



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

ROMA

Centro Congressi
di Confindustria

**Auditorium
della Tecnica**

9^a Edizione

30 Settembre
1 Ottobre
2022

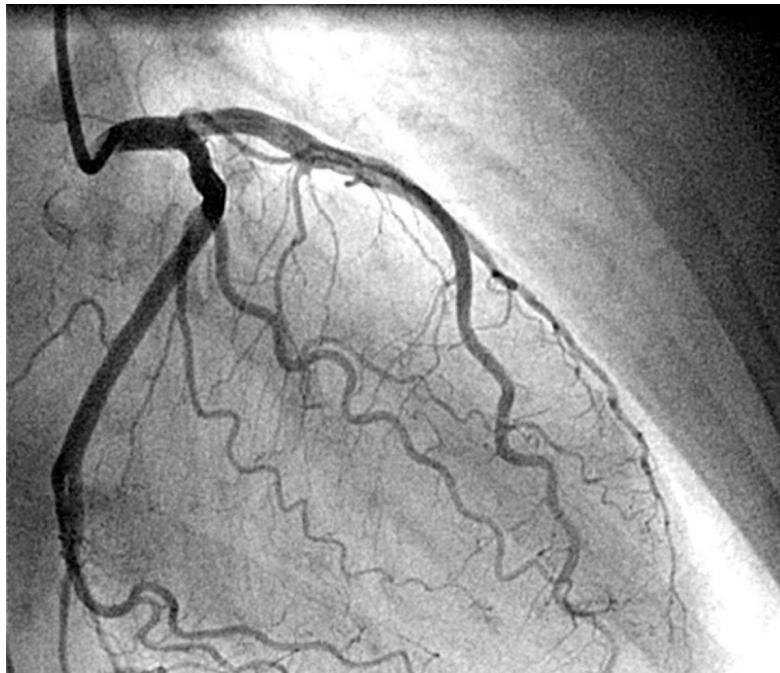


Imaging e stratificazione del rischio nella cardiopatia ischemica

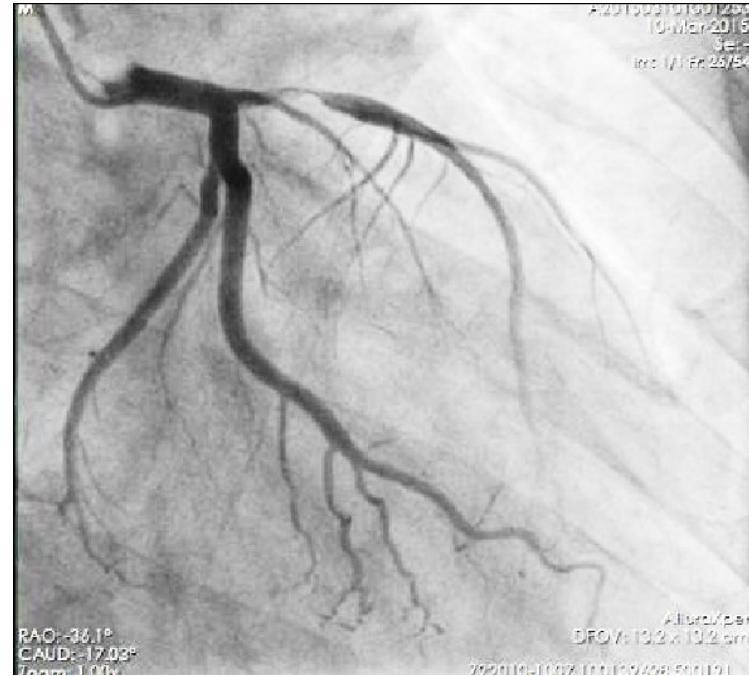
**Valore prognostico e terapeutico della malattia
aterosclerotica coronarica non ostruttiva**

Giancarlo Casolo

Black and White Vision (BWV)

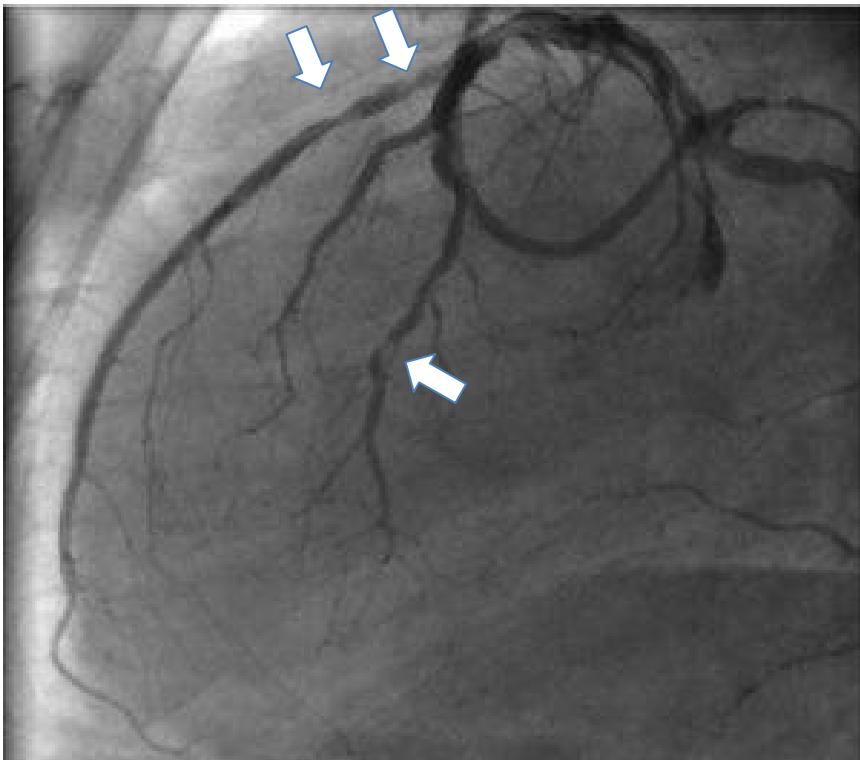
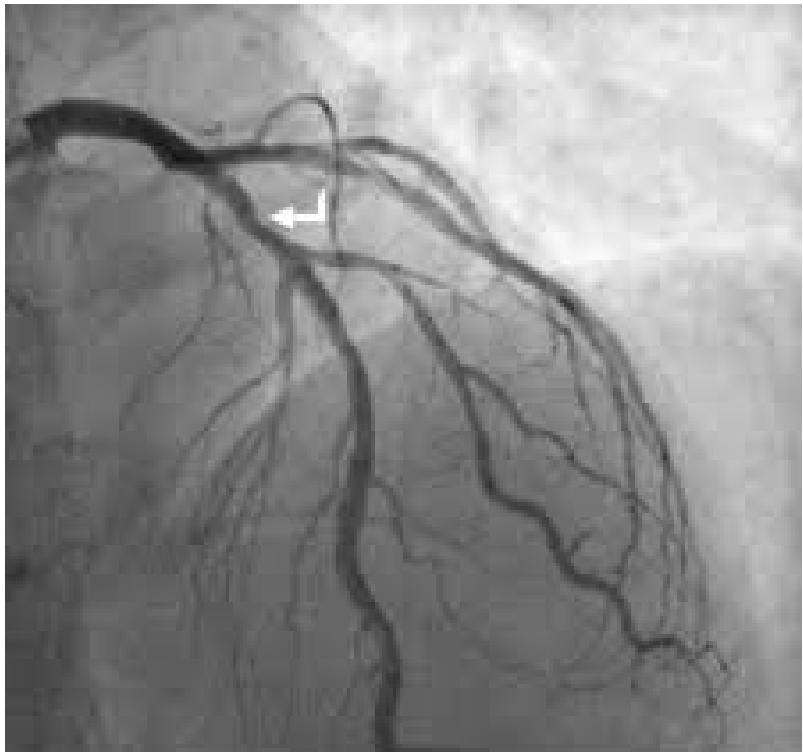


NO CAD

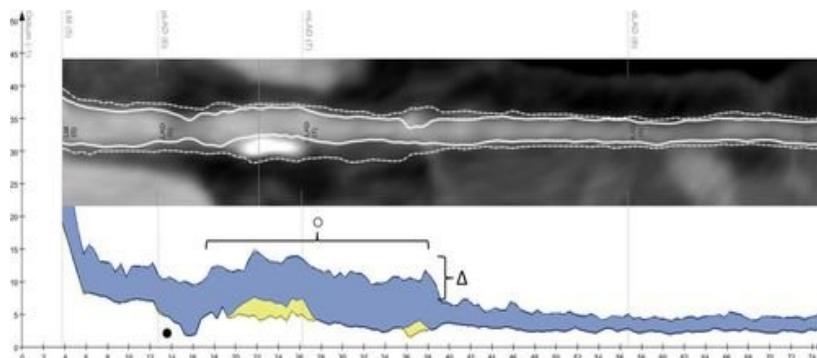
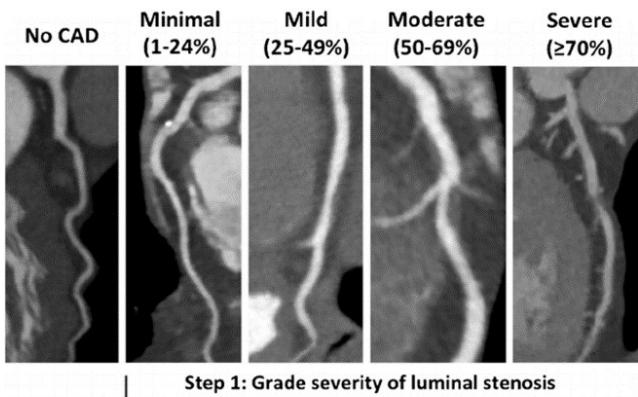
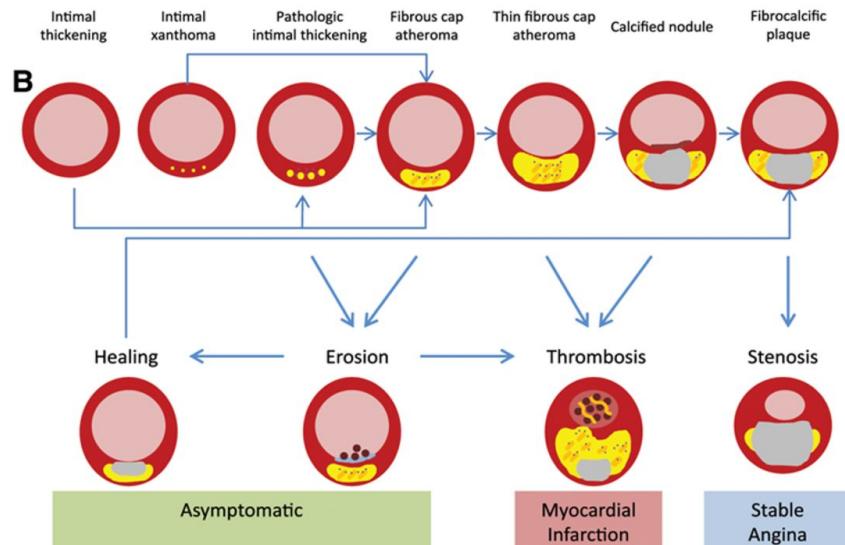
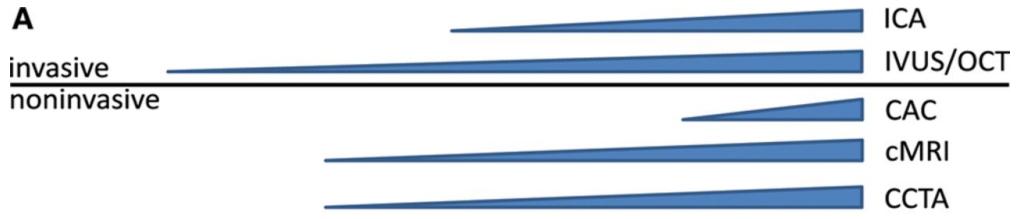


