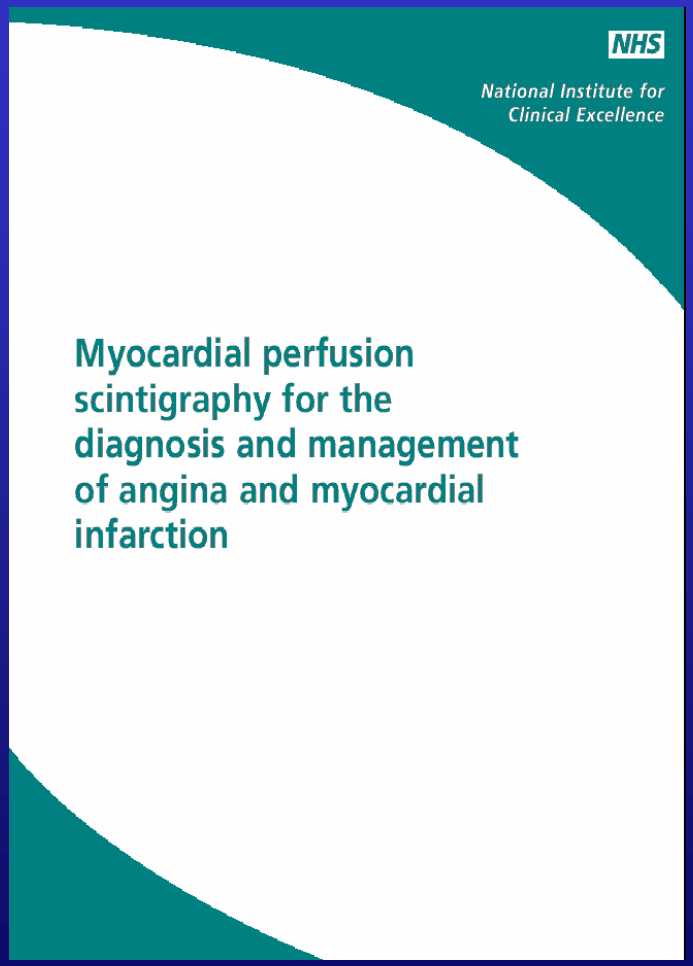
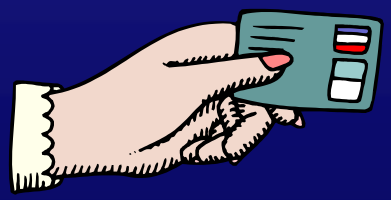
Nuclear Cardiology

