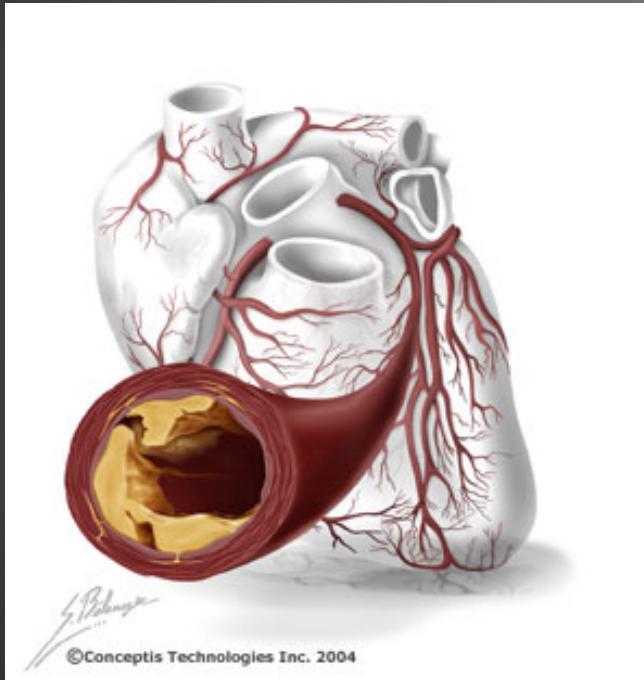


NSTEMI

Young patient- 45 years



**Non
ST segment
Elevation
Myocardial
Infarction**

Dr Claude TOUATI- Pr Jean-Pierre CAMOUS

Clinique ST George
Hôpital de Cannes
Hôpital Pasteur

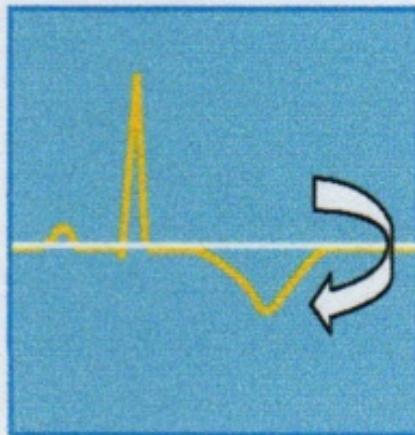
The prevalence of risk factors is increasing

- Smoking
- Obesity
- Insuline resistance
- Cocaine use

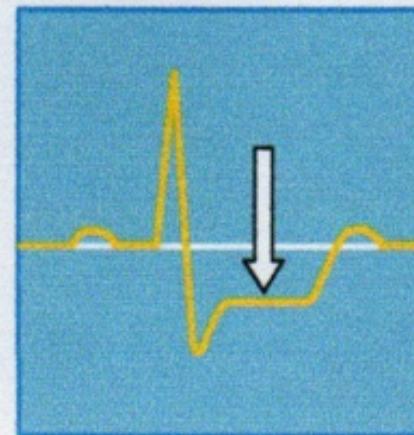


Syndromes coronaires aigus : nosologie

SCA sans élévation du ST



SCA avec élévation persistante du ST



Angor instable

IDM non Q

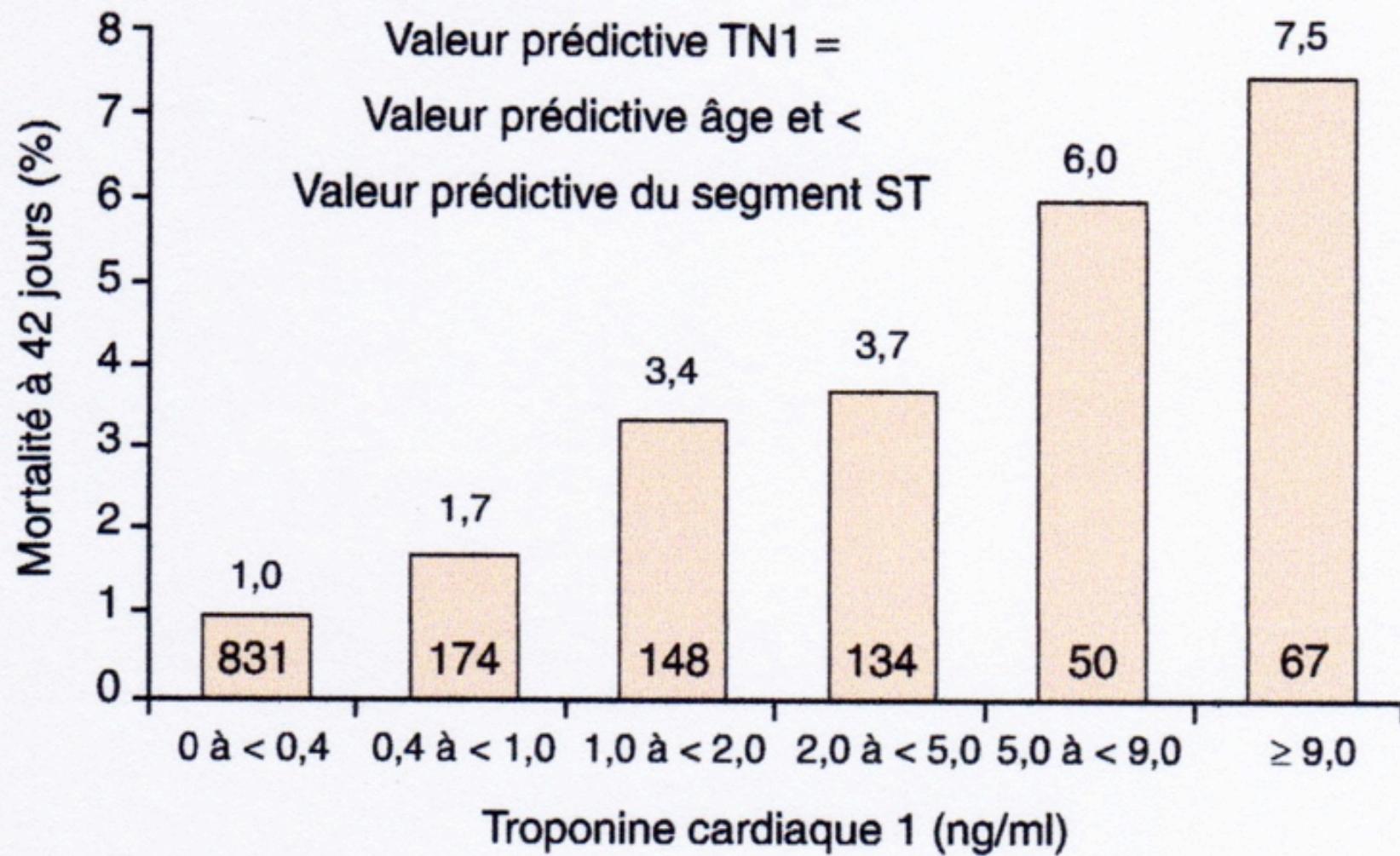
IDM Q

↔ ↑ CK-MB →

↔ ↑ troponine →

EMC

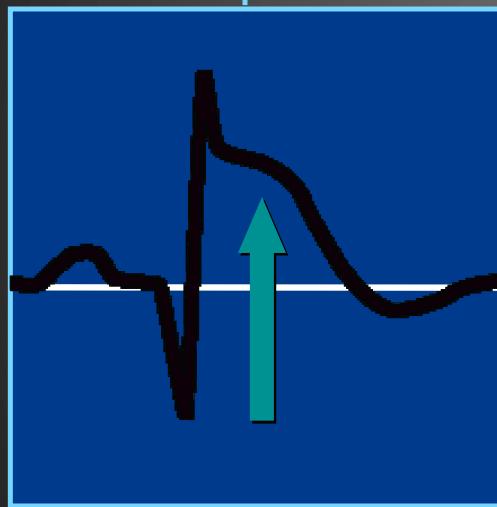
Le SCA ST – est l'urgence la plus fréquente



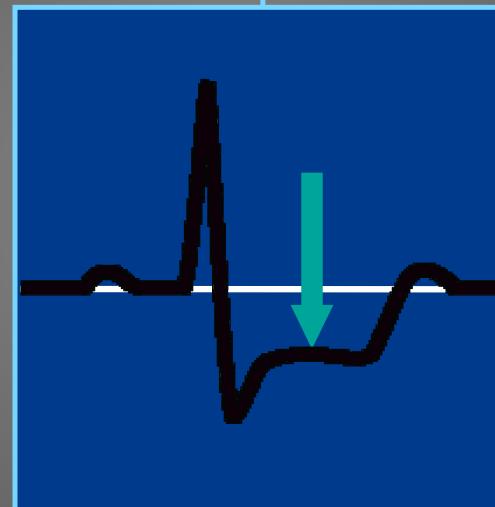
OR	1,0	1,8	3,5	3,9	6,2	7,8
IC 95 %	-	0,5-6,7	1,2-10,6	1,3-11,7	1,7-22,3	2,6-23,0

