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# ***Health Economics and Financing***

# Workshops

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- Focus on practical critical appraisal of published paper:
  - Group X = Cote *et al.* A pharmacy-based health promotion programme in hypertension. *Pharmacoecon*, 2003; 21: 415-428.  
[Cost-benefit analysis of a pharmacy intervention for hypertension]
  - Group Y = Scuffham & Chaplin. An economic evaluation of fluvastatin used for the prevention of cardiac events following successful first percutaneous coronary intervention in the UK. *Pharmacoecon*, 2004; 22: 525-535.  
[Cost-utility analysis of a drug intervention for hypertension]
- Workshop 1 – checklist items 1, 2, 3 and 4-6 (re: costs)
- Workshop 2 – checklist items 4-6 (re: benefits) and 7,8,9,10
- **Read paper and checklist prior to workshop**

# Overview of next 4 lectures

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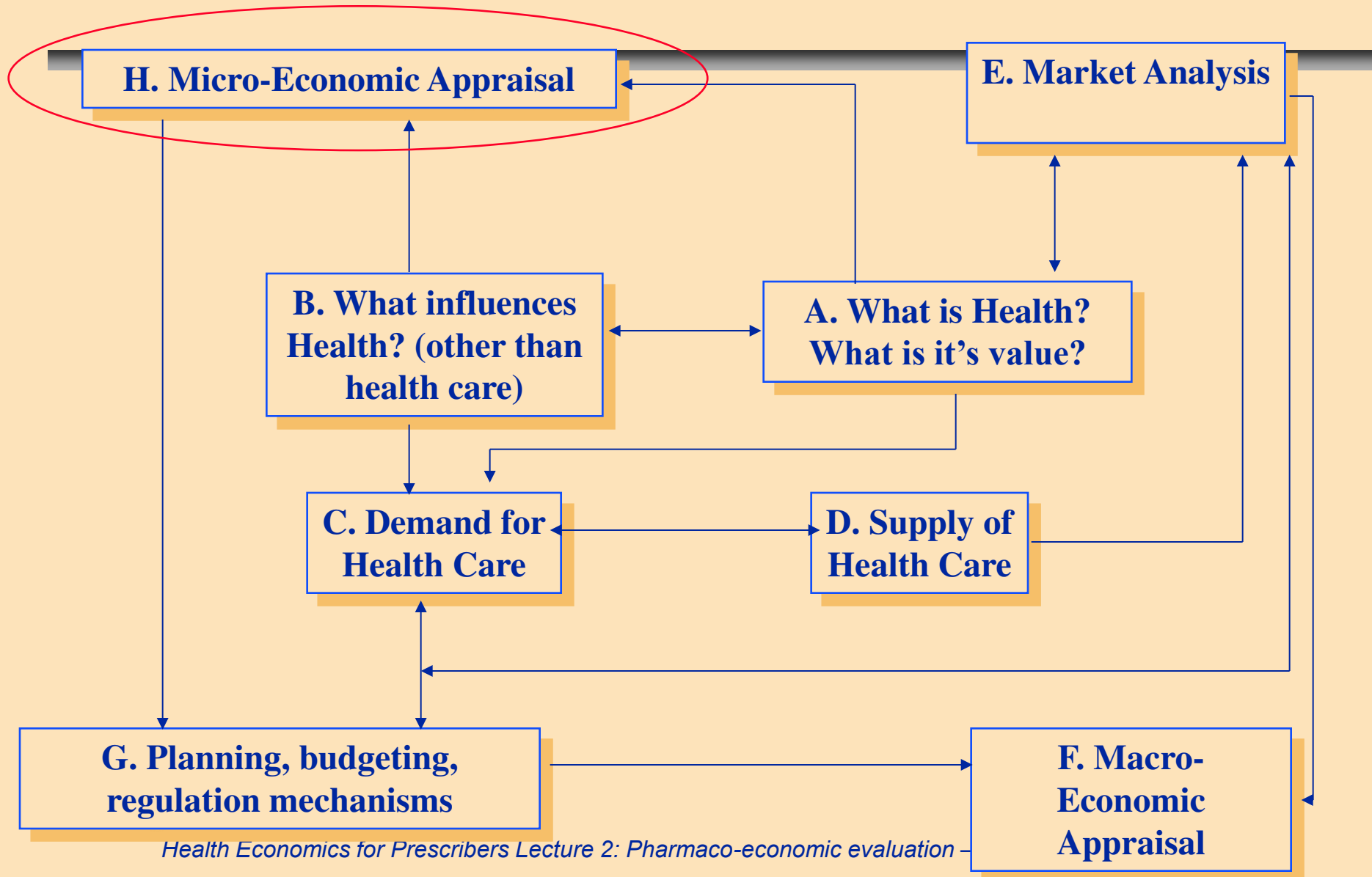
- *Lecture 2 – the research question*
  - What (pharmaco)economic evaluation is, introduce ‘checklist’ for critical appraisal, cover items 1,2,3 of checklist (specification of question, comparator(s), evidence of effectiveness)
- *Lecture 3 – resources and costs*
  - How resource use conceptualised, quantified and valued – items 4, 5, 6, 7, 8 of checklist (importance of resource use versus ‘cost’, types of cost, which costs to include, overheads, discounting)
- *Lecture 4 – benefits and outcomes*
  - How outcomes conceptualised, quantified and valued – checklist items 4, 5, 6 (cost versus benefit, measures of effectiveness, utility and the money value of ‘health’ for use in CEA, CUA, CBA)
- *Lecture 5 – analysis and results*
  - How results presented - items 9, 10 of checklist (use of modelling to incorporate uncertainty and synthesis data, the use of summary measures and ratios, role in decision-making, eg NICE)

