

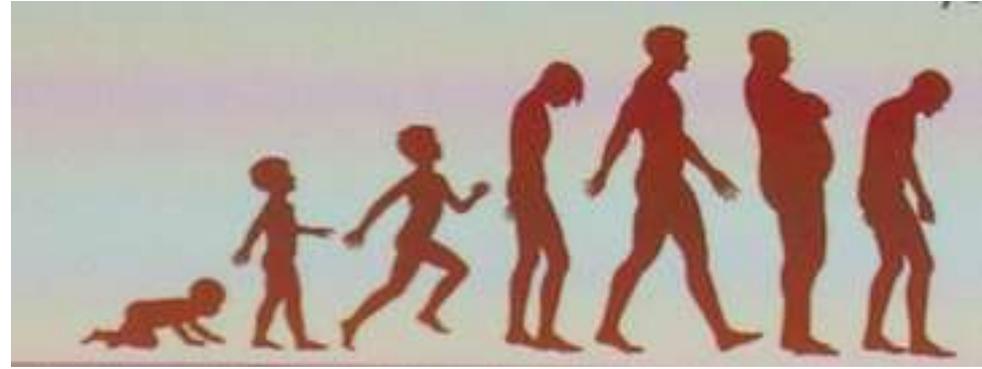
Maladie coronaire du sujet âgé

Quoi de neuf en 2023 ?



Pr Florence Leclercq
Département de cardiologie
CHU Montpellier

Plan



Epidémiologie et physiopathologie

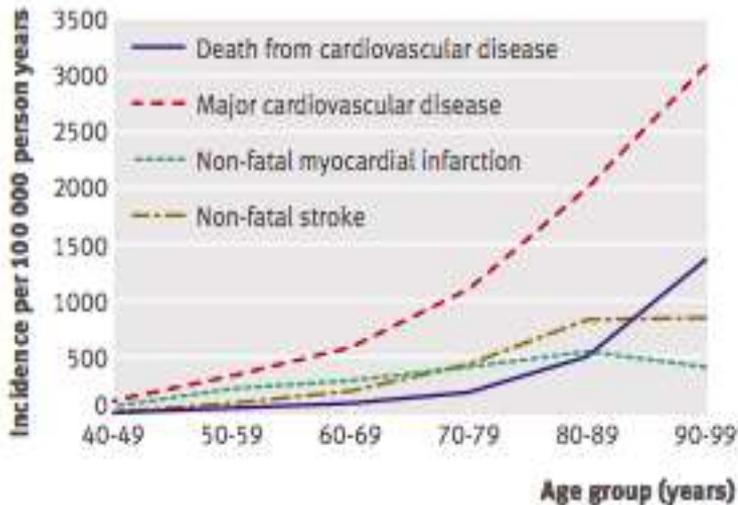
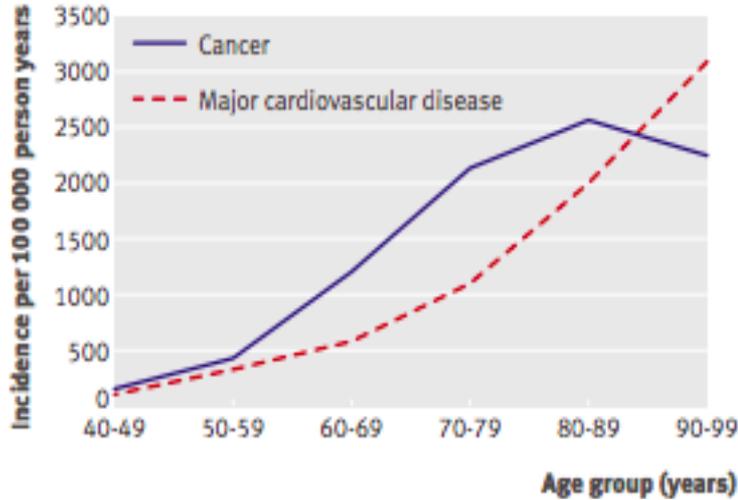
Aspect diagnostiques

Place et indications de la cardiologie interventionnelle

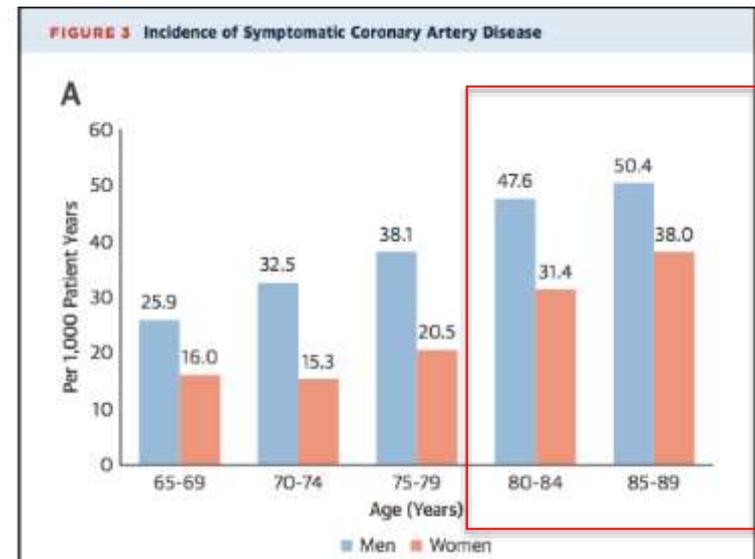
Stratégie antiplaquettaire: DAPT après SCA ou angioplastie

L'âge reste le premier facteur de risque cardiovasculaire

Cohorte prospective de 28000 sujets



Risk factors, No.	<40 y	40-65 y	>75 y
0	1.0	1.0	1.0
1	2.5	1.4	1.0
2	9.1	1.7	1.2
3	7.8	2.6	1.0
4 or 5	22.5	3.6	1.2



