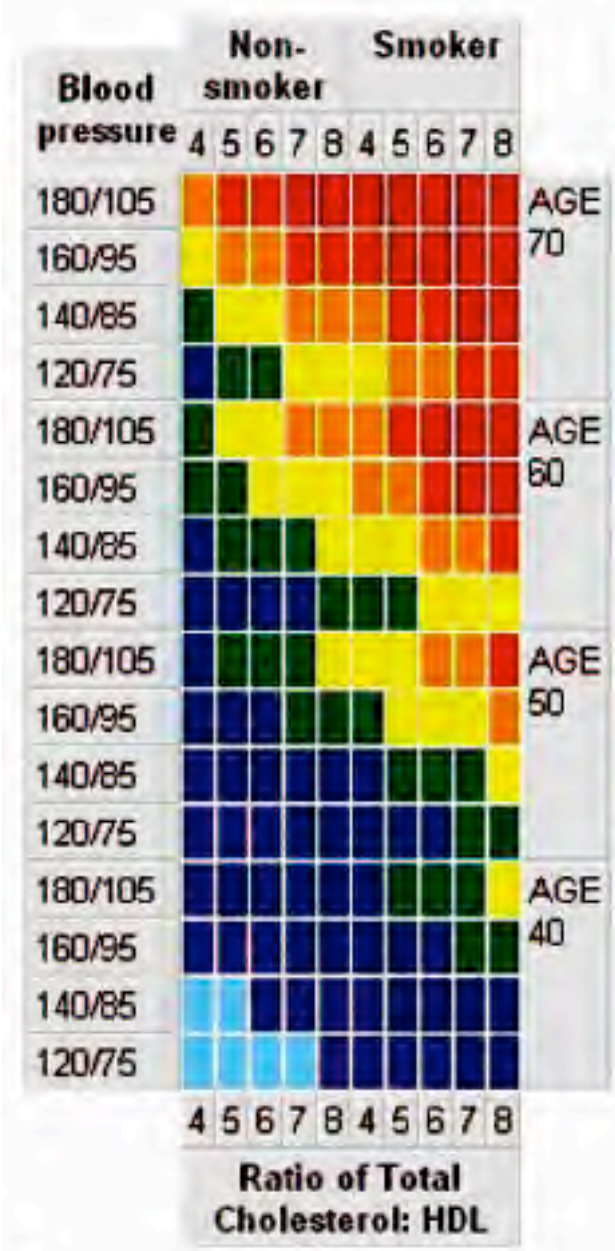
Comment explorer une douleur thoracique

Pascal Guéret
Hôpital Henri Mondor
Université Paris Est Créteil (UPEC)

Stratification du risque

- Caractéristiques cliniques de la douleur thoracique (typique, atypique, non angineuse)
- Age et sexe
- Facteurs de risque (HTA, tabagisme, dyslipémie, diabète)
- + ECG basal, antécédents d'infarctus (Score Duke)

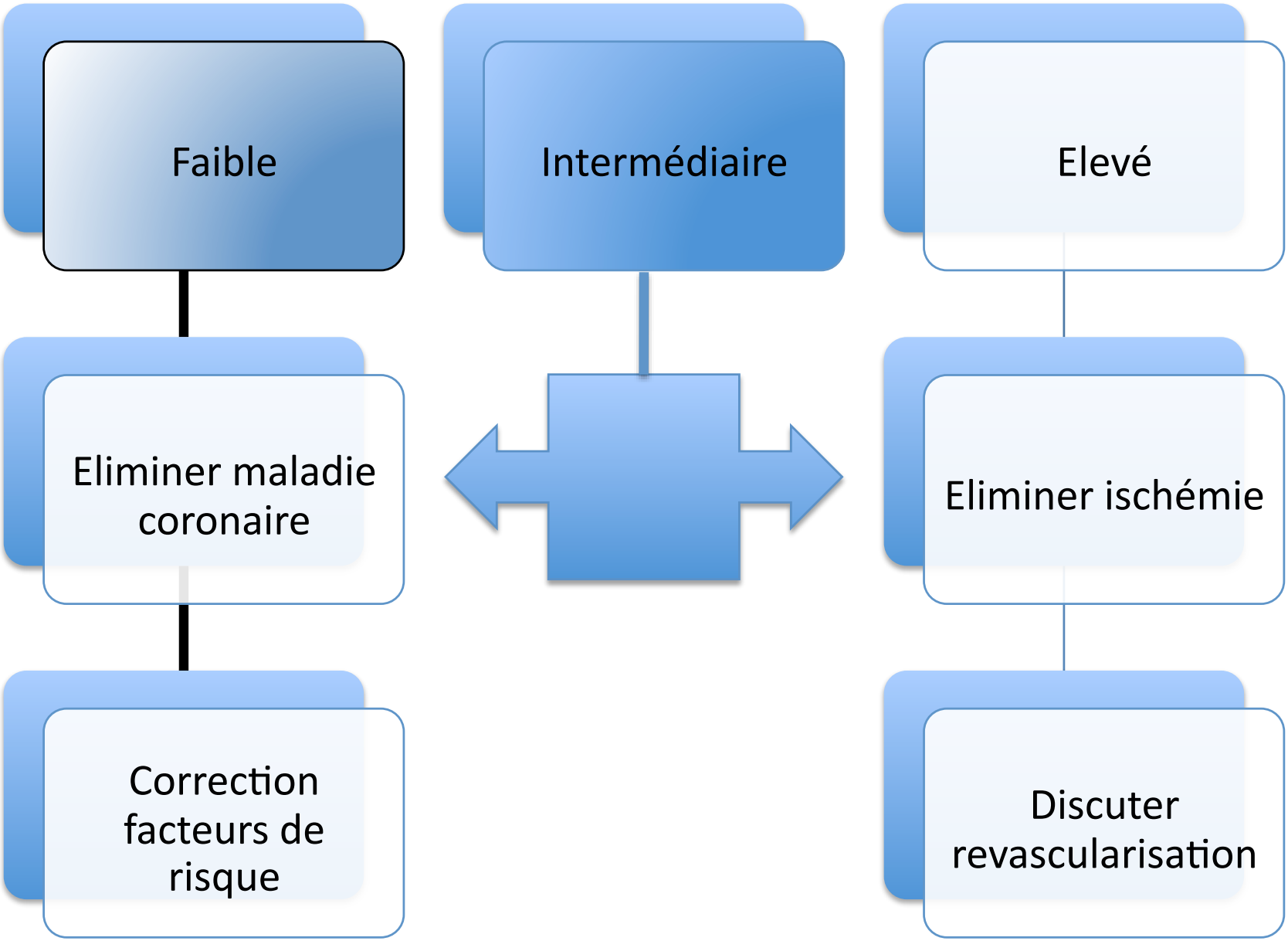


a.

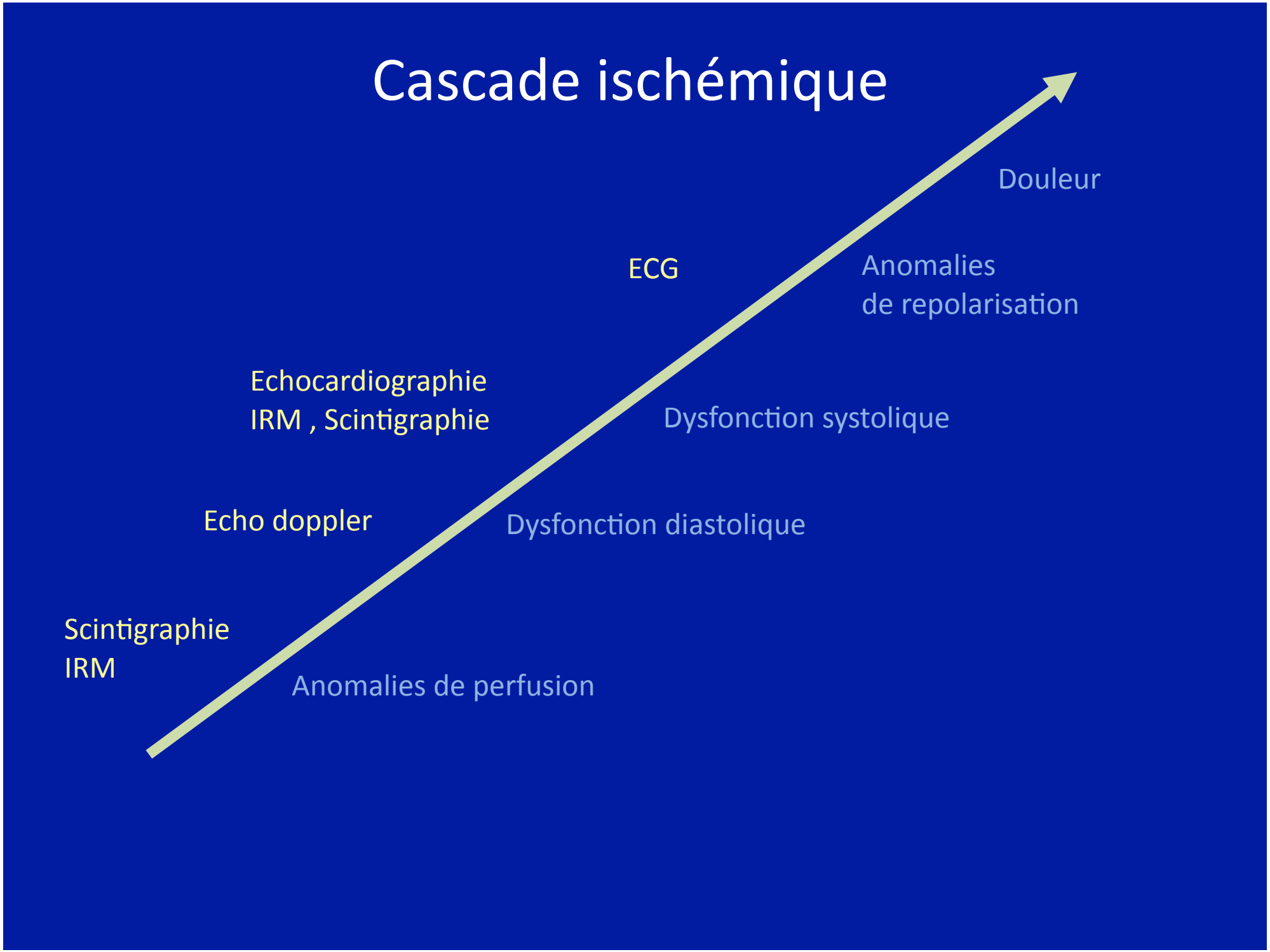
Risk level	
5 year CVD risk (non-fatal and fatal)	Mid-range value (range)
Very high	> 30%
Very high	27.5% (25-30%)
Very high	22.5% (20-25%)
High	17.5% (15-20%)
Moderate	12.5% (10-15%)
Mild	7.5% (5-10%)
Mild	2.75% (2.5-5%)
Mild	< 2.5%

b.

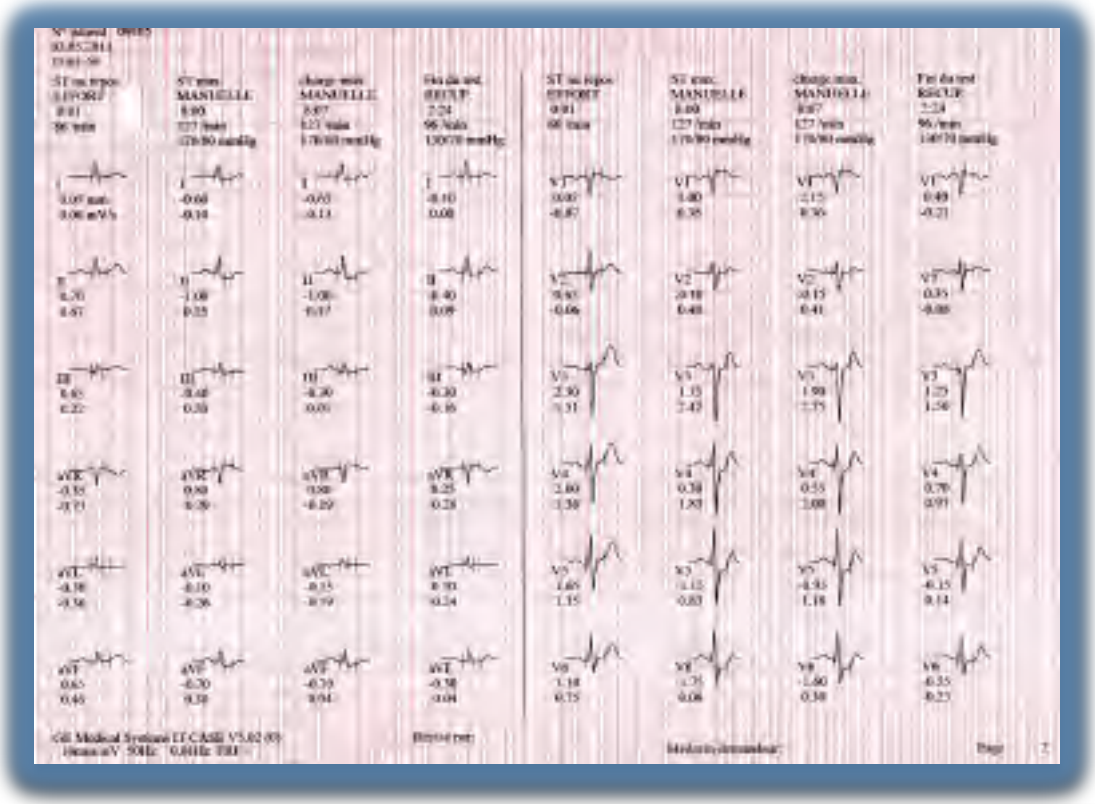
Stratification du risque de maladie coronaire



Cascade ischémique



Electrocardiogramme d'effort



Performance diagnostique
-variable selon critères retenus
-Sensibilité 68%*
-Spécificité 77%*

