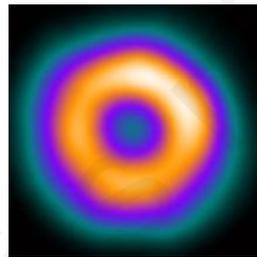


# Gestion du coronarien très âgé : Faut-il le coronarographier et/ou le dilater ?



Pr Gilles Barone-Rochette  
Interventional cardiology and cardiac imaging  
Pôle Thorax et vaisseaux © CHU de Grenoble  
Inserm 1039

# Disclosure

- Consulting: Abbott Vascular, Bayer, Novonordisk
- Honoraria: Bayer, AMGEN, Sanofi, AstraZeneca, Novonordisk, Novartis  
Pfizer, Boehringer Ingelheim
- Grants: MDS, Pfizer, Bayer, Abbott vascular

## Ce que l'on sait :

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# Une maladie coronaire plus sévère

	Age <70 y (n=15 392)	Age 70–79 y (n=5198)	Age ≥80 y (n=983)	<i>P</i>
Coronary anatomy, %				<0.0001
Minimal CAD	22.2	12.7	9.7	
1–2–Vessel disease	25.8	19.5	15.0	
2 Vessels + proximal LAD	15.9	14.9	14.2	
3-Vessel disease	18.1	22.9	24.3	
3 Vessels + proximal LAD	11.7	18.6	22.9	
Left main	6.3	11.3	13.9	

# Plus de complications / procédures invasives

**Table 4.** Clinical Outcomes

Outcome	Age ≥80 years*	Age <80 years*	Odds Ratio (95% CI)	P Value
Death	3.8 (3.4–4.2)	1.1 (1.0–1.1)	3.6 (3.2–4.1)	< 0.001
Procedural success	84 (83–85)	89 (89–89)	0.65 (0.60–0.70)	< 0.001
Death/MI/CVA	4.9 (4.4–5.4)	1.9 (1.9–2.0)	2.6 (2.3–2.9)	< 0.001
Q wave MI	1.9 (1.5–2.3)	1.3 (1.2–1.3)	1.5 (1.2–1.9)	< 0.001
CVA	0.58 (0.38–0.78)	0.23 (0.2–0.26)	2.5 (1.7–3.6)	< 0.001
Renal failure	3.2 (2.7–3.7)	1.0 (0.96–1.1)	3.1 (2.6–3.8)	< 0.001
Vascular complication	6.7 (6.0–7.5)	3.3 (3.2–3.5)	2.1 (1.9–2.4)	< 0.001
Urgent revascularization	4.4 (4.0–4.9)	4.5 (4.4–4.6)	0.98 (0.88–1.1)	0.770
Total LOS†	5.1 ± 5.3	3.7 ± 4.3	NA	< 0.001
Postprocedure LOS†	3.6 ± 4.6	2.6 ± 3.8	NA	< 0.001

\*Data are expressed as percentages, with 95% confidence intervals in parentheses. †Length of hospital stay (LOS) in days (mean ± SD).  
CVA = cerebrovascular disease; MI = myocardial infarction; NA = not applicable.