Molecular mechanisms of vascular aging

Molecular mechanisms of vascular aging

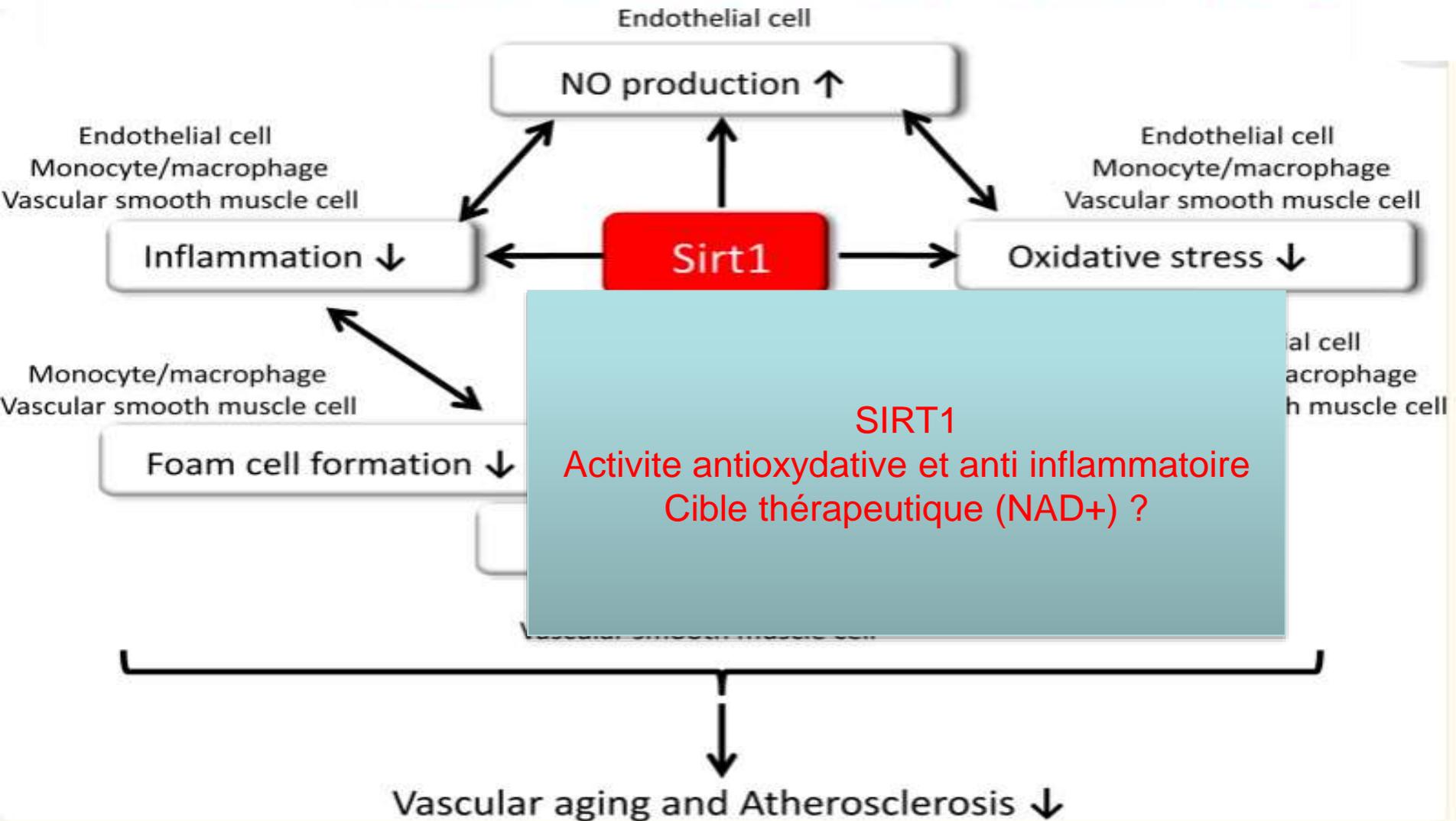


Figure 1

Molecular mechanisms of vascular aging

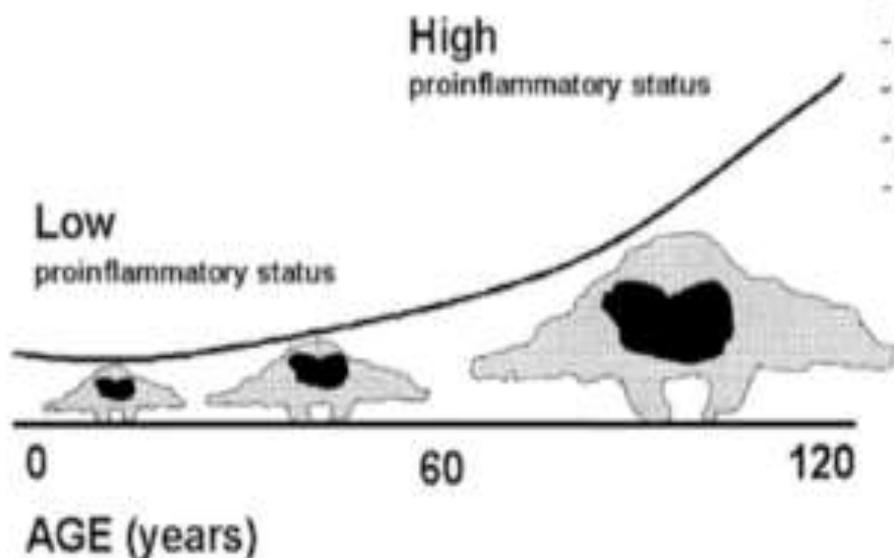
INFLAMMATION

CONCEPT OF INFLAMM-AGING

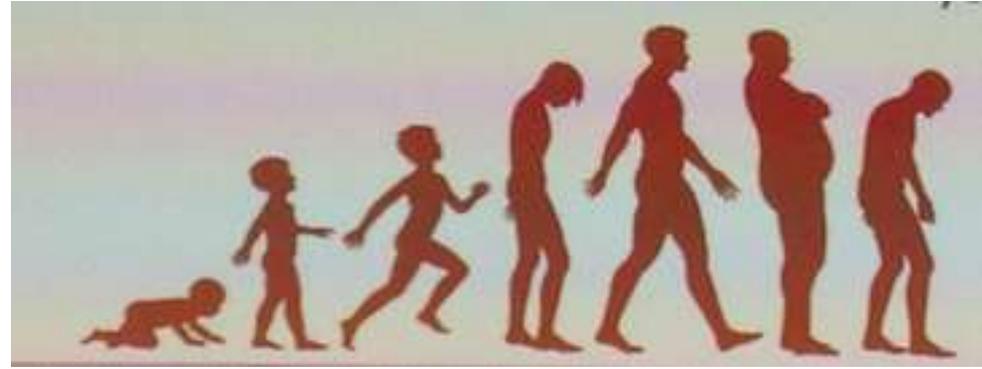
INCREASING OF:

- Coagulation factors
- Homocysteine
- IL6
- Proinflammatory cytokines
- Acute Phase Proteins
- Stress hormones
- ROS
- Lp(a)

A
PROINFLAMMATORY
STATUS OF HEALTHY
ELDERLY AND
CENTENARIANS



Plan



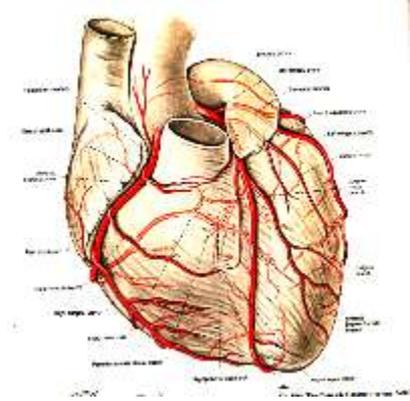
Epidémiologie et physiopathologie

Aspect diagnostiques

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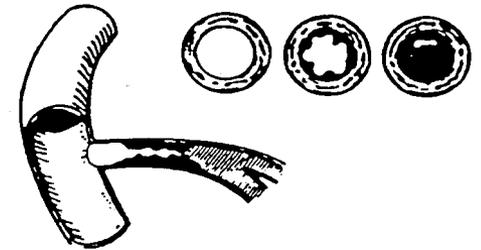
Stratégie antiplaquettaire: DAPT après SCA ou angioplastie

Deux expressions cliniques principales



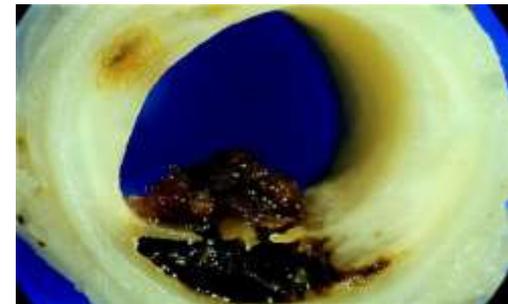
- **Maladie coronaire stable (syndromes coronaires chroniques)**

Sténoses (athérome) : **ischémie myocardique** (silencieuse) et **angor** (plutôt effort), **insuffisance cardiaque**



- **Maladie coronaire instable (syndromes coronaires aigus)**

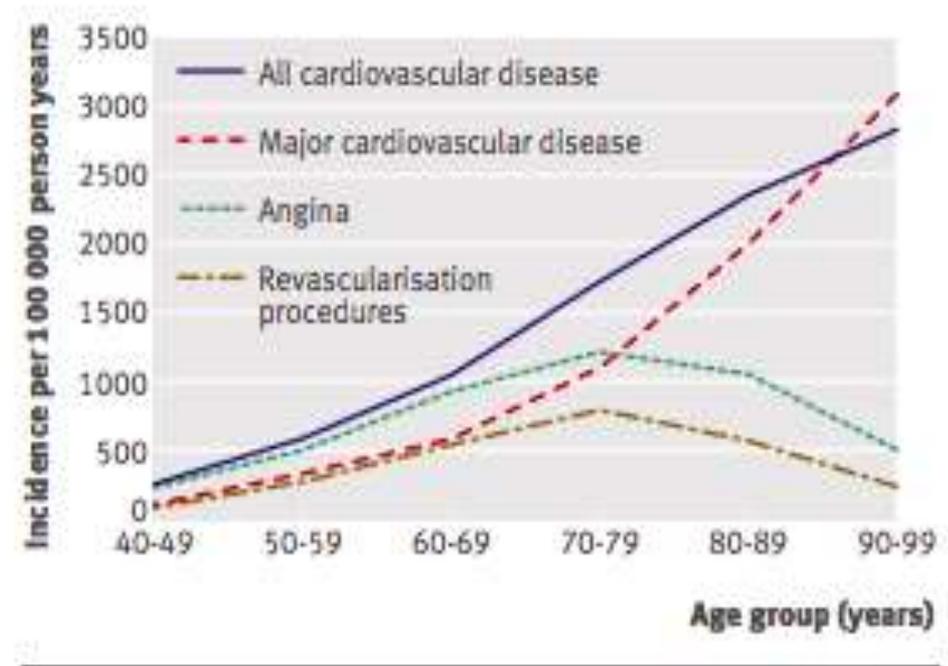
Complication brutale (thrombose) : **occlusion ou subocclusion coronaire aigue**



Athérosclérose ou plutôt Athérothrombose

Maladie coronarienne stable: diagnostic

- **Symptomatologie d'appel souvent atypique**
 - Après 80 ans: angor typique <40% des cas
 - Dyspnée, douleurs des épaules, douleurs épigastriques, AEG, OAP
 - Fréquence des manifestations d'insuffisance cardiaque`

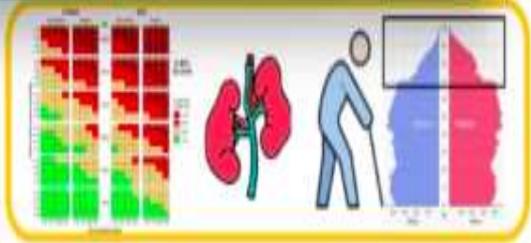


- **Moins bien traitée**

Maladie coronarienne stable: examens complémentaires

- **Épreuves d'effort souvent non diagnostiques** (niveau d'effort et anomalies ECG de base): non recommandées à titre de dépistage
- **Intérêt de tests fonctionnels type scintigraphie myocardique ou échographie de stress:**
pas ou peu d'effort, sensibilité et spécificité élevées, paramètres pronostiques, localisation des territoires ischémiques
- **Coroscanner non performant**

Calcified coronary lesions: Risk factors



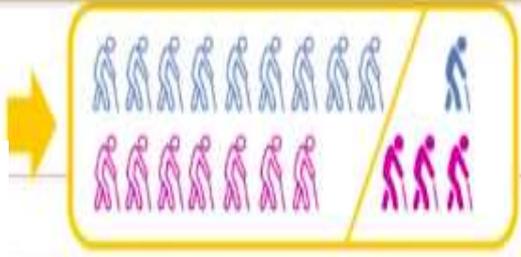
- Advanced age
- Gender (M), obesity, hypertension, dyslipidemia, diabetes, smoking, heredity
- Chronic renal failure

Coronary CTA is not recommended when extensive coronary calcification, irregular heart rate, significant obesity, inability to cooperate with breath-hold commands, or any other conditions make obtaining good image quality unlikely.