# ***Lecture 2: Pharmaco-economic evaluation – research question***

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- The ‘why and what’ of economic evaluation (checklist item 1)
- How it relates to other forms of evaluation (checklist item 2)
- Types of economic evaluation (checklist item 3)
- Stages in an economic evaluation
- Checklist for appraisal
- Items 1, 2 and 3 summary

# Health economics 'map'



# ***Why Economic Evaluation?***

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- Scarcity → choice → value of benefits (opportunity cost) → efficiency
- Economic evaluation = measuring value of alternative course of action (opportunity cost again)
- Opportunity cost forces identification of relevant alternatives
- Assessment of 'value' makes explicit importance of viewpoints – an alternative that seems unattractive from one point of view may seem more attractive from another (cost to one is benefit to another)
- Valuation requires value judgements to be made explicit
- Measurement enables uncertainties surrounding orders of magnitude to be assessed

# *Economic evaluation is ...*

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- “The comparative analysis of alternative courses of action in terms of both their costs and consequences in order to assist policy decisions” (Drummond et al)
- Economic evaluation is *not* “choosing the cheapest”
  - “The pursuit of efficient practice is not merely about reducing costs. If it were the most efficient procedure would be to do nothing as that pushes costs to zero” (Alan Maynard)

# *History of economic evaluation*

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- Roots in attempts to define and value public goods in 19<sup>th</sup> century
- Practical development result of Federal Navigation Act, 1936
  - required US Corps of Engineers to create systematic methods to measure benefits and costs of ways to improve waterways
- 1950's Dept of defence use 'cost per kill' (CEA)
- Today widely used to assess public projects
  - Third London airport
  - Train Protection Warning System
  - Victoria underground line
  - North Norfolk coastal defences



