

CONOSCERE E CURARE IL CUORE 2017

VENERDÌ 24 MARZO

COME STIMARE IL RISCHIO DI EVENTI CARDIOVASCOLARI. PARTIREI DAL CALCIUM SCORE.

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Fondazione Onlus, Roma*





The adoption of the Framingham risk score was waived many years ago as an innovative population-based method to assess the median risk of developing CAD.

Inherent limitations

- ❑ Clinical scores do not allow discernment of the individual's risk
- ❑ Enable identification of a small increase in cardiovascular events (3- to 5-fold) in subject categories considered at risk.
- ❑ Even when more liberal treatment criteria are applied, as suggested in the recent AFCAPS/TexCAPS trial, only 37% of the AMIs are prevented.

The search for patients at high risk after and ACS

DRUGS USED TO BE DESIGNED WITH THE AVERAGE PATIENT IN MIND
NOW, THEY CAN BE TAILORED TO SPECIFIC PATIENTS' GENETICS, MICROBES, AND CHEMICAL COMPOSITION



www.plengegen.com

SOURCE: HHS

Precision Medicine | Plenge Gen @rp...

www.plengegen.com - 2238 x 1226 - Ricerca tramite immagine

A letter to President Obama about precision medicine

Visita la pagina

Visualizza immagine

Immagini correlate:

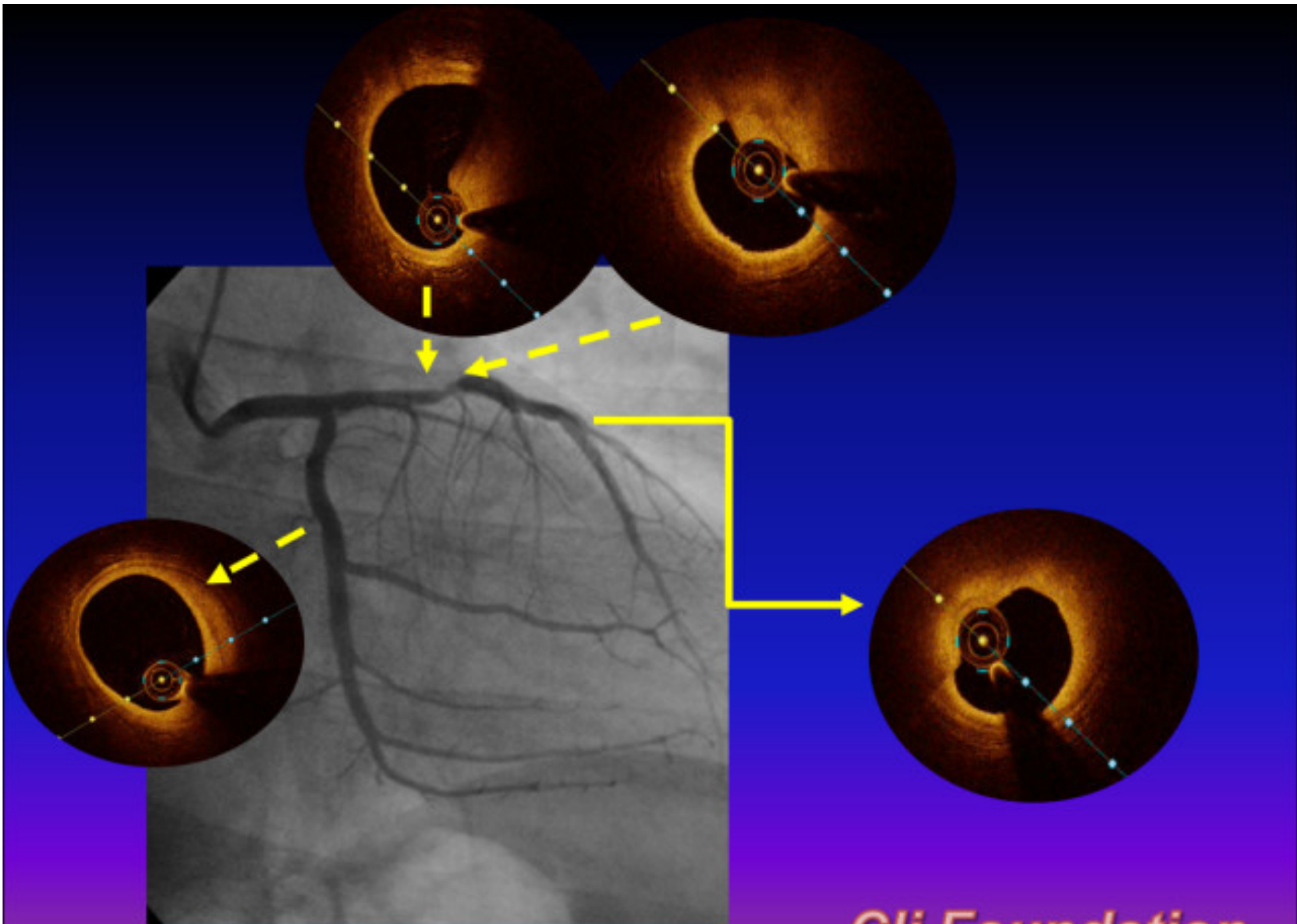


Visualizza
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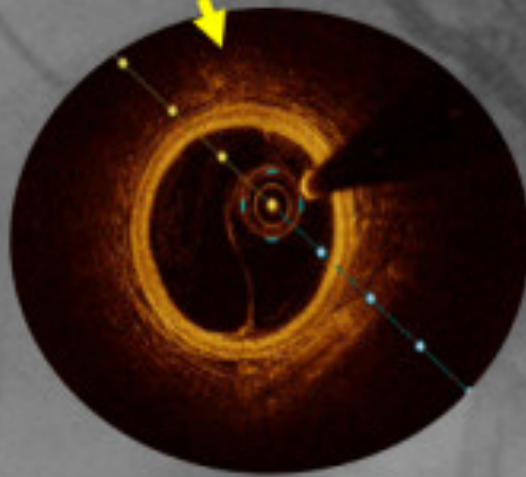
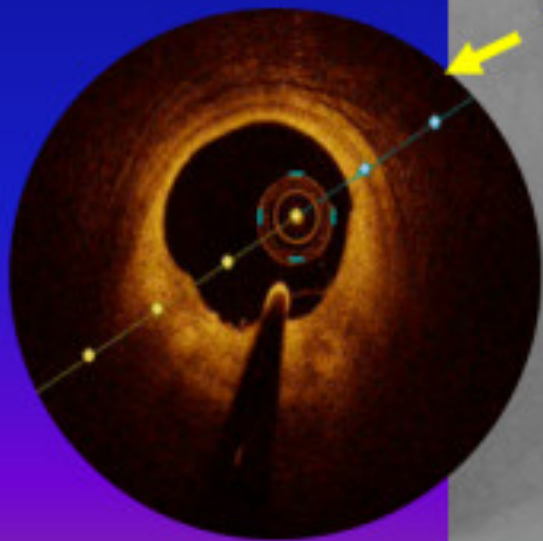
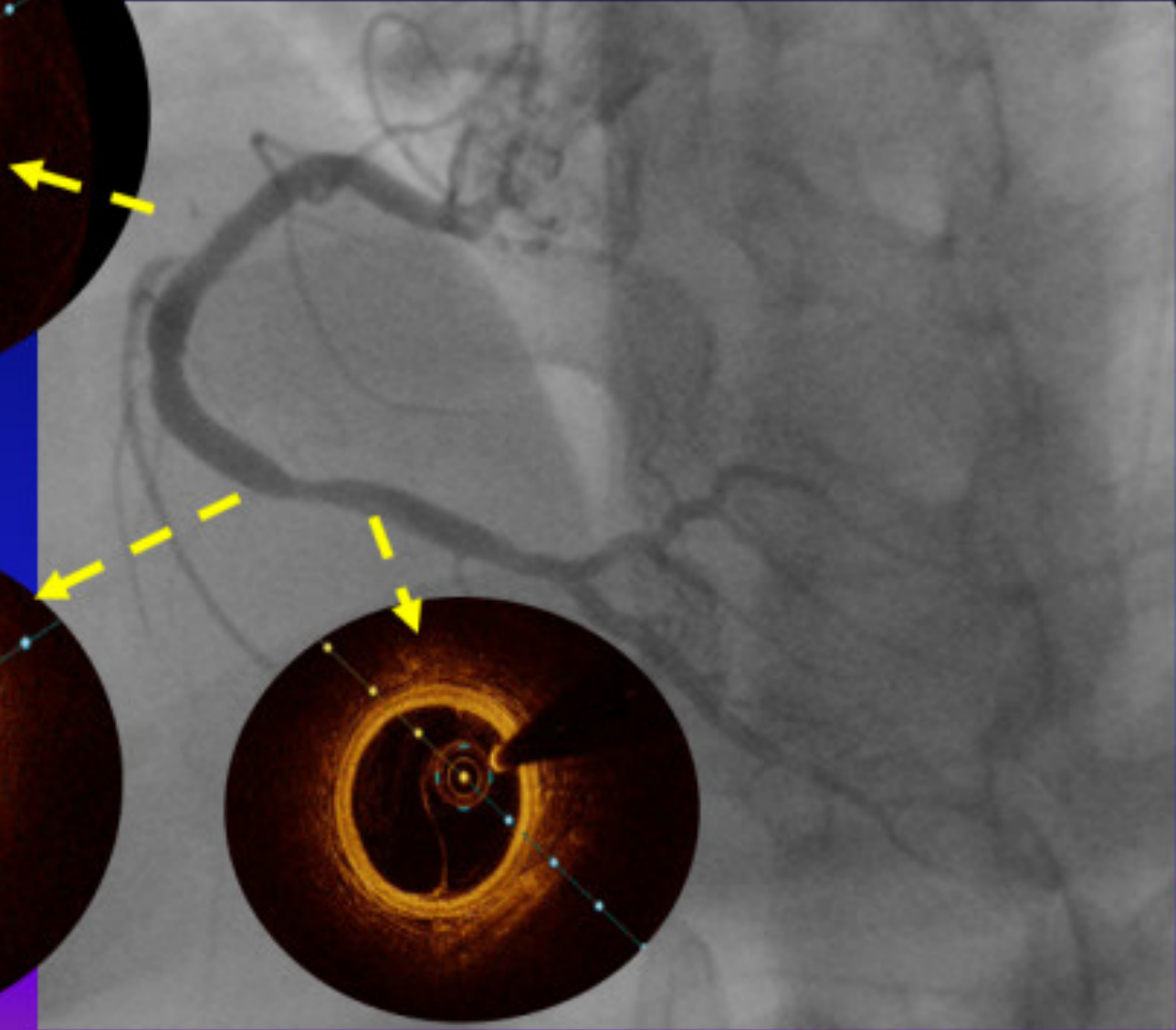
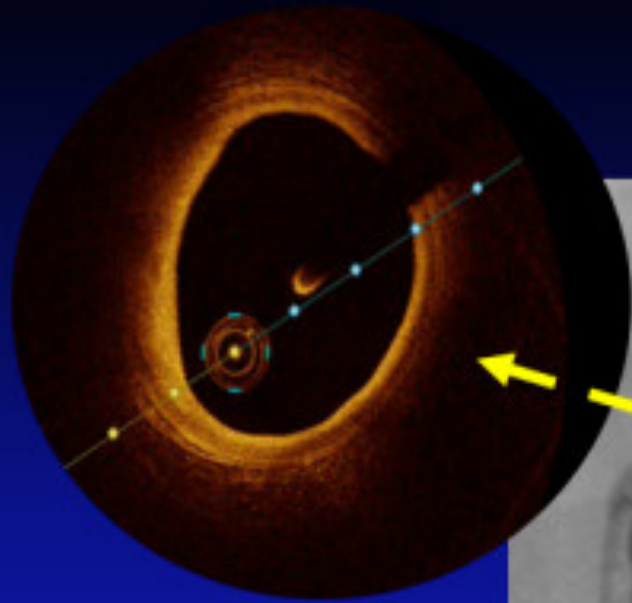
Le immagini potrebbero essere soggette a copyright. - Invia feedback