III

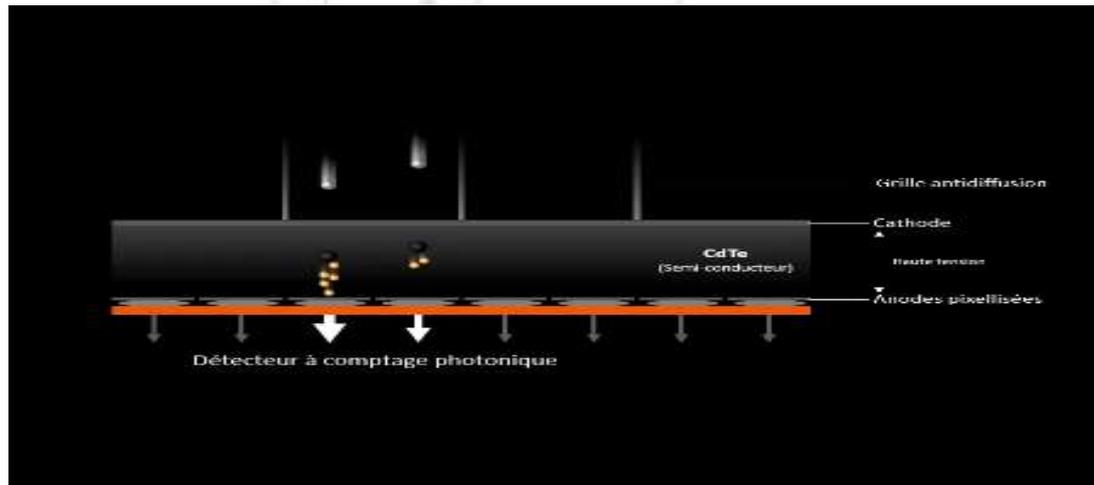
C

Madhavan MV, J Am Coll Cardiol 2014



Principe de fonctionnement des détecteurs CT

Détecteur à comptage de photons (PCD)



Photon

- Semi-conducteur utilisé comme convertisseur direct de rayons X (CdTe)

Charge

- Les photons produisent une charge proportionnelle à l'énergie des rayons X.

Signal

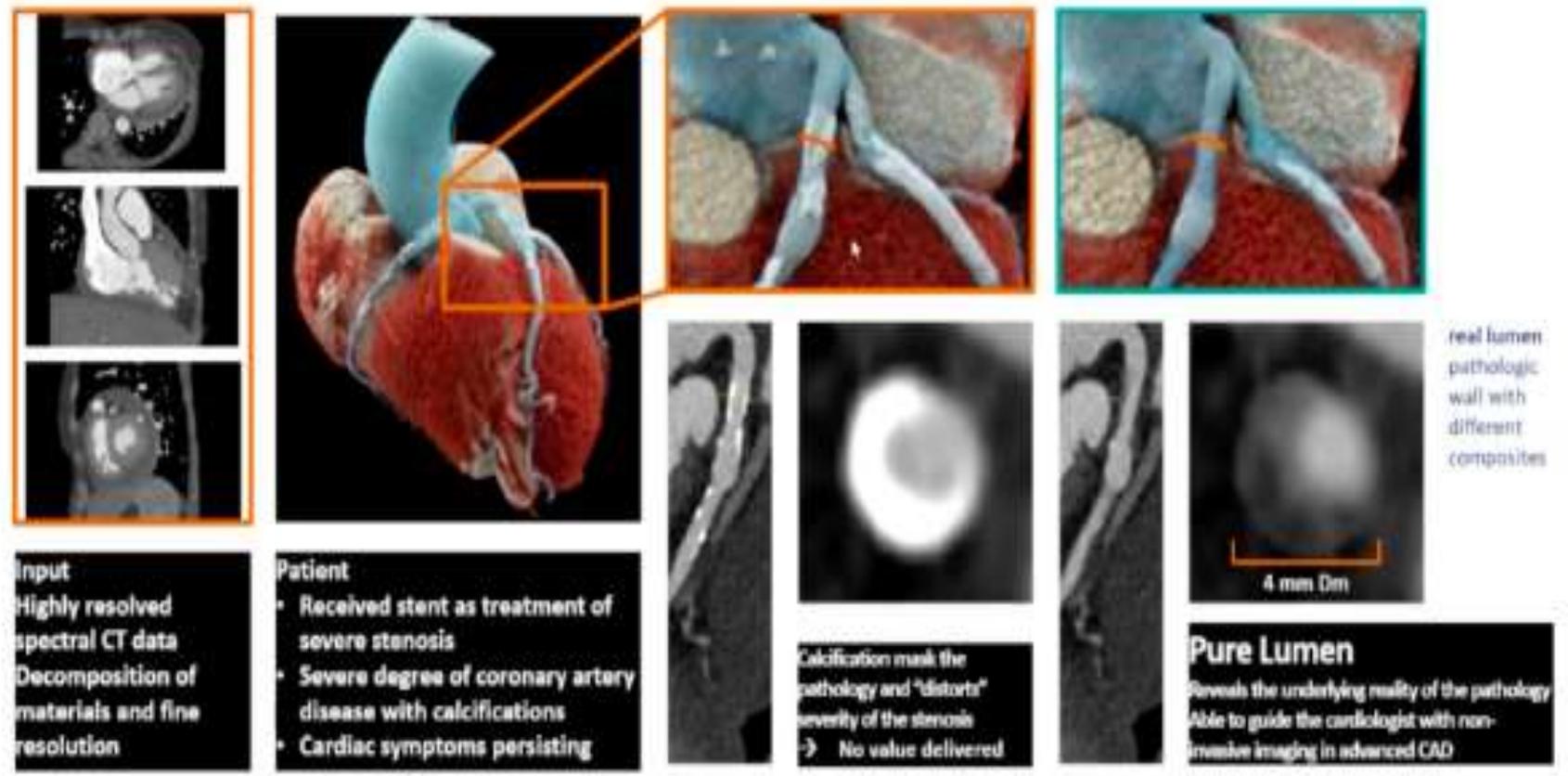
- Les photons individuels sont mesurés, ce qui permet de mesurer l'information énergétique.

- Signal de comptage sélectif en énergie

Signal individuel pour chaque photon détecté

Conversion directe en une seule étape : Rayons X \Rightarrow courant électrique

Removing the effect of calcification in coronary artery disease



Input
 Highly resolved spectral CT data
 Decomposition of materials and fine resolution

Patient

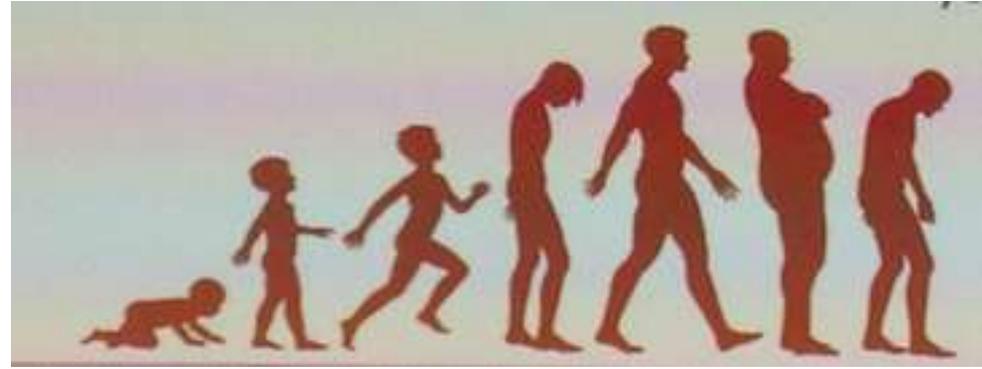
- Received stent as treatment of severe stenosis
- Severe degree of coronary artery disease with calcifications
- Cardiac symptoms persisting

Calcification mask the pathology and "distorts" severity of the stenosis
 → No value delivered

Pure Lumen
 Reveals the underlying reality of the pathology
 Able to guide the cardiologist with non-invasive imaging in advanced CAD

real lumen pathologic wall with different composites

Plan



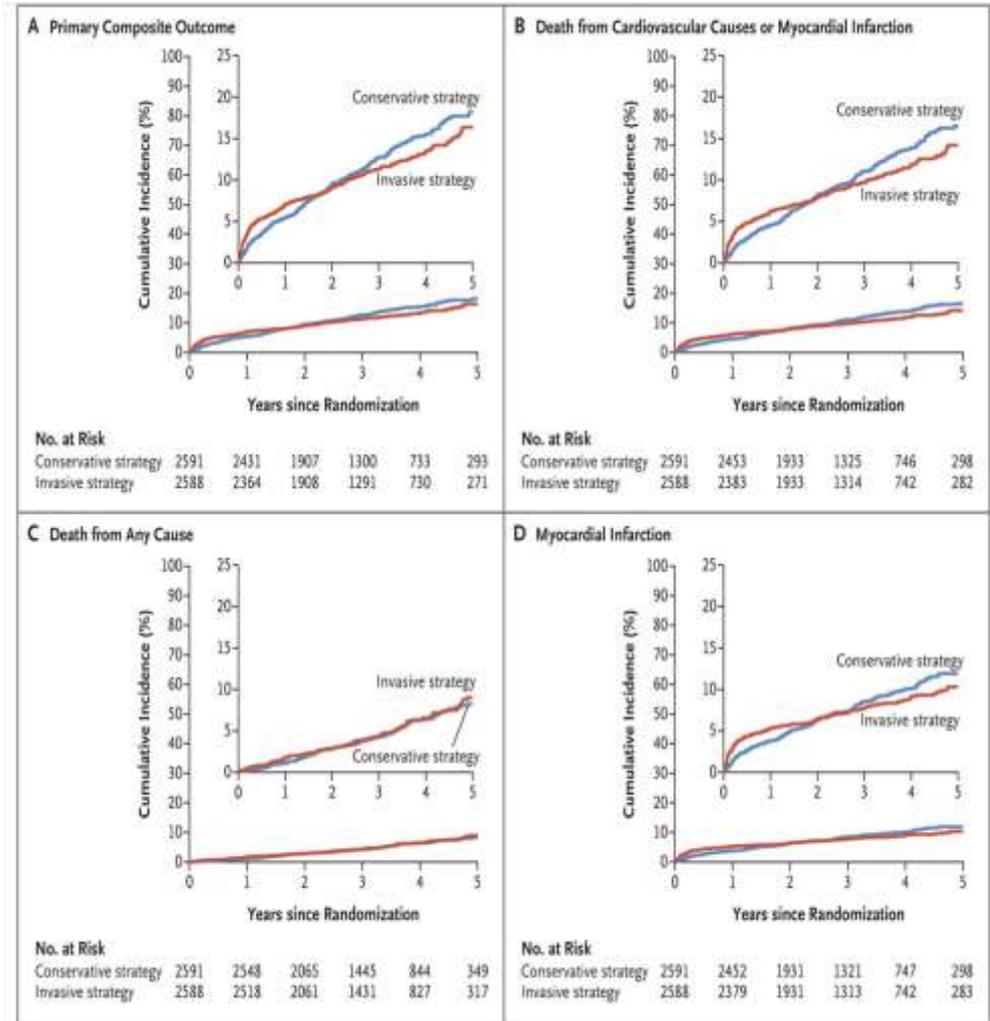
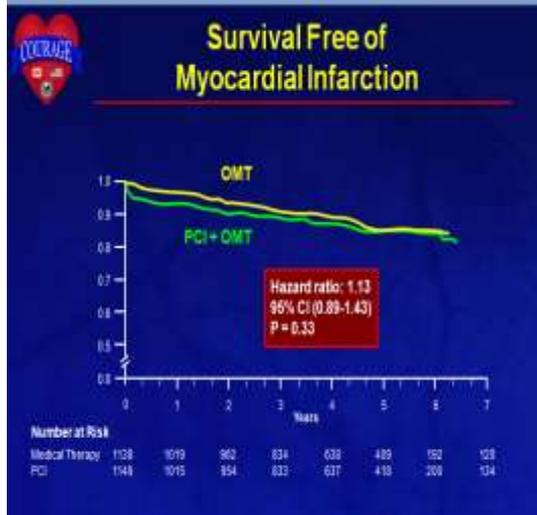
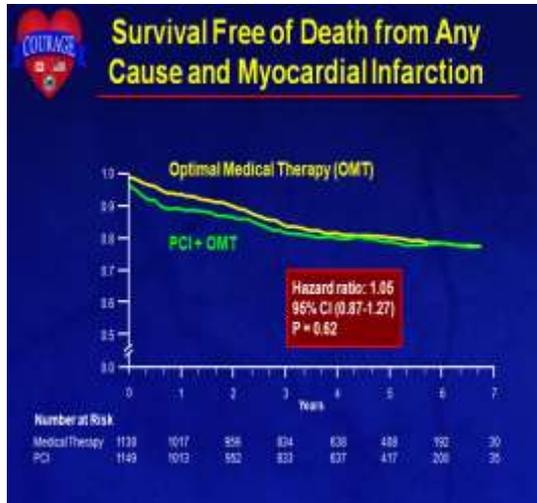
Epidémiologie et physiopathologie