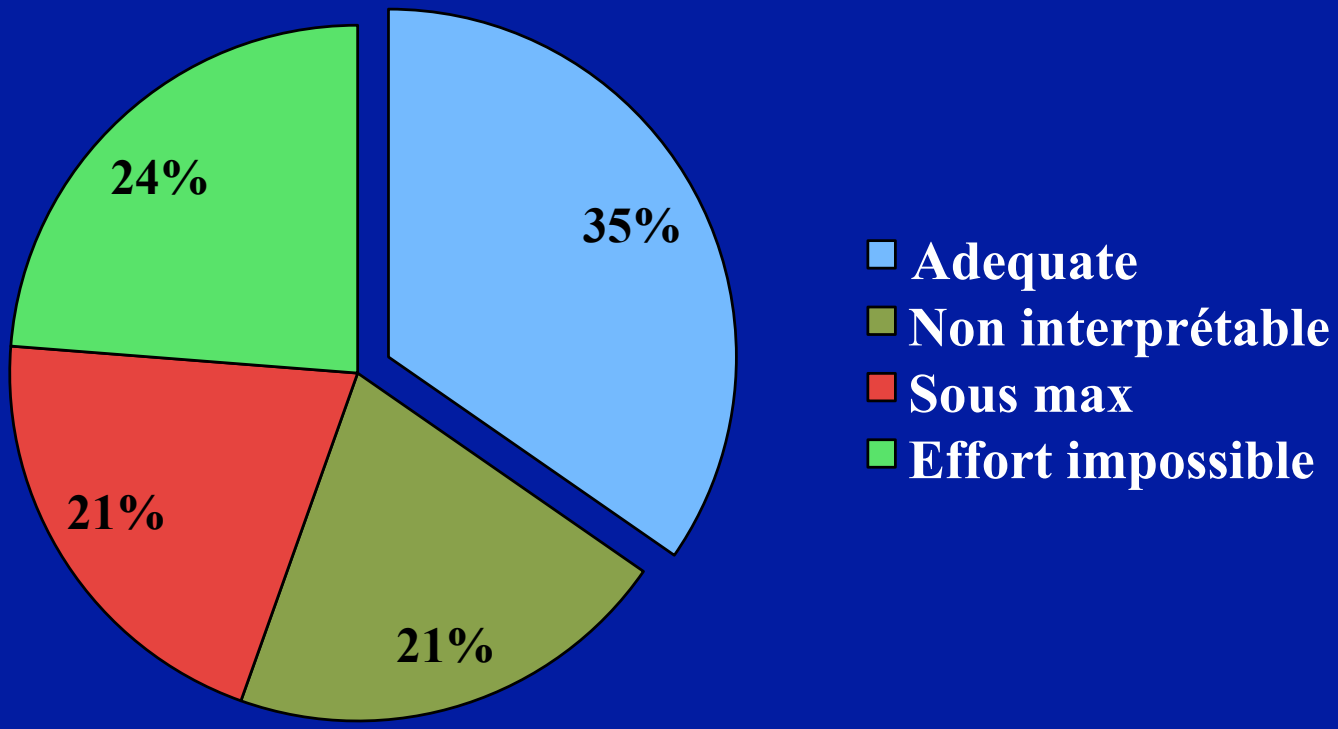
Limites
-Epreuve sous maximale
-Anomalies ECG :BBG,WPW,
-Faux positifs chez femmes
-Pas de valeur localisatrice
-Interprétation parfois difficile

* Méta analyse de Gianrossi. > 24 000 patients.Circulation 1989.

