

EVALUATION ET PREVENTION DU RISQUE CARDIOVASCULAIRE DU PATIENT DIABETIQUE EN 2026

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Diabetes: not « CAD – equivalent »

- ▶ Swedish registry – case control study and follow-up 5.7 yrs
- ▶ 271,174 pts with diabetes & 1,355,870 controls matched for age & sex

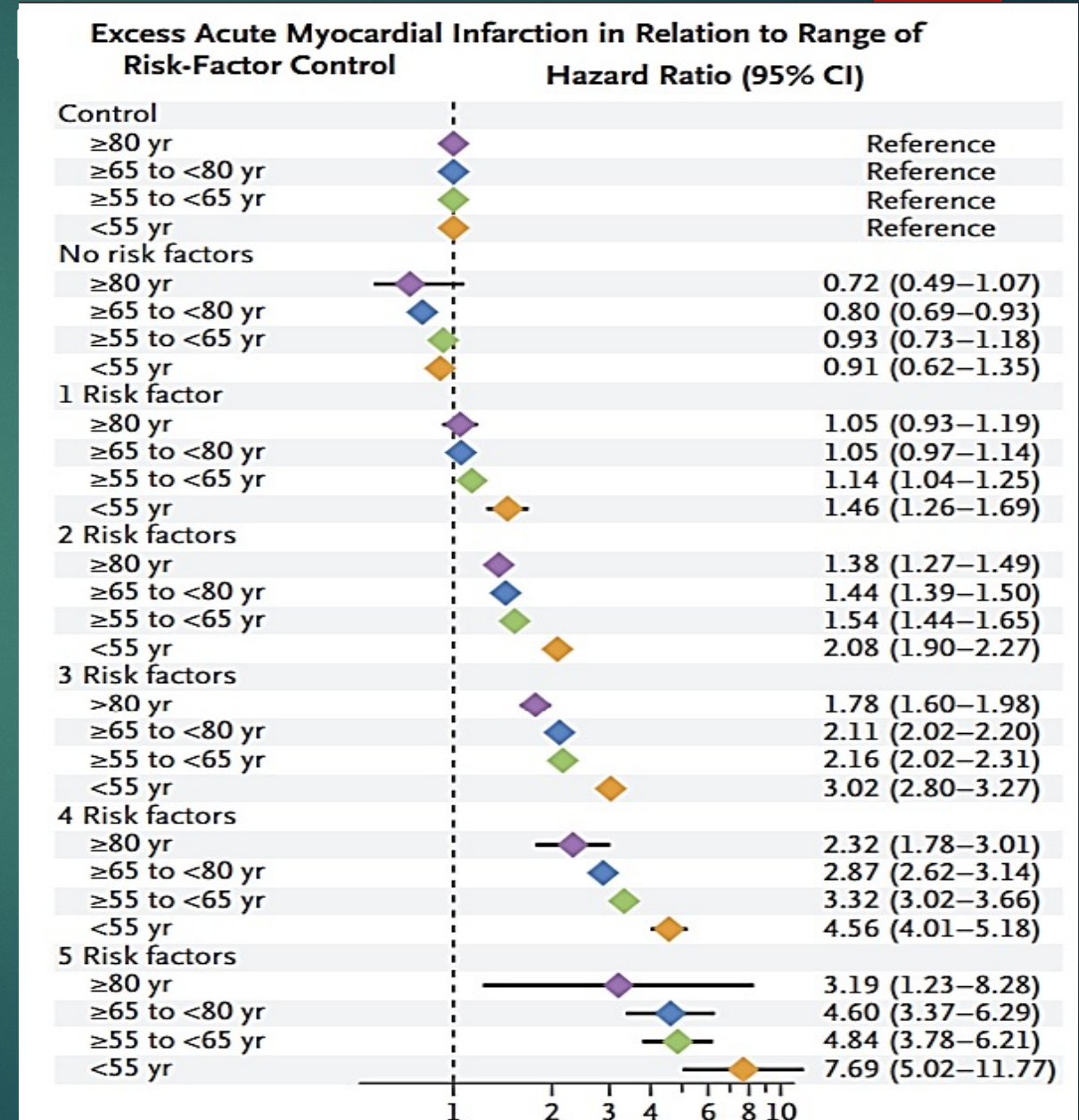
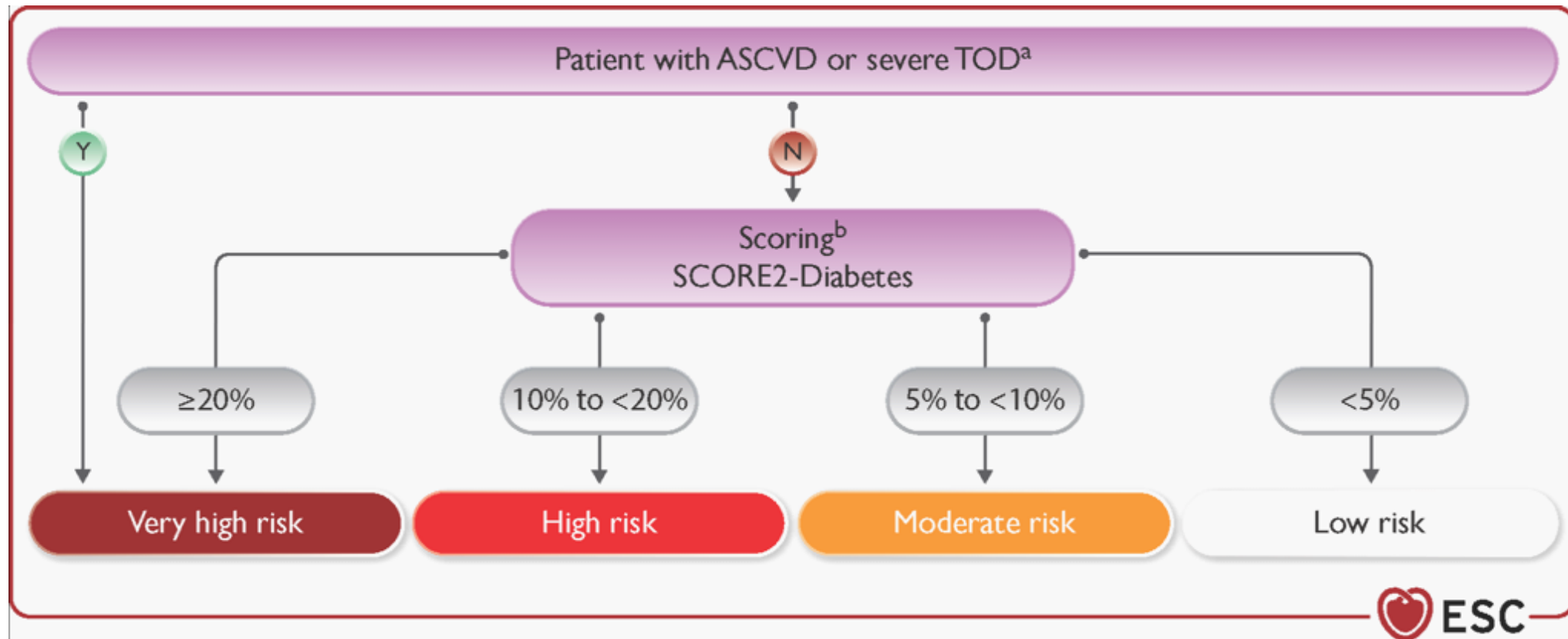