that will do NICE-ly



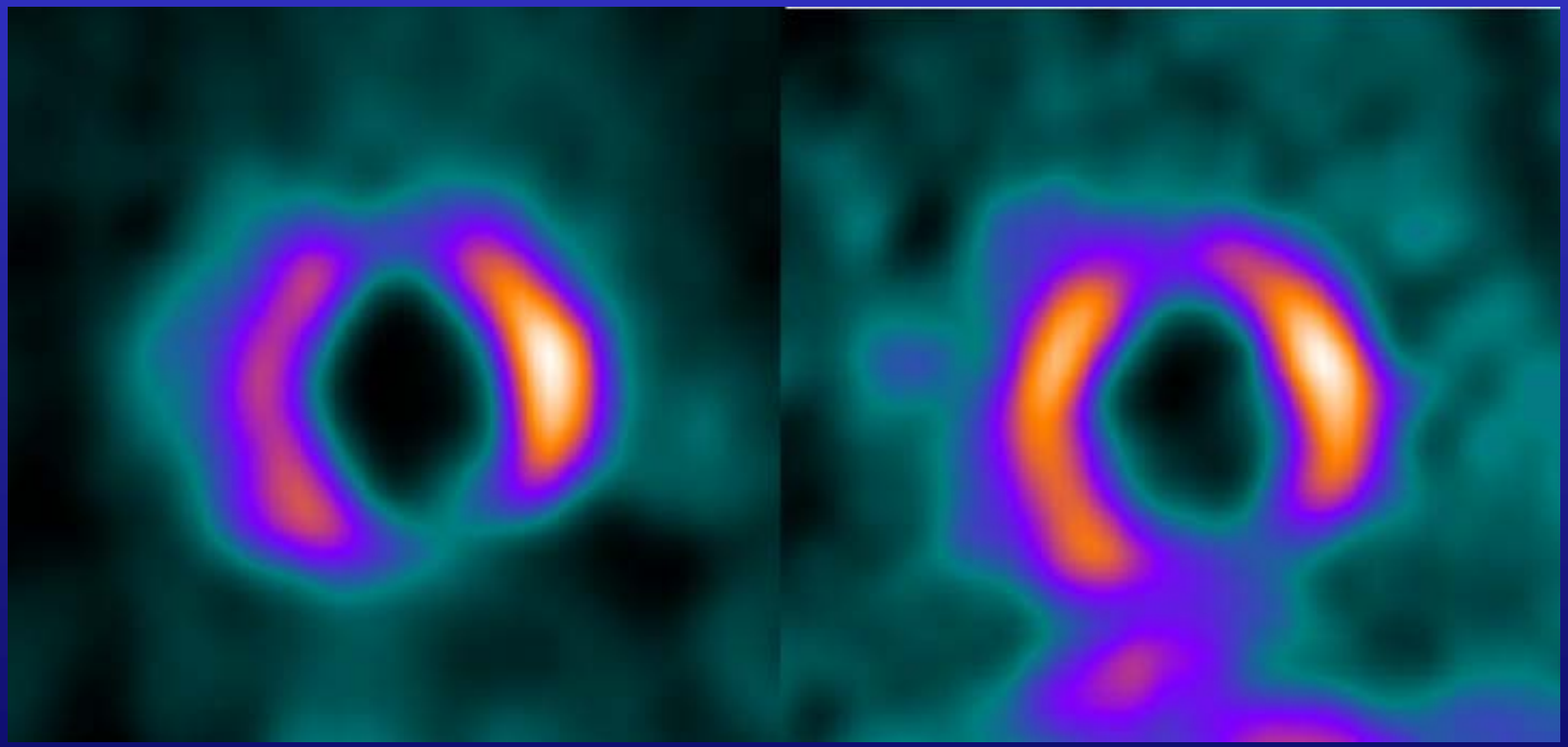


www.nice.org.uk

c.cam
c.cam

Patterns of uptake

Thallium-201



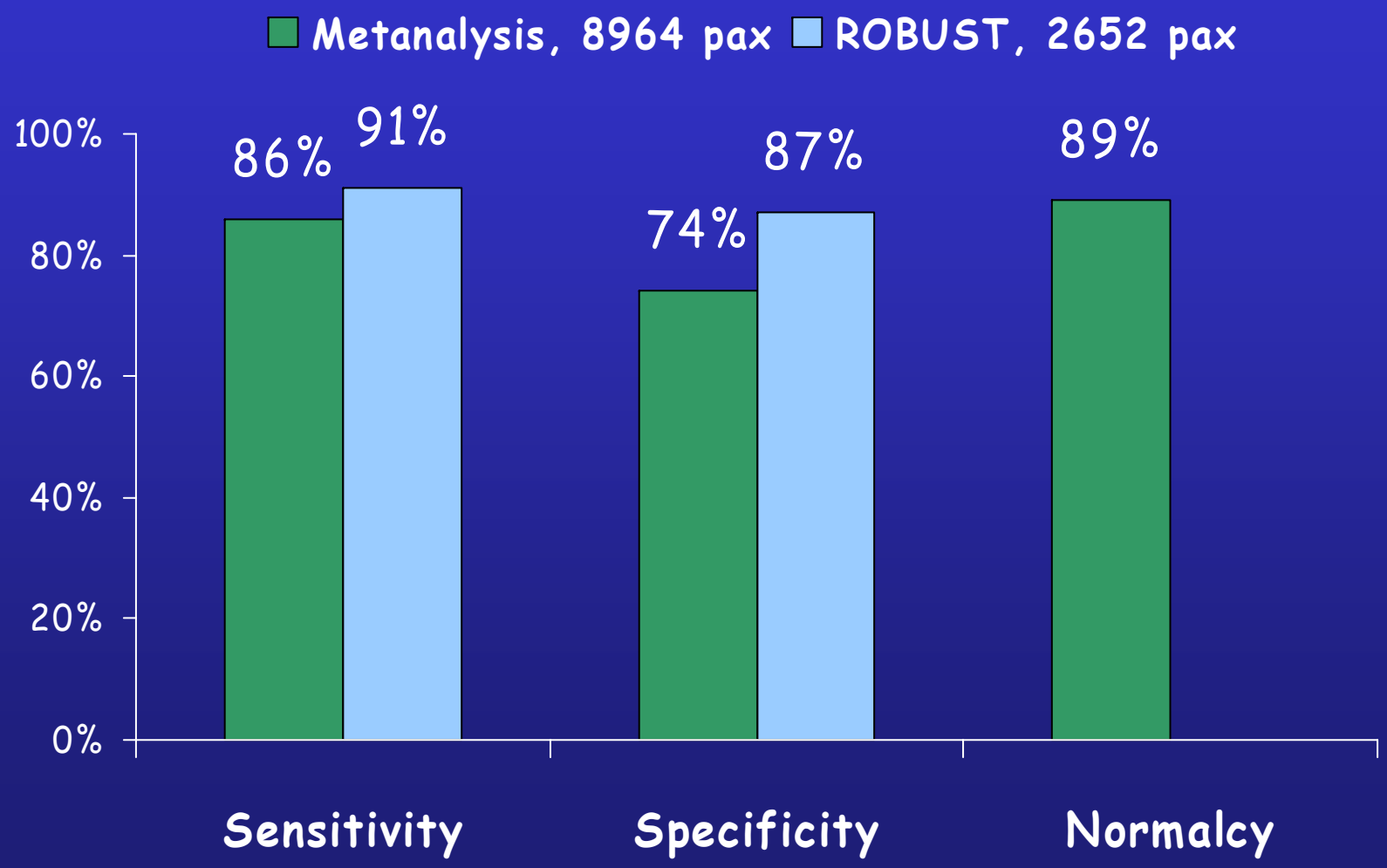
stress redistribution

Two Stages

- **Assessment** *An objective process*
  - systematic review
  - evidence synthesis and meta-analysis
  - assessment of strength and consistency of evidence
  - modelling of cost-effectiveness based on explicit assumptions

- **Appraisal** *A largely subjective process*
  - judging applicability and relevance of evidence
  - interpreting implications for NHS policy
  - judging likelihood of modelling assumptions
  - determining appropriate policy given uncertainties

