscle tone [48]. Progesterone levels decrease after menopause.

Review Article

Obstructive Sleep Apnea in Women: Specific Issues and Interventions

Alison Wimms,[1,2] Holger Woehrle,[1,3] Sahisha Ketheeswaran,[1] Dinesh Ramanan,[1] and Jeffery Armitstead[1]

[1] *ResMed Science Centre, Fraunhoferstraße 16, 82152 Planegg, Germany*
[2] *University of Sydney, Fisher Road, Sydney, NSW, Australia*
[3] *Sleep and Ventilation Center Blaubeuren, Lung Center Ulm, Ulm, Germany*

Correspondence should be addressed to Alison Wimms; alison.wimms@resmed.com

Received 27 May 2016; Revised 26 July 2016; Accepted 11 August 2016

HTA et ménopause

ESC European Society of Cardiology

European Heart Journal (2022) **43**, 4777–47
https://doi.org/10.1093/eurheartj/ehac470

Sex differences in arteri

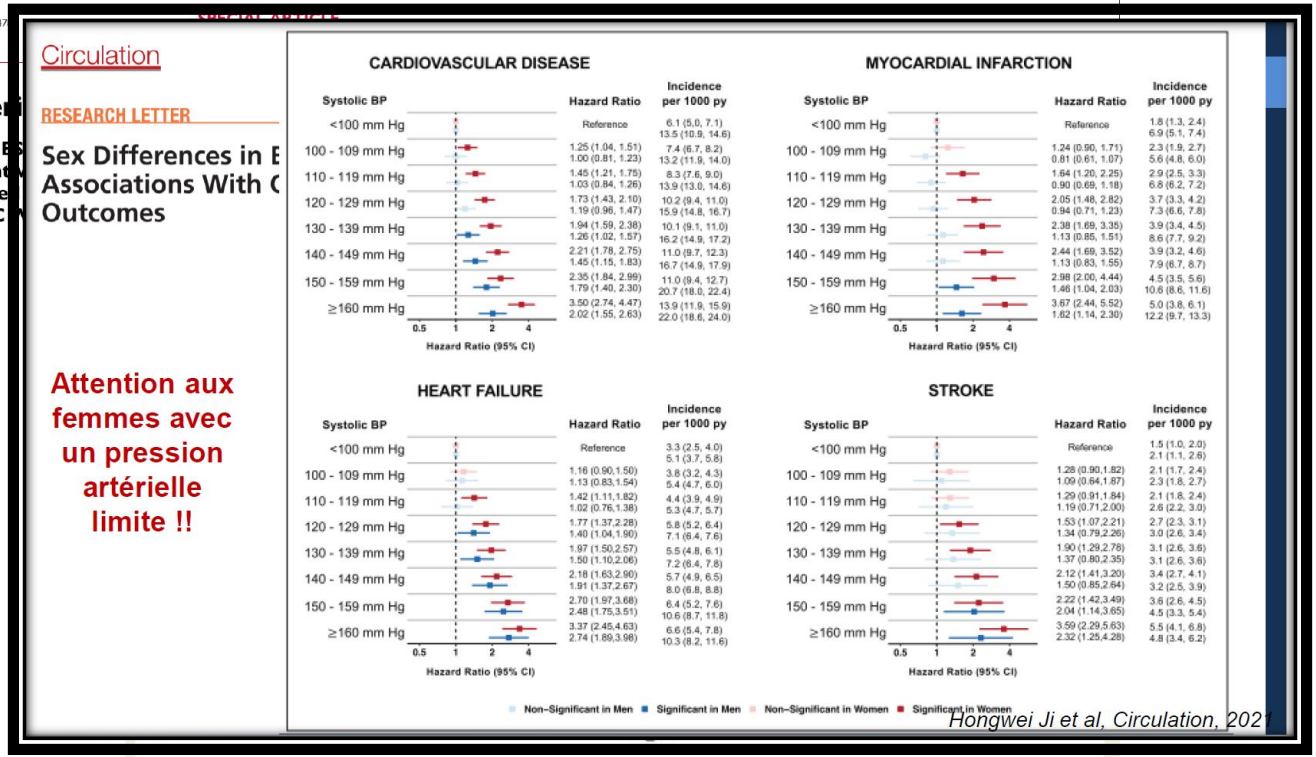
A scientific statement from the E European Association of Prevent Cardiovascular Nursing and Allie Cardiology Practice, and the ESC Pharmacotherapy