Figure 3

Cardiovascular risk categories in patients with type 2 diabetes



Cardiovascular risk assessment in diabetes

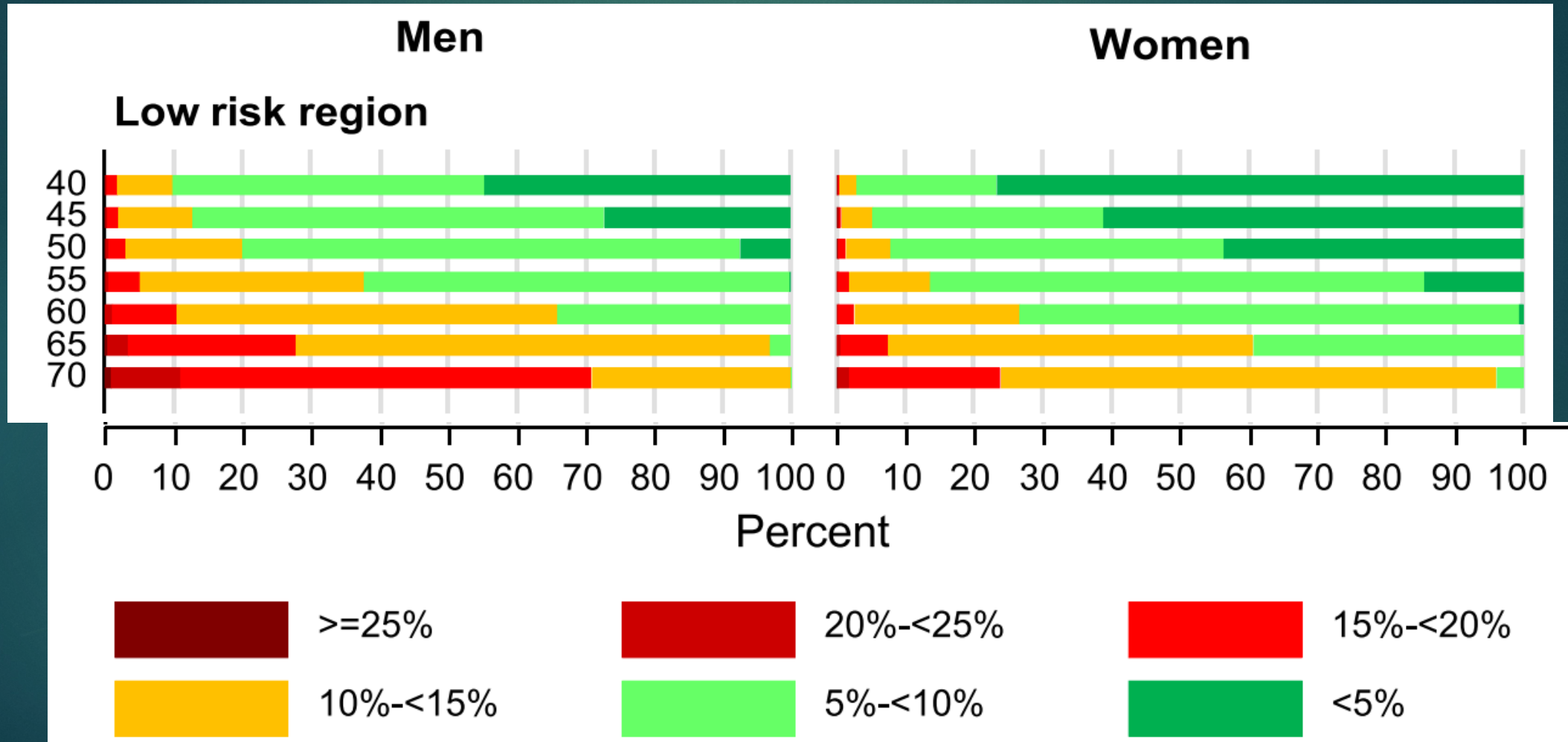
In patients with T2DM without symptomatic ASCVD or severe TOD, it is recommended to estimate 10-year CVD risk via SCORE2-Diabetes.

I

B

T2D risk distribution in low-risk countries (e.g. France)

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KDIGO chronic kidney disease staging by GFR and urinary albumin-to-creatinine ratio categories with colour chart for risk of initiation of maintenance kidney replacement therapy

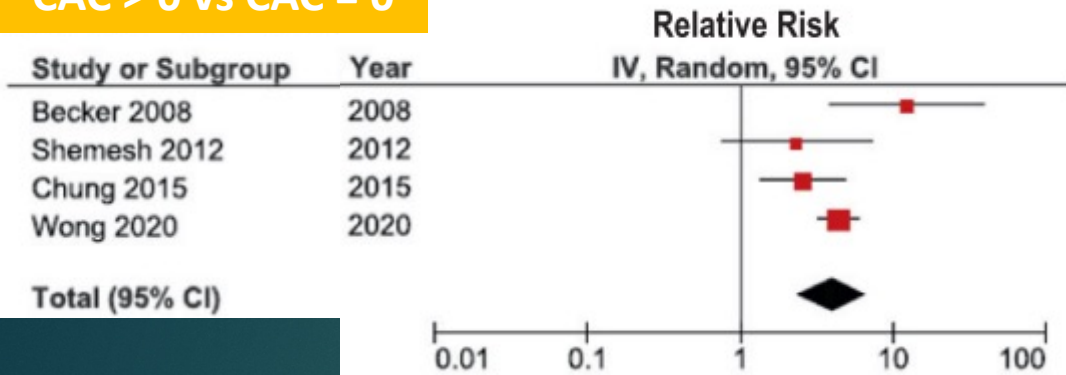
	Albuminuria stage		
eGFR stage (mL/min/1.73m ²)	A1 <3 mg/mmol (<30 mg/g)	A2 3–30 mg/mmol (30–300 mg/g)	A3 >30 mg/mmol (>300 mg/g)
G1 (≥90)			
G2 (60–89)			
G3a (45–59)			
G3b (30–44)			
G4 (15–29)			
G5 (<15)			

Failure of obstructive CAD screening

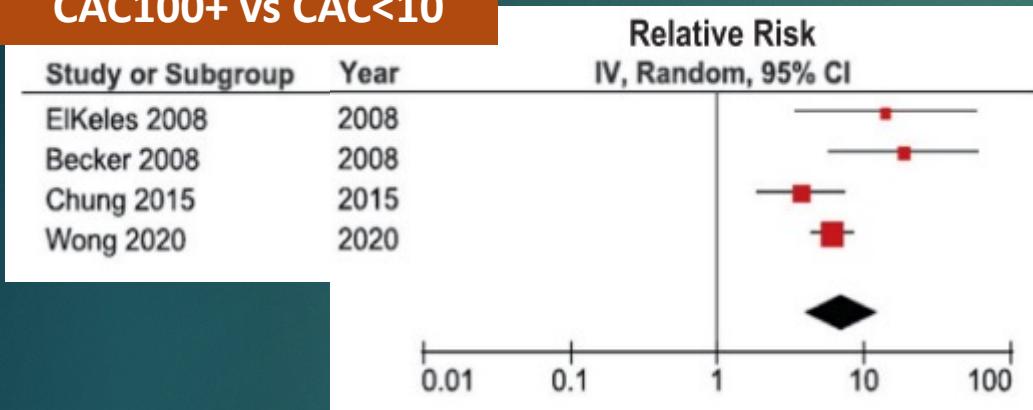
Overview of randomized controlled trials

Study/author	Faglia et al. ⁶⁹	DIAD ⁶⁸	DYNAMIT ⁶⁴	FACTOR-64 ⁶⁷	DADDY-D ⁷⁰
Year of publication	2005	2009	2011	2014	2015
Patients (n)	141 (+1) ^a	1123	615	899	520
Inclusion criteria	T2DM	T2DM	T2DM	T1DM or T2DM	T2DM
	45–76 years	50–75 years	50–75 years	♂ aged ≥50 years/ ♀ aged ≥55 years, DM for ≥3 years	50–75 years
	≥2 other CVRFs		≥2 other CVRFs	♂ aged ≥40 years/ ♀ aged ≥45 years, DM for ≥5 years	CV risk ≥10%
					Sinus rhythm
					Able to do EET
Mean age (years)	60.1	60.8	63.9	61.5	61.9
Male sex (%)	55.6	53.5	54.5	52.2	80.0
Screening test	EET and SE	MPI	EET or MPI	CTCA and CAC score	EET
Positive screening test (%)	21.1	5.9 moderate or large defects	21.5 positive or uncertain	11.9 moderate; 10.7 severe	7.6
Treatment strategy	ICA and cardiac follow-up if any test was positive	At the referring physician's discretion	According to the cardiologist's decision	Recommendation based on stenosis severity and CAC score	ICA if EET positive
ICA performed after positive test (%)	93.3	15.2	55.9	47.3	85.0
Mean follow-up (years)	4.5	4.8	3.5	4.0	3.6
Annual rate of major CEs (%)	1.9	0.6	1.0	0.8	1.4
Main results of screening	Significant ↓ of major and all CEs	Non-significant ↓ of major CEs	Non-significant ↓ of MI; no effect on combined CEs	Non-significant ↓ of combined CEs	Non-significant ↓ of major CEs, but significant ↓ in those aged >60 years

CAC > 0 vs CAC = 0



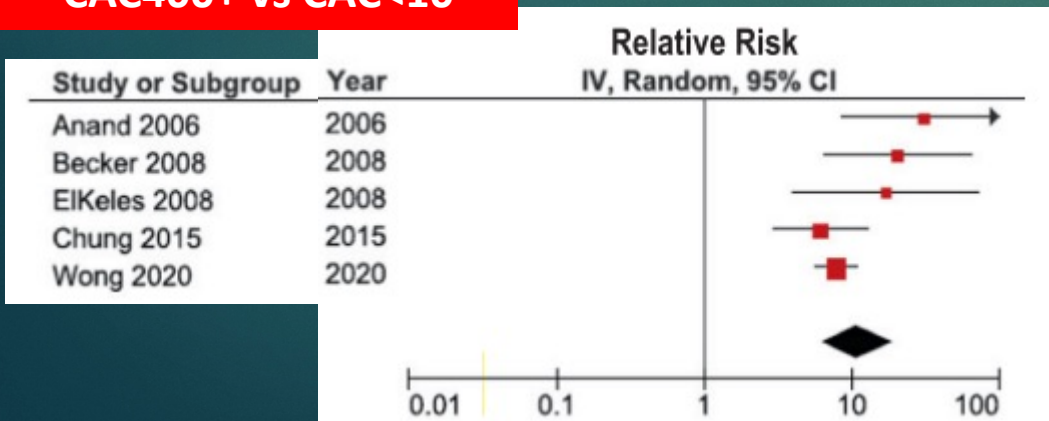
CAC100+ vs CAC<10



x4,0 [2,3-6,0]

x7,1 [4,0-12,7]