# Radial access

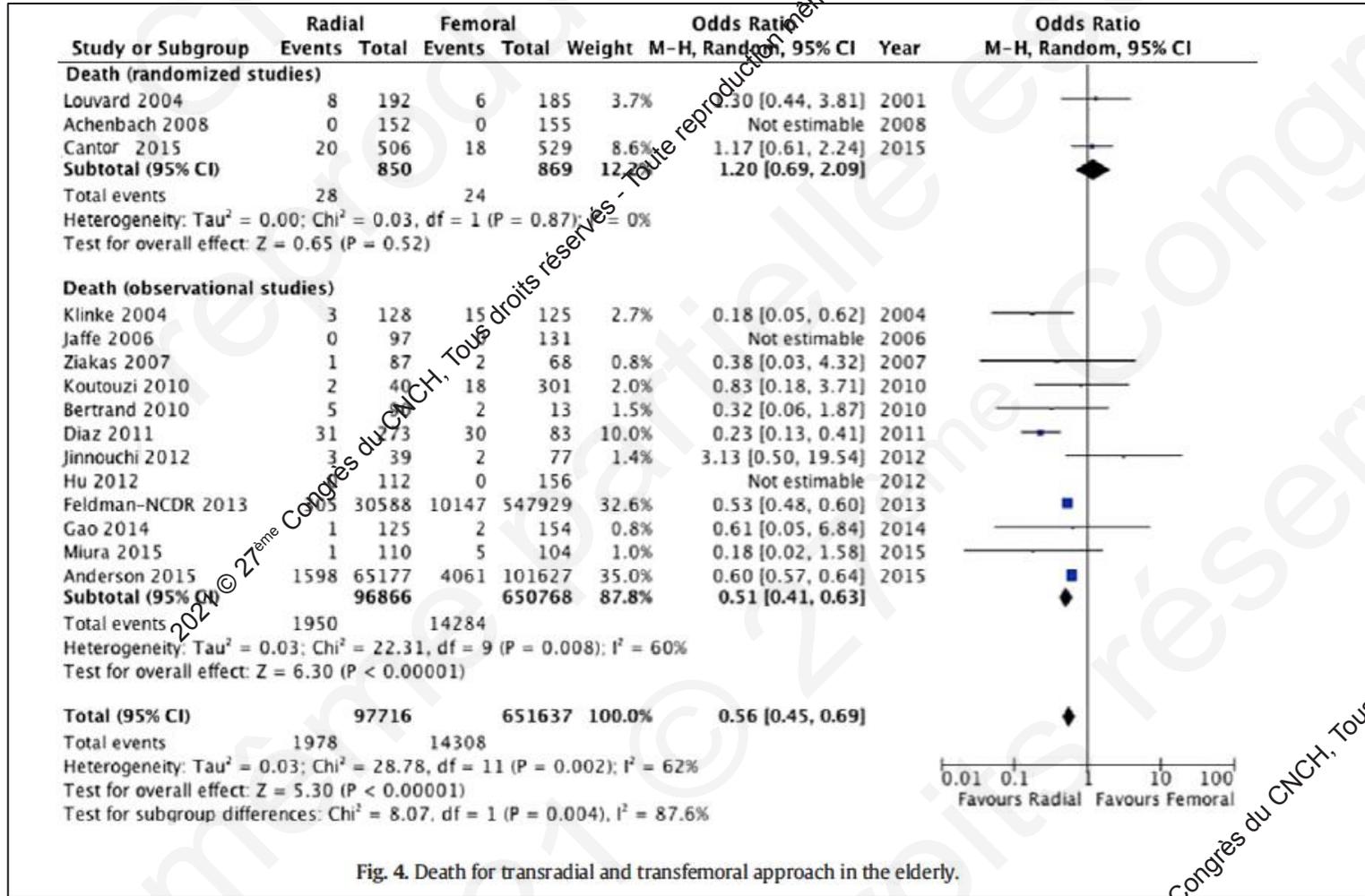


Fig. 4. Death for transradial and transfemoral approach in the elderly.



- Monter sous scopie
- Twirled
- Guide hydrophile
- Ne jamais forcer
- Injection
- Guide d'angioplastie

# Faut il aller à l'invasif tout le temps?

## Les choses sont moins claires

- **Le rapport bénéfice / risque de la revascularisation reste flou car nous manquons de données.**

**En effet, les données disponibles sur l'impact d'une stratégie chez les personnes âgées proviennent en grande partie d'analyses de sous-groupes de registres ou des études randomisées.**

- **L'OMS prévoit que la morbi-mortalité cardiovasculaire augmentera de 120 à 137% d'ici 20 ans en raison du vieillissement de la population.**