Circulation

RESEARCH LETTER

Sex Differences in E Associations With C Outcomes

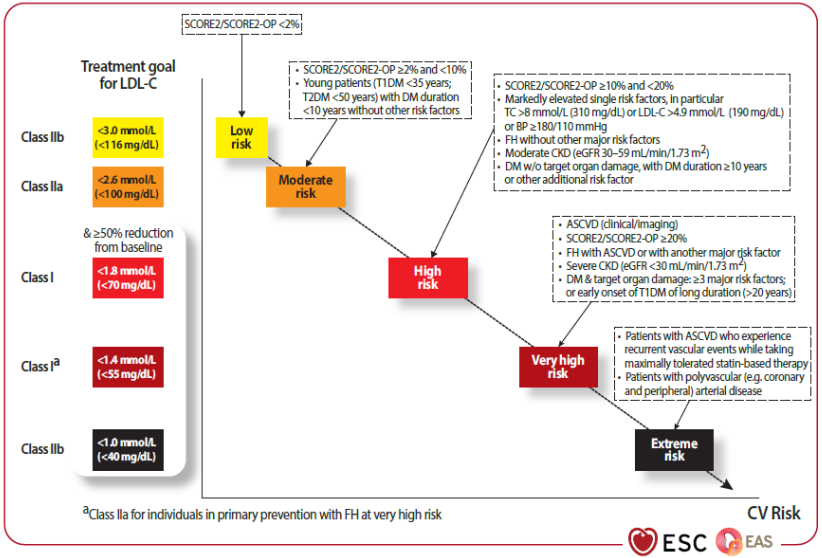
Attention aux femmes avec un pression artérielle limite !!

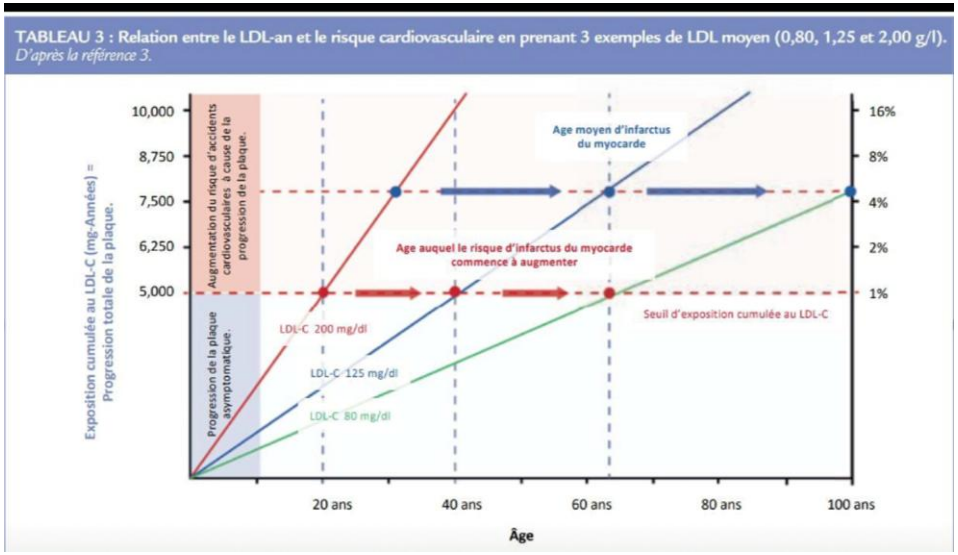


Hongwei Ji et al, Circulation, 2021

www.forumeuropeen.com

Dyslipidémies et ménopause





ESC European Society of Cardiology
European Heart Journal (2025) 00, 1–20
https://doi.org/10.1093/eurheartj/ehaf190
ESC GUIDELINES