Number of Admissions for ACS

~ 2.0 MM patients admitted
to CCU or telemetry annually

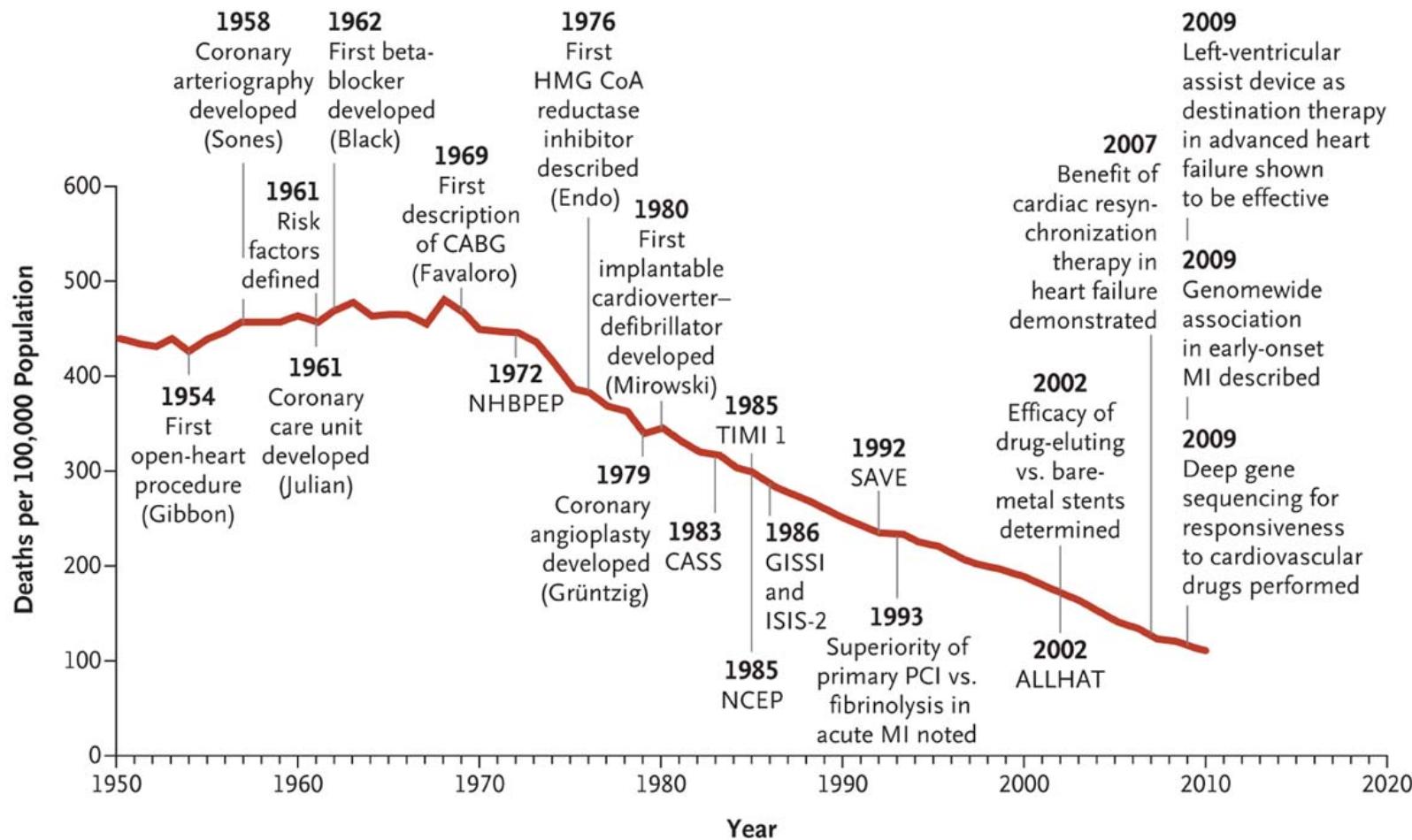


600,000
STEMI



1.3 Million
NSTE ACS

Decline in Deaths from Cardiovascular Disease in Relation to Scientific Advances.

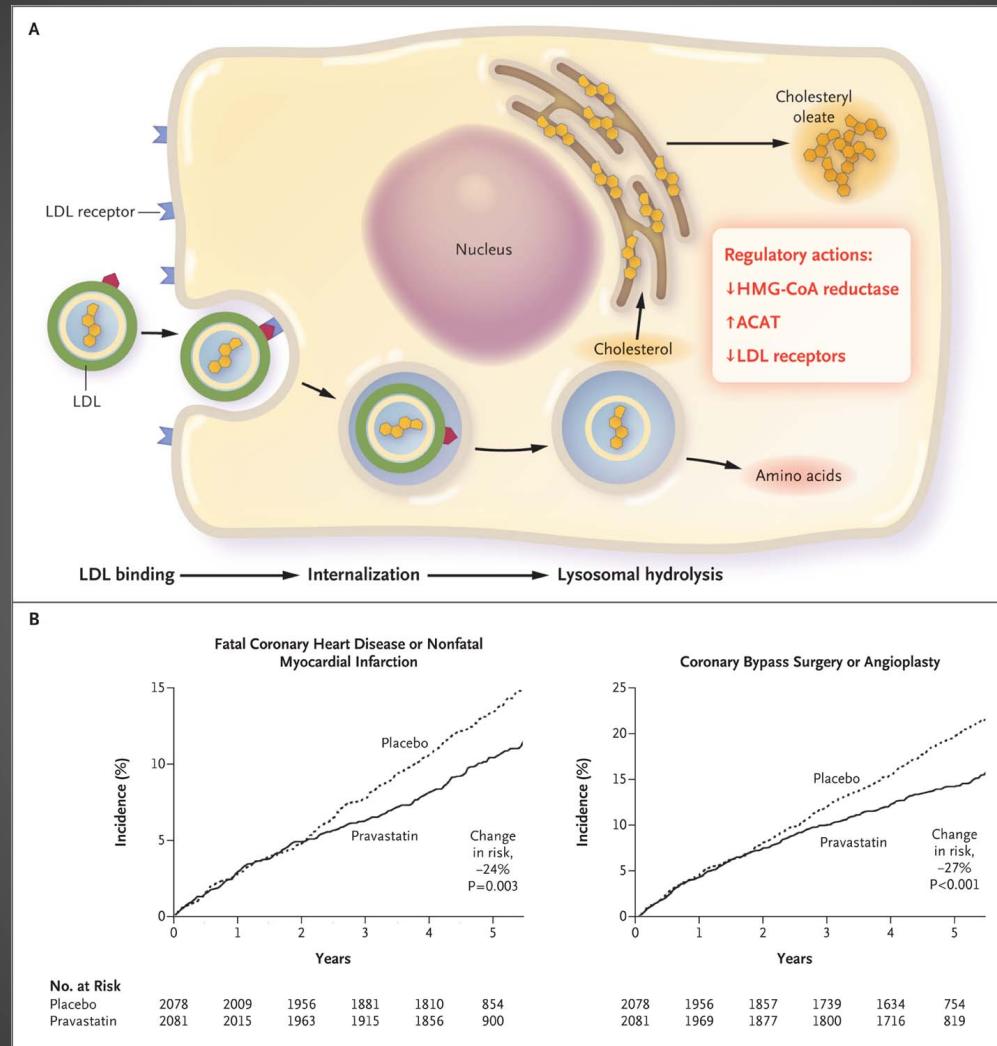


Nabel EG, Braunwald E. N Engl J Med 2012;366:54-63



The NEW ENGLAND
JOURNAL of MEDICINE

The LDL-Receptor Pathway and Treatment with LDL Cholesterol–Lowering Drugs, which Improves Cardiovascular Outcomes.



