Kardiyovasküler Komplikasyonlar ve HIV

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Genel Bakış : Sorun Ne ?

AIDS ve infeksiyonla ilişkili mortalite

- Subklinik ateroskleroz !
- Semptomatik **<u>aterosklerotik</u>** kardiyovasküler hastalık – MORBİDİTE
- Kardiyovasküler MORTALİTE

Aterosklerotik KV riski ve HIV

- Klinik kohortlar → HIV (+) → 1,5 x insidans 
- ABD sigorta verileri:

  KKH insidansı ↑ x6,76 erkekler, ↑ x2,47 kadınlar)
- Akut MI riski (diğer risk fx,komoribditelere göre düzeltilmiş): HR 1.48 !!
- ABD referans hastane verileri, MI riski:

  RR 1.75, 95% CI 1.51–2.02

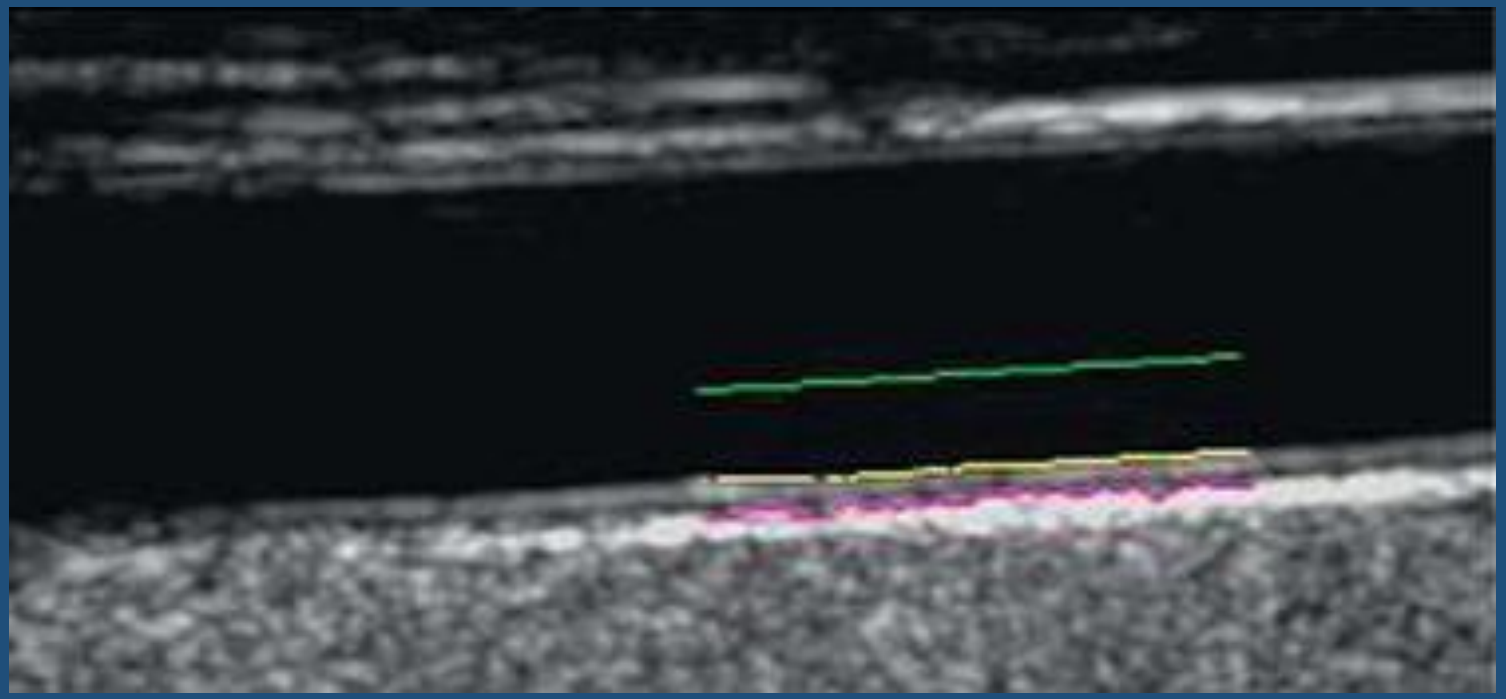
Sub-klinik Ateroskleroz ve HIV

- Genç popülasyonda yapılan çalışmalar
- "Surrogate" son-nokta olan parametreler:
  İntima-media kalınlığı
  USG ile lümen içi plaklar
  BT ile koroner arter kalsifikasyonu
  BT ile koroner plak tayini
- … Son noktalar ile gelecekteki KV olaylar ile KORELASYON (+) (HIV - bireylerde) !

IMT

Asemptomatik orta riskli hastalarda ateroskleroz varlığı değerlendirmesi

(kalınlaşma > 0,9 mm, plak)



IMT ve HIV

- Çoğu çalışmada HIV (+) bireylerde IMT ⬆
- META-ANALİZ : Fark var ama çok az : 0.04 mm (95% CI 0.02-0.06)
- 300 HIV (+) hastanın 2,4 yıl izleminde:

Karotid Plak oranı daha fazla (%50 vs %23) → HIV (+) ise daha hızlı seyir...

- Tedavilerin IMT etkileri farklı olabilir ...

Koroner arter kalsifikasyonu, plak -BT

- HIV (+) vs. benzer kardiyovasküler risk skorlarına sahip HIV (-) → prevelans oranı 1.13, (95% CI 1.04-1.23)
  - Özellikle kalsifiye olmayan plaklar daha fazla
- PLAK varlığı → yaş , düşük CD4, ART süresi ilişkili
  - Plak olan HIV + hastada statin verilirse ?

Lancet Infect Dis. 2015;2(2):e52

Plak volüm ⬇

KV Hastalık/subklinik ateroskleroz ve HIV… neden?

- **HIV hastalarında geleneksel KV risk faktörlerinin halihazırda yüksek oranda bulunması ?**

- **HIV infeksiyonunun kendi etkileri ?**

- **Verilen tedavilerin yan-etkileri ?**

(toksisite +/- dislipidemi)

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HIV (+) hastalarda "geleneksel" KV risk faktörleri

- **Dislipidemi**

(düşük HDL, artmış TG, metbolik sendrom, ART bağımsız?): Değişik ilaçların değişik etkileri?

- **Hipertansiyon**

(%21 vs %16, ART etkisi? >5 yıl kullanım)

- **Diabetes Mellitus**

(4,7/100 yıl HIV+ vs 1,4/100 yıl HIV(-) ..MACS çalışması

- **Sigara**

(HIV + kohortlarda daha fazla … APROCO vs MONICA kohort, %42 vs %21 ABD taraması, diğer ülkeler %57-72 sigara kullanımı!!)

HIV (+) hastalarda “geleneksel” KV risk faktörleri

- **Risk faktörleri toplum ortalamasından bile yüksek!**
- **Ne kadar KV risk artışından sorumlu**

- **TEK BAŞINA SORUMLU DEĞİL!!!**

- **KV risk faktörleri ile MÜCADELE edilmeli**

Kardiyovaküler Riske Dikkat!