CAD

Shades of Grey Vision (SGV)



Focus on Coronary Atherosclerosis



Prevalence of Nobs in Asymptomatic Individuals

SCAPIS (the Swedish Cardiopulmonary Bioimage Study)

N° 25.182

Age 57 + 4.3yrs

Women 51%



No atherosclerosis	52,8%	14 506 ⁵⁸
Any form of atherosclerosis		10 508 (42.0)
Any stenosis ≥50%		1309 (5.2)
1-49% stenosis NobsCAD		30%

Miami Heart Study

N° 2359

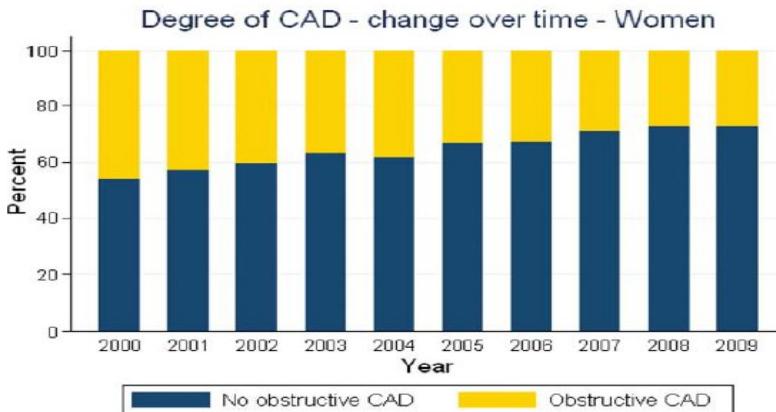
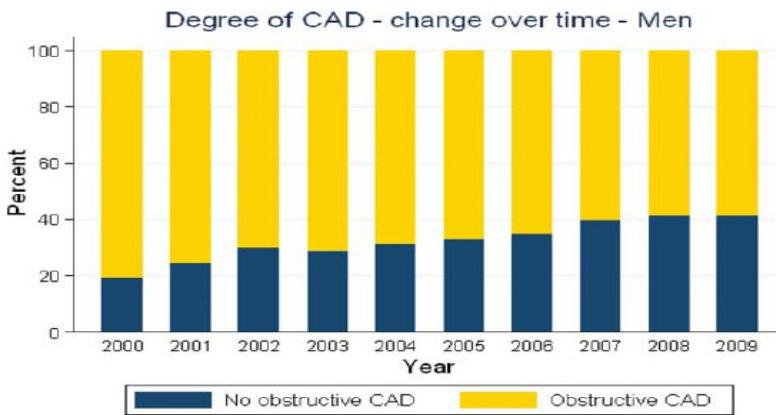
Age 53.4+6.8yrs

Women 49.6%



Maximum stenosis	
No stenosis/plaque	1,194 (50.9)
1%-49% stenosis	1,012 (43.1)
50%-69% stenosis	97 (4.1)
≥70% stenosis	43 (1.8)

Degree of CAD by examination year and gender In Stable Angina



Copenhagen Study

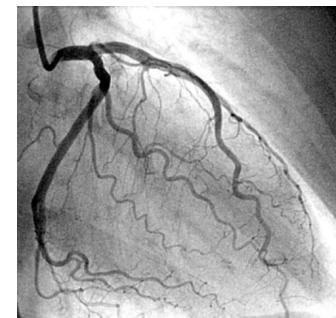
No obstructive CAD comprised normal coronary arteries (defined as 0% stenosis in all coronary arteries) and diffuse non-obstructive CAD (defined as 1–49% stenosis in any epicardial coronary artery).

The proportion of patients with no obstructive CAD increased from 54 to 73% in women and from 19 to 41% in men

Original Investigation

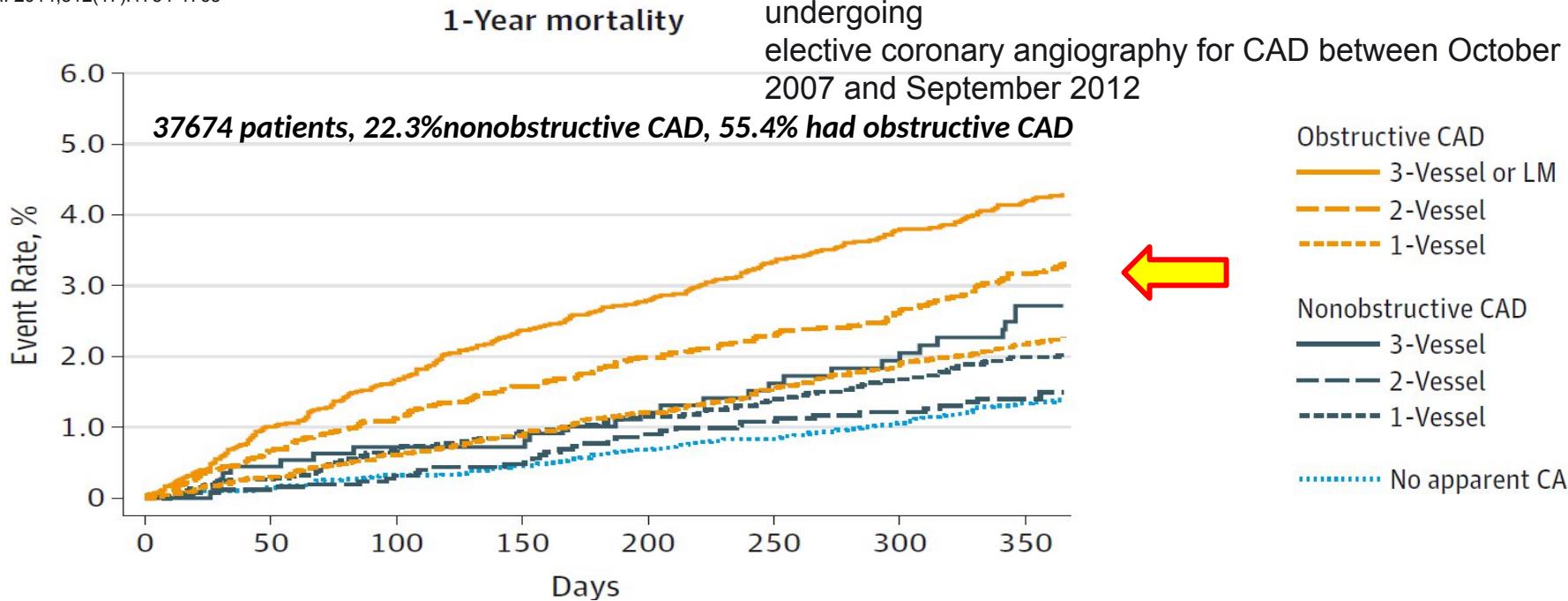
Nonobstructive Coronary Artery Disease and Risk of Myocardial Infarction

JAMA®



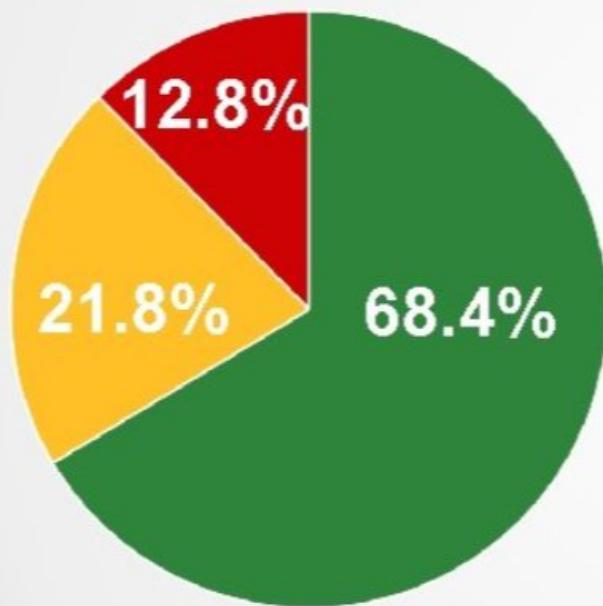
Thomas M. Maddox, MD, MSc; Maggie A. Stanislawski; Gary K. Grunwald, PhD; Steven M. Bradley, MD, MPH; P. Michael Ho, MD, PhD; Thomas T. Tsai, MD, MSc; Manesh R. Patel, MD; Amneet Sandhu, MD; Javier Valle, MD; David J. Magid, MD, MPH; Benjamin Leon, BS; Deepak L. Bhatt, MD; Stephan D. Fihn, MD, MPH; John S. Rumsfeld, MD, PhD

