



# HIV ile Yaşayan Bireylerde Kardiyovasküler Hastalık İzlem ve Tedavi Yaklaşımı Nasıl Olmalı?

**Dr. Yalın Tolga YAYLALI**

Pamukkale Üniversitesi, Kardiyoloji AD, Denizli.

# HIV infection and coronary heart disease\_ mechanisms and management

## REVIEW

### **Sudden cardiac death in HIV-infected patients: A contemporary review**

Venkata A. Narla MD, MAS 

*JAMA Cardiol.* 2017 May 01; 2(5): 536–546. doi:10.1001/jamacardio.2017.0264.

### **Association Between HIV Infection and the Risk of Heart Failure With Reduced Ejection Fraction and Preserved Ejection Fraction in the Antiretroviral Therapy Era: Results From the Veterans Aging Cohort Study**

› *J Acquir Immune Defic Syndr.* 2012 Aug 1;60(4):351-8. doi: 10.1097/QAI.0b013e31825c7f24.

### **Comparison of ischemic stroke incidence in HIV- infected and non-HIV-infected patients in a US health care system**

Felicia C Chow <sup>1</sup>, Susan Regan, Steven Feske, James B Meigs, Steven K Grinspoon, Virginia A Triant

Affiliations + expand

PMID: 22580566 PMID: PMC3670086 DOI: 10.1097/QAI.0b013e31825c7f24

[Free PMC article](#)

› *JAMA Intern Med.* 2013 Apr 22;173(8):614-22. doi: 10.1001/jamainternmed.2013.3728.

### **HIV infection and the risk of acute myocardial infarction**

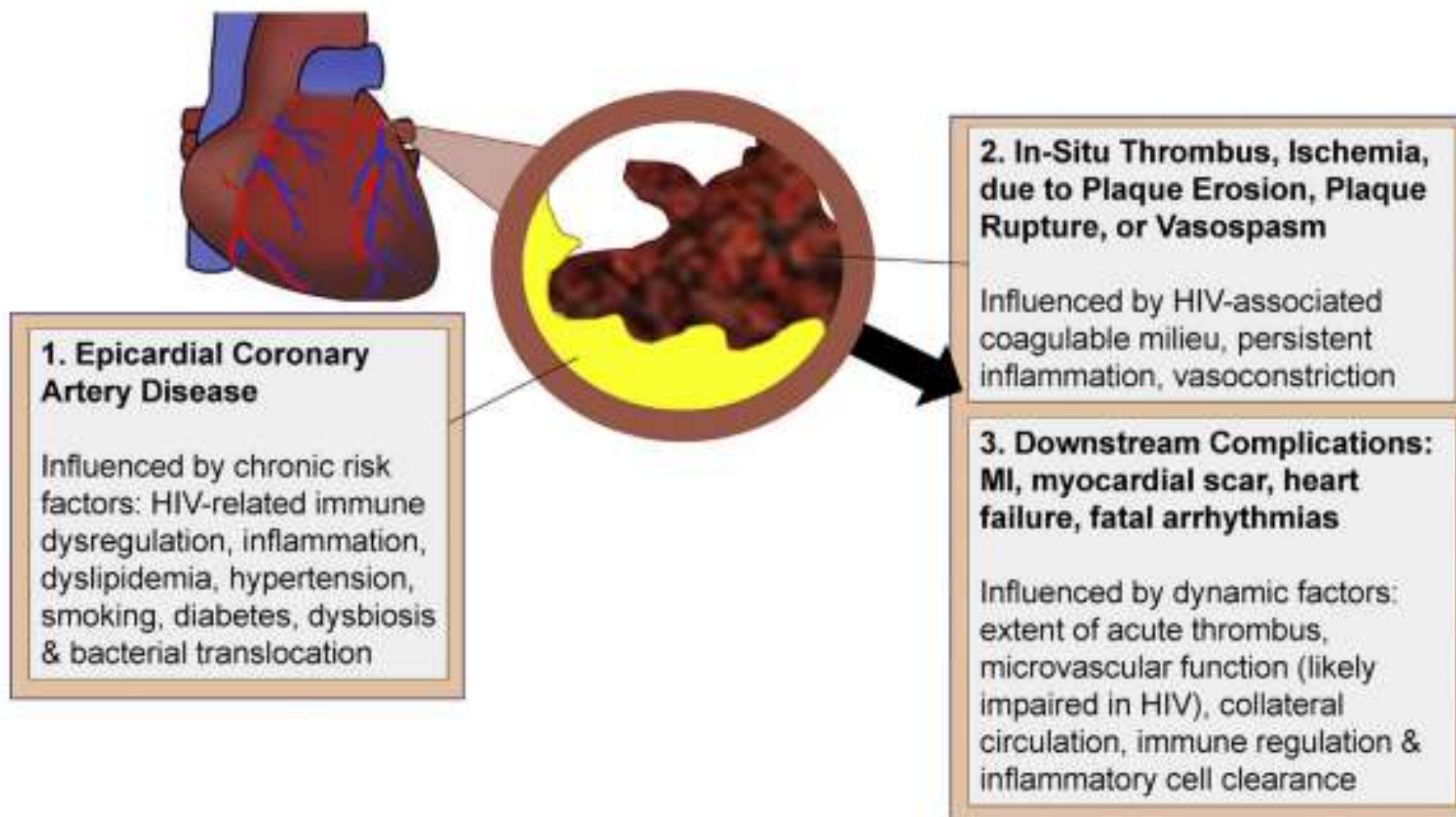
Matthew S Freiberg <sup>1</sup>, Chung-Chou H Chang, Lewis H Kuller, Melissa Skanderson, Elliott Lowy, Kevin L Kraemer, Adeel A Butt, Matthew Bidwell Goetz, David Leaf, Kris Ann Oursler, David Rimland, Maria Rodriguez Barradas, Sheldon Brown, Cynthia Gibert, Kathy McGinnis, Kristina Crothers, Jason Sico, Heidi Crane, Alberta Warner, Stephen Gottlieb, John Gottdiener, Russell P Tracy, Matthew Budoff, Courtney Watson, Kaku A Armah, Donna Doebler, Kendall Bryant, Amy C Justice

Affiliations + expand

PMID: 23459863 PMID: PMC4766798 DOI: 10.1001/jamainternmed.2013.3728

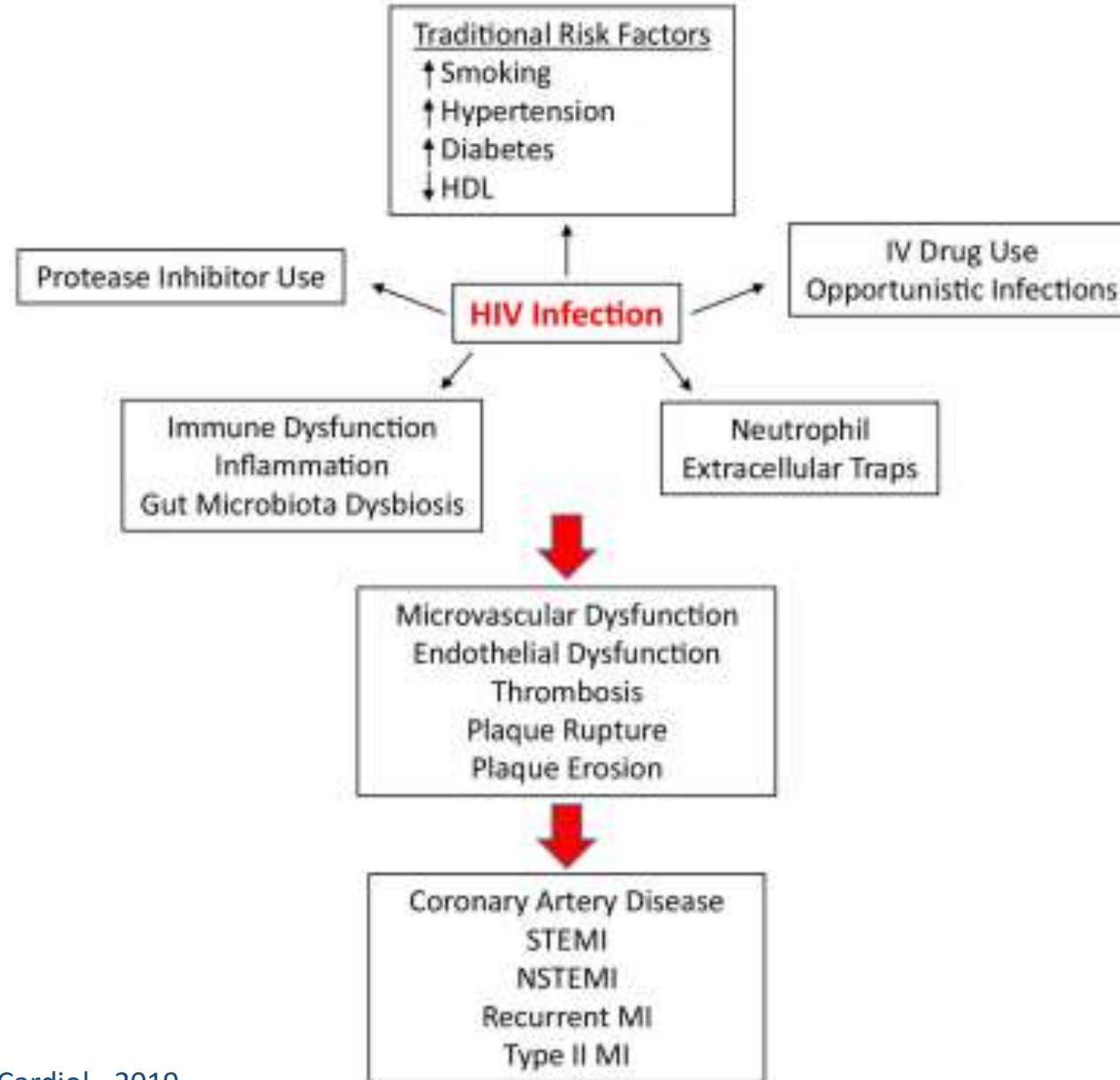
[Free PMC article](#)

# Coronary Artery Disease Manifestations in HIV: What, How, and Why



**Figure 1.** Pathophysiology of human immunodeficiency virus (HIV)-associated coronary artery disease (CAD) and acute coronary syndrome (ACS). MI, myocardial infarction.