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ETUDE COURAGE ET ISCHEMIA: PAS DE SUPERIORITE DU TRAITEMENT INTERVENTIONNEL SUR LE PRONOSTIC DE LA MALADIE CORONAIRE STABLE



UN EFFET BENEFIQUE DE L'ANGIOPLASTIE SUR L'ANGOR ET L'ISCHÉMIE

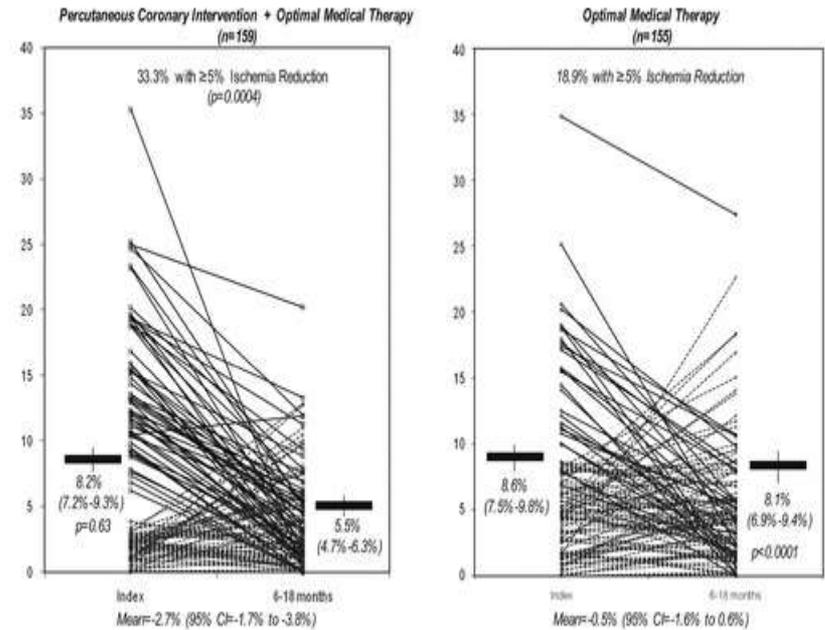
Integrated Analysis of the COURAGE Trial (Angina-Free Status)

COURAGE RR (95% CI)

1 yr 0.89 (0.83–0.96)

3 yrs 0.92 (0.87–0.98)

5 yrs 0.98 (0.90–1.06)



Diamond et al J Am Coll Cardio 2007, 16: 1604-9

Shaw LS et al. Circulation 2008,117: 1283-91

Long-Term Outcome in Elderly Patients With Chronic Angina Managed Invasively Versus by Optimized Medical Therapy

Four-Year Follow-Up of the Randomized Trial of Invasive Versus Medical Therapy in Elderly Patients (TIME)

Circulation 2004; 110: 1213–1218

Matthias Pfisterer, MD; for the TIME Investigators*

TABLE 2. Major Events During Long-Term Follow-Up (Between Day 365 and Late Follow-Up)

	INV (n=137)	MED (n=139)	P	HR	P
All death, %	21.2	22.3	0.88	0.68	0.18
Cardiac death, %	13.9	17.3	0.51	0.56	0.10
Patients with nonfatal MI, %	4.4	0.7	0.07	5.24	0.13
Patients with late PCI/CABG, %	2.9	2.9	0.98	1.41	0.67
Patients with cardiac hospitalization, %	20.4	13.0	0.11	2.37	0.01
Patients with major clinical events, %	45.3	37.4	0.22	1.43	0.08



Stable ischemic heart disease in the older adults

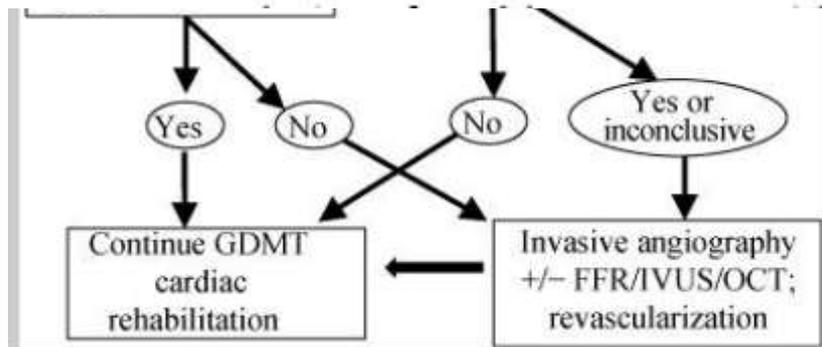
Xuming Dai,¹ Jan Busby-Whitehead,² Daniel E Forman,³ and Karen P Alexander⁴

What do the guidelines say ?

Chronic coronary syndromes in specific circumstances

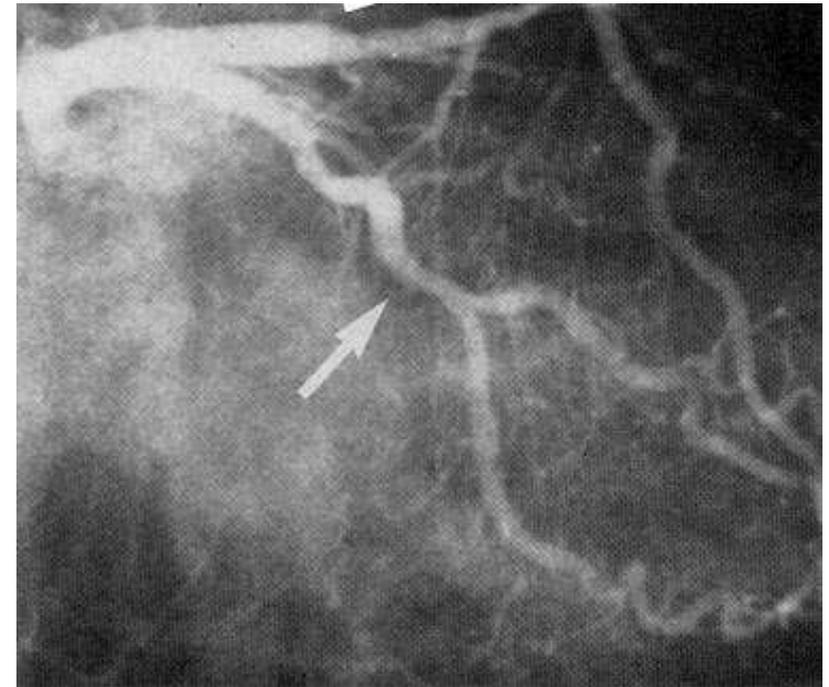
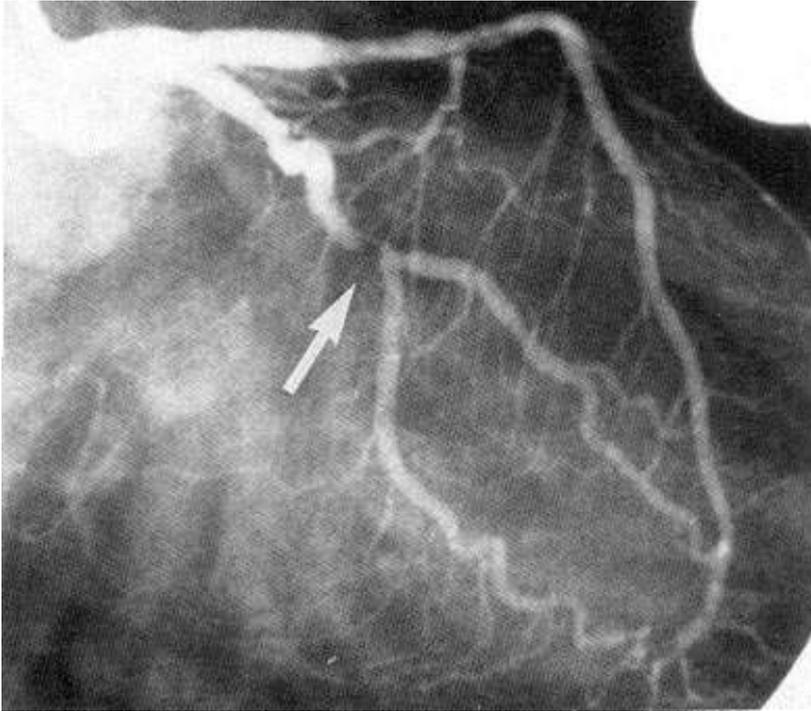
Elderly

It is recommended that diagnostic and revascularization decisions are based on symptoms, the extent of ischaemia, frailty, life expectancy, and comorbidities.