- Yaş >40
- Sigara içenler / bırakmışlar
- Hipertansiyon hastaları
- Diabetes Mellitus / metabolik sendrom
- Bel çevresi >90cm kadın, >110 cm erkek
- Aile hikayesi (erken KV hastalık, DM)

İlk bakışta KV Risk İçin…

- Açlık lipid profili
- DM? (AKŞ, HbA1c)
- Sigara (sormanız bile yetebilir!)
- Aile hikayesi
- Kan basıncı ölçümü (Yeni kılavuzlara dikkat!)
- Bel çevresi
- Vücut kitle indeksi hesaplamak
- Diyet ve egzersiz (yaşam stilinin değerlendirilmesi)
- Efor anginası, efor kapasitesi?, dispne, palpitasyon, senkop,vb)

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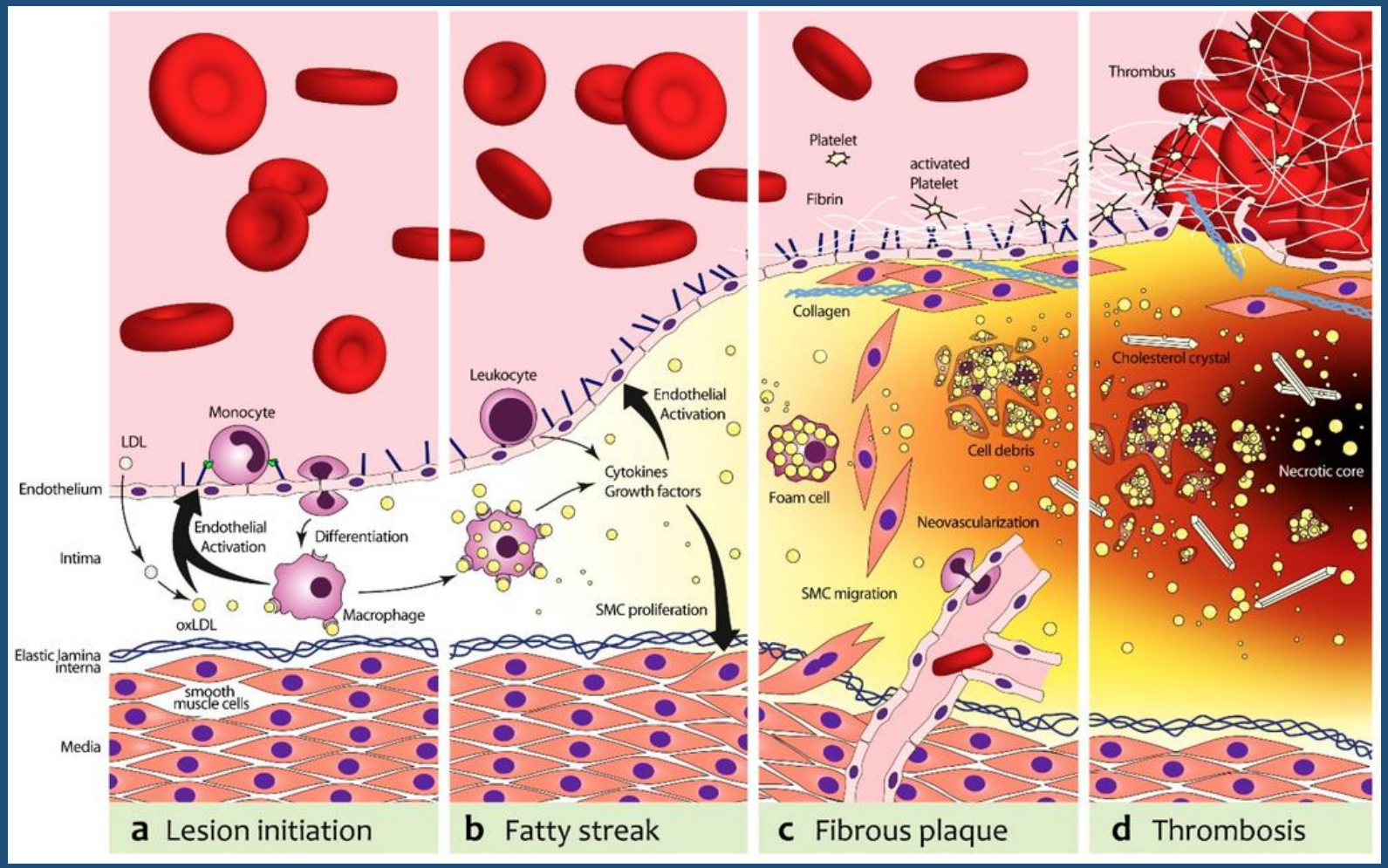
(toksisite +/- dislipidemi)

Aterosklerozun patogenezi



Steinl DC, Kaufmann BA. Int. J. Mol. Sci. **2015**, *16*(5), 9749-9769

Ateroskleroz için…

- İnflamasyon
- İmmün disregülasyonu (T hücre, monosit) sCD163 r
- Endotel disfonksiyonu
- Plak rüptürü
- Koagülasyon
- Ko-infeksiyon (CMV, HSV, HCV)

+

* Geleneksel Risk Faktörleri

İnflamasyon

- **İnflamasyon → endotel disfonksiyonu → protrombotik ortam, plak rüptürü**
- **HIV (+) → CRP, IL-6**
- **CRP: LDL bağlanarak makrofajlarca alımını arttırır, adezyon moleküllerini, IL-6, MCP-1 arttırarak plaktaki immün hücre birikimi kolaylaştırır**
- **CRP: Neden / sonuç?**
- **hS-CRP :**
- **<1, 1-3, >3 mg/L Stabil KKH, akut MI, KKY,PAD, AF**
- **Statin tx ile CRP azalması → prognoz!**

(AFCAPS/TexCAPS, JUPITER, PROVE-IT TIMI 22, A to Z)

İnflamasyon-2

- **HIV (+) hastada ↑ CRP :**

bağımsız mortalite prediktörü

- **HIV + ve CRP yüksek hastalarda MI riski : x4**
- **ART ile CRP etkisi ve KVH ilişkisi ????**
- **IL-6: ↑ IL6 → KV olaylar, total mortalite ilişkili *(SMART)***
- **ART modalitesi → inflamasyon etkisi & KV olaylar ?? Net değil (abacavir)**

HIV infeksiyonu ve Dislipidemi

- **ART almayan hastalarda da dislipidemi +**
- **Makrofajlardan kolesterol çıkışının HIV tarafından inhibisyonu?**
- **ABCA-1 bağımlı (ATP-binding casette transporter-1) kolesterol "efflux" HIV tarafından inhibe ediliyor!**
- **ART öncesi devirler → Yüksek TG (viremi ile korelasyon!), düşük HDL, düşük LDL**

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HIV tedavisi ve KV olaylar

- ART alan hastalarda KV olay riski tedavi almayan HIV hastalarına göre daha yüksek ? → Çoğu kohort sonucu bu … *(benzer olduğuna dair veriler de yok değil!)*
- D:A:D Çalışma Grubu: Prospektif Mİ riski

Kümülatif ART maruziyeti arttıkça risk ⬆

Her yıl için … RR 1.26, 95% CI 1.12–1.41

ART ile Mİ ilişkisi T.kolesterol ve TG seviyelerine göre düzeltmeden sonra da SÜRÜYOR...