# Coronary Artery Disease Manifestations in HIV: What, How, and Why





# 2019 ESC/EAS Guidelines for the management of dyslipidaemias

## Recommendations for lipid-lowering drugs in human immunodeficiency virus patients

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
Lipid-lowering therapy (mostly statins) should be considered in HIV patients with dyslipidaemia to achieve the LDL-C goal as defined for high-risk patients. The choice of statin should be based on their respective potential drug–drug interactions.	<b>IIa</b>	<b>C</b>

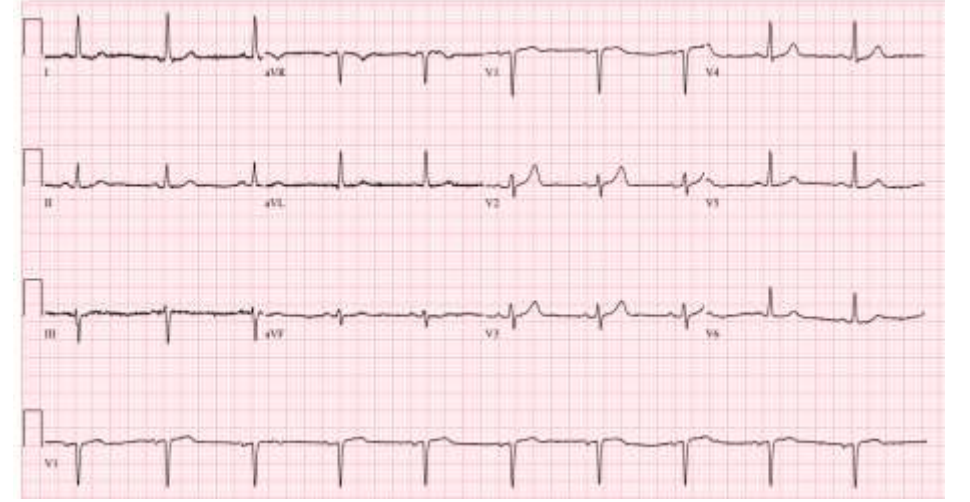
HIV = human immunodeficiency virus; LDL-C = low-density lipoprotein cholesterol.

<sup>a</sup>Class of recommendation.

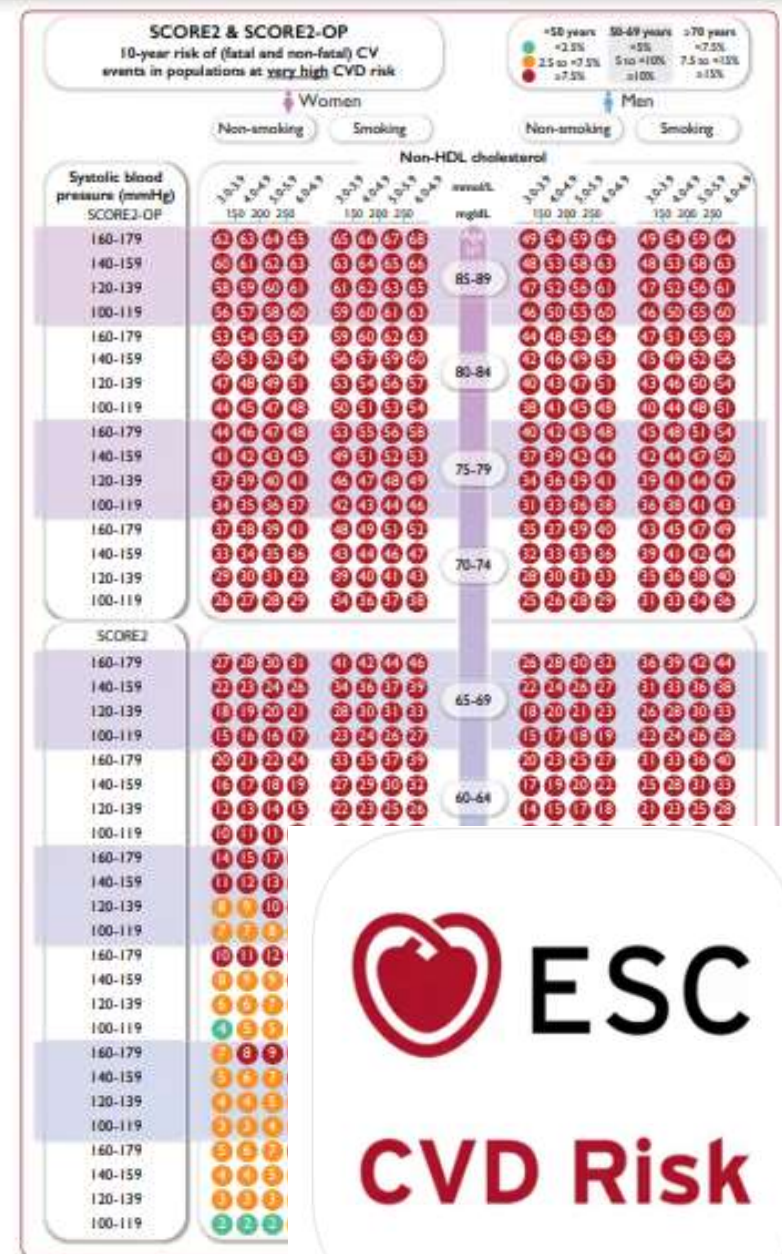
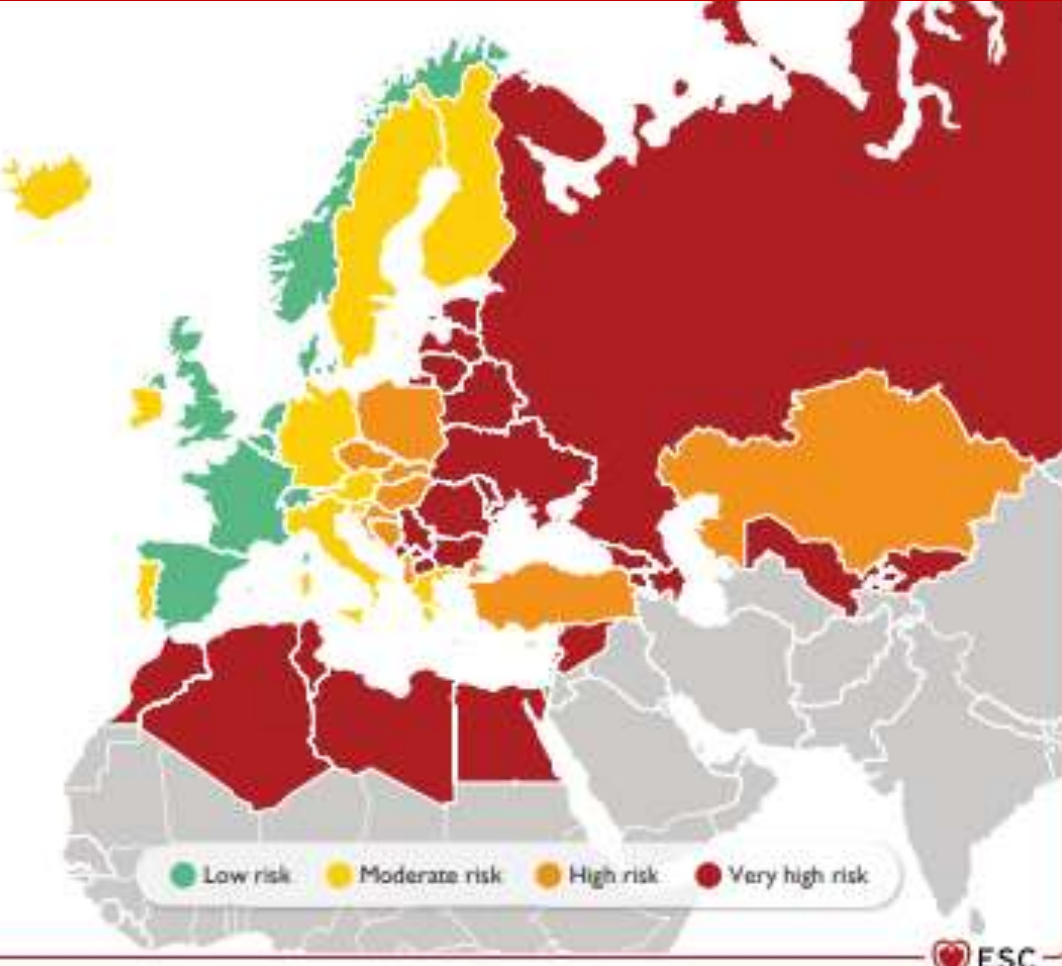
<sup>b</sup>Level of evidence.