Nabel EG, Braunwald E. N Engl J Med 2012;366:54-63

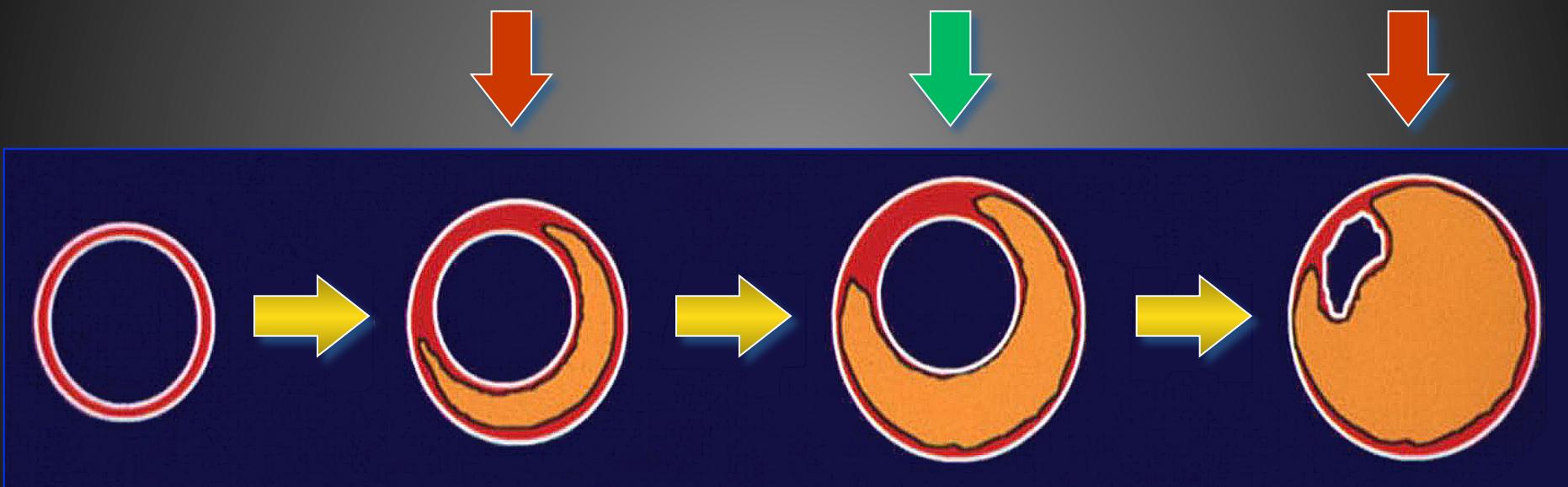


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Lesion Formation

Compensatory Expansion
Maintains Consistent Lumen

Expansion
Overcome: Lumen
Narrows



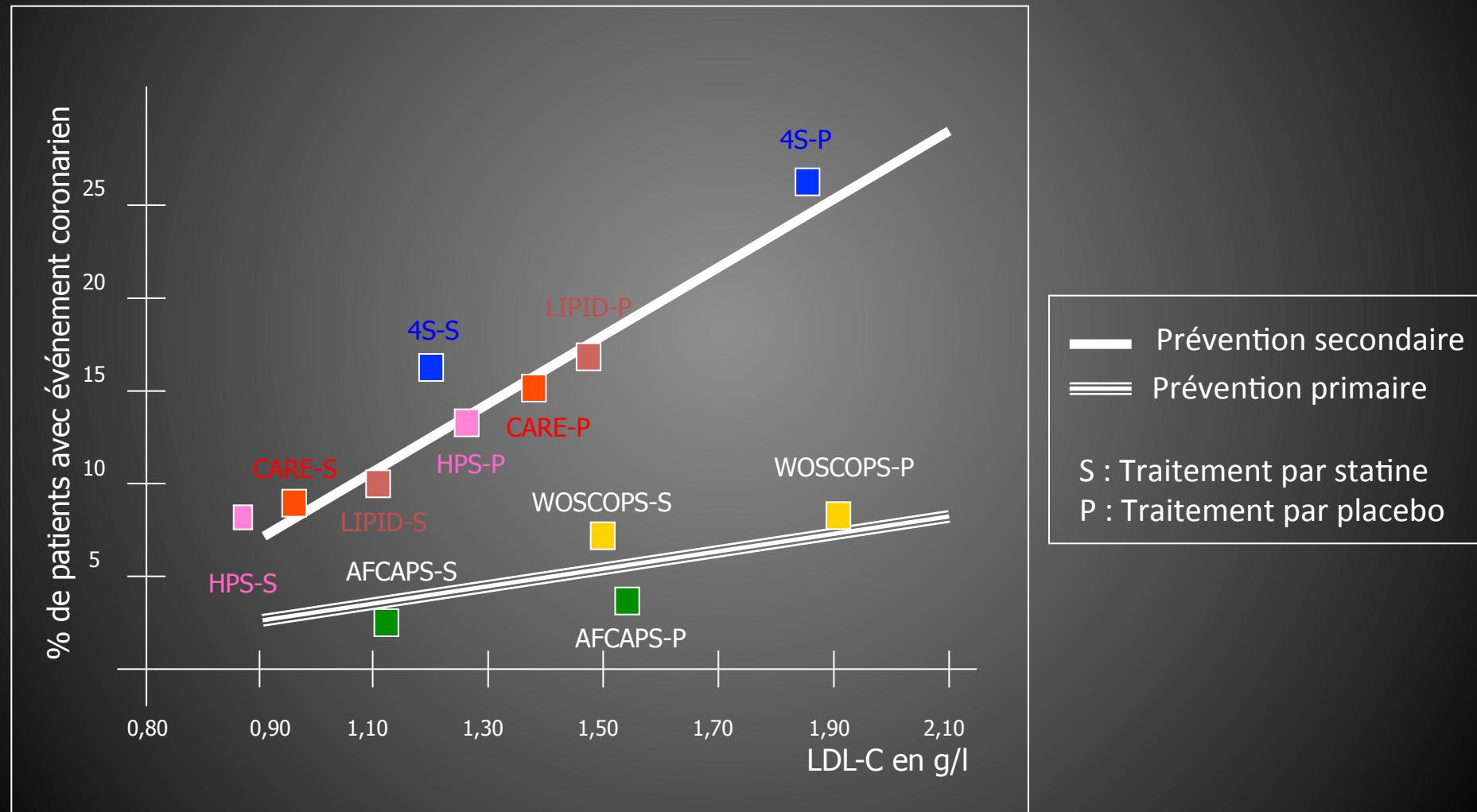
Normal
Vessel

Minimal
CAD

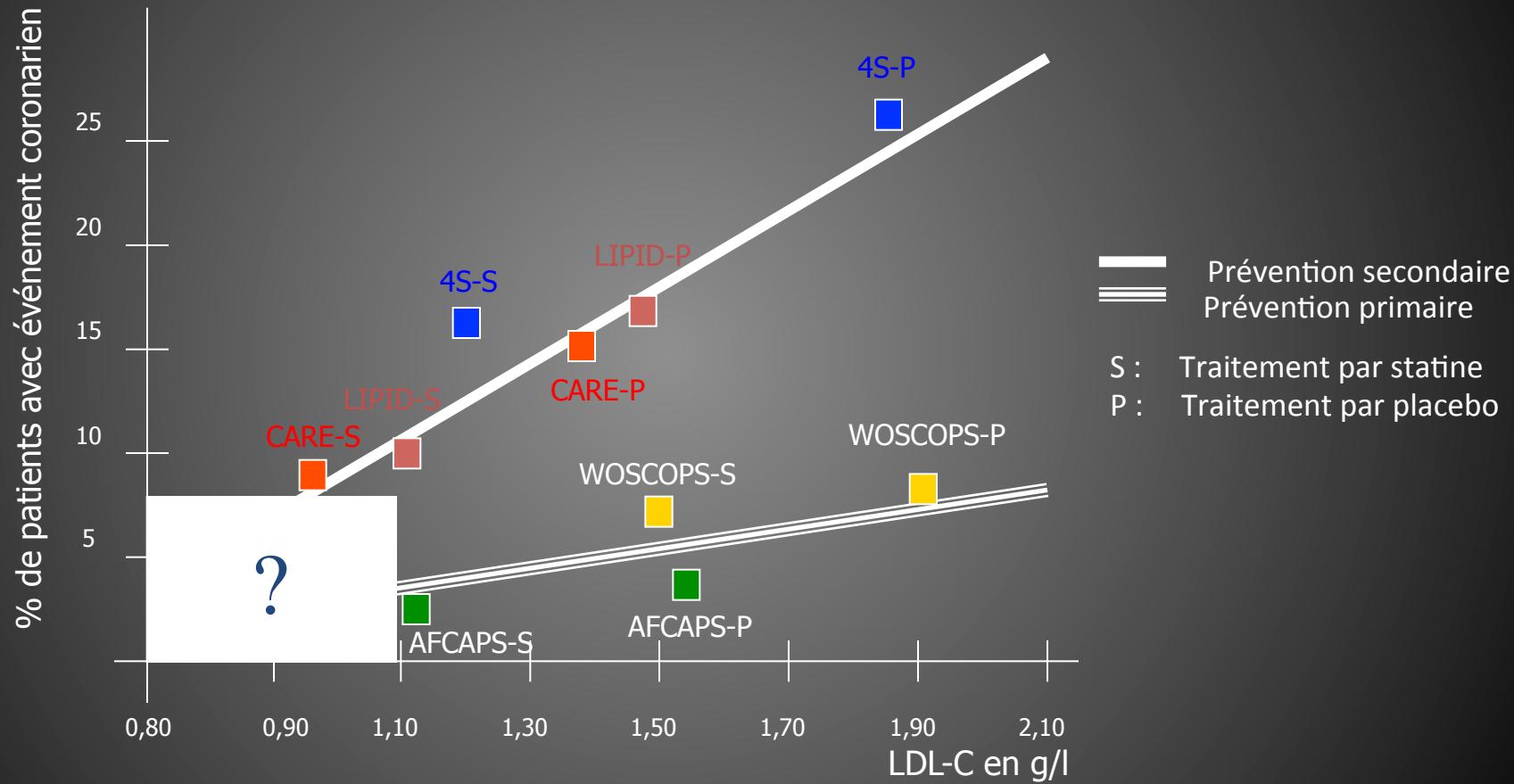
Moderate
CAD

Severe
CAD

Plus le LDL-C est bas, plus le risque coronaire est faible



Jusqu'où faut-il baisser le LDL-C ?



Can We Halt Progression of Atherosclerosis by lowering LDL-C?

Change in Atheroma and Lumen Area

Before Therapy



Atheroma Area



Lumen Area



12.97 mm²

7.67 mm²

After Therapy

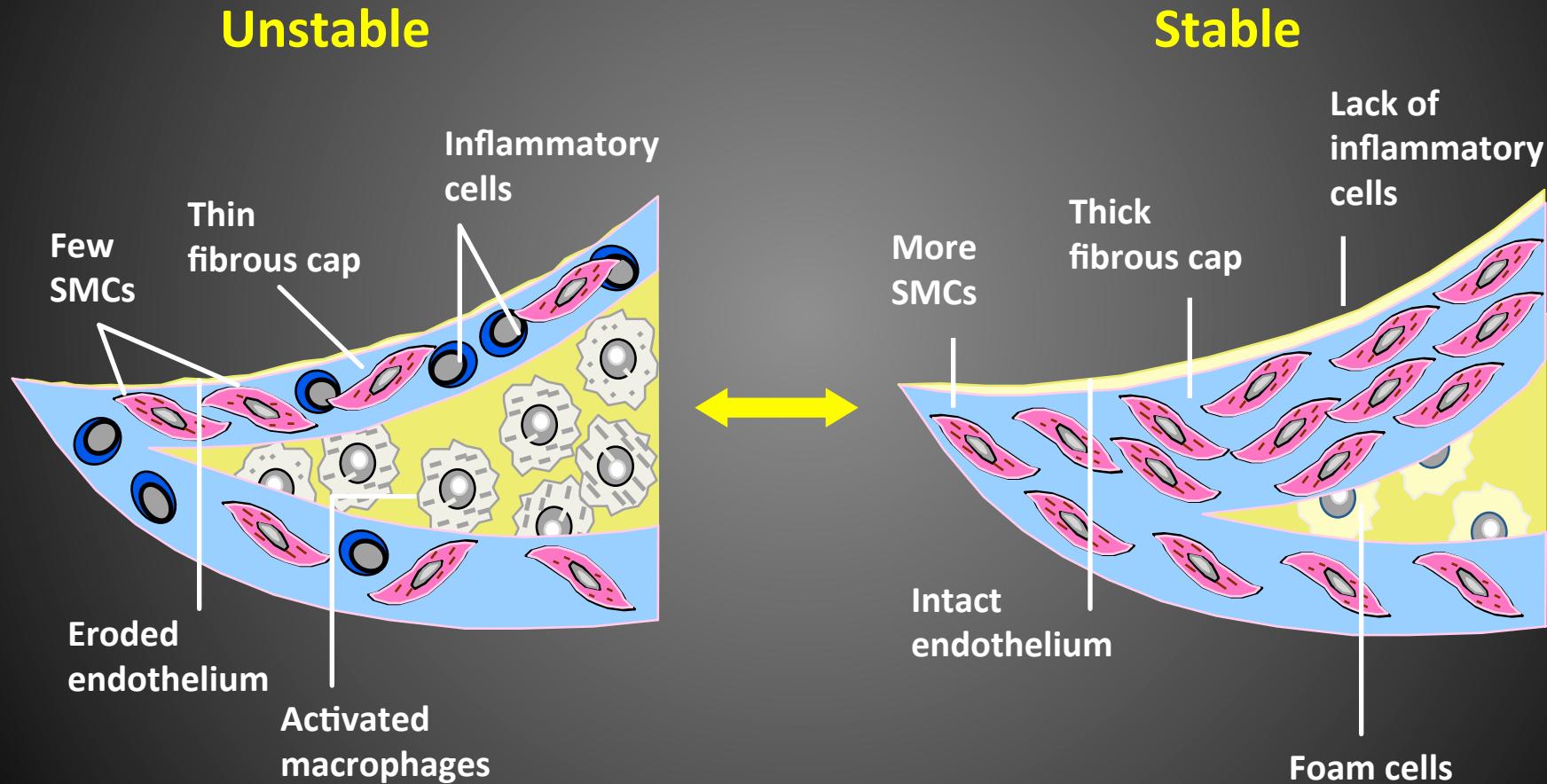


7.36 mm²



9.76 mm²

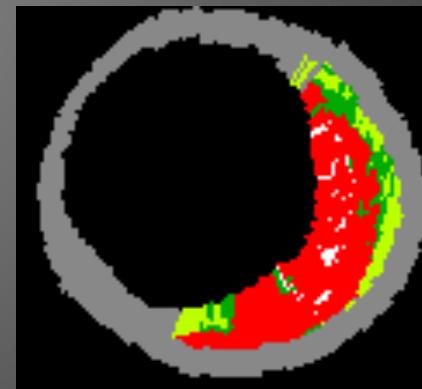
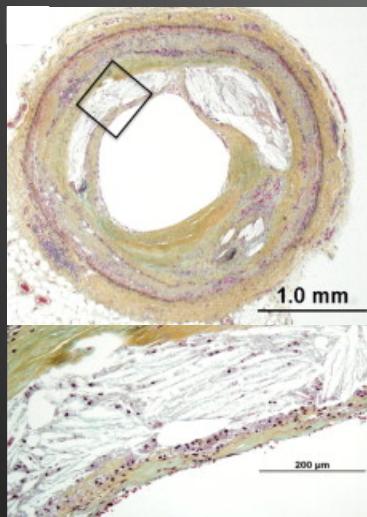
Characteristics of Unstable and Stable Plaque