??? ART ve KV olaylar = ilaç direkt etkisi + dislipidemi etkisi?

.. yine de: Artmış CD4 sayısı, düşük HIV RNA → Mİ riski düşüyor (bazı çalışmalarda, D:A:D kohortu hariç) + ART ara verilmesi → Mİ riskini ARTTIRIYOR! (SMART)

ABACAVIR (MI risk artışı ??)

ART ve Lipidler

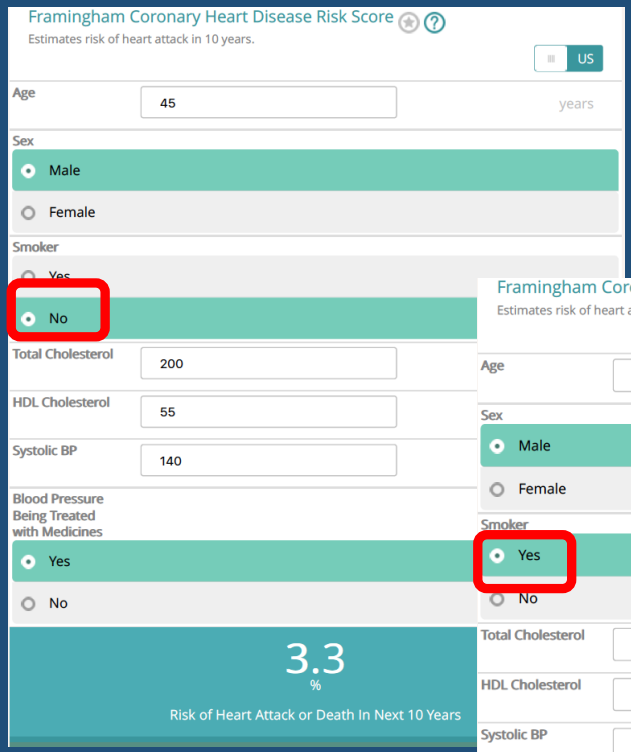
- Değişik sınıfların lipid profili üzerine FARKLI etkileri(+)
- Sınıf içi ajanlar arasında farklar (+)
- Ritonavir – TG, LDL, T.kol artışı, HDL düşüşü
- Kombinasyon: Atazanavir + Rit > Lopinavir + Rit

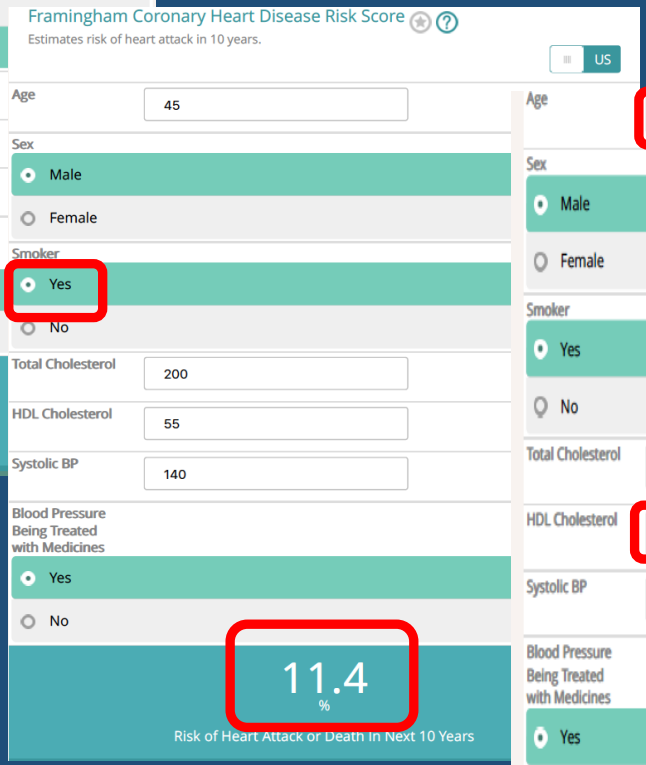
  Darunavir + Rit > lopinavir + Rit
- Non-nüleozid RT inhibitörleri: Nevirapine, rilpivirine
- Nükleozid RT inhibitörleri: Tenofovir, emtricitabine
- İntegraz inhibitörleri: Raltegravir, dolutegravir

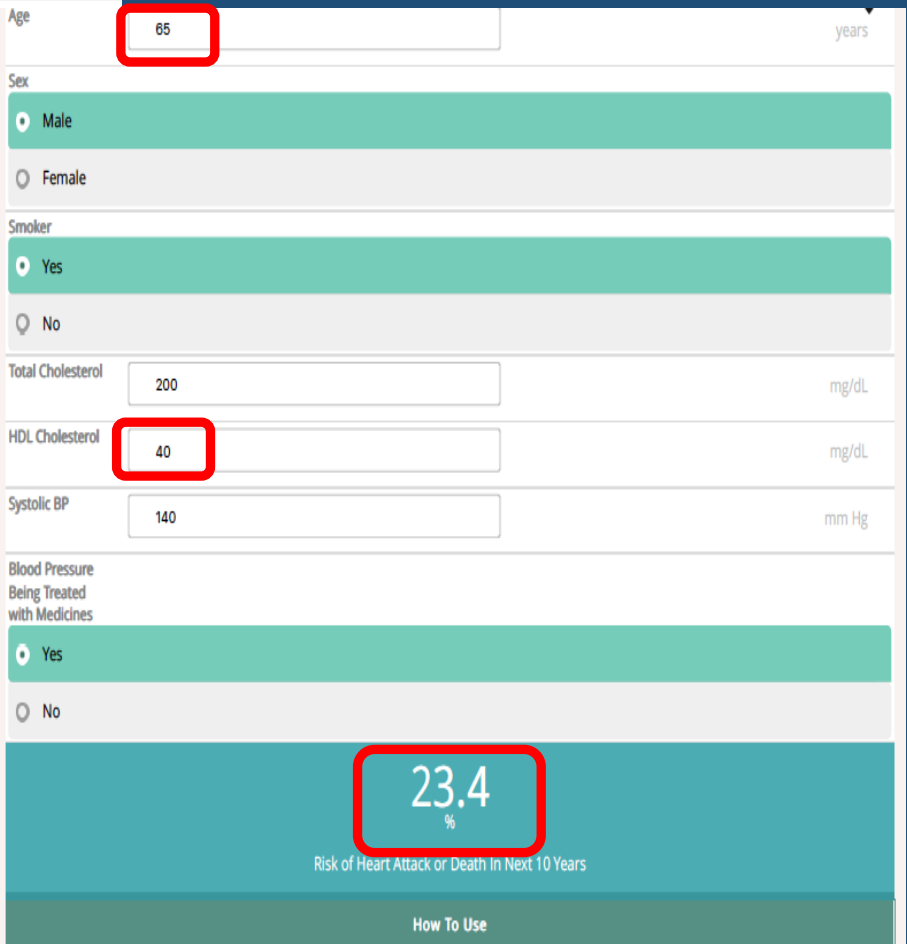
Kardiyovasküler Risk: Skorlar

- Global KV risk kavramı
- Framingham
- SCORE
- DAD
- ASCVD – pooled cohort
- 5-10 yıllık riskin değerlendirilmesi vs “yaşam boyu risk”