Young 28 years old asiatic male
Anterior NSTEMI
Risk factor: mild smother





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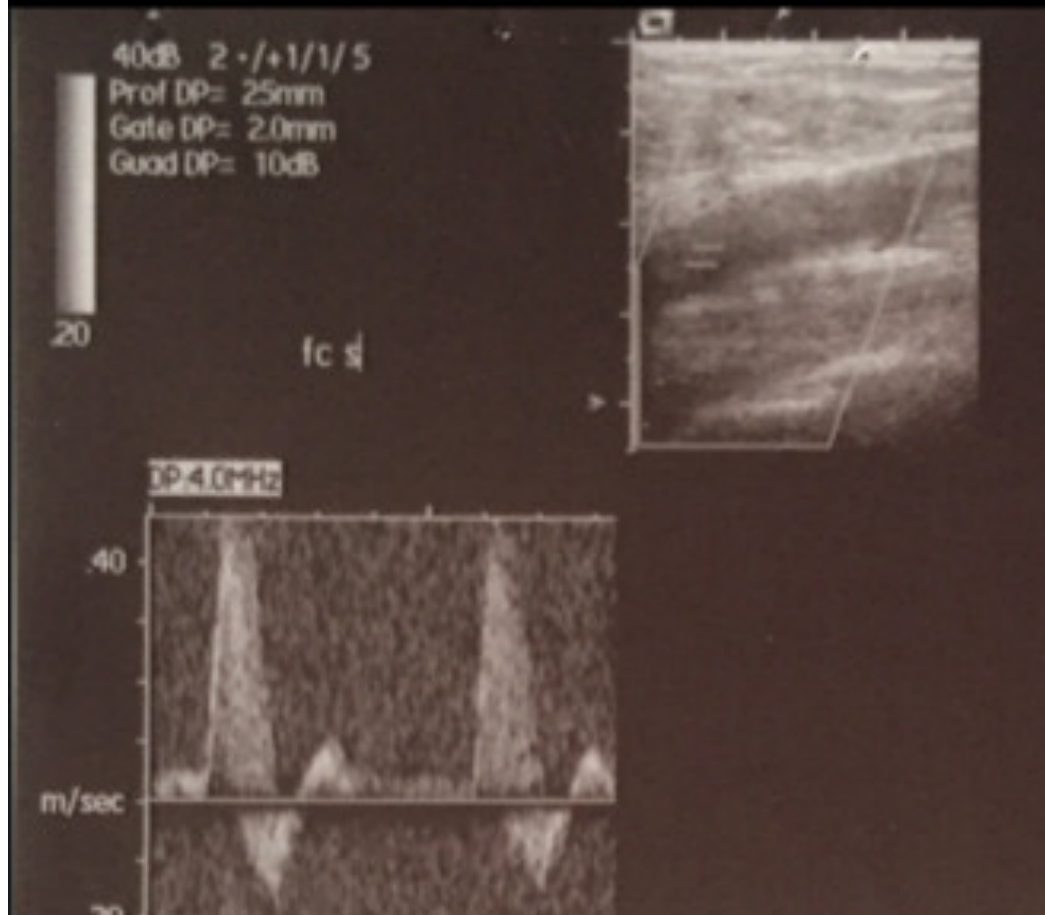
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Sliding Doors

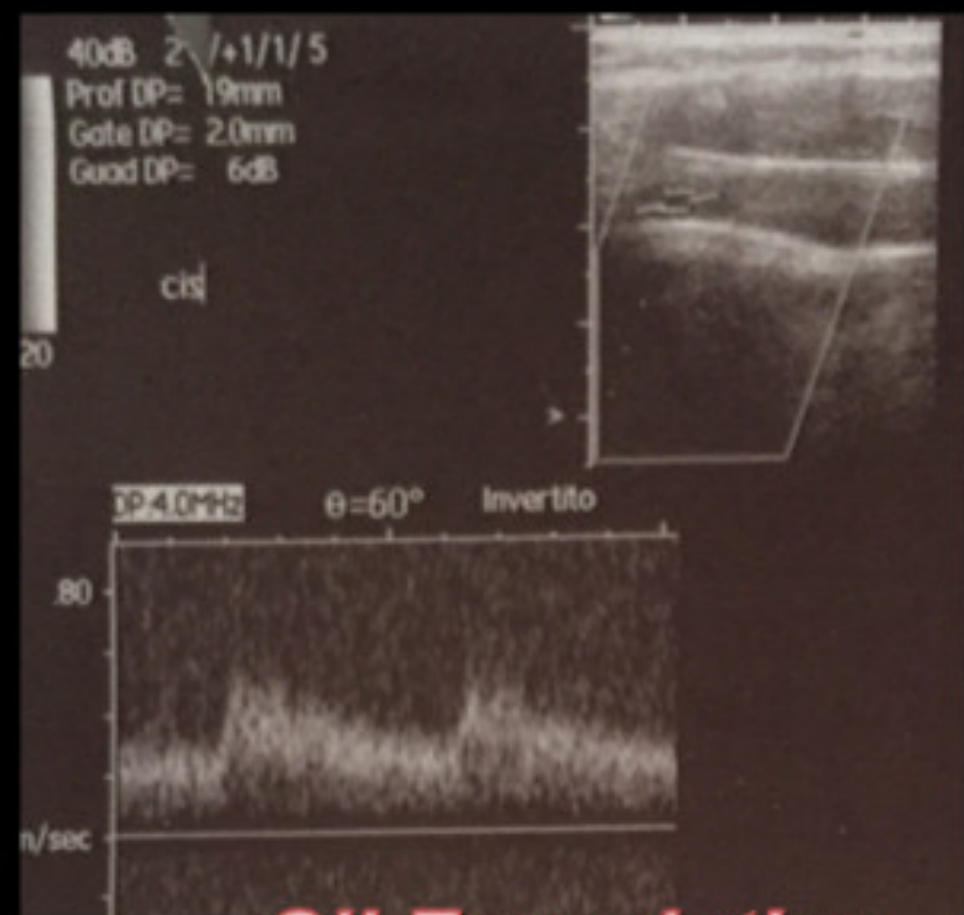


Undiseased carotid and femoral arteries at Echo-doppler

Femoral



Carotid



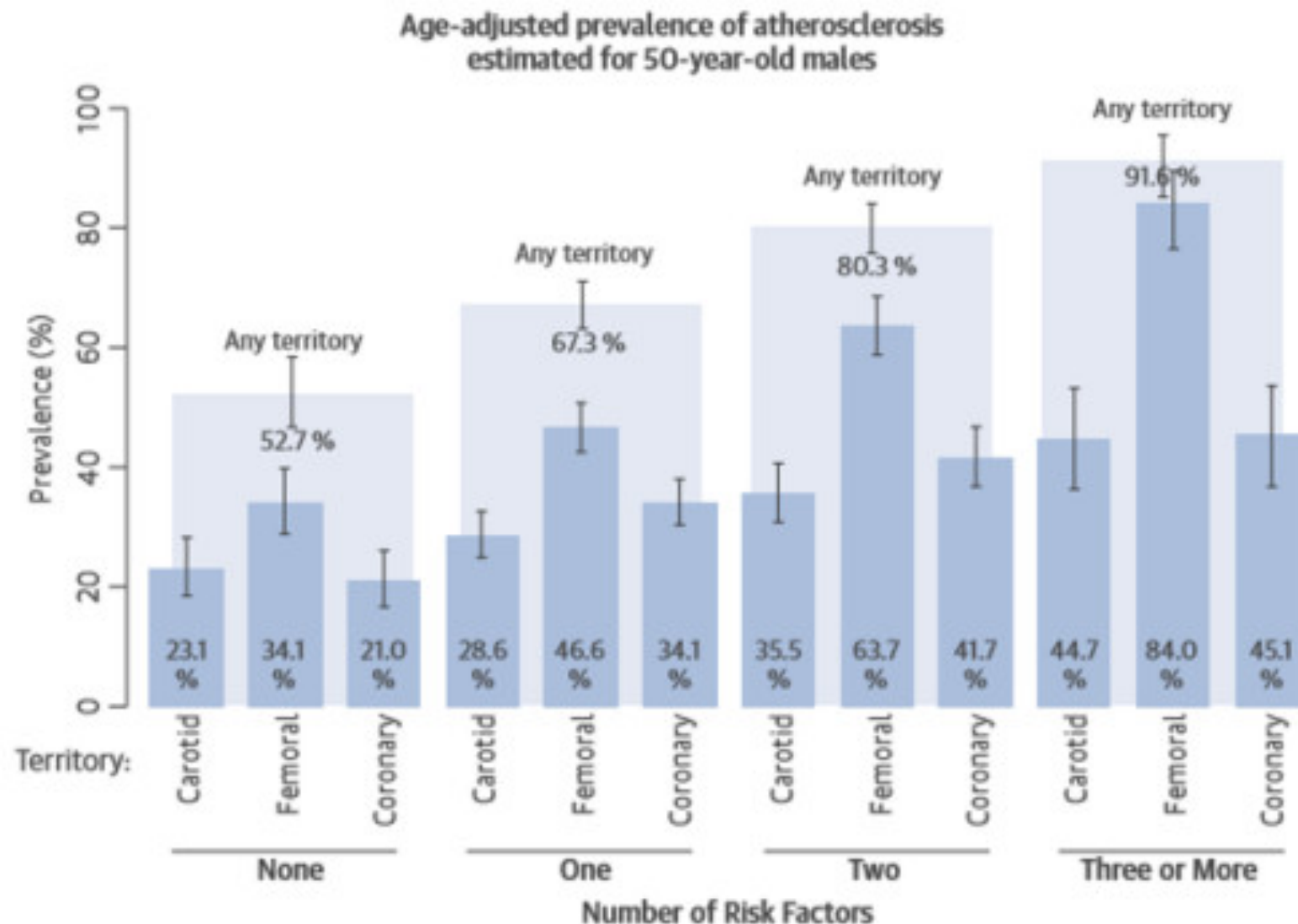
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Femoral and subclinical carotid atherosclerosis association with risk factors and coronary calcium. The AWHS study

