

Coronary Calcium Scan is Sufficient for the Evaluation of Patients with Low to Intermediate Risk for ACS in the Emergency Department

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Name of company: GE - Paid consultant

EBCT "Screening" in the Emergency Room: Results in the Mayo Clinic "chest pain unit"

50% women, 98% Caucasian

All events occurred in those with CAC

	EBCT Results		Total
	Positive (Score > 0)	Negative (Score = 0)	
Other Cardiac Test Results			
Positive Dx of CAD	14	0	14
Negative Dx of CAD	32	54	86
Total	46	54	100

EBCT Results:

Sensitivity	100%
Specificity	63%
Negative Predictive Value	100%

Annals of Em Med, 1999

**NPV for "Significant"
CAD of 100%**



NABI An Emer Med 2010

- The 1,031 patients enrolled (mean [SD] age 54 [13] years) had a median CACS of 0 (61% with CACS of 0).
- Only 2 events occurred in 625 patients with a CACS of 0 (**0.3%**). Both of these patients developed increased troponin levels during their index visit but had normal serial ECG and SPECT study results and no cardiac events at 6-month follow-up.
- **These results suggest that patients with a CACS of 0 can be discharged home, without further cardiac testing.**

NICE GUIDELINES

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Chest pain of recent onset

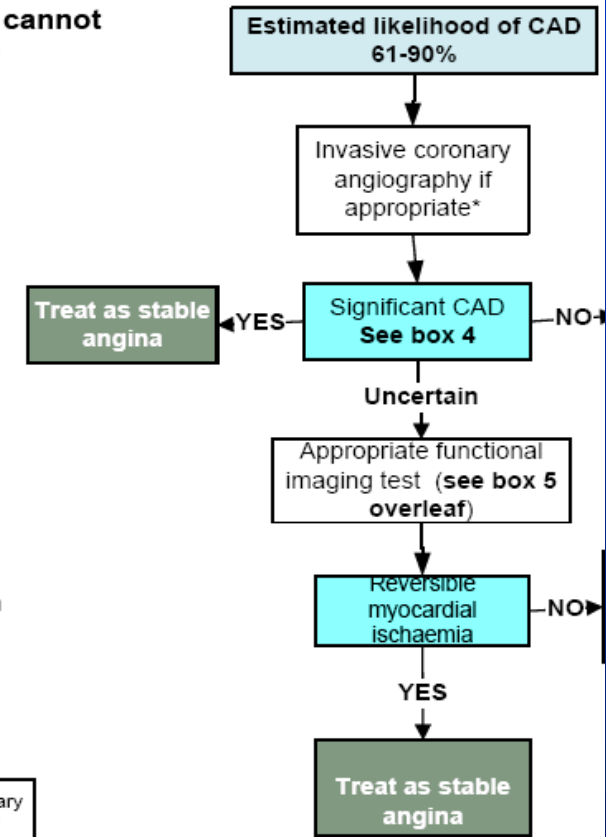
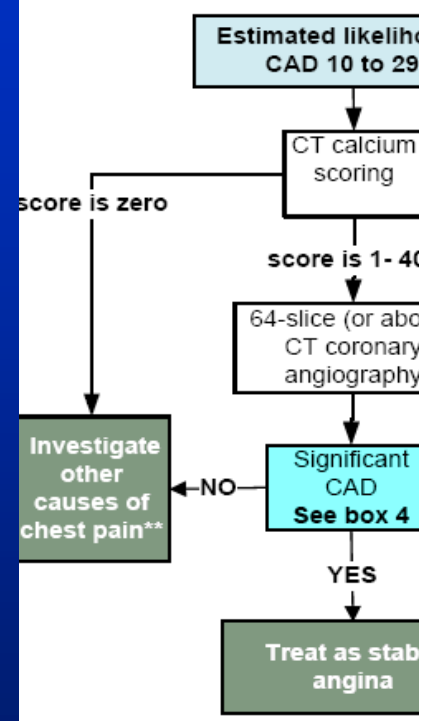
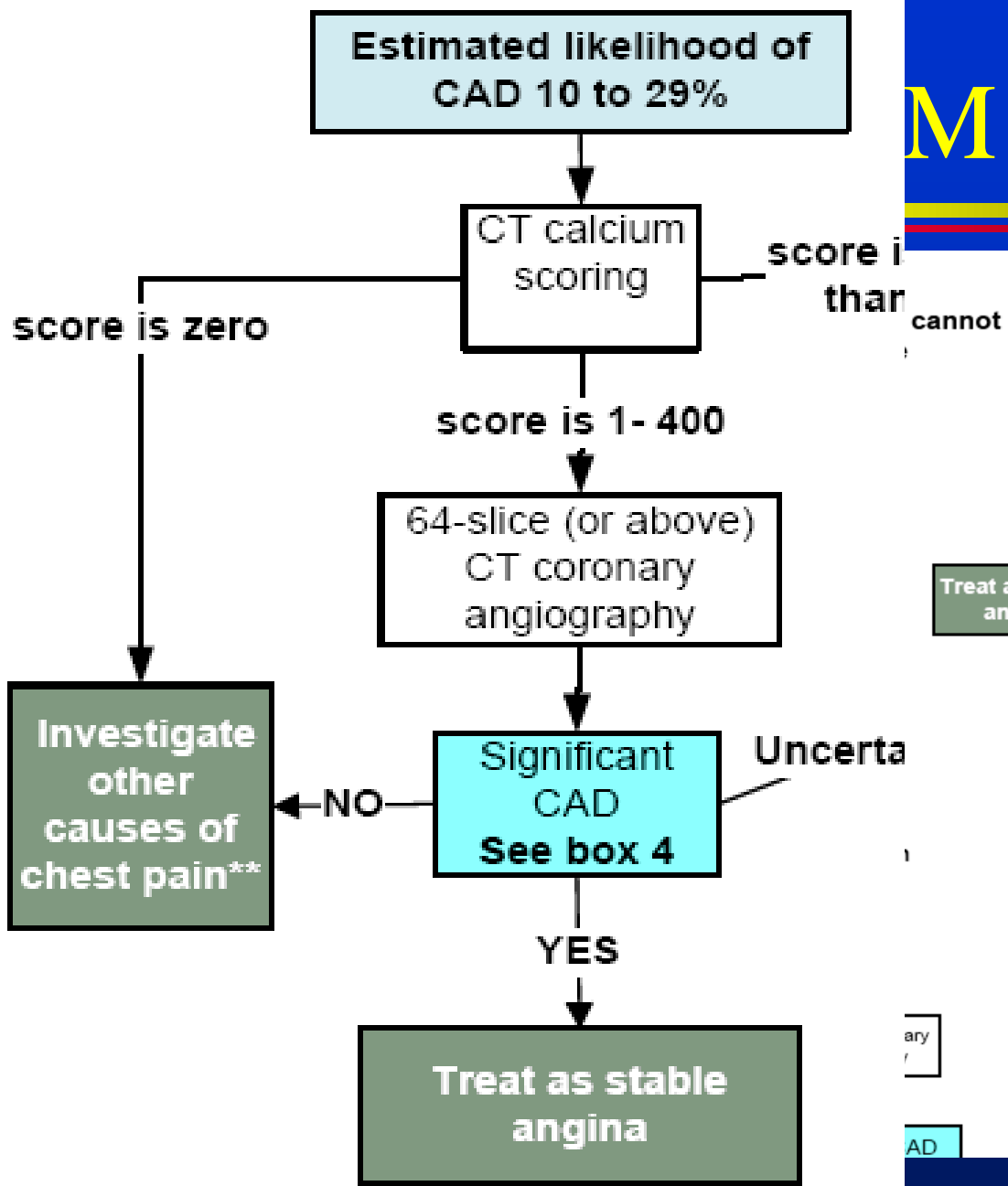
Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin

NICE GUIDELINES

1.3.4.7 For people with chest pain in whom stable angina cannot be diagnosed or excluded by clinical assessment alone and who have an estimated likelihood of CAD of 10–29% (see recommendation 1.3.3.16) offer CT **calcium** scoring. If the calcium score is:

- zero, consider other causes of chest pain
- 1–400, offer 64-slice (or above) CT coronary angiography
- greater than 400, offer invasive coronary angiography. If this is not clinically appropriate or acceptable to the person and

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Box 4 Definition of significant coronary artery disease (CAD) four vessel disease with at least one major epicardial artery with at least 50% diameter stenosis of at least one major epicardial artery or at least one major epicardial artery with at least 70% diameter stenosis of the left main coronary artery.