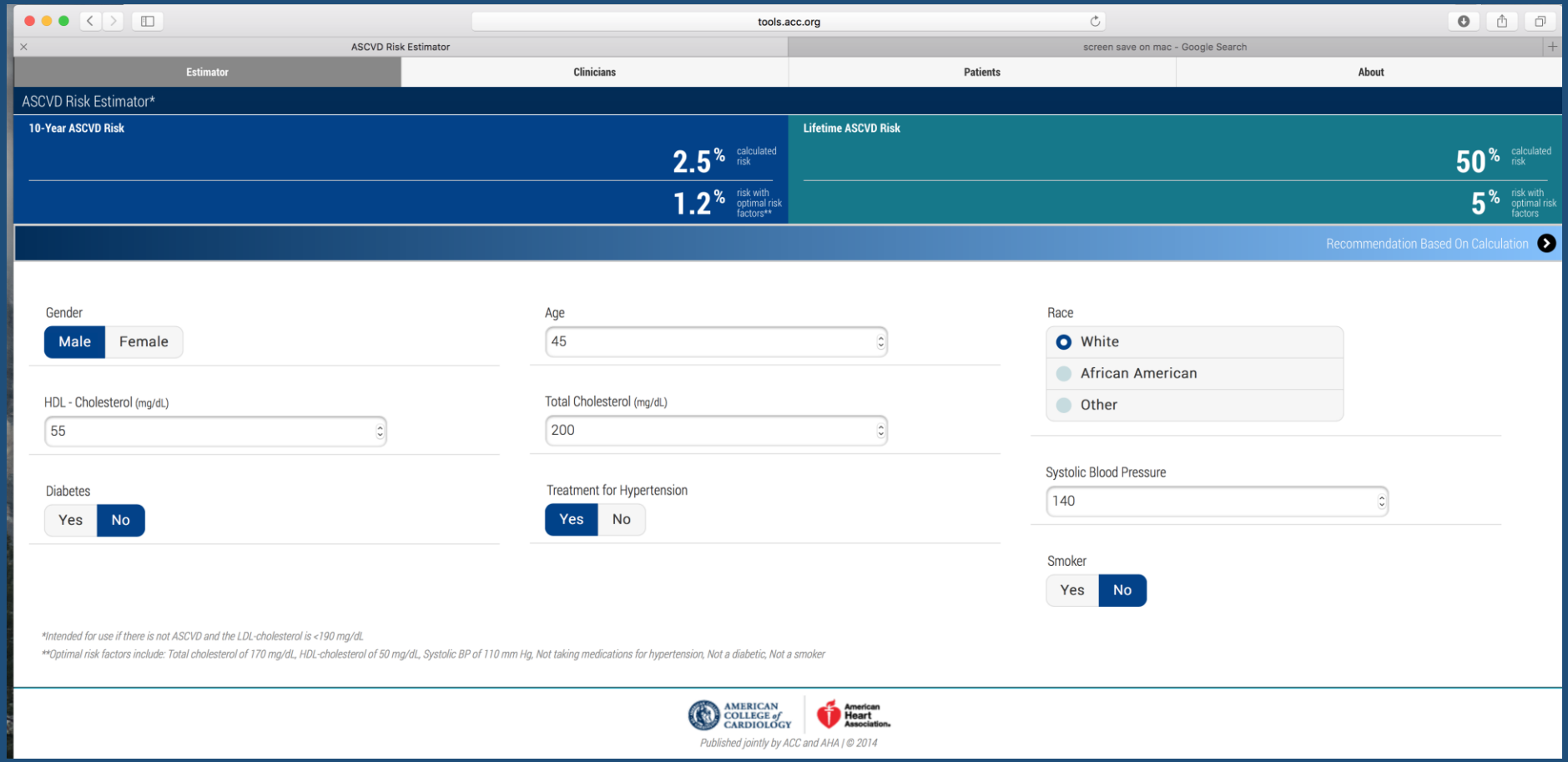
Global KV Risk (Framingham)







Global KV Risk (ASCVD)



Global KV Risk (ASCVD)-2

Back | Recommendation

Based on the data entered (assuming no clinical ASCVD and LDL-C 70-189 mg/dL):

- Gender: Male
- Age: 45
- Race: White/Other
- Total Cholesterol: 200
- HDL-Cholesterol: 55
- Systolic Blood Pressure: 140
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