2025 Focused Update of the 2019 ESC/EAS Guidelines for the management of dyslipidaemias

Life style et ménopause

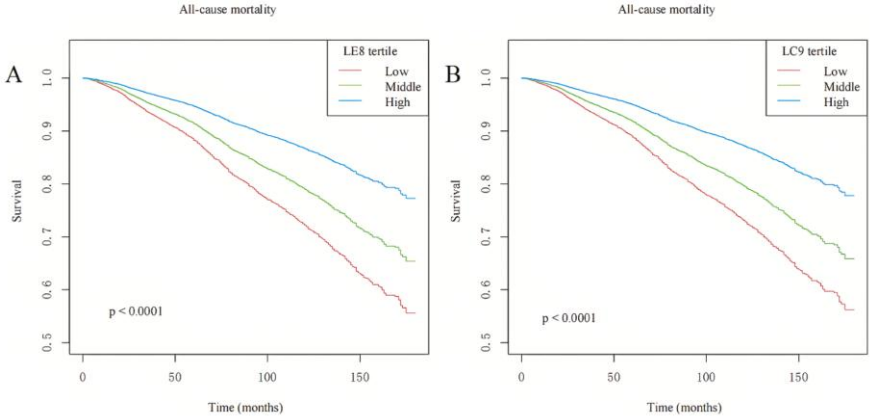
ABSTRACT

Objectives: This study examines the associations of scores on the Life's Essential 8 (LE8) and Life's Crucial 9 (LC9) scales with all-cause and cardiovascular mortality among postmenopausal women in the United States.

Methods: We analyzed data from 5499 postmenopausal women aged ≥20 years from the 2005–2014 National Health and Nutrition Examination Survey (NHANES), linked to mortality data through December 31, 2019. LE8 includes four behavioral and four clinical metrics; LC9 adds psychological well-being. Cox proportional hazards models were used to estimate hazard ratios (HRs) for all-cause mortality. Generalized additive models explored dose–response relationships. Kaplan–Meier curves and log-rank tests assessed survival differences across score tertiles.

Results: During a median follow-up of 64 months, 1154 deaths occurred (20.99 %), including 358 (31.0 %) from cardiovascular causes. Mean LC9 score was 63.7 (SD = 14.2). Each 1-SD increase in LE8 and LC9 scores was associated with a 27 % (HR = 0.73, 95 % CI: 0.68–0.78) and 30 % (HR = 0.70, 95 % CI: 0.66–0.76) lower risk of all-cause mortality, respectively. Compared with the lowest tertiles, the highest tertiles of LE8 and LC9 were associated with 50 % (HR = 0.50, 95 % CI: 0.43–0.59) and 51 % (HR = 0.49, 95 % CI: 0.41–0.57) lower risks. Dose–response curves showed inverse, approximately linear associations. Kaplan–Meier survival curves showed significantly higher survival probabilities among participants with higher LE8 and LC9 scores (log-rank $P <$ 0.0001).

Conclusions: Higher LE8 and LC9 scores were associated with lower all-cause and cardiovascular mortality among postmenopausal women.



Maturitas 203 (2025) 108753

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/maturitas

Original article

Associations of life's essential 8 and life's crucial 9 scores with all-cause and cardiovascular mortality: A population-based cohort study of postmenopausal women

Jun Wei [a,b,c], Ye Xu [a], Yang Liu [a,*]

[a] School of Basic Medical Sciences, Jilin Medical University, Jilin, 132013, China
[b] Edinburgh Medical School: Biomedical Sciences, College of Medicine and Veterinary Medicine, The University of Edinburgh, Edinburgh, UK
[c] Zhejiang University-University of Edinburgh Institute, Zhejiang University School of Medicine, Haining, 314400, China

ARTICLE INFO ABSTRACT

Education thérapeutique et THM

- N'augmente pas le risque de K
- Réduit le risque d'IDM
- N'augmente pas les risques d'AVC et de MTEV
- Diminue la mortalité globale toutes causes confondues pour les femmes <60 ans