44 y E

- 10 yıldır HIV (+)  
Kalp ile ilgili bir şikayeti yok,
- Özgeçmiş: preHT (ilaç almıyor),
- sigara: -,
- Kİ: 2NNRTI + PI
- TA: 144/90 mmHg, N: 73/dk, VKİ: 32
- AKŞ: 100 HbA1C: 5.7
- T.kol: 227 HDL: 31 LDL: 157 mg/dL Trig: 195 non HDL: 196
- TSH: n; kr: 0.9 (tGFR: 92)
- EKG: n
- EKO: n



# 2021 ESC Kardiyovasküler Hastalıklar Korunma

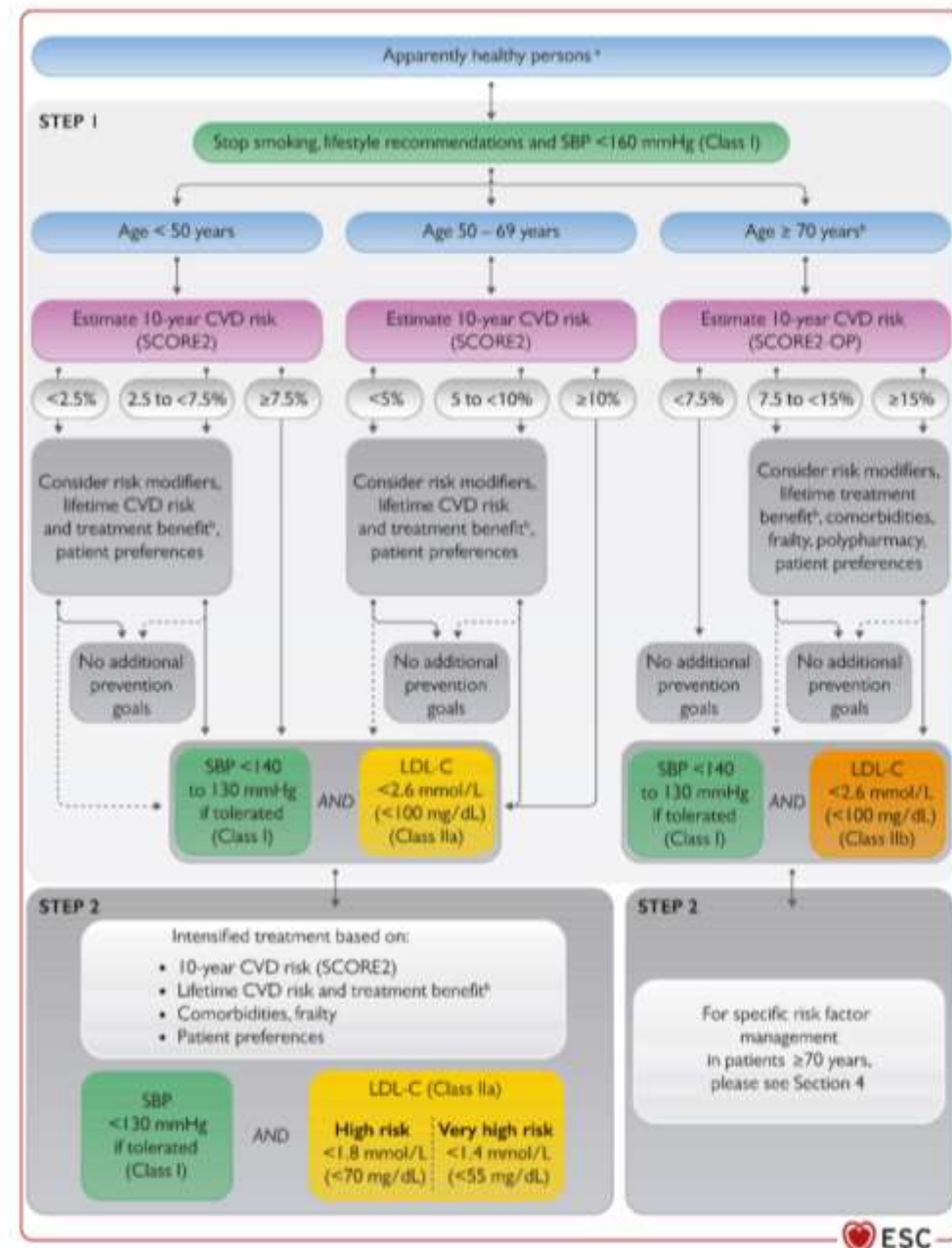




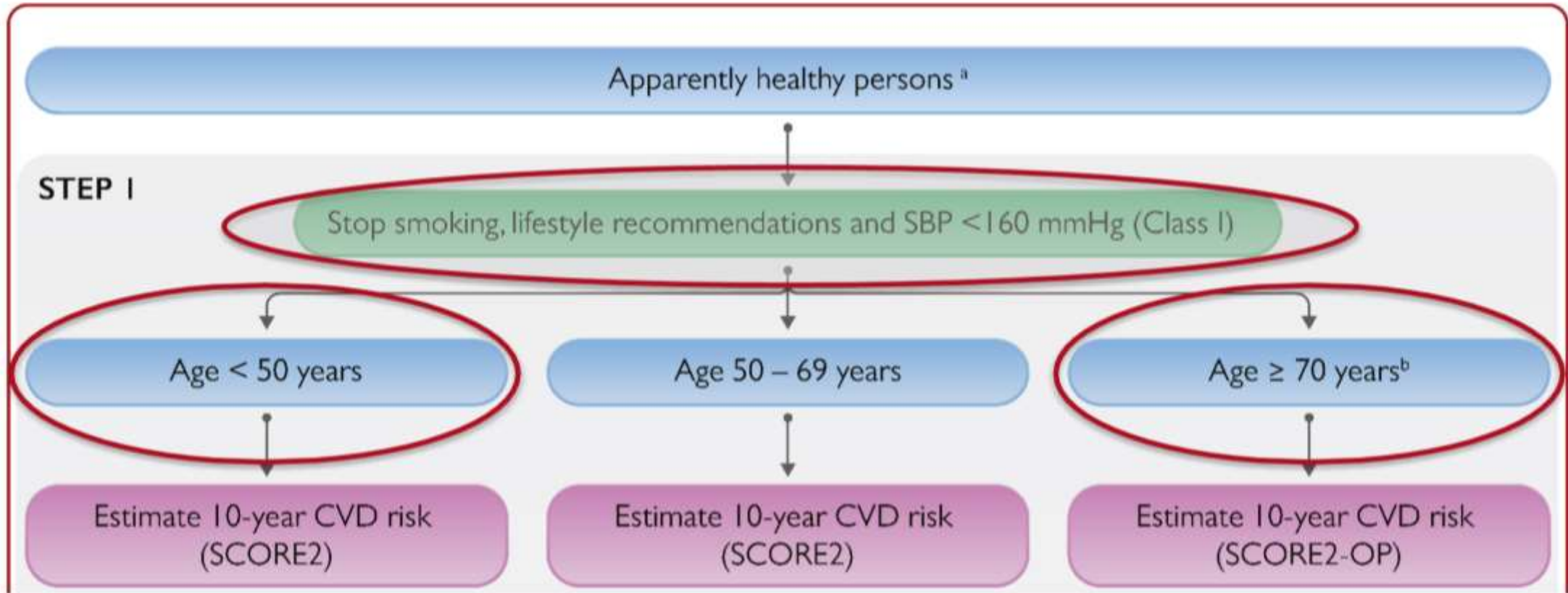
## Apparently healthy persons:

### Persons without:

- Established ASCVD (*event or plaque*)
- Chronic Kidney Disease
- Diabetes
- Familial Hypercholesterolemia