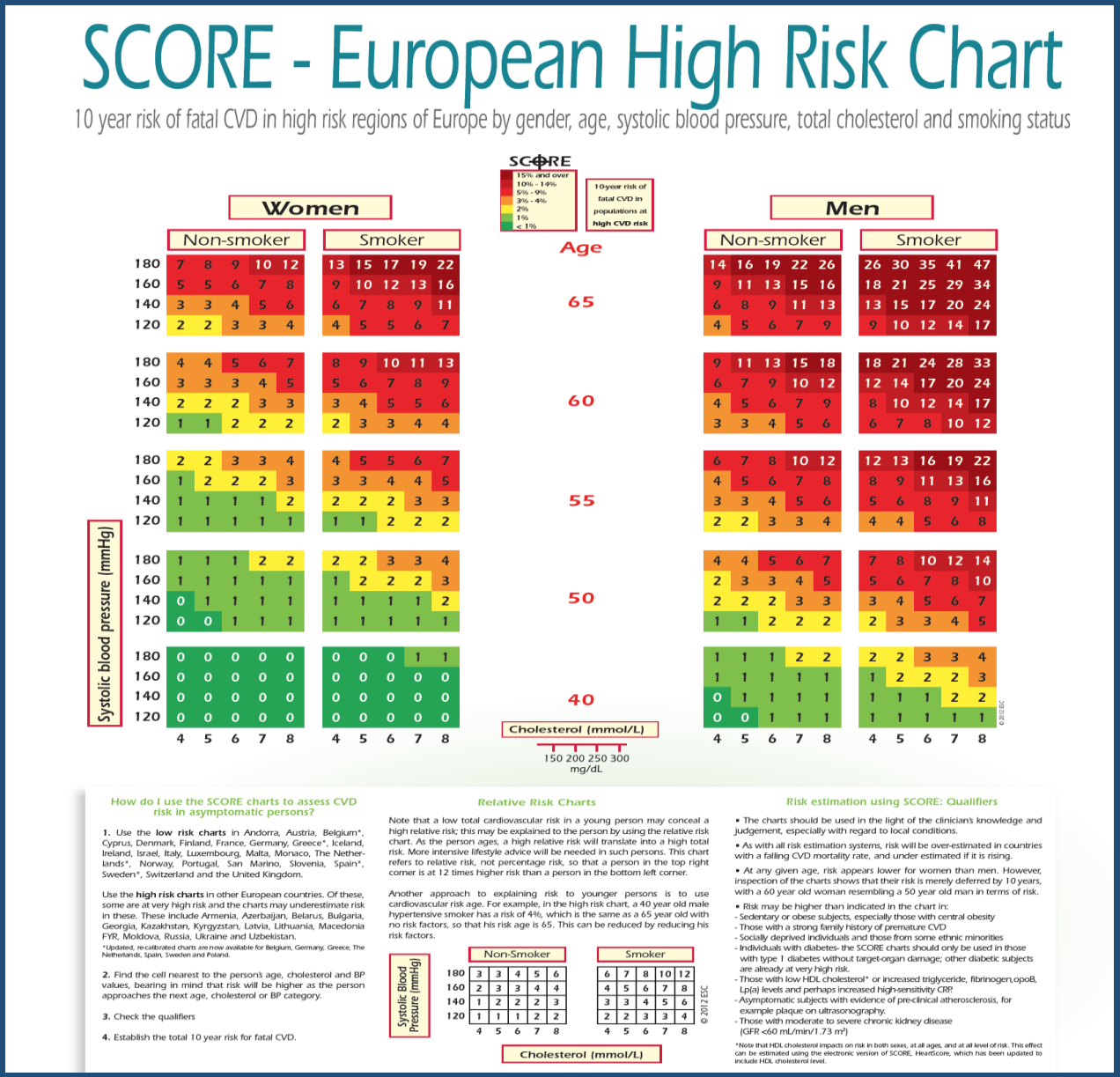
Not In Statin Benefit Group Due To 10-Year ASCVD Risk <5%

In individuals for whom after quantitative risk assessment a risk-based treatment decision is uncertain, additional factors may be considered to inform treatment decision making. These factors may include primary LDL-C ≥160 mg/dL or other evidence of genetic hyperlipidemias, family history of premature ASCVD with onset <55 years of age in a first degree male relative or <65 years of age in a first degree female relative, high-sensitivity C-reactive protein ≥2 mg/L, CAC score ≥300 Agatston units or ≥75 percentile for age, sex, and ethnicity, ankle-brachial index <0.9, or elevated lifetime risk of ASCVD. Additional factors may be identified in the future. (IIb C)

Lifestyle Recommendations

AHA/ACC guidelines stress the importance of lifestyle modifications to lower cardiovascular disease risk. This includes eating a heart-healthy diet, regular aerobic exercises, maintenance of desirable body weight and avoidance of tobacco products.

Global KV Risk (SCORE)



SCORE - European High Risk Chart

10 year risk of fatal CVD in high risk regions of Europe by gender, age, systolic blood pressure, total cholesterol and smoking status

SCORE
15% and over
10% - 14%
5% - 9%
3% - 4%
2%
1%
< 1%

10-year risk of fatal CVD in populations at high CVD risk

Women

Systolic blood pressure (mmHg)	Non-smoker					Smoker				
	Cholesterol (mmol/L) 4	5	6	7	8	4	5	6	7	8
180	7	8	9	10	12	13	15	17	19	22
160	5	5	6	7	8	9	10	12	13	16
140	3	3	4	5	6	6	7	8	9	11
120	2	2	3	3	4	4	5	5	6	7
180	4	4	5	6	7	8	9	10	11	13
160	3	3	3	4	5	5	6	7	8	9
140	2	2	2	3	3	3	4	5	5	6
120	1	1	2	2	2	2	3	3	4	4
180	2	2	3	3	4	4	5	5	6	7
160	1	2	2	2	3	3	3	4	4	5
140	1	1	1	1	2	2	2	2	3	3
120	1	1	1	1	1	1	1	2	2	2
180	1	1	1	2	2	2	2	3	3	4
160	1	1	1	1	1	1	2	2	2	3
140	0	1	1	1	1	1	1	1	1	2
120	0	0	1	1	1	1	1	1	1	1
180	0	0	0	0	0	0	0	0	1	1
160	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0

Age

Age	Men Non-smoker					Men Smoker				
	Cholesterol (mmol/L) 4	5	6	7	8	4	5	6	7	8
65	14	16	19	22	26	26	30	35	41	47
	9	11	13	15	16	18	21	25	29	34
	6	8	9	11	13	13	15	17	20	24
	4	5	6	7	9	9	10	12	14	17
60	9	11	13	15	18	18	21	24	28	33
	6	7	9	10	12	12	14	17	20	24
	4	5	6	7	9	8	10	12	14	17
	3	3	4	5	6	6	7	8	10	12
55	6	7	8	10	12	12	13	16	19	22
	4	5	6	7	8	8	9	11	13	16
	3	3	4	5	6	5	6	8	9	11
	2	2	3	3	4	4	4	5	6	8
50	4	4	5	6	7	7	8	10	12	14
	2	3	3	4	5	5	6	7	8	10
	2	2	2	3	3	3	4	5	6	7
	1	1	2	2	2	2	3	3	4	5
40	1	1	1	2	2	2	2	3	3	4
	1	1	1	1	1	1	2	2	2	3
	0	1	1	1	1	1	1	2	2	2
	0	0	1	1	1	1	1	1	1	1

Cholesterol (mmol/L)

150 200 250 300 mg/dL

© 2012 ESC

How do I use the SCORE charts to assess CVD risk in asymptomatic persons?

1. Use the **low risk charts** in Andorra, Austria, Belgium*, Cyprus, Denmark, Finland, France, Germany, Greece*, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, The Netherlands*, Norway, Portugal, San Marino, Slovenia, Spain*, Sweden*, Switzerland and the United Kingdom.

Use the **high risk charts** in other European countries. Of these, some are at very high risk and the charts may underestimate risk in these. These include Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia FYR, Moldova, Russia, Ukraine and Uzbekistan.

*Updated, re-calibrated charts are now available for Belgium, Germany, Greece, The Netherlands, Spain, Sweden and Poland.

2. Find the cell nearest to the person's age, cholesterol and BP values, bearing in mind that risk will be higher as the person approaches the next age, cholesterol or BP category.

3. Check the qualifiers

4. Establish the total 10 year risk for fatal CVD.

Relative Risk Charts

Note that a low total cardiovascular risk in a young person may conceal a high relative risk; this may be explained to the person by using the relative risk chart. As the person ages, a high relative risk will translate into a high total risk. More intensive lifestyle advice will be needed in such persons. This chart refers to relative risk, not percentage risk, so that a person in the top right corner is at 12 times higher risk than a person in the bottom left corner.