# History of (health) economic evaluation

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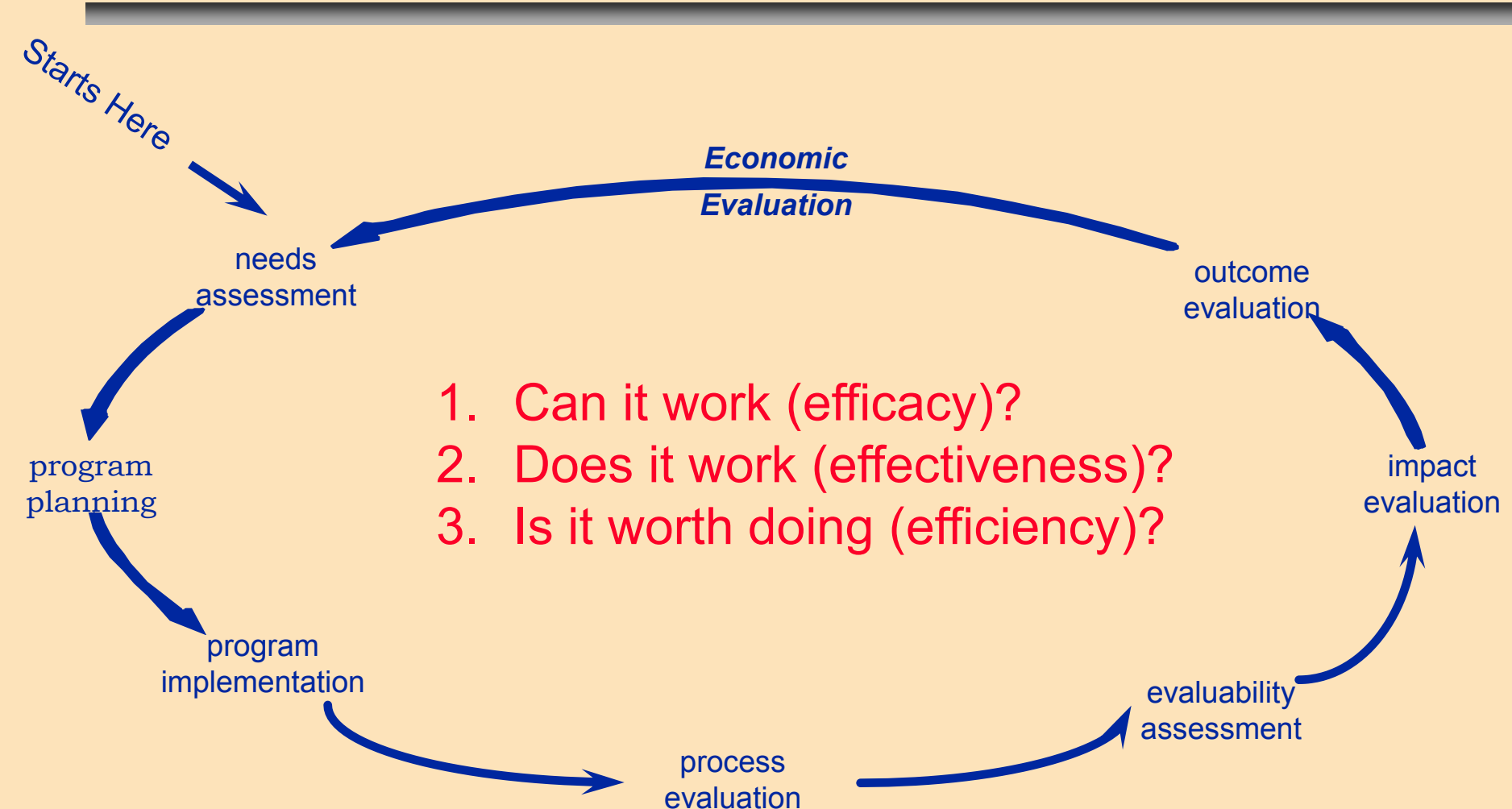
- 1950's – economists began to apply economic theory to health care
- 1960's – cost-of-illness studies began to emerge
- 1970's – cost-benefit *approach* accepted but money value of health 'dismissed'
- 1980's – alternative outcome measures led to CEA/CUA
- 1990's – re-emergence of interest in CBA
  - formal adoption by regulatory bodies
- 2000's – integration of CBA and CUA (SVQ)