CAC400+ vs CAC<10



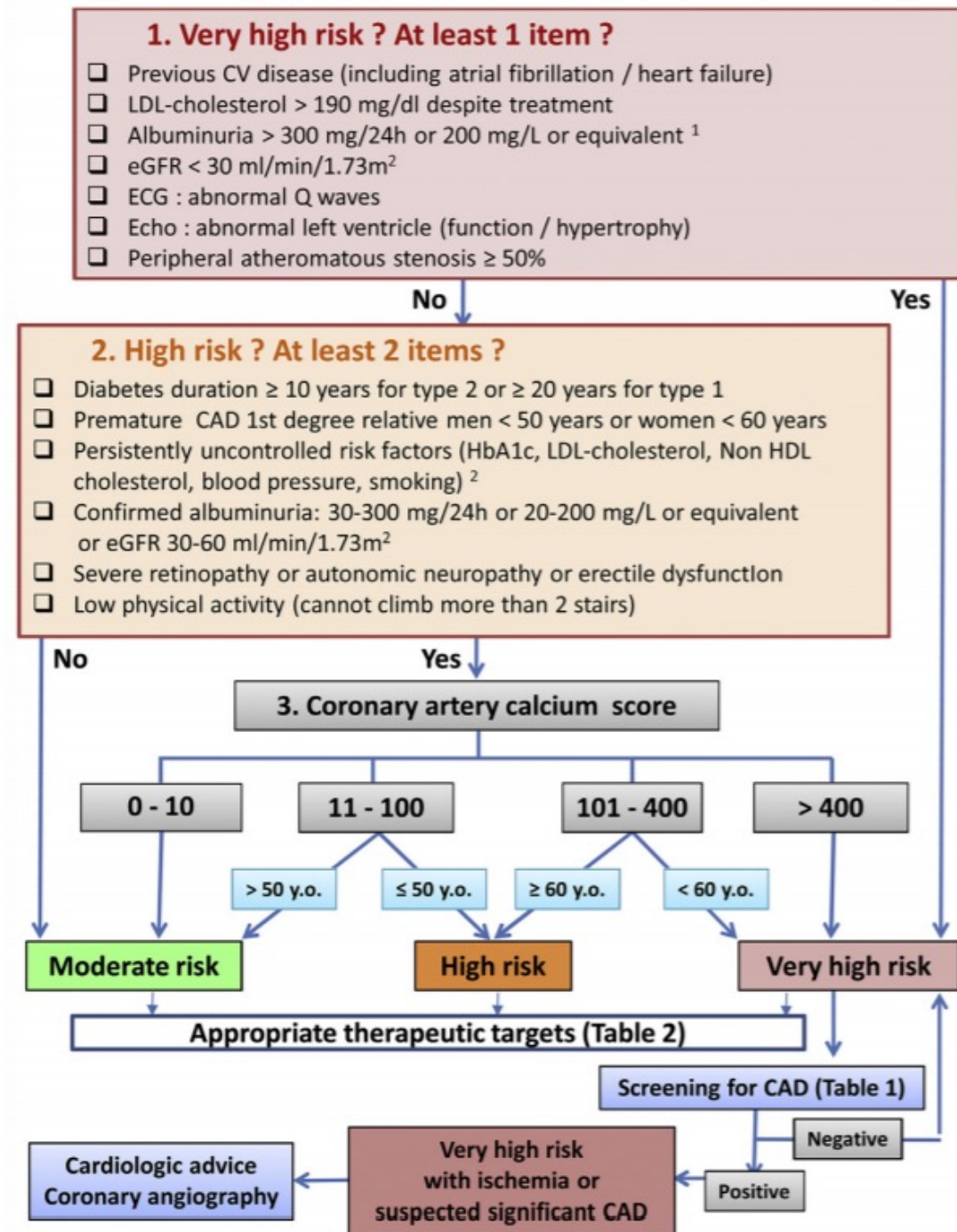
x11,0 [6,4-19,0]

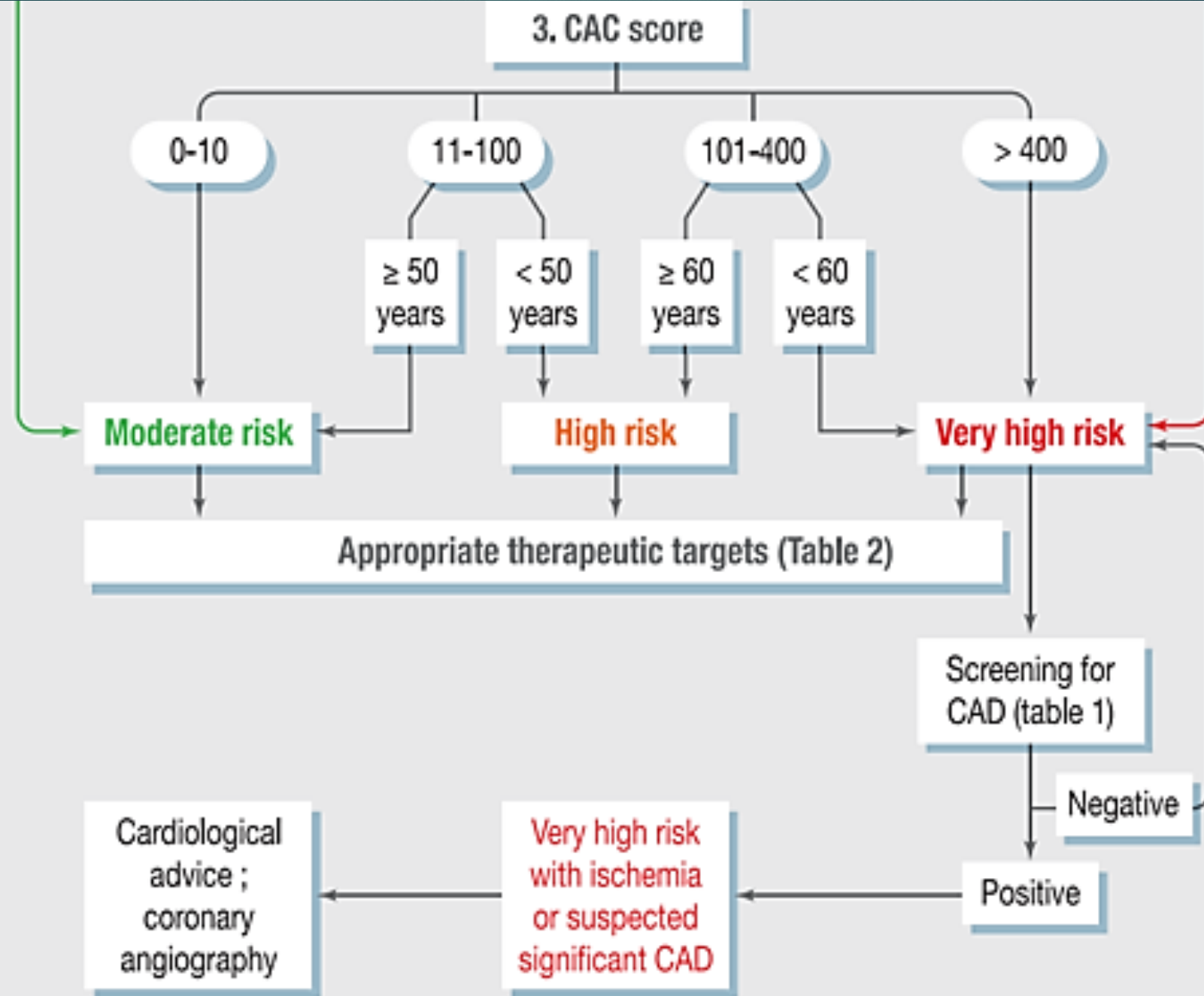
Sow, Aboyans et al. J Diab Complications 2022

Risk stratification and screening for coronary artery disease in asymptomatic patients with diabetes mellitus

Position Paper of the French-speaking Society of Diabetology (SFD) and the French Society of Cardiology (SFC), in collaboration with the French Society of diagnostic and Interventional Cardiac and Vascular Imaging (SFICV)

Paul Valensi ^{a,*}, Eric Van Belle ^{b,c,d}, Emmanuel Cosson ^{e,f}, Joseph Emmerich ^{g,h}, Gaëtan Prevost ^{i,j}, Jean Ferrières ^k, Ariane Sultan ^{l,m}, Laura Ernande ⁿ, François Rouzet ^{o,p}, Dany Marcadet ^q, Elie Mousseaux ^{r,s}, Franck Boccara ^t, Bruno Vergès ^u, Patrick Henry ^v





CAC score in patients with diabetes

- 9715 asymptomatic patients who had CAC score.
- 810 with diabetes.
- FU 15 yrs.