- Troubles du rythme ventriculaires d'effort
- Angor invalidant

Faisabilité de la revascularisation



Accepter des revascularisations « incomplètes »



Des outils pour traiter les lésions calcifiées

01

Rotablator

	Principe	Avantages	Limites
<p>Athérectomie Rotationnelle</p> 	Fraisage	<p>>30 ans de recul</p> <p>Possible si infranchissable au ballon</p> <p>Remboursée</p> <p>Simple (Rotapro®)</p> <p>Compatible 6F (1.25 ou 1.5mm)</p> <p>Calcifications superficielles</p>	<p>Non protection collatérale</p> <p>Impact surtout superficiel</p> <p>Risque de coinçage</p> <p>Risque de rupture coronaire (tortuosités)</p> <p>Délicat voire CI en intrastent</p>
<p>Lithotripsie IV</p> 	Fragmentation	<p>Simple</p> <p>Possible en intrastent (off label)</p> <p>Efficacité en profondeur</p> <p>Possibilité de protéger collatérale</p> <p>Bientôt remboursée</p> <p>Moins de risque de perforation</p>	<p>Franchissement du ballon</p> <p>Action sur 12mm de long</p> <p>80 pulses seulement</p>
<p>Athérectomie Orbitale</p> 	Polissage	<p>Guide performant</p> <p>Polissage adapté au diamètre</p> <p>Intéressant en cas de calcification excentrée, bourgeon protrusif</p> <p>Action antéro et rétrograde</p> <p>Calcifications superficielles</p>	<p>Coût</p> <p>Précautions d'usage, proctoring</p>

Shockwave

Athérectomie

Syndromes coronaires aigus

Rupture de la plaque athéromateuse

Thrombus

Occlusif

Non occlusif

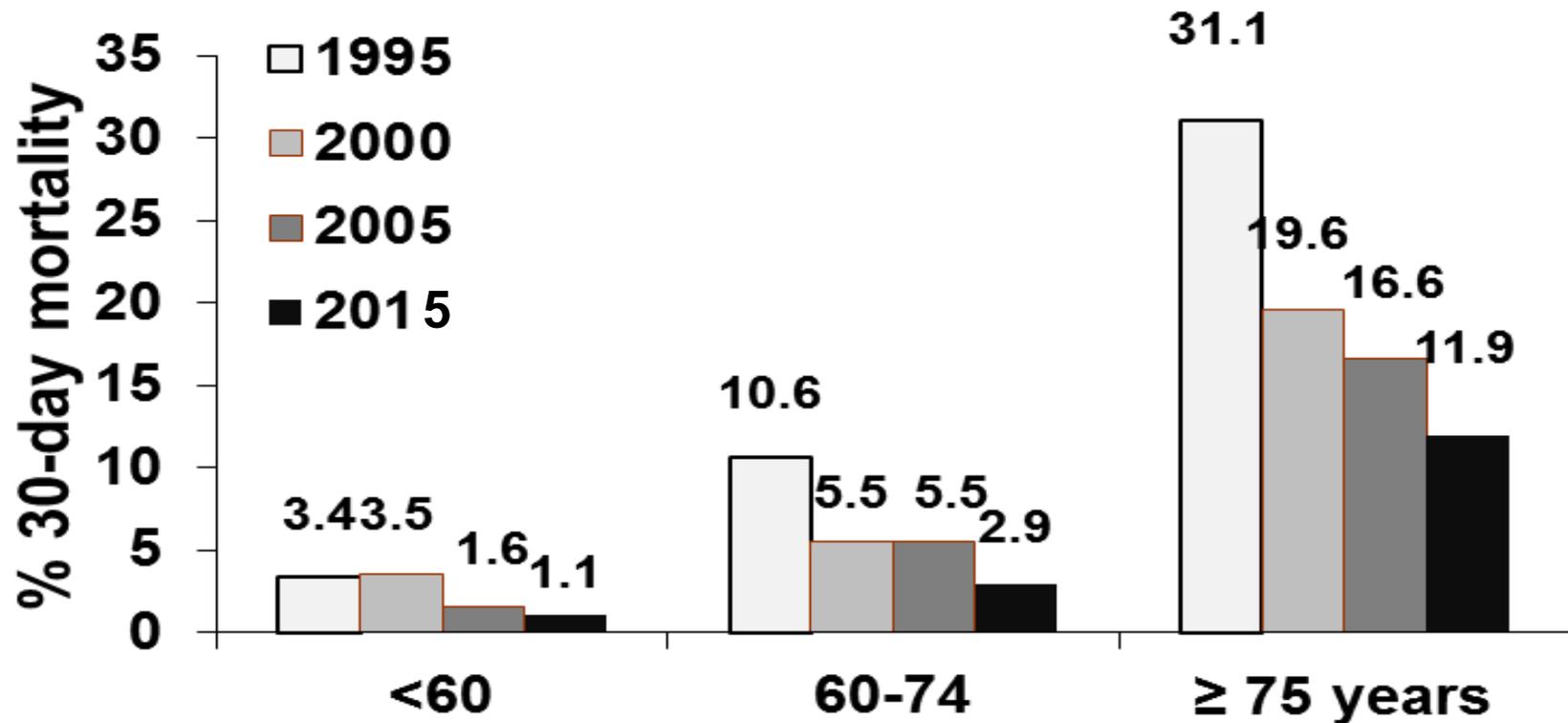
Avec Sus décalage de ST (ST+)	Sans Sus décalage de ST (ST-)
Extrême urgence	Urgence
Désobstruer l'artère	Prévenir l'occlusion
Choisir un traitement rapide	Décider l'hospitalisation