Diagnosis of CAD

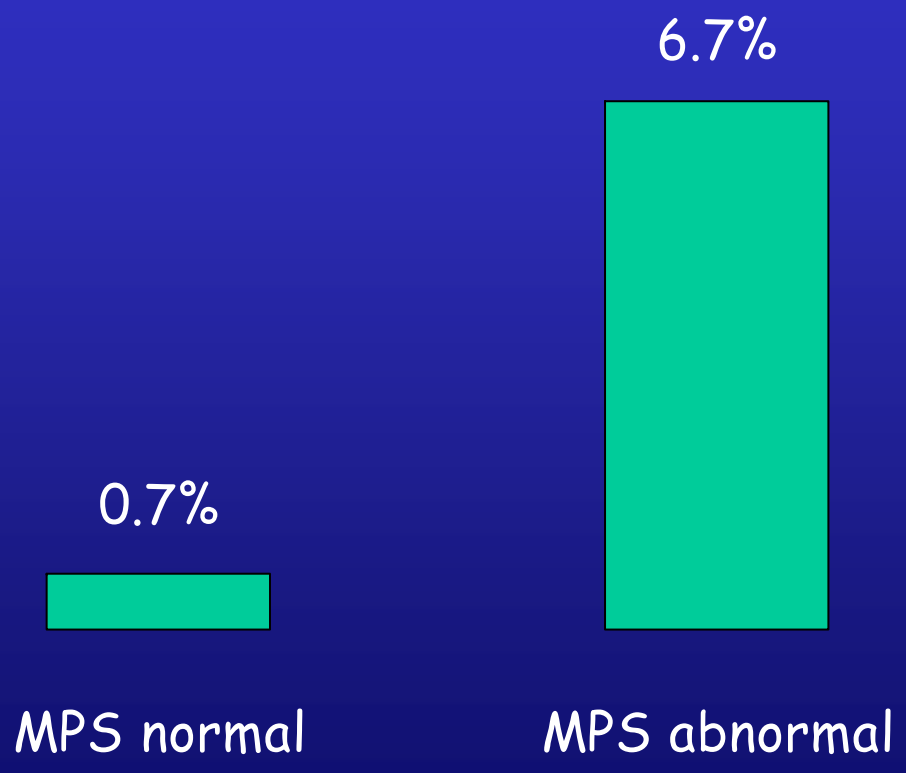


Underwood SR, et al. EJNM 2004; 31; 261-91

Kapur A, et al. EJNM 2002; 29; 1608-16

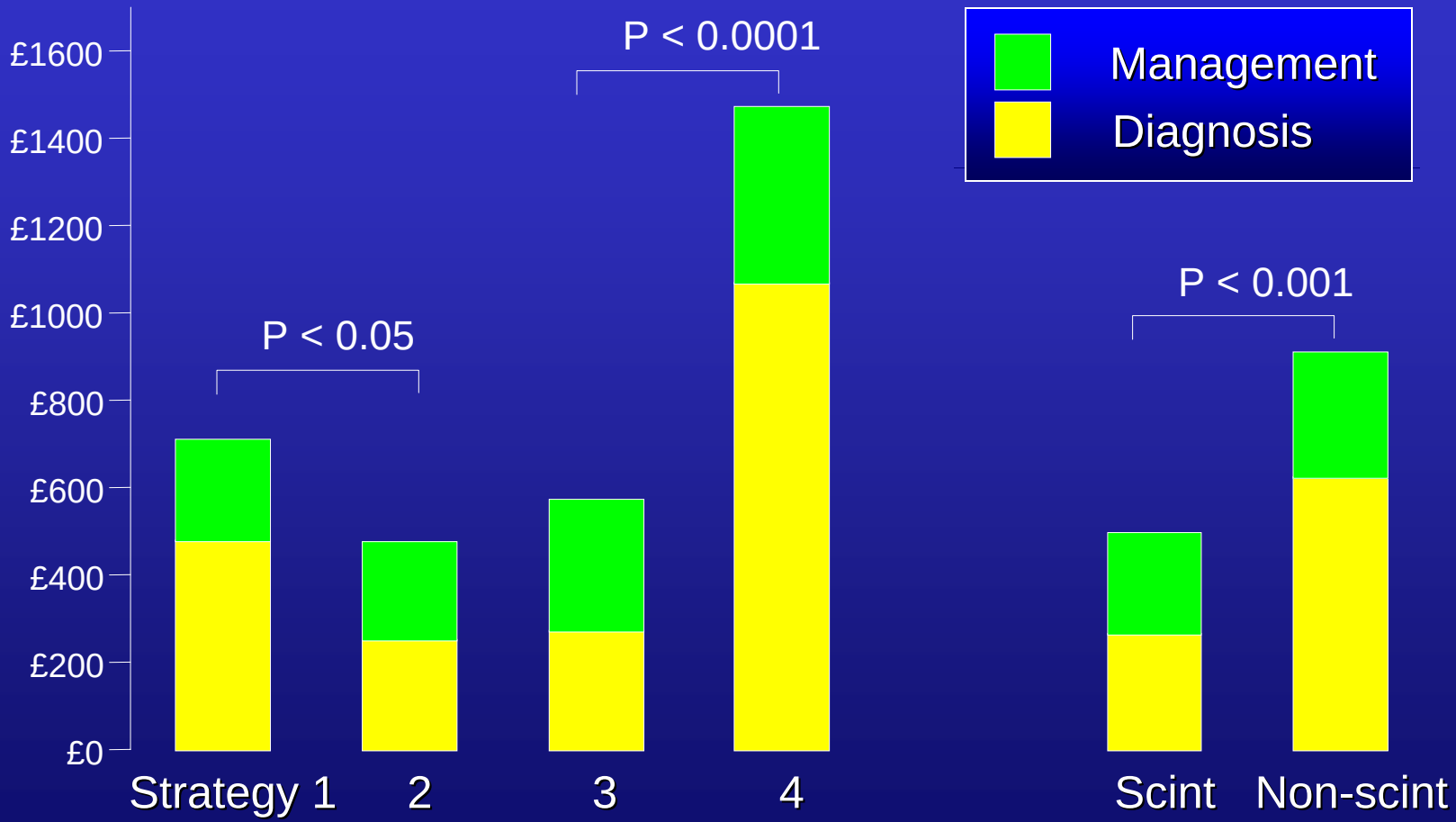
Prognosis in CAD

29 studies , 20963 patients, mean follow-up 28m



Annual hard event rate

Total costs (CAD absent)



EMPIRE study. Eur Heart J 1999; 20: 157-66

Final Appraisal Determination

MPS is recommended . . .