Another approach to explaining risk to younger persons is to use cardiovascular risk age. For example, in the high risk chart, a 40 year old male hypertensive smoker has a risk of 4%, which is the same as a 65 year old with no risk factors, so that his risk age is 65. This can be reduced by reducing his risk factors.

Systolic Blood Pressure (mmHg)	Non-Smoker					Smoker				
	Cholesterol (mmol/L) 4	5	6	7	8	4	5	6	7	8
180	3	3	4	5	6	6	7	8	10	12
160	2	3	3	4	4	4	5	6	7	8
140	1	2	2	2	3	3	3	4	5	6
120	1	1	1	2	2	2	2	3	3	4

Cholesterol (mmol/L)

© 2012 ESC

Risk estimation using SCORE: Qualifiers

- The charts should be used in the light of the clinician's knowledge and judgement, especially with regard to local conditions.
- As with all risk estimation systems, risk will be over-estimated in countries with a falling CVD mortality rate, and under estimated if it is rising.
- At any given age, risk appears lower for women than men. However, inspection of the charts shows that their risk is merely deferred by 10 years, with a 60 year old woman resembling a 50 year old man in terms of risk.
- Risk may be higher than indicated in the chart in:
  - Sedentary or obese subjects, especially those with central obesity
  - Those with a strong family history of premature CVD
  - Socially deprived individuals and those from some ethnic minorities
  - Individuals with diabetes- the SCORE charts should only be used in those with type 1 diabetes without target-organ damage; other diabetic subjects are already at very high risk.
  - Those with low HDL cholesterol* or increased triglyceride, fibrinogen,apoB, Lp(a) levels and perhaps increased high-sensitivity CRP.
  - Asymptomatic subjects with evidence of pre-clinical atherosclerosis, for example plaque on ultrasonography.
  - Those with moderate to severe chronic kidney disease (GFR <60 mL/min/1.73 m²)

*Note that HDL cholesterol impacts on risk in both sexes, at all ages, and at all level of risk. This effect can be estimated using the electronic version of SCORE, HeartScore, which has been updated to include HDL cholesterol level.

D:A:D(F) SKORU

1. Age: yr

2. Gender: Male Female

3. Previous smoker? Yes No

4. Smoker? Yes No

5. Family CVD history? Yes No

6. Diabetes? Yes No

7. Abacavir treatment? Yes No

8. PI exposure: yr

9. NRTI exposure: yr

10. CD4 cell count: Cells/µL

11. Systolic blood pressure: mmHg

12. Total cholesterol: mg/dL

13. HDL: mg/dL

Risk Skorları Benzer mi?

DOI: 10.1111/hiv.12300
HIV Medicine (2015)

ORIGINAL RESEARCH

Cardiovascular risk prediction in HIV-infected patients: comparing the Framingham, atherosclerotic cardiovascular disease risk score (ASCVD), Systematic Coronary Risk Evaluation for the Netherlands (SCORE-NL) and Data Collection on Adverse Events of Anti-HIV Drugs (D:A:D) risk prediction models

M Krikke,[1] RC Hoogeveen,[1] AIM Hoepelman,[1] FLJ Visseren[2] and JE Arends[1]

Results

A total of 997 HIV-infected patients were included in the study: 81% were male and they had a median age of 46 [interquartile range (IQR) 40–52] years, a known duration of HIV infection of 6.8 (IQR 3.7–10.9) years, and a median time on ART of 6.4 (IQR 3.0–11.5) years. The D:A:D, ASCVD and SCORE-NL models gave a lower cumulative CVD risk, compared with that of the FHS-CVD and FHS-CHD models. Comparing the general CVD models with the D:A:D model, the FHS-CVD and FHS-CHD models only classified 65% and 79% of patients, respectively, in the same category as did the D:A:D model. However, for the ASCVD and SCORE-NL models, this percentage was 89% and 87%, respectively. Furthermore, FHS-CVD and FHS-CHD attributed a higher CVD risk to 33% and 16% of patients, respectively, while this percentage was < 6% for ASCVD and SCORE-NL.

Conclusions

When using FHS-CVD and FHS-CHD, a higher overall CVD risk was attributed to the HIV-infected patients than when using the D:A:D, ASCVD and SCORE-NL models. This could have consequences regarding overtreatment, drug-related adverse events and drug–drug interactions.

Risk Skorları Benzer mi?

Clin Infect Dis. 2016 December 01; 63(11): 1508–1516. doi:10.1093/cid/ciw615.

Cardiovascular Disease Risk Prediction in the HIV Outpatient Study

Angela M. Thompson-Paul[1,2], Kenneth A. Lichtenstein[4], Carl Armon[5], Frank J. Palella Jr[6], Jacek Skarbinski[1], Joan S. Chmiel[6], Rachel Hart[5], Stanley C. Wei[1], Fleetwood Loustalot[3], John T. Brooks[1], and Kate Buchacz[1]

Results—From January 2002 through September 2013, 195 (8.5%) HOPS participants experienced an incident CVD event in 15 056 person-years. The FRS demonstrated moderate discrimination and was well calibrated (C-statistic: 0.66, E/O: 1.01, $P = .89$). The PCE and D:A:D risk equations demonstrated good discrimination but were less well calibrated (C-statistics: 0.71 and 0.72 and E/O: 0.88 and 0.80, respectively; $P < .001$ for both), whereas SCORE performed poorly (C-statistic: 0.59, E/O: 1.72; $P = .48$).

Conclusions—Only the FRS accurately estimated risk of CVD events, while PCE and D:A:D underestimated risk. Although these models could potentially be used to rank US HIV-infected individuals at higher or lower risk for CVD, the models may fail to identify substantial numbers of HIV-infected persons with elevated CVD risk who could potentially benefit from additional medical treatment.

Risk Skorları Benzer mi?

JAMA Cardiol. 2017 Feb 1;2(2):155-162. doi: 10.1001/jamacardio.2016.4494.

Assessing and Refining Myocardial Infarction Risk Estimation Among Patients With Human Immunodeficiency Virus: A Study by the Centers for AIDS Research Network of Integrated Clinical Systems.

Feinstein MJ[1], Nance RM[2], Drozd DR[2], Ning H[3], Delaney JA[4], Heckbert SR[4], Budoff MJ[5], Mathews WC[6], Kitahata MM[2], Saag MS[7], Eron JJ[8], Moore RD[9], Achenbach CJ[10], Lloyd-Jones DM[3], Crane HM[2].