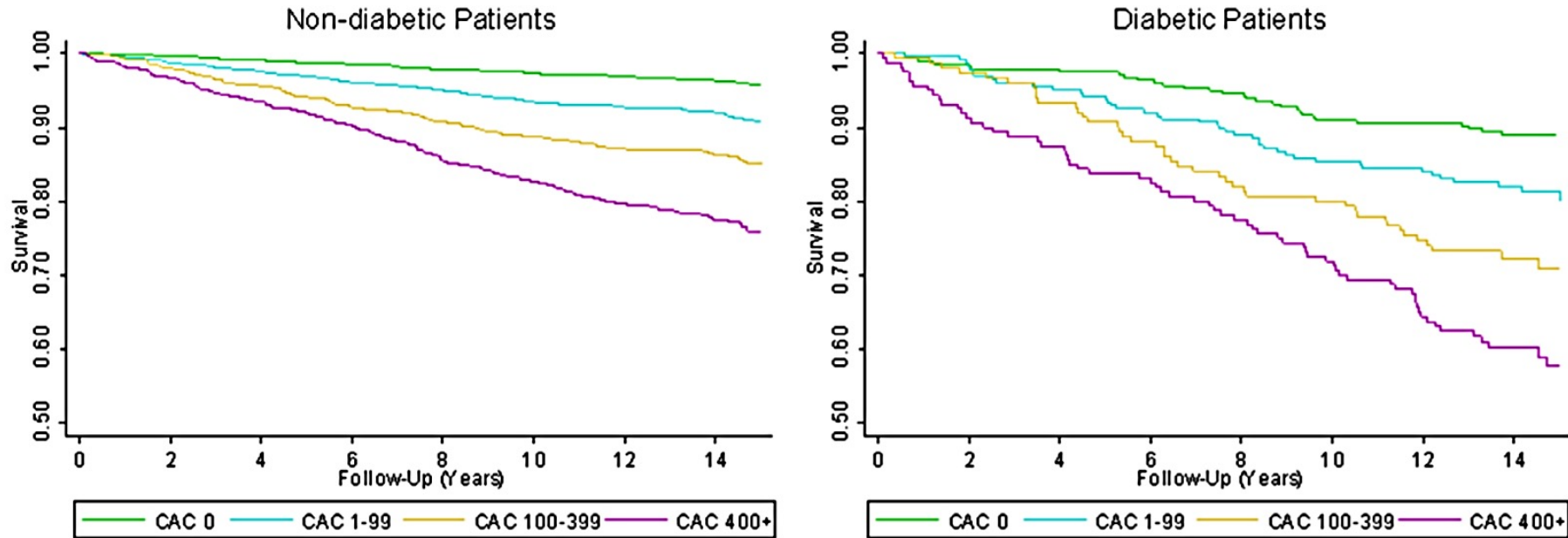


Figure 3. Kaplan-Meier survival curves in diabetic and nondiabetic individuals according to coronary artery calcium (CAC) scores.

CAC=0 does not exclude obstructive CAD

- ▶ 487 asymptomatic diabetic pts



Figure 2. Representative images of calcified (A), mixed (B) and non-calcified plaques (C) as detected on CTA. CTA: computed tomography angiography

Table 4. Univariate and Multivariate Logistic Regression Analyses in Predicting Obstructive CAD by Traditional Cardiovascular Risk Factors in Patients with CAC=0

Variable	Univariate		Multivariate	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Age	1.03 (0.97-1.10)	0.308	1.04 (0.97-1.11)	0.279
Male	0.95 (0.35-2.60)	0.916	0.92 (0.32-2.64)	0.869
Hypertension	1.65 (0.60-4.55)	0.332	1.17 (0.36-3.74)	0.795
Dyslipidemia	1.23 (0.45-3.36)	0.692	1.25 (0.43-3.63)	0.687
Current smoking	4.77 (1.66-13.70)	0.004	4.87 (1.65-14.42)	0.004

CAC: coronary artery calcium, CAD: coronary artery disease, CI: confidence interval, OR: odds ratio

Summary

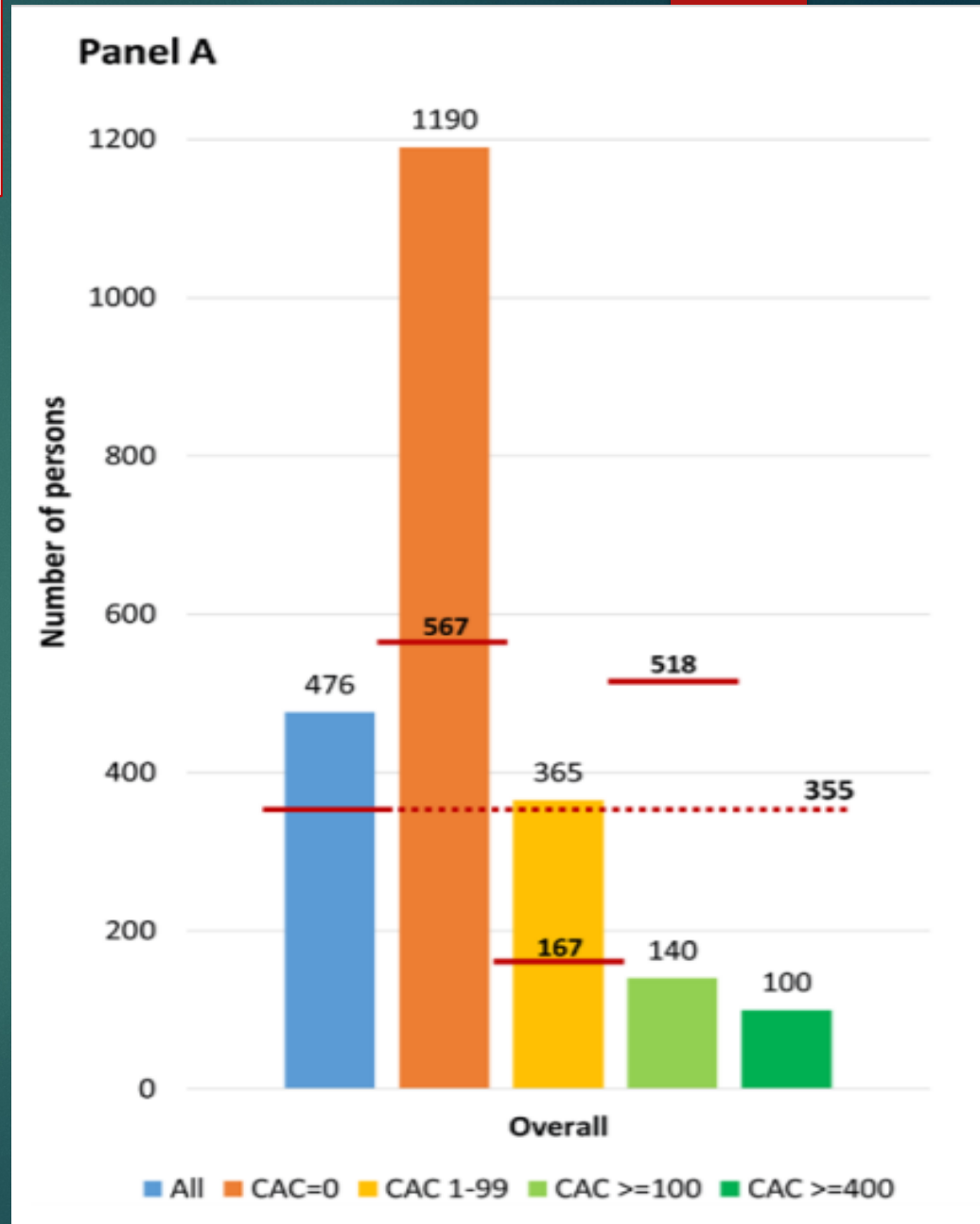
- ▶ Interest of CAC to change the management of diabetic patients?

Asymptomatic	Low-risk patients	• The use of CAC=0 to “de-risk” patients with diabetes to forgo statin initiation is not currently recommended.
	Cardiometabolic agents	• SGLT2i and GLP1-RA should be considered in most patients with diabetes given multiple cardiometabolic benefits. • CAC may help to identify primary prevention patients most likely to derive benefits in ASCVD risk reduction, particularly for GLP1-RA.
	High-risk patients: lipid-lowering	• CAC can identify a high-risk cohort in primary prevention (e.g., CAC ≥ 100), which may guide the use of non-statin lipid-lowering agents
	High-risk patients: aspirin	• Patients with a CAC ≥ 100 treated with aspirin have a much lower NNT to prevent ASCVD compared to the NNH for major bleeding.
	CAD screening	• CAD screening with CCTA or functional imaging is not indicated in asymptomatic patients with diabetes.

Coronary Artery Calcium for Personalized Allocation of Aspirin in Primary Prevention of Cardiovascular Disease in 2019

The MESA Study (Multi-Ethnic Study of Atherosclerosis)

Better benefit/risk ratio of aspirin in primary prevention in case of high CAC



CAC screening & behavioral motivations

- ▶ Statins adherence & weight loss after CAC screening

Table 2 Statin compliance for cohort based on baseline calcium score

CAC score	Patients with hyperlipidemia (n)	Statin compliance [n (%)]
0	514	141 (27.4)
1–100	779	305 (39.2)
100–400	580	311 (53.6)
> 400	735	432 (58.8)

CAC, coronary artery calcium.
 $P < 0.001$ for trend of values.