JAMA. 2014;312(17):1754-1763

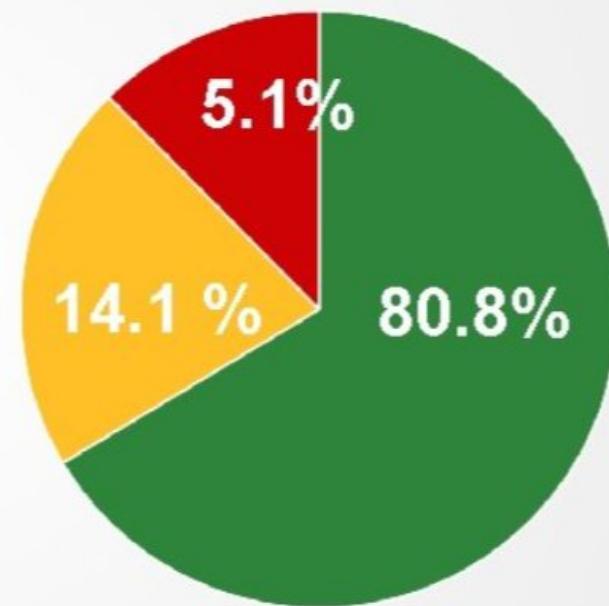


ICONIC Results: Maximal % stenosis at CCTA

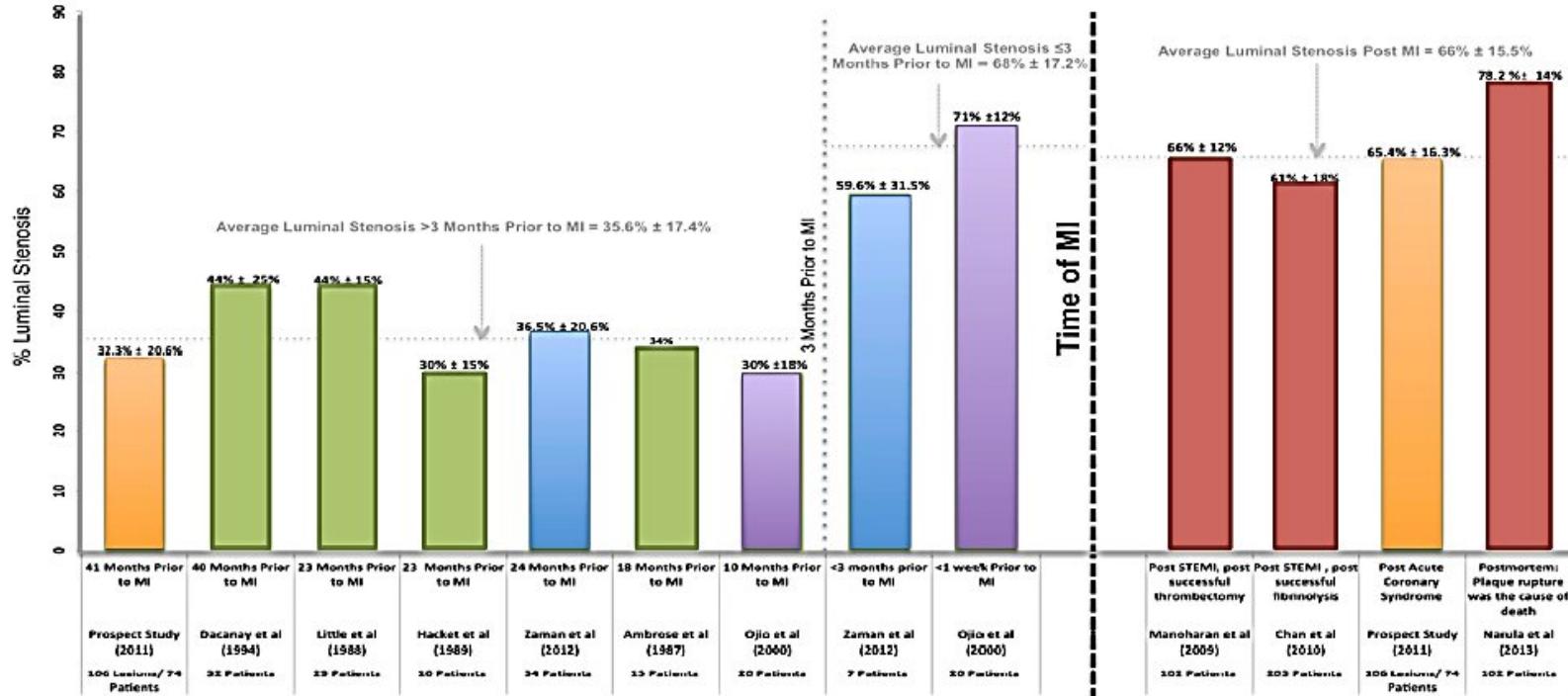
ACS

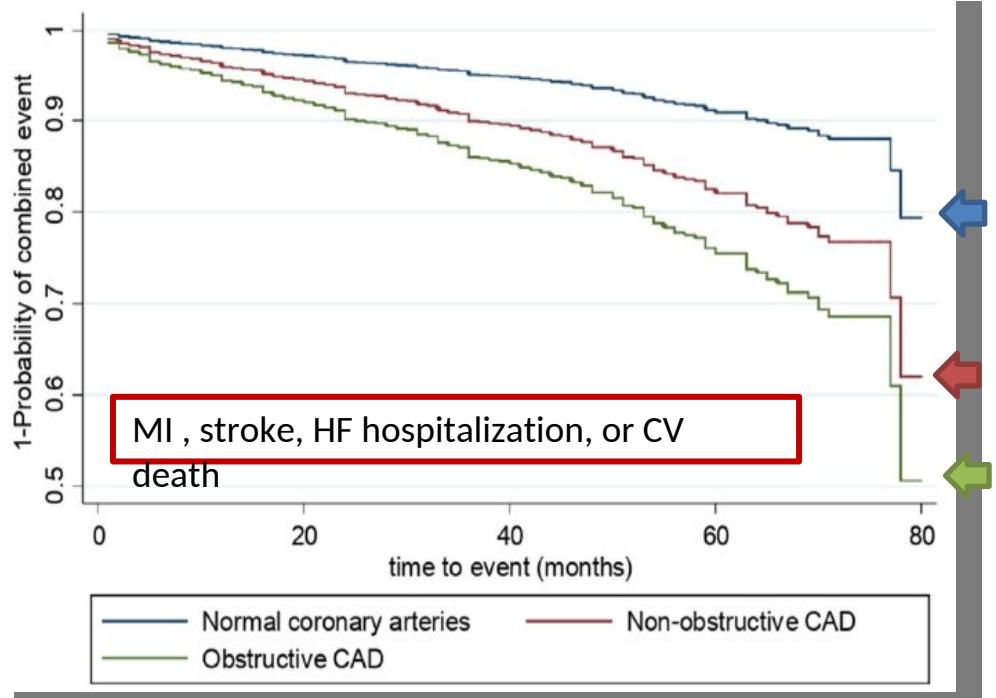


No ACS



La complicanza è dovuto a progressione della stenosi coronarica che diviene improvvisamente significativa e causa ischemia ACUTA





3265 patients classified into 3 groups:

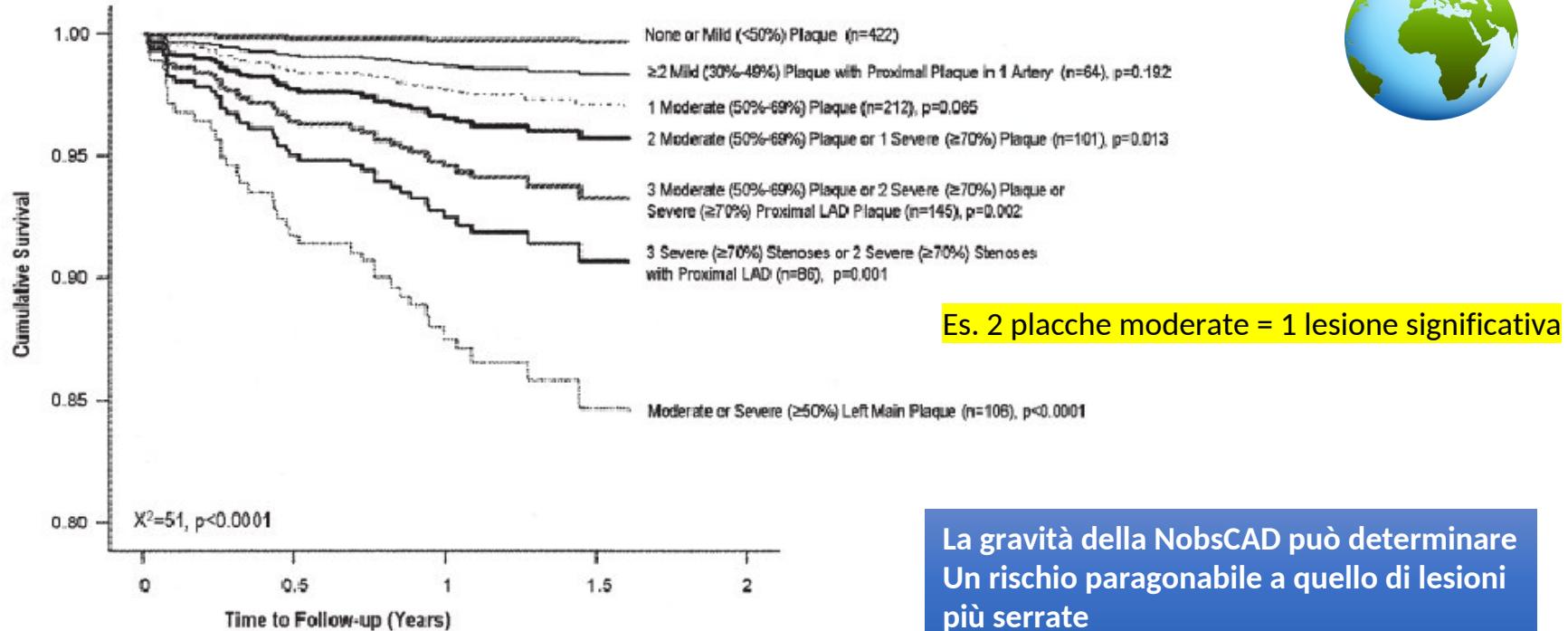
Normal coronary arteries (lesion <20%)

Non-obstructive CAD (20-50%)

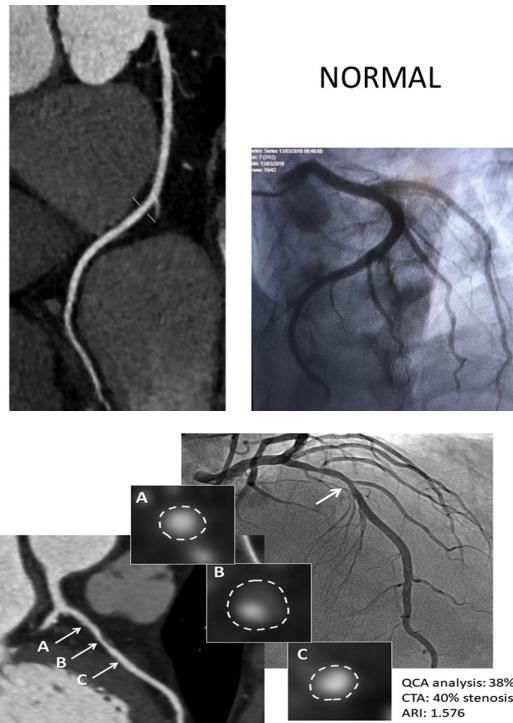
Obstructive coronary artery disease (>70%)

Rodríguez-Capitán et Al. J. Clin. Med. 2024

CONFIRM (Coronary CT Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry)