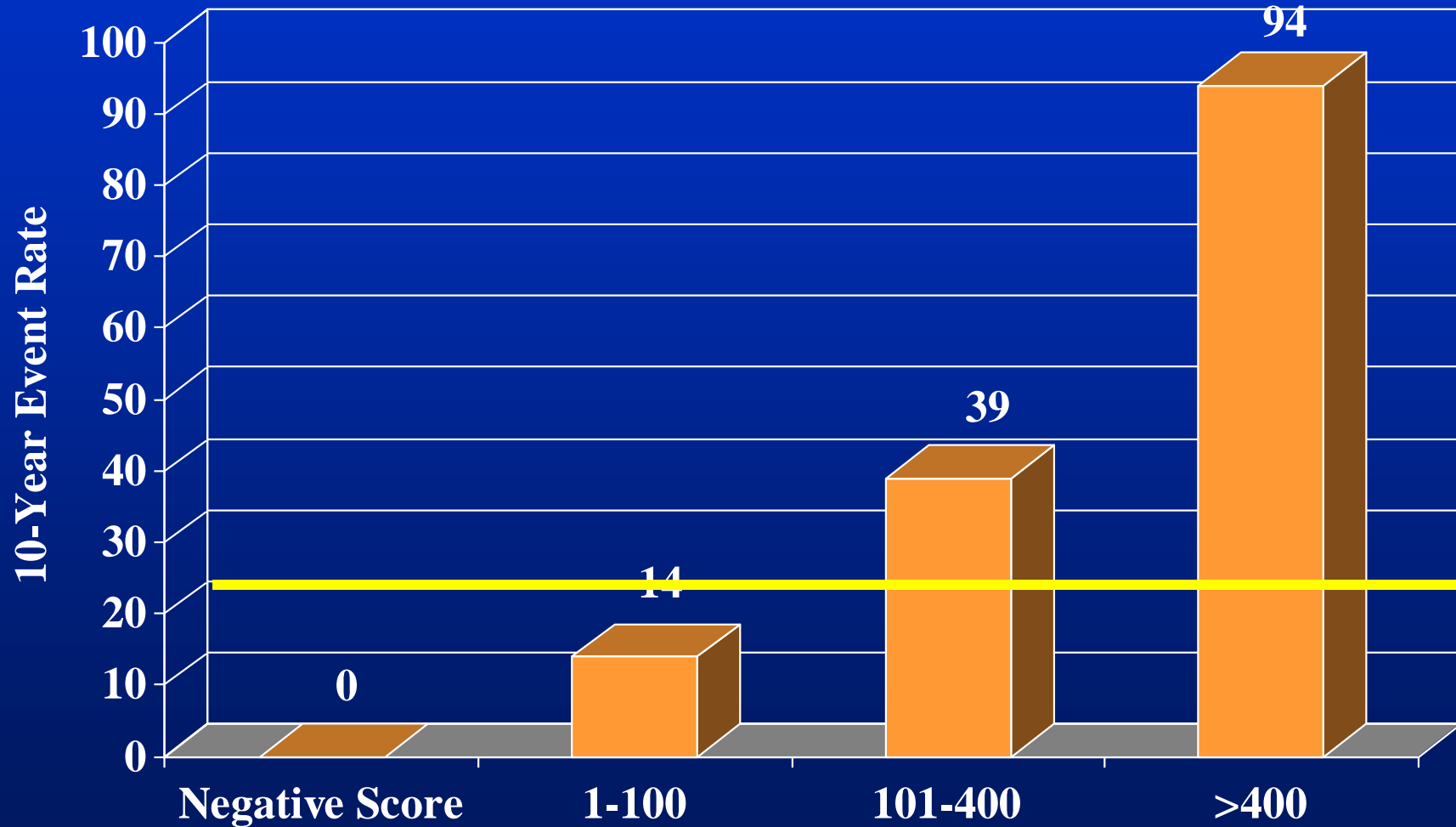
a) Factors intensifying ischaemia. Such factors include tachycardia, anaemia, hypotension, and hyperthyroidism.