# Important features of economic evaluation

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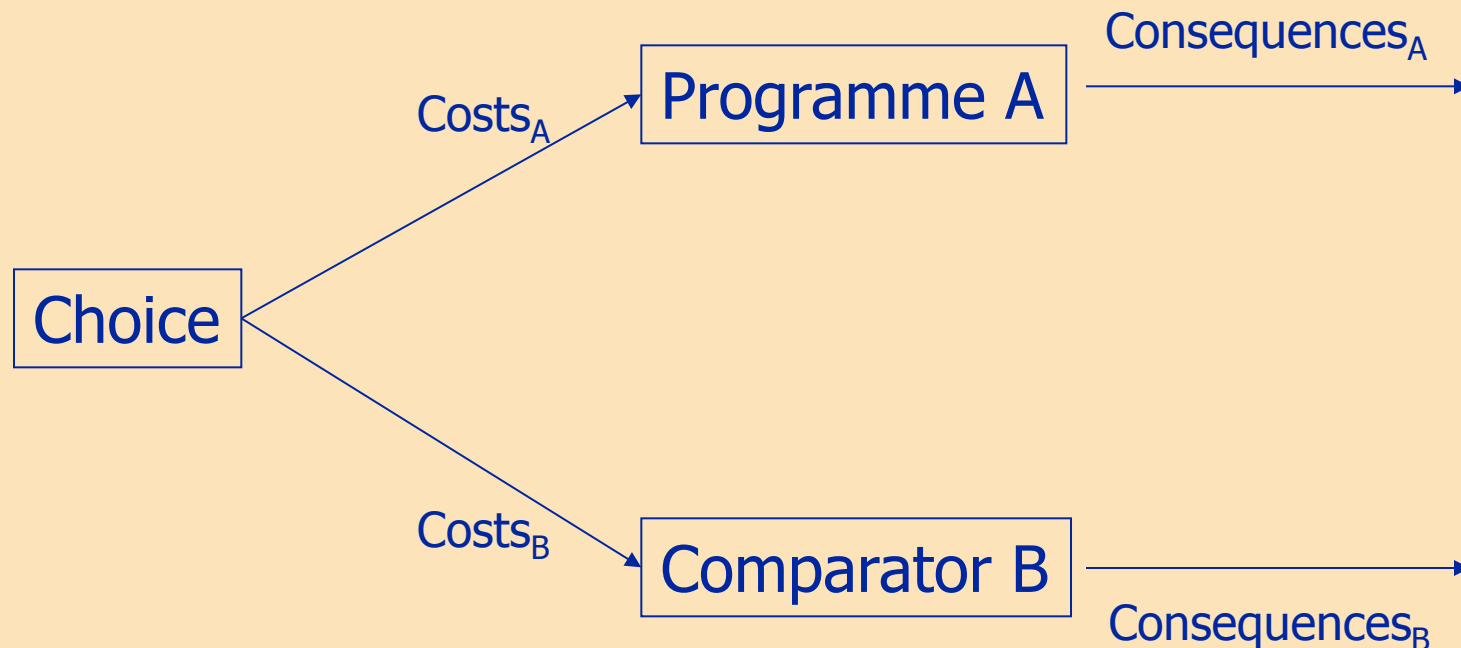
- “The *comparative* analysis of alternative courses of action in terms of both their costs *and* consequences in order to *assist* policy decisions” (Drummond et al)
- 1. Costs and consequences – efficiency
- 2. Comparison – technical efficiency
- 3. Assist - not replace - decision making

# Place of economic evaluation in the wider 'evaluation cycle'



# Characteristics...

- Economic evaluation has 2 characteristics
  1. inputs and outputs (costs and consequences)
  2. choice between at least 2 alternatives



# ...determine forms of evaluation

2. Are at least 2 alternatives compared?

1. Are both costs (inputs) and consequences (outputs) examined?

	NO		YES
NO	Examines only consequences	Examines only costs	2 PARTIAL EVALUATION  • Cost-outcome description.
	1A	1B	
	• Outcome description.	• Cost description.	
YES	3A	3B	4 FULL ECONOMIC EVALUATION  • Cost-minimisation analysis. • Cost-effectiveness analysis. • Cost-utility analysis. • Cost-benefit analysis.
	• Efficacy or effectiveness evaluation.	• Cost analysis.	