# CVD Risk

All risk calculators ↓

No previous cardiovascular disease or type 2 diabetes

**SCORE2**  
(Europe)  
<30 years

**SCORE2-OP**  
(Europe)  
≥70 years

**SCORE2-Diabetes**  
(Europe)  
Type 2 Diabetes

**SMART risk score**  
Previous cardiovascular disease

**ASCVD**  
(North America)  
No previous cardiovascular disease

**Lifetime risk calculators**

## SCORE2 & SCORE2-OP 10-year risk of (fatal and non-fatal) CV events in populations at high CVD risk



Women

Men

Non-smoking

Smoking

Non-smoking

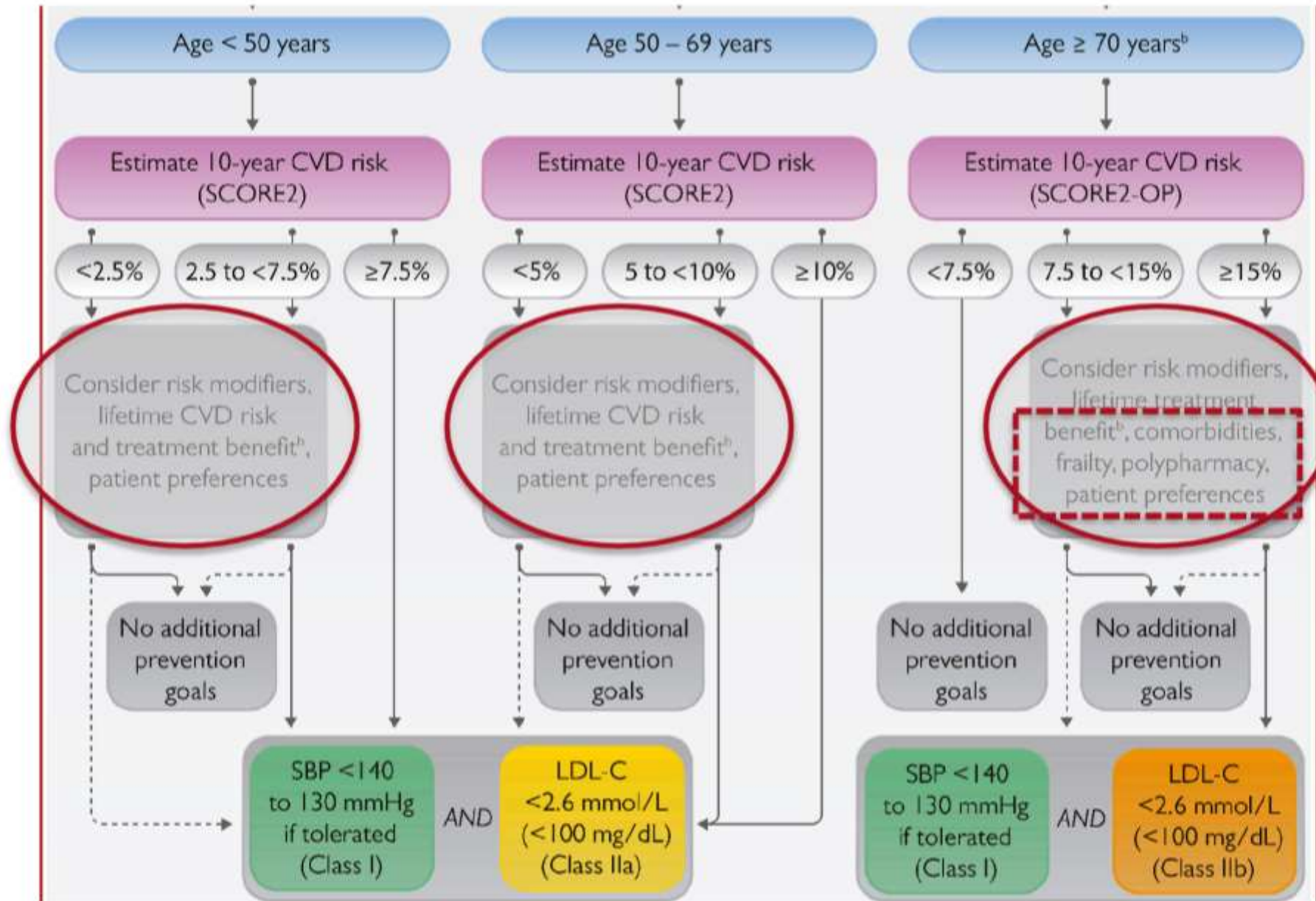
Smoking

### Non-HDL cholesterol

Systolic blood pressure (mmHg)	3.0-3.9				4.0-4.9				5.0-5.9				6.0-6.9				mmol/L mg/dL	3.0-3.9				4.0-4.9				5.0-5.9				6.0-6.9																											
	SCORE2-OP				SCORE2-OP				SCORE2-OP				SCORE2-OP					SCORE2-OP				SCORE2-OP				SCORE2-OP																															
	150	200	250		150	200	250		150	200	250		150	200	250			150	200	250		150	200	250		150	200	250		150	200	250																									
120-139	10	10	11	11	16	17	18	19	11	12	13	15	17	19	20	22	60-64	8	8	8	9	13	14	14	15	9	10	11	12	14	15	17	18	10	11	13	14	16	18	20	23	13	13	16	18	20	23	25	28								
100-119	8	8	8	9	13	14	14	15	10	11	13	14	13	15	16	18	55-59	6	7	7	8	12	13	14	15	6	7	8	9	10	12	13	15	8	9	10	11	13	15	16	18	6	7	8	9	10	12	13	15	6	7	8	9	10	12	13	15
160-179	11	11	12	13	20	21	23	25	15	16	18	19	16	19	21	24	50-54	11	11	12	13	20	21	23	25	9	11	12	14	16	19	21	24	7	8	10	11	13	15	17	19	7	8	10	11	13	15	17	19	7	8	10	11	13	15	17	19
140-159	8	9	9	10	15	16	18	19	11	12	14	15	16	19	21	24	45-49	5	6	7	7	11	12	14	15	9	11	12	14	16	19	21	24	6	6	7	9	10	11	13	15	6	6	7	9	10	11	13	15	6	6	7	9	10	11	13	15
120-139	6	7	7	8	12	13	14	15	8	9	10	11	13	15	16	18	40-44	5	5	6	6	6	7	8	8	6	7	8	9	6	7	8	9	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7
100-119	5	5	6	6	9	10	11	11	6	7	8	8	13	15	16	18	35-39	3	3	4	4	6	7	8	8	4	5	6	7	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7
160-179	7	8	9	10	15	16	18	20	11	12	14	15	16	19	21	24	30-34	7	8	9	10	11	13	14	16	7	8	10	11	13	15	17	19	7	8	10	11	13	15	17	19	7	8	10	11	13	15	17	19								
140-159	5	6	7	7	11	12	14	15	8	9	10	11	13	15	16	18	25-29	5	6	7	7	11	13	14	16	7	8	10	11	13	15	17	19	5	6	7	9	10	11	13	15	5	6	7	9	10	12	14	16								
120-139	4	4	5	5	8	9	10	11	6	7	8	8	13	15	16	18	20-24	3	4	4	4	6	7	8	9	4	5	6	7	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
100-119	3	3	4	4	6	7	8	8	4	5	6	6	13	15	16	18	15-19	2	2	2	3	4	5	6	6	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
160-179	5	5	6	7	11	13	14	16	8	9	10	11	13	15	16	18	10-14	3	4	4	5	8	10	11	13	5	6	8	9	10	13	15	18	5	6	8	9	10	13	15	18	5	6	8	9	10	13	15	18								
140-159	3	4	4	5	8	9	10	12	6	7	8	9	13	15	16	18	5-9	2	3	3	4	6	7	8	9	4	5	6	7	8	9	11	14	4	5	6	7	8	9	11	14	4	5	6	7	8	9	11	14								
120-139	3	3	3	4	6	7	8	9	4	5	6	6	13	15	16	18	0-4	2	2	2	2	4	5	6	6	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
100-119	2	2	2	3	4	5	6	6	3	3	4	5	13	15	16	18	60-64	2	2	2	2	3	3	4	5	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
160-179	2	2	3	4	6	7	9	10	4	5	6	6	13	15	16	18	55-59	1	1	2	2	3	3	4	5	2	2	3	4	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
140-159	1	2	2	2	4	5	6	7	3	4	4	5	13	15	16	18	50-54	1	2	2	2	4	5	6	7	2	2	3	4	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
120-139	1	1	1	2	3	4	4	5	3	4	4	5	13	15	16	18	45-49	1	1	1	2	3	4	4	5	2	2	3	4	4	5	6	7	3	3	4	5	4	5	6	7	3	3	4	5	4	5	6	7								
100-119	1	1	1	1	2	2	3	3	2	2	3	3	13	15	16	18	40-44	1	1	1	1	2	2	3	3	1	2	2	3	2	2	3	4	3	4	5	6	1	2	2	3	2	2	3	4	3	4	5	6								









Assess CVD risk in next 10 years<sup>(i)</sup>

Advise on diet and lifestyle in all persons  
Consider ART modification if 10-year CVD risk  $\geq 10\%$ <sup>(ii)</sup>

Smoking (see page 61)

Identify key modifiable risk factors<sup>(iii)</sup>

Blood pressure

Coagulation

Glucose

Lipids

Drug treatment if: SBP  $\geq 140$  or DBP  $\geq 90$  mmHg (especially if 10-year CVD risk  $\geq 10\%$ )

Drug treatment if: established CVD or DM with very high/high CVD risk<sup>(iv)</sup>

Confirm DM and treat with diet and drugs

Drug treatment if: established CVD or DM or 10-year CVD risk  $\geq 10\%$

**Target<sup>(vi)</sup>**  
SBP < 130 mmHg  
DBP < 80 mmHg

Target - N/A

**Target**  
HbA1C 6.5-7.0%

**Target<sup>(vi)</sup> \***

	2 <sup>nd</sup> prevention or very high risk <sup>(vii)</sup>	High risk <sup>(ix)</sup>
LDL-c**	< 1.4 (55)	< 1.8 (70)
non-HDL-c	< 2.2 (85)	< 2.6 (100)

Treatment (see pages 63-65)