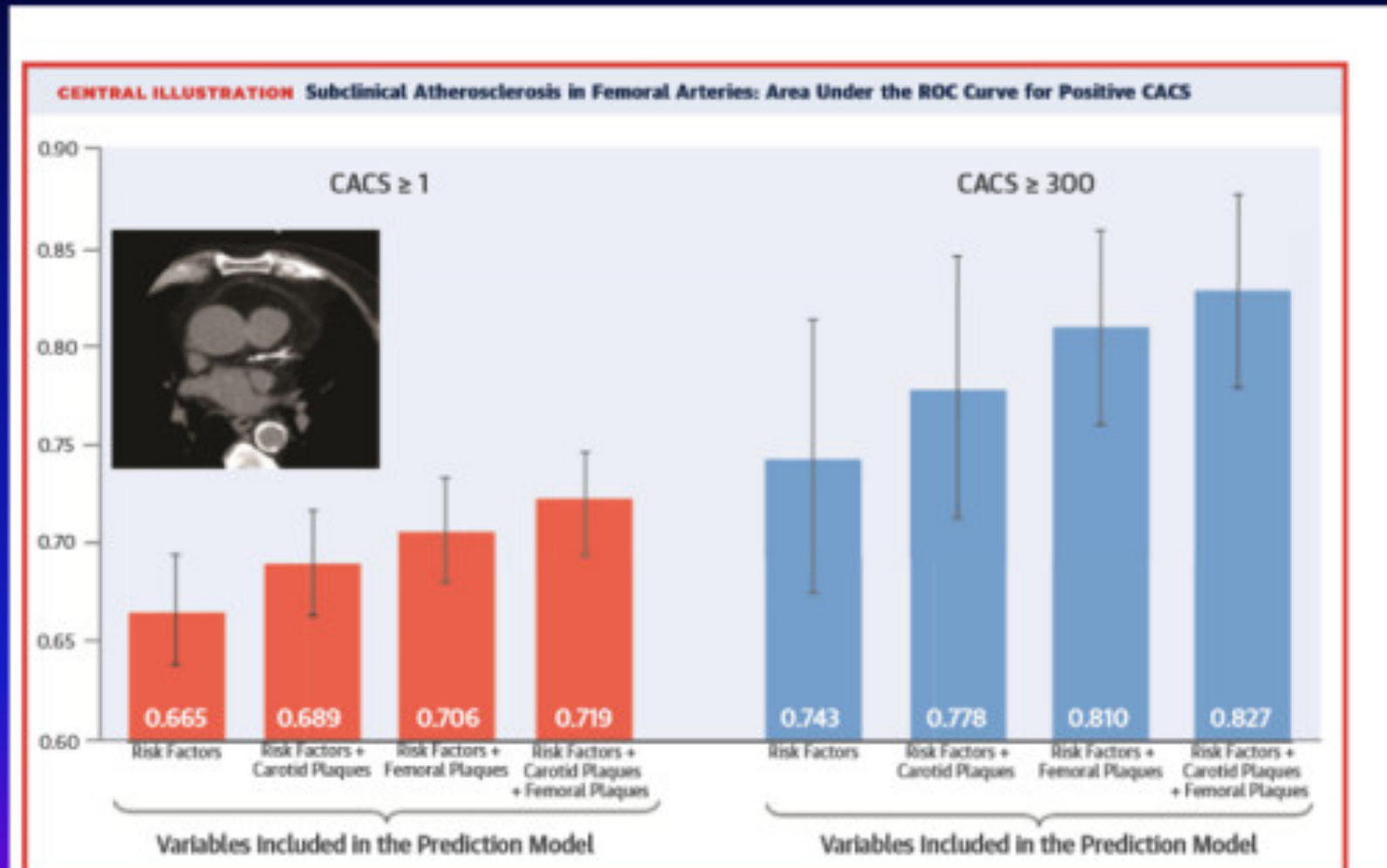
Laclaustra et al. JACC 2016

- **Population:** 1.423 Middle aged men
- **Methods:** Risk factors assessment plus Carotid, femoral ultrasound and coronary calcium score

Risk factors are better correlated with femoral atherosclerosis



Association with coronary calcium score stronger in femoral than carotid subclinical atherosclerosis

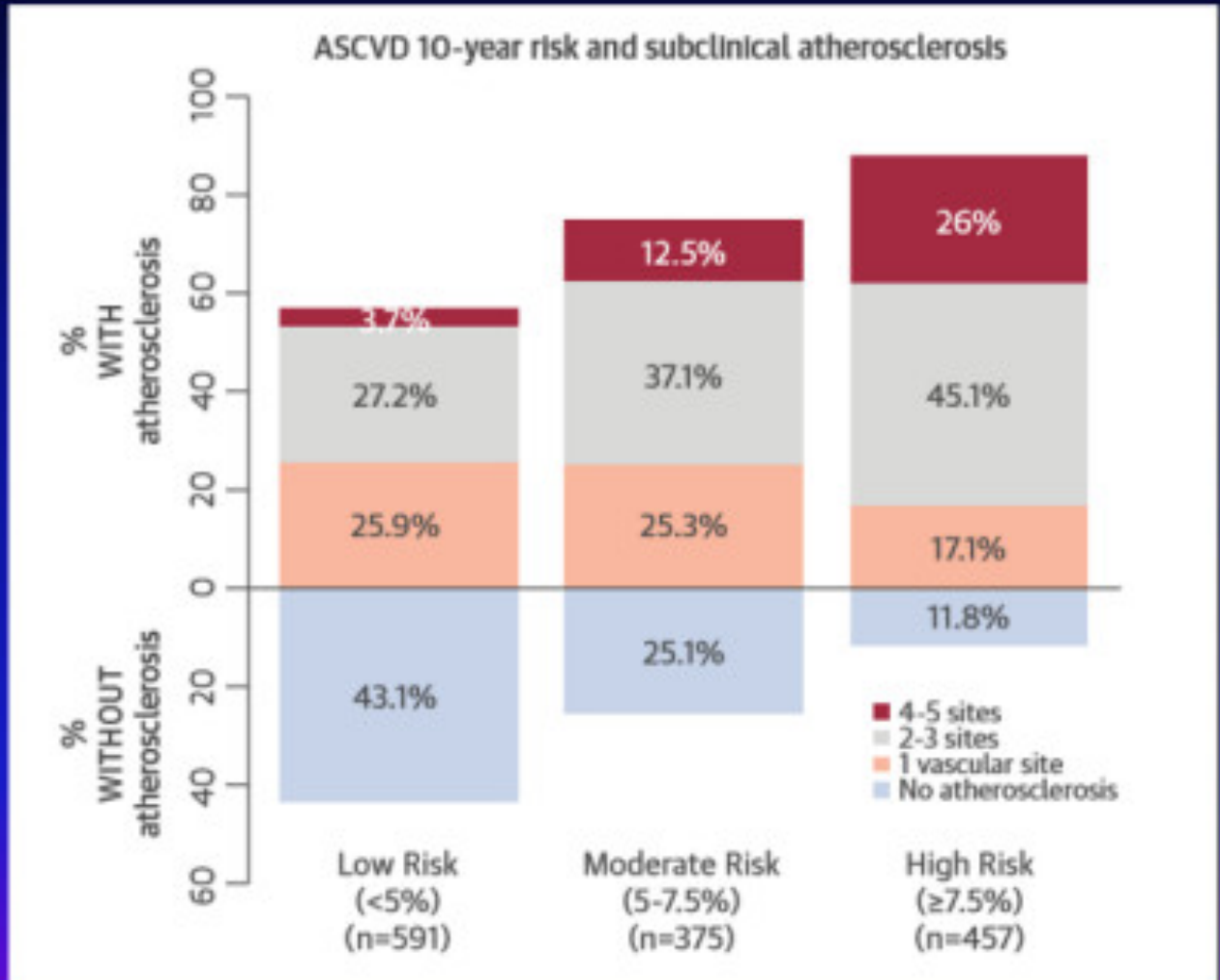


Femoral screening..... A new appealing strategy

Laclaustra et al. JACC 2016

67% of low risk patients have atherosclerosis

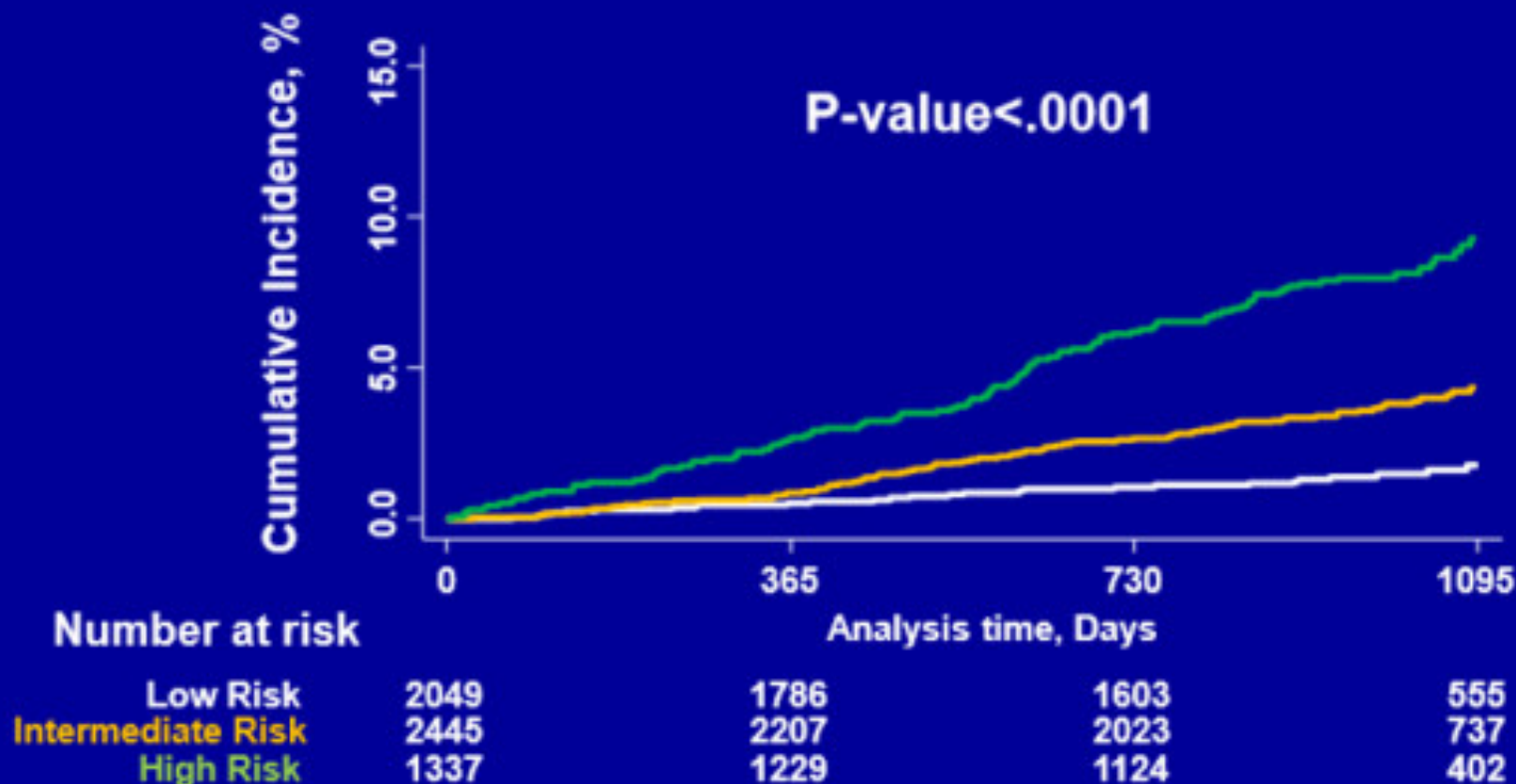
12% of high risk patients don't have atherosclerosis