# Le STEMI



et le BBG

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# Mortalité +++

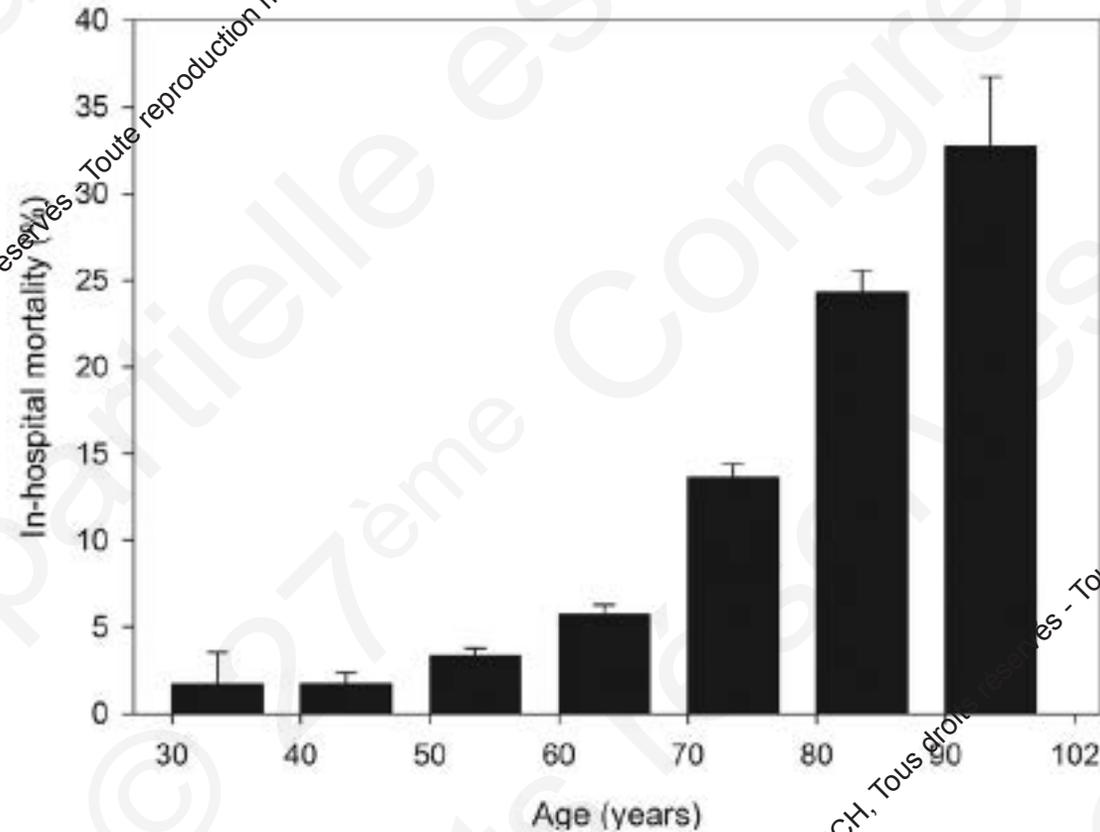
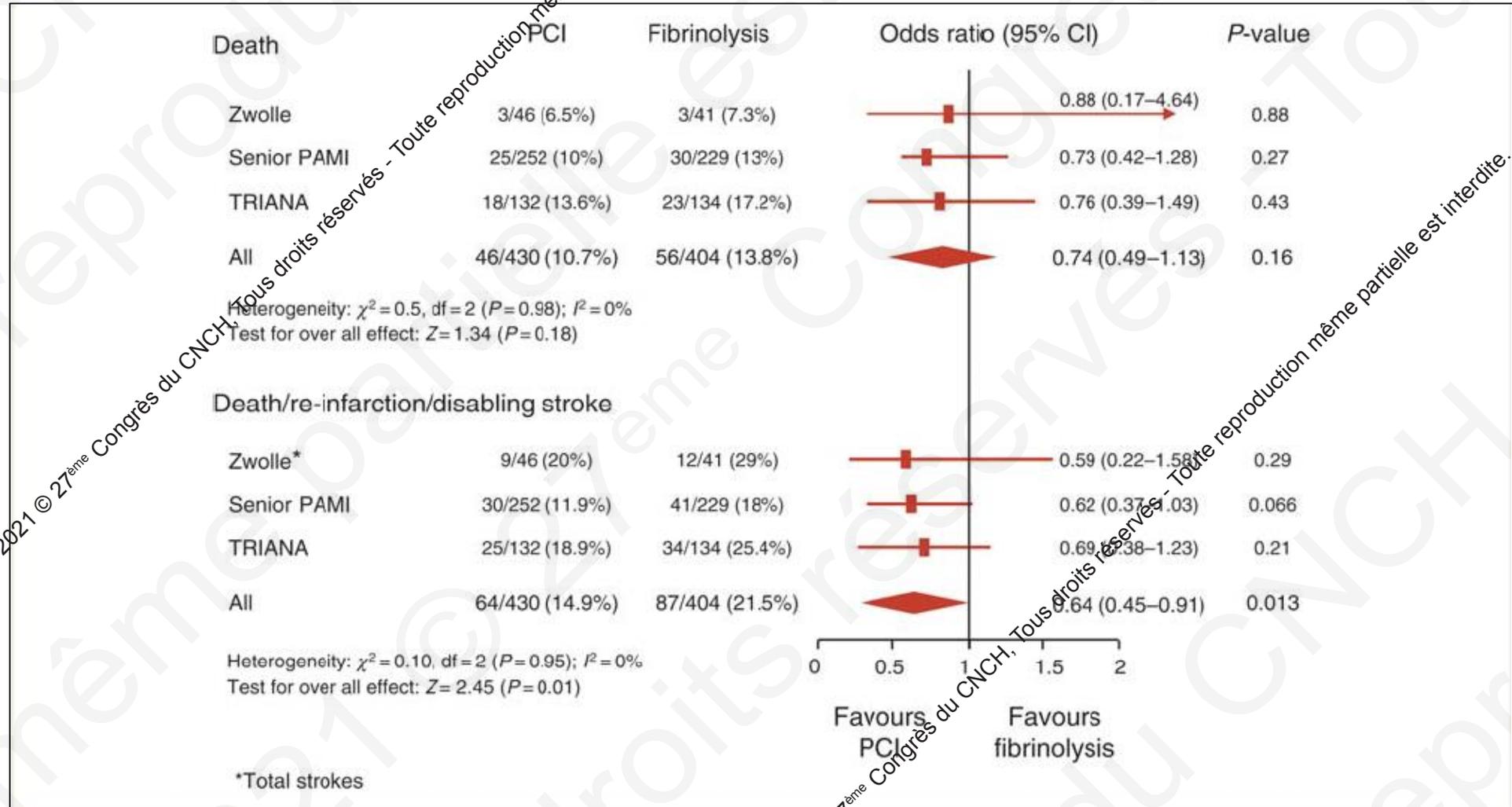


Figure 1. Age-specific in-hospital mortality rate of STEMI. Error bars indicate upper limits of 95% CIs.