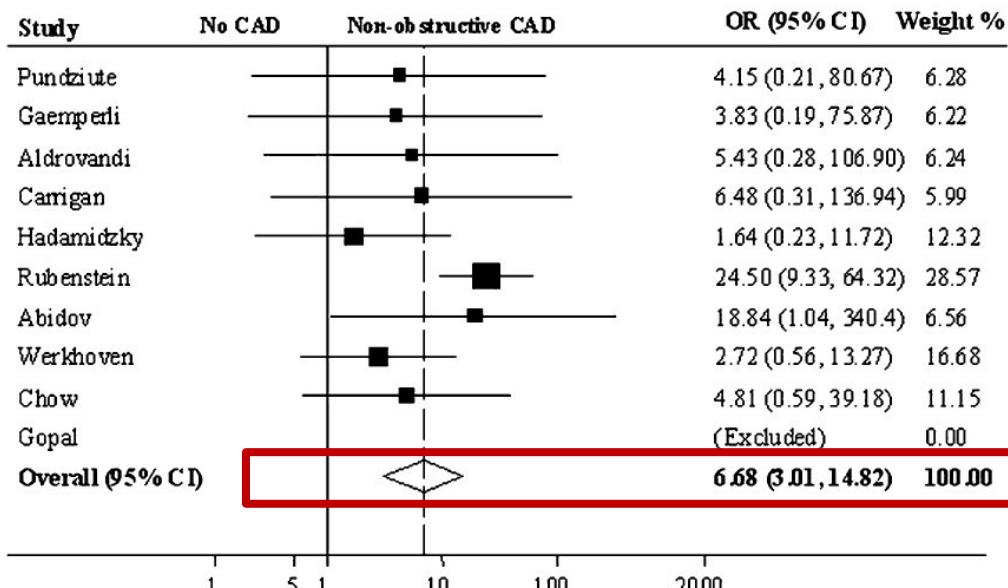
Metanalisi NObsCAD vs NOCAD



Weights are from random effects analysis

Test of OR=1: Z score= 4.67; p=0.0001

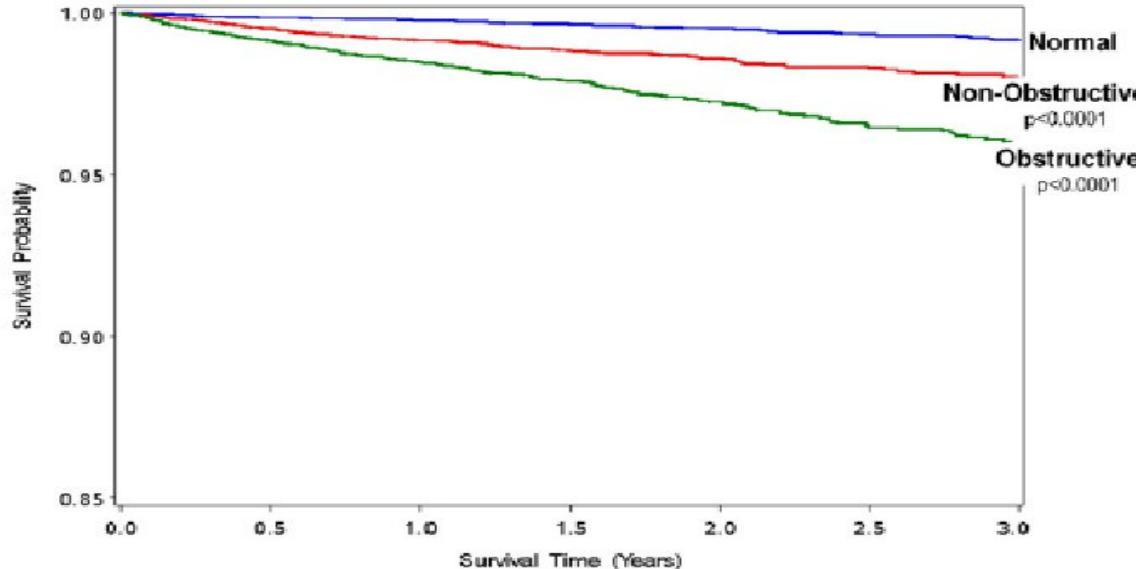
Heterogeneity: p=0.232; $I^2=23.7\%$



CONFIRM (Coronary CT Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry)

Unadjusted All-Cause 3-Year Kaplan-Meier Survival by the Maximal Per-Patient

23,854 Patients Without Known Coronary Artery Disease

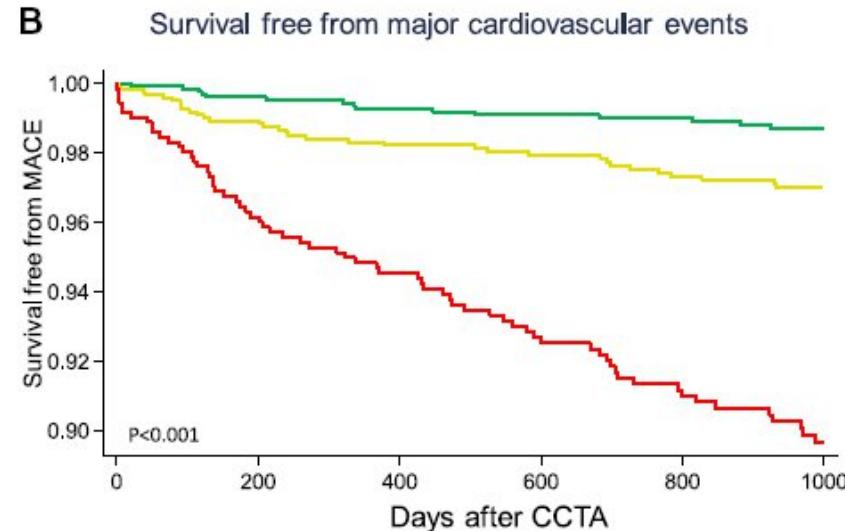
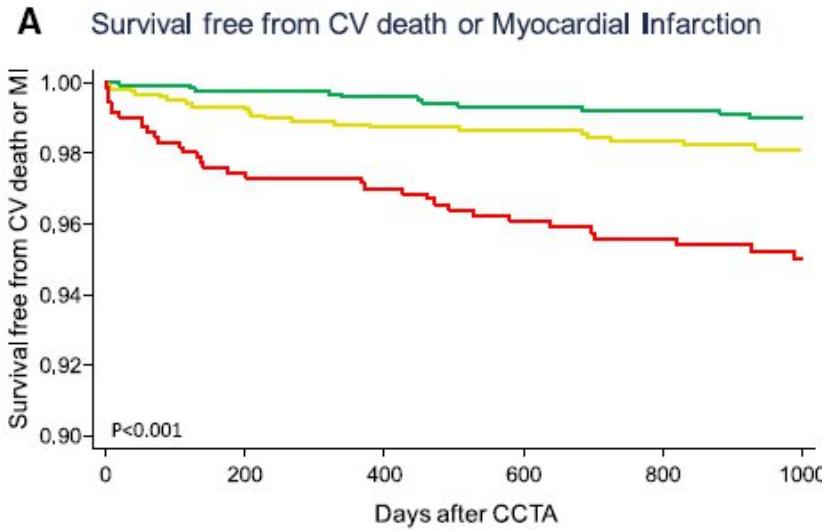


At Risk	Year 0	Year 1	Year 2	Year 3
Normal	10146	9357	5800	2907
Non-Obstructive (1-49%)	8114	7437	4081	1930
Obstructive ($\geq 50\%$)	5594	5136	3153	1430



Valore prognostico della CAD ostruttiva e non ostruttiva (studio prospettico)

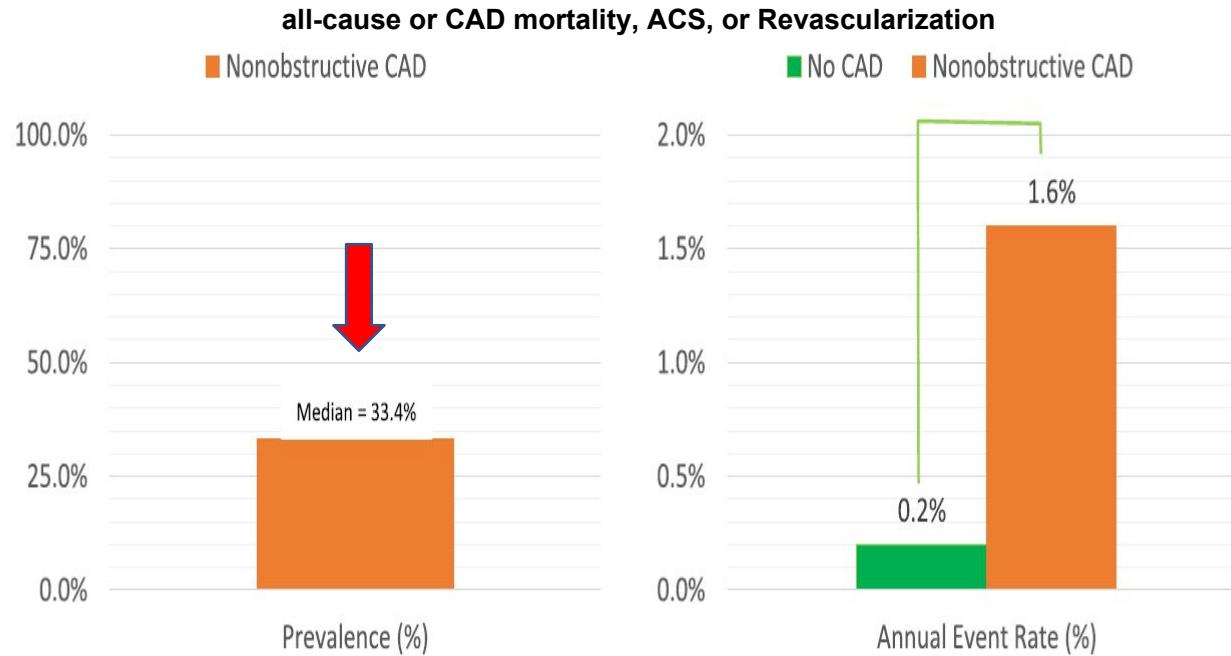
3242 patients followed for the primary outcome of cardiovascular death or myocardial infarction for a median of 3.6 (2.1–5.0) years



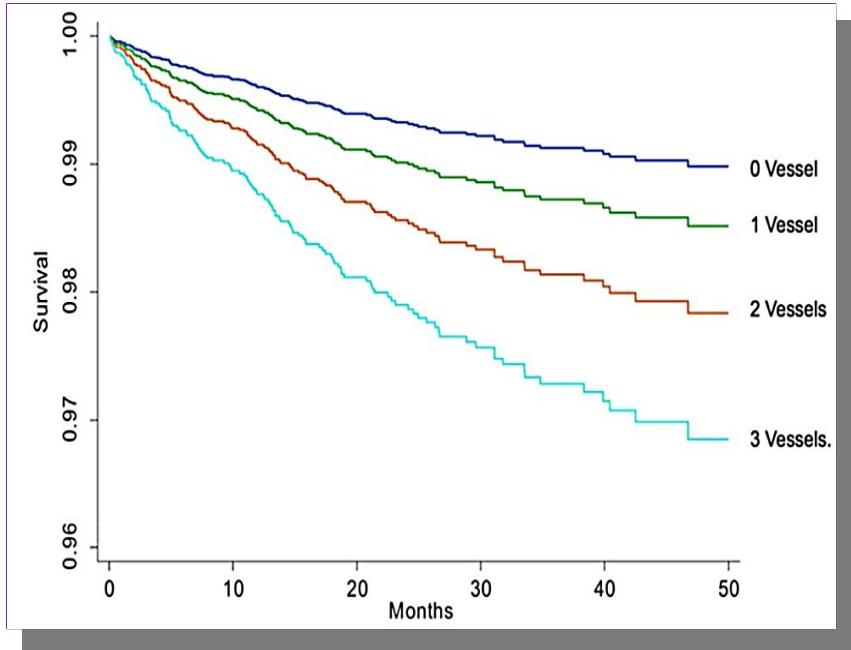
— No CAD — Non-obstructive CAD — Obstructive CAD

