

NICE's Appraisal of Cancer Medications: Recent Policy and Methodological Challenges

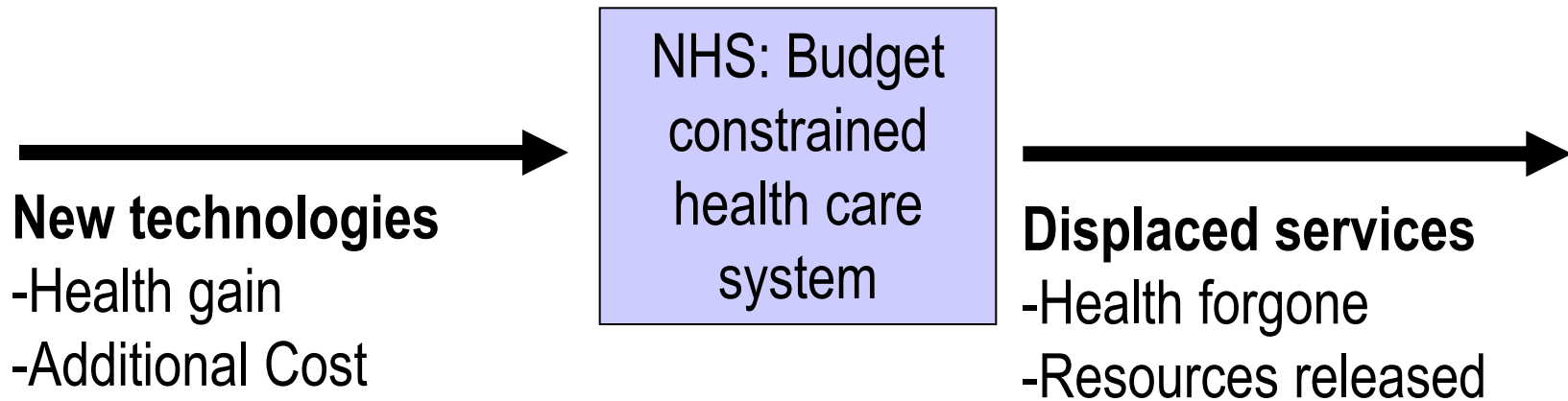
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Outline

- The NHS and NICE
- NICE's methods
- Some recent challenges
 - The QALY as a measure of individual health ✓
 - Inter-personal comparison of health improvement ✓
 - Immature and uncertain evidence ✓
 - Valuing innovation
 - Estimating the cost-effectiveness threshold
 - Speed versus rigour