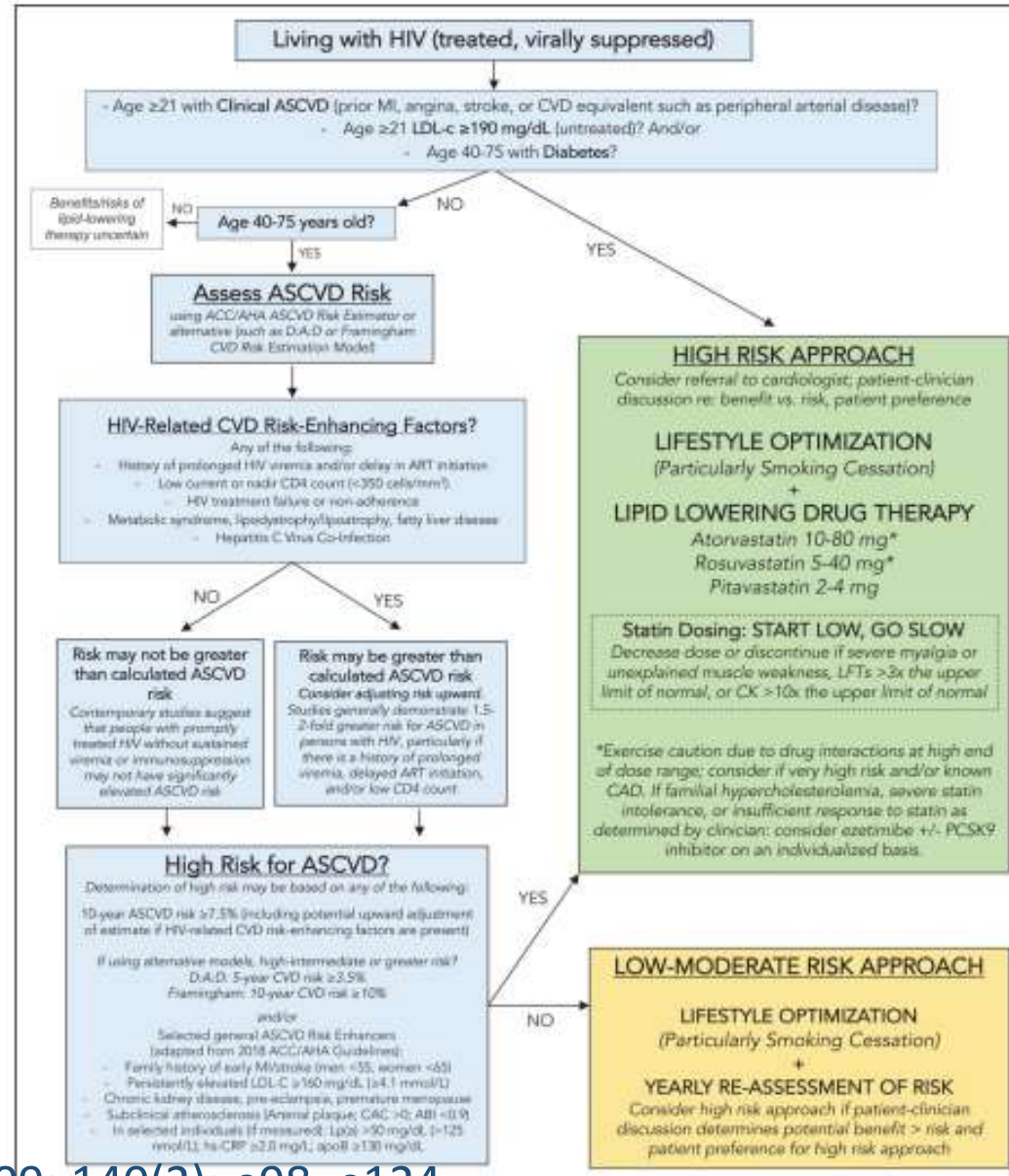
Consider treating with acetylsalicylic acid 75-150 mg<sup>(viii)</sup>

Treatment (see page 68)

Treatment (see page 69)

\* Fasting or non-fasting samples may be used  
 \*\* and  $\geq 50\%$  reduction from baseline

# Characteristics, Prevention, and Management of Cardiovascular Disease in People Living With HIV: A Scientific Statement From the American Heart Association



# 2021 ESC kardiyovasküler Hastalıklar Korunma

**Table 10** Corresponding non-high-density lipoprotein cholesterol and apolipoprotein B levels for commonly used low-density lipoprotein cholesterol goals

<b>LDL-C</b>	<b>Non-HDL-C</b>	<b>Apolipoprotein B</b>
2.6 mmol/L (100 mg/dL)	3.4 mmol/L (131 mg/dL)	100 mg/dL
1.8 mmol/L (70 mg/dL)	2.6 mmol/L (100 mg/dL)	80 mg/dL
1.4 mmol/L (55 mg/dL)	2.2 mmol/L (85 mg/dL)	65 mg/dL

© ESC 2021

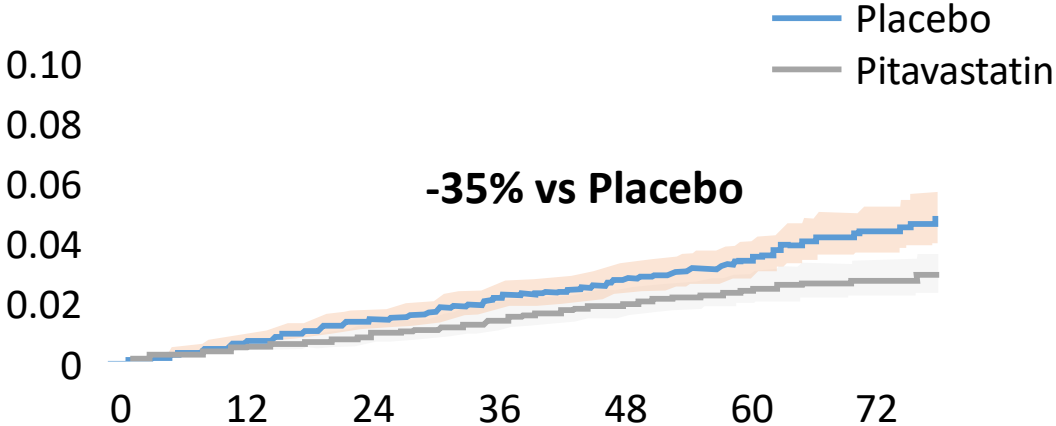
HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol.



# REPRIEVE: Time to First Major Cardiovascular Event

- Baseline characteristics well balanced between treatment arms; median ASCVD risk score 4.5% (IQR: 2.1 to 7.0) and median LDL cholesterol 108 mg/dL (IQR 87 to 128)
- Pitavastatin prolonged time to first MACE vs placebo

**First Primary MACE**



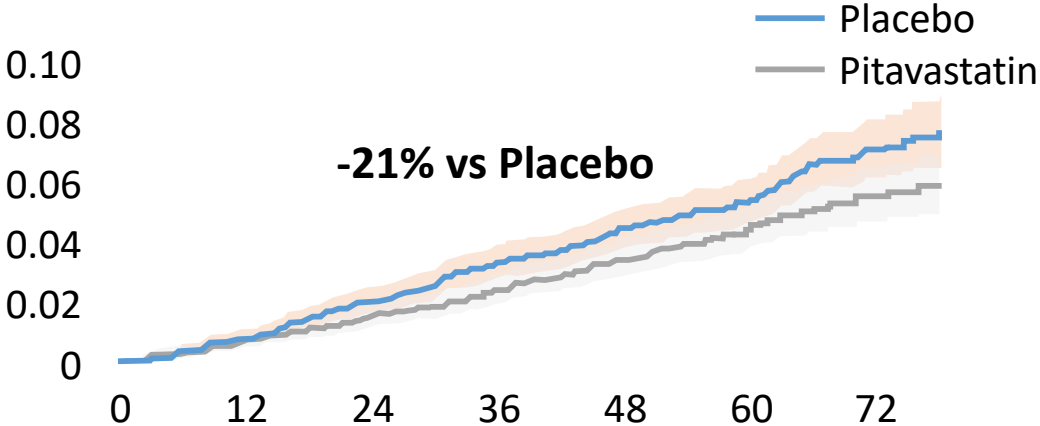
0%	0.6%	1.0%	1.4%	1.9%	2.4%	2.7%
0%	0.7%	1.4%	2.1%	2.7%	3.4%	4.4%

Patients at Risk, n

Mo on Study

Pitavastatin	3888	3647	3475	3364	2997	1947	1052
Placebo	3881	3693	3506	3356	2997	2182	959

**First MACE or Death**



0%	0.8%	1.6%	2.4%	3.4%	4.5%	5.5%
0%	0.8%	2.0%	3.3%	4.4%	5.3%	7.1%

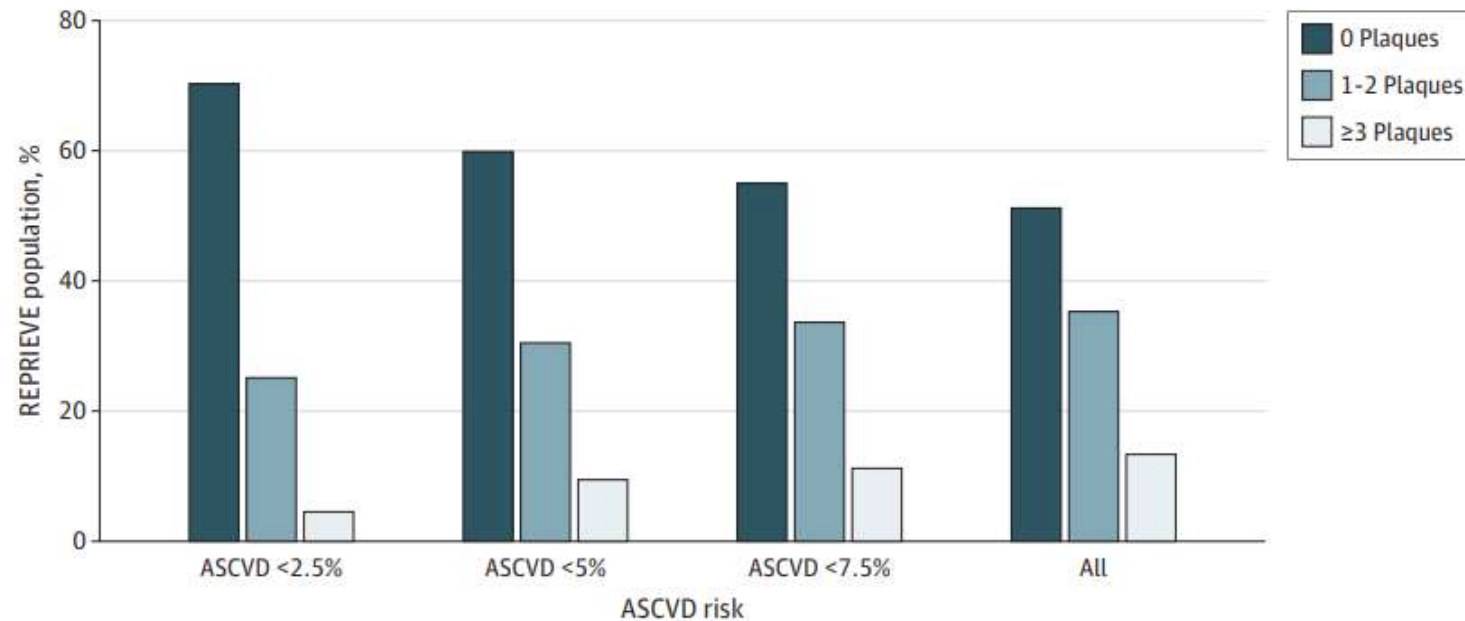
Patients at Risk, n

Mo on Study

Pitavastatin	3888	3647	3475	3364	2998	1948	1027
Placebo	3881	3693	3506	3356	2997	1975	919