Traitement basé sur la stratégie interventionnelle

SCA ST +

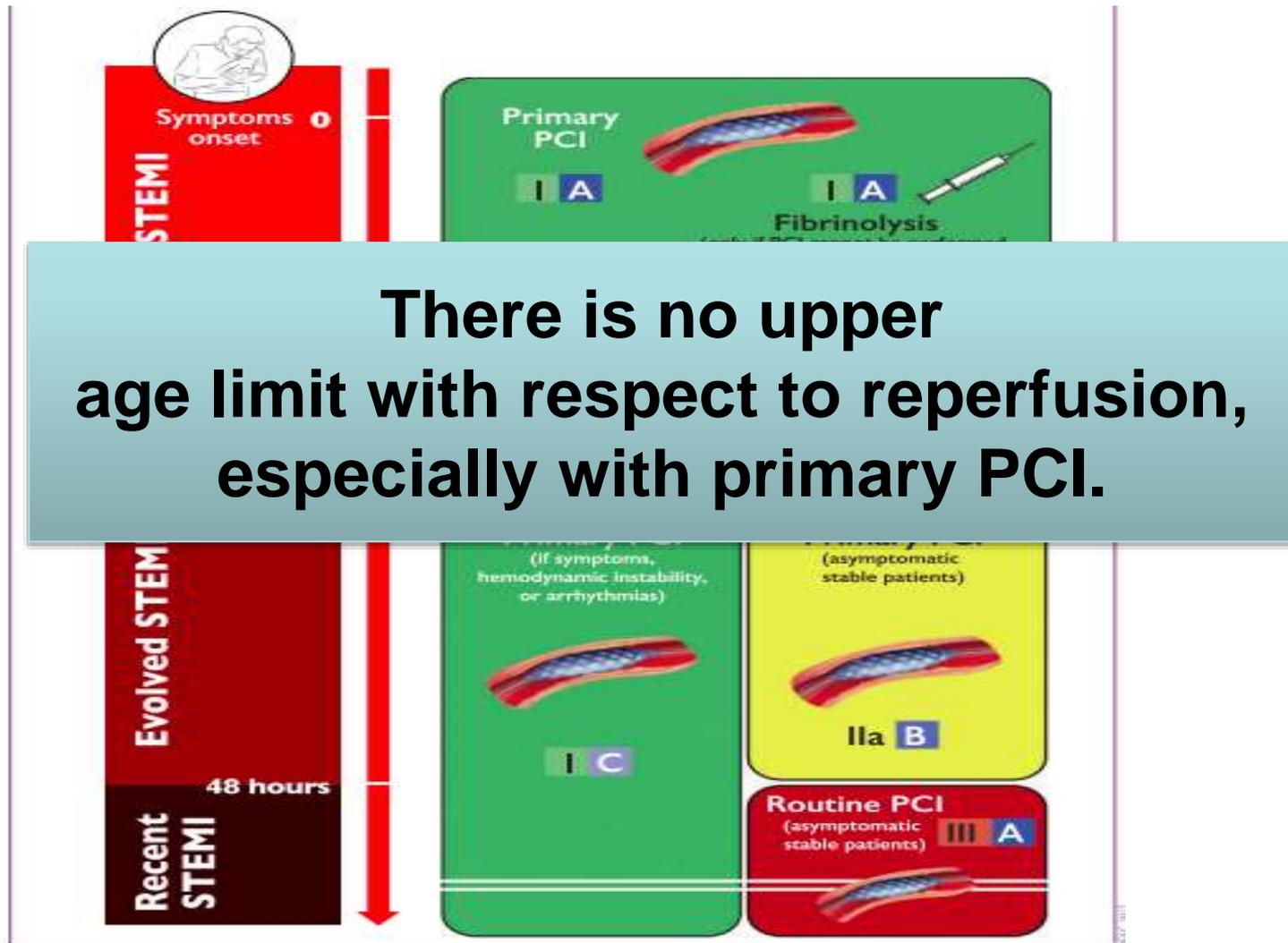
USIK et FAST MI french registries

Changes in 30-day mortality according to age



SCA ST +

L'angioplastie primaire: traitement de première intention quelque soit l'âge

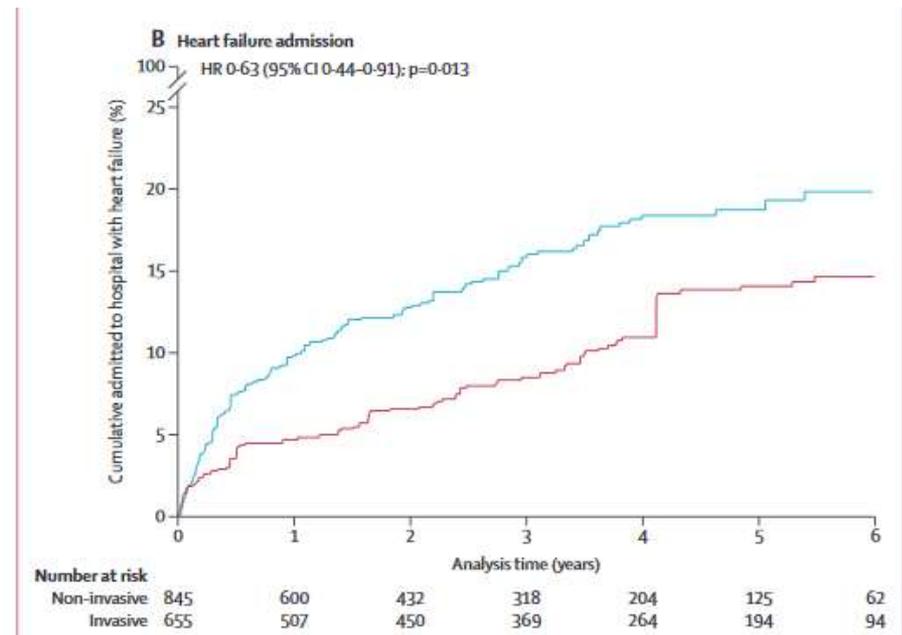
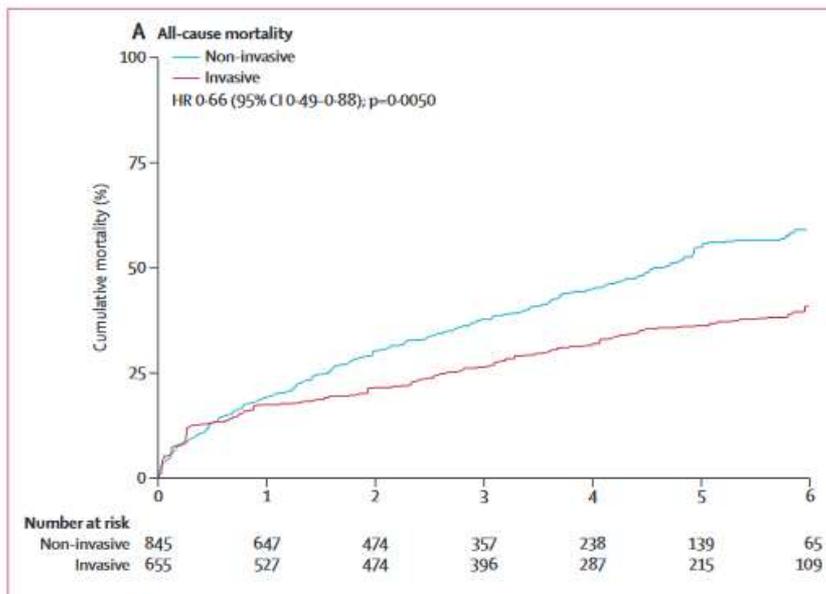


SCA ST-

Invasive versus non-invasive management of older patients with non-ST elevation myocardial infarction (SENIOR-NSTEMI): a cohort study based on routine clinical data

Amit Kaura, Jonathan A C Sterne, Adam Trickey, Sam Abbott, Abdulrahim Mulla, Benjamin Glampson, Vasileios Panoulas, Jim Davies, Kerrie Woods, Joe Omigie, Anoop D Shah, Keith M Channon, Jonathan N Weber, Mark R Thursz, Paul Elliott, Harry Hemingway, Bryan Williams, Folkert W Asselbergs, Michael O'Sullivan, Graham M Lord, Narbeh Melikian, Thomas Johnson, Dai Rajesh Kharbanda, Riyaz S Patel, Jamil Mayet

www.thelancet.com Vol 396 August 29, 2020



What do the guidelines say ?

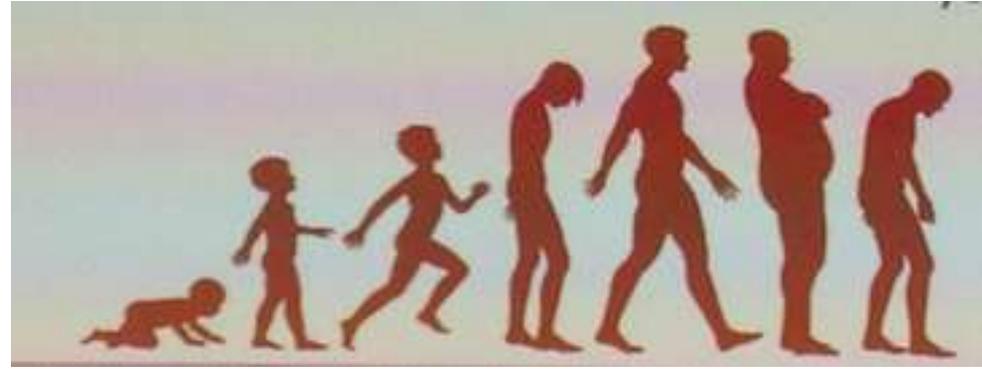
Recommendations for older persons with non-ST-segment elevation acute coronary syndrome



Recommendations	Class	Level
It is recommended to apply the same diagnostic strategies in older patients as for younger patients.	I	B
It is recommended to apply the same interventional strategies in older patients as for younger patients.	I	B
The choice of antithrombotic agent and dosage, as well as secondary preventions, should be adapted to renal function, as well as specific contraindications.	I	B



Plan



Epidémiologie et physiopathologie

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Stratégie antiplaquettaire: DAPT après SCA ou angioplastie



Predictors of Major Bleeding in ACS

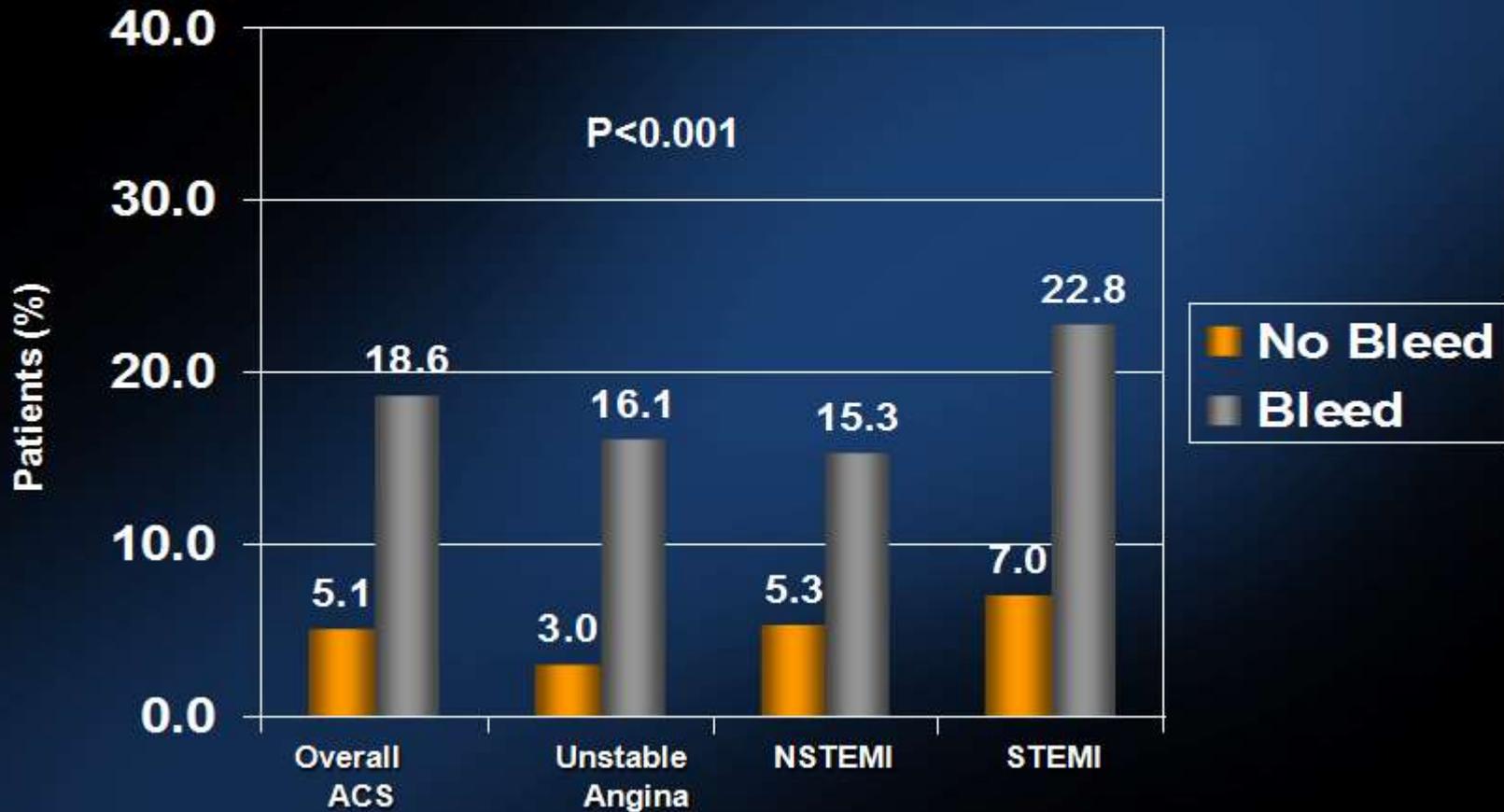
- ▶ Older Age
- ▶ Female Gender
- ▶ Renal Failure
- ▶ History of Bleeding
- ▶ Right Heart Catheterization
- ▶ GPIIb-IIIa antagonists