# Traitement invasif : oui



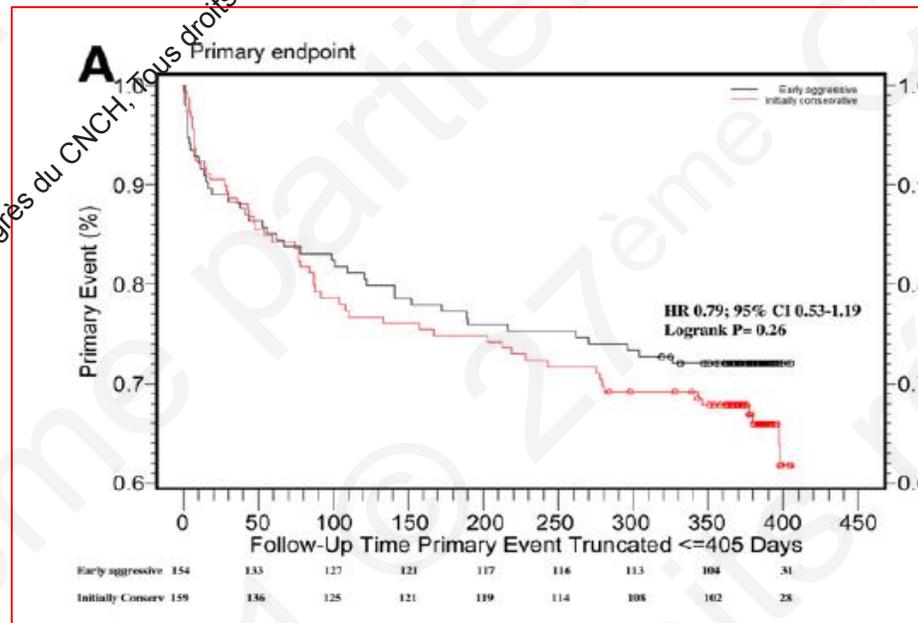
# NSTEMI et angor instable

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# The Italian Elderly ACS Trial Investigators

313 patients aged 75 years or older with NSTEMI or unstable angina  
21 hospitals, follow-up of 1 years

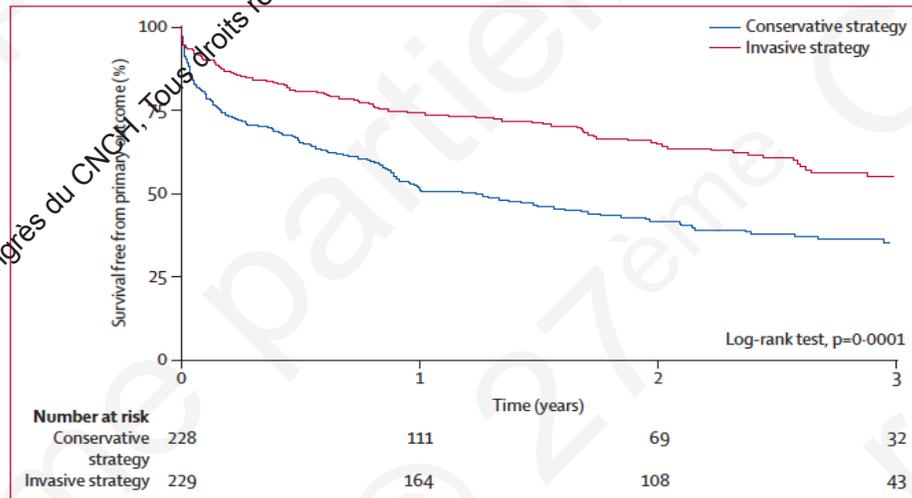


The primary endpoint was the composite of death, myocardial infarction, disabling stroke, and repeat hospital stay for cardiovascular causes or severe bleeding

Angiography and revascularization only for recurrent ischemia: 29%

## AFTER EIGHTY STUDY

457 patients aged 80 years or older with NSTEMI or unstable angina  
16 hospitals, median follow-up of 1.53 years



**Figure 2:** Kaplan-Meier curves of survival free from composite outcome  
The primary outcome was a composite of myocardial infarction, need for urgent revascularisation, stroke, and death.

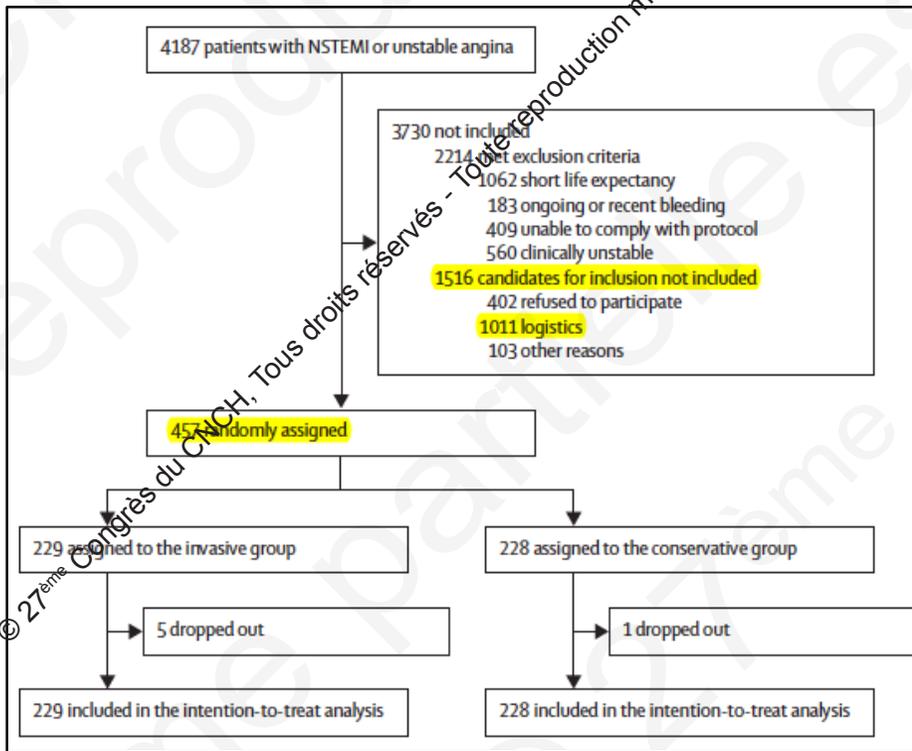
The primary outcome was a composite of myocardial infarction, need for urgent revascularisation, stroke, and death