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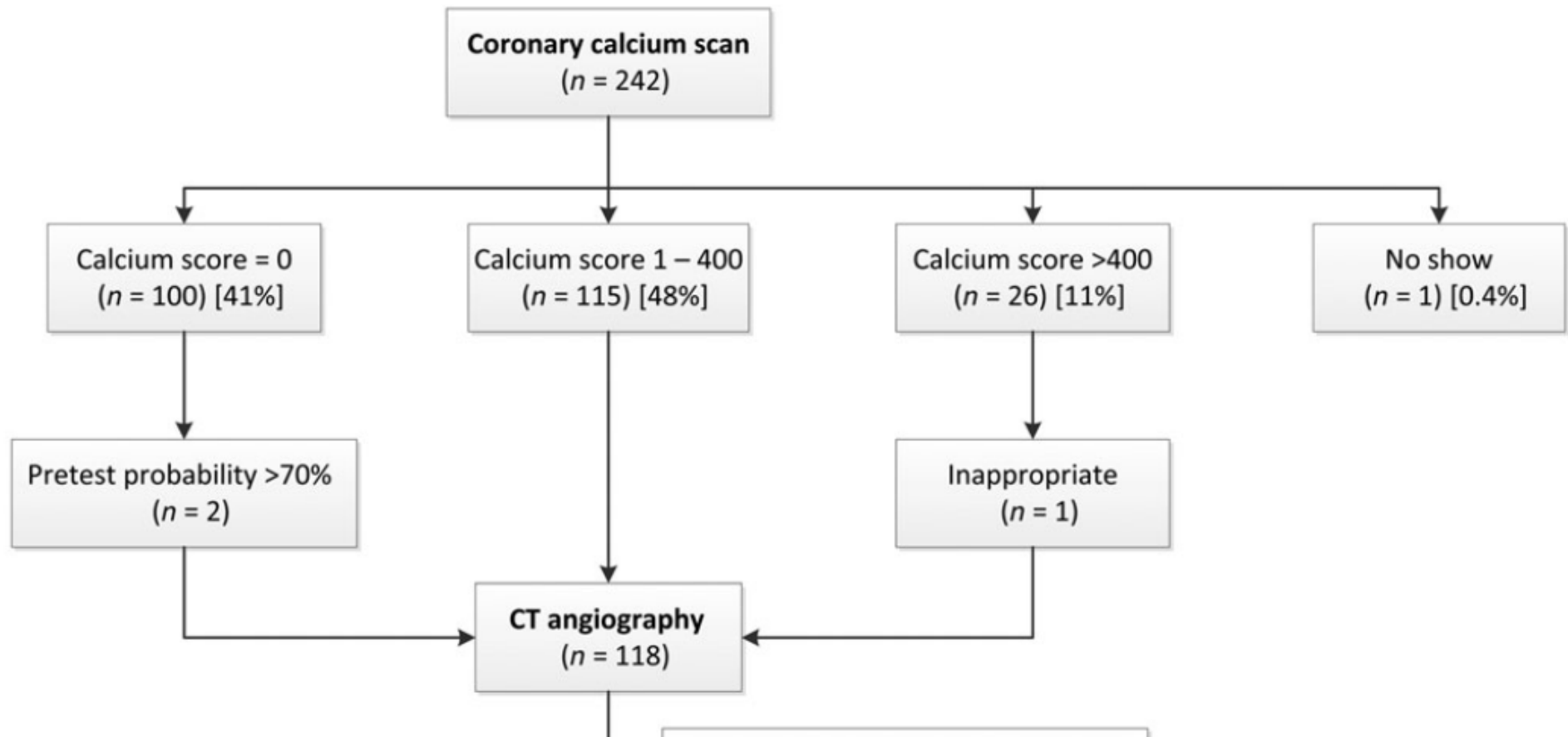
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Prognostic Significance of CAC in a Chest Pain Population

Georgiou, Budoff et al. JACC 7/01



Lubbers CRESCENT Trial EHI 2016



LUBBERS EHJ 2016

- In 98 patients (39%), CAD was ruled out based on a zero calcium score.
- During follow-up, none of these patients underwent further testing, and **no adverse events occurred**.
- Anginal symptoms were reported less frequently after a zero calcium scan, compared with when CAD was ruled out based on CT angiography or functional testing ($P = 0.042$).

Calcium is Very Sensitive for obstruction

- **INVASIVE ANGIOGRAPHY**

- Budoff et al (1851 patients) - 95%
- Haberl et al (1764 patients) - 99%
- Rumberger et al (213 patients) – 97%
- Knez et al (2111 patients) – 99%
- Becker 2007 (1347 patients) – 99%

CAC Scanning in the ED

- Negative predictive power is high (ie 99%)
- In the ED, it is appropriate to use CAC zero to exclude CAD, then add CTA sequentially

Questions?

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