Independent
Predictors of
Major Bleeding
in Marker Positive
Acute Coronary
Syndromes



Major Bleeding Predicts Mortality in ACS

24,045 ACS patients in the GRACE registry, in-hospital death



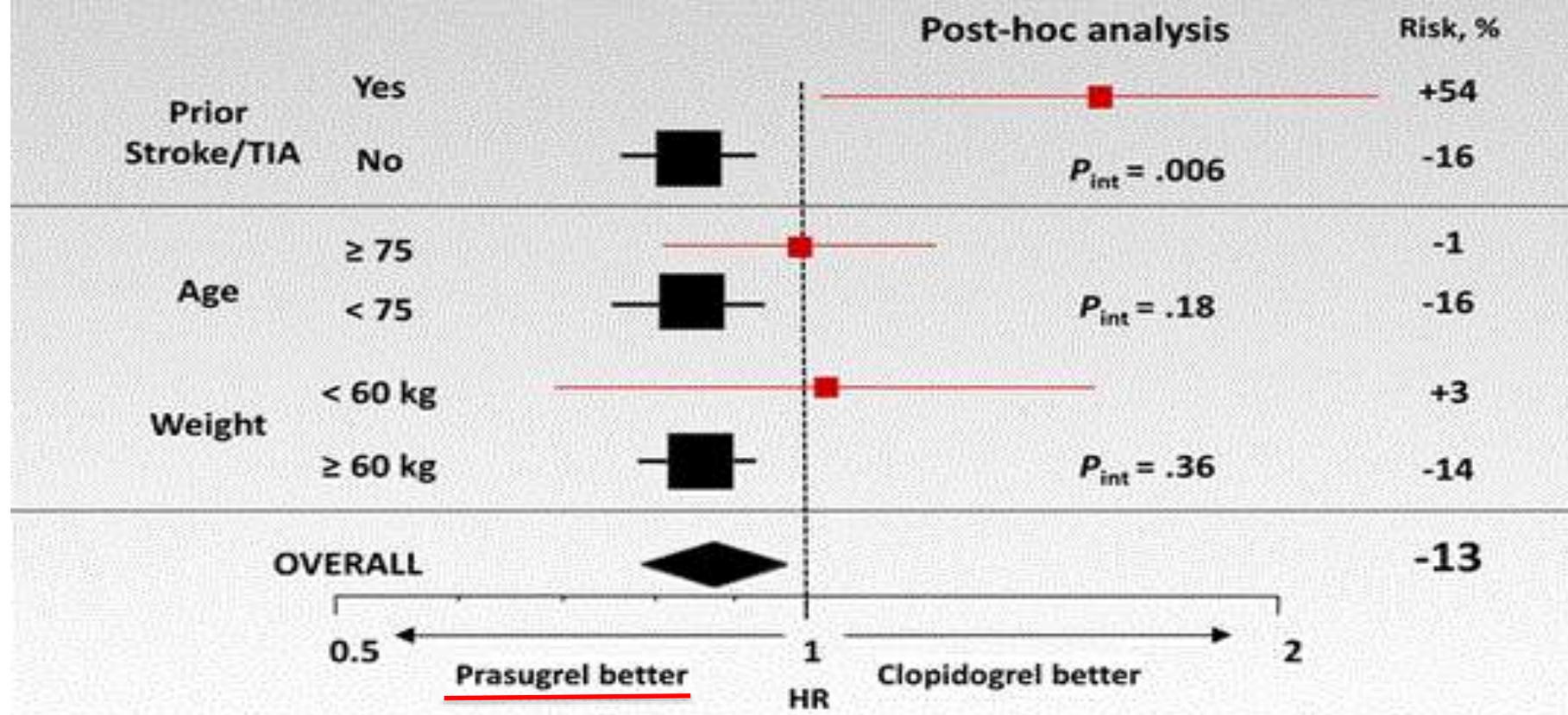
Moscucci M et al. *Eur Heart J* 2003;24:1815-23.

Comment diminuer le risque hémorragique de la DAPT chez le sujet âgé ?

- choisir la bonne molécule
- durées de traitement courtes
- stratégies de « désescalade »
- risques de la trithérapie

Choix des antiagrégants plaquettaires: privilégier le clopidogrel

TRITON-TIMI 38 Net Clinical Benefit Bleeding Risk Subgroups



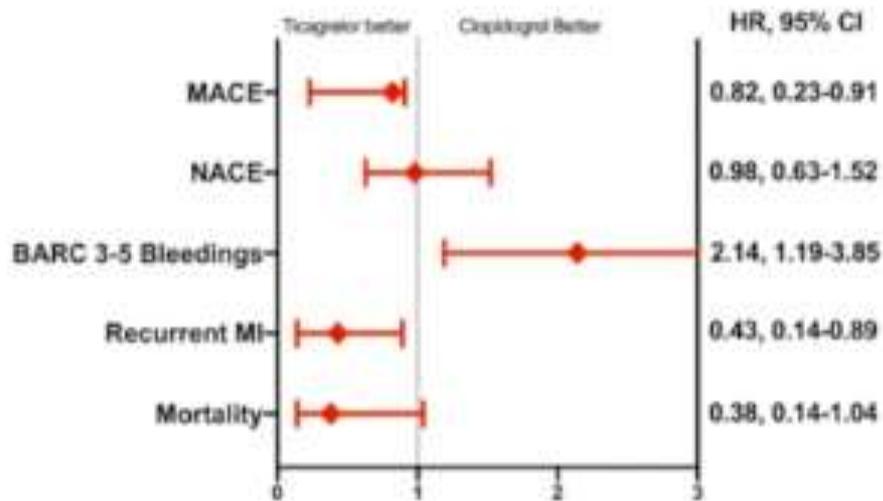


Ticagrelor versus clopidogrel in elderly Pts

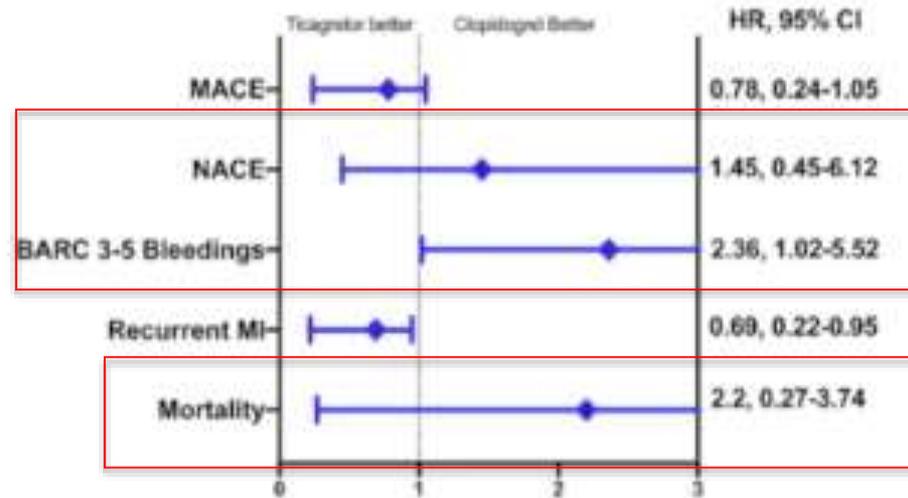
Net clinical benefit of different strategies of DAPT

Data from the PRAISE registry

Endpoint incidence in the overall cohort



Endpoint incidence in pts > 85 years old



Ticagrelor associated with neutral effect on all-cause death, lower risk of MACE & MI compared to clopidogrel, and increased risk of major bleeding.

Privilégier des durées de traitement courtes

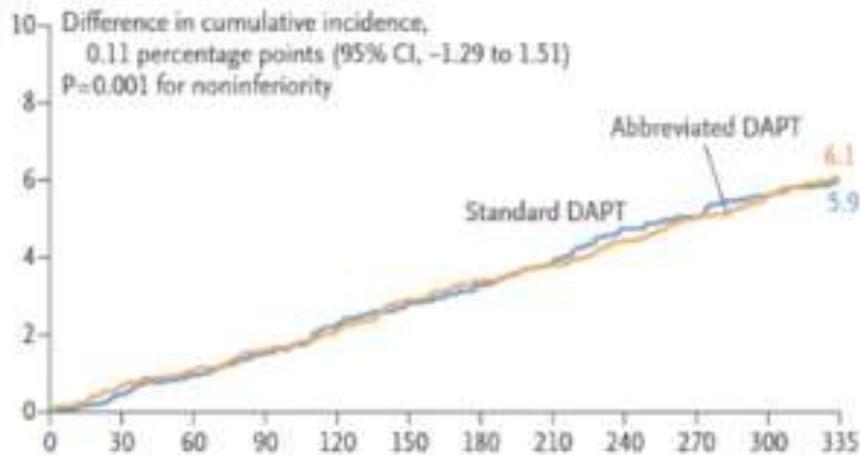


Emerging DAPT strategies for advanced age

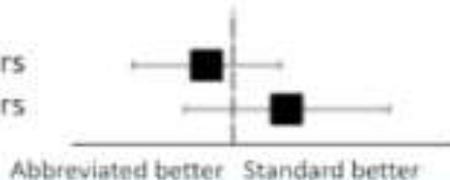
Shorter duration ?