Il rischio di eventi cumulativo in presenza di NobsCAD è di circa 8 volte quello dei pazienti NOCAD

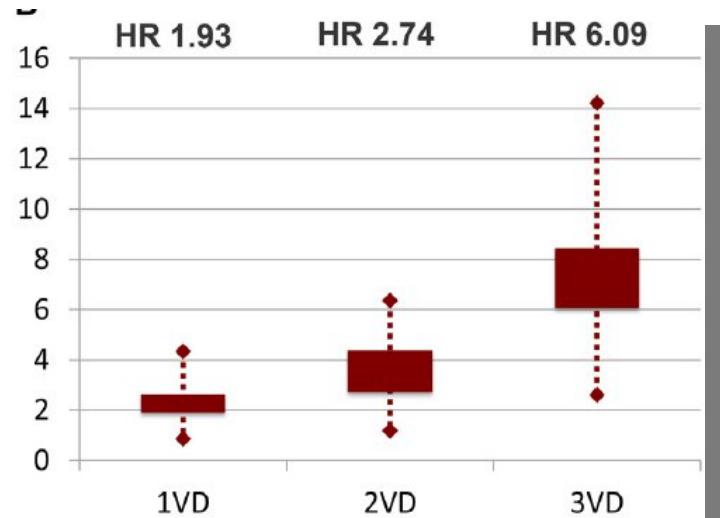
Findings from 17 Published Reports (N ¼ 49,957) with a Median of 2.5 years of Follow-up – Suspected CAD



Valore prognostico della coronaropatia non ostruttiva



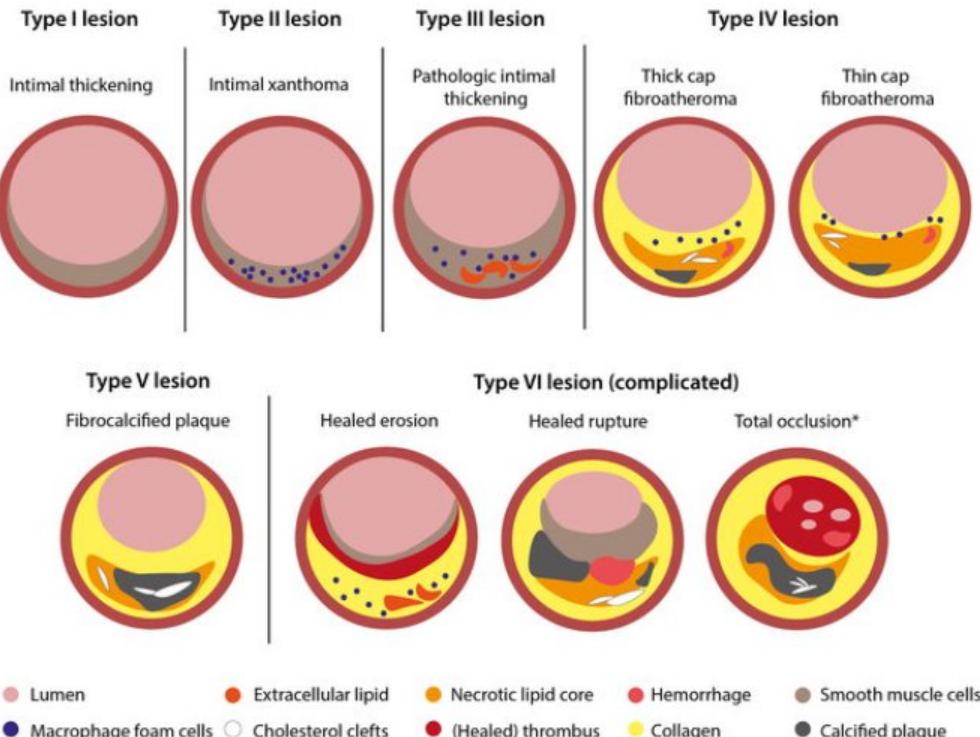
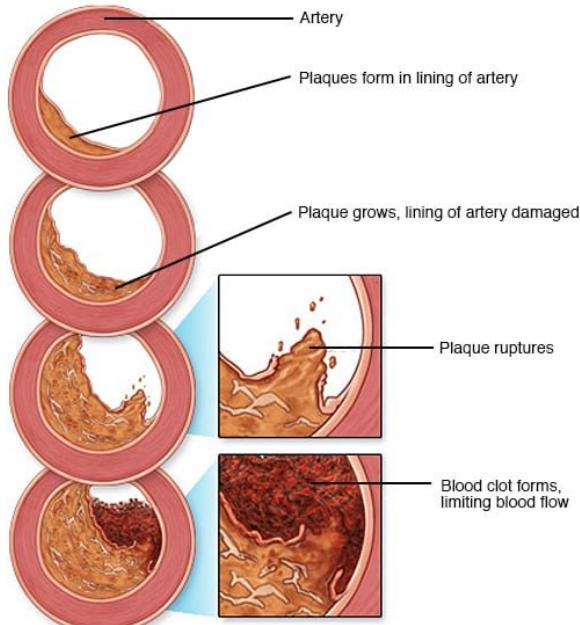
Hazard ratios (HRs)
for all-cause mortality



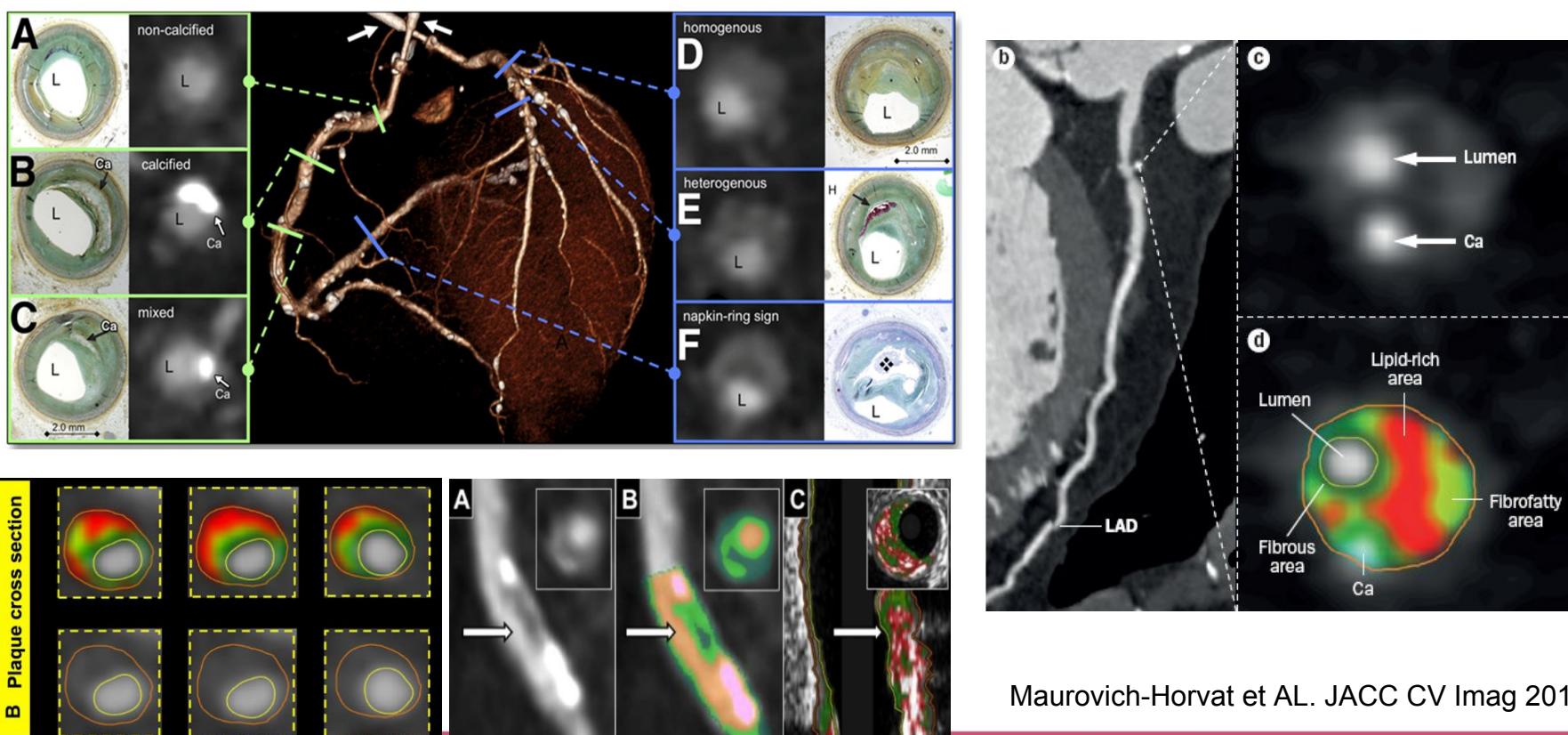
Chow et Al. Arteriosclerosis, Thrombosis, and Vascular Biology. 2015