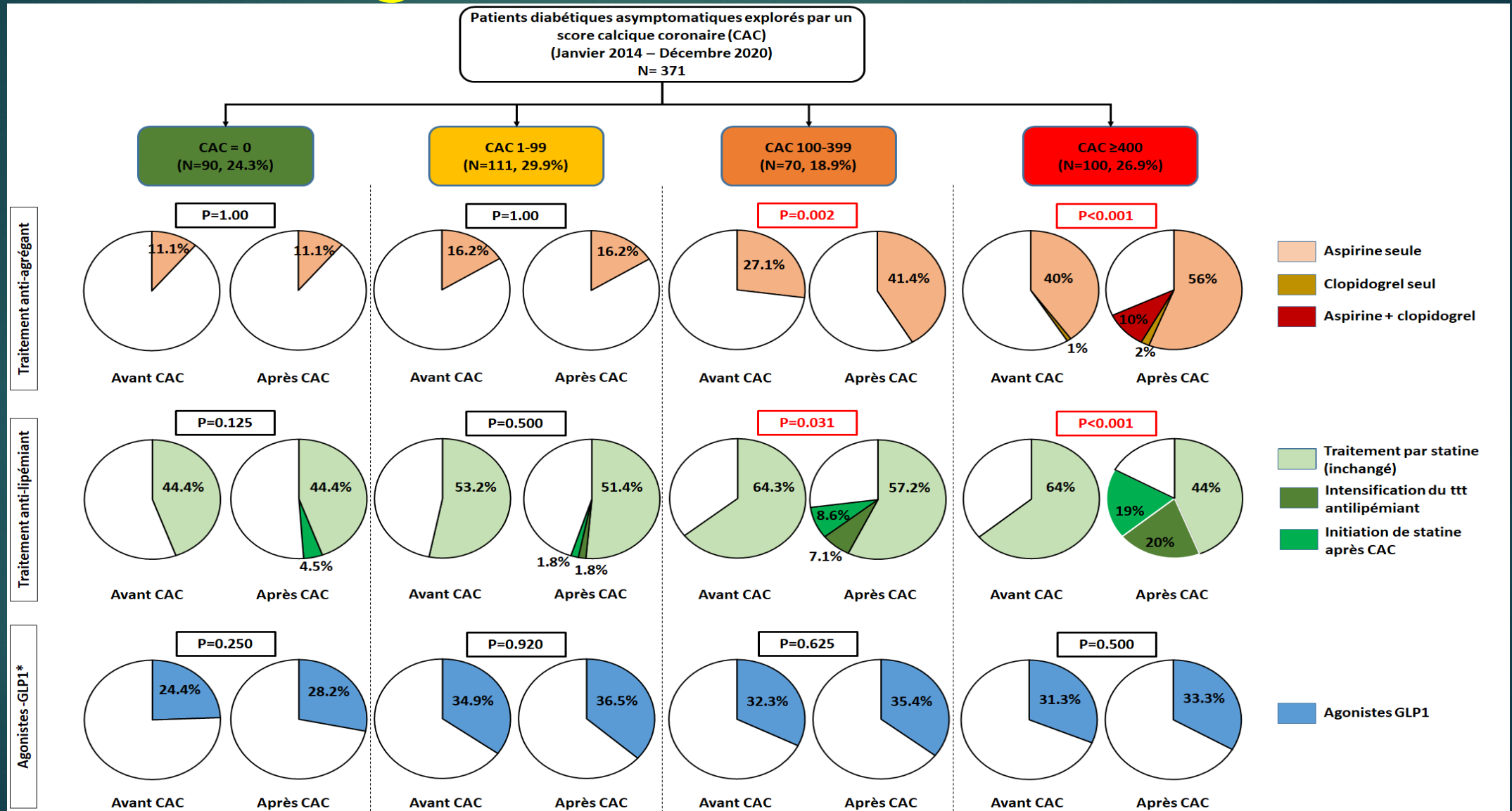
Table 3 Percent of participants losing weight in cohort based on baseline calcium score

CAC score	Patients with weight (n)	Weight loss [n (%)]
0	212	42 (19.8)
1–100	312	73 (23.4)
100–400	224	69 (30.8)
> 400	330	111 (33.6)

CAC, coronary artery calcium.

Improving preventive measures after CAC screening

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When to start CAC screening?

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- ▶ 22,346 CAC Consortium participants aged 30-50 years

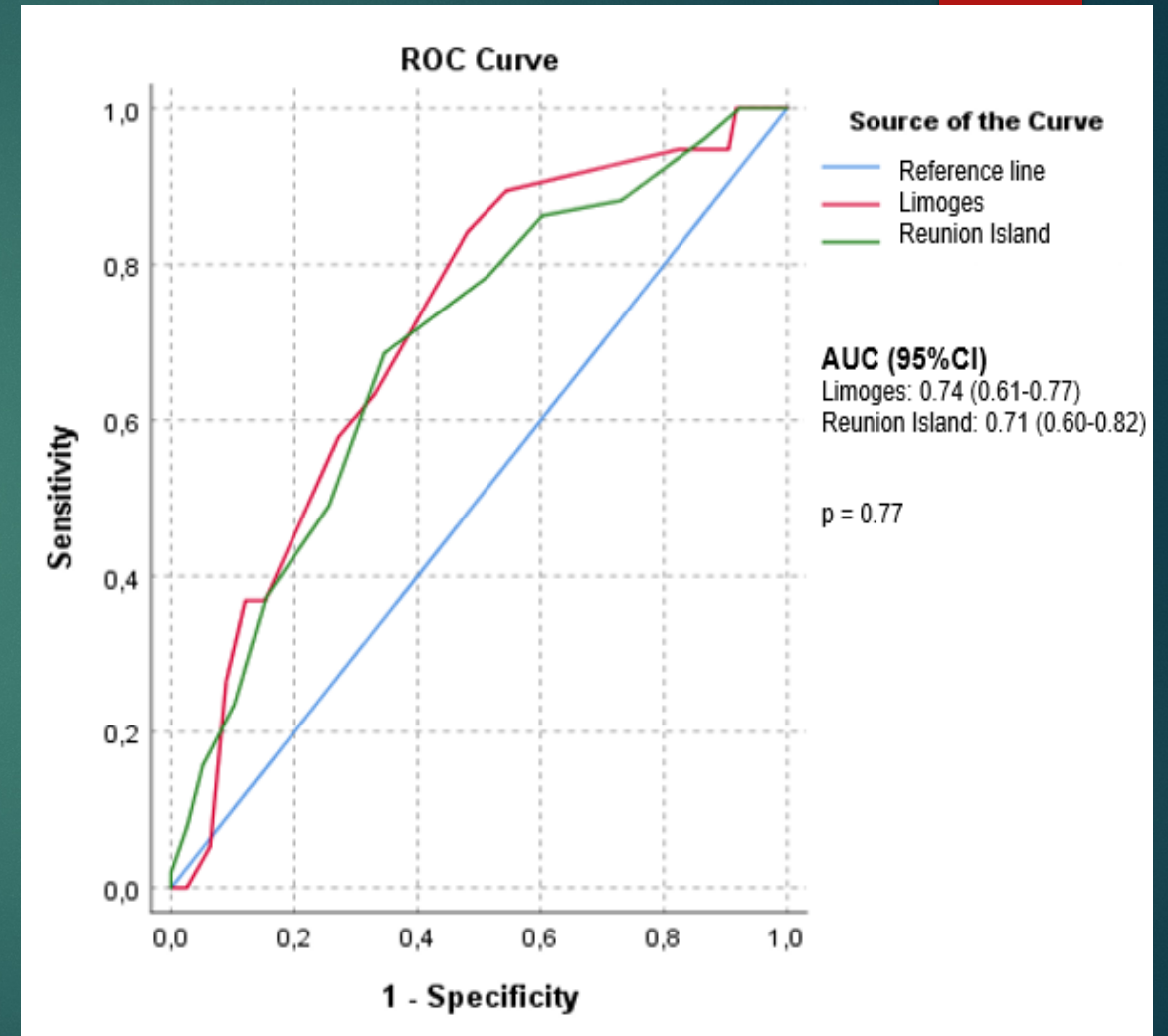
Predicted Age of CAC >0 Conversion According to ASCVD Risk Factor Status

Risk Factor	Women Age to CAC >0 Conversion (Years)*	Men Age to CAC >0 Conversion (Years)*	All Average Years Earlier to CAC >0*
None	58 (56-60)	42 (41-44)	Reference
Family History of CHD	53 (52-55)	39 (38-41)	-3.5
Current Cigarette Smoking	53 (51-55)	40 (39-42)	-3.5
Dyslipidemia	52 (51-54)	39 (38-41)	-4.5
Hypertension	53 (52-55)	39 (38-41)	-4
Diabetes	50 (49-52)	37 (36-38)	-6.5
Family History of CHD + Dyslipidemia	48 (46-50)	36 (35-38)	-8
Family History of CHD + Hypertension	49 (47-51)	36 (35-38)	-7.5