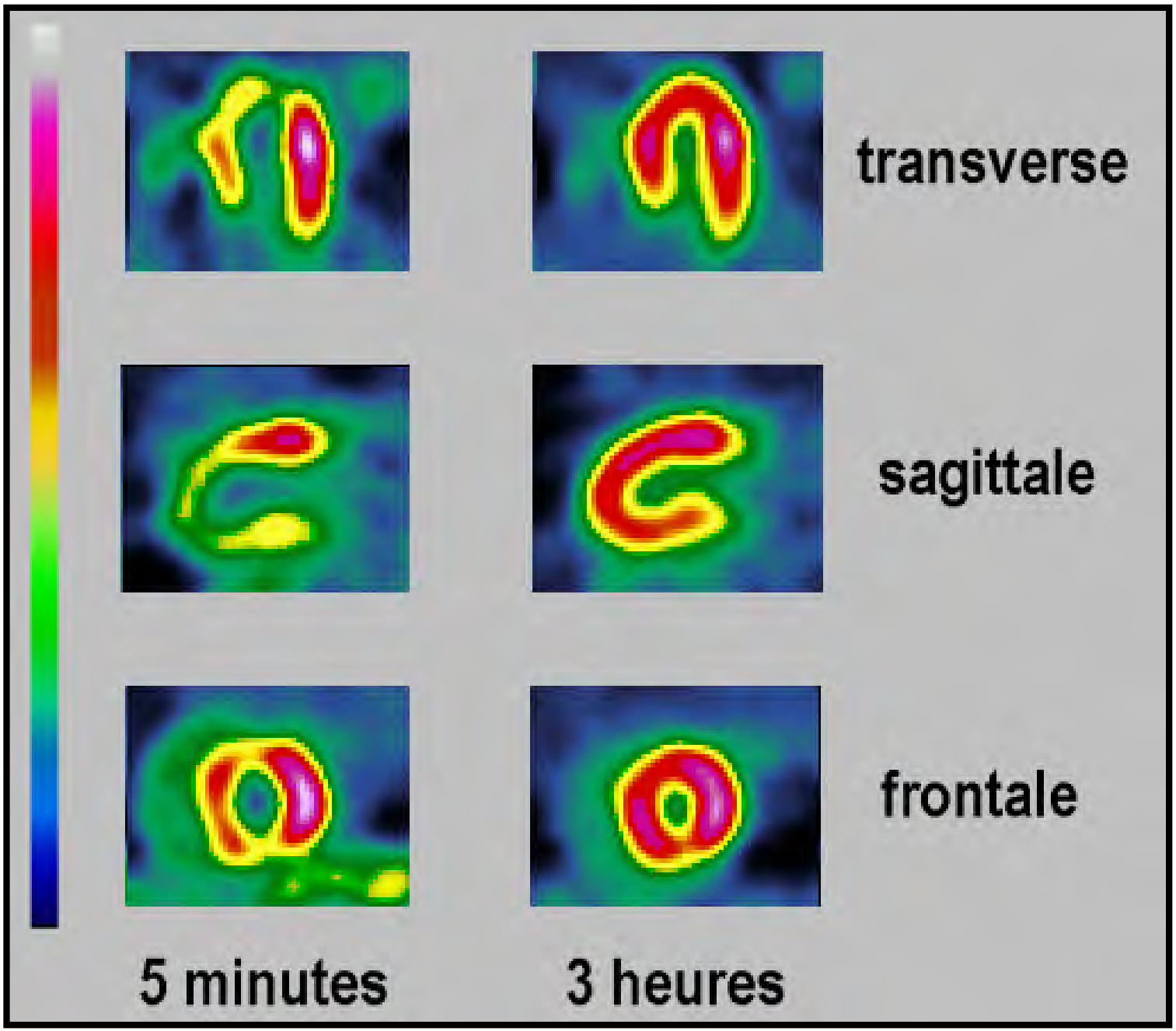
ECG d'EFFORT

Acta. Clin. Belg. 1992

1814 patients non sélectionnés



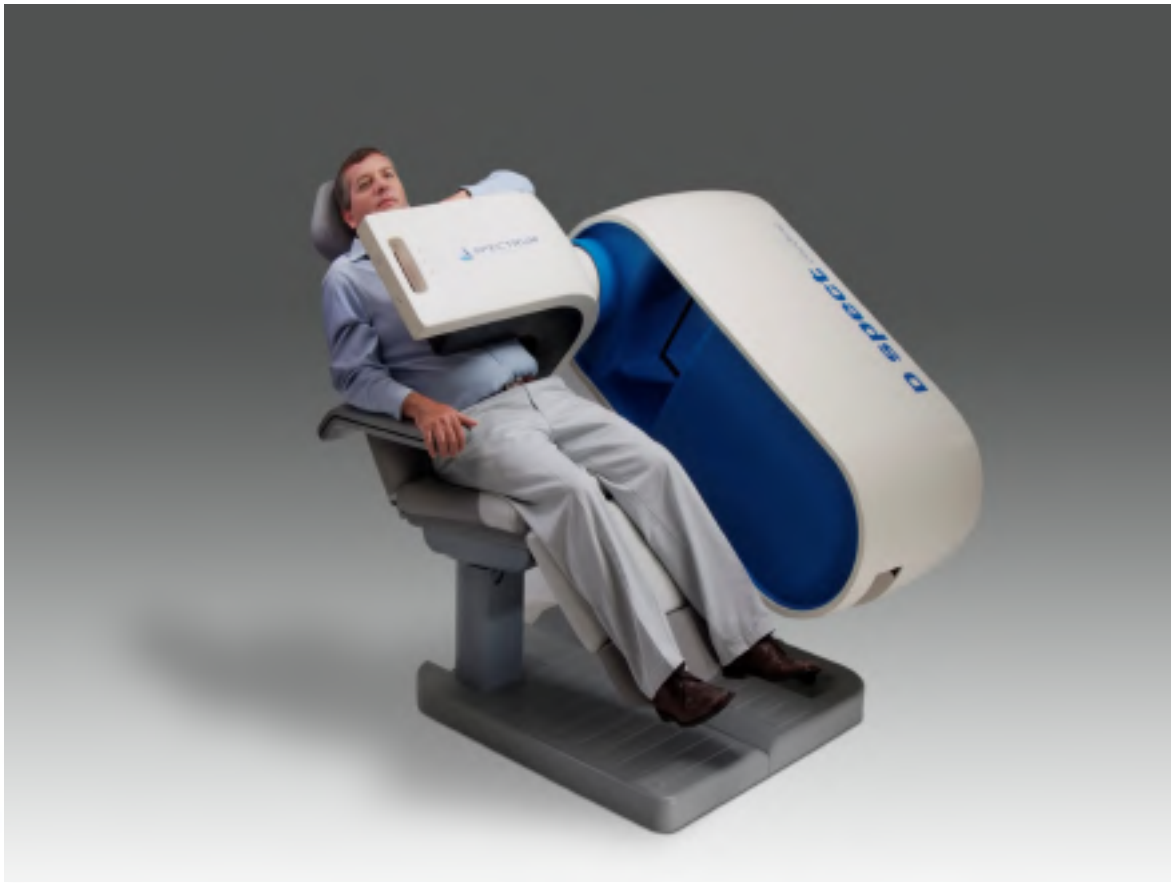
Scintigraphie myocardique d'effort



Courtesy J Rosso

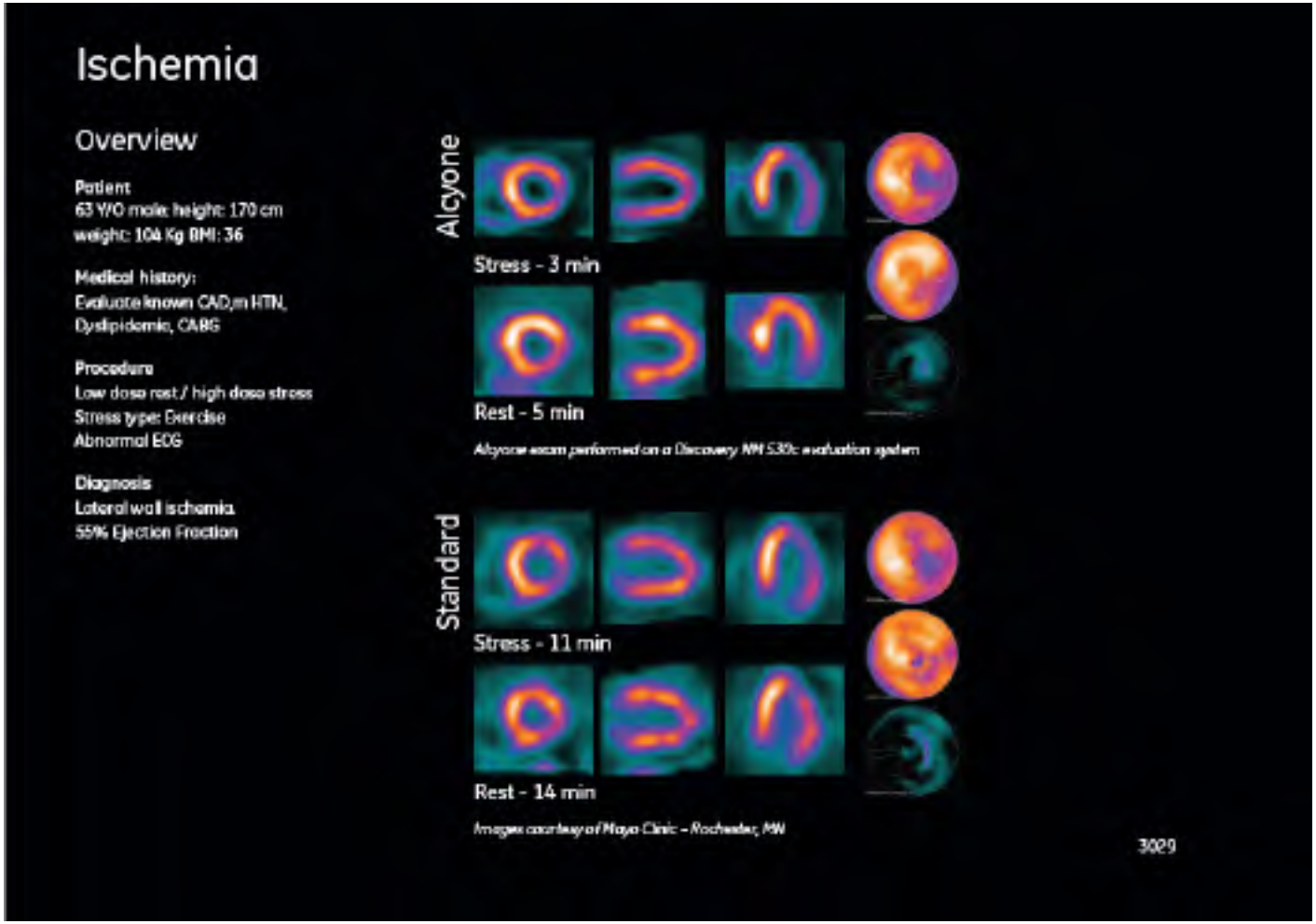
Gamma caméras

2 détecteurs 90°

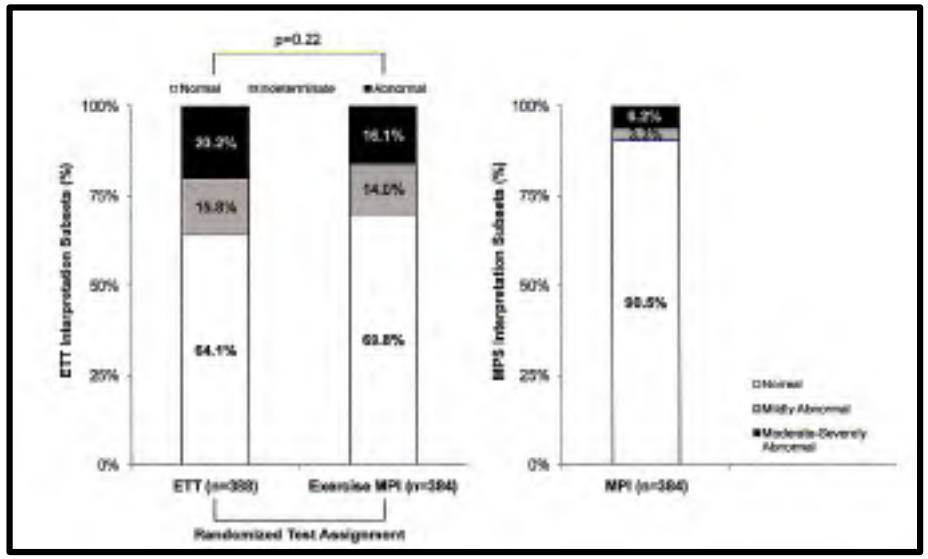


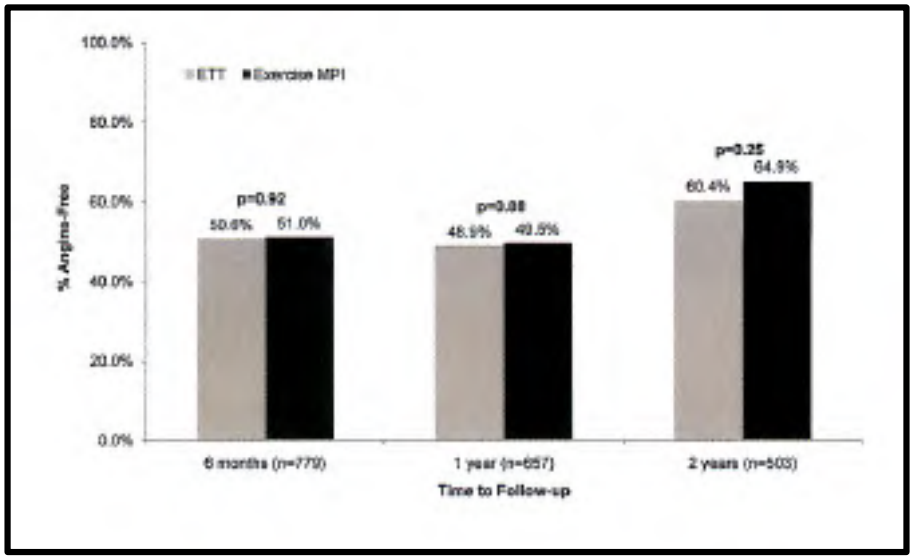
Multidétecteurs. Caméras CZT

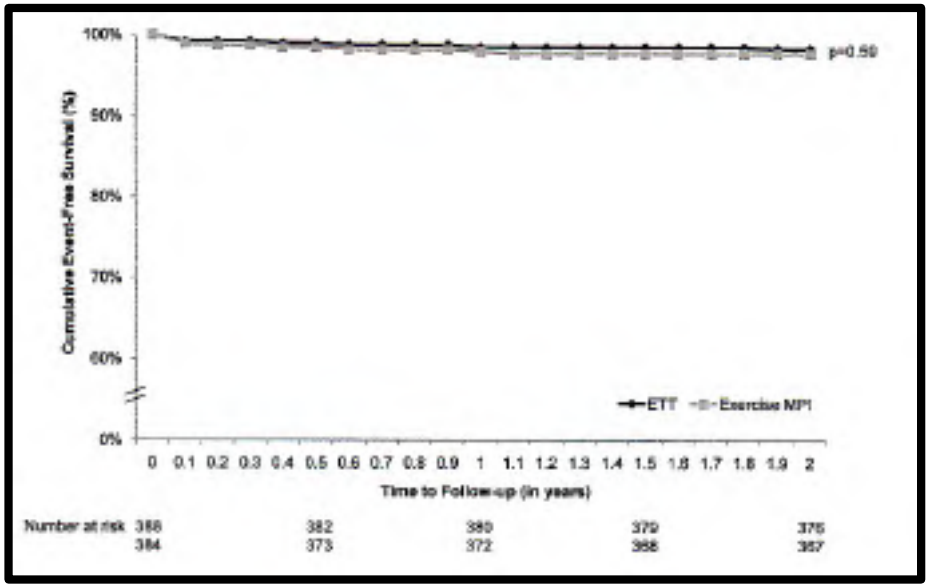
Ischémie myocardique

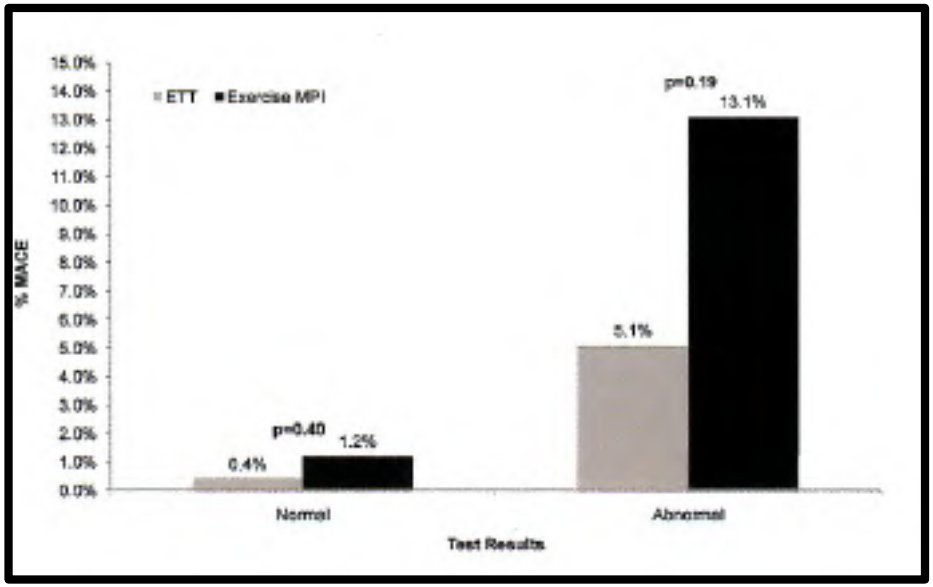


WOMEN trial : Exercise test vs SPECT









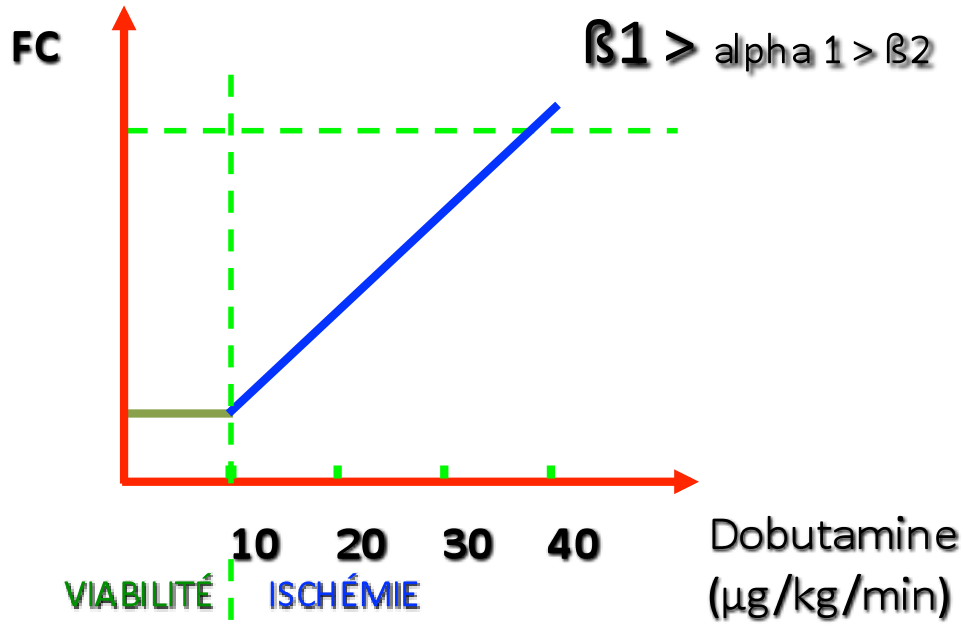
N= 824 low-risk patients

Shaw et al. Circulation 2011; 124 : 1239

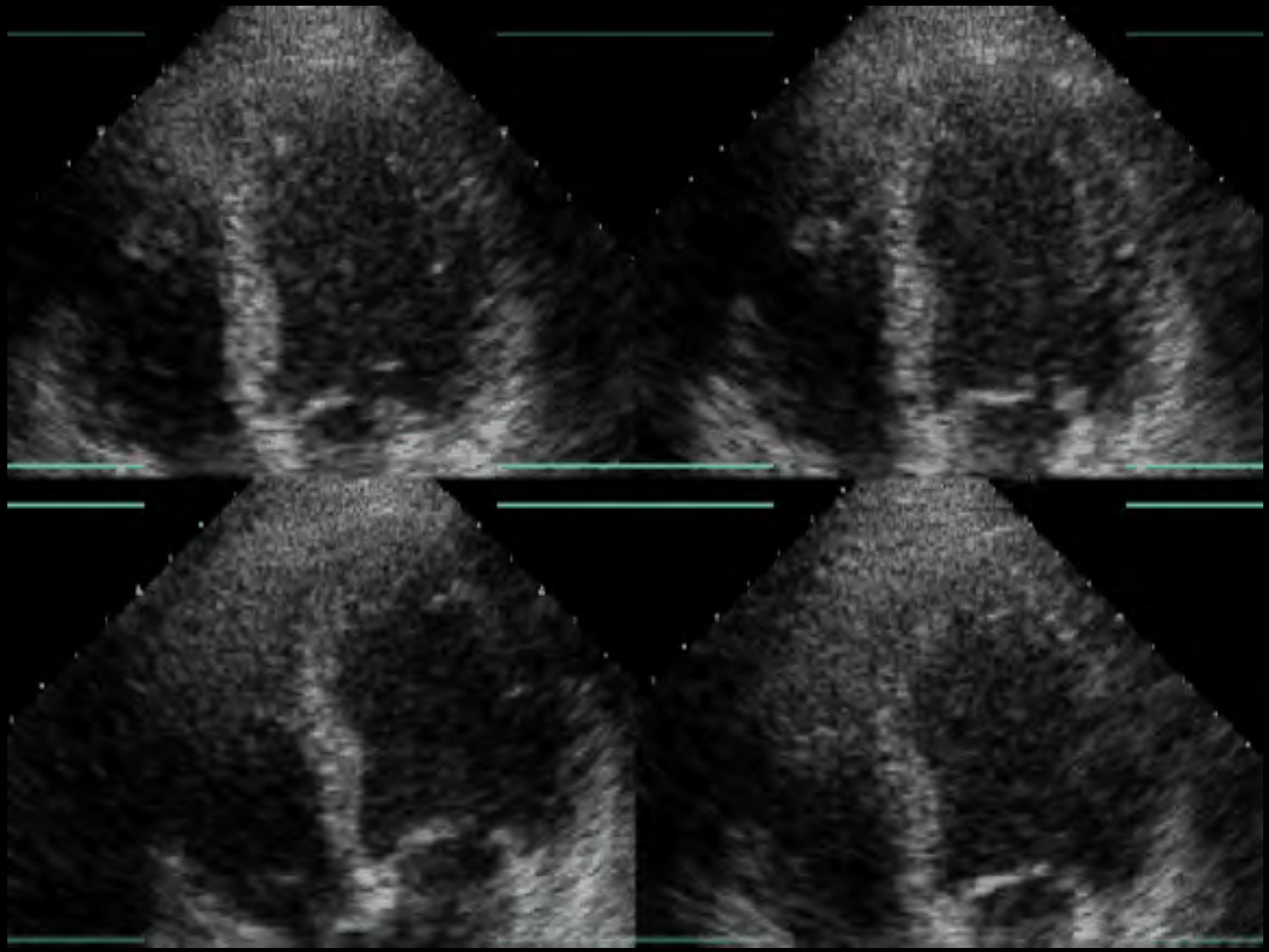
Echocardiographie de stress

Per effort

Echo dobutamine



Echocardiogramme d’effort



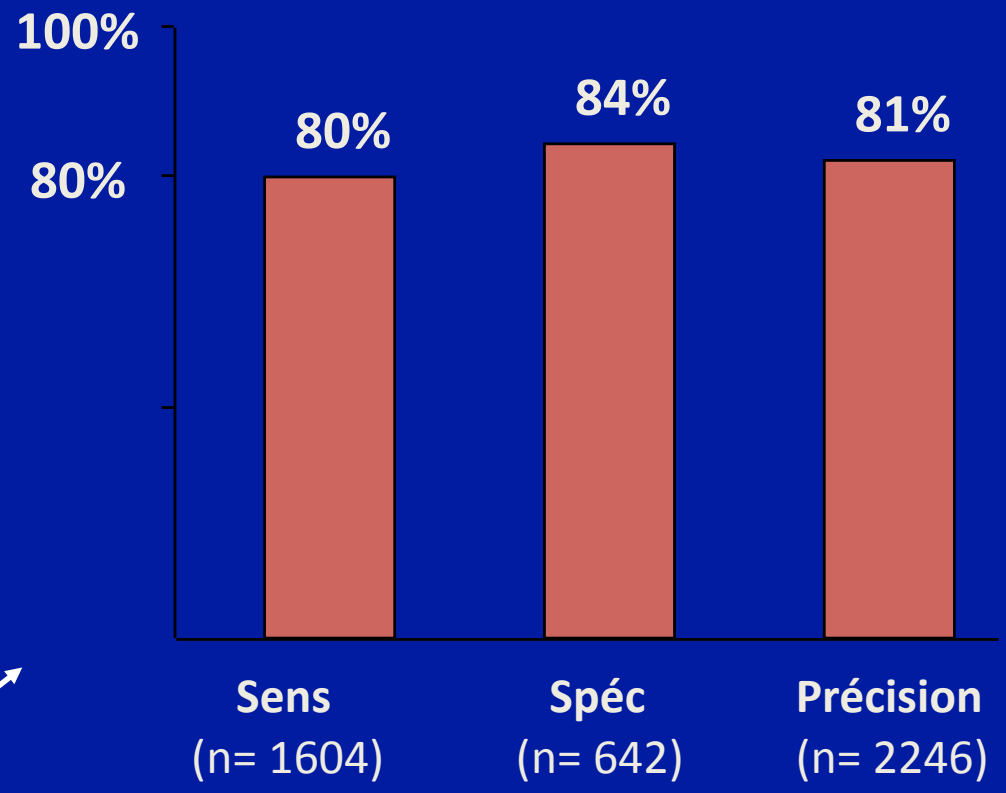
Echo-Dobutamine: valeur diagnostique pour détection des lésions coronaires