# *Types of economic evaluation*

<i>Type of Analysis</i>	<i>Costs</i>	<i>Consequences</i>	<i>Result</i>
Cost Minimisation	Money	Identical in all respects.	Least cost alternative.
Cost Effectiveness	Money	Different magnitude of a common <b>measure</b> eg., LY's gained, blood pressure reduction.	Cost per unit of consequence eg. cost per LY gained.
Cost Utility	Money	Single or multiple effects not necessarily common. <b>Valued</b> as "utility" eg. QALY	Cost per unit of consequence eg. cost per QALY.
Cost Benefit	Money	As for CUA but <b>valued</b> in money.	Net £ cost: benefit ratio.

# *Stages in economic evaluation*

Deciding upon study question

- Viewpoint taken.
- Alternatives appraised.



Assessment of costs and benefits

- Identification of relevant C&B.
- Measurement of C&B.
- Valuation of C (&B).



Adjustment for timing.



Adjustment for uncertainty.



Making a decision.

# Critical appraisal

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- Standard 'checklist' for critical appraisal is:
  - Drummond *et al.* Methods for the economic evaluation of health care programmes, chapter 3.
- Also other 'guidelines'
  - Drummond & Jefferson. Guidelines for authors and peer reviewers of economic submissions to the BMJ. *BMJ* 1996; 313: 275–283.
  - NICE. Guide to the Methods of Technology Appraisal. April 2004.
  - Etc



# ***‘Drummond’ checklist***

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1. Was a well-defined question posed in answerable form?
2. Was a comprehensive description of alternatives given?
3. Was there evidence that effectiveness had been established?
4. Were all the important and relevant costs and consequences for each alternative identified?
5. Were costs and consequences measured accurately/appropriately?
6. Were costs and consequences valued credibly?
7. Were costs and consequences adjusted for differential timing?
8. Was an incremental analysis performed?
9. Was allowance made for uncertainty?
10. Did presentation/discussion of results include all issues of concern?

# Checklist item 1

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- *Was a well-defined question posed in answerable form?*
  - Does the study examine both the costs and consequences of each alternative (determines if it *is* an economic evaluation)?
  - Does the study compare competing alternatives (should be identified & justified)?
  - Does the study state the viewpoint (perspective) taken?

# *Importance of viewpoint/perspective*

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- Alternative perspectives
  - Government/NHS
  - health care institutions (hospital etc)
  - 3rd party payers (PCT, insurance company)
  - patient and family
  - 'societal'
- Methodological decision - determines what costs and consequences to measure and how to value them
- For instance, programme leading to early discharge may...
  - provide cost-savings to hospital/NHS as shorter inpatient stay...
  - but what if a family member has to take time off to care for them?
- Societal perspective is recommended as incorporates all costs and all consequences regardless of who incurs them

# ***Eg - costs and outcomes relevant to different groups***

Evaluation of antenatal care programmes				
	Health authority	2nd level providers	1st level providers	Service users
Resource use	Contract costs for care/ reimbursed care costs	Tests and imaging Outpatient attendances Bed days Transport	GP/Midwife time Drugs Travel Premises etc	Travel Lost time Out of pocket costs Friends and family costs
Outcomes	Life years Utility	Lives gained Morbidity Clinic waiting times?	Appropriate referral (and as for 2nd level and users)	Safety Reassurance Satisfaction