*Using a 25% testing yield for CAC >0

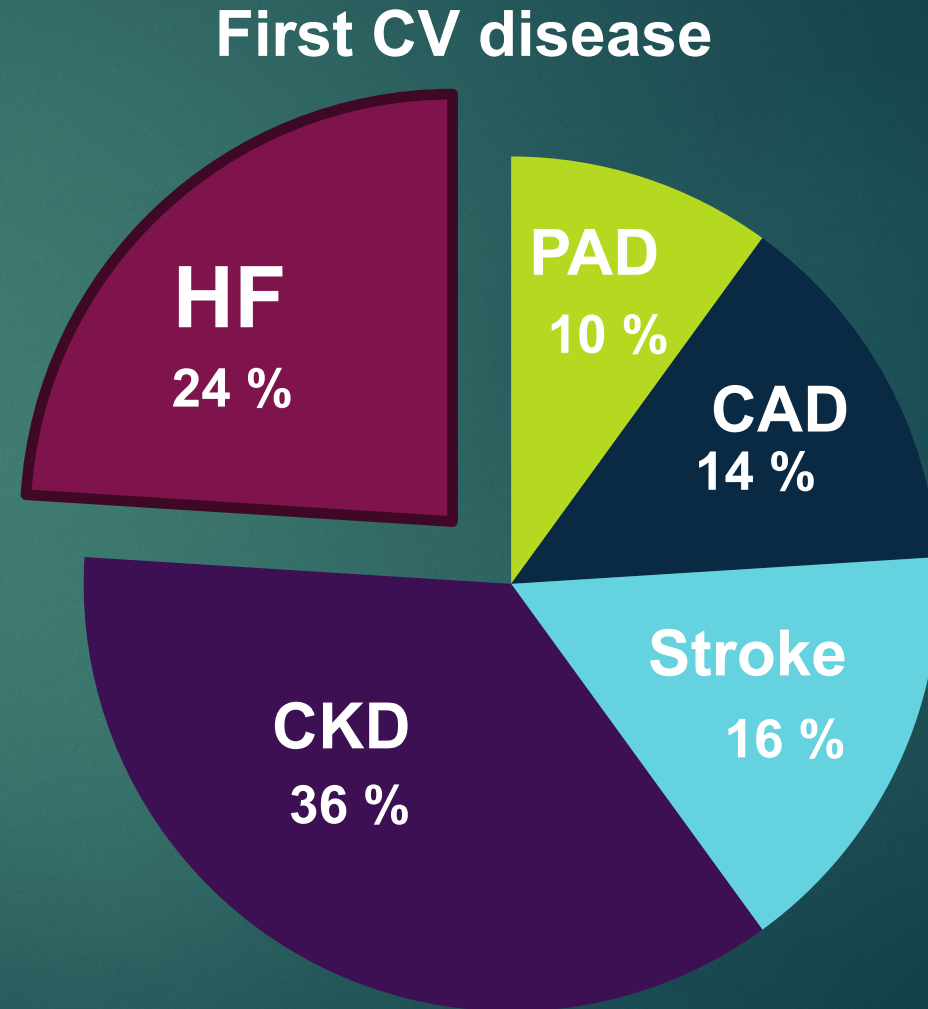
French CAC400 score

Item	points
Age: years	
< 55	0
≥ 55	3
Sex:	
Female	0
Male	3
Diabetes duration:	
<5	0
5-9	1
10-14	2
15-19	3
20-24	4
25-29	5
≥ 30	6
Other non-CV target organ damage	
No	0
Yes	2
Family history of CV diseases	
No	0
Yes	2



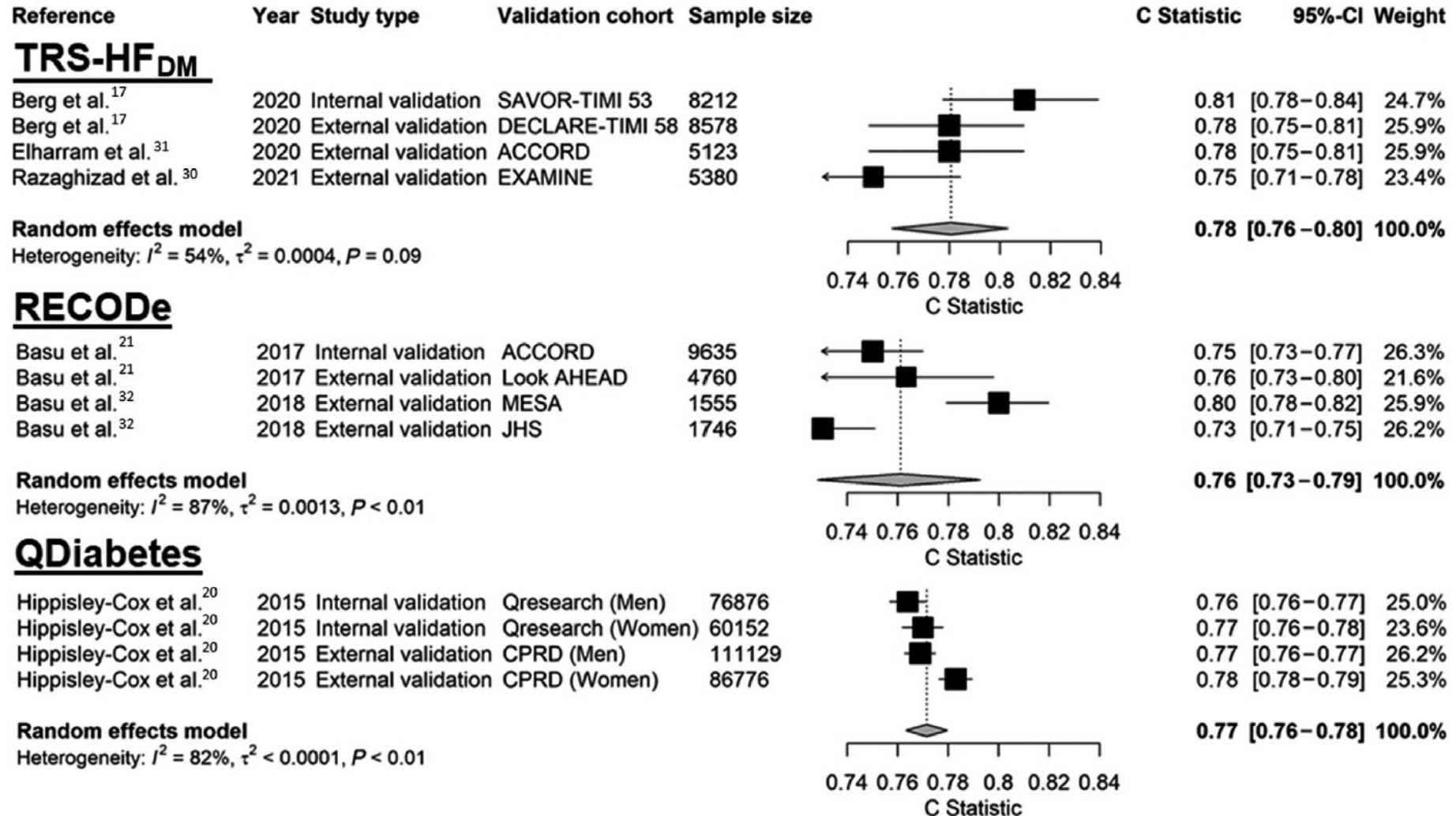
Heart failure is a frequent first cardiorenal condition in patients with T2D

- International Registry
- 772,336 patients with T2D without cardiorenal disease at baseline