Geleijnse, JACC 1997

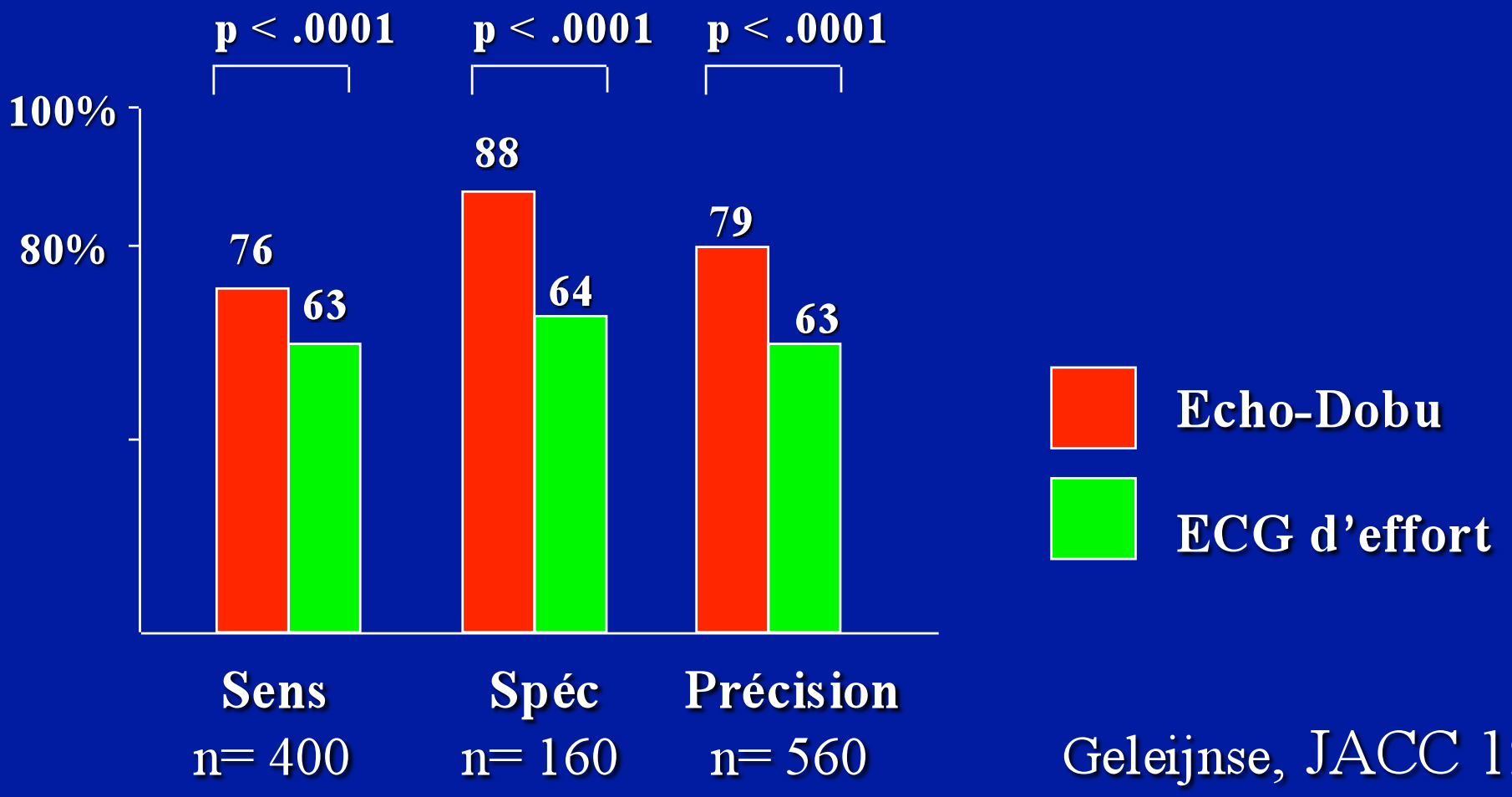
- Méta-analyse / 28 études

$$\text{Précision} = \frac{VP + VN}{\text{n total pts}}$$

Atropine: sensibilité ↗

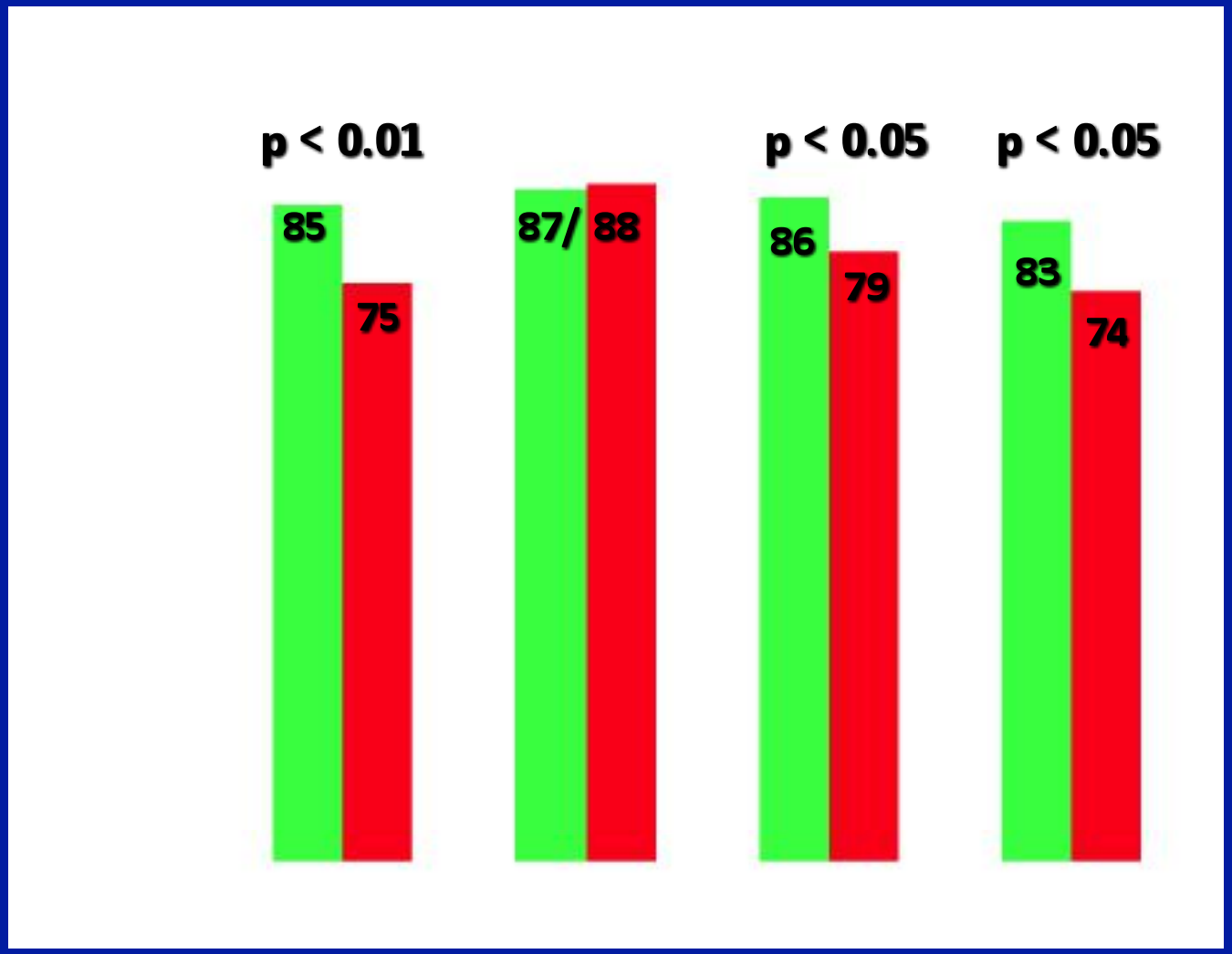


Détection de l'ischémie : Echo-Dobutamine *vs* ECG d'effort



Geleijnse, JACC 1997

Écho d'effort *vs* Écho-dobutamine



EFFORT

DOBU

Méta-analyse,
4 études, 334 pts

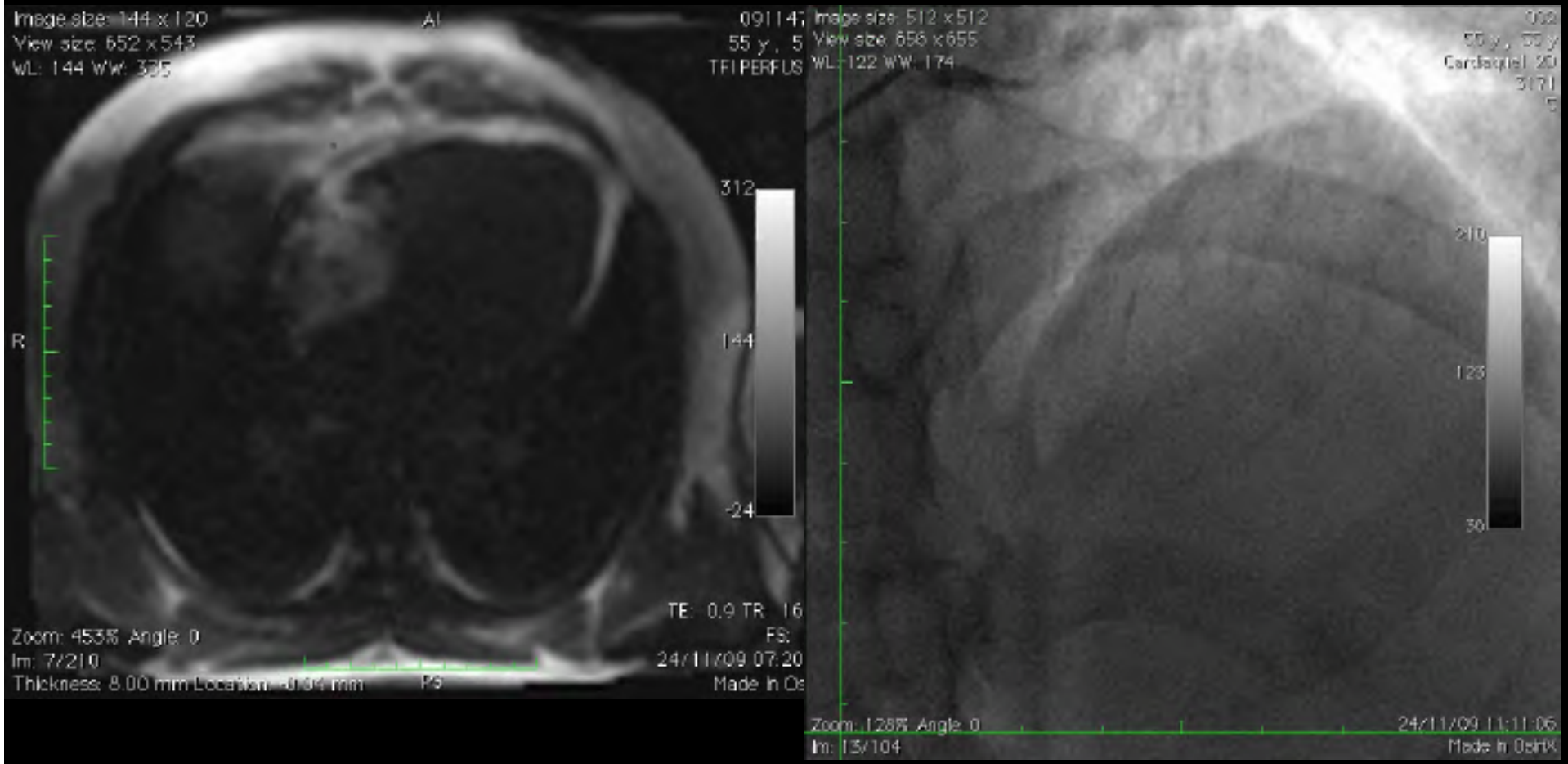
Geleijnse et al. JACC 1997;30:595

Performance diagnostique des tests non invasifs pour détecter l'ischémie myocardique

Test	Sensibilité	Specificité	Etudes	Patients
ECG Effort	68	77	132	24 074
SPECT	88 (73-98)	77 (53-96)	8	628
Echo Stress	76 (40-100)	88 (80-95)	10	1 174

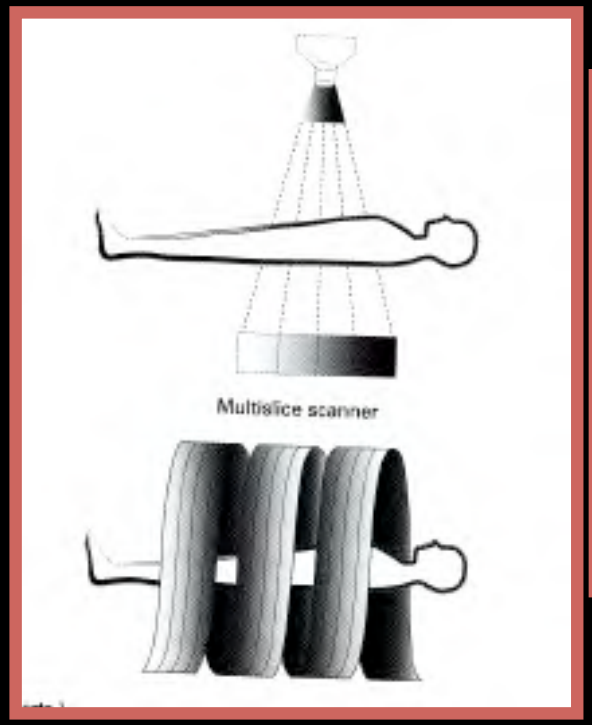
Lee TH ,Boucher CA. *N Eng J Med.* 2001; 344: 1840