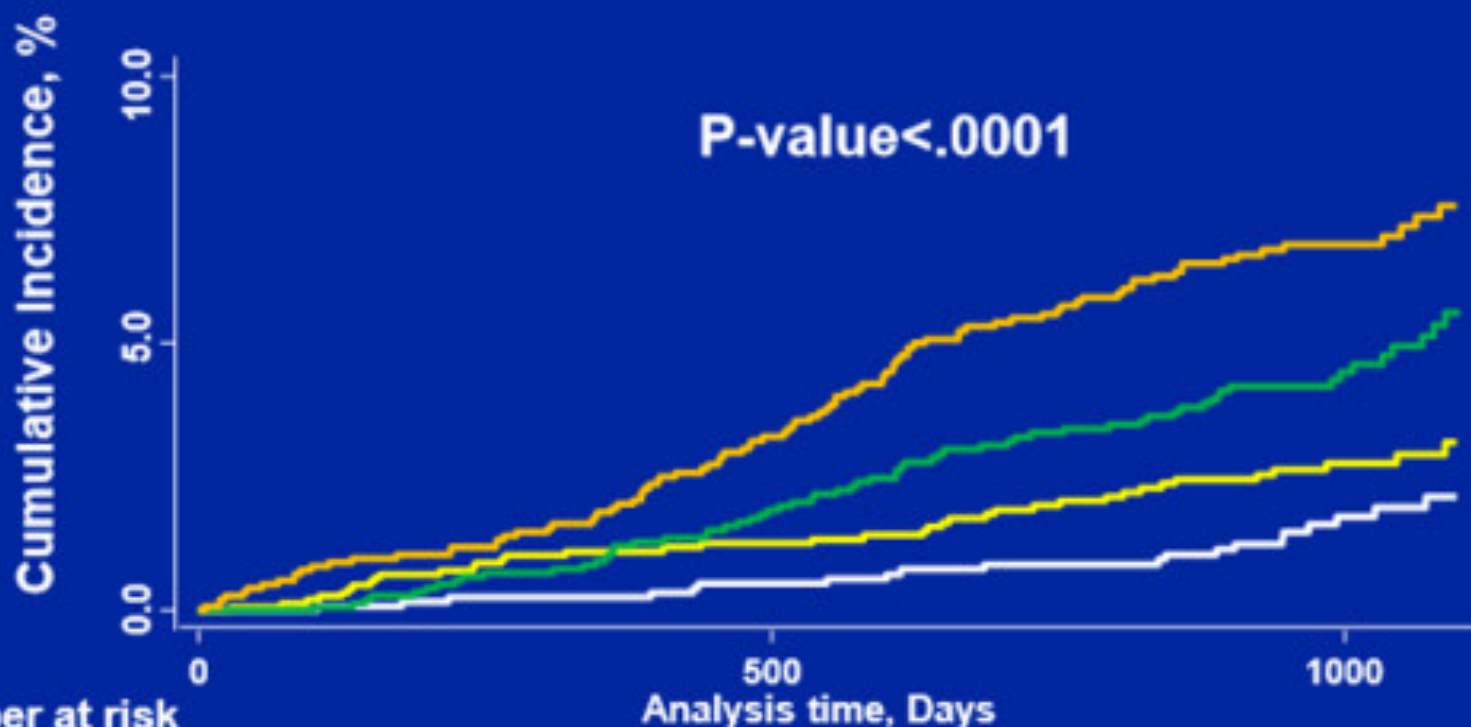
Carotid Plaque Area Quartiles

U Baber, R Mehran, V Fuster et al, 2013

Cumulative MACE by Framingham Score

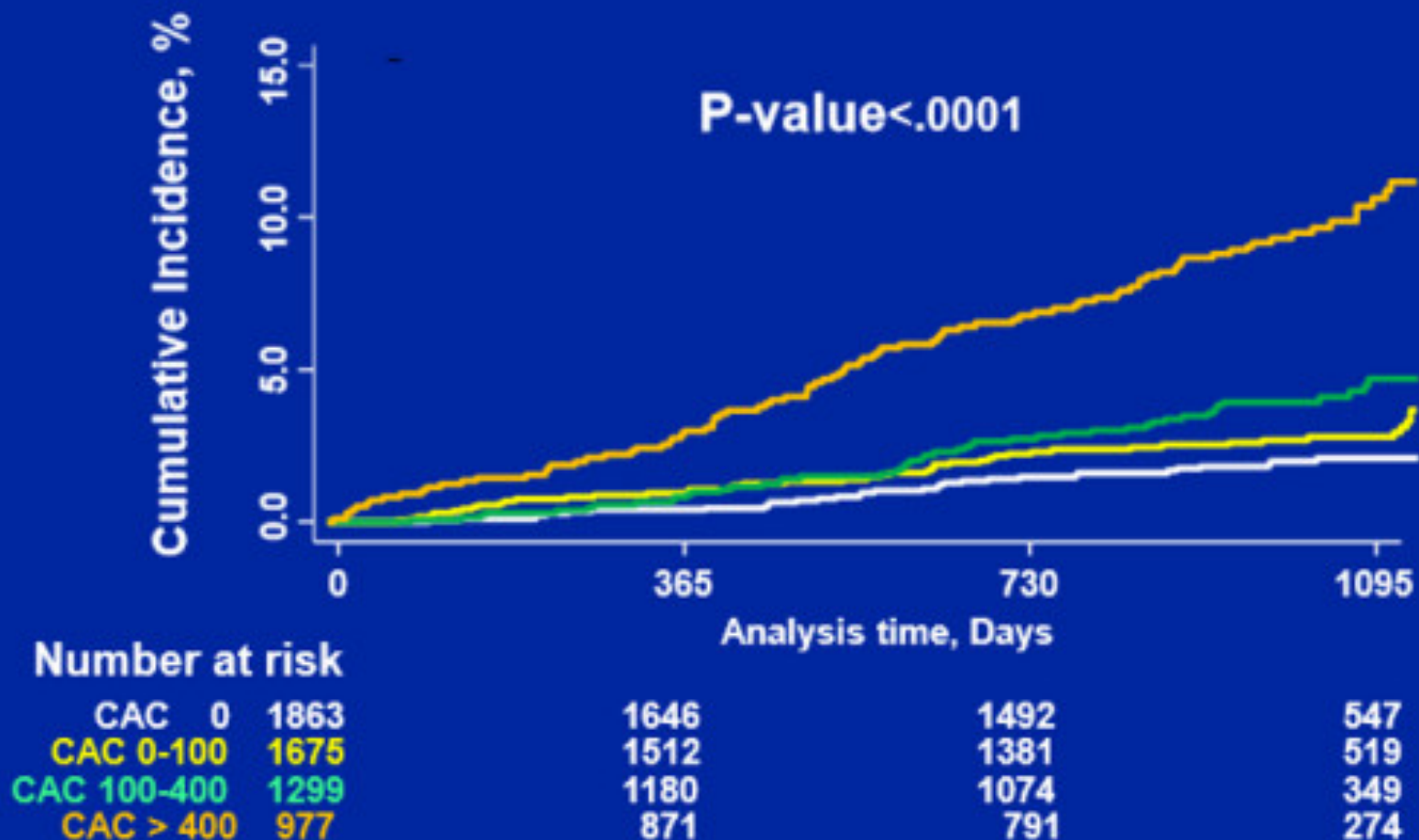


MACE by 2D US Carotid Plaque



Number at risk	0	500	1000	1100
2D plaque = 0	1319	1181	1080	433
2D plaque Quartile 1	1504	1331	1204	415
2D plaque Quartile 2	1504	1343	1230	413
2D plaque Quartile 3	1504	1367	1236	433