Vulnerable Plaque Consensus : Clinical Definition

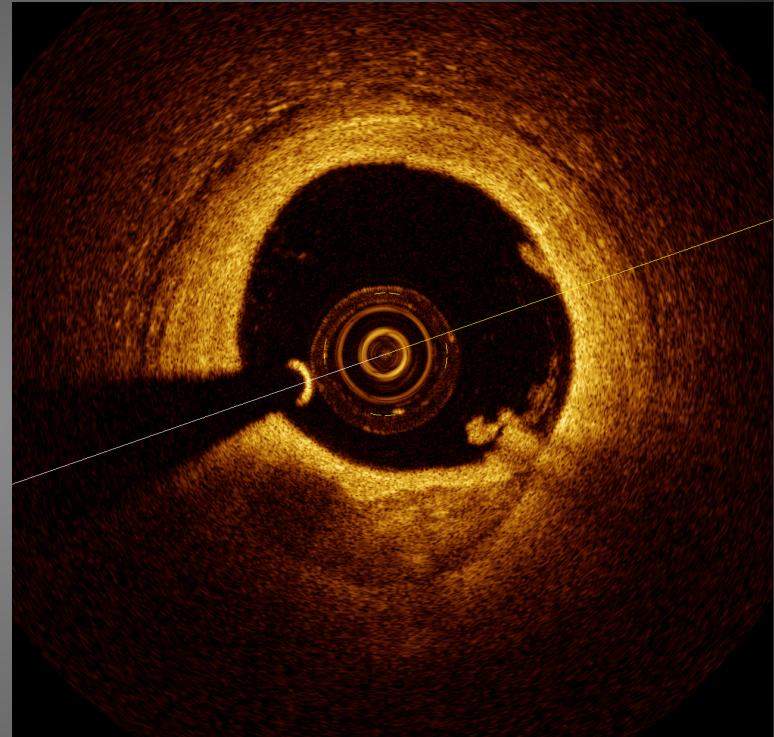
Any thrombosis-prone plaque or plaque at risk of rapid progression, with the potential of becoming a culprit lesion and triggering an ACS independent of its specific morphology.

TCFA (Thin-cap fibroatheroma) is still believed to be the most prevalent lesion type in 60-70% of cases.

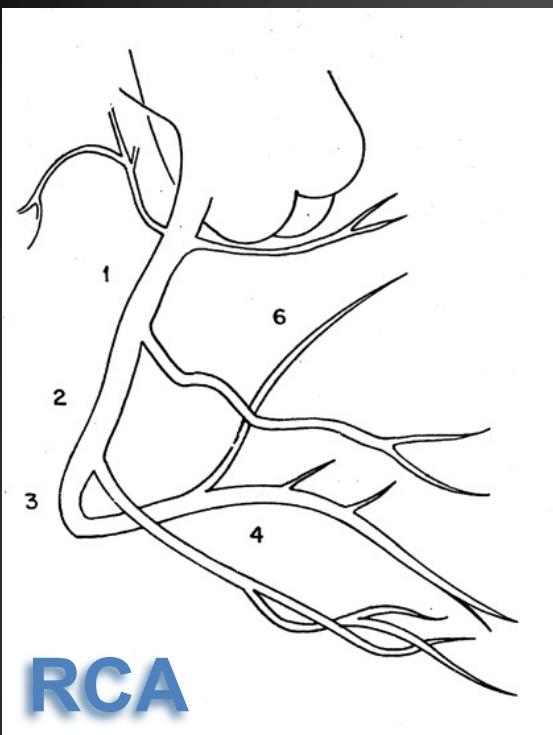


Plaque Rupture

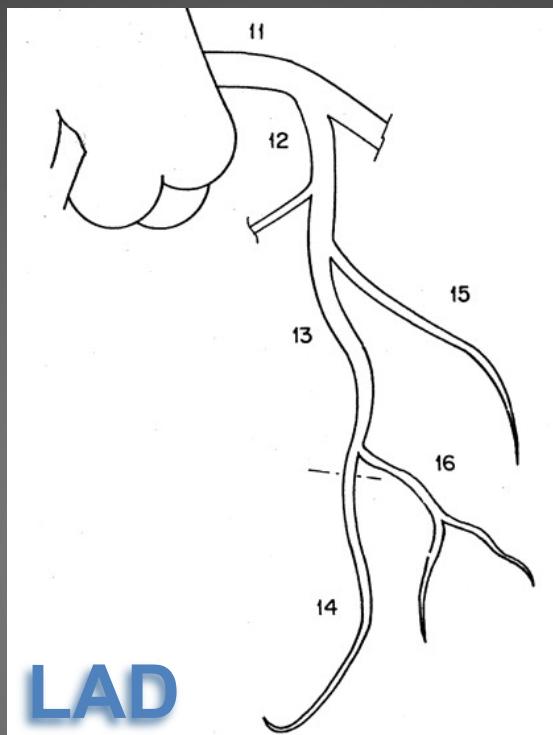
- Exertion
- Sexual Activity
- Anger
- Mental Stress
- Cocaine/Tobacco/Marijuana
- Air Pollution
- Infection- Influenza
- Different stressors may cause a plaque to rupture in different locations (e.g., exertion: thick shoulder, diabetes: thin midportion)



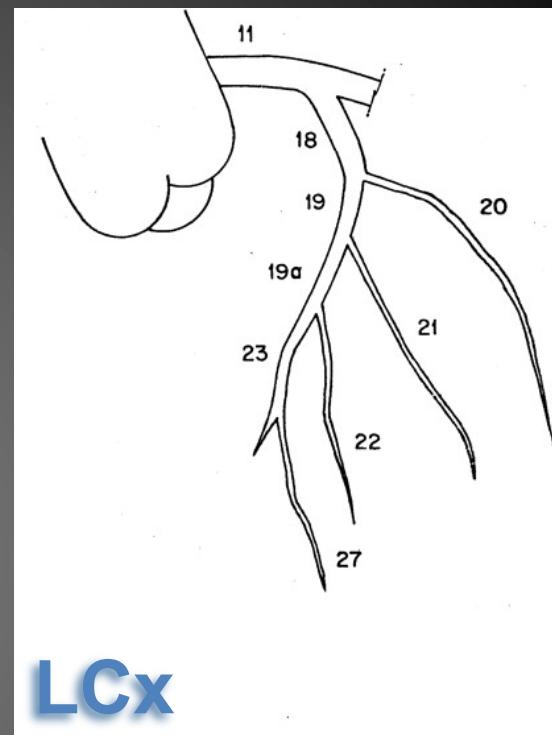
Lesion Location



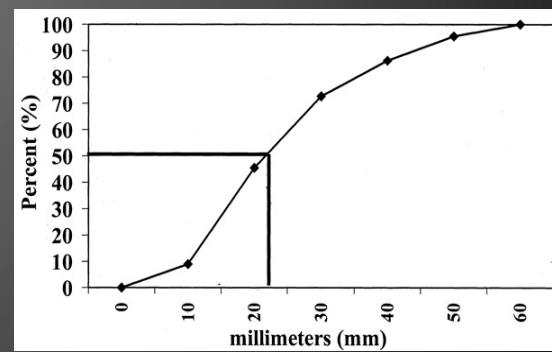
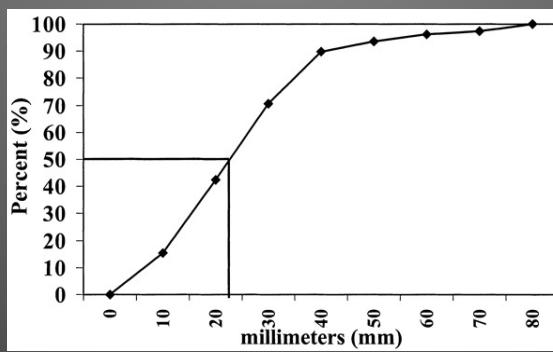
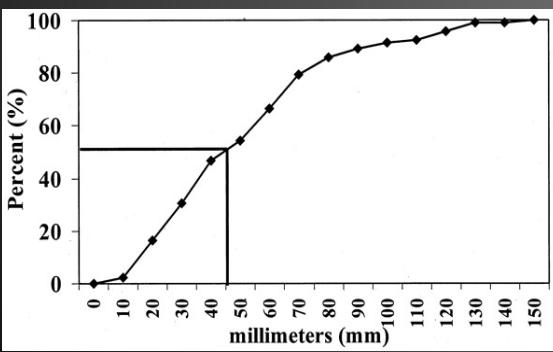
RCA



LAD



LCx



Causes of ACS in Patients younger than 45 years

- Atheromatous coronary artery disease
 - Tobacco in 92%
 - Positive family history of CHD in 39%
 - ↑TG and low HDH cholesterol
 - Impaired glucose intolerance in 65%
- ACS related to substance misuse : Cocaine +++;amphetamine/marihuana/binge drinking
 - Tobacco association
 - Up to 76 hours after use
 - Vasospasm, hypercoagulability