First pass Stress MRI

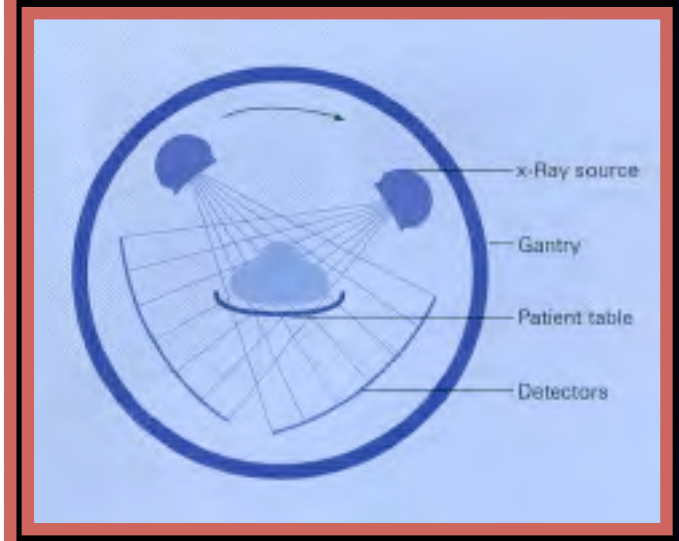


Courtesy J Garot

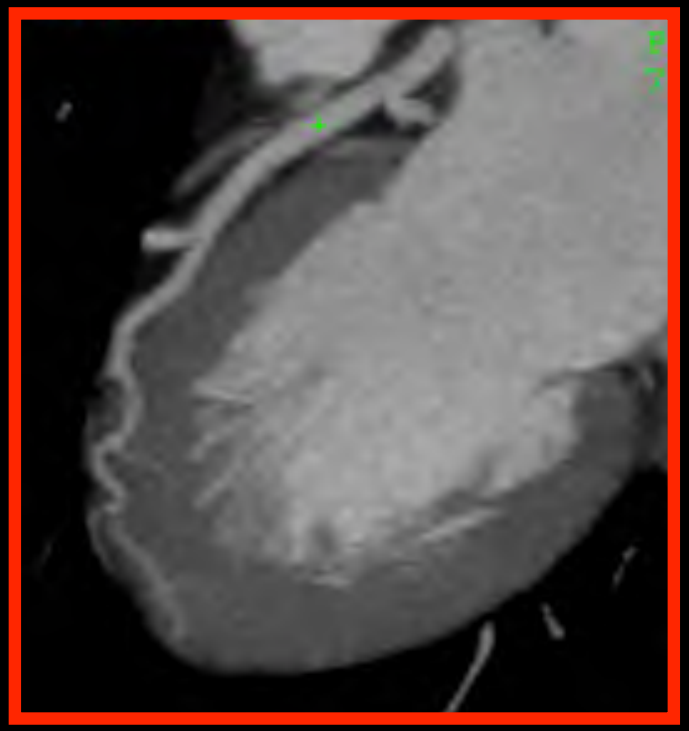
Scanner coronaire: améliorations technologiques

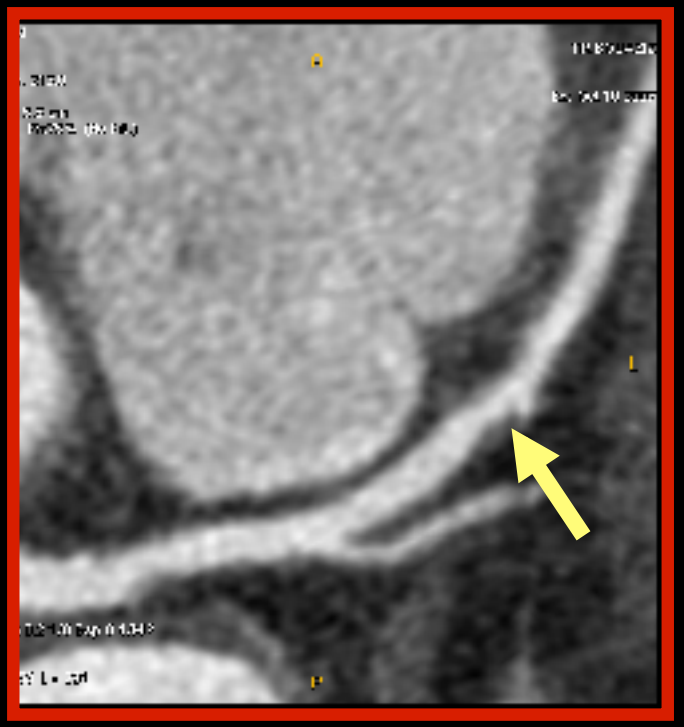


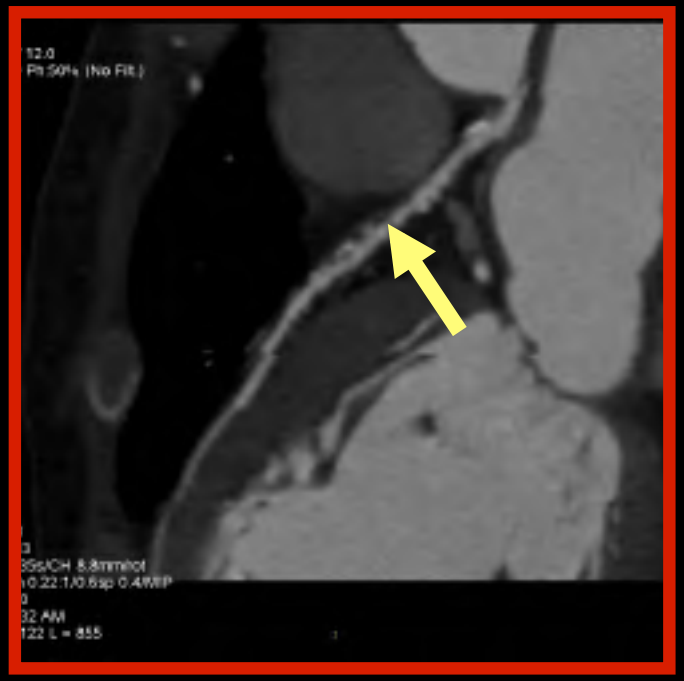
16-40-64 detecteurs



Double source CT



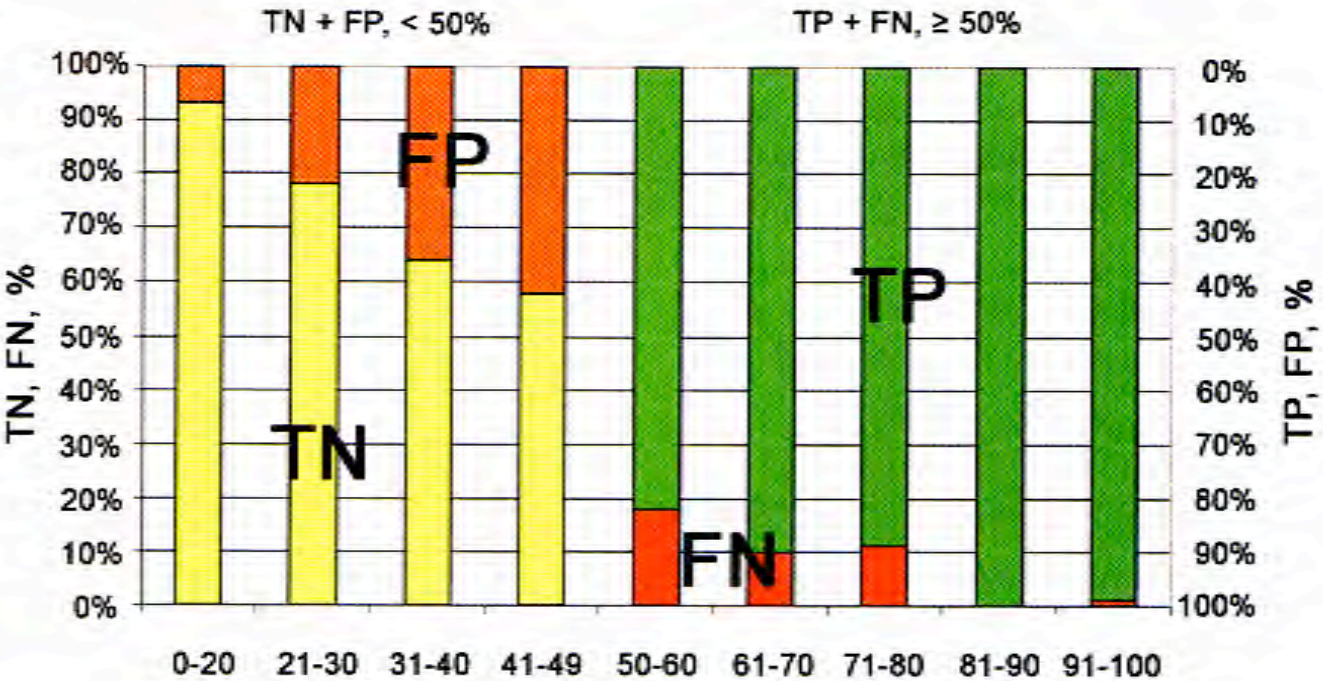




Etudes multicentriques

Study	n	Prevalence %	Ss %	Sp %	VPP %	VPN %	RV+	RV-	Sgts non évaluables
Accuracy	230	25	95	83	64	99	5.5	0.06	=adjacent prox
Core 64	291	56	85	90	91	83	8.5	0.17	normaux
Meijboom	360	68	99	64	86	97	2.7	0.02	stenosés
NIMISCAD	350	58	73	93	93	73			exclus
Evascan	1062	52	91	52	67	84	1.9	0.17	stenosés

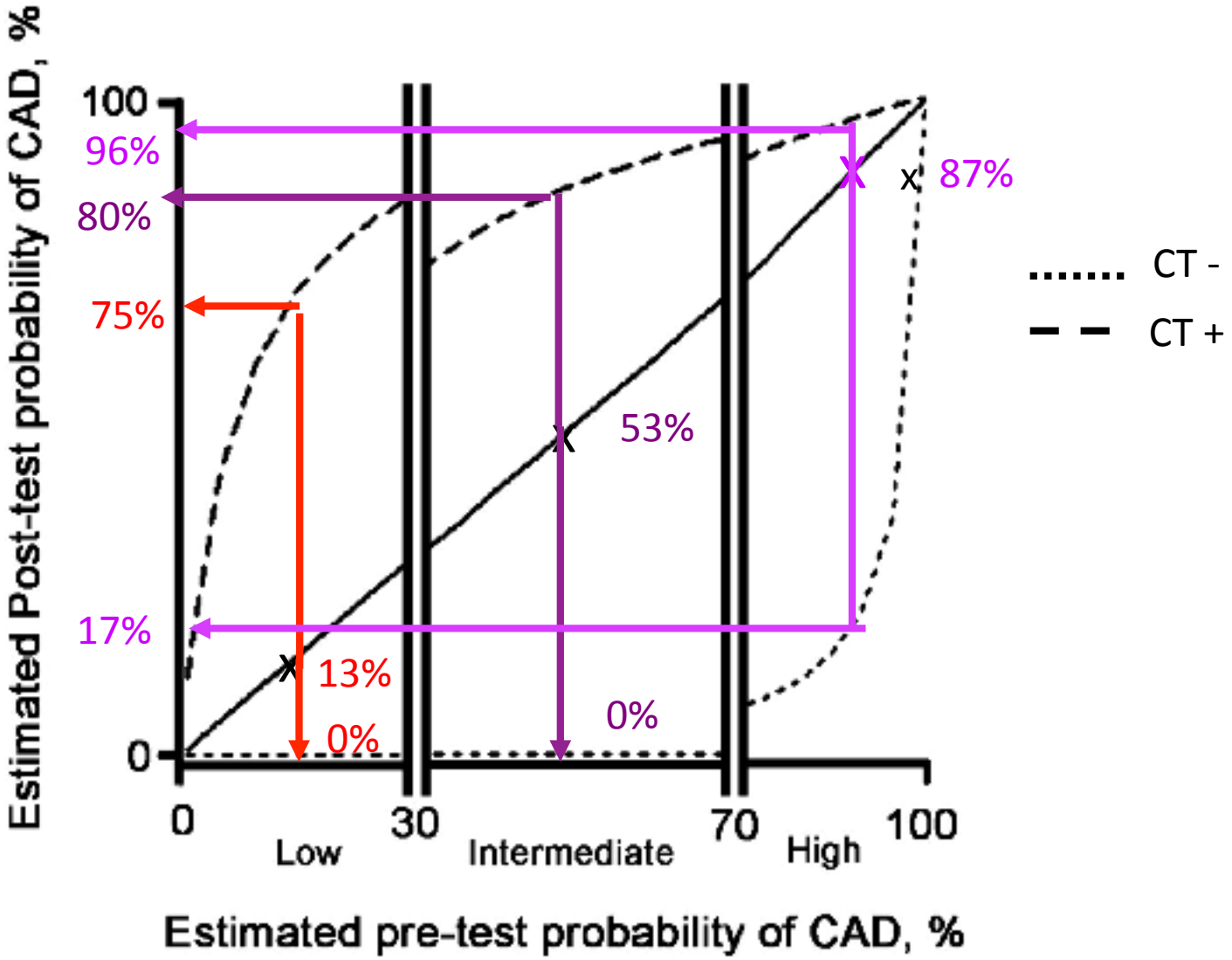
Diagnostic performance of CTCA per segmental analysis



FP	286	34	77	74	180	102	50	10	80	TP
TN	3993	116	137	99	41	11	7	0	1	FN

Meijboom. JACC 2008; 52 : 2135-44

Influence of 64 MDCT CA on probability of CAD as function of pre-test probability



Meijboom. JACC 2007; 50 : 1469-75

Société Européenne de Cardiologie 2006

Test	Niveau de recommandations
ECG évaluation initiale	1 C
ECG d'effort#	1 B
Effort + imagerie (écho ou scinti)*	1 B
Stress pharmacologique$	1 B
Scanner coronaire	2b C

: ne figure plus dans les recommandations NICE 2010

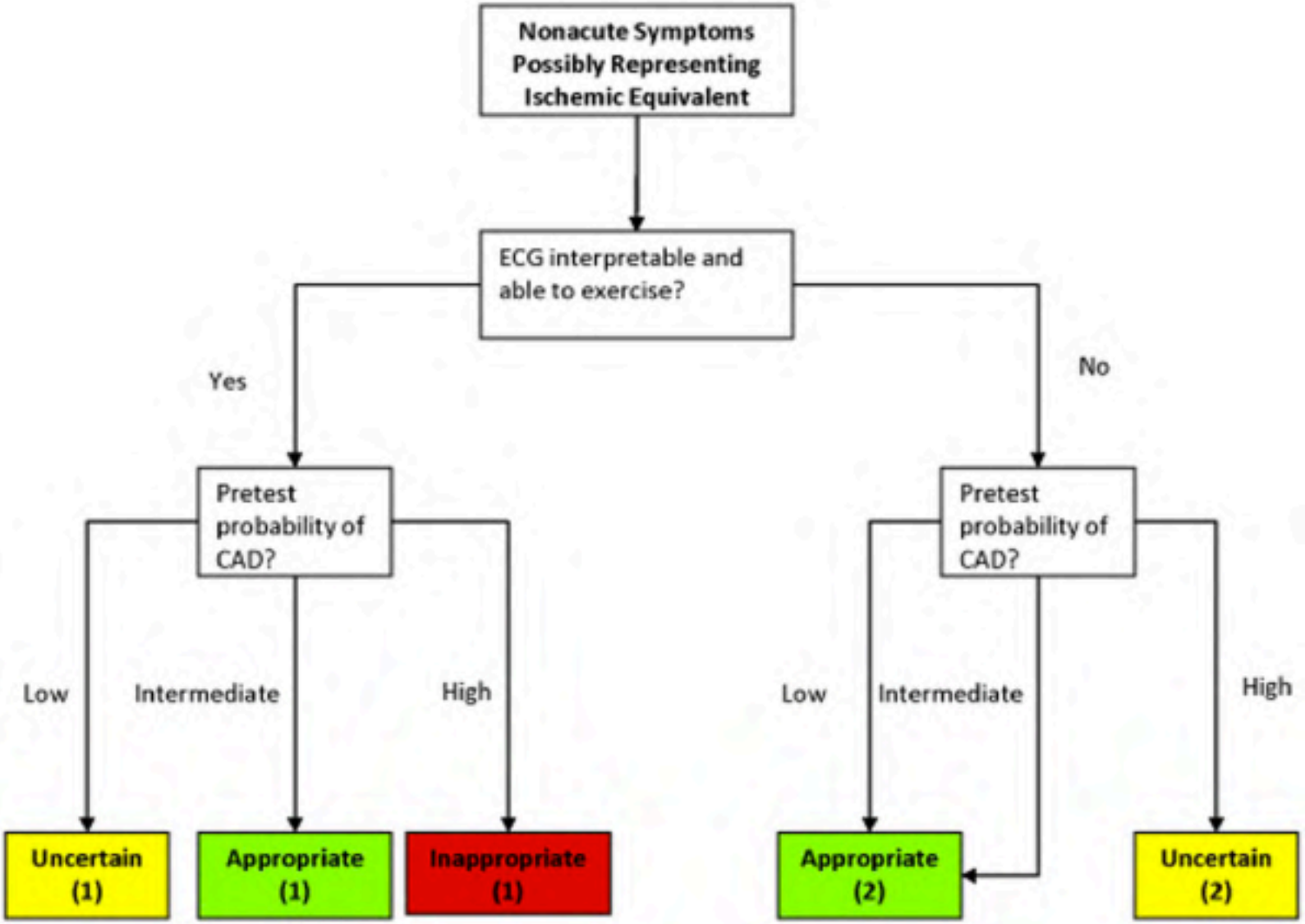
*Si ECG d'effort impossible ou ininterprétable ou litigieux