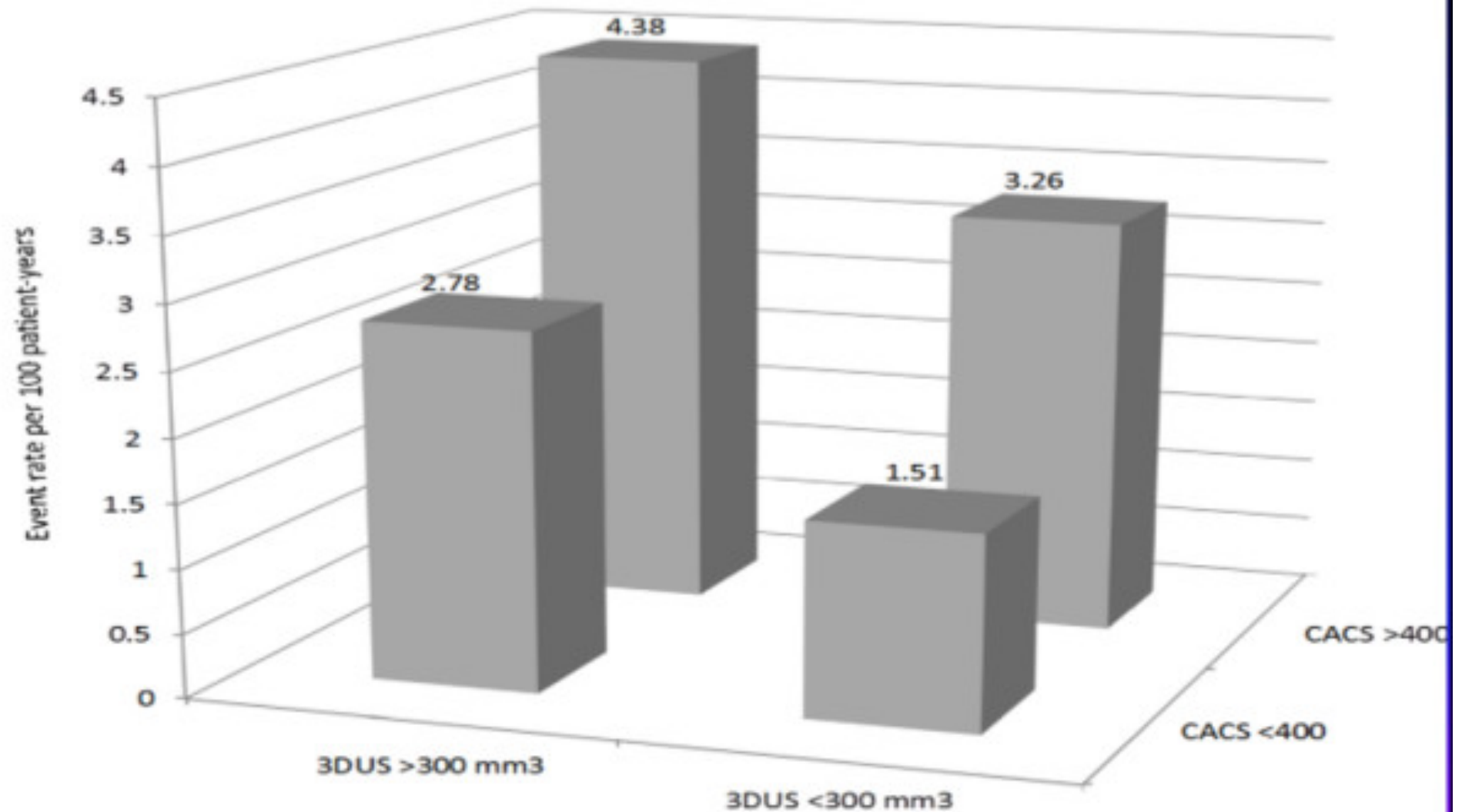
MACE by Coronary Calcium Score



U Baber, R Mehran, V Fuster et al, 2013

3D-US Transducer + CAC

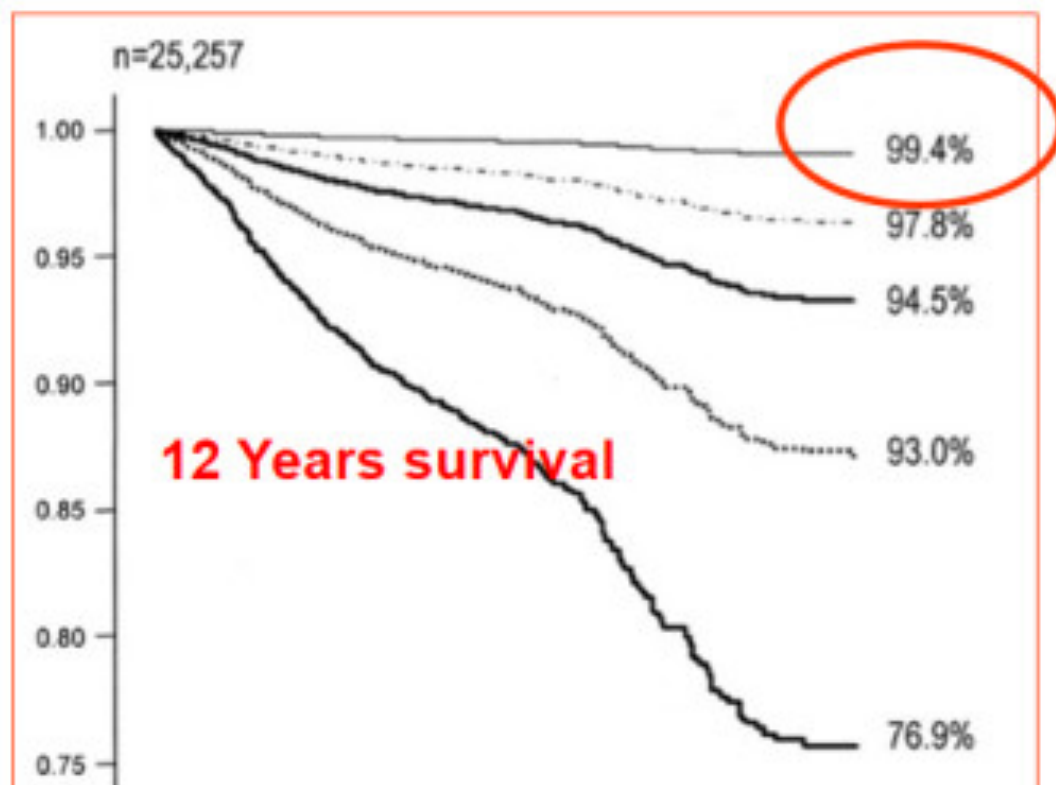
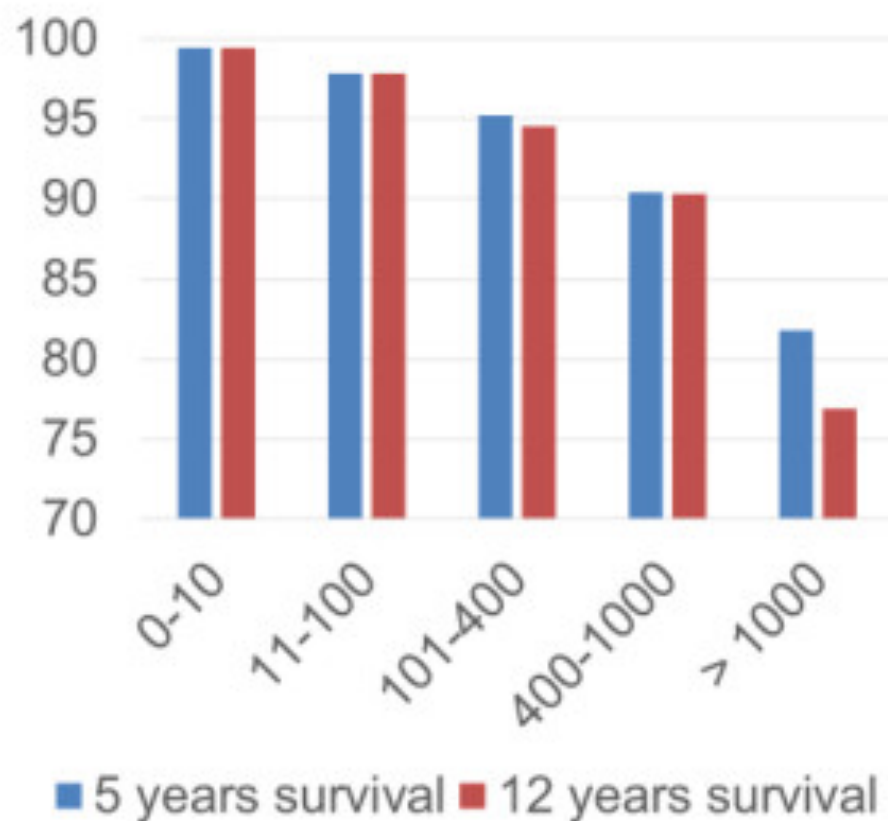
3D-US Transducer + CAC Impact on Events (Intermediate FRS Group)



U Baber, R Mehran, V Fuster et al, 2013

Hecht et al. JACC 2010

Survival according to calcium score



Treatment of Asymptomatic Adults With Elevated Coronary Calcium Scores With Atorvastatin, Vitamin C, and Vitamin E

The St. Francis Heart Study Randomized Clinical Trial

Yadon Arad, MD, FACC, Louise A. Spadaro, MD, FACC, Marguerite Roth, RN, David Newstein, DRPH,
Alan D. Guerci, MD, FACC

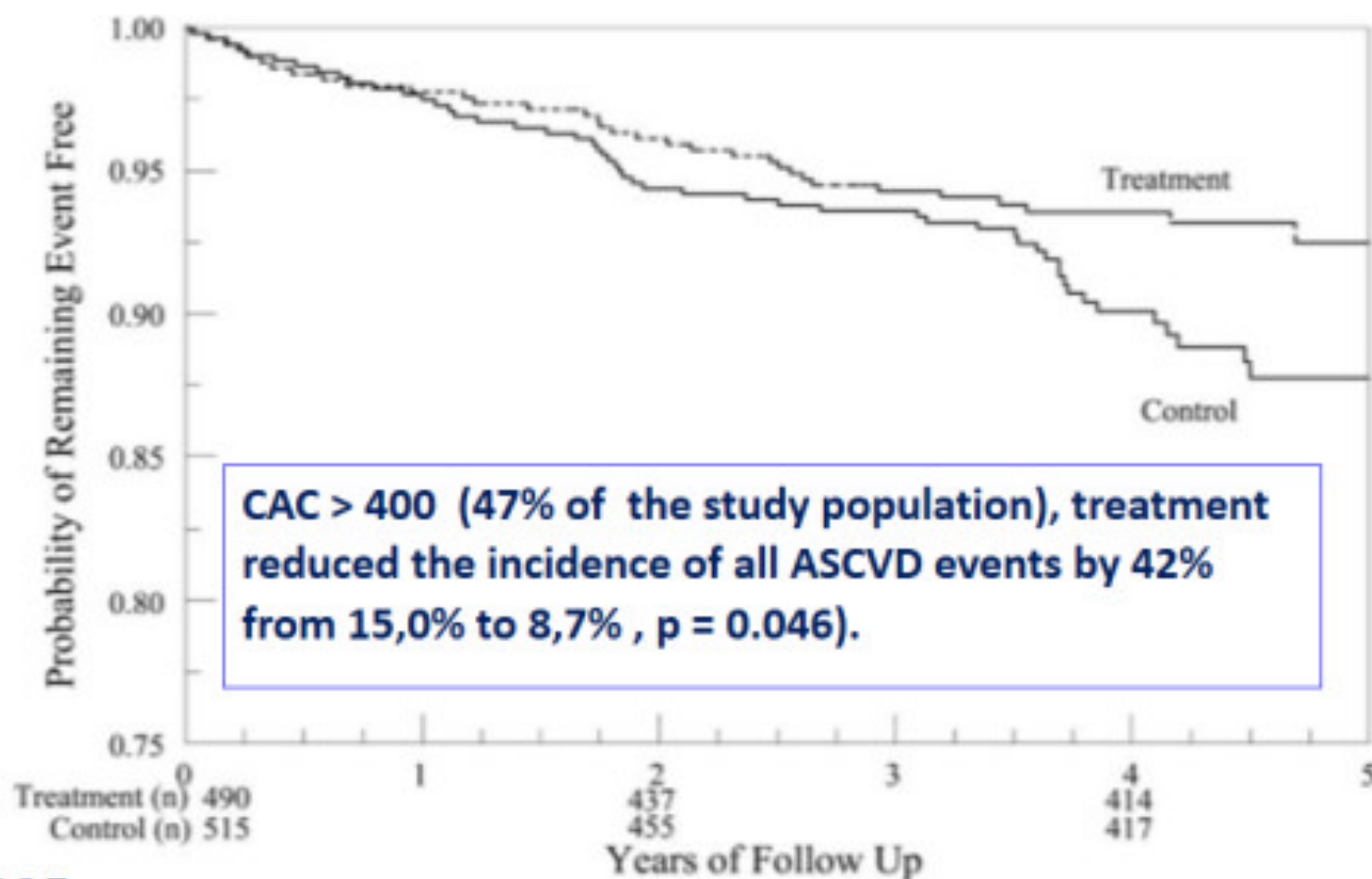
Roslyn, New York

- Double-blind, placebo-controlled randomized clinical trial
- **Population.** 1,005 asymptomatic subjects with coronary calcium scores > 80th percentile for age and gender.
- **Treatment.** atorvastatin 20 mg daily, vitamin C 1g daily, and vitamin E (alpha-tocopherol) 1,000 U daily, versus placebos