The 2022 Hormone Therapy Position Statement of The North American Menopause Society Advisory Panel
Lien : https://www.menopause.org/docs/default-source/professional/nams-2022-hormone-therapy-position-statement.pdf


MÉDECINE

Les femmes sous-traitées pour la ménopause à cause d'une étude biaisée qui date d'il y a 20 ans

Par Anne Orenstein

Publié le mardi 18 octobre 2022 à 12h56 | 3 min | PARTAGER

Dédiaboliser le THM

Troubles climatériques altérant la qualité de vie

Prévention de l'ostéoporose et des fractures

Insuffisance ovarienne prématurée <40 ans (jusqu'à 50 ans)

Le plus tôt possible
Dose minimale efficace
Tant que durent les symptômes

Maladies hormono-dépendantes	Maladies vasculaires	Maladies métaboliques et autres situations cliniques
- En lien avec un cancer • Cancer du sein • Cancer de l'utérus (endomètre) • Cancer des ovaires - sans lien avec un cancer • Maladies auto-immunes (Lupus...) • Méningiome*	- Artérielle • Infarctus du myocarde • Accident vasculaire cérébral • Artériopathie oblitérante des membres inférieurs - Veineuse** • Maladie veineuse thromboembolique	- Métabolique • Augmentation sévère du cholestérol ou des triglycérides (lipides) non contrôlée • Diabète non contrôlé ou compliqué • Pathologie grave du foie ou du pancréas

Traitement validé : 17béta Estradiol par voie percutanée et progestérone naturelle micronisée (endomètre)


Disponible en ligne sur ScienceDirect www.sciencedirect.com
Elsevier Masson France EM|consulte www.em-consulte.com
Recommandations pour la pratique clinique
Les femmes ménopausées : recommandations pour la pratique clinique du CNGOF et du GEMVi (Texte court)
Postmenopausal women management: CNGOF and GEMVi clinical practice guidelines (Short version)

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Pour conclure

- Meilleure connaissance des spécificités: former, communiquer, agir.
- Meilleure connaissance des spécificités chez la femme, par les femmes elles-mêmes: éducation, prévention dès le plus jeune âge
- Poursuivre des registres et identifier les principales sources d'inégalité de pronostic
- Intégrer les spécificités féminines dans les scores de risque d'évaluation cardiovasculaire dans notre routine clinique.