$: si effort + imagerie impossible ou douteux car exercice physique sous maximal

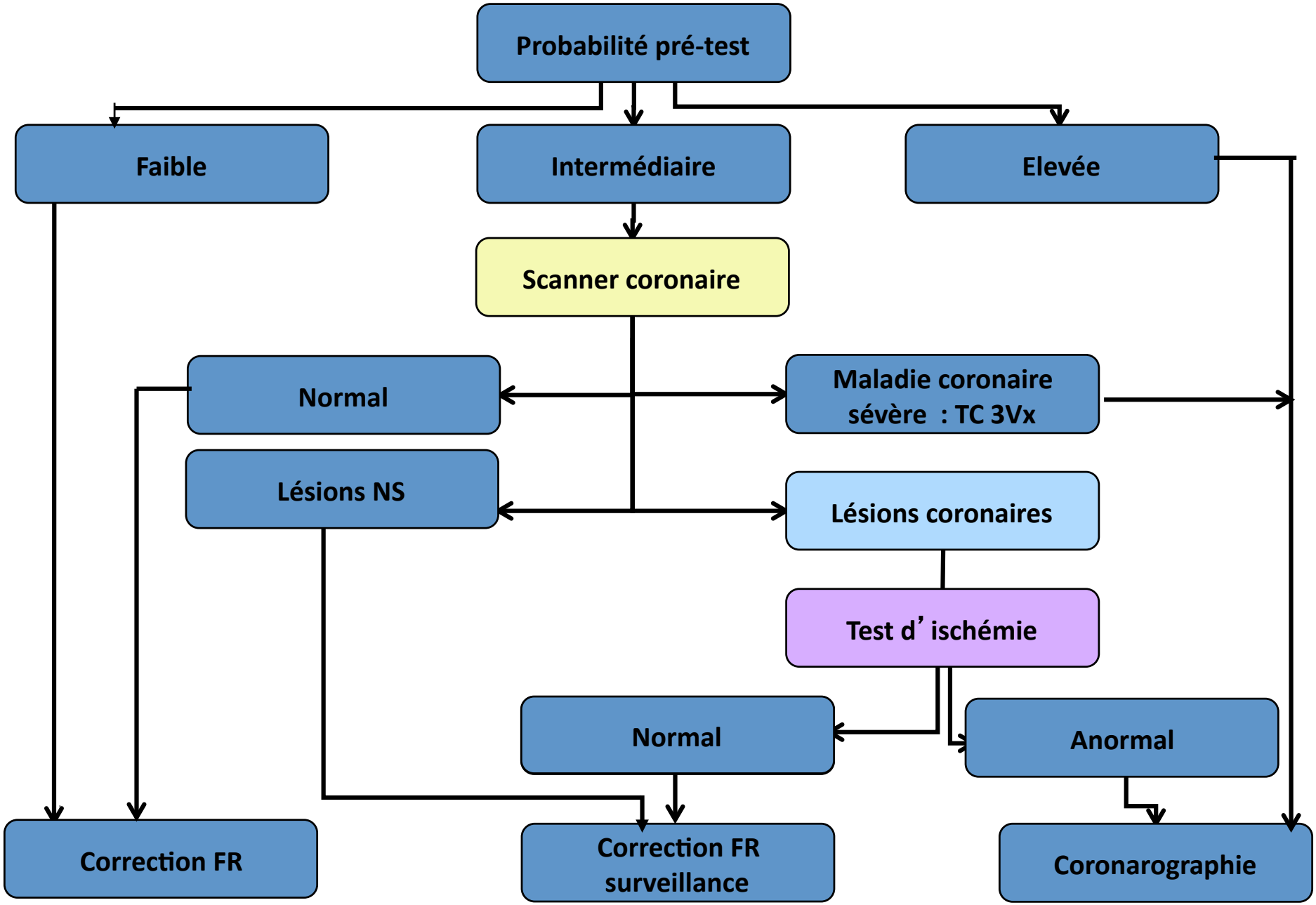
ESC guidelines 2010 : imaging testing for CAD

	Asymptomatic		**Symptomatic**		**Prognostic value of positive test**	**Prognostic value of negative test**
			Pre test likelihood			
		Low	intermediate	high		
Anatomical test						
ICA	III A	III A	IIb A	I A	I A	I A
CT	III B	IIb B	IIa B	III B	IIb B	IIa B
MRI	III B	III B	III B	III B	III C	III C
Functional test						
Stress echo	III A	III A	I A	III A	I A	I A
Nuclear	III A	III A	I A	III A	I A	I A
Stress MRI	III B	III C	IIa B	III B	IIa B	IIa B
PET	III B	III C	IIa B	III B	IIa B	IIa B

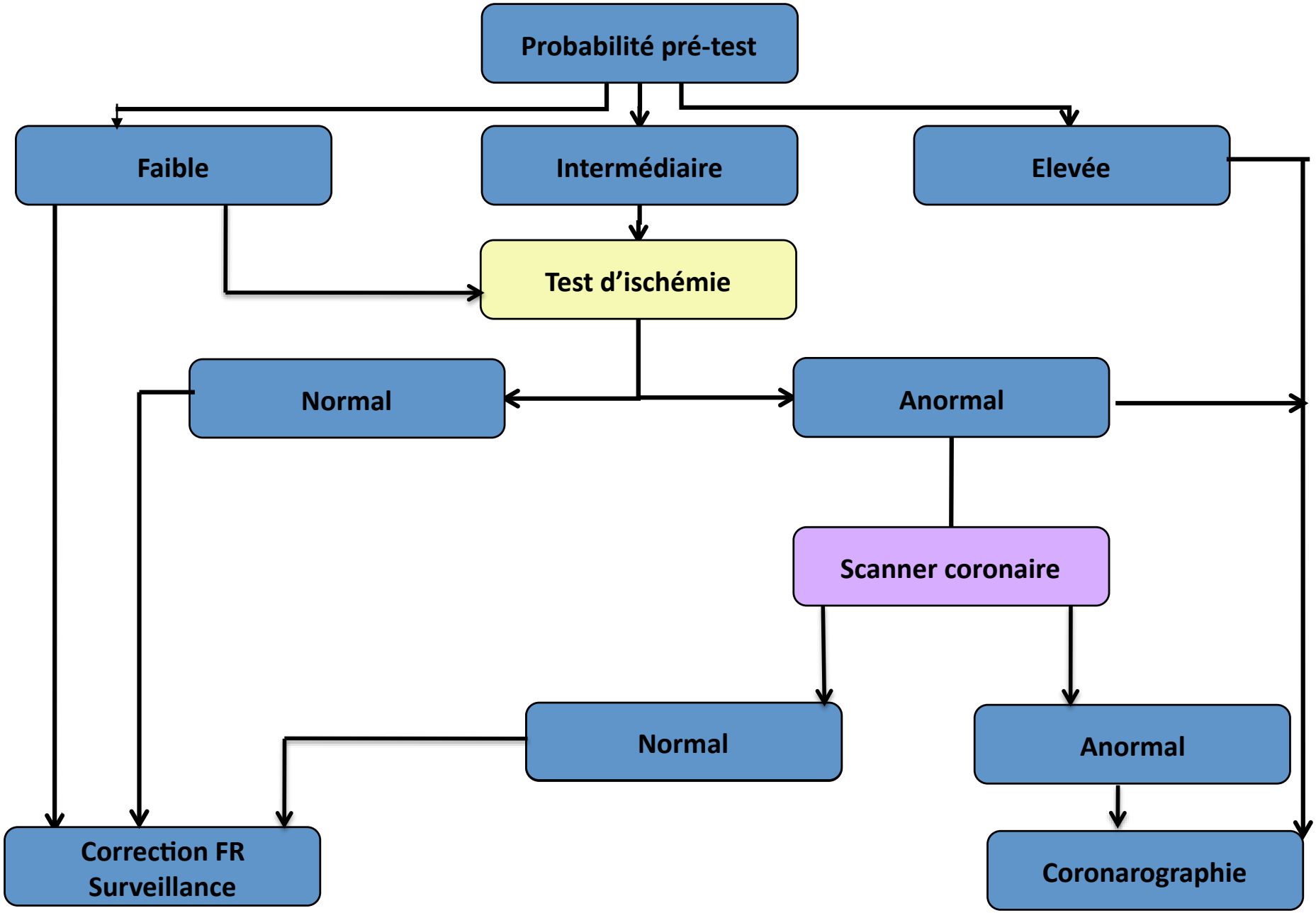
Detection of CAD in symptomatic stable patients without kown heart disease



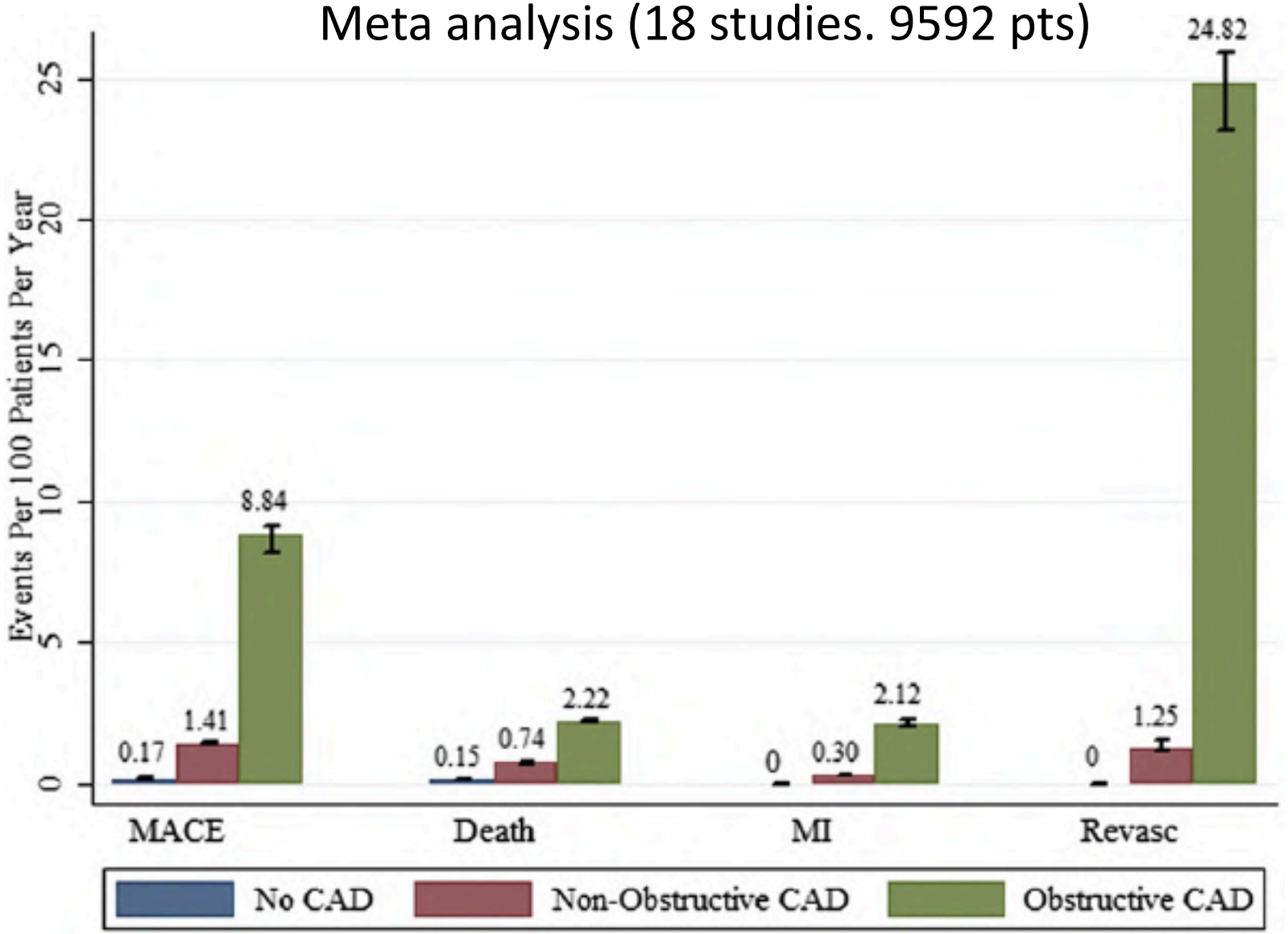
ACC/AHA Appropiate use criteria for cardiac CT. Circulation Nov 2010