Multiple scores to predict HF in patients with T2D

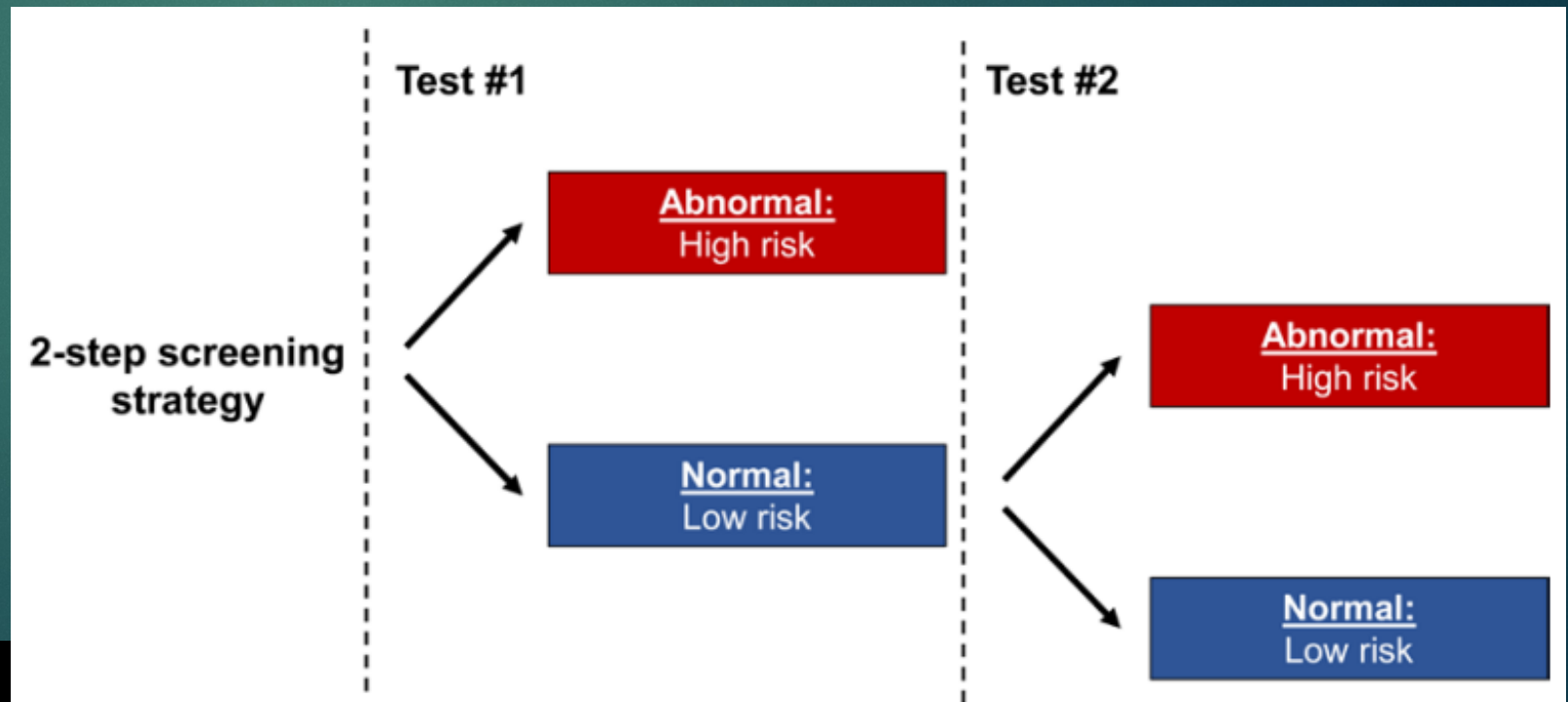
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Optimal Screening for Predicting and Preventing the Risk of HF Among Adults With Diabetes Without ASCVD

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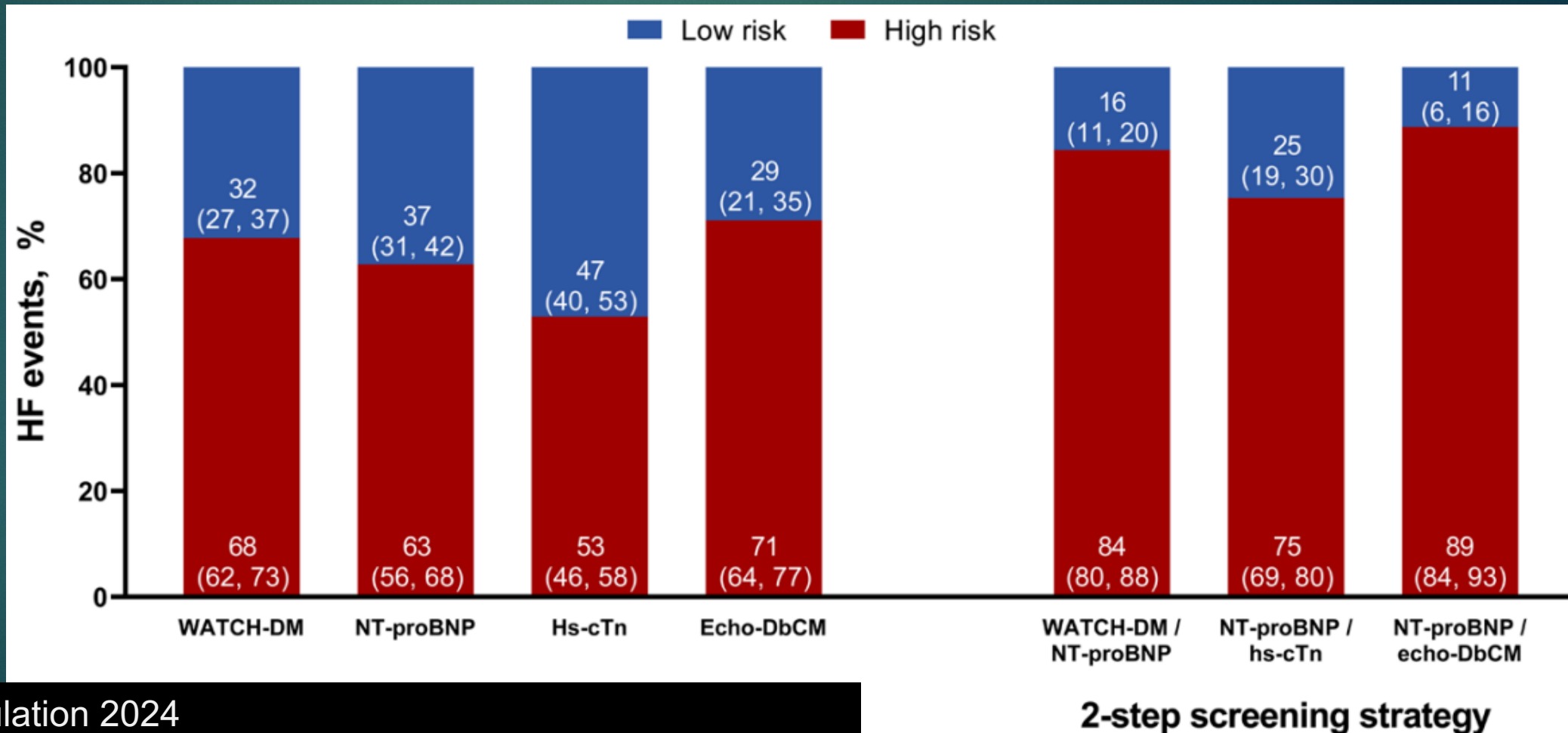
- ▶ 6293 participants with diabetes and no HF at baseline from 7 community-based cohorts were included.
- ▶ **4 methods** were studied:
 - ▶ **Watch-DM score** : (Weight, Age, Hypertension, Creatinine, HDL-C, Diabetes Control, QRS Duration, MI, and CABG). High risk when >12 .
 - ▶ **NT-pro-BNP**
 - ▶ **Hs-Troponin**
 - ▶ **TTE**



Optimal Screening for Predicting and Preventing the Risk of HF Among Adults With Diabetes Without ASCVD