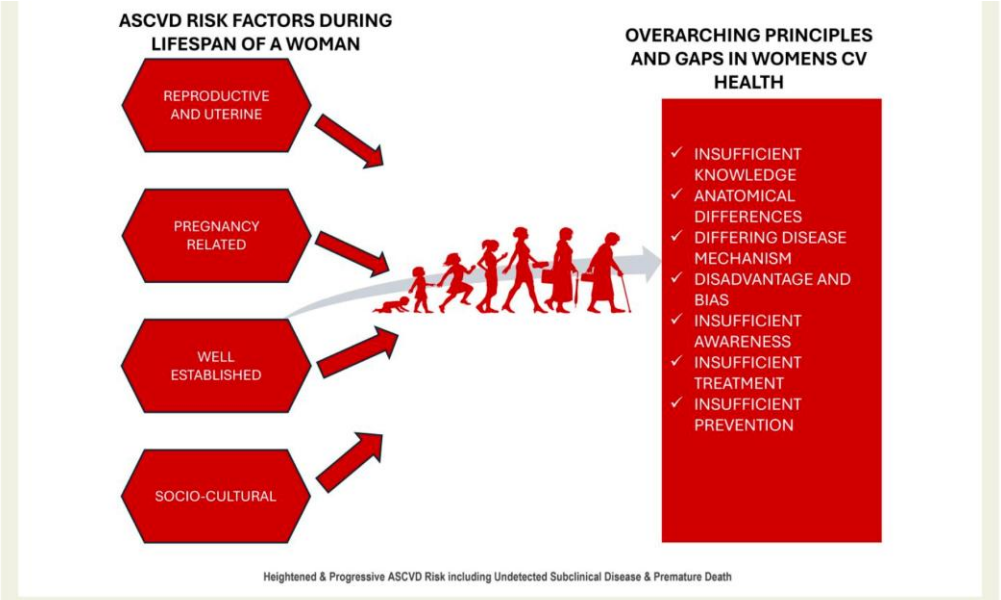
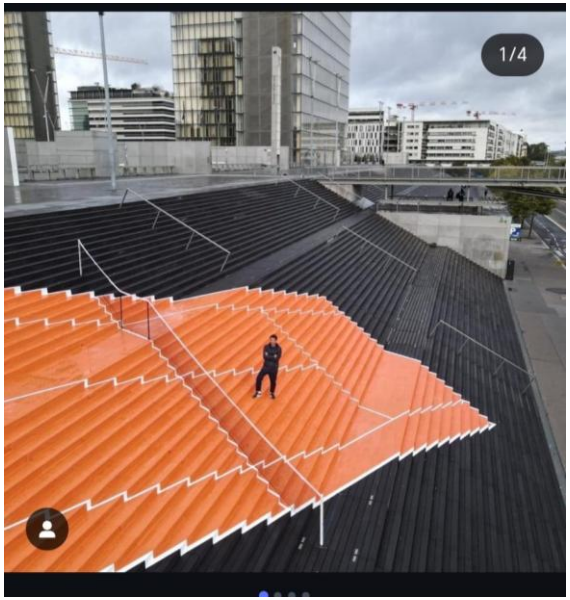
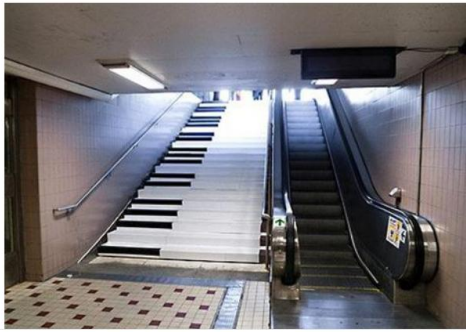


Figure 6 ASCVD risk factors during the lifespan of a woman and overarching principles and gaps in women's CV health. Heightened & Progressive ASCVD Risk, including Undetected Subclinical Disease & Premature Death. ASCVD, atherosclerotic cardiovascular disease; CV, cardiovascular

Faire de l'AP une priorité de « Lifestyle », quelque soit l'âge!



Laurent Perbos, « Aire » Nuit Blanche 2021, BNF



Remo Saraceni, Rennes 2013

Unité de cardiologie du sport, Clinique du sport Bordeaux-Mérignac: Laurent Chevalier, Laurent Gencel, Luc Corneloup, Jérémie Jaussaud, Stéphanie Clément-Guinaudeau, Thomas Pospiech, Clément Charon

Cas clinique

Mme A. 61 ans

1ère consultation cardiovasculaire: Sa sœur ainée vient de faire un IDM à 63ans

Profession : AS au CHU, mariée deux grands enfants

Vient de participer au trail d'Hautacam (70km).

INTERROGATOIRE APPROFONDI DE SES FDR

Tabagisme sevré à l'âge de 45ans estimé à 25AT

Une notion de dyslipidémie ancienne, familiale.

Un poids de 46Kg pour une taille de 163cm; IMC 17 Kg/m²

50km de CAP/semaine

- Pré-éclampsie pour la 1ere grossesse à l'âge de 26ans
- ATCD gynéco-endoc: 0
- Ménopause: 46ans, pas de THM
- Syndrome climatérique marqué persistant: BVM, troubles du sommeil