New Albany, Indiana



Causes

- Hypercoagulable states
 - Antiphospholipid syndrome
 - Nephrotic syndrome (↓AT3, dyslipidemia)
 - Factor V Leiden
 - Contraceptive pill
- Non atheromatous coronary artery disease
 - Congenital coronary artery disease
 - Myocardial bridging
 - Peripartum period (LAD dissection)
 - Septic vegetation
 - Paradoxical embolization

Twofold evolution

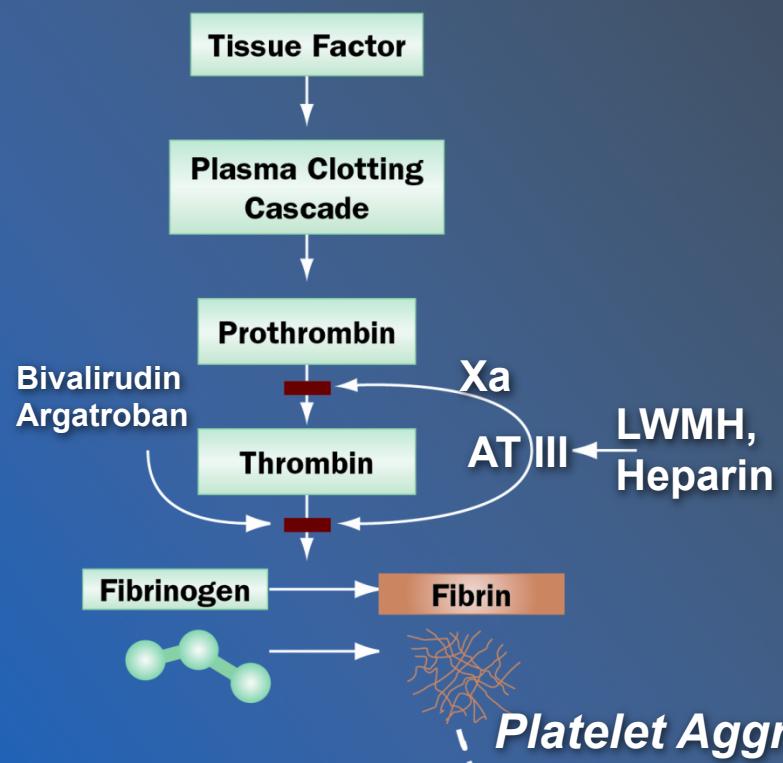
Interventional

- Balloon angioplasty
- Bare metal stent
- Drug eluting stent (DES)
- Bioresorbable vascular scaffold (BVS)
- Thrombo-aspiration?

Medicinal

- Heparin/aspirin
- ADP Inhibitor
- Statin
- Anti IIb-IIIa
- LMWH
- Bivalirudin?