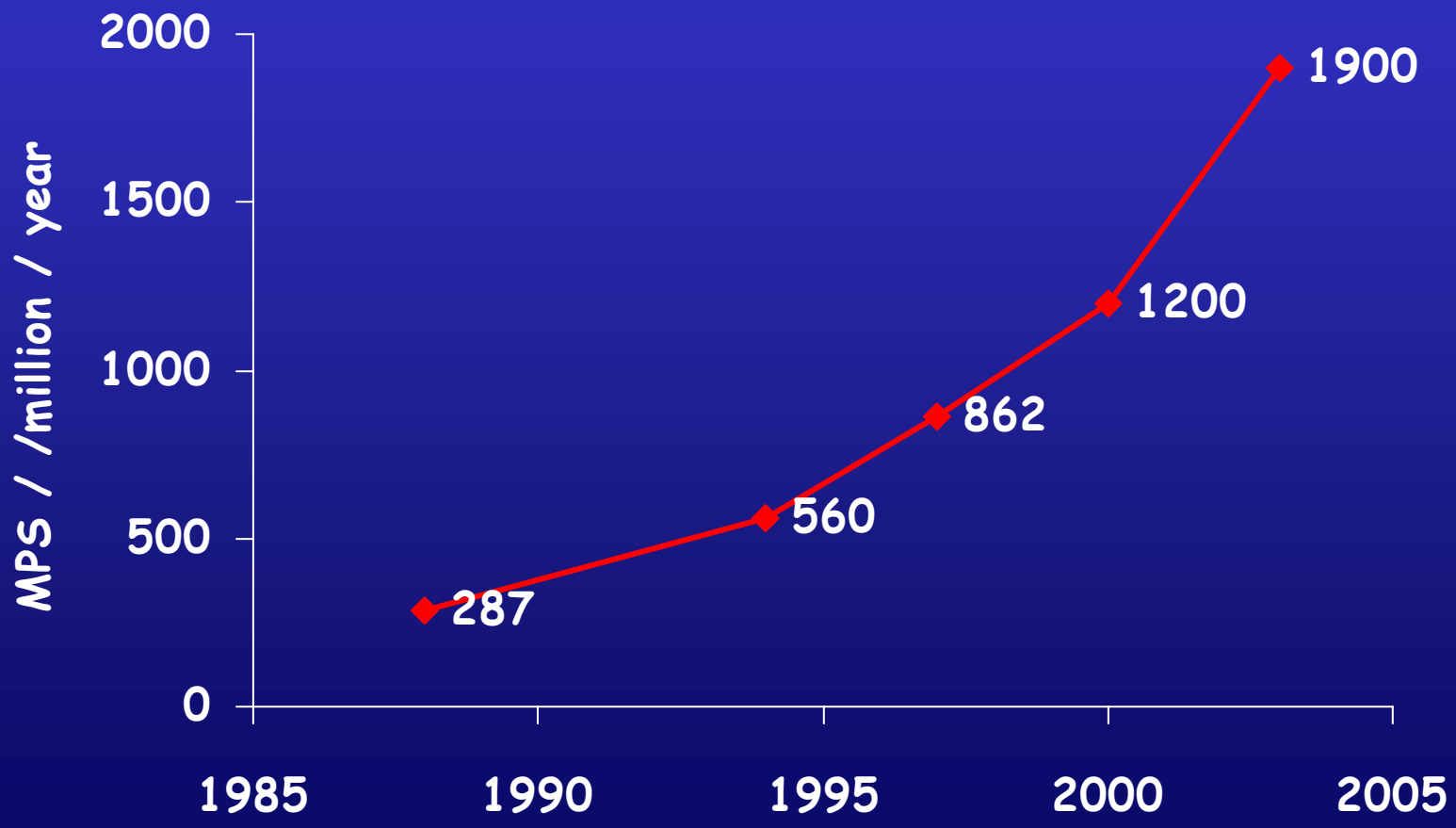
- as the initial diagnostic tool in people for whom sECG poses particular problems, including
  - conduction abnormality
  - unable to exercise
  - women
  - diabetes
- as part of an investigational strategy for people with lower likelihood of CAD
- as part of an investigational strategy in symptomatic patients after myocardial infarction or revascularistion

Imaging Performance

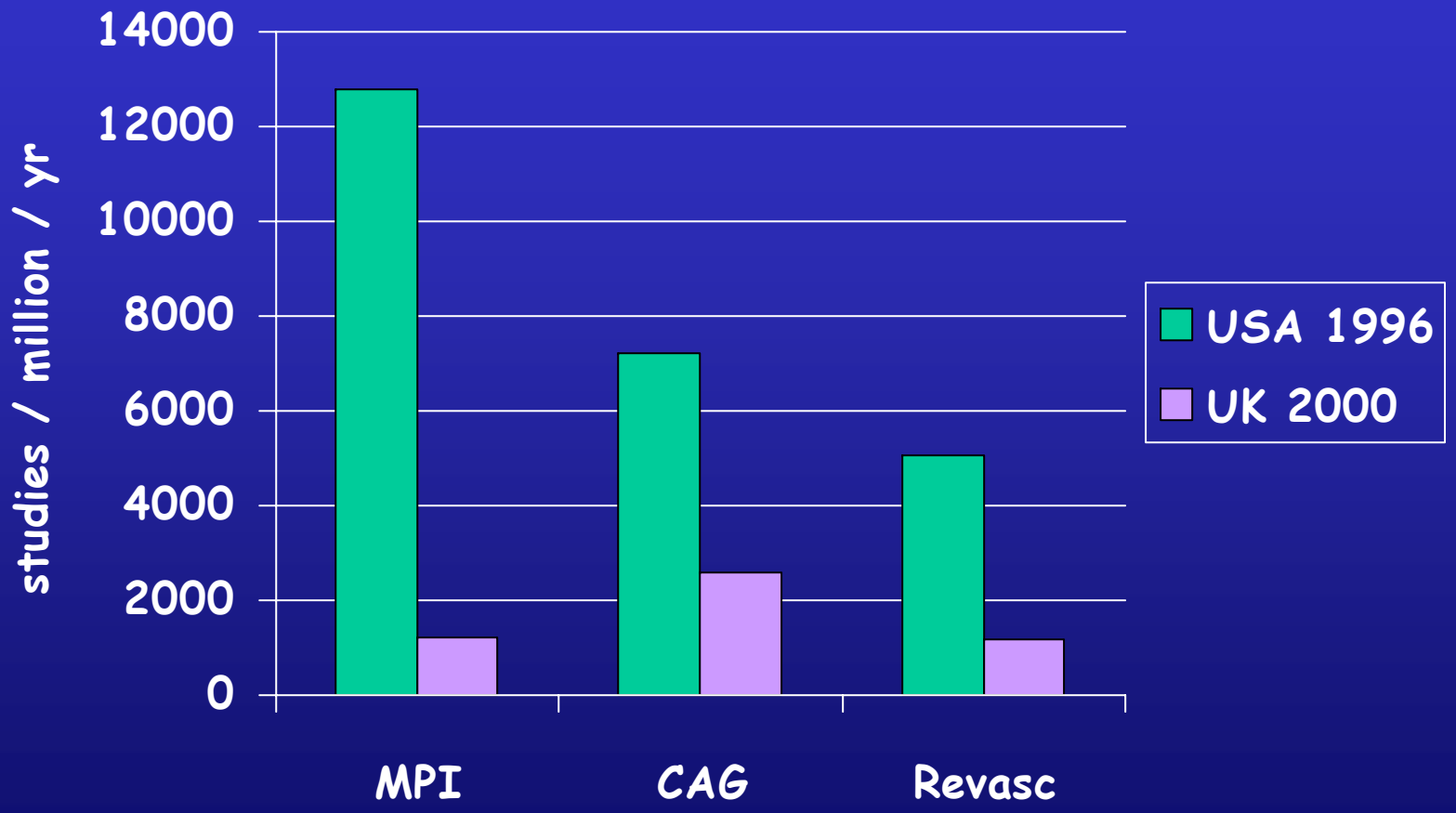
- Quantity
  - Are there national or international recommendations?
  - Do we believe the recommendations?
  - Are the recommendations relevant to NW Thames?
  - Can we invent or modify recommendations?
  - How do we perform against the recommendations?
- Quality
  - Do standards exist?
  - Are the standards relevant and practical within NW Thames?
  - Do we operate according to the standards?