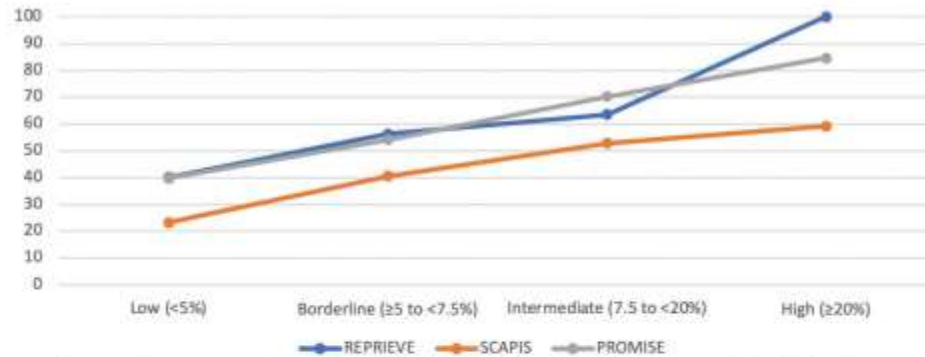
# Assessment of Coronary Artery Disease With Computed Tomography Angiography and Inflammatory and Immune Activation Biomarkers Among Adults With HIV Eligible for Primary Cardiovascular Prevention

Figure. Relative Distribution of Coronary Plaque by Atherosclerotic Cardiovascular Disease (ASCVD) Risk Scores

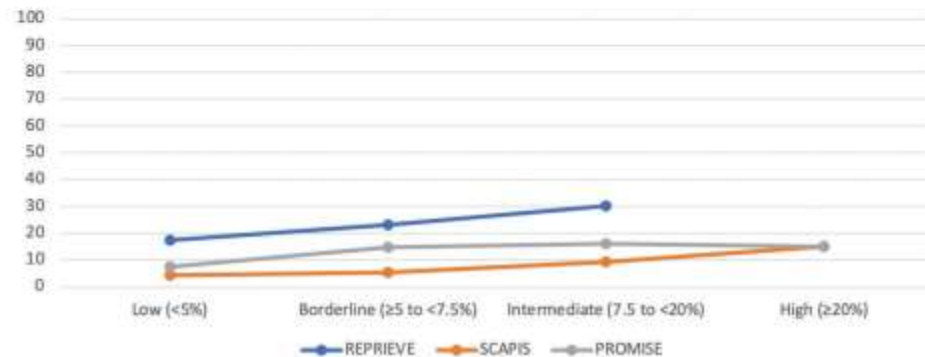


# CORONARY ARTERY DISEASE IN LOW- TO INTERMEDIATE-RISK ASYMPTOMATIC PEOPLE WITH HIV: COMPARISON TO ASYMPTOMATIC COMMUNITY AND STABLE CHEST PAIN POPULATIONS WITHOUT KNOWN HIV

**Figure:** Prevalence of coronary artery plaque in % by estimated 10-year ASCVD risk category in A) all persons and B) the subgroup with coronary artery calcium score = 0.  
**A) Prevalence of coronary plaque by ASCVD risk.**



**B) Prevalence of coronary plaque by ASCVD risk, in the subgroup with CAC=0.**





# 2022 ESC PH Kılavuzu

## **GROUP 1** Pulmonary arterial hypertension (PAH)

### 1.1 Idiopathic

#### 1.1.1 Non-responders at vasoreactivity testing

#### 1.1.2 Acute responders at vasoreactivity testing

### 1.2 Heritable<sup>a</sup>

### 1.3 Associated with drugs and toxins<sup>a</sup>

### 1.4 Associated with:

#### 1.4.1 Connective tissue disease

#### 1.4.2 HIV infection

#### 1.4.3 Portal hypertension

#### 1.4.4 Congenital heart disease

#### 1.4.5 Schistosomiasis

### 1.5 PAH with features of venous/capillary (PVOD/PCH) involvement

### 1.6 Persistent PH of the newborn

Further tests (echocardiography, BNP/NT-proBNP, PFTs, and/or CPET) should be considered in symptomatic patients with CTD, portal hypertension, or HIV to screen for PAH<sup>172</sup>

**IIa**

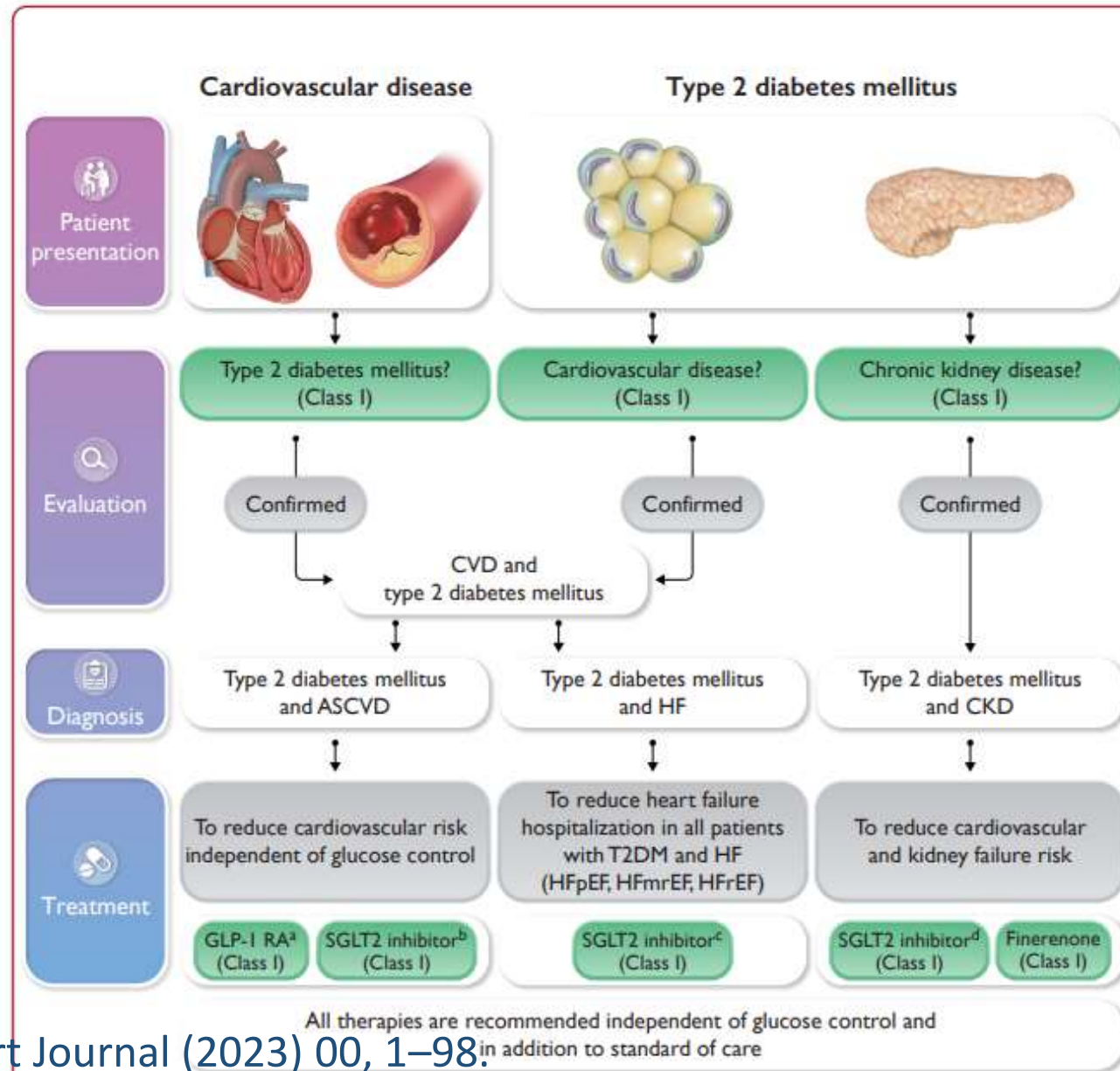
**B**

## **Recommendation Table 16 — Recommendations for pulmonary arterial hypertension associated with human immunodeficiency virus infection**