MASTER-DAPT (# 70% > 75 yrs)
1 month DAPT vs 3 months DAPT in HBR pts

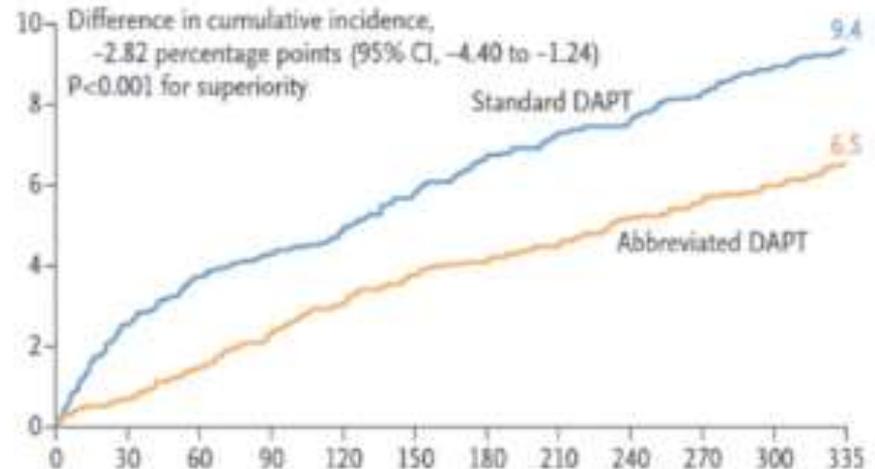
Major adverse cardiac & cerebral events



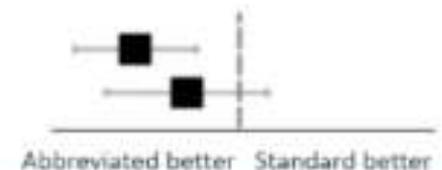
Age \geq 75 years
Age < 75 years



Major or clinically relevant non-major bleeding



Age \geq 75 years
Age < 75 years

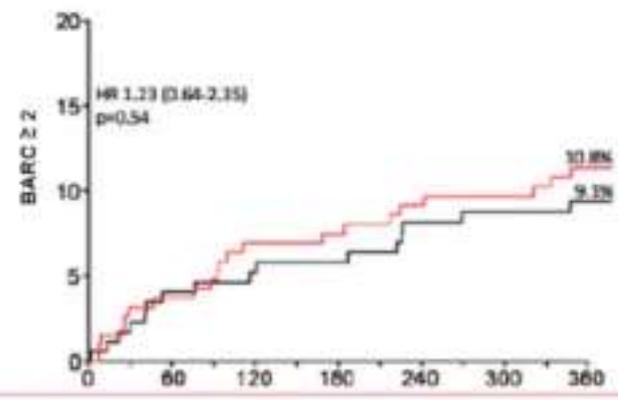
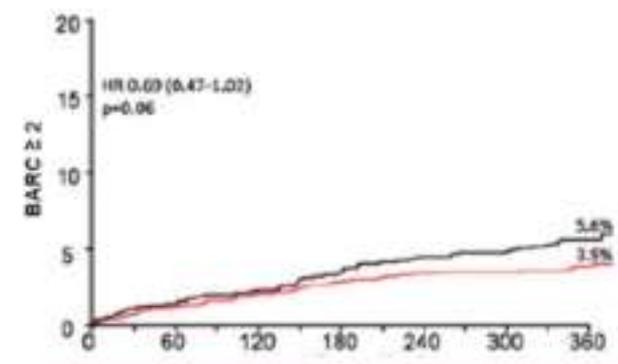
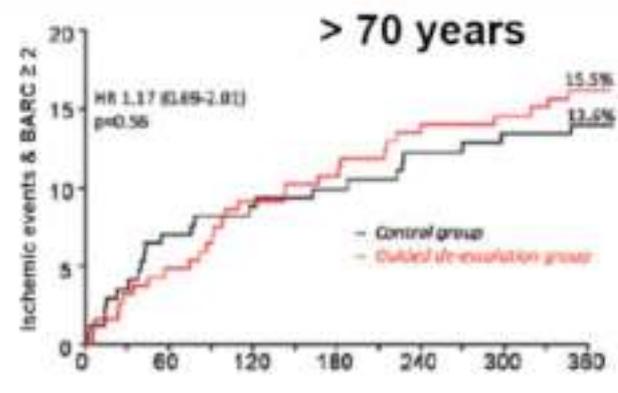
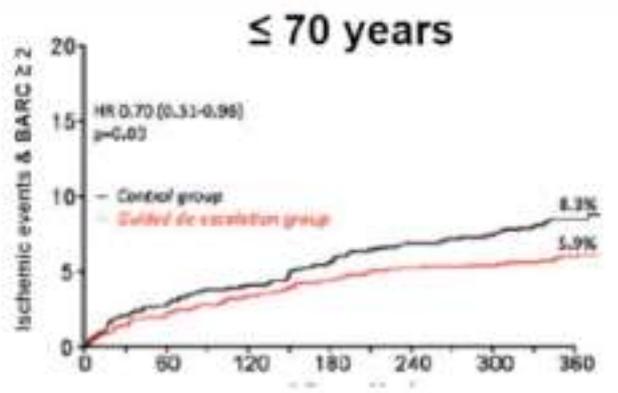


La désescalade est souvent possible

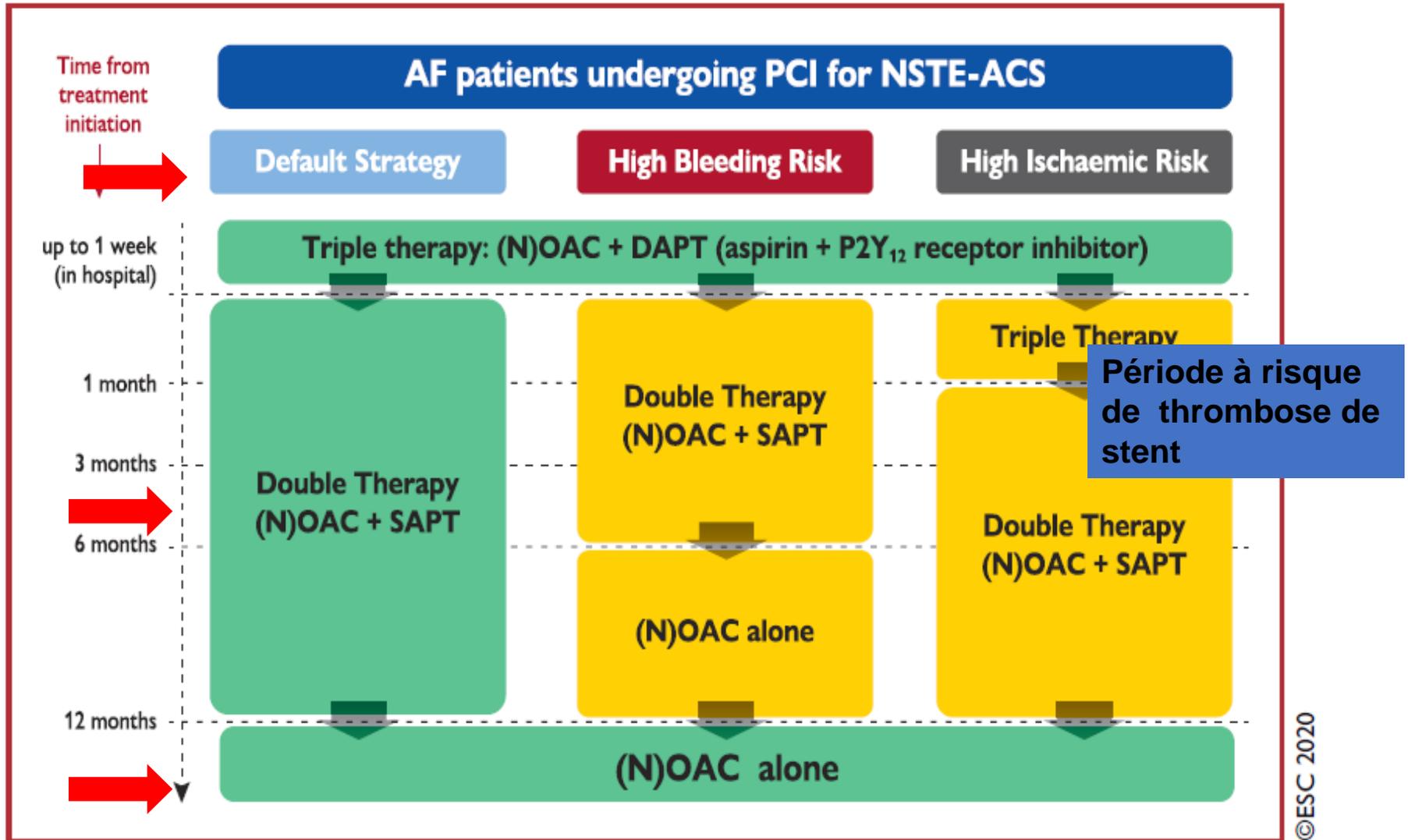
Emerging DAPT strategies for advanced age

De-escalation ?

TROPICAL-ACS trial (ACS pts undergoing PCI)
Guided de-escalation of APT from prasugrel to clopidogrel after 14 days (according to PFT)



« Triple thérapie » : courte et avec des AOD



Conclusion

- **Morbi mortalité élevée** des maladies cardiovasculaires du sujet âgé: prise en charge « agressive » pour dépistage traitement
- **Présentation clinique souvent atypique et non spécifique** : y penser (ECG, échographie, cinétique de troponine)
- **Maladie coronaire stable**: traitement médical de première intention, revascularisation selon symptômes et signes de gravité (dysfonction VG, instabilité hémodynamique ou rythmique, territoire ischémique important)
- **Gravité des syndromes coronaires aigus**: prise en charge interventionnelle obligatoire, effets secondaires des traitements (risque hémorragique++): stratégies personnalisées (choix AAP et durées +++)

Protéine de la longévité ??