BNCS surveys

Linear compound growth = 12.5% / year

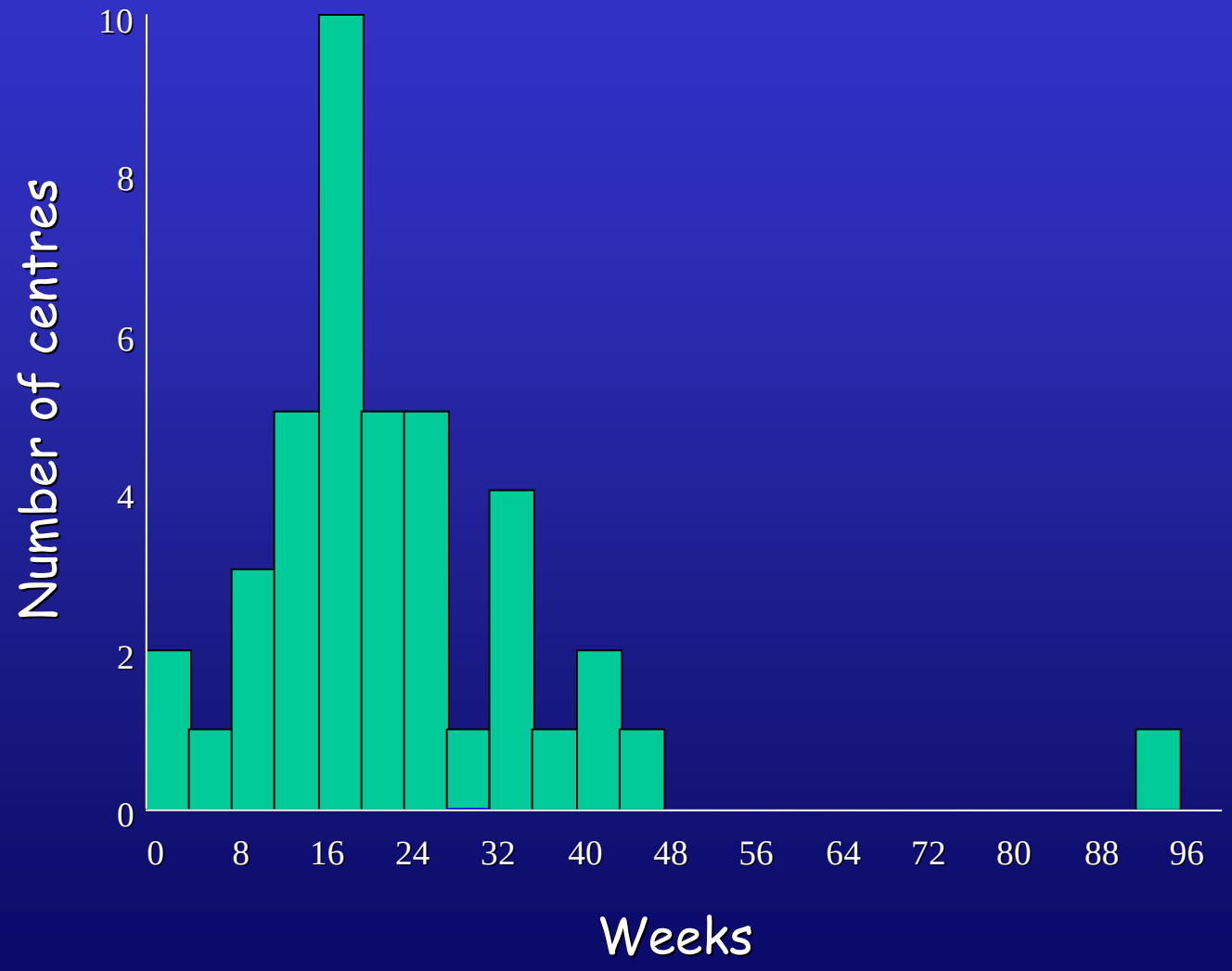


Investigation rates



USA	2.5	:	1.4	:	1
UK	1	:	2.2	:	1

Waiting time for MPS



Kelion AD, et al. BNCS 2000

Final Appraisal Determination

Recommended level of provision

- 4000 MPS patient studies per million population per year

Maximum waiting time

- 6 weeks routine
- 1 week urgent

Perceived problems in the UK

- MPS is either not available or not requested in patients where the evidence and guidelines suggest benefit e.g. RACPC
- MPS is available but the waiting time is too long for the test to be clinically useful. The mean waiting time of 5 months suggests an unsatisfied clinical demand.
- MPS provision is not of a uniform high standard in all centres.