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	Invasive strategy group (n=229)	Conservative strategy group (n=228)	Rate ratio	p value
<b>Primary endpoint</b>				
Composite endpoint	93 (41%)	140 (61%)	0.48 (0.37-0.63)	0.0001
Follow-up patient years	419.54	307.07		
<b>Components of the primary endpoint</b>				
<b>Myocardial infarction</b>	<b>39 (17%)</b>	<b>69 (30%)</b>	<b>0.50 (0.33-0.75)</b>	<b>0.0003</b>
Follow-up patient years	510.76	444.37		
<b>Need for urgent revascularisation</b>	<b>5 (2%)</b>	<b>24 (11%)</b>	<b>0.19 (0.05-0.52)</b>	<b>0.0001</b>
Follow-up patient years	588.12	536.69		
Stroke	8 (3%)	13 (6%)	0.61 (0.22-1.60)	0.26
Follow-up patient years	590.41	577.45		
Death from any cause	57 (25%)	62 (27%)	0.87 (0.59-1.27)	0.53
Follow-up patient years	496.92	481.26		
<b>Complications (bleeding)</b>				
<b>Major</b>	4 (2%)	4 (2%)	NA	NA
Gastrointestinal	2 (1%)	2 (1%)	NA	NA
Pericardial tamponade	1 (<1%)	0	NA	NA
Traumatic epidural haematoma	1 (<1%)	0	NA	NA
Traumatic subdural haematoma	0	1 (<1%)	NA	NA
Subarachnoid haemorrhage	0	1 (<1%)	NA	NA
<b>Minor</b>	23 (10%)	16 (7%)	NA	NA
Gastrointestinal	14 (6%)	11 (5%)	NA	NA
Other	9 (4%)	5 (2%)	NA	NA

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*Tegn et al. Lancet 2016*



Coronary angiographic data†

Three-vessel disease or left main	105 (48%)	NA
Two-vessel disease	40 (18%)	82% NA
One-vessel disease	35 (16%)	NA
Calcification, no significant stenosis	38 (17%)	NA
Normal	2 (1%)	NA
Revascularisation therapy		
PCI	107 (47%)	NA
CABG	6 (3%)	NA
Radial access†	198 (90%)	NA
Femoral access†	23 (10%)	NA
Angiography not done	9 (4%)	228 (100%)

# STEMI

## Recommendations for the management of elderly patients with non-ST-elevation acute coronary syndromes

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
It is recommended to tailor antithrombotic treatment according to bodyweight and renal function.	I	C	
Elderly patients should be considered for an invasive strategy and, if appropriate, revascularization after careful evaluation of potential risks and benefits, estimated life expectancy, comorbidities, quality of life, frailty and patient values and preferences.	IIa	A	408, 414–418
Adjusted dosing regimens of beta-blockers, ACE inhibitors, ARBs and statins should be considered to prevent side effects.	IIa	C	

ESC Guidelines 2015

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

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
It is recommended to apply the same diagnostic strategies in older patients as for younger patients. <sup>458</sup>	I	B
It is recommended to apply the same interventional strategies in older patients as for younger patients. <sup>463,467</sup>	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. <sup>461</sup>	I	B

© ESC 2020

Decisions as to how to manage older patients should be based on ischaemic and bleeding risks, estimated life expectancy, comorbidities, the need for non-cardiac surgery, quality of life, frailty, cognitive and functional impairment, patient values and preferences, and the estimated risks and benefits of revascularization