RESULTS: Of the 11 288 patients with complete baseline data, 6904 were white and 9250 were men. Myocardial infarction rates were higher among black men (6.9 per 1000 person-years) and black women (7.2 per 1000 person-years) than white men (4.4 per 1000 person-years) and white women (3.3 per 1000 person-years), older participants (7.5 vs 2.2 MI per 1000 person-years for adults 40 years and older vs < 40 years old at study entry, respectively), and participants who were not virally suppressed (6.3 vs 4.7 per 1000 person-years for participants with and without detectable viral load, respectively). The 2013 Pooled Cohort Equations, which predict composite rates of MI and stroke, adequately discriminated MI risk (Harrell C statistic = 0.75; 95% CI, 0.71-0.78). Two data-derived models incorporating HIV-specific covariates exhibited weak calibration in a validation sample and did not discriminate risk any better (Harrell C statistic = 0.72; 95% CI, 0.67-0.78 and 0.73; 95% CI, 0.68-0.79) than the Pooled Cohort Equations. The Pooled Cohort Equations were moderately calibrated in the Centers for AIDS Research Network of Clinical Systems but predicted consistently lower MI rates.

EACS KILAVUZ

	Değerlendirme	HIV tanısı alındığında	ART başlama-dan önce	İzlem sıklığı	Yorum	Sayfa
ÖYKÜ						
Tıbbi	Tam tıbbi öykü (aşağıdakileri kapsayacak şekilde)	+	+	İlk ziyarette	Hasta farklı bir hizmet birimine sevk edldiğinde değerlendirmeyi tekrarlayın	
	• Aile öyküsü (örn. erken KVH, diyabet, hipertansiyon, KBH)	+		İlk ziyarette	Erken KVH: birinci dereceden akrabada kardiyovasküler olaylar (erkek < 55, kadın < 65 yıl)	32-34
Kardiyovasküler hastalık	Risk değerlendirmesi (Framingham skoru[iii])	+	+		KVH bulunmayan >40 yaşındaki tüm erkekler ve >50 yaşındaki tüm kadınlarda yapılmalı	
	EKG	+	+/-	Yıllık	İletim sorunları yapma olasılığı bulunan ART başl-anmadan önce EKG yapılması önerilir	
Hipertansiyon	Kan basıncı	+	+	Yıllık		
Lipitler	TK, HDL-k, LDL-k, TG[iv]	+	+	Yıllık	Tıbbi girişim için kullanılacaksa açlık halinde (yani ≥ 8 saat kalori alımı olmadan) tekrarla	

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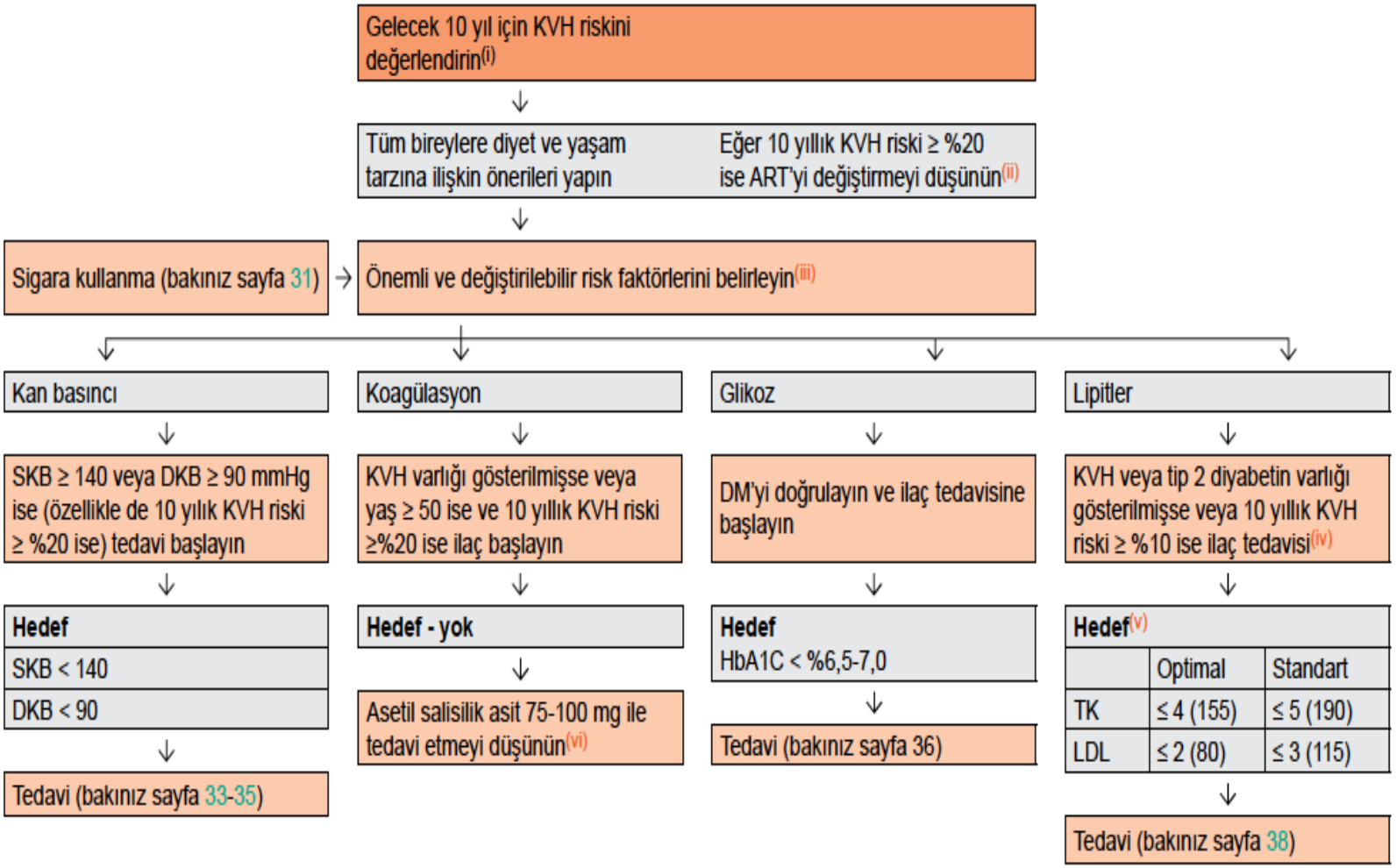

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Drugs used to lower LDL-c

Drug class	Drug	Dose	Side effects	Advise on use of statin together with ART	
				use with PI/r	use with NNRTIs
Statin[i,ix]	atorvastatin[ii]	10-80 mg qd	Gastrointestinal symptoms, headache, insomnia, rhabdomyolysis (rare) and toxic hepatitis	Start with low dose[v] (max: 40 mg)	Consider higher dose[vi]
	fluvastatin[iii]	20-80 mg qd		Consider higher dose[vi]	Consider higher dose[vi]
	pravastatin[iii]	20-80 mg qd		Consider higher dose[vi,vii]	Consider higher dose[vi]
	rosuvastatin[ii]	5-40 mg qd		Start with low dose[v] (max: 20 mg)	Start with low dose[v]
	simvastatin[ii]	10-40 mg qd		Contraindicated	
Intestinal cholesterol absorption inhibitor↓[i,viii]	ezetimibe[iv]	10 mg qd	Gastrointestinal symptoms	No known drug-drug interactions with ART	
PCSK9-inhibitor[x]	evolocumab	140 mg 2 weekly or 420 mg monthly	Nil	No drug-drug interactions anticipated	