Lin et Al. JACC 2011

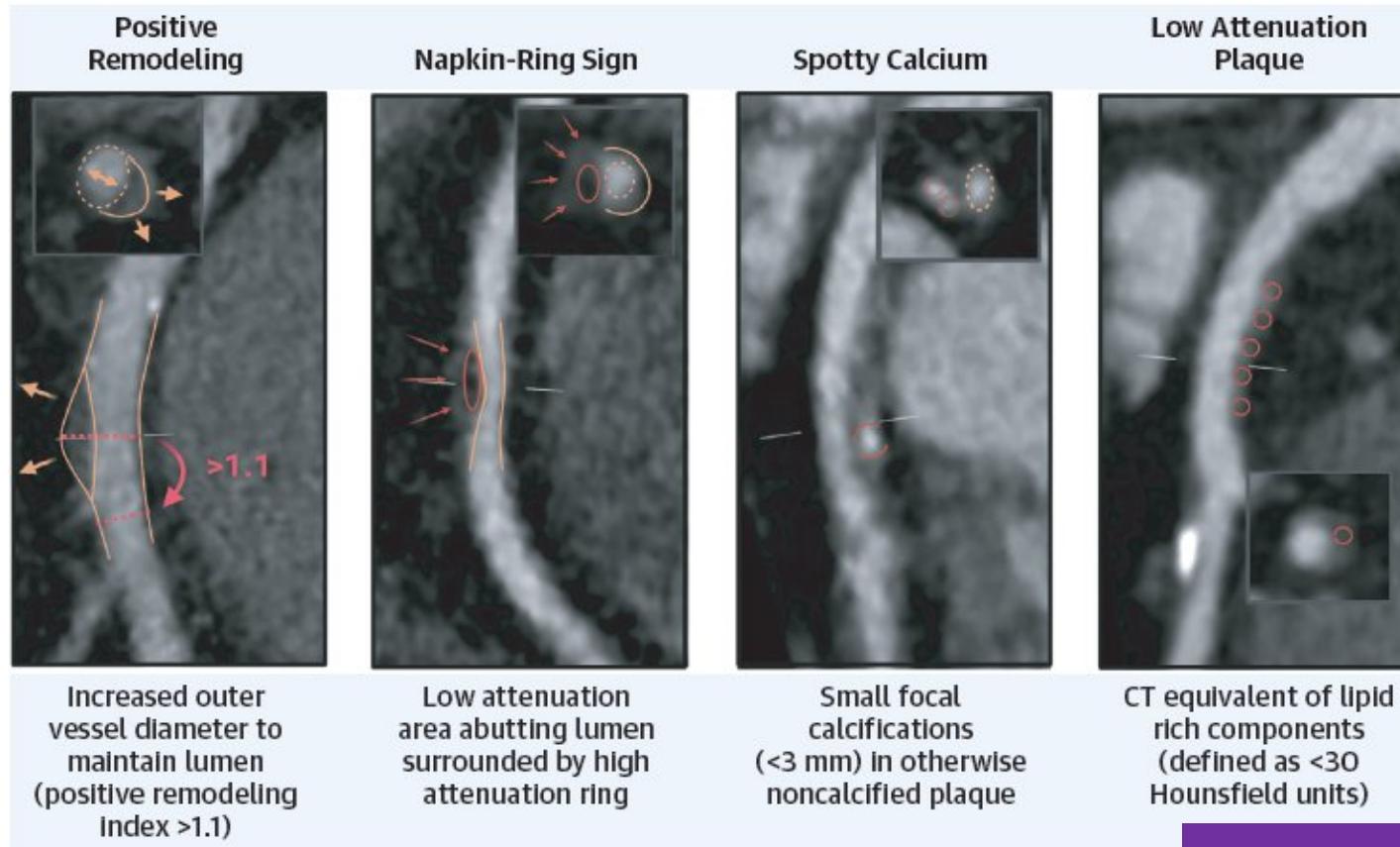
Classification of coronary atherosclerosis

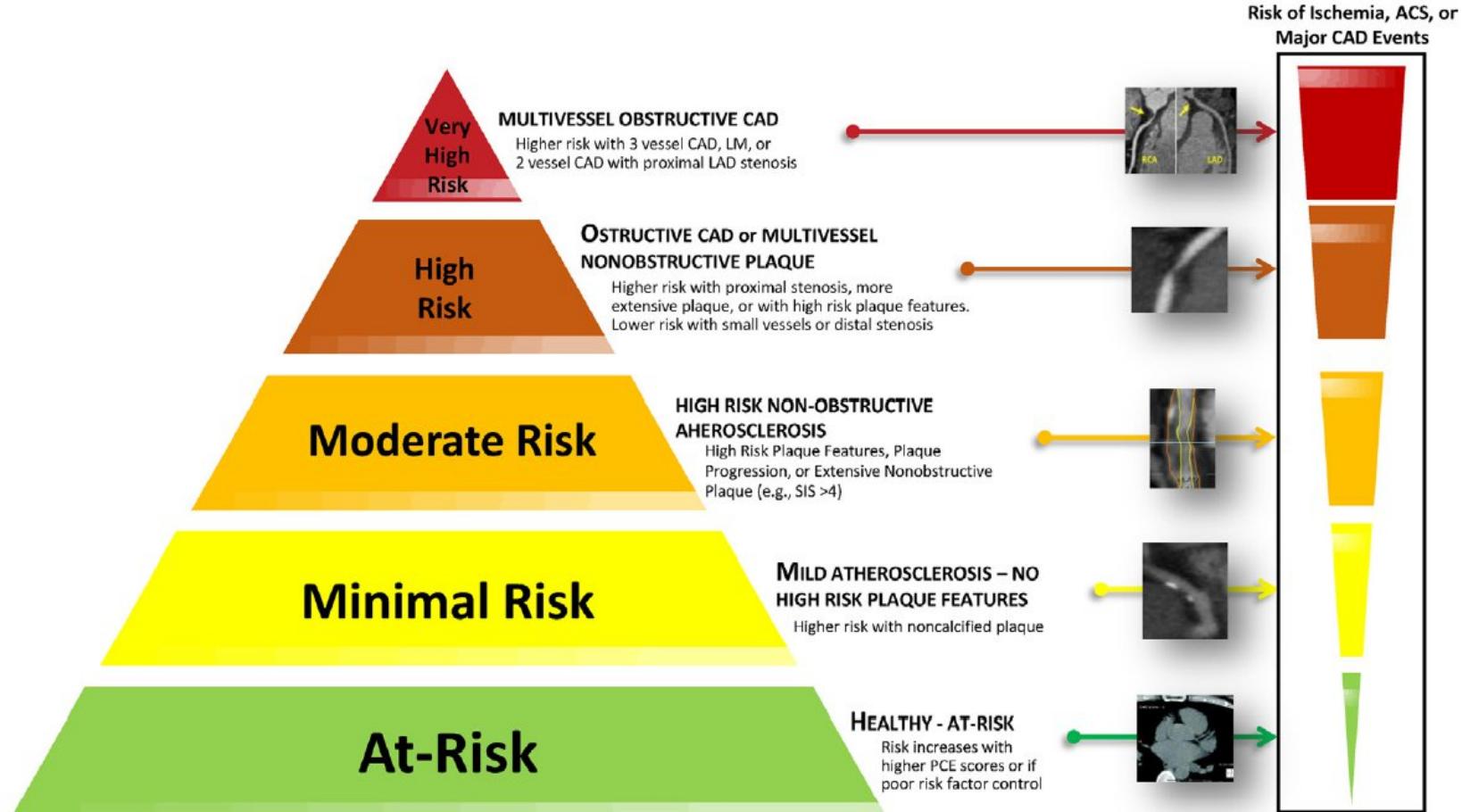


Rainbow Vision (RV)



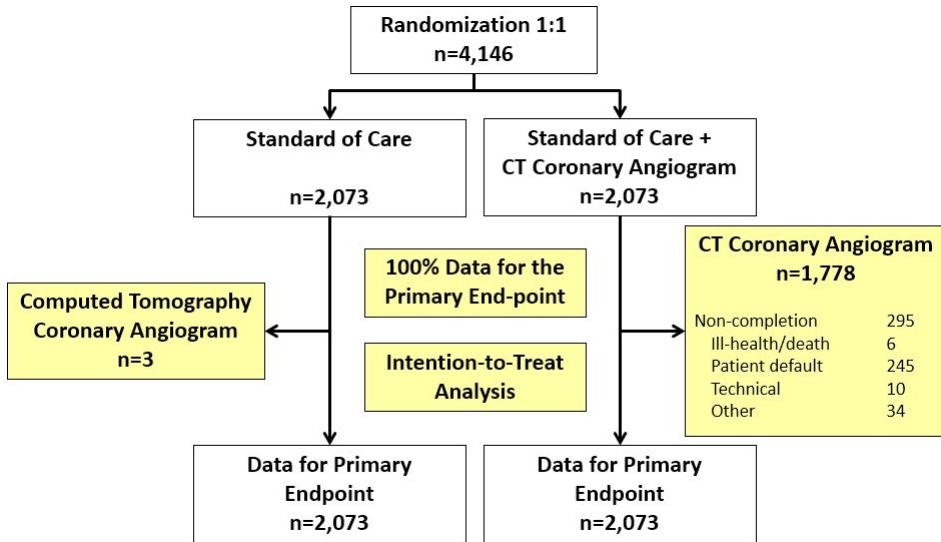
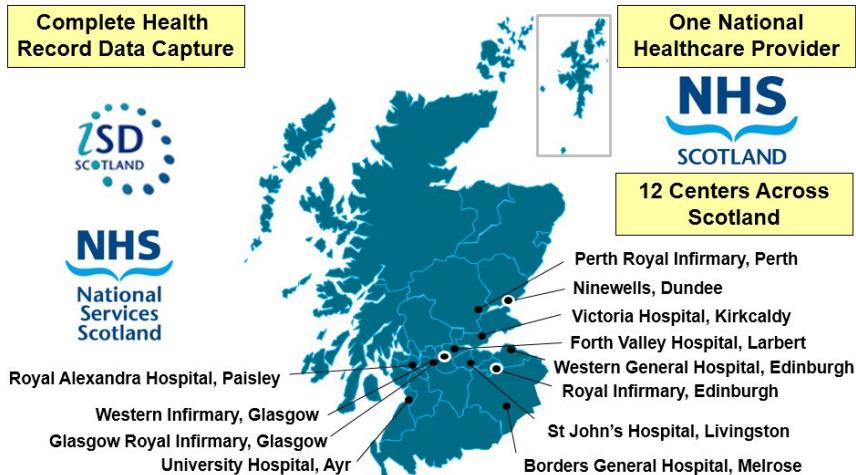
Adverse Plaque Characteristics