ESC Guidelines 2020

# Des spécificités à prendre en compte pour le design des études

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# NSTEMI type 2

## Criteria for type 1 MI

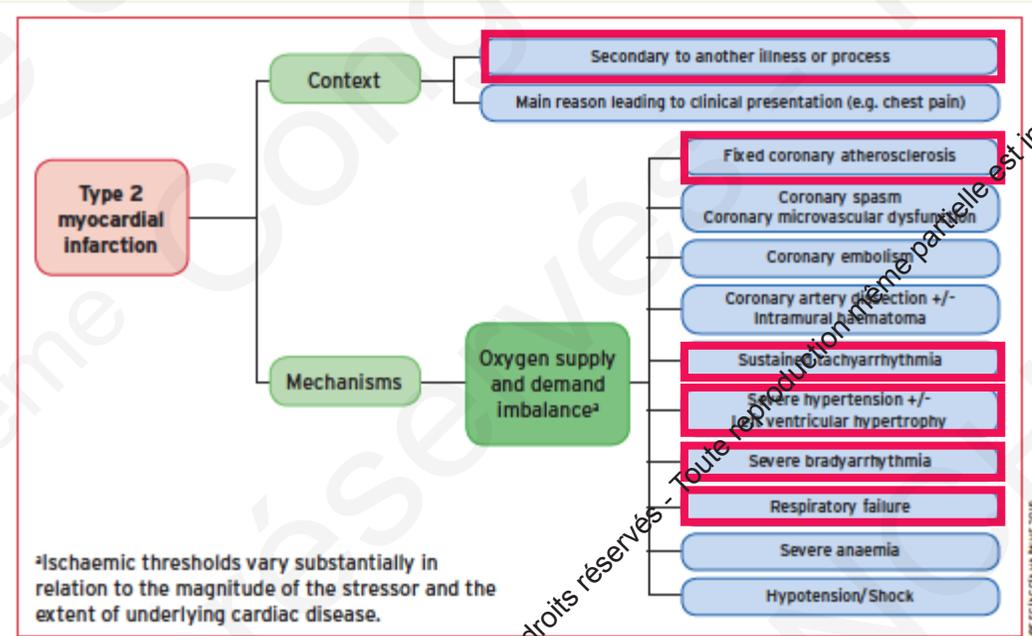
Detection of a rise and/or fall of cTn values with at least one value above the 99th percentile URL and with at least one of the following:

- Symptoms of acute myocardial ischaemia;
- New ischaemic ECG changes;
- Development of pathological Q waves;
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemic aetiology;
- Identification of a coronary thrombus by angiography including intracoronary imaging or by autopsy.<sup>a</sup>

## Criteria for type 2 MI

Detection of a rise and/or fall of cTn values with at least one value above the 99th percentile URL, and evidence of an imbalance between myocardial oxygen supply and demand unrelated to coronary thrombosis, requiring at least one of the following:

- Symptoms of acute myocardial ischaemia;
- New ischaemic ECG changes;
- Development of pathological Q waves;
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemic aetiology.



# La Fragilité

**Définition consensuelle :** réduction physiologique multi systémiques limitant les capacités d'adaptation au stress

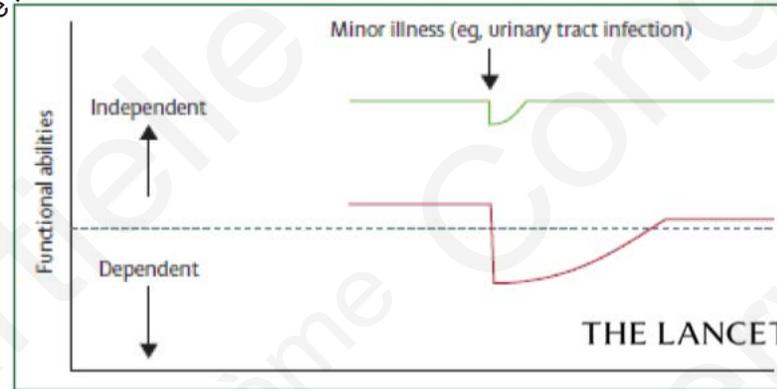
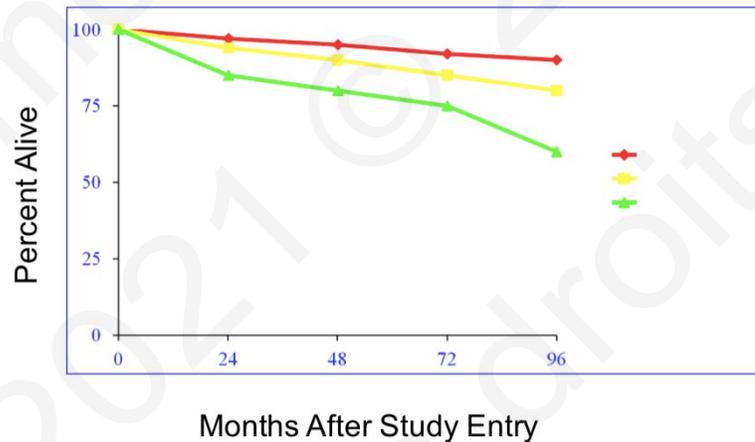