D'après J. Schuijf and J. Bax. Heart 2008

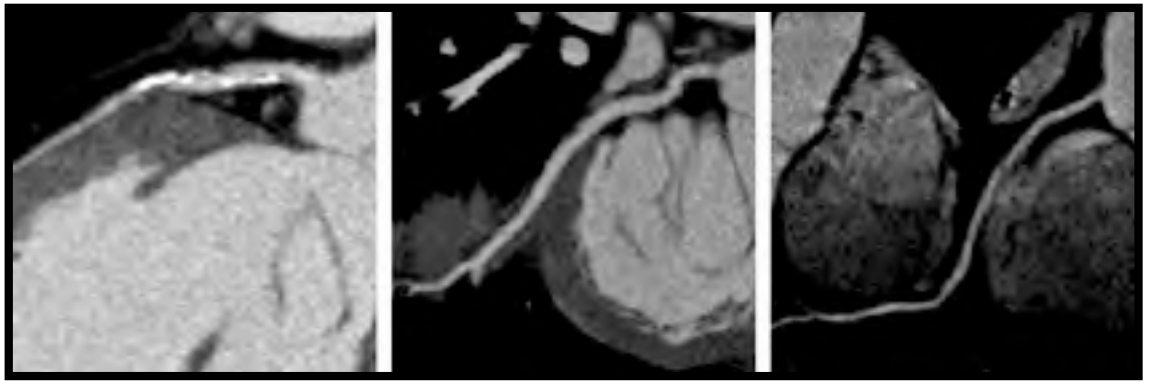

Probabilité pré-test
Faible
Intermédiaire
Elevée
Test d'ischémie
Normal
Anormal
Scanner coronaire
Normal
Anormal
Correction FR
Surveillance
Coronarographie

Annualized event rates stratified by CT-CA diagnosis of CAD
Meta analysis (18 studies. 9592 pts)



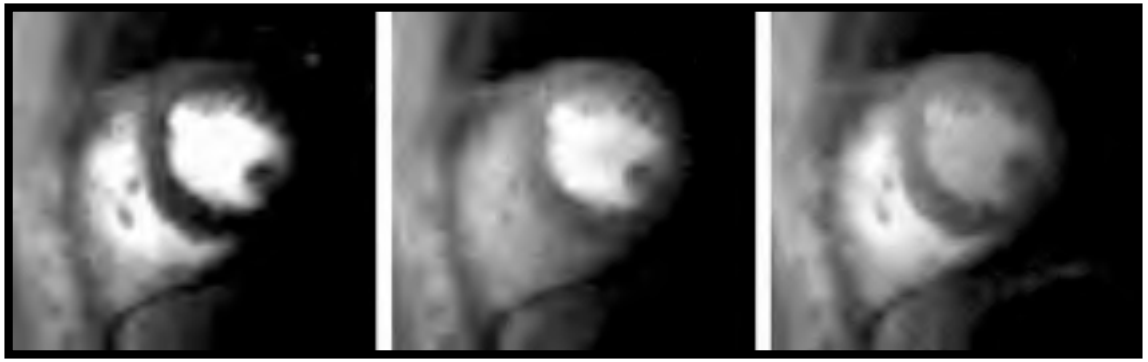
Hulten et al. J. Am. Coll. Cardiol Jan 2011

CT-CA

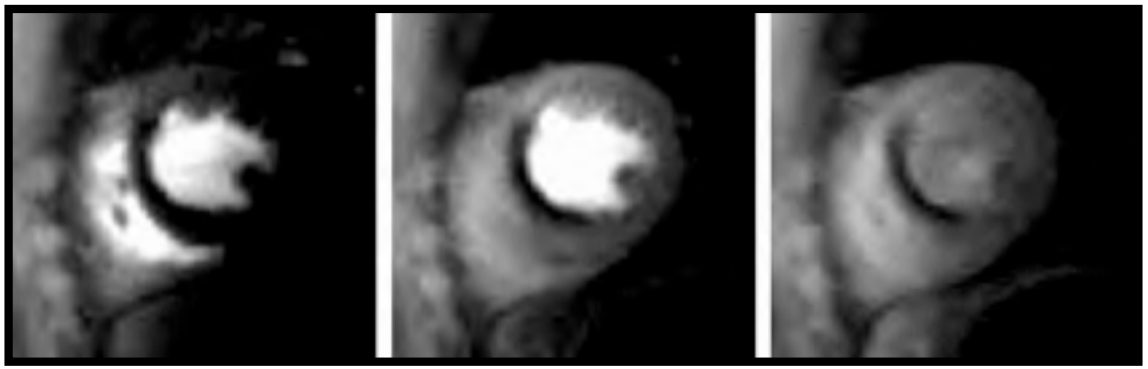


LAD CX RCA

MRI rest

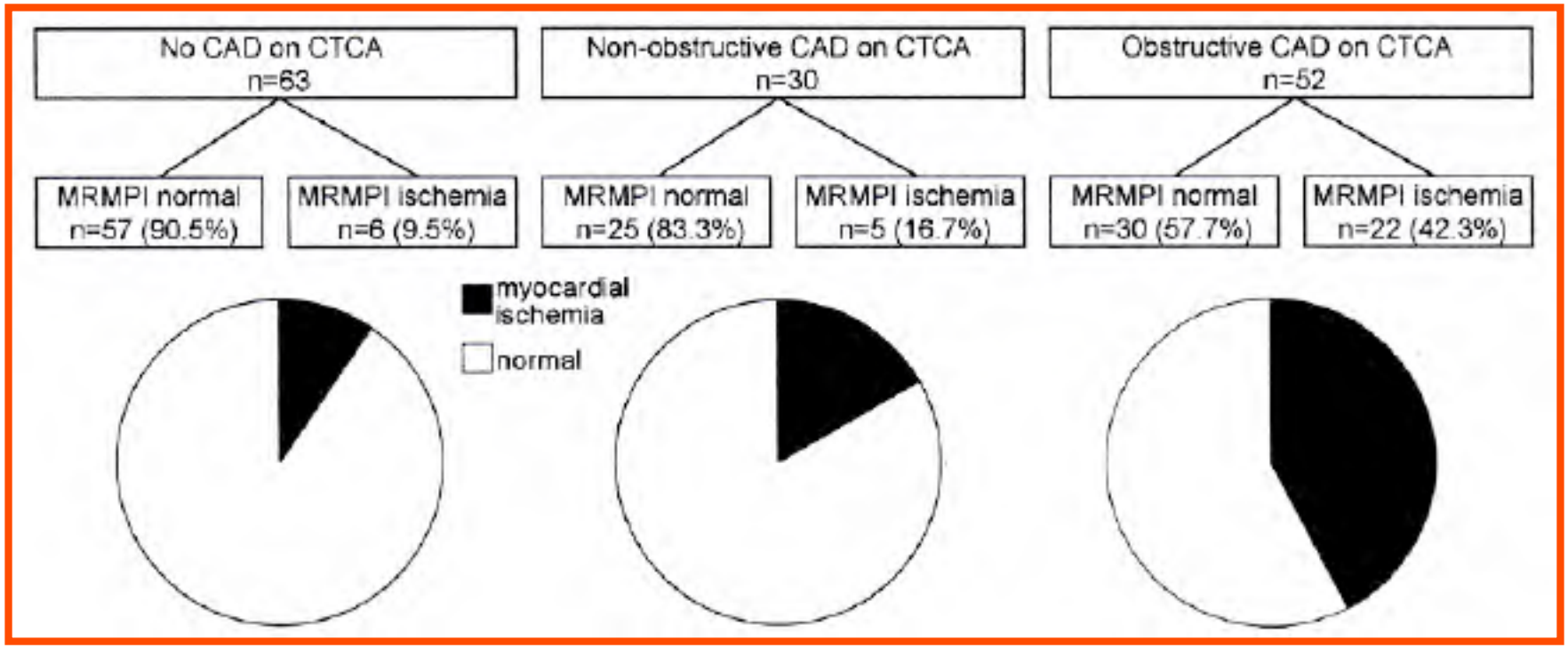


MRI stress
(Adenosin)



Groothuis. Radiology. Feb 2010

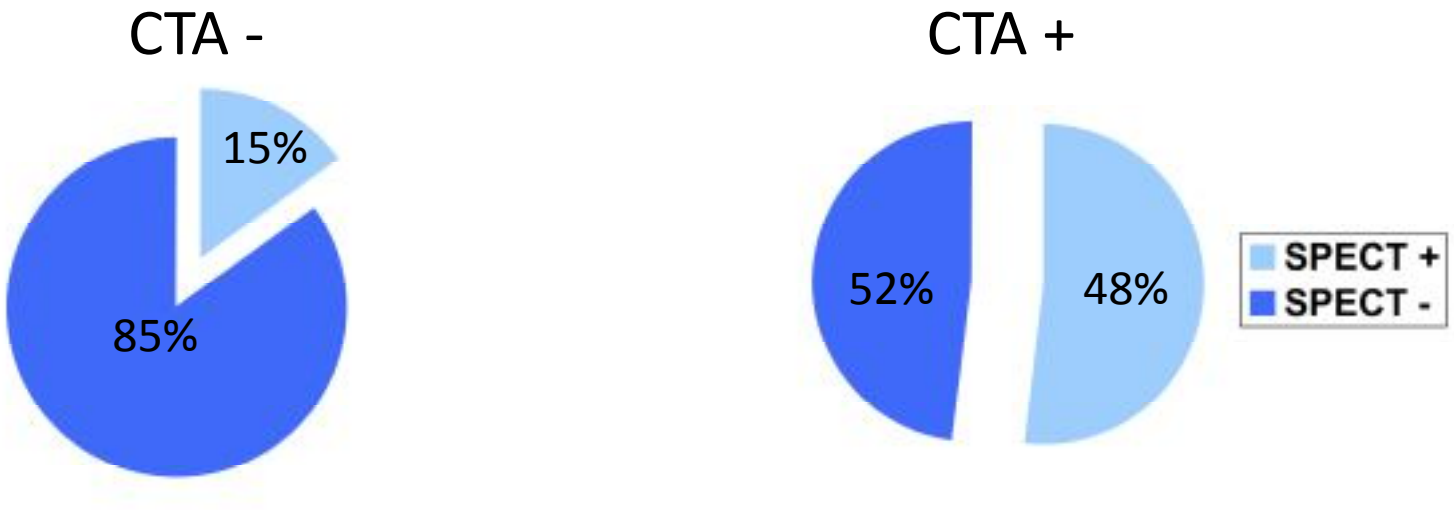
Complemenraty role of CT CA and 1st pass MR perfusion imaging



145 patients with low –intermediate risk of CAD

JG Groothuis. Radiology. Feb 2010

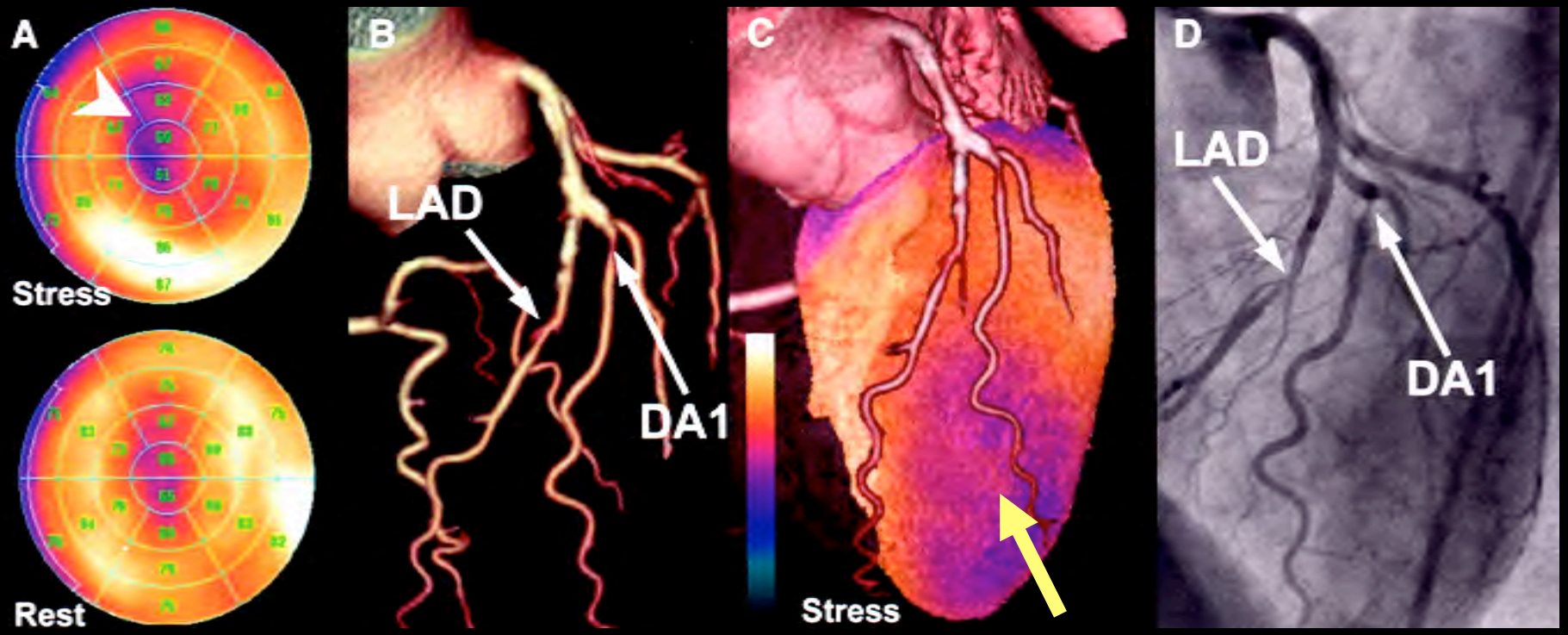
Perfusion vs Anatomy



	N	CT- SPECT-	CT+ SPECT +
Hacker	26	86% (12/14)	67%(8/12)
Gaemperli	91	96% (53/55)	50% (18/36)
Schuijf	114	77% (57/74)	50% (20/40)
Total	231	85% (122/143)	52% (46/88)