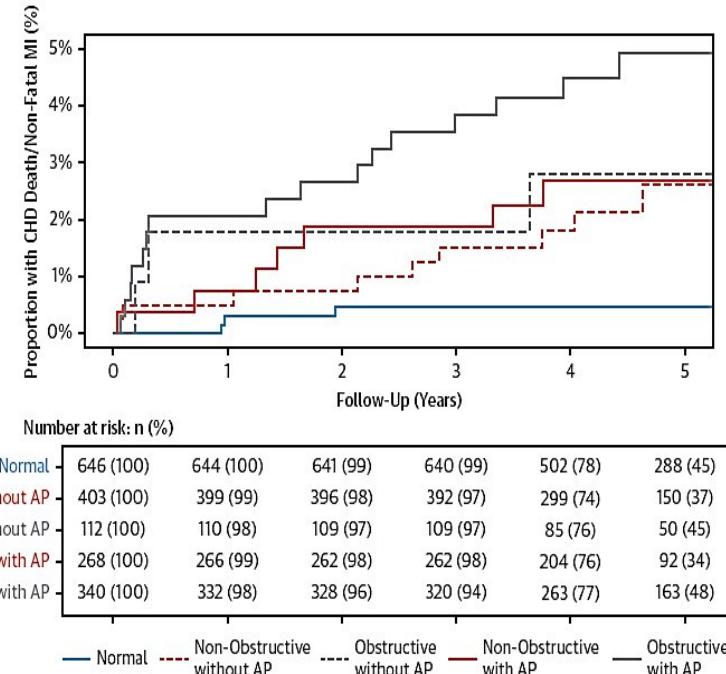
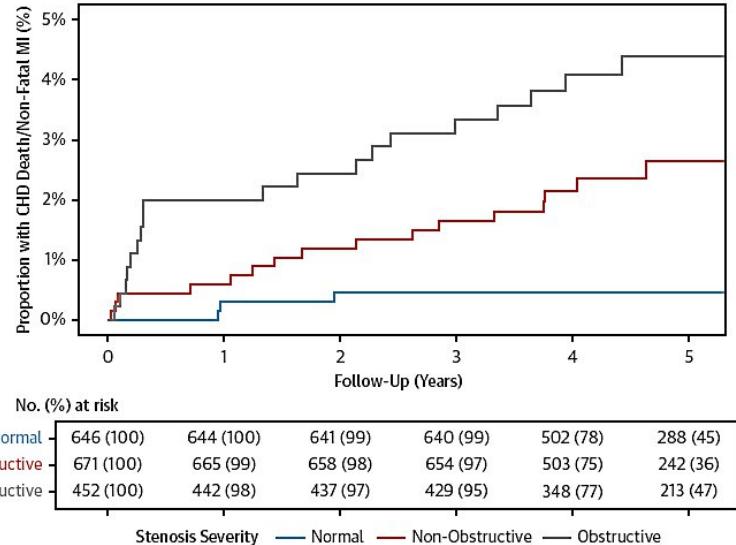




Scottish COmputed Tomography of the HEART (SCOT-HEART) Trial



Valore prognostico delle stenosi coronariche e delle caratteristiche di placca nello studio SCOTHEART



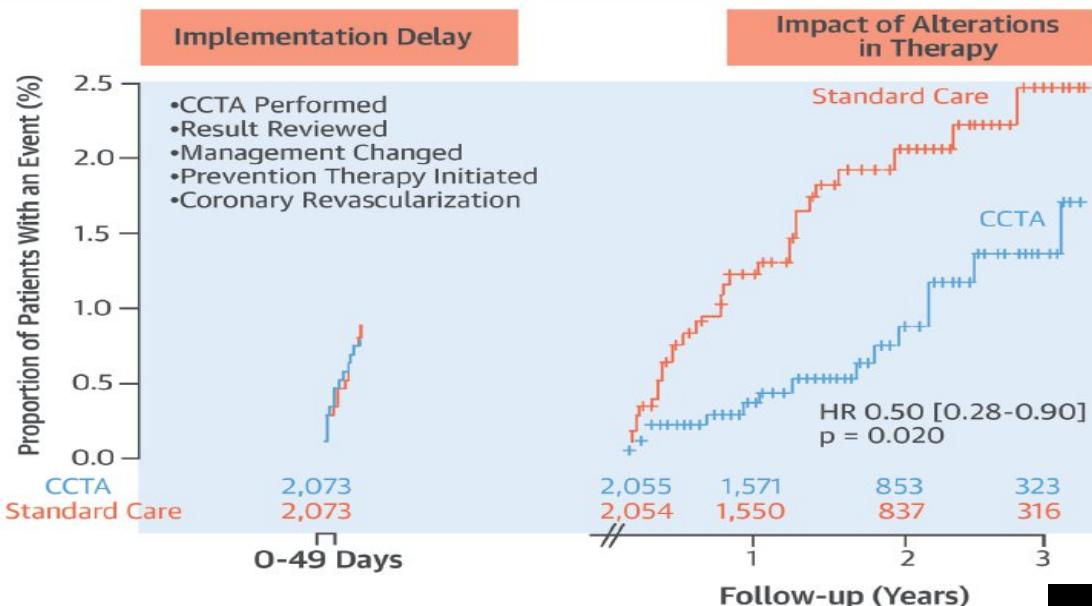
Williams et Al. JACC 2019

AP= Adverse plaque characteristics



Early detection of coronary atherosclerosis makes the difference

CV Death + MI



-61% ICA WOCO
+29% ICA WCO

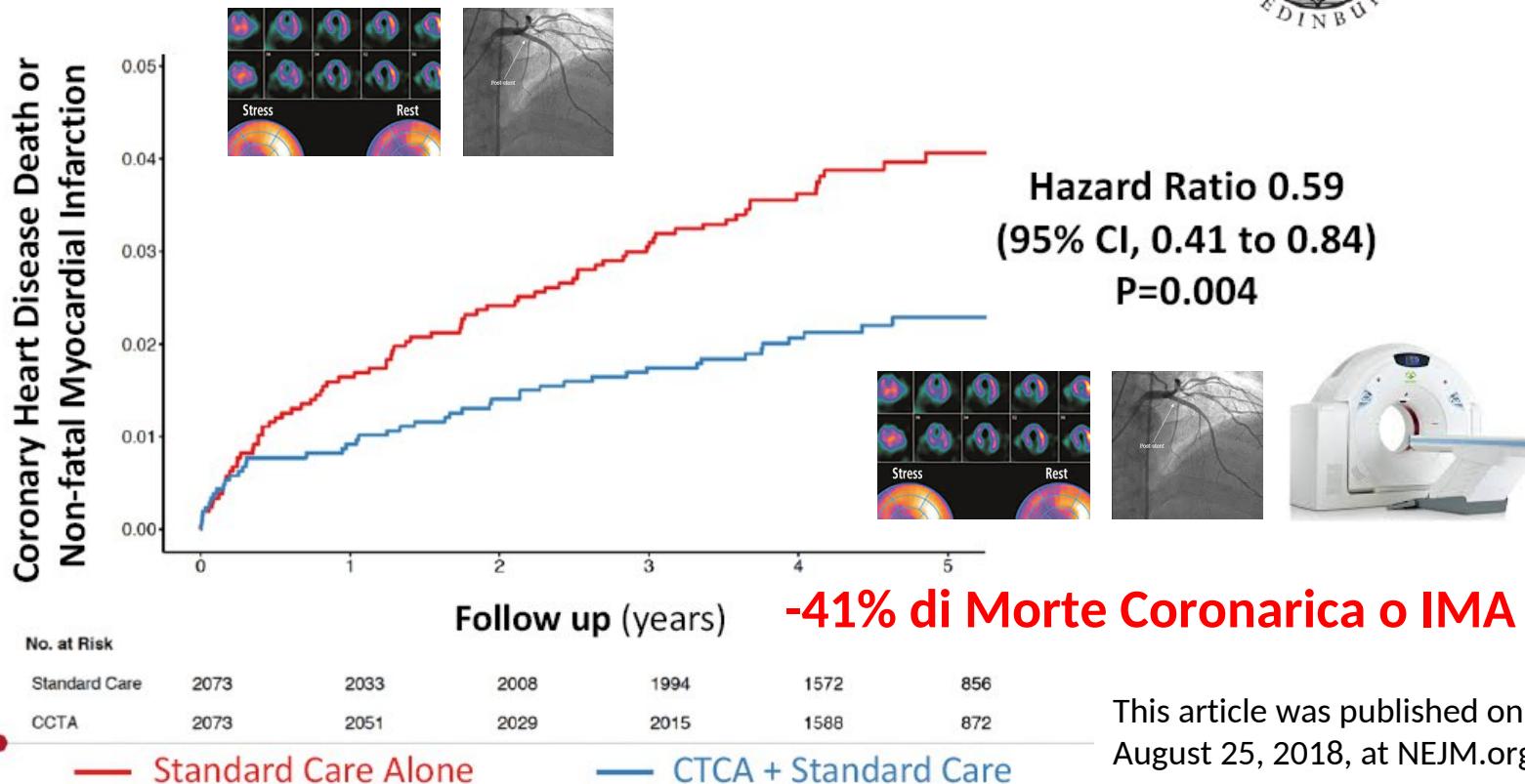
-50% events

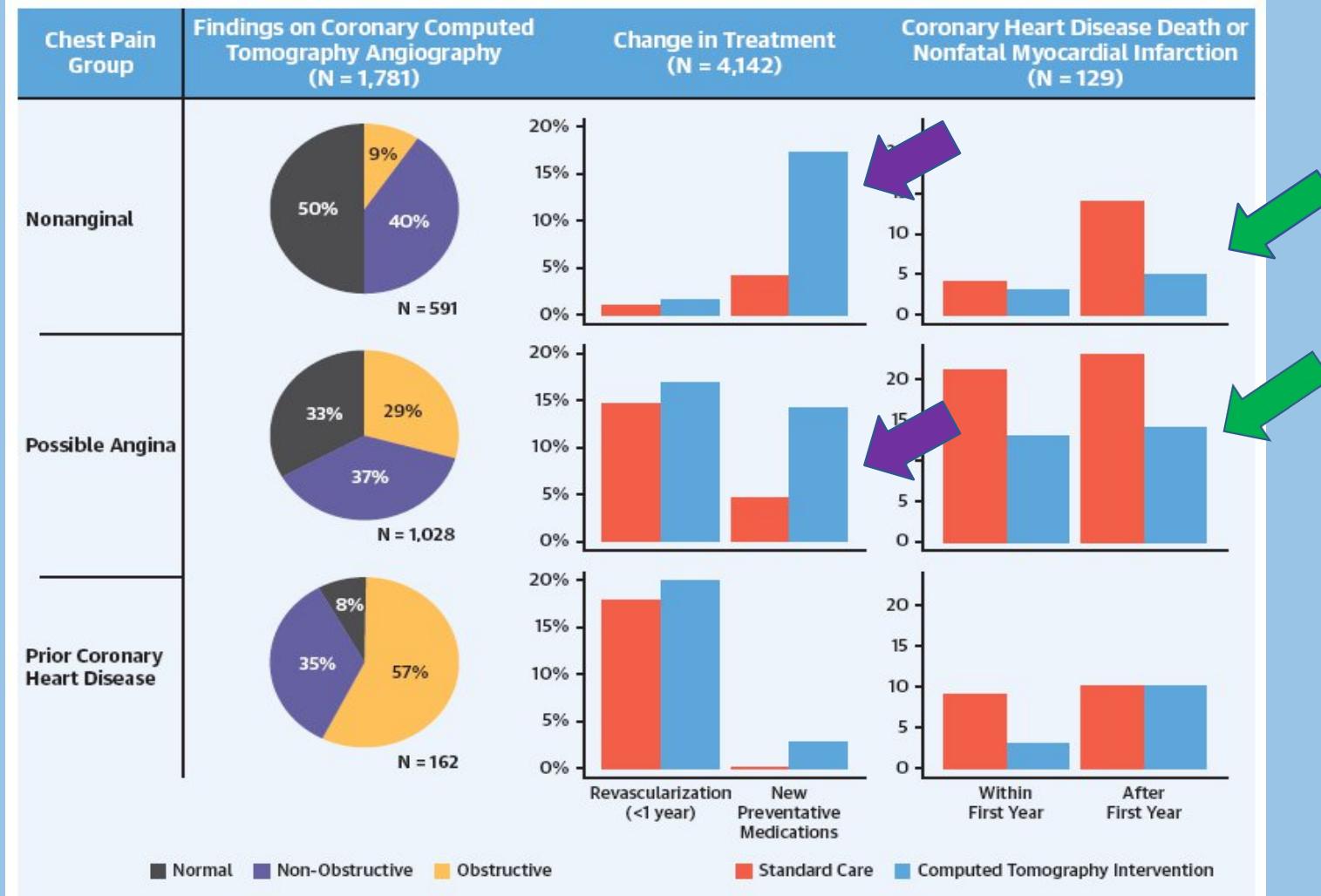
Improved assignment
of preventive therapies

Williams, M.C. et al. J Am Coll Cardiol. 2016;67(15):1759-68.