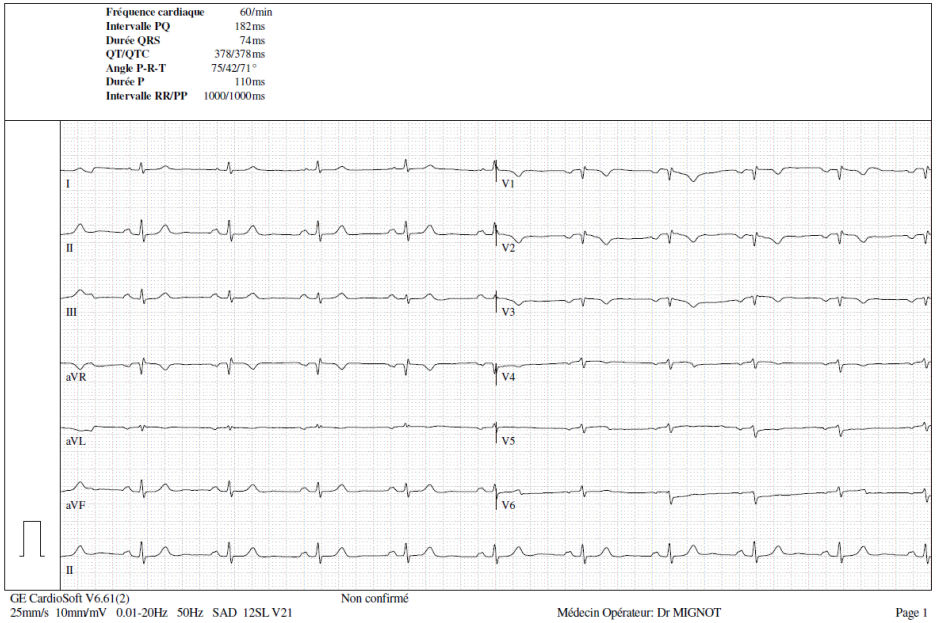
Examen clinique, ECG et EAL

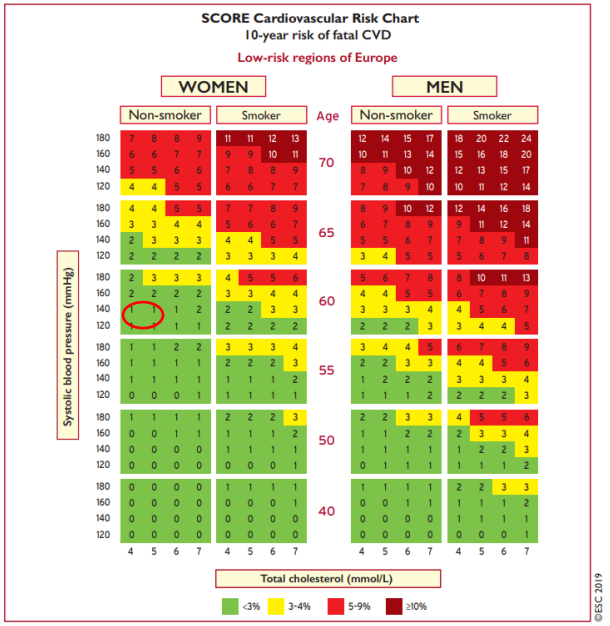
PA: privilégier 3 mesures au repos après 10min au calme:

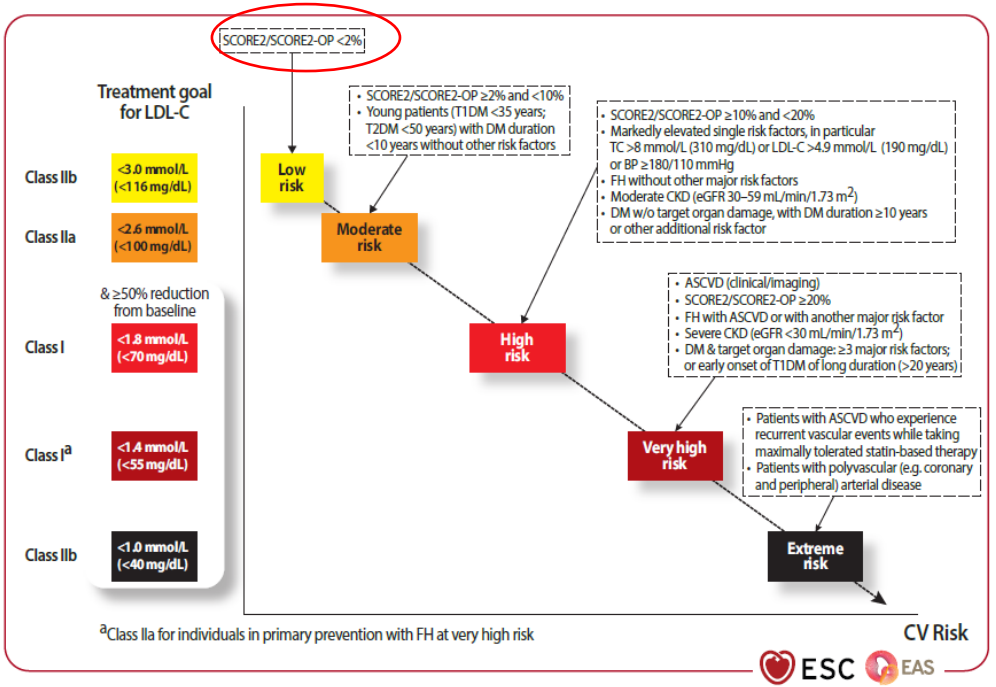
148/74, 152/88, 141/89

Pas de souffle cardiaque ni arythmie

EAL: CT 2,6 g/ LDL 1,83g/l, HDL 0,64g/l TG 0,88g/l







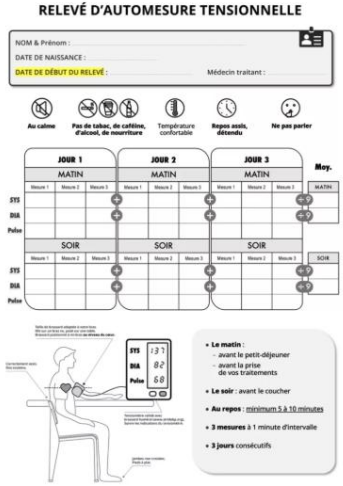
Quid d'un score prenant en compte les autres FDRCV ? Quel est son « vrai » risque CV?

Table 4 Intervention strategies as a function of total cardiovascular risk and untreated low-density lipoprotein cholesterol levels

Total CV risk	Untreated LDL-C levels					
	<1.4 mmol/L (<55 mg/dL)	1.4 to <1.8 mmol/L (55 to <70 mg/dL)	1.8 to <2.6 mmol/L (70 to <100 mg/dL)	2.6 to <3.0 mmol/L (100 to <116 mg/dL)	3.0 to <4.9 mmol/L (116 to <190 mg/dL	≥4.9 mmol/L (≥190 mg/dL)[a]
Low	Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle modification, consider adding drug if uncontrolled	N/A[a]
Moderate	Lifestyle advice	Lifestyle advice	Lifestyle advice	Lifestyle modification, consider adding drug if uncontrolled	Lifestyle modification, consider adding drug if uncontrolled	N/A[a]
High	Lifestyle advice	Lifestyle advice	Lifestyle modification, consider adding drug if uncontrolled	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention
Very high: primary prevention	Lifestyle modification, consider adding drug	Lifestyle modification, consider adding drug	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention
Very high: secondary prevention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention	Lifestyle modification and concomitant drug intervention

CV, cardiovascular; LDL-C, low-density lipoprotein cholesterol; N/A, not applicable.
[a]In individuals with untreated LDL-C levels ≥4.9 mmol/L, total CV risk is already at least high (*Table 3*).