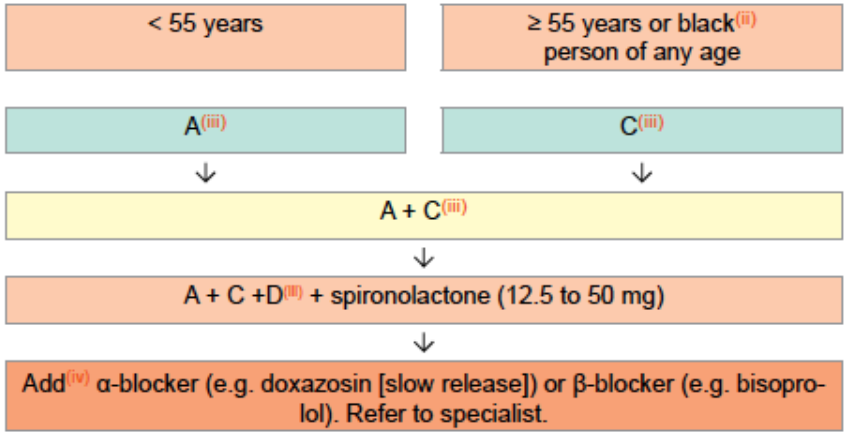
Pitavastatin has as yet no morbidity/mortality trial data to support its use but may have advantages of fewer drug-drug interactions, more

Hypertension: Diagnosis, Grading and Management

Other risk factors, asymptomatic organ damage or disease	Blood pressure (mmHg)	Blood pressure (mmHg)	Blood pressure (mmHg)	Blood pressure (mmHg)
	High normal SBP 130-139 or DBP 85-89	Grade 1 hypertension SBP 140-159 or DBP 90-99	Grade 2 hypertension SBP 160-179 or DBP 100-109	Grade 3 hypertension SBP ≥ 180 or DBP ≥ 110
No other risk factors	• No BP intervention	• Lifestyle changes[i] for several months • Then add BP drugs targeting < 140/90	• Lifestyle changes[i] for several weeks • Then add BP drugs targeting < 140/90	• Lifestyle changes[i] • Immediate BP drugs targeting < 140/90
1-2 risk factors	• Lifestyle changes[i] • No BP Intervention	• Lifestyle changes[i] for several weeks • Then add BP drugs targeting < 140/90	• Lifestyle changes[i] for several weeks • Then add BP drugs targeting < 140/90	• Lifestyle changes[i] • Immediate BP drugs targeting < 140/90
≥ 3 risk factors	• Lifestyle changes[i] • No BP intervention	• Lifestyle changes[i] for several weeks • Then add BP drugs targeting < 140/90	• Lifestyle changes[i] • BP drugs targeting < 140/90	• Lifestyle changes[i] • Immediate BP drugs targeting < 140/90
Organ damage, CKD stage 3 or diabetes	• Lifestyle changes[i] • Consider blood pressure drugs targeting < 130/80	• Lifestyle changes[i] • BP drugs targeting < 140/90[ii]	• Lifestyle changes[i] • BP drugs targeting < 140/90[ii]	• Lifestyle changes[i] • Immediate BP drugs targeting < 140/90[ii]
Symptomatic CVD, CKD stage ≥ 4 or diabetes with organ damage/risk factors	• Lifestyle changes[i] • Consider blood pressure drugs targeting < 130/80	• Lifestyle changes[i] • BP drugs targeting < 140/90[ii]	• Lifestyle changes[i] • BP drugs targeting < 140/90[ii]	• Lifestyle changes[i] • Immediate BP drugs targeting < 140/90[ii]

Hypertension: Drug Sequencing Management

Choosing drugs[i] for persons newly diagnosed with hypertension



Abbreviations + details

A ACE inhibitor (e.g. perindopril, lisinopril or ramipril) or low cost angiotensin receptor blockers (ARB) (e.g. losartan, candesartan)

C Dihydropyridine calcium-channel blocker (e.g. amlodipine). If not tolerated or if deemed at high risk of heart failure, 'D' drugs can be used instead. Where a C drug is preferred but not tolerated, verapamil or diltiazem may be used (note: dose with caution with PIs as these may increase plasma concentrations of these calcium-channel blockers, potentially leading to toxic reactions)

D Thiazide-type diuretic* e.g. indapamide or chlorthalidone

i Some calcium-channel blockers interact marginally with the pharmacokinetics of ARVs, see Drug-drug Interactions between Antihypertensives and ARVs

ii Black persons are those of African or Caribbean descent, and not mixed race, Asian or Chinese persons

iii Wait 4-6 weeks to assess whether target, see page 40, is achieved; if not, go to next step

iv Requirement of 4-5 drugs to manage hypertension needs specialist training

* This excludes thiazides (e.g. hydrochlorothiazide (HCTZ), bendroflumethiazide etc.)

HIV ve Diğer KV Hastalıklar

- **Miyokardit (asemptomatik / KMP)**
- **KMP : ART öncesi sık**
- **ART devrinde meta-analiz:**

diyastolik disfonksiyon: %43.4,

sistolik disfonksiyon: % 8.3 (eko)

- **KMP etyoloji ? KAH, ilaç istismarı, alkol, ilaç toksisitesi, miyokardit (opp. İnfeksiyon? HIV, inflamasyon?)**
- **Perikardit: ART sonrası nadir!**

(AIDS: %10-40 efüzyon, ART sonrası 1/400)

HIV ve Diğer KV Hastalıklar

- **Perikard efüzyon:**

çoğu idiyopatik, Tbc, lenfoma/sarkom, S.aureus → kötü prognoz göstergesi, büyük efüzyonlarda teşhise yönelik drenaj

- **Uzun QT :**

HIV → KCNH2 protein ekspresyonu inhibe eder→ Bağlı K akımlarında değişiklikler → QT uzaması + İlaçlarla ya da etkileşimleri ile QT uzaması

- **Proteaz inhibitörleri ile PR uzaması**

…ne yapalım?

- **Geleneksel KV risk faktörleri sorgulanmalı, modifiye edilmeli (SİGARA!!!)**
- **KV risk global olarak değerlendirilmeli (başlarken ve aralıklı olarak)**
- **KV risk skorları yararlı**

  Framingham, SCORE (ESC – TKD)

  ASCVD – "pooled cohort" denklemleri
- **Bu skorlar HIV için spesifik DEĞİL!!! (D:A:D?)**
- **Riski OLDUĞUNDAN AZ/FAZLA GÖSTEREBİLİRLER!!!!**

…ne yapalım?

- **Pankreatit riskine dikkat ederek TG yüksekliği Tx - FİBRATLAR**
- **Global KV Riske göre Statin Tedavisi (Simvastatin XX)**
- **ASA tedavisi, anti-HT tedavi, DM kontrolü**
- **ART tedavisinin global KV riske/ mevcut KVH/dislipidemiye göre modifikasyonu?**

Sabrınız için teşekkürler....