Figure 1: Vulnerability of frail elderly people to a sudden change in health

**Pas de consensus sur méthode d'évaluation**



*Clegg A et al. Lancet 2013*

*Fried et al J. gerontol Med Sci 2001*

307 patients

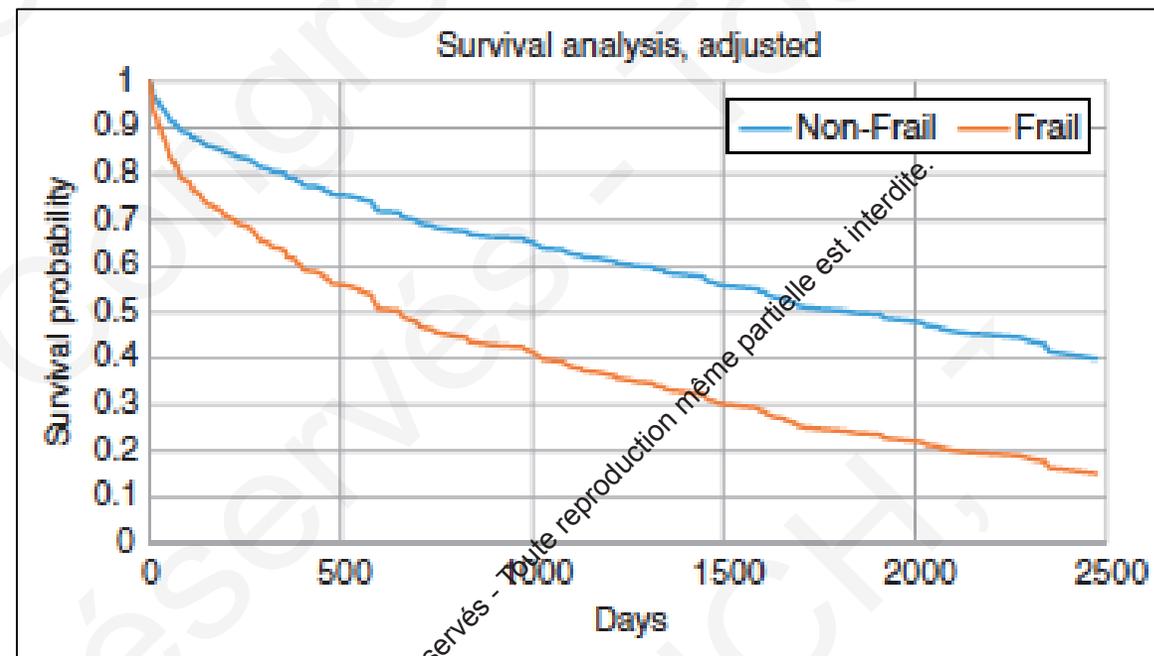
The aim of the study was to assess the prognostic value of frailty on mortality at long-term follow-up of more than 5 years in patients 75 years or older hospitalised for non-ST-segment elevation myocardial infarction.

CLINICAL FRAILITY SCALE		
	<b>1</b>	<b>VERY FIT</b> People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
	<b>2</b>	<b>FIT</b> People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g., seasonally.
	<b>3</b>	<b>MANAGING WELL</b> People whose medical problems are well controlled, even if occasionally symptomatic, but often are not regularly active beyond routine walking.
	<b>4</b>	<b>LIVING WITH VERY MILD FRAILITY</b> Previously "vulnerable," this category marks early transition from complete independence. While not dependent on others for daily help, often symptoms limit activities of common complaint is being "slowed up" and/or being tired during the day.
	<b>5</b>	<b>LIVING WITH MILD FRAILITY</b> People who often have more evident slowing, and need help with high order instrumental activities of daily living (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.
	<b>6</b>	<b>LIVING WITH MODERATE FRAILITY</b> People who need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.
	<b>7</b>	<b>LIVING WITH SEVERE FRAILITY</b> Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).
	<b>8</b>	<b>LIVING WITH VERY SEVERE FRAILITY</b> Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.
	<b>9</b>	<b>TERMINALLY ILL</b> Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise living with severe frailty. (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILITY IN PEOPLE WITH DEMENTIA		
	<b>DALHOUSIE UNIVERSITY</b>	
The degree of frailty generally corresponds to the degree of dementia. Common symptoms in mild dementia include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.	In moderate dementia, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.	In severe dementia, they cannot do personal care without help.
	In very severe dementia they are often bedfast. Many are virtually mute.	

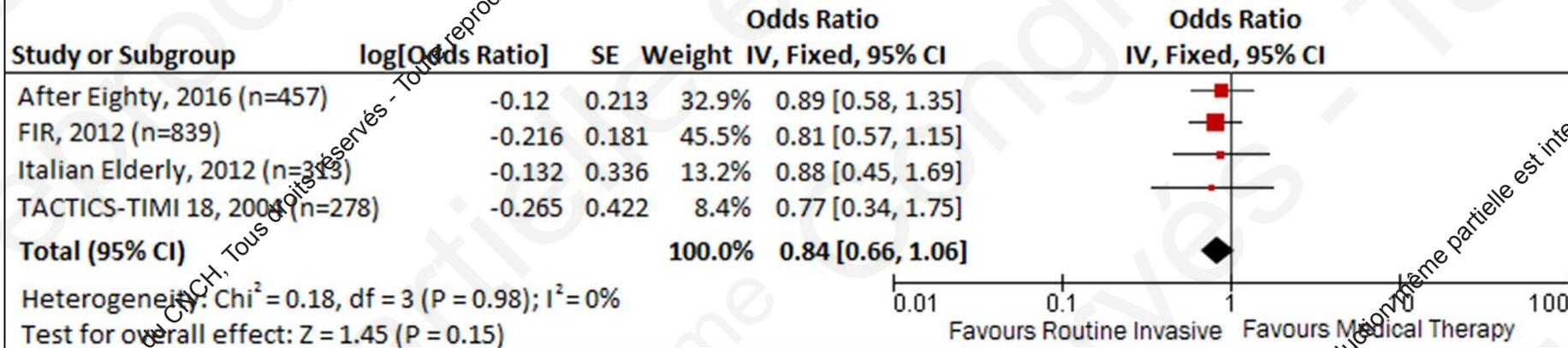
Clinical Frailty Scale ©2005–2020 Rockwood, Version 2.0 (EN). All rights reserved. For permission: [www.geriatricmedicine.ca](http://www.geriatricmedicine.ca)  
Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.