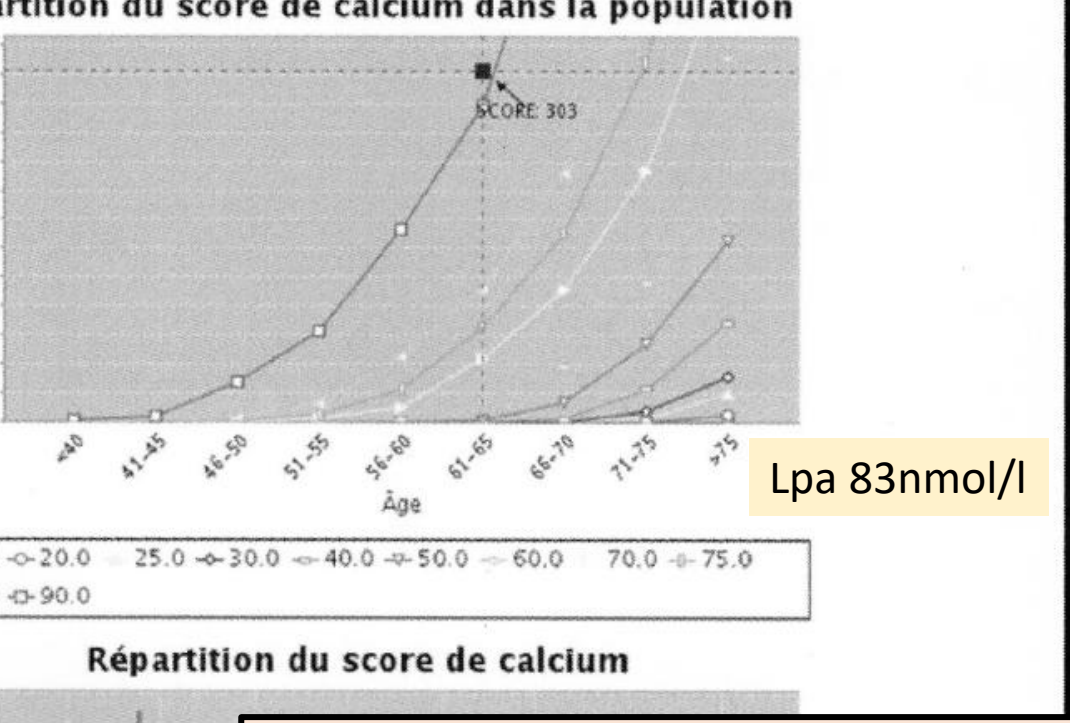
Stratification ciblée complémentaire

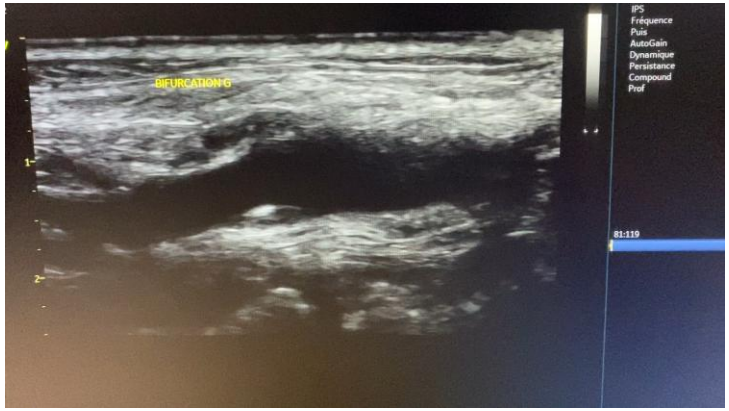


Recommendations for cardiovascular imaging for risk assessment of atherosclerotic cardiovascular disease

Recommendations	Class[a]	Level[b]
Arterial (carotid and/or femoral) plaque burden on arterial ultrasonography should be considered as a risk modifier in individuals at low or moderate risk.[29,30]	IIa	B
CAC score assessment with CT should be considered as a risk modifier in the CV risk assessment of asymptomatic individuals at low or moderate risk.[14–16,24,26]	IIa	B

CAC = coronary artery calcium; CT = computed tomography; CV = cardiovascular.
[a]Class of recommendation.
[b]Level of evidence.





Lpa 83nmol/l

- Rectification du niveau de risque en risque élevé
- Arguments forts pour la prescription d'un traitement (statine)
- Test ischémique (?)