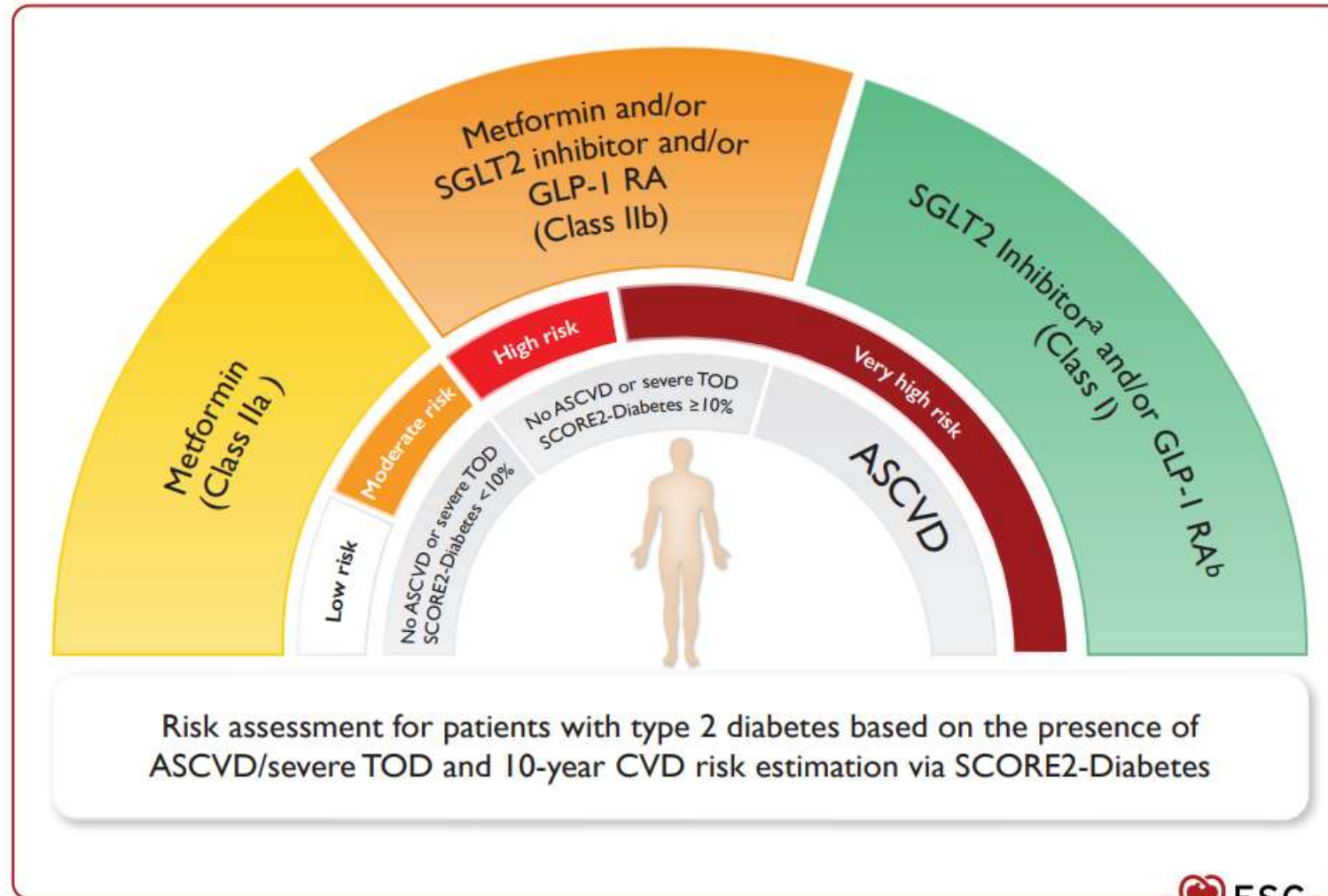
<b>Recommendations</b>	<b>Class<sup>a</sup></b>	<b>Level<sup>b</sup></b>
In patients with PAH associated with HIV infection, antiretroviral treatment according to current guidelines is recommended <sup>541,542</sup>	<b>I</b>	<b>A</b>
In patients with PAH associated with HIV infection, initial monotherapy should be considered, followed by sequential combination if necessary, taking into consideration comorbidities and drug–drug interactions	<b>IIa</b>	<b>C</b>

© ESC/ERS 2022

# 2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes

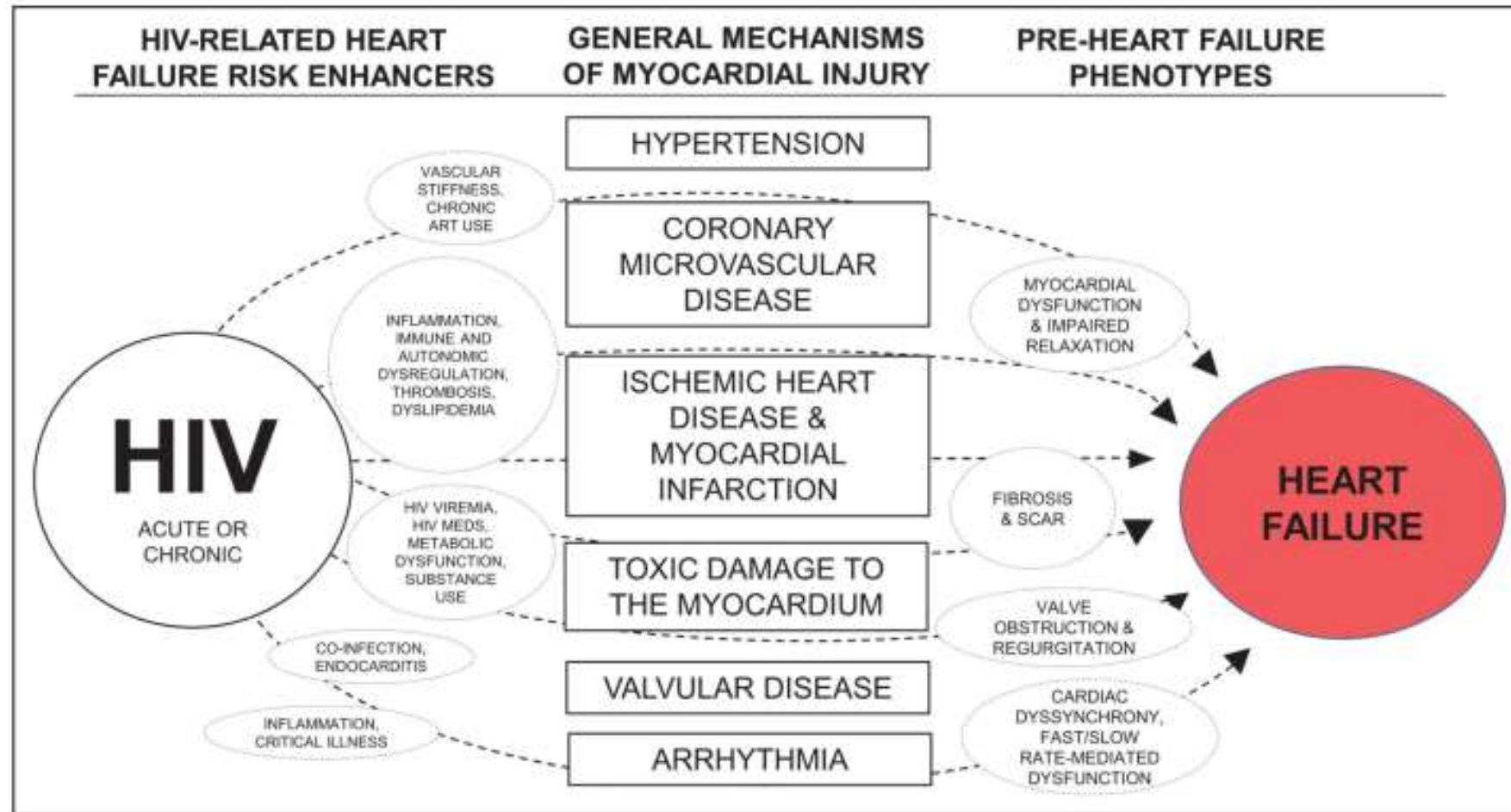


# 2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes



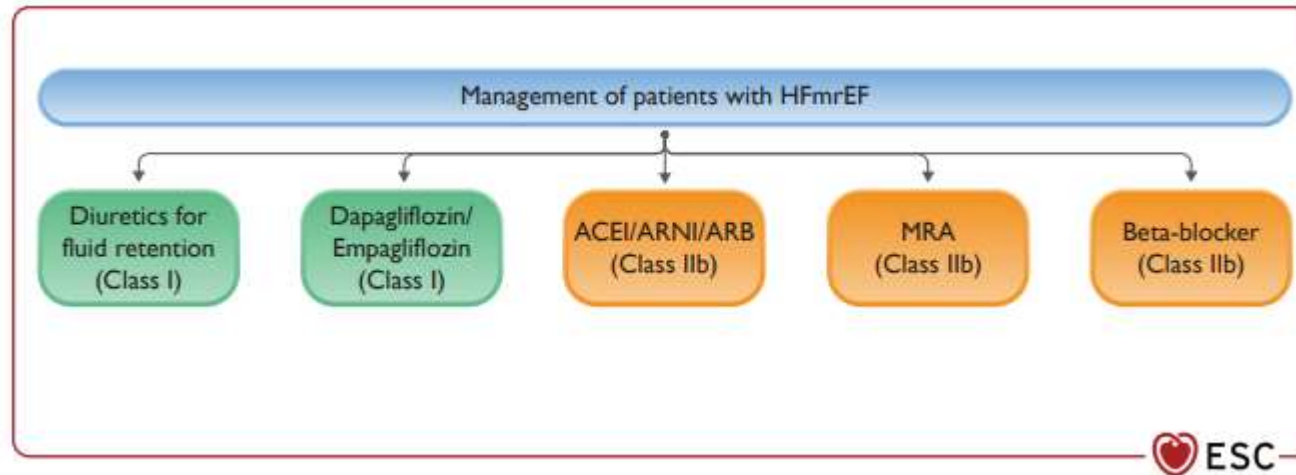
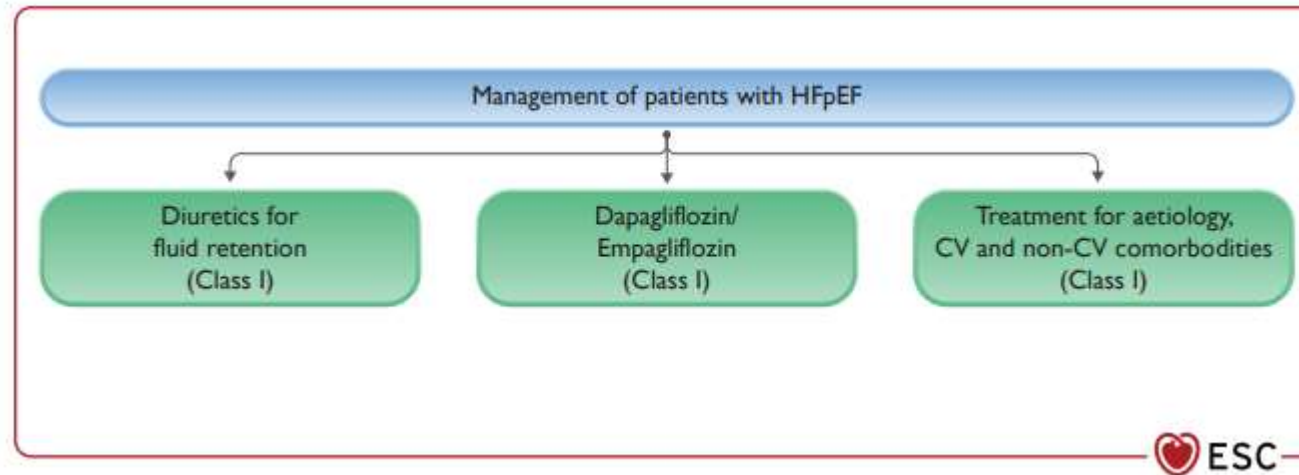