Antithrombin Pathway



AT III = Antithrombin III
Xa = Factor Xa

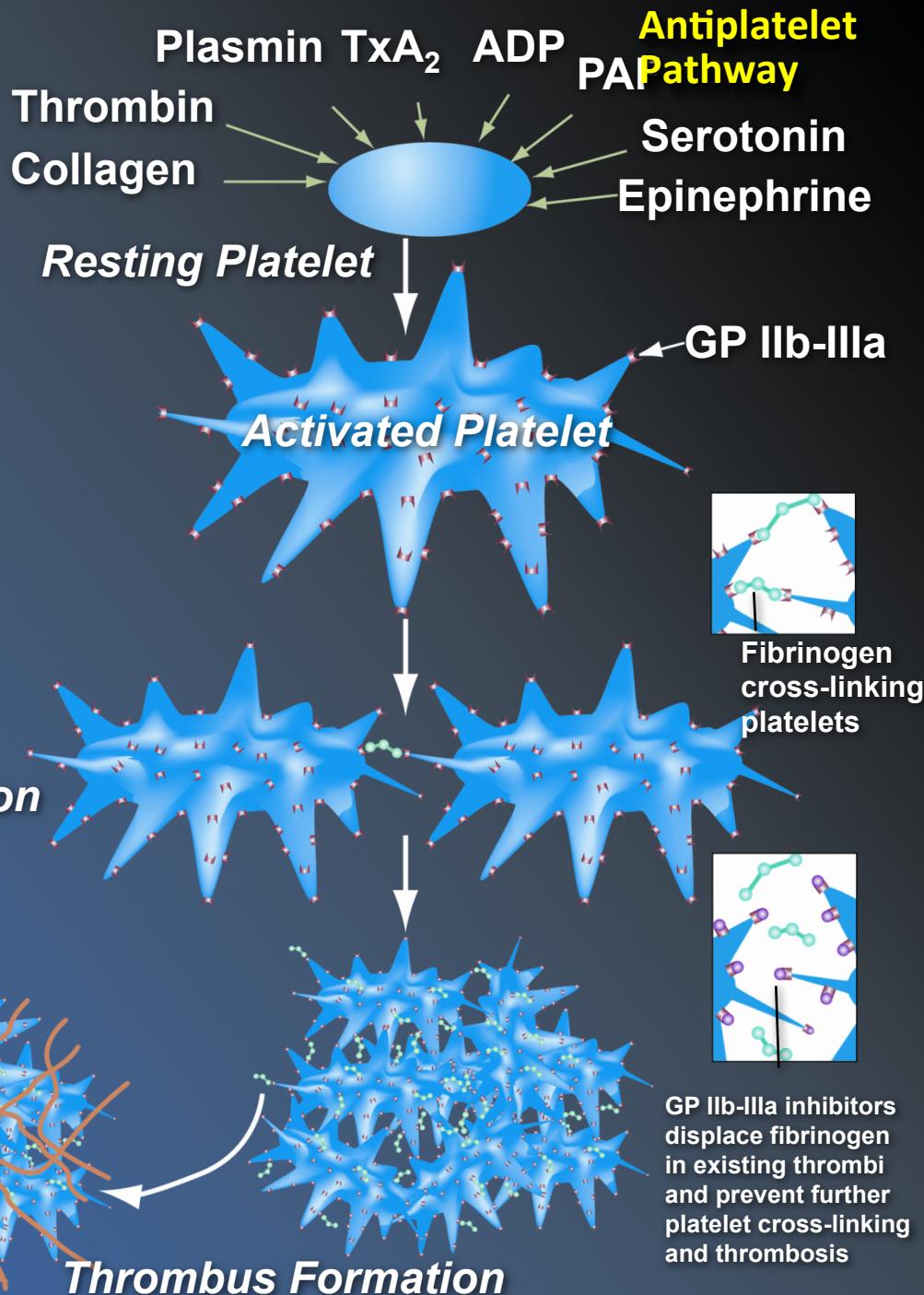
PAF = Platelet Activating Factor

TxA₂ = Thromboxane A₂

ADP = Adenosine Diphosphate

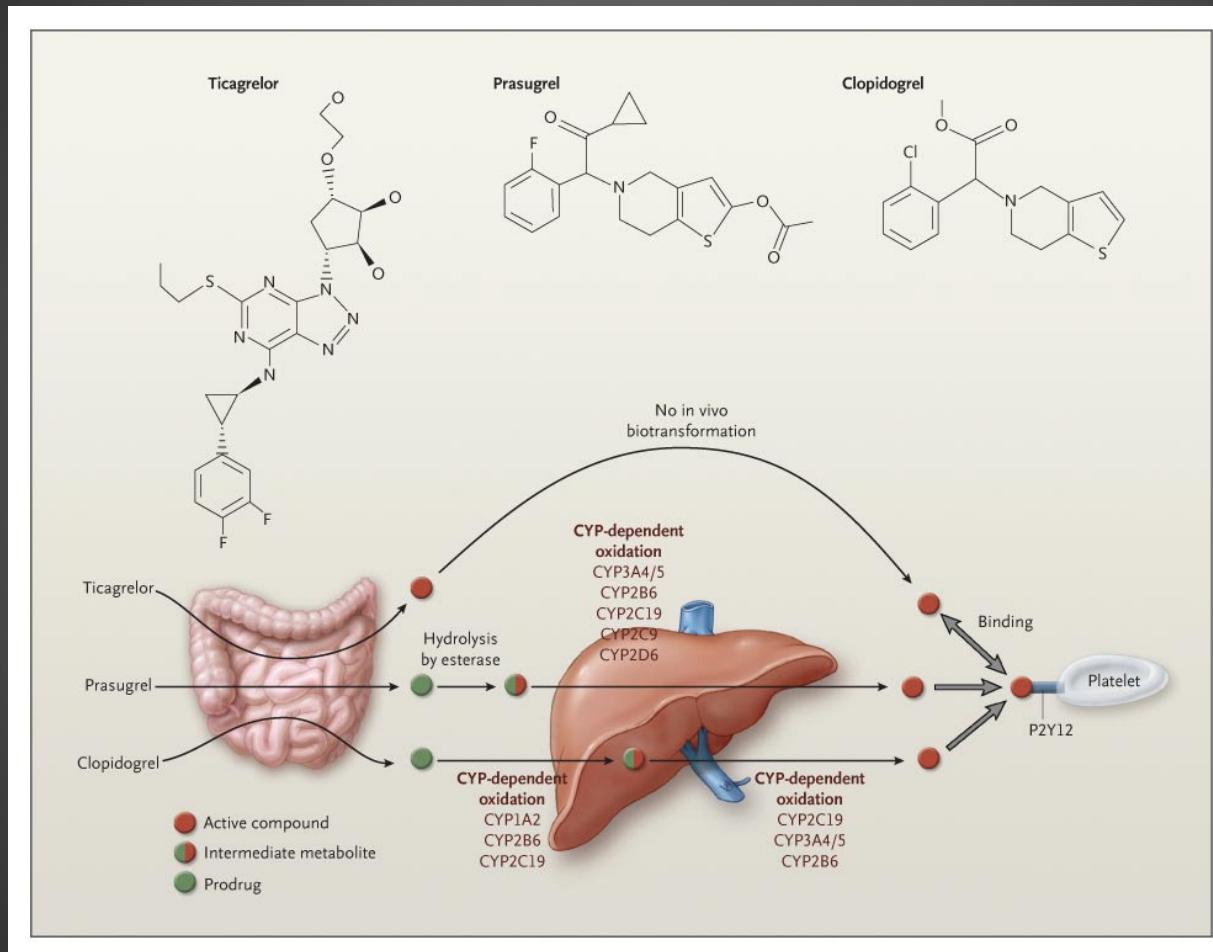
LMWH = Low-molecular-weight Heparin

Occlusive Clot Formation



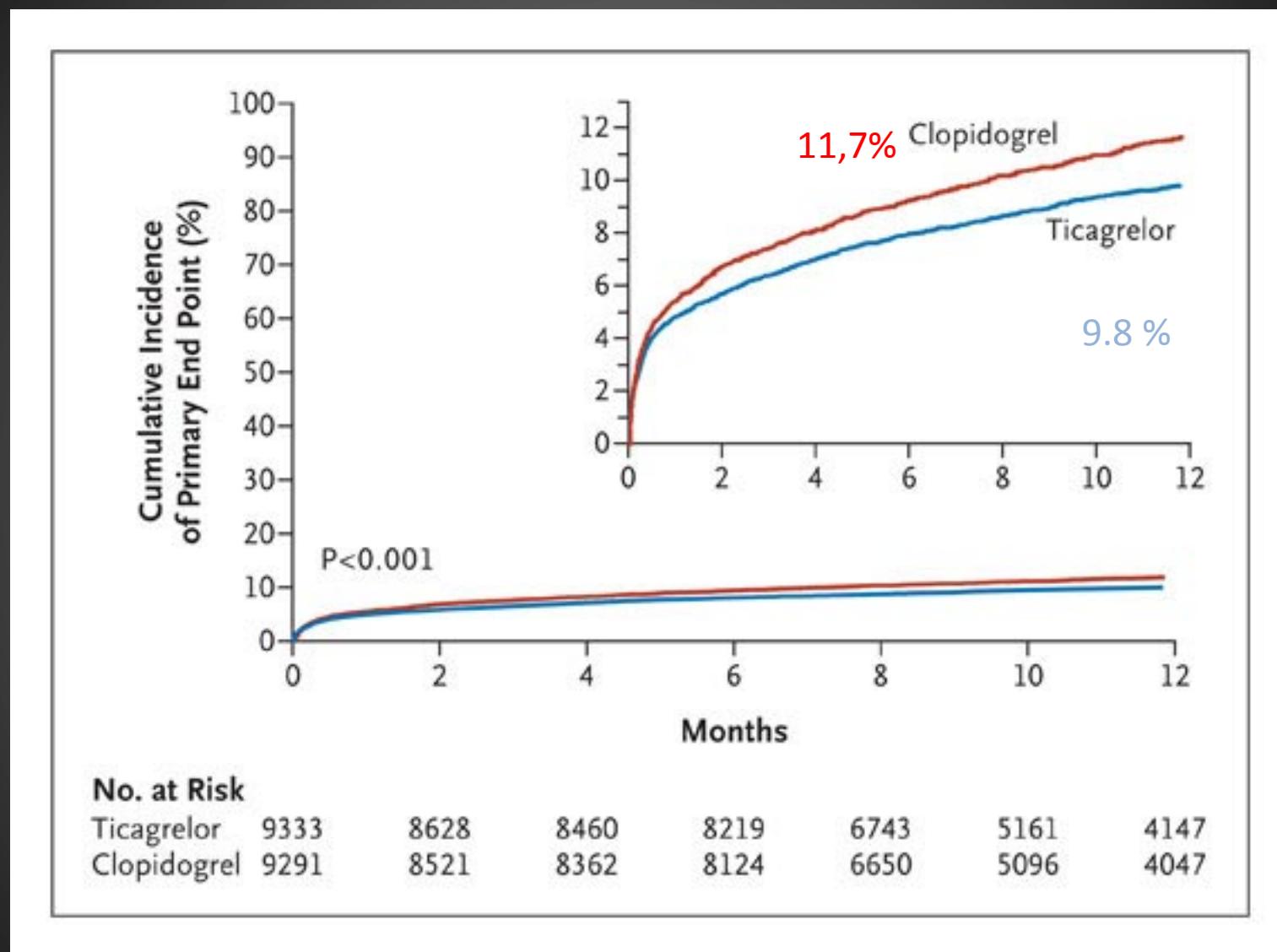
GP IIb-IIIa inhibitors displace fibrinogen in existing thrombi and prevent further platelet cross-linking and thrombosis

Ticagrelor versus Clopidogrel in Patients with Acute Coronary Syndromes



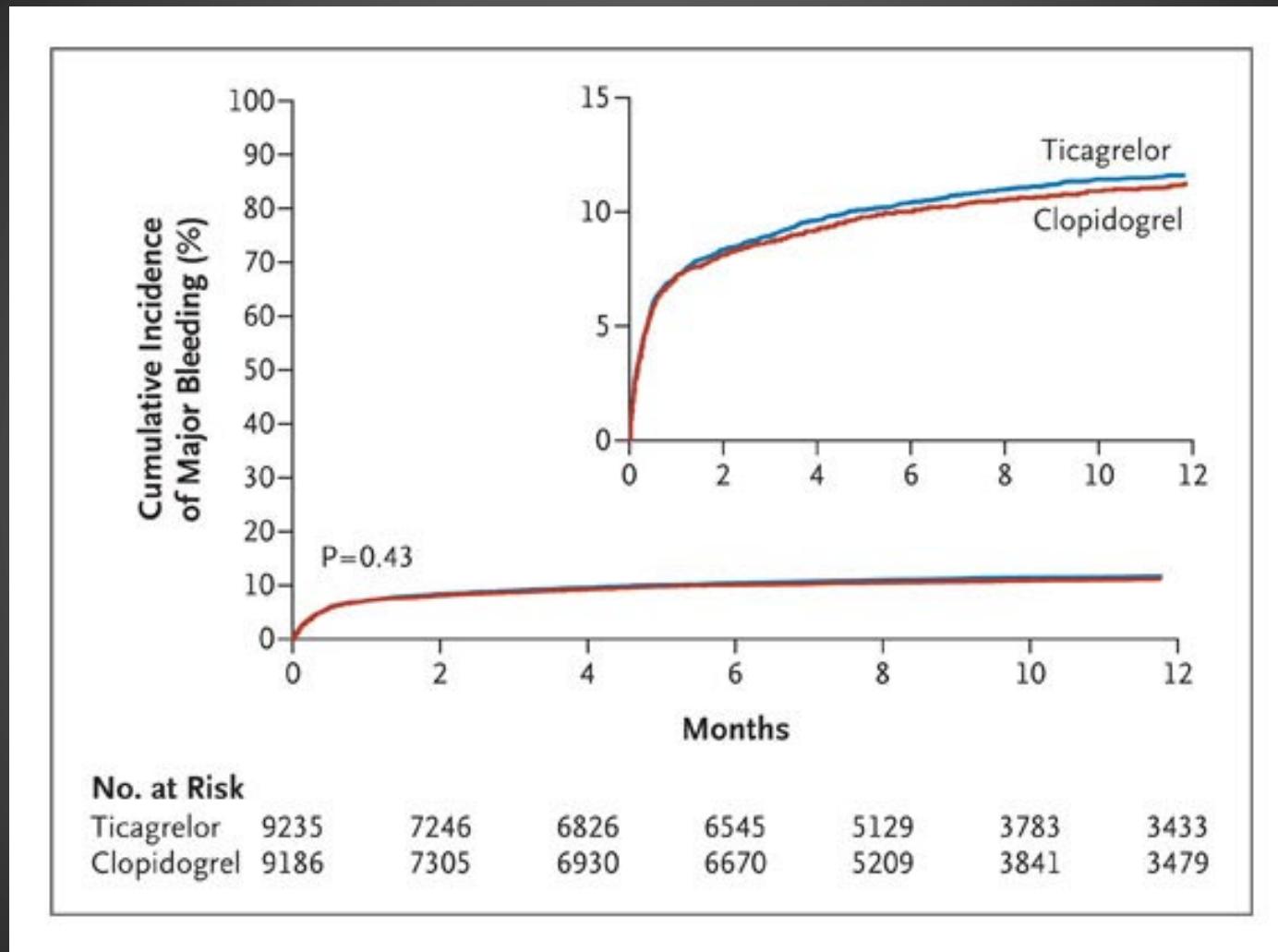
PLATO Investigators N Engl J Med
Volume 361(11):1045-1057
September 10, 2009

Cumulative Kaplan-Meier Estimates of the Time to the First Adjudicated Occurrence of the Primary Efficacy End Point



The NEW ENGLAND
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Cumulative Kaplan-Meier Estimates of the Time to the First Major Bleeding End Point, According to the Study Criteria



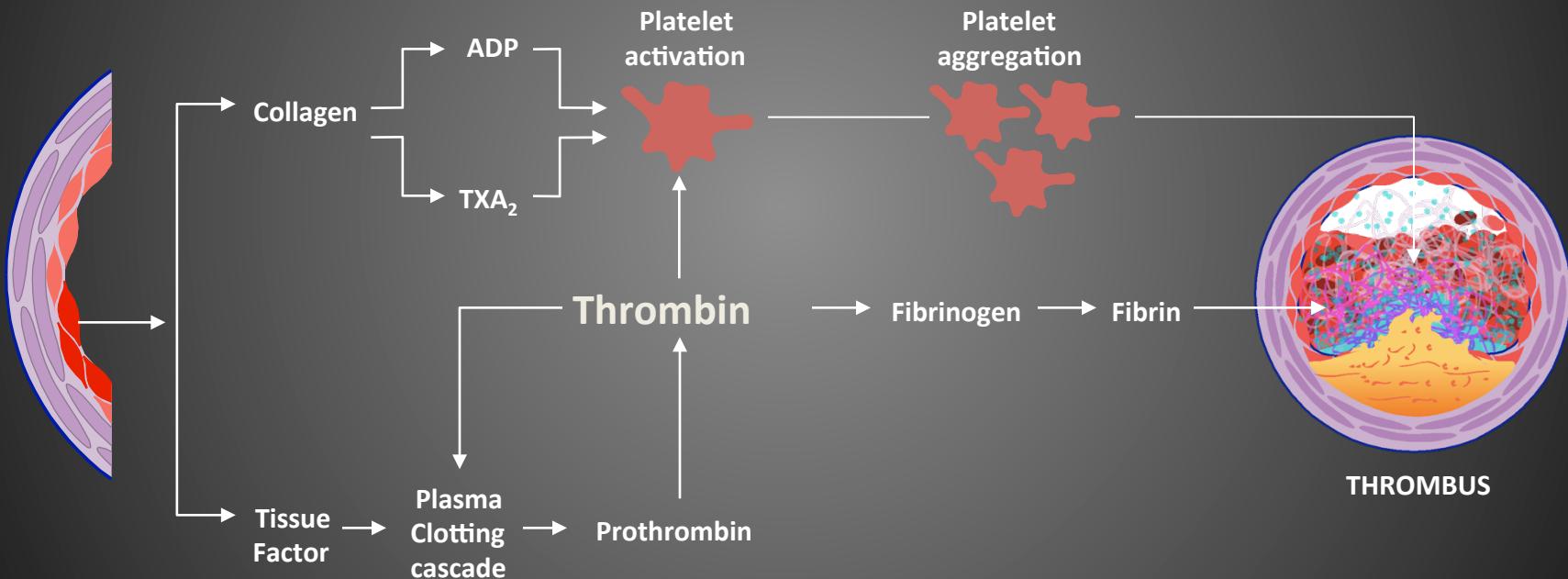
Wallentin L et al. N Engl J Med 2009;361:1045-1057