NICE outcomes so far

NICE

- the guidance, to be reviewed Nov 2006
- information for the public and press release
- University of Aberdeen assessment report

The profession

- MPS: the evidence - EJNM 2004; 31: 261-91
- Heart 2004; 90 suppl v
- Procedure guidelines – Heart 2003; 89: 1156
- Guidance on service provision - Heart 2005; 91 su
- Br J Cardiol 2005; 12 suppl 2
- increased demand for MPS
- unofficial dialogue raising broader questions

NICE outcomes so far

Department of Health

- Waiting list target 13 weeks 2007, 6 weeks 2008

Industry

- evidence summary and cost-effectiveness analysis
- press release
- mobile MPS service
- assistance with managed MPS service

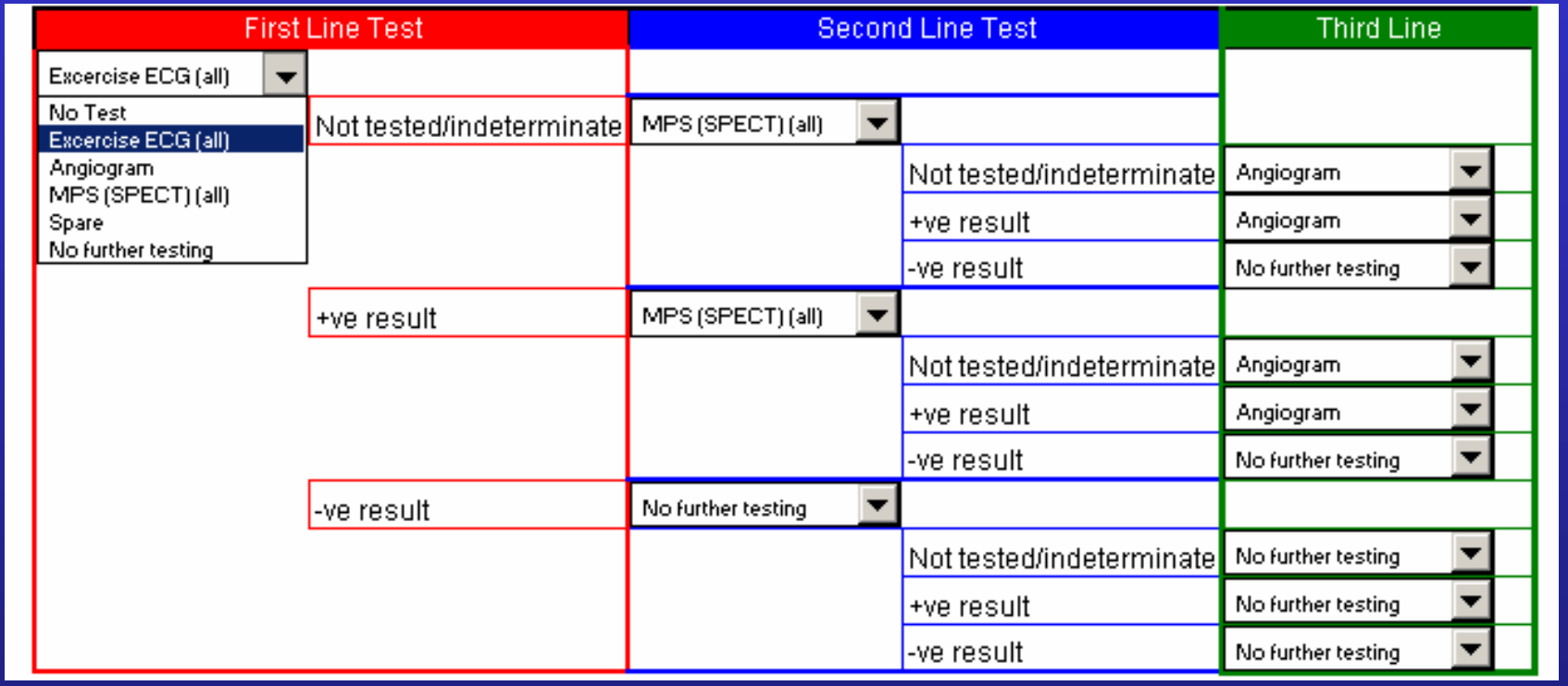
NHS Trusts

- hub and spoke assistance
- franchised services

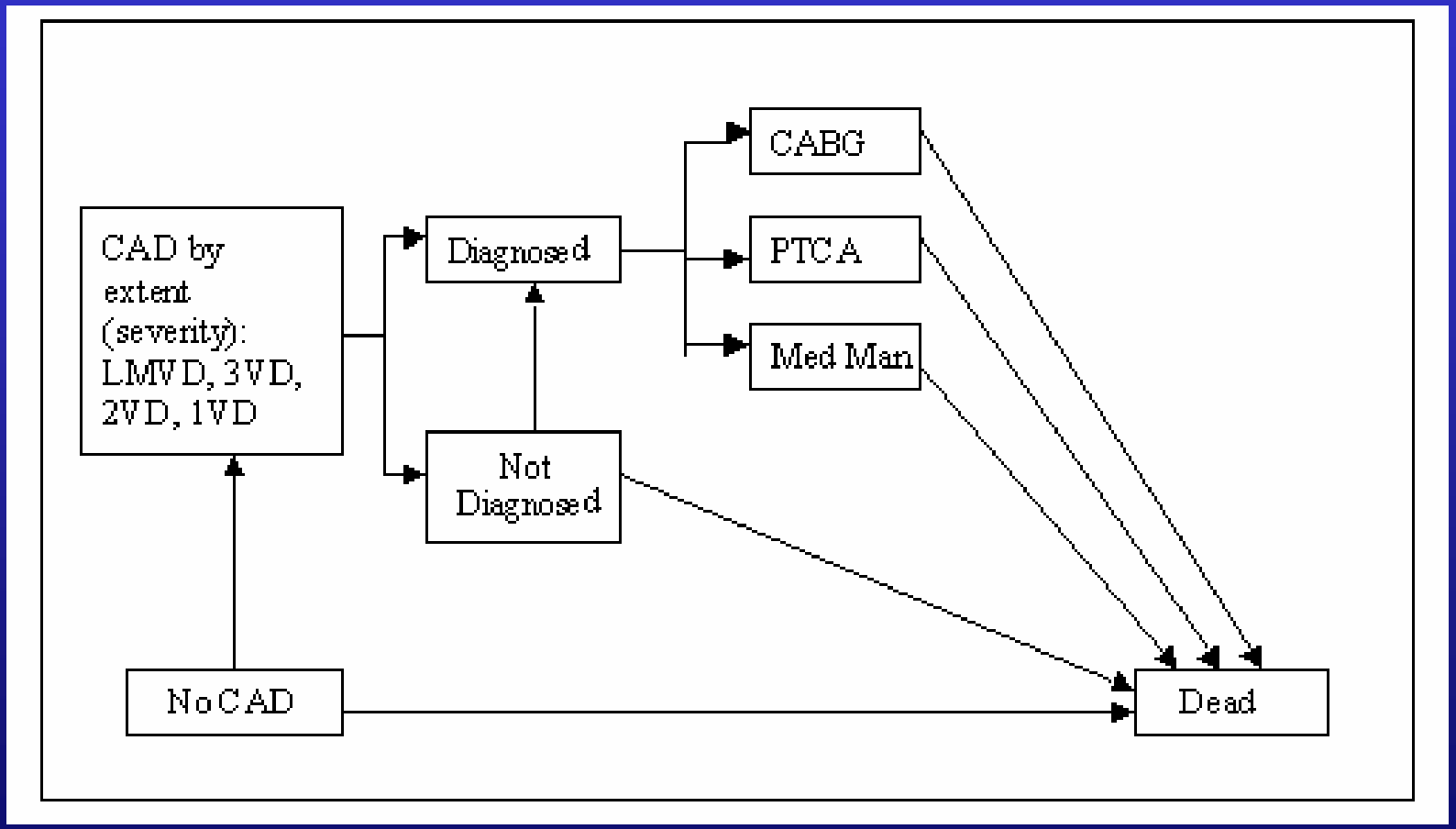
Modelling cost effectiveness of CAD diagnosis and management

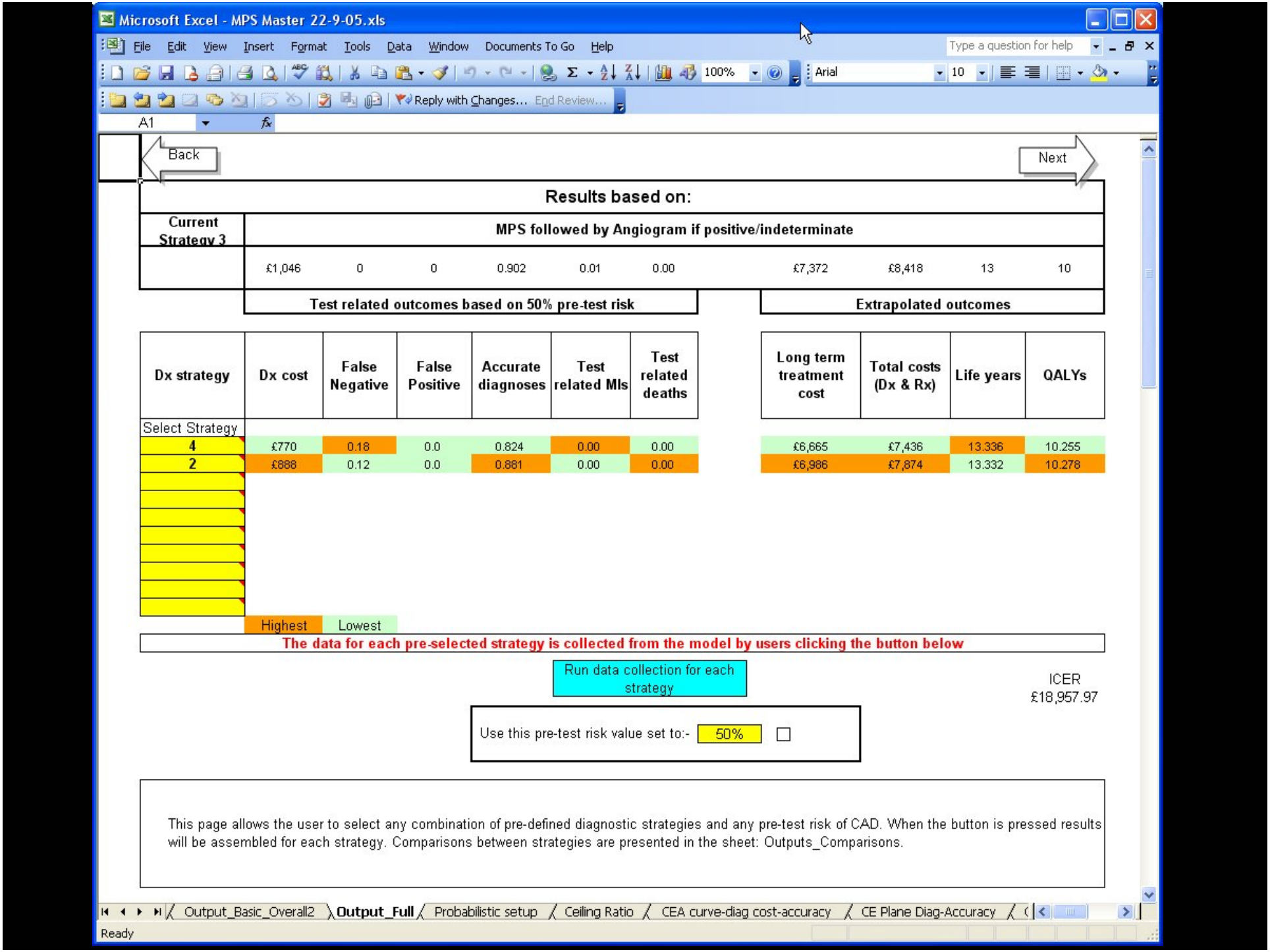
- Decision tree analysis for diagnosis
- Markov model for management (20 year horizon)
- Deterministic becoming probabilistic
- Bayesian principals
- Patients with CAD may not have angiography
- Angiography not perfect