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JACC 2005

**Tailored therapy
by means of
Calcium Score
assessment**

Associations between C-reactive protein, coronary artery calcium, and cardiovascular events: implications for the JUPITER population from MESA, a population-based cohort study

Blaha et al. Lancet 2011

Population: 950 participants eligible for JUPITER. 5-8 y FU.
Role of CAC for stratifying risk

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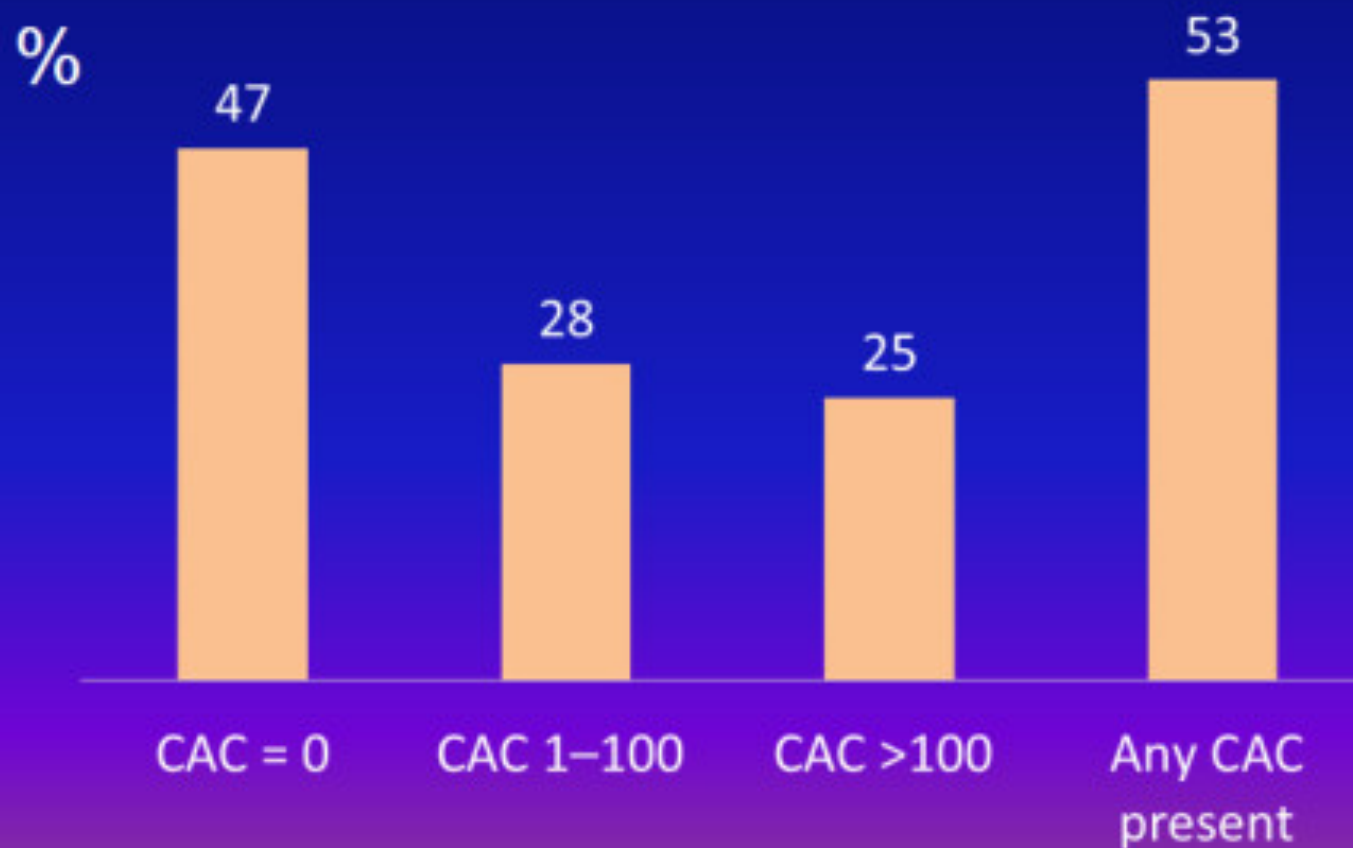
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The MESA study a population-based cohort study