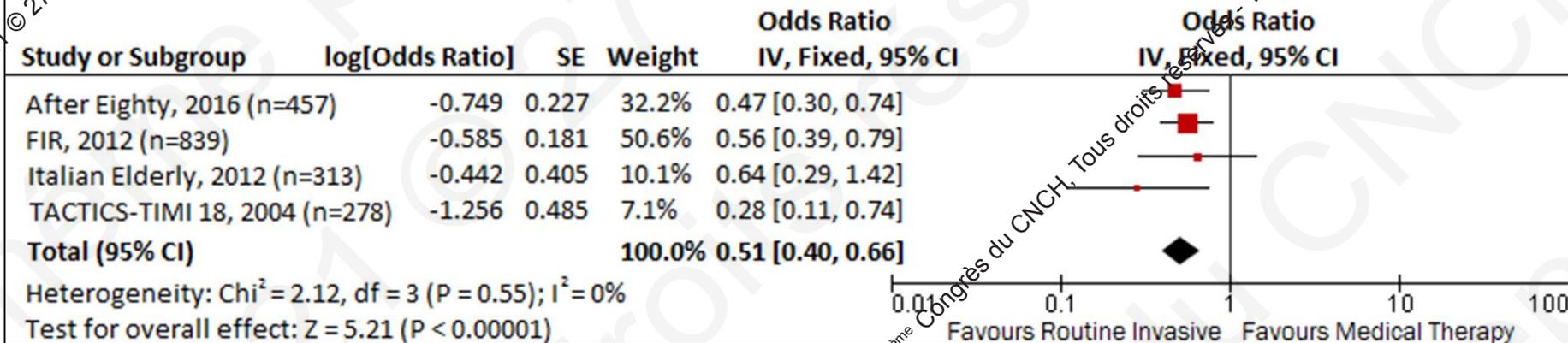
age, sex, EF, cardiovascular risk and comorbidities (i.e. the Charlson index score)

# Meta-analysis

## C. Mortality at Follow-up: Randomized controlled trials



## C. Myocardial Infarction at Follow-up: Randomized controlled trials



## Nouvelles études

### RINCAL



NSTEMI de plus de 80 Ans dont les résultats ont été présentés à l' euroPCR 2020. Pas de différence entre traitement médical et revascularisation à un an sur le critère combiné mortalité toute cause et infarctus du myocarde.

Le nombre de sujet nécessaire à inclure étant de 750 patients mais seulement 251 patients ont été inclus entraînant un manque de puissance pour l'interprétation des résultats avec un arrêt précoce de l'étude pour recrutement trop lent.

**Malgré le manque de puissance lors des discussions sur les résultats de cette étude il a été souligné l'importance du traitement médical et la nécessité d'une prise en charge invasive individualisée dans cette tranche d'âge.**

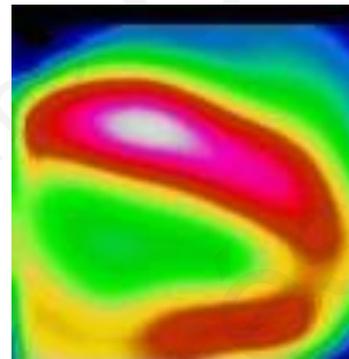
# EVALUATION OF A STRATEGY GUIDED BY IMAGING VERSUS SYSTEMATIC CORONARY ANGIOGRAPHY IN ELDERLY PATIENTS WITH ISCHEMIA



SYSTEMATIC CORONARY ANGIOGRAPHY



CONDITIONED BY NON-INVASIVE IMAGING OF MYOCARDIAL ISCHEMIA

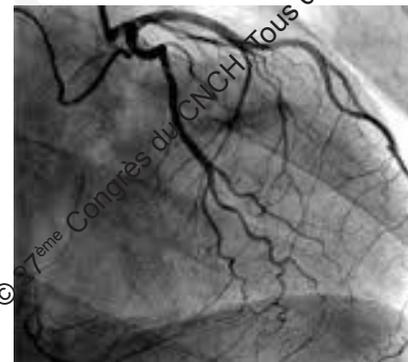


Or



Time of ischemic evaluation

If ischemia > moderate on OMT



# Take home messages

- **L'angioplastie du sujet âgé présente plusieurs pièges**
- **Ces pièges sont connus et peuvent être anticipés**
- **Pour les indications d'une stratégie l'invasive la littérature montre :**
  - **STEMI → invasif ou palliatif**
  - **NSTEMI → plutôt éviter le traitement médical seul mais des études sont encore nécessaires**