Decision tree analysis

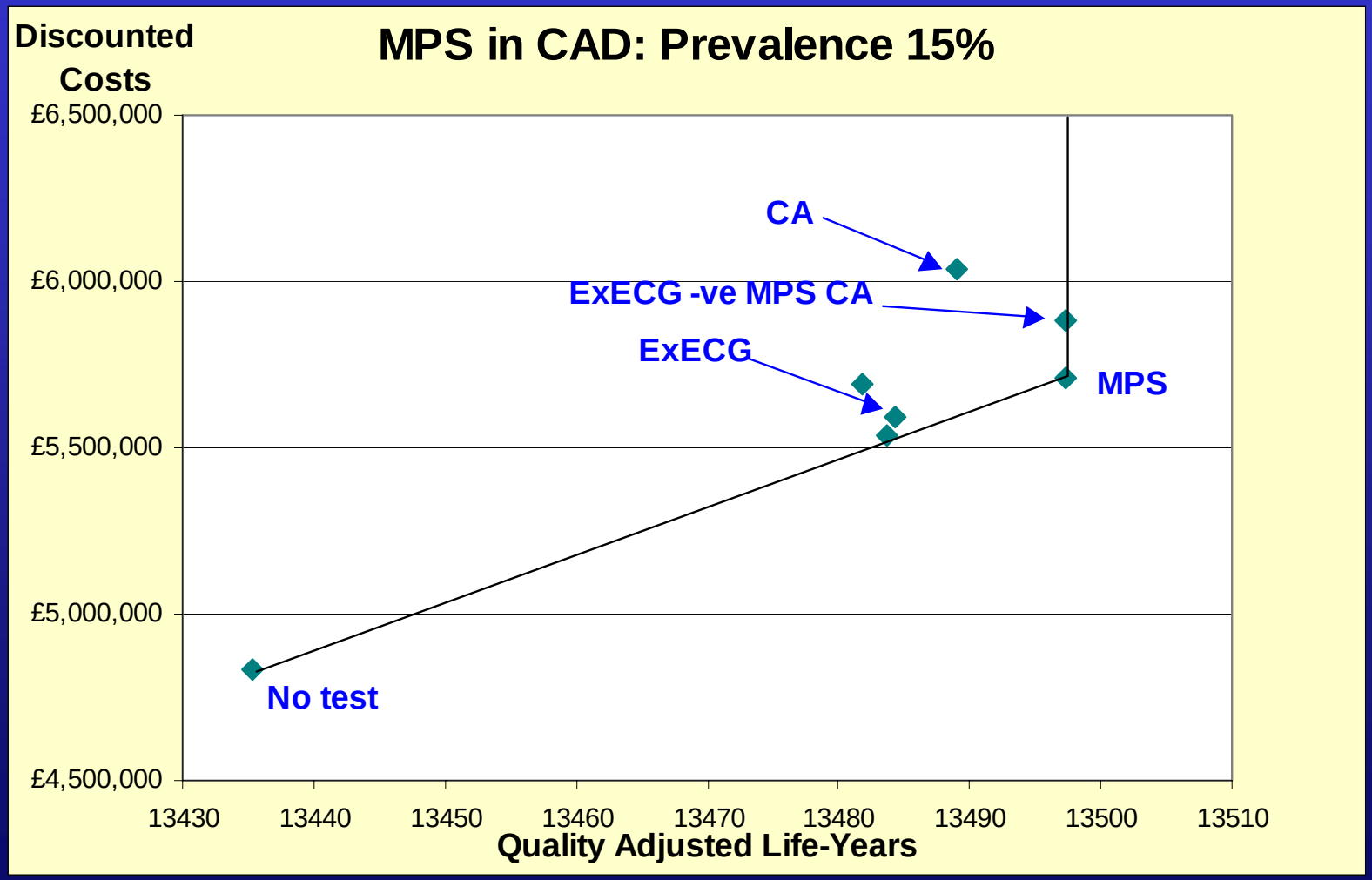


Markov model




Microsoft Excel - MPS Master 22-9-05.xls
File Edit View Insert Format Tools Data Window Documents To Go Help
Type a question for help
Arial 10 100%
Reply with Changes... End Review...
A1
Back
Next
Results based on:
Current Strategy 3
MPS followed by Angiogram if positive/indeterminate
£1,046 0 0 0.902 0.01 0.00 £7,372 £8,418 13 10
Test related outcomes based on 50% pre-test risk
Extrapolated outcomes
Dx strategy
Dx cost
False Negative
False Positive
Accurate diagnoses
Test related MIs
Test related deaths
Long term treatment cost
Total costs (Dx & Rx)
Life years
QALYs
Select Strategy
4 £770 0.18 0.0 0.824 0.00 0.00 £6,665 £7,436 13.336 10.255
2 £888 0.12 0.0 0.881 0.00 0.00 £6,986 £7,874 13.332 10.278
Highest
Lowest
The data for each pre-selected strategy is collected from the model by users clicking the button below
Run data collection for each strategy
ICER
£18,957.97
Use this pre-test risk value set to:- 50%
This page allows the user to select any combination of pre-defined diagnostic strategies and any pre-test risk of CAD. When the button is pressed results will be assembled for each strategy. Comparisons between strategies are presented in the sheet: Outputs_Comparisons.
Output_Basic_Overall2
Output_Full
Probabilistic setup
Ceiling Ratio
CEA curve-diag cost-accuracy
CE Plane Diag-Accuracy
Ready

Incremental cost effectiveness ratios



UK Service implications

Increase 1200 to 4000 MPS per million per year

- Capital requirement £21M
  - 84 cameras
- Revenue requirement £31M / year
- New staff
  - 168 radiographers
  - 84 nurses
  - 42 physicists
  - 45 physicians

Possible further outcomes

- £20M capital fund over 5 years
- coordinated approach to revenue costs
- policy for staff recruitment and training
- standards for training and quality assurance
- consideration of MPS alongside other imaging techniques
- incorporation into NSF update