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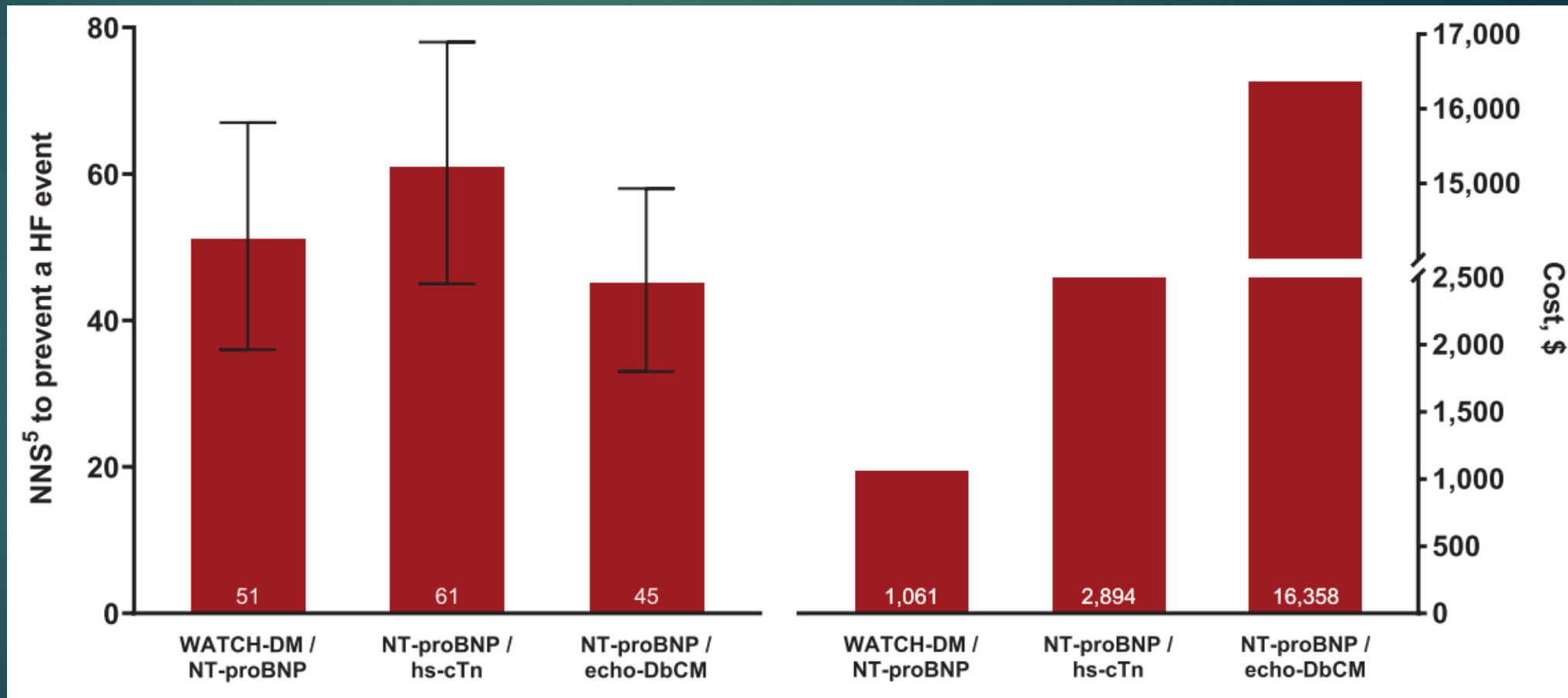
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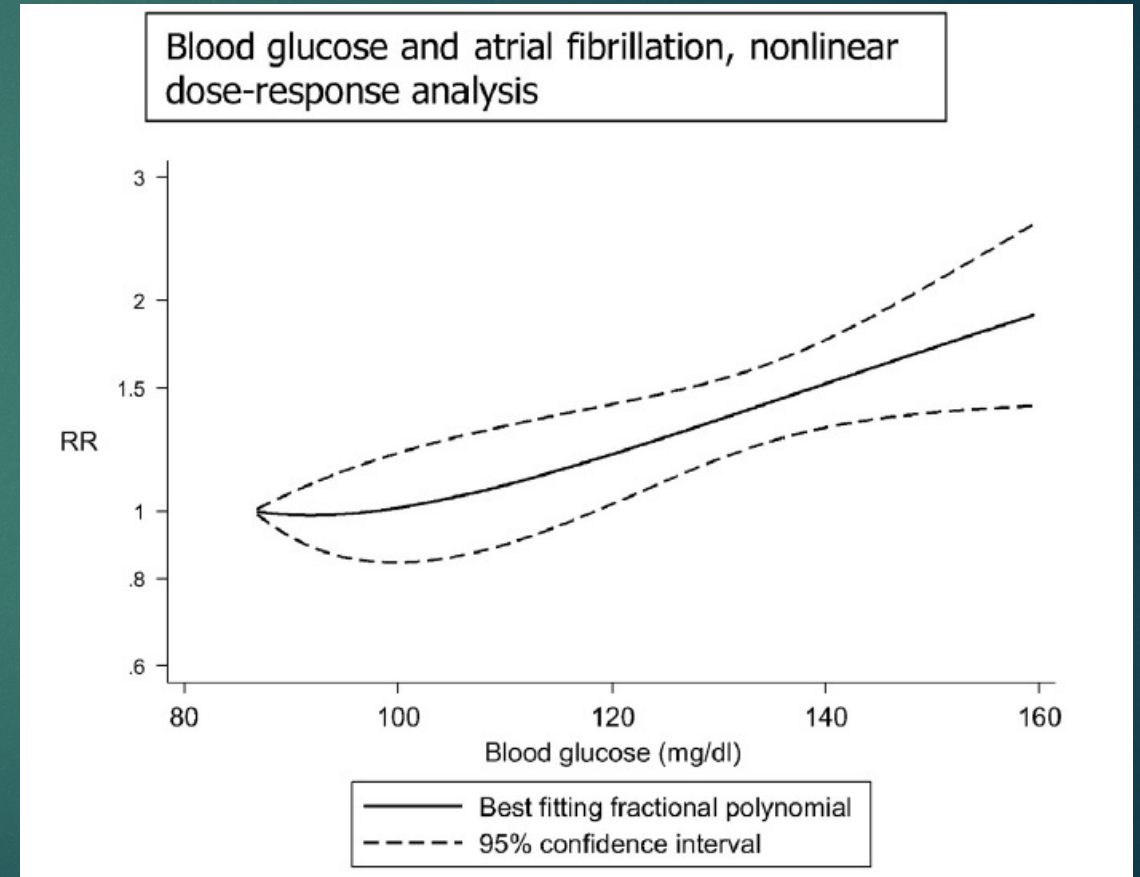


Diabetes: increased risk of AF

Diabetes: in 25% of AF patients

Meta-analysis: 32 studies

- ▶ 464,229 cases
- ▶ 10,244,043 participants
- ▶ Diabetes: Risk x1,28



Peripheral vascular assessment in PAD

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SCORE ABS: Plaques carotidienne D+G et Fémorales D+G: 0,1,2,3,4

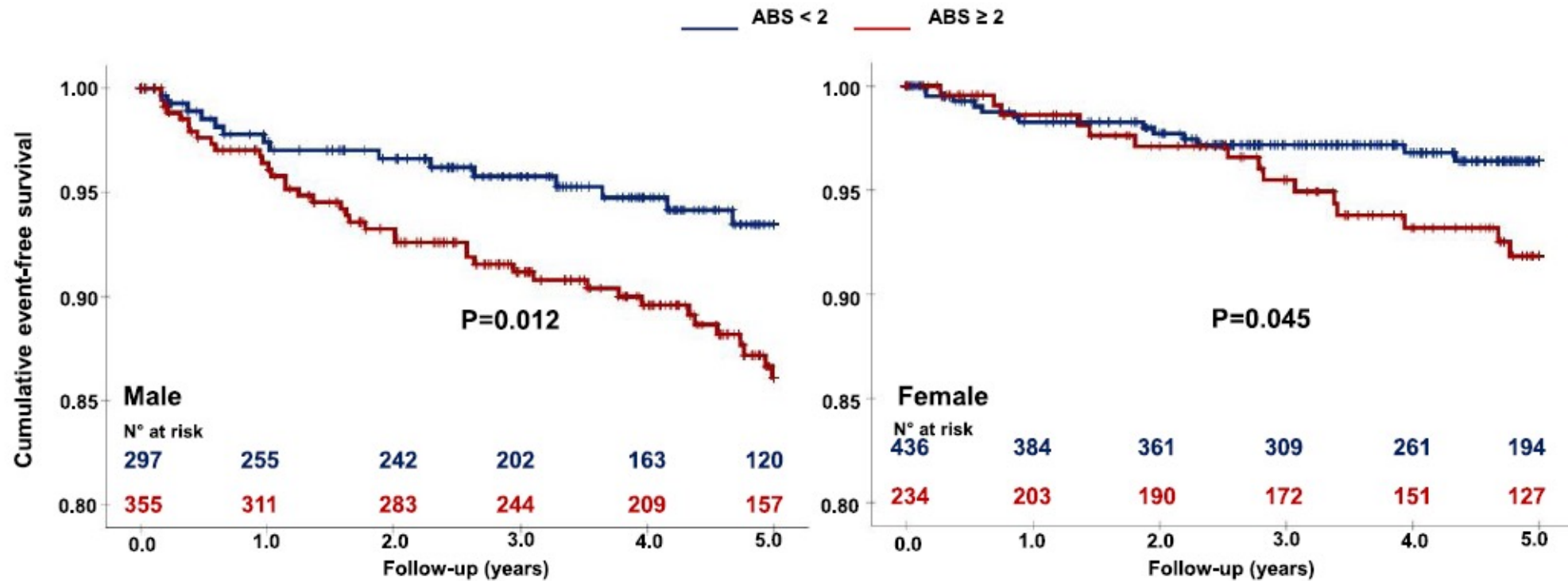


Fig. 2. Outcomes of the patients according to gender and ABS score.

CV screening: what do the guidelines say ?

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Diabetes Care 2026

- ▶ In asymptomatic individuals, routine screening for CAD is **not** recommended, as it does **not** improve outcomes as long as ASCVD risk factors are treated.
- ▶ Consider investigations for CAD in the presence of any clinical sign or symptom of cardiac or vascular disease, or ECG abnormalities (e.g. Q waves).
- ▶ CAC scoring in asymptomatic people with diabetes may help in risk stratification.
- ▶ Consider HF screening by measuring BNP/NT-pro-BNP
- ▶ Screening for PAD is recommended if a PAD diagnosis may change management.

Waiting for STENO
INTEN-CT trial

Take Home Messages

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- ▶ ESC: **4 risk categories** according to **SCORE-2Diabetes**, as well as **CV diseases and Target Organ Damages**.
- ▶ Those without CVD: Possible refinement with vascular markers, especially **CKD** and **CAC score++**
- ▶ CAC score is NOT for obstructive CAD screening but for risk stratification. The objective is to better stratify and **better implement PREVENTION NOT REVASCULARIZATION**.
- ▶ **Heart Failure** is a major complication of T2D and deserves screening: BNP + TTE
- ▶ Other cardiovascular conditions:
 - ▶ AF
 - ▶ PAD

Merci



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Au sommaire, 4 propositions concrètes :

- La prévention et le dépistage
- L'accès aux soins
- L'accompagnement des populations vulnérables
- L'excellence, la recherche et l'innovation

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