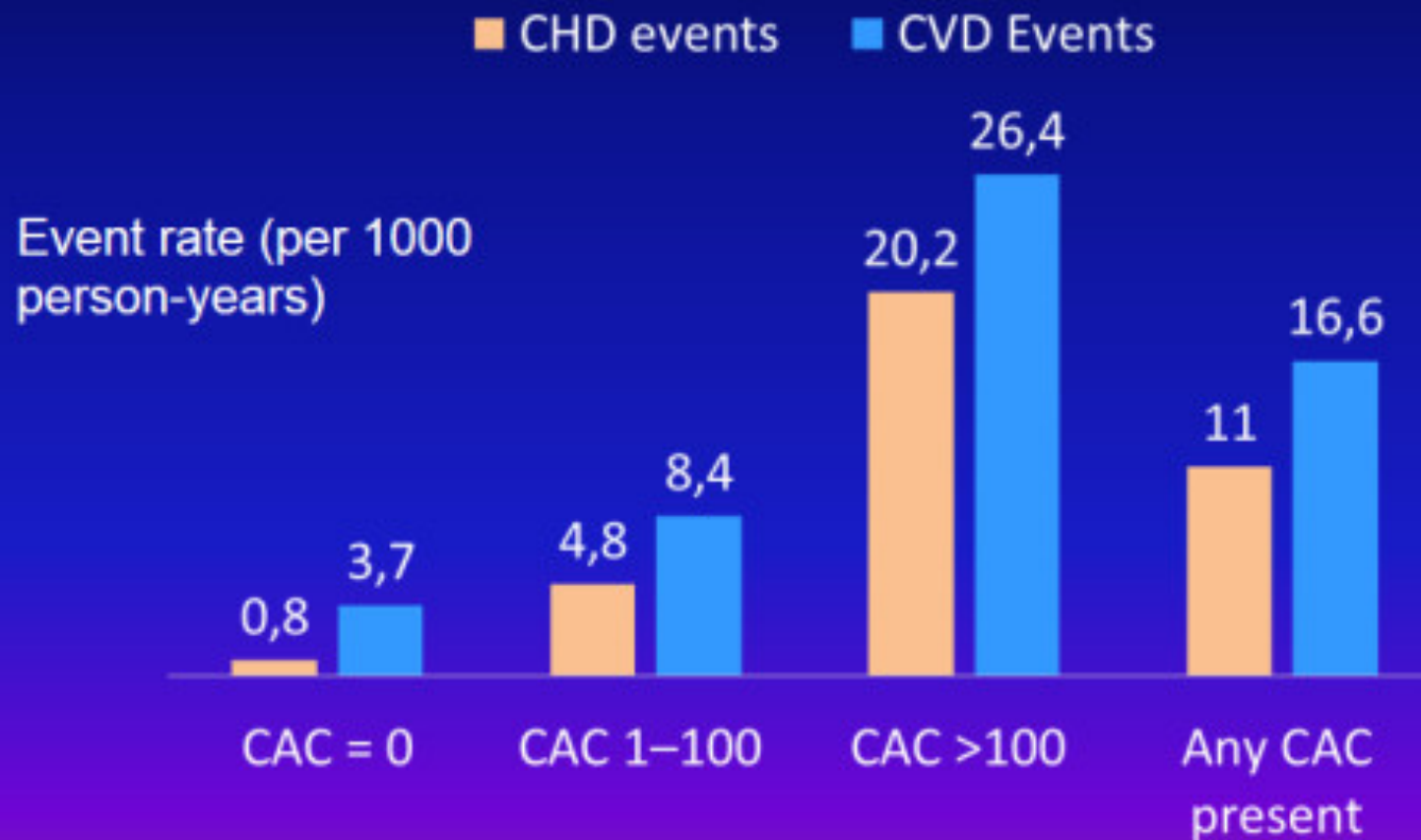
Blaha et al. Lancet 2011

Calcium score prevalence



The MESA study a population-based cohort study

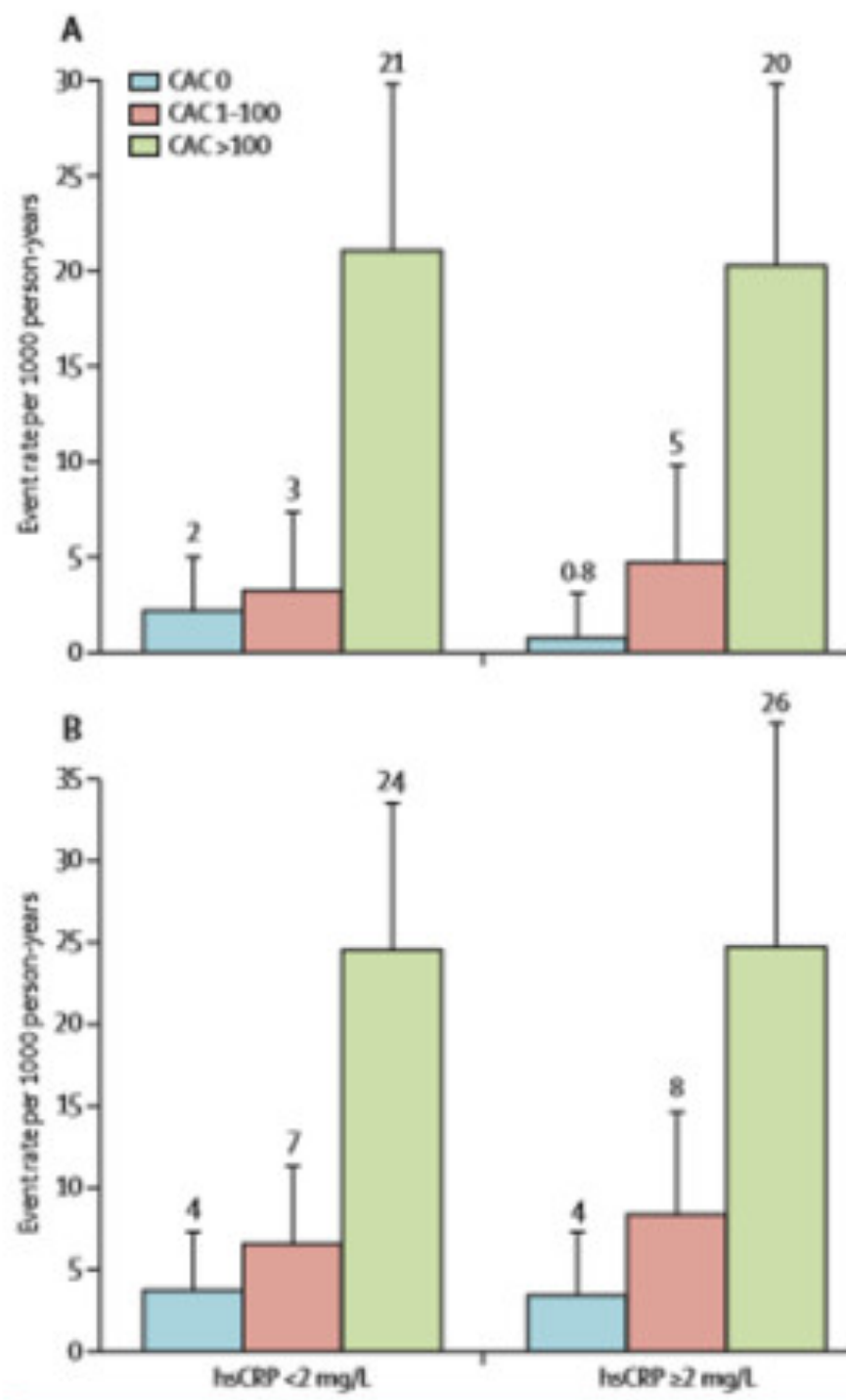
Blaaha et al. Lancet 2011



Associations between C-reactive protein, coronary artery calcium, and cardiovascular events: implications for the JUPITER population from MESA, a population-based cohort study

CAC seems to further stratify risk in patients eligible for J
CAC can target subgroups of patients to be treated with statin

Lancet 2011



Statins for all?

Mesa trial (LDL-C <130 mg/dL and hsCRP ≥ 2 mg/L)

- **CAC = 0**
NNT to prevent one cardiovascular disease in 5 years with atorvastatin **549**
- **CAC > 100**
NNT to prevent one cardiovascular disease in 5 years with atorvastatin **24**

Aspirine to whom?

Mesa trial (LDL-C <130 mg/dL
and hsCRP \geq 2 mg/L)

- Pts with elevated CAC scores (>100) were 2–4 times more likely to benefit from aspirin therapy than to be harmed, even if they did not qualify for aspirin use according to current AHA guidelines.
- Conversely, pts with no calcified plaque (CAC score = 0) were 2–4 times more likely to be harmed by aspirin use than to benefit.

Secondary Prevention



Patient Selection



History of cardiovascular disease (MI or ischemic stroke or diagnosis of nonhemorrhagic stroke or symptomatic PAD.

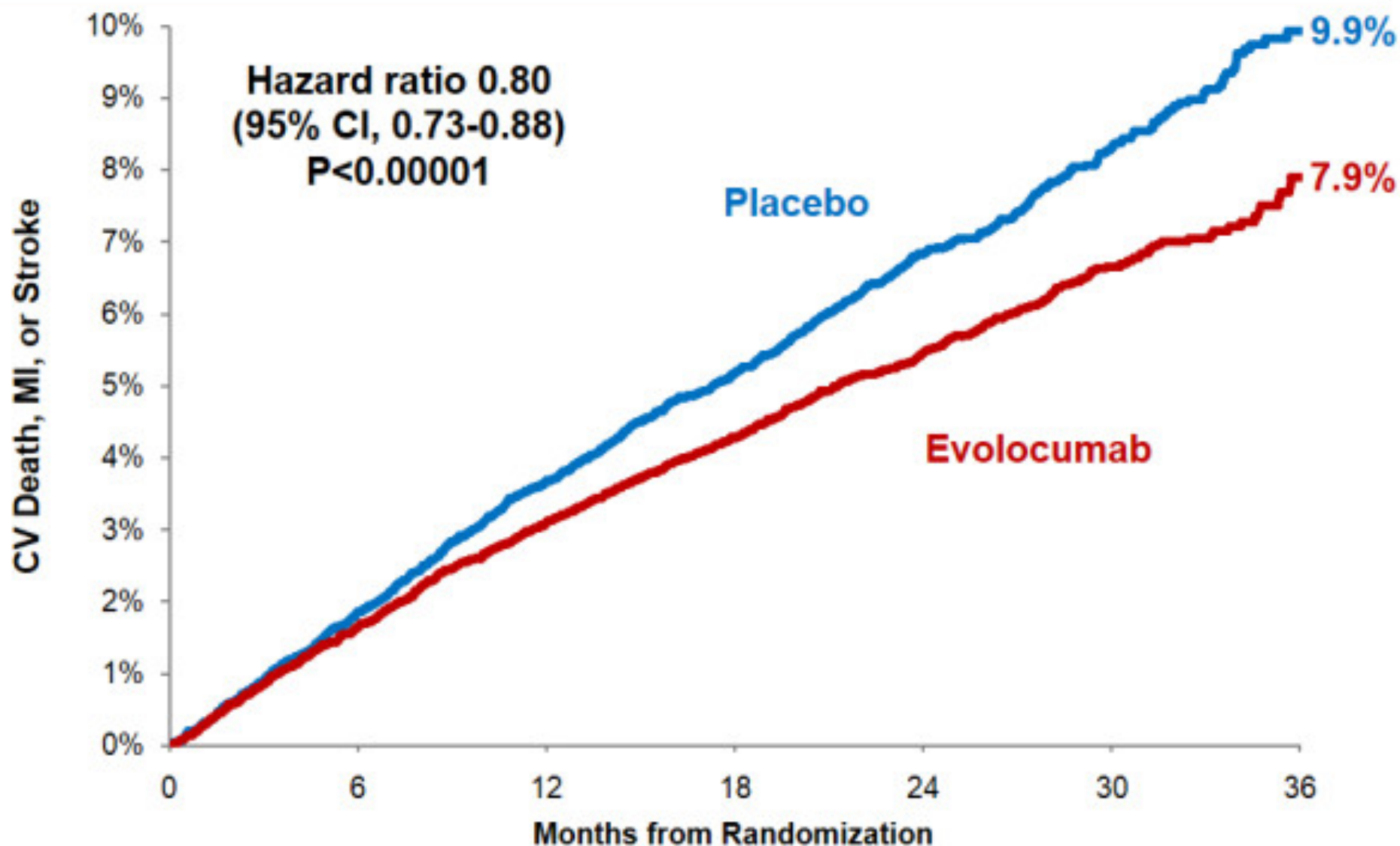
At least 1 Major risk factors : diabetes, age $\geq 65y$, MI or nonhemorrhagic stroke, cigarette smoking, symptomatic PAD

Minor risk factors (2 required): • history of non-MI-related coronary revascularization • residual coronary artery disease with $\geq 40\%$ stenosis in ≥ 2 large vessels, low HDL, high CRP, LDL-C ≥ 130 mg/dL (3.4 mmol/L) or non-HDL-C ≥ 160 mg/dL (4.1 mmol/L).





Key Secondary Endpoint



KEY INCLUSION

- Age ≥ 50 years
- At least 1 of the following:
 - Age ≥ 65 years
 - Diabetes requiring medication
 - 2nd prior MI (>1 year ago)
 - Multivessel CAD
 - CrCl <60 mL/min
- Tolerating ASA and able to be dosed at 75-150 mg/d

KEY EXCLUSION

- Planned use of P2Y₁₂ antagonist, dipyridamole, cilostazol, or anticoag
- Bleeding disorder
- History of ischemic stroke, ICH, CNS tumor or vascular abnormality
- Recent GI bleed or major surgery
- At risk for bradycardia
- Dialysis or severe liver disease

Endpoint

HR (95% CI)

P value

CV Death, MI, or Stroke
(1558 events)



0.85 (0.75-0.96)

0.008

0.84 (0.74-0.95)

0.004

0.84 (0.76-0.94)

0.001

CV Death
(566 events)



0.87 (0.71-1.06)

0.15

0.83 (0.68-1.01)

0.07

0.85 (0.71-1.00)

0.06

Myocardial Infarction
(898 events)



0.81 (0.69-0.95)

0.01

0.84 (0.72-0.98)

0.03

0.83 (0.72-0.95)

0.005

Stroke
(313 events)



0.82 (0.63-1.07)

0.14

0.75 (0.57-0.98)

0.03

0.78 (0.62-0.98)