# Characteristics, Prevention, and Management of Cardiovascular Disease in People Living With HIV: A Scientific Statement From the American Heart Association



**Figure 3. Proposed mechanisms of myocardial dysfunction and heart failure in HIV.**  
ART indicates antiretroviral therapy.

# 2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure



# 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure/

2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Tüm DEF-KY hastalarında önerilen ilaçlar

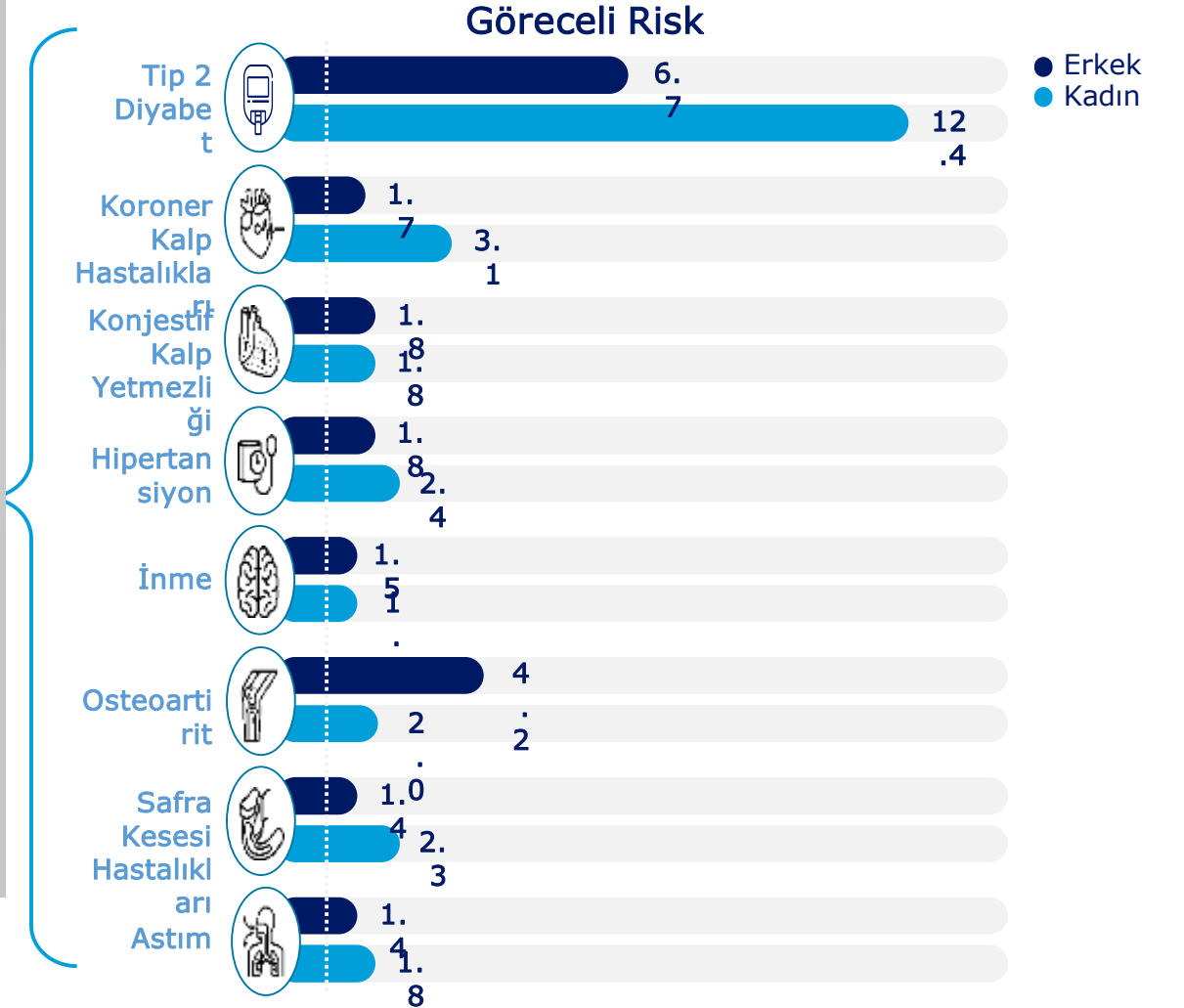
Mortaliteyi azaltmak için – Tüm hastalarda			
ACEi/ARNi	BB	MRA	SGLT2i



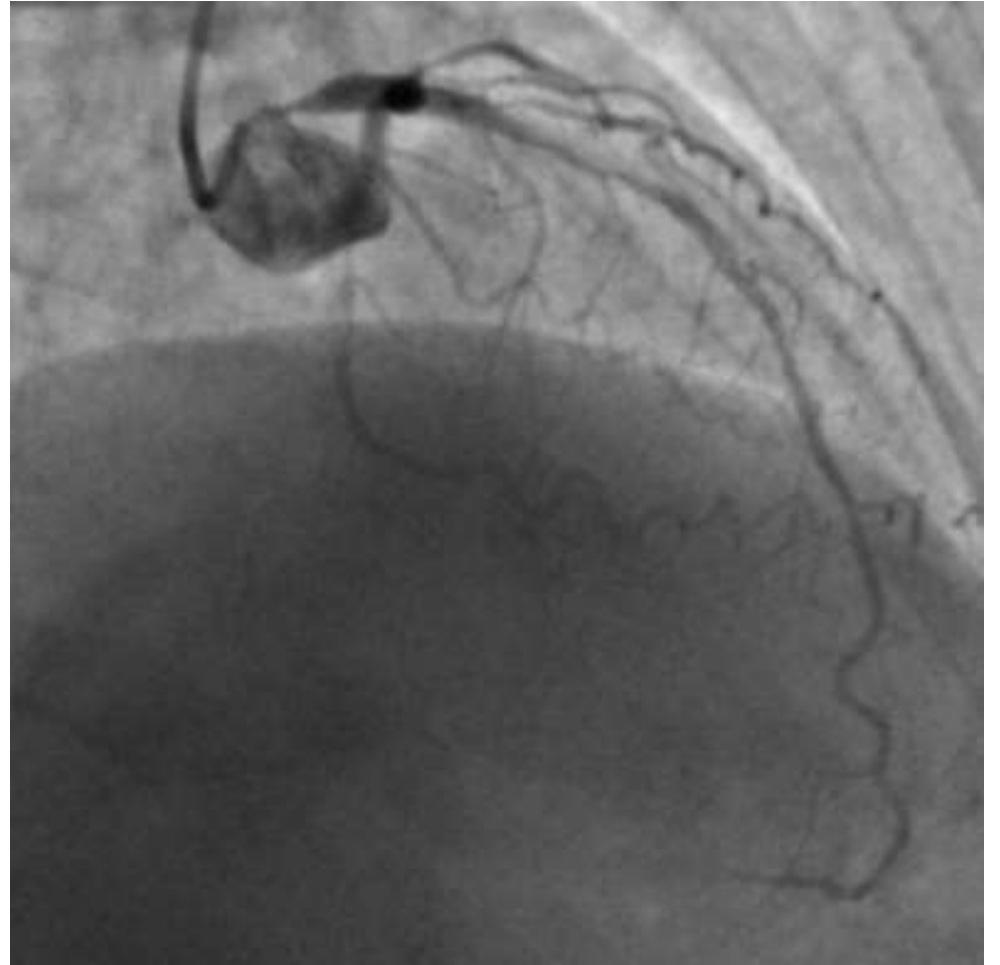
- McDonagh TA et al. Eur Heart J . 2021 Sep 21;42(36):3599-3726.
- McDonagh TA, et al. European Heart Journal (2023) 00, 1–13

# Obezite birden fazla komorbidite ile ilişkilidir

Normal VKİ'ye sahip bireylere kıyasla göreceli komorbidite riski







Teşekkürler!