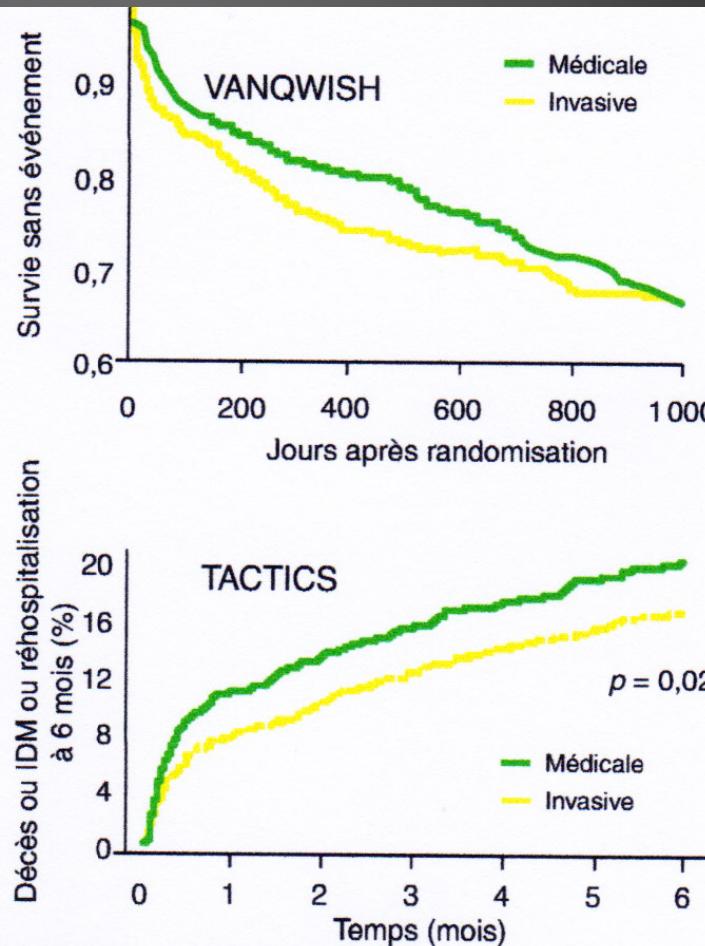
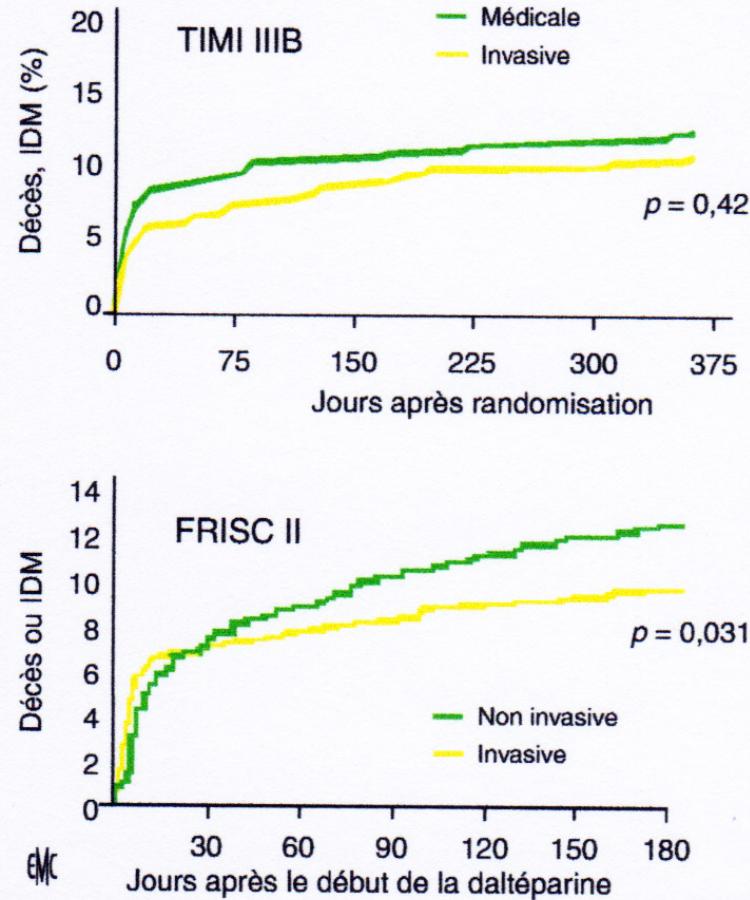
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Thrombus formation

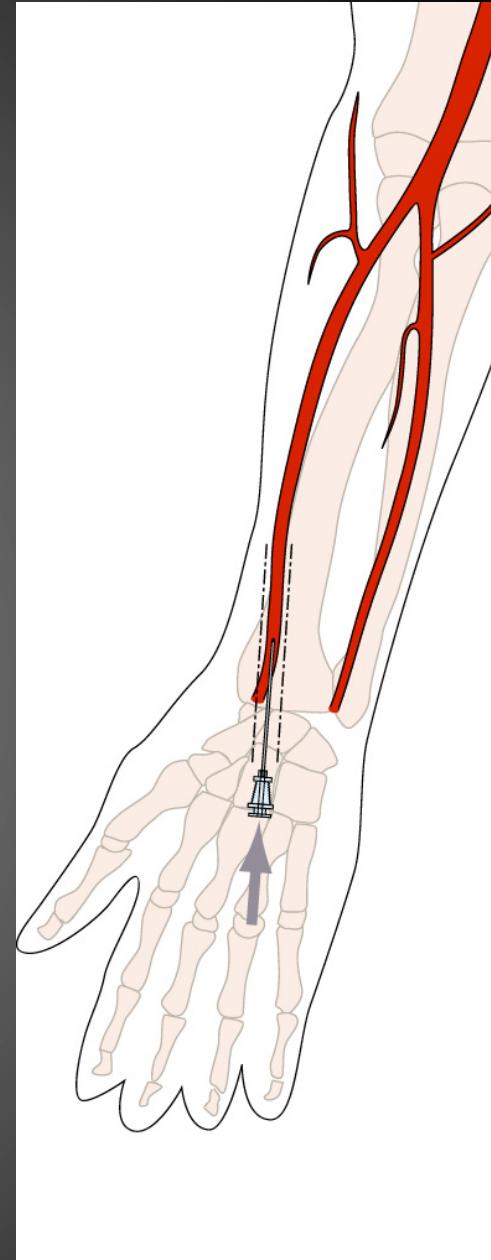
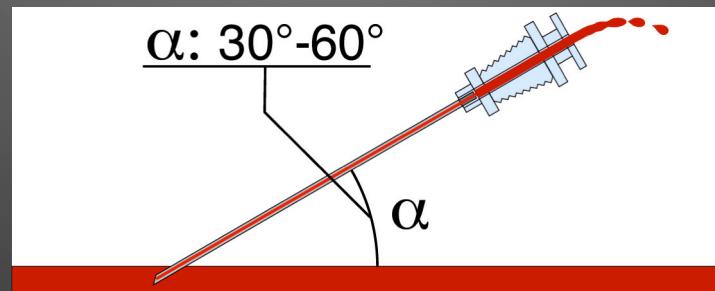
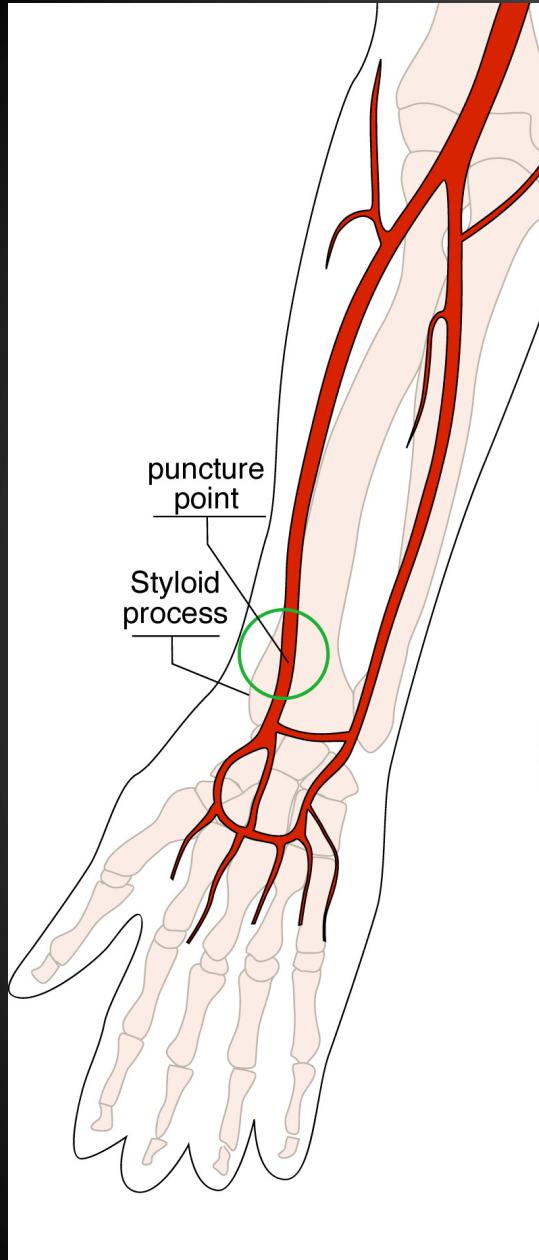
- Thrombin is the link between tissue injury, coagulation, and platelet response.