0.03

0.4

0.6

0.8

1

1.25

1.67

Ticagrelor better

Placebo better

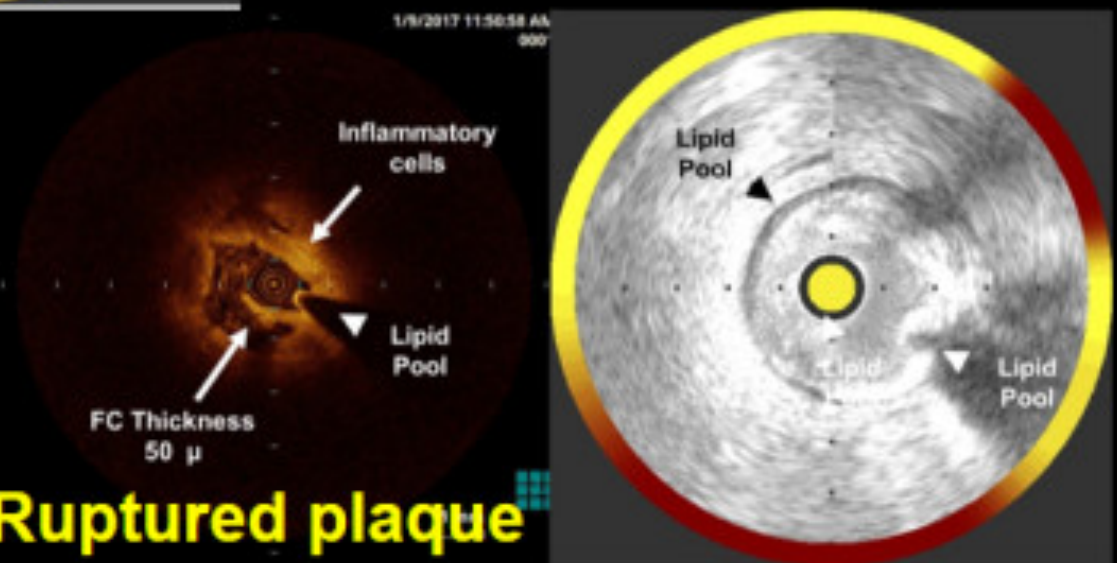
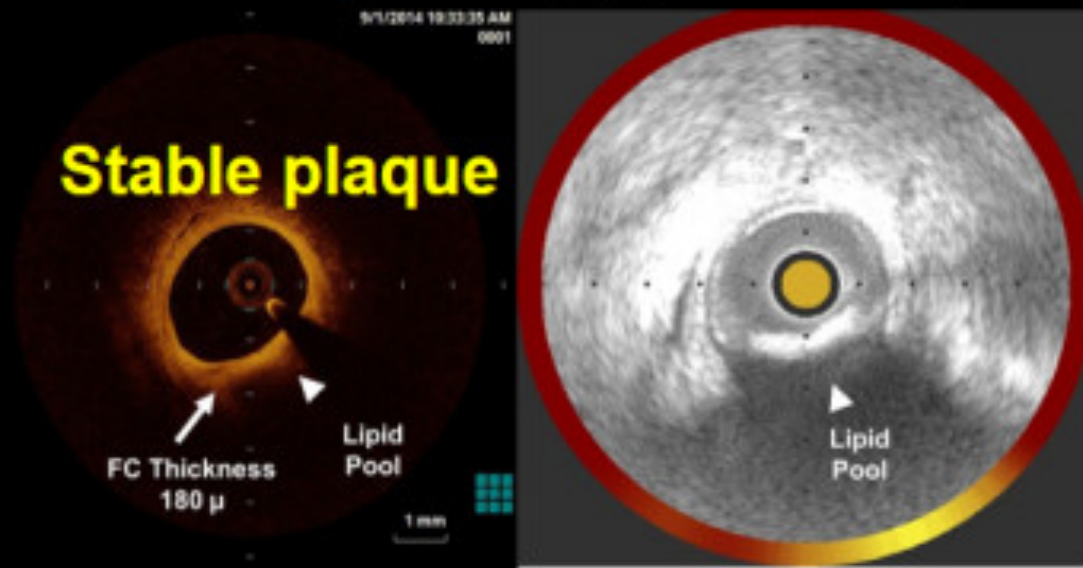




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N 99 lesions studied with IVUS-NIRS and OCT

Culprit lesions of ACS pts have small LA ($< 4 \text{ mm}^2$, thin FC ($< 80 \mu$), and superficial inflammation



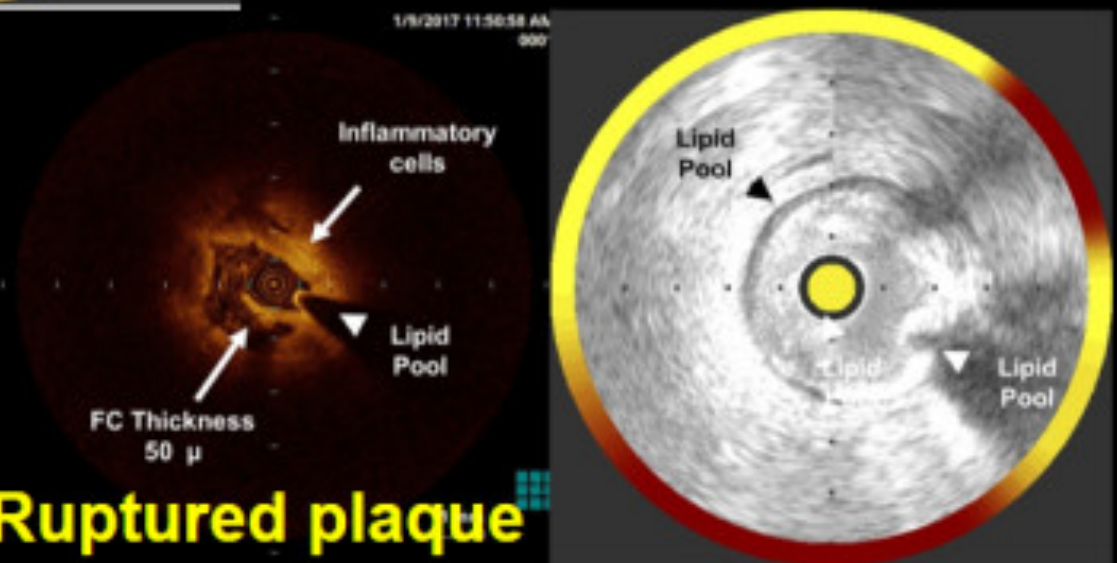
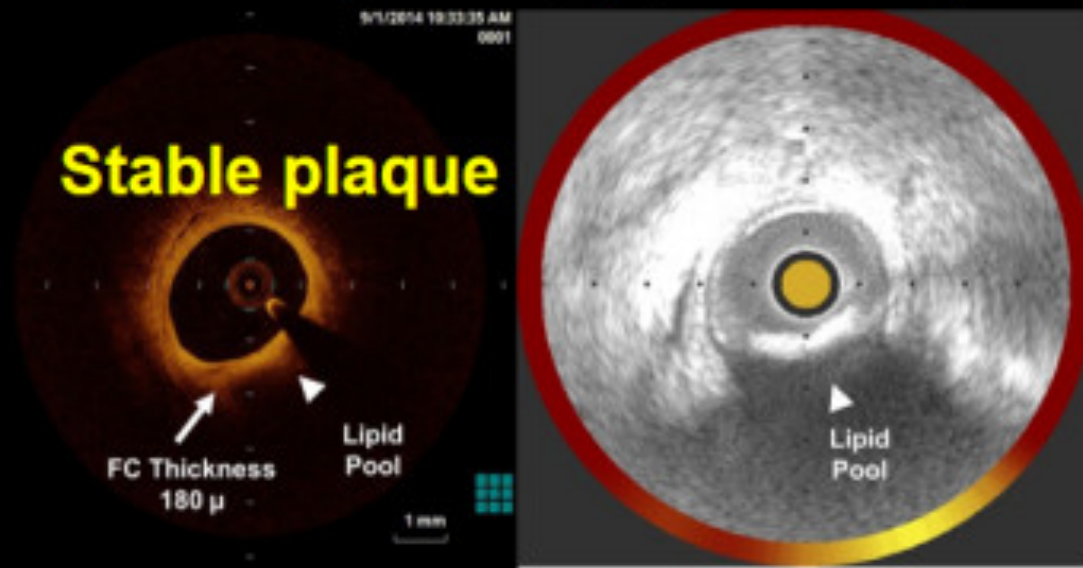
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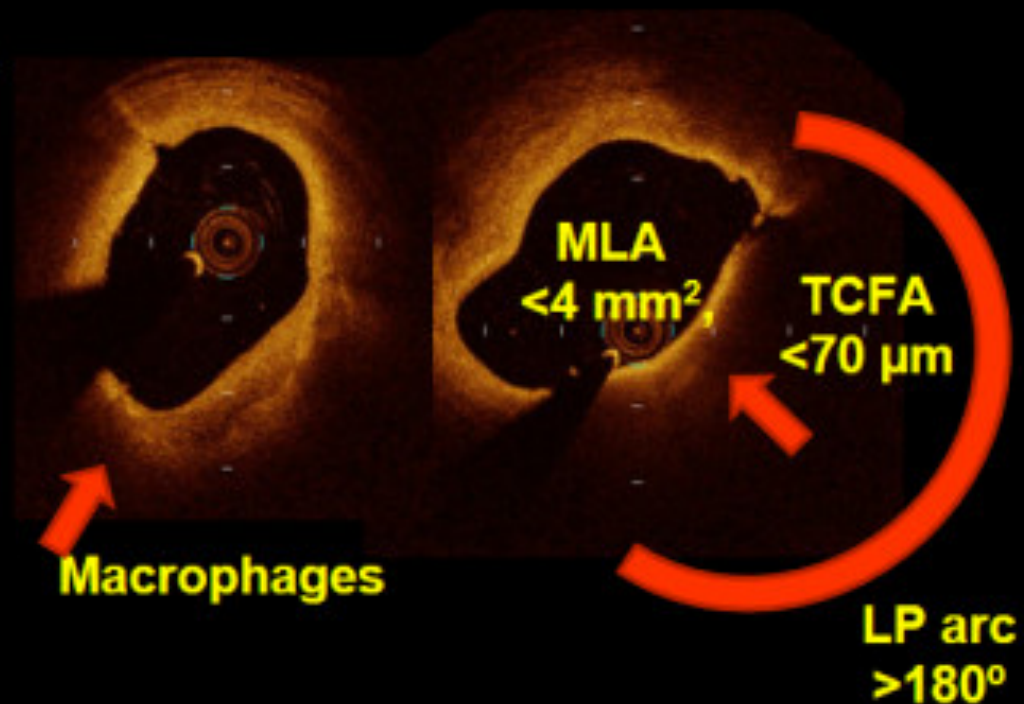
Submitted Prati et al.

N 700 pts

OCT vulnerable plaque criteria

Lesion presenting all of the following four features:

- TCFA <65 μm
- Lipid pool arc >180°
- MLA <4.0 mm^2
- Macrophages



Clinical outcome

Composite of cardiac death and/or target vessel MI (STEMI/NSTEMI)

CLIMA

CLI Foundation

Milano, Monzino

★ Bologna Sant'Orsola

★ Cotignola GVM Care and Research

★ Grosseto. Misericordia

★ Siena. Sant'Anna

★ Roma S Giovanni

Roma Pol Gemelli

★ Isernia. Veneziale

★ Warsaw
Military Hosp.

★ Madrid
S. Carlos

★ Brotzu Cagliari

Caltanissetta, Sant'Elia ★ Messina. G Martino

★ Catania, Ferratto

★ Siracusa Umberto I



Take Home Message

- To discern the individual's risk clinical risk scores should be integrated with the search of arterial atherosclerosis
- Among imaging modalities to detect atherosclerosis, the coronary calcium score has an established role
- Absence of detectable calcium score conveys an excellent long term outcome with a ten year risk of cardiovascular events less than 1 / 1000
- For secondary prevention IC imaging modalities potentially better identify patients with a more aggressive atherosclerosis