# Checklist item 2

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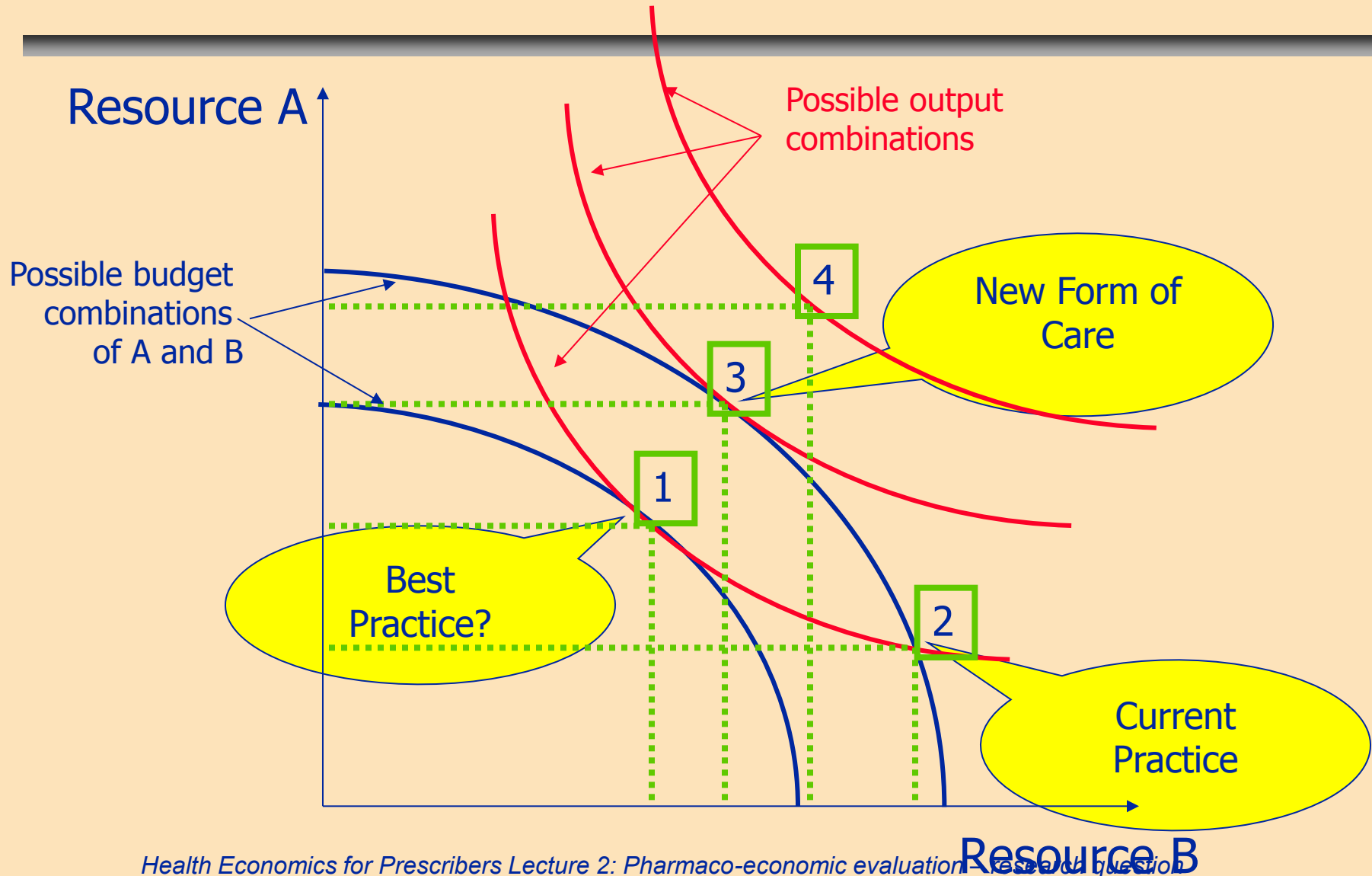
- *Was a comprehensive description of alternatives given?*
  - Can you tell who did what, to whom, where and how often (determines *range* of costs and benefits)?
  - Were any relevant alternatives omitted?
  - Was (should) a 'do-nothing' alternative (be) considered?

# Comparator

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- An ideal evaluation will
  - compare all possible programmes/interventions with each other and a “do nothing” option
- In reality
  - resources to undertake evaluations are limited
- In general evaluations should seek to at least *justify* choice of comparator, especially existing practice (status quo)
- Word of warning
  - to compare a new intervention with no treatment when one currently exists and is standard practice is deceptive

# Problems choosing the comparator



# Checklist item 3

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- *Was there evidence that the programmes effectiveness had been established?*
  - Was this done through a RCT? If so, did the trial reflect practice?
  - Were effectiveness data collected through a systematic review?
  - Were observational data used – what are the possible biases?
  - What was measure of effectiveness?



# *Useful website*

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NHS Economic Evaluations website:

<http://www.york.ac.uk/inst/crd/nhsdfaq.htm>

- Funded by DoH to systematically identify, appraise and synthesise economic evaluations to support decision-makers within the NHS.