- Thrombin is a critical mediator in coagulation
- Elicits multiple responses in platelets



Radial artery puncture





Radial vs Femoral Access Associated with Reduced Complications and Mortality in NSTEMI Patients

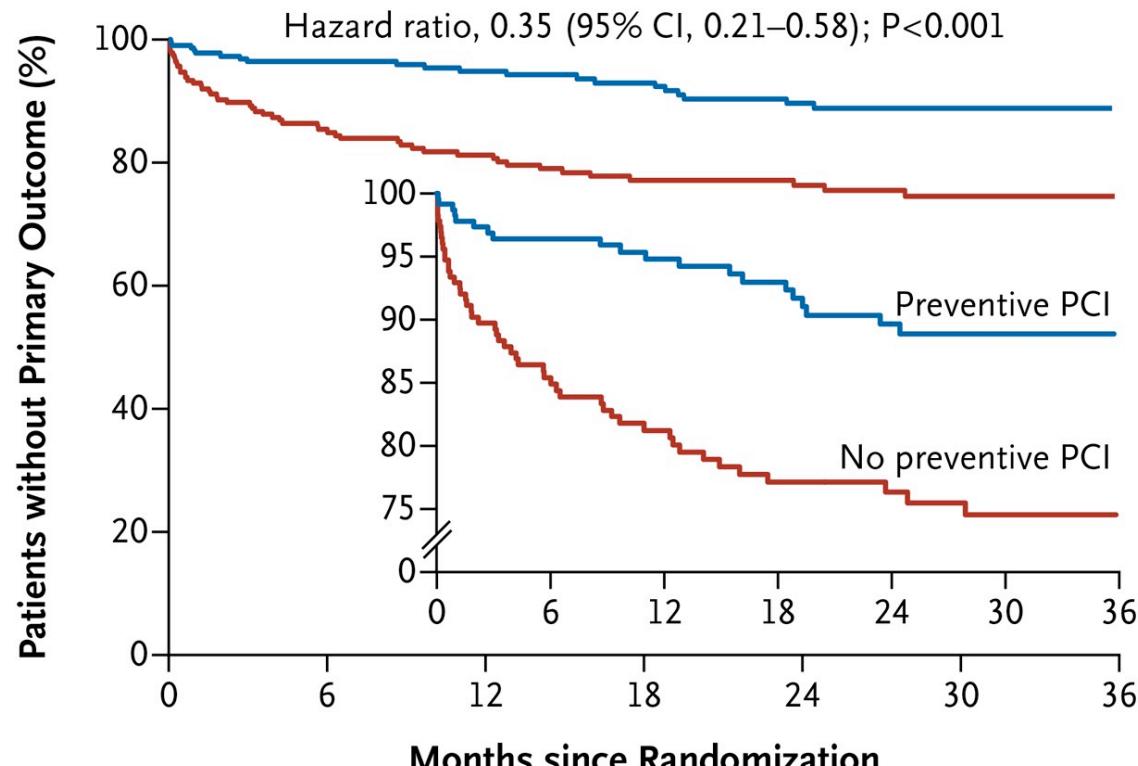
10,095 consecutive NSTEMI patients who underwent radial ($n = 2,275$) or femoral ($n = 7,820$) PCI at 8 centers in London, 2005 to 2011.

Radial vs Femoral	Adjusted OR/ HR	95% CI	P Value
Total Bleeding	0.21	0.08-0.57	.002
1-Year Mortality	0.72	0.54-0.94	.017

The mortality advantage for transradial access was most prominent during 2008-2011 and at centers with a high radial volume.

Conclusion: Radial vs femoral PCI was associated with less bleeding and improved survival in patients with NSTEMI.

Kaplan–Meier Curves for the Primary Outcome.



No. at Risk

Preventive PCI	234	196	166	146	118	89	67
No preventive PCI	231	168	144	122	96	74	50

Wald DS et al. N Engl J Med 2013;369:1115-1123



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Facteurs de risques

Arrêter tabac-
la cocaine +++

Périmètre abdominal

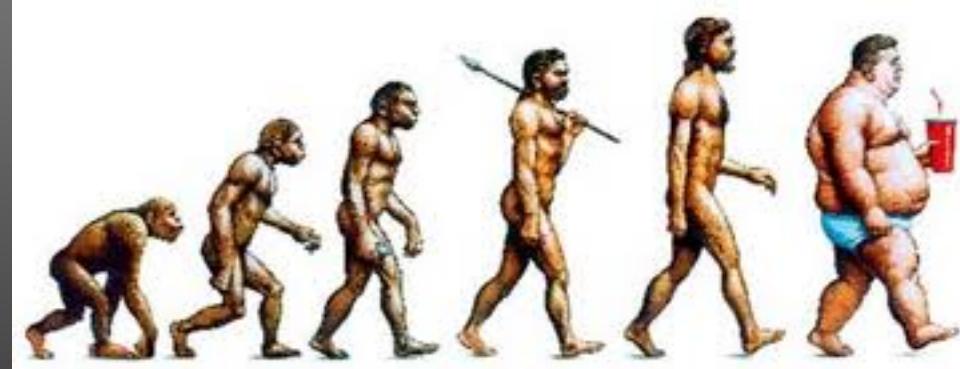
Activité physique



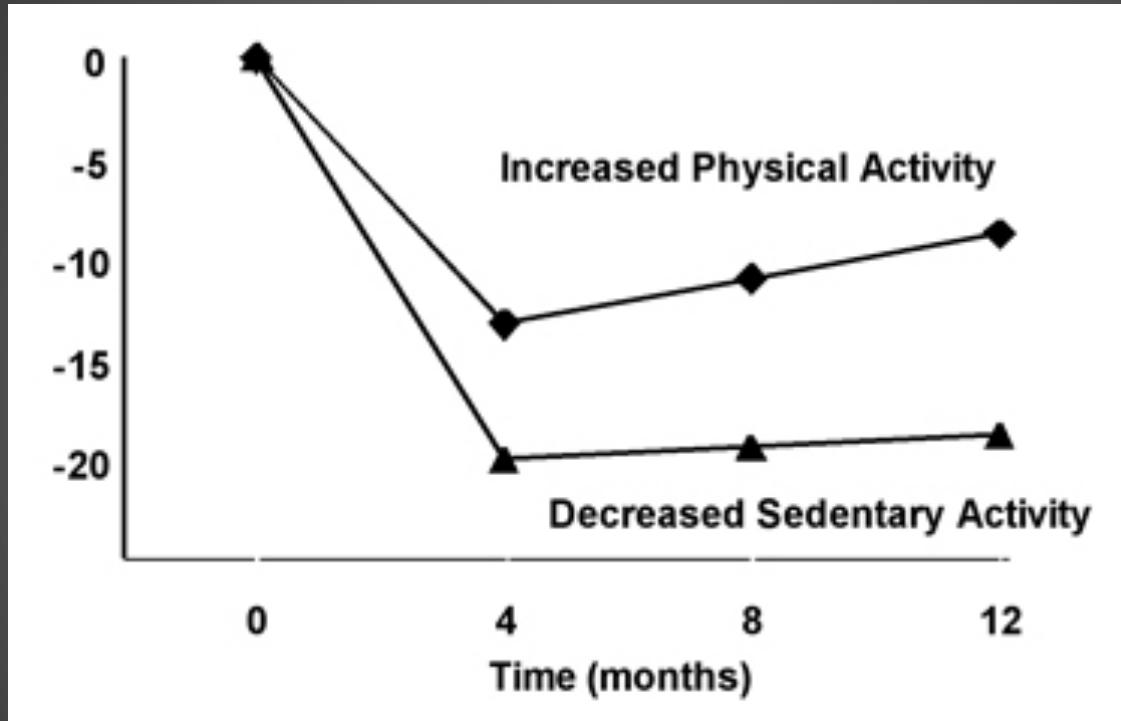
Alimentation :
Fruits et légumes
poissons

Maternal Weight and Obesity in Offspring

40% of children were overweight by age 3 if mom had $\text{BMI} \geq 25$



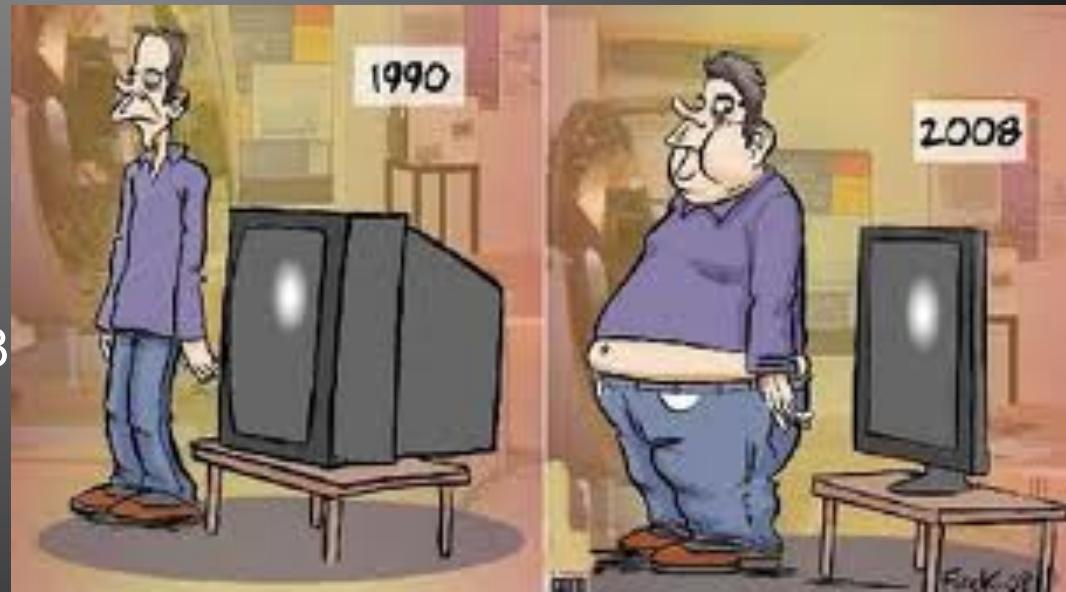
reducing inactivity versus increasing physical activity- effect on weight loss in adolescents.



Epstein, LH, Valoski, AM, Vara, LS, et al. Effects of decreasing sedentary behavior and increasing activity on weight change in obese children. Health Psychol 1995; 14:109

Television and Weight

- Nurse's Health Study: 50,000 women over 6 years
- 23% increased risk of obesity and 14% increased risk of diabetes *for every two hours of TV watched daily*



JAMA Vol 289(14) April 9, 2003.178

Burn an extra 100 kcals/day
= 10 lb weight-loss in one year



Energy Out > Energy In