Schuijf. Heart 2008

Cardiac Image Fusion from Stand-Alone SPECT and CT

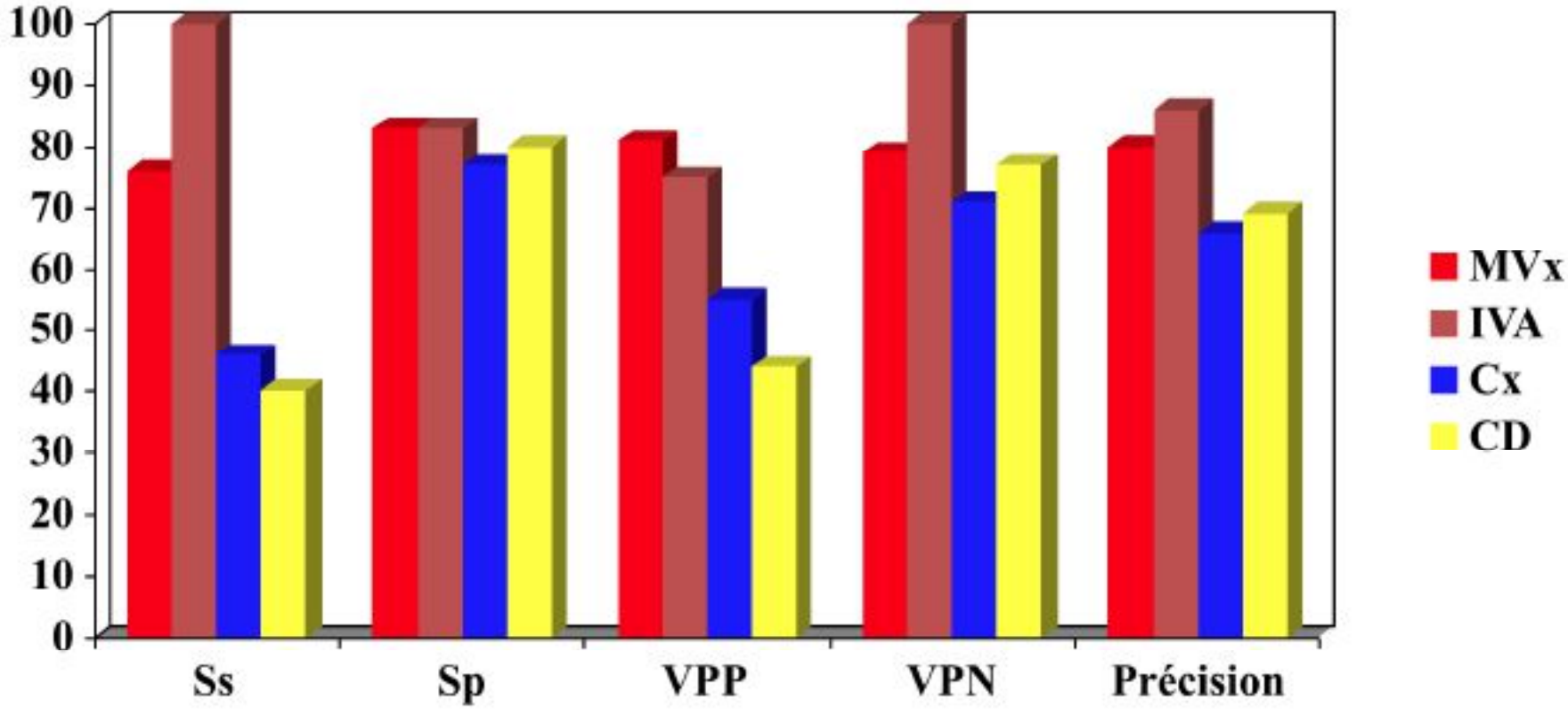


MIBI Polar maps 3D CTA Fused 3D SPECT/CT CA

Gaemperli. J Nucl Med 2007

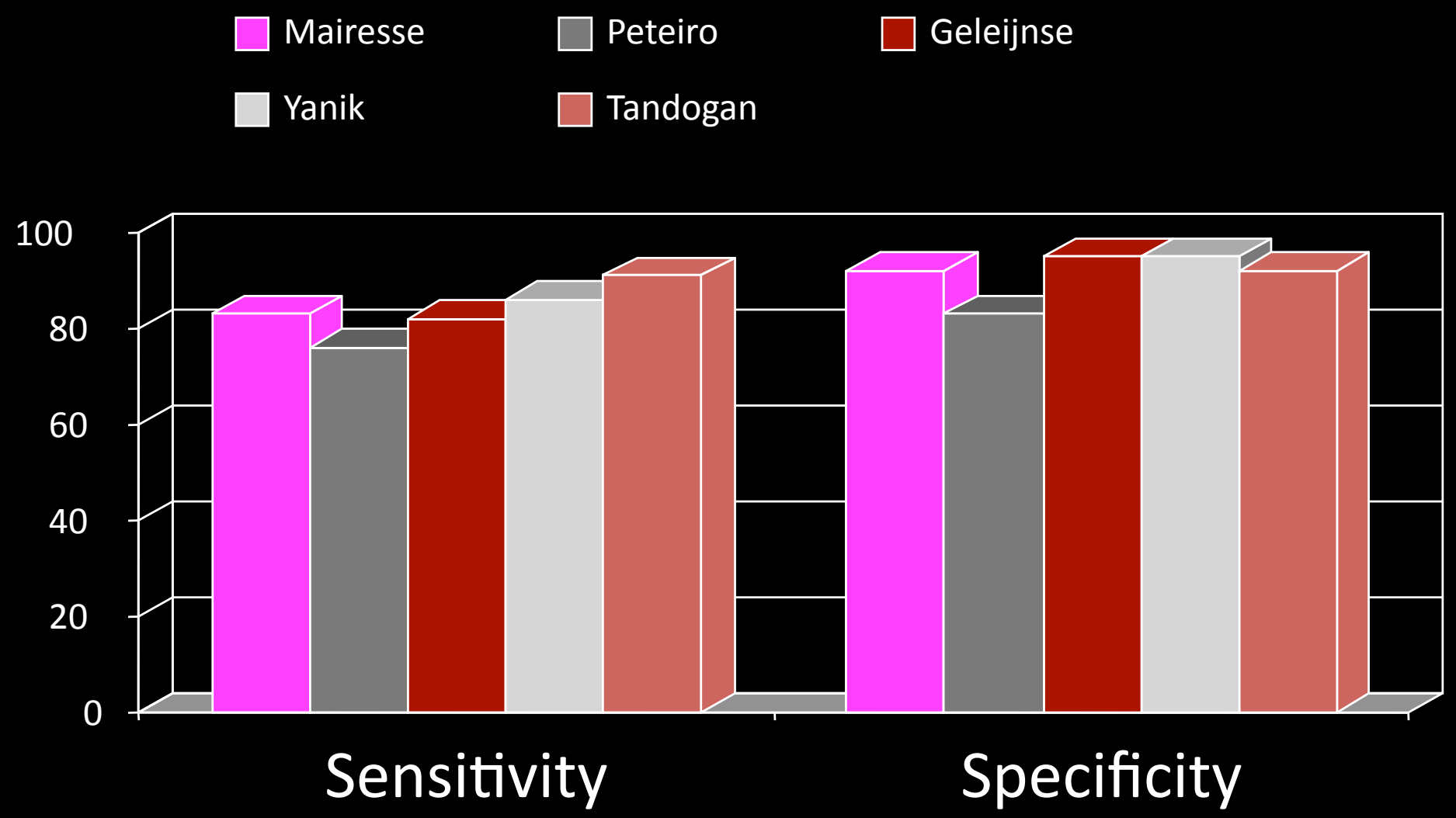
Echo d'effort et Bloc Complet Gauche

35 patients (sans infarctus ni pontage)



Peteiro. Am J. Cardiol 2000

Dobutamine Stress Echo and LBBB



Mairesse GH. Am J Cardiol. 1995 ; 76 : 321-5

Yanik A. Coron Artery Dis. 2000 ; 11 : 545-8.

Peteiro J. J Am Soc Echocardiogr. 2004 ; 17 : 1044-9.

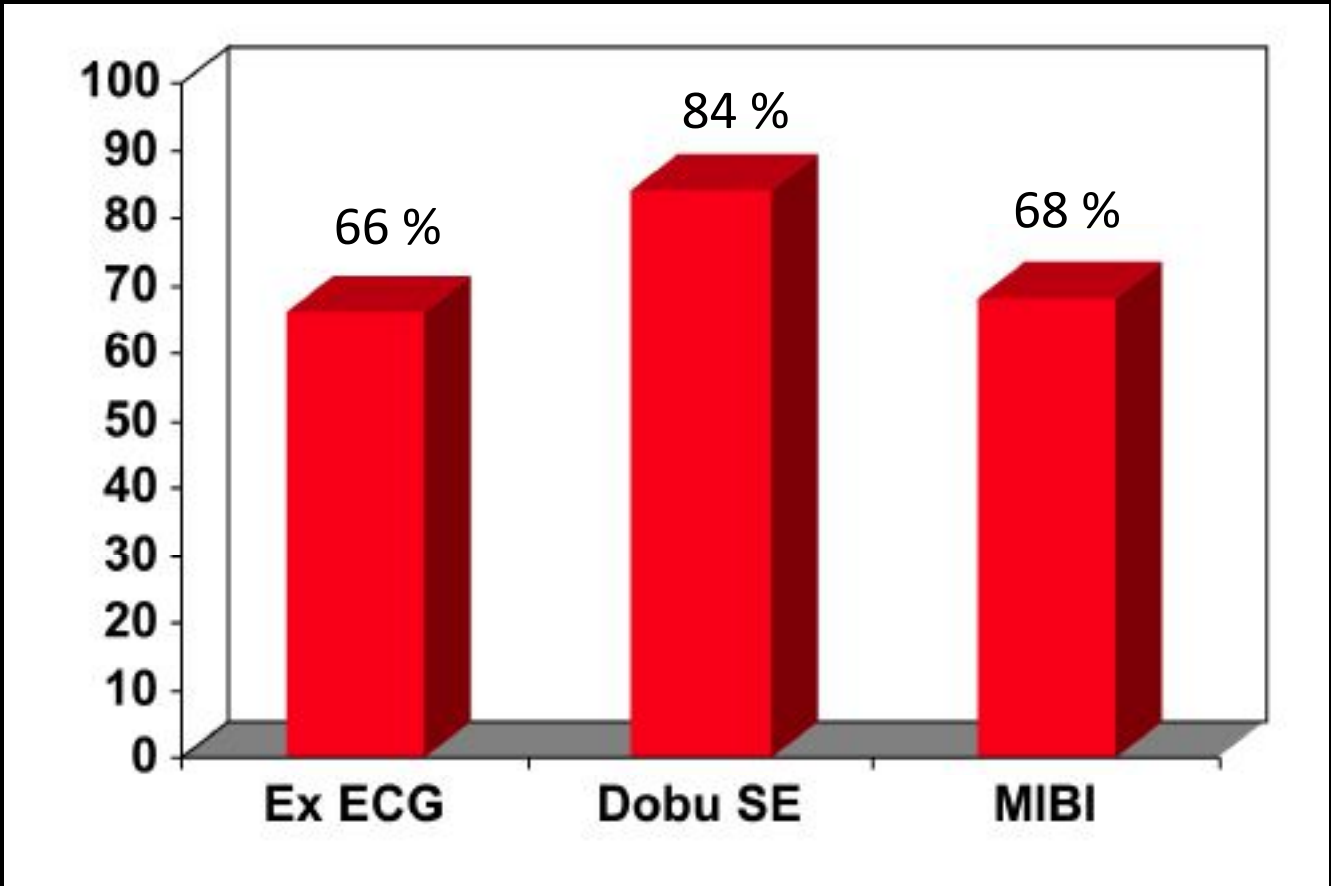
Geleijnse ML. Eur Heart J 2000 ; 21 : 1666-73

Tandogan I. Int J Cardiovasc Imaging. 2001 ; 7 : 339-45.

Hypertension

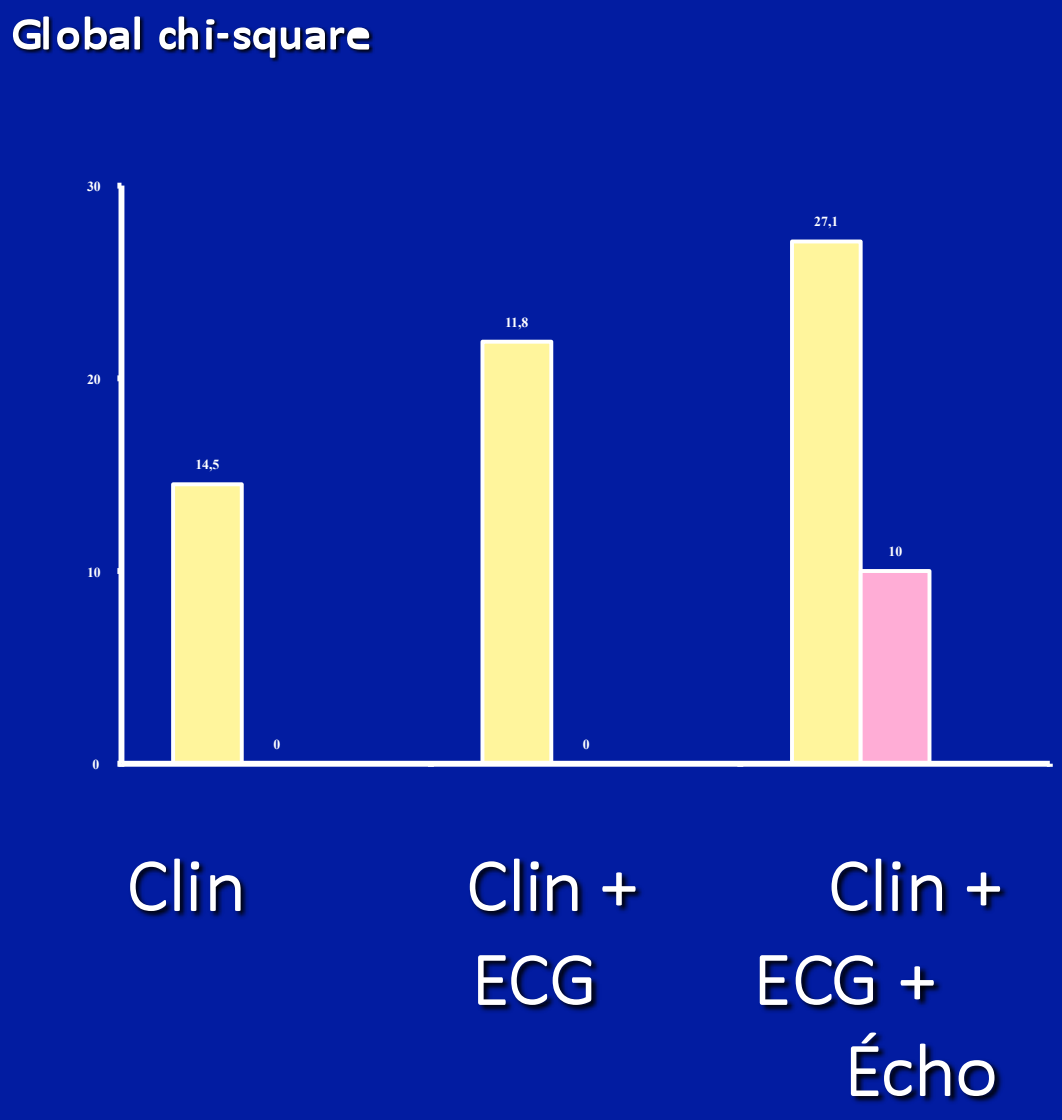
76 women with hypertension (16 with LVH)

Accuracy (%)



Lu C et al. Am J Cardiol 2010;105 (9) : 1254-60

Valeur additive de l'écho d'effort. chez la femme



Pas d'ATCD
Clin: diabète, HVG
EE: score (charge + ST)
Écho: ischémie

ATCD coronariens
ECHO +++

Heupler et al. JACC 1997;30:414