Post hoc landmark analysis at 50 days

Primary Clinical End Point

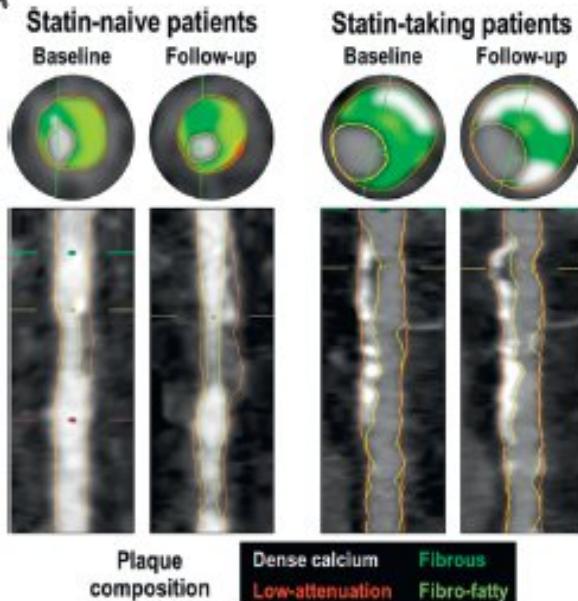




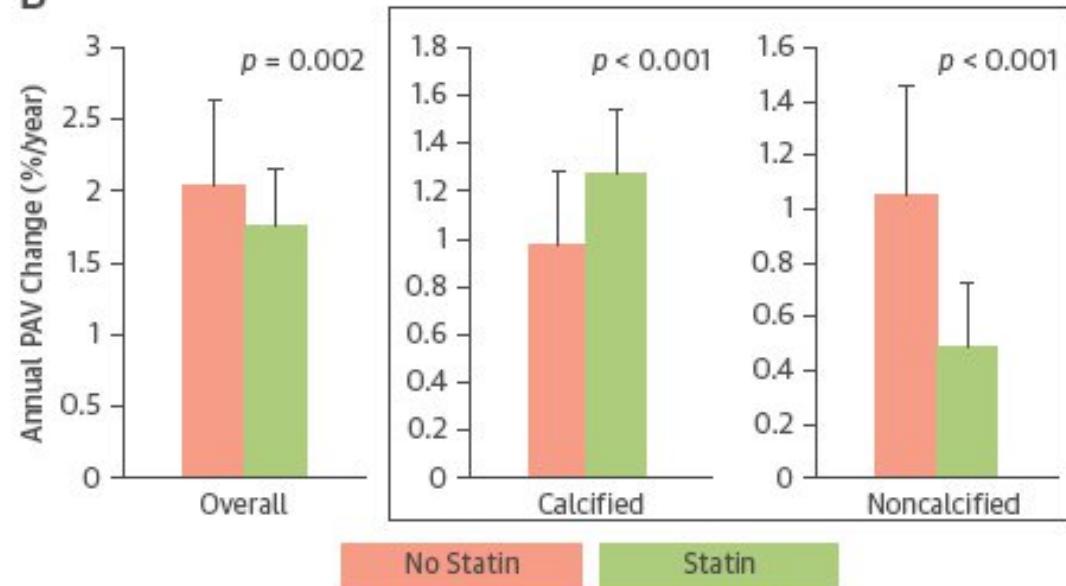
Temporal Changes in Plaque Volumes and Composition of Noncalcified Plaque by Statin use

The PARADIGM Study

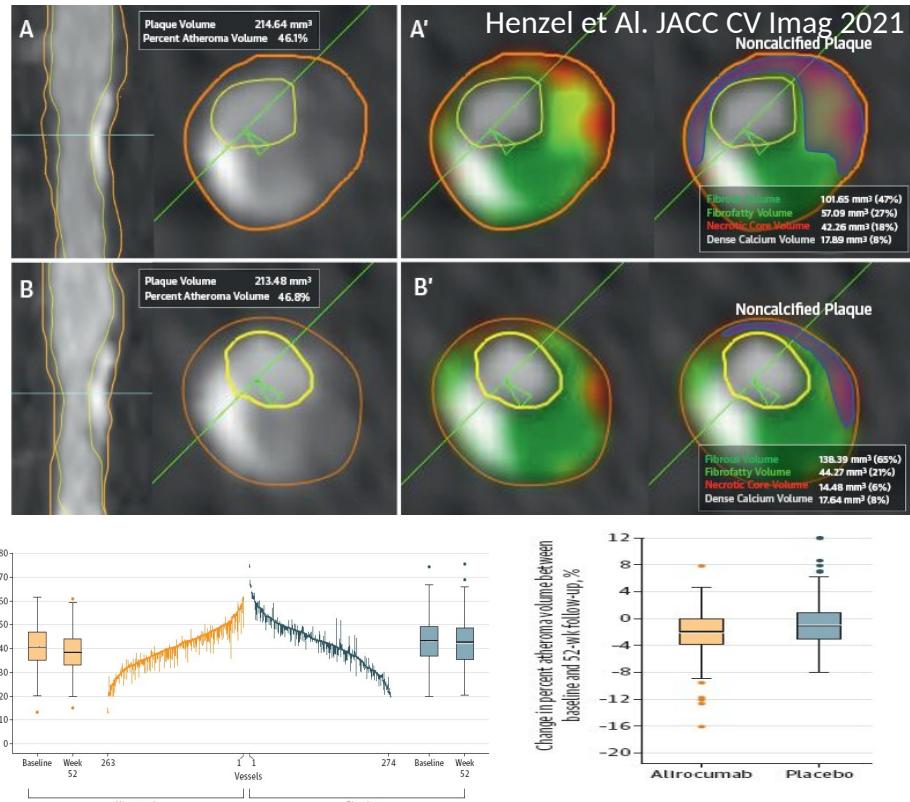
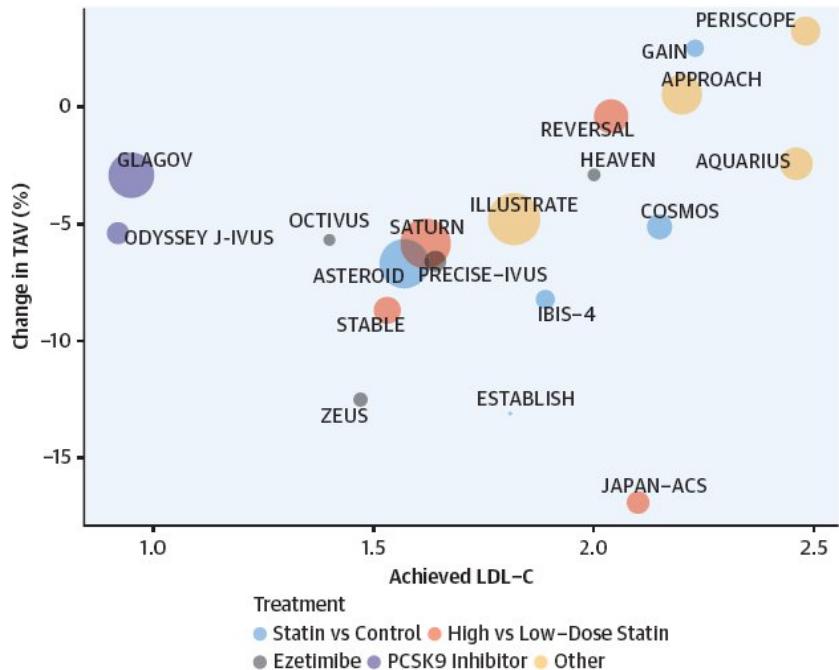
A



B



Effects of pharmacological and non-pharmacological intervention on plaque features and dimensions





HUYGENS

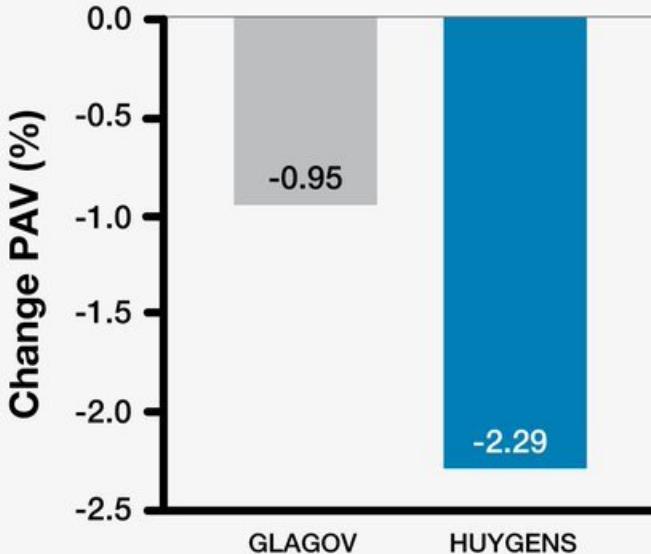
Imaging of Coronary
Plaques in Participants
Treated With
Evolocumab

HUYGENS demonstrated the ability to change the character of unstable plaques over time. By reducing the lipid core and thickening the fibrous cap - which helps stabilise and protect the plaque from rupture - the overall size of the atheroma also regressed.

The degree to which this is possible directly related to how much LDL cholesterol could be lowered.

Percent change in atheroma regression was also shown to be significantly greater in Acute Coronary Syndrome (ACS) patients.

Effect of Evolocumab on Plaque Burden in GLAGOV and HUYGENS



Conclusioni

- La maggior parte degli eventi coronarici si verifica per complicanze di placche non ostruttive
- L'impiego precoce di misure preventive in grado di modificare la gravità delle lesioni aterosclerotiche coronariche può prevenire lo sviluppo di eventi coronarici e morte
- La corretta identificazione e descrizione della malattia non ostruttiva è di estrema importanza clinica e andrebbe promossa in tutti i casi in cui si disponga di una anatomia coronarica