The National Health Service budget constraint

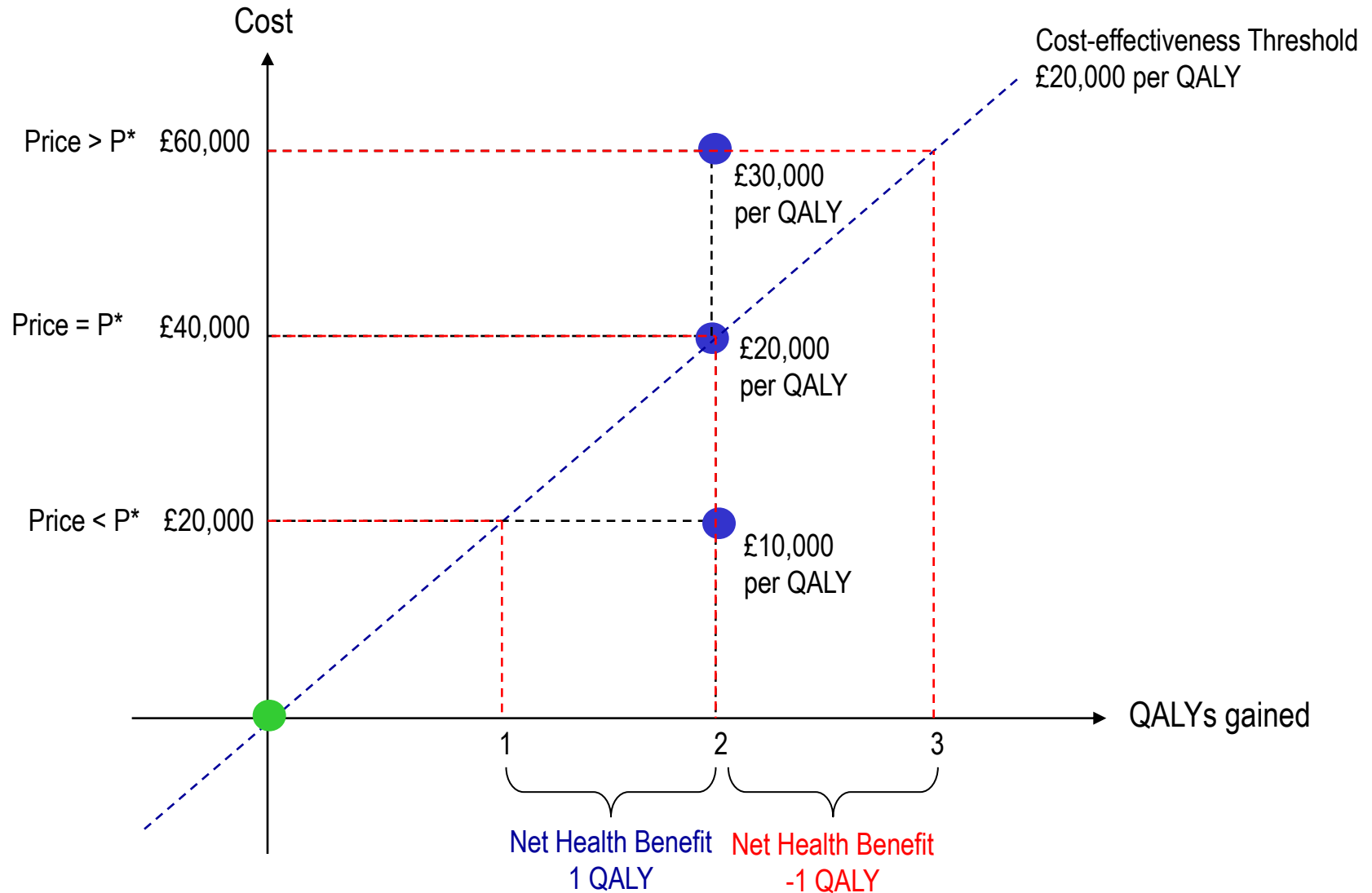


Cancer patients can be gainers and losers

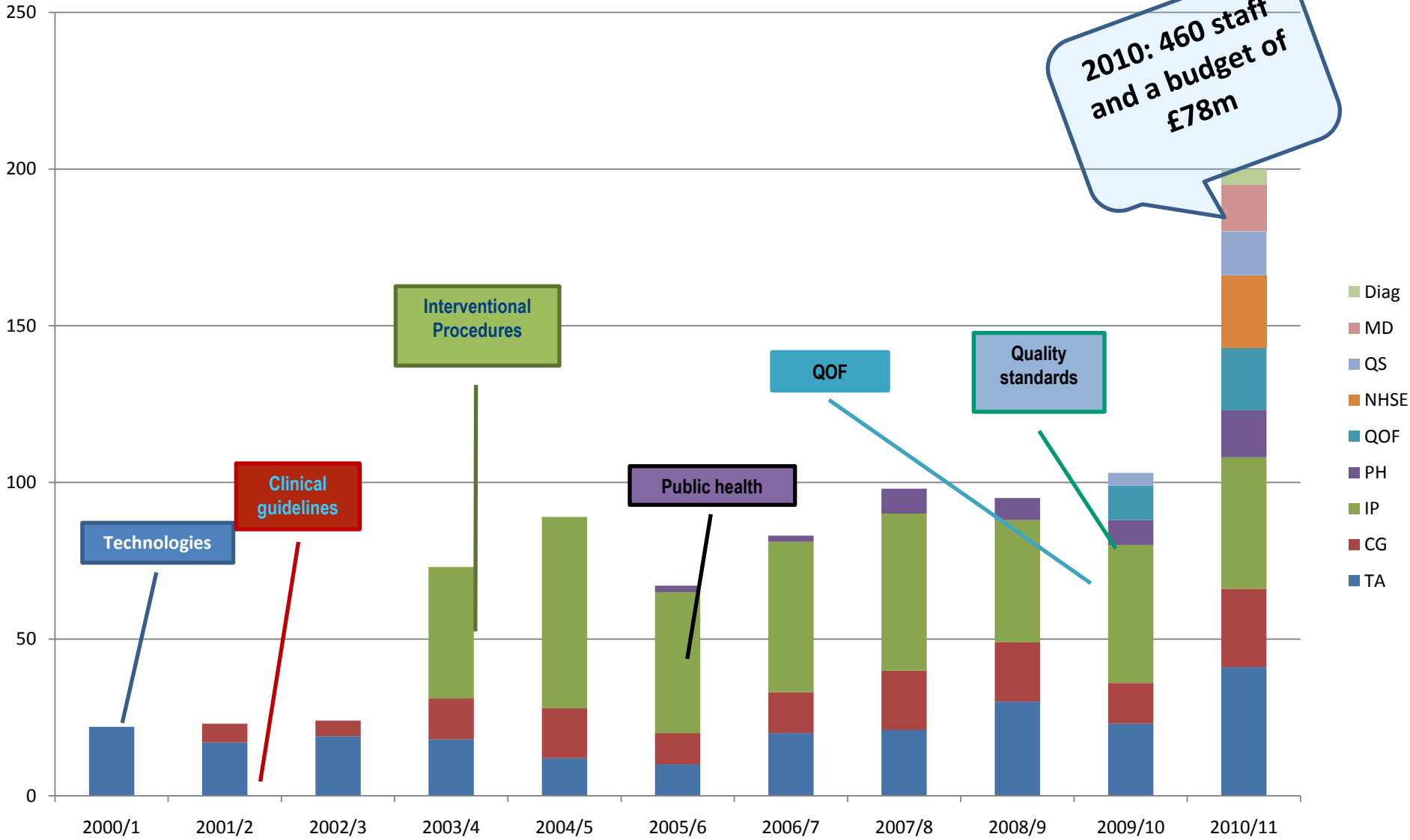
Policy context

- Resource allocation decisions always taken
 - By whom, when and how?
- Political challenge of postcode prescribing in 1980s and 1990s
- NICE introduced in 1999 by incoming Labour Government

Resource allocation decisions at NICE



A short history of NICE



Implications

- Decisions are taken across diseases and clinical areas
- Gains and losses on same scale
 - Net health benefit to average patient
 - Population net health benefit
- Health needs to be measured consistently
 - ➔ Combines different dimensions of quality of life
 - ➔ Combines change in length and quality of life

Challenge 1: concern with the QALY

Table 5.1 Summary of the reference case

Element of health technology assessment	Reference case	Section providing details
Defining the decision problem	The scope developed by the Institute	5.2.5 & 5.2.6
Comparator	Therapies routinely used in the NHS, including technologies regarded as current best practice	5.2.5 & 5.2.6
Perspective on costs	NHS and PSS	5.2.7 to 5.2.10
Perspective on outcomes	All health effects on individuals	5.2.7 to 5.2.10
Type of economic evaluation	Cost-effectiveness analysis	5.2.11 & 5.2.12
Synthesis of evidence on outcomes	Based on a systematic review	5.3
Measure of health effects	QALYs	5.4
Source of data for measurement of HRQL	Reported directly by patients and/or carers	5.4
Source of preference data for valuation of changes in HRQL	Representative sample of the public	5.4
Discount rate	An annual rate of 3.5% on both costs and health effects	5.6
Equity weighting	An additional QALY has the same weight regardless of the other characteristics of the individuals receiving the health benefit	5.12

Measure of health effects
"QALYs"

HRQL, health-related quality of life; NHS, National Health Service; PSS, personal social services; QALYs, quality-adjusted life years.

The QALY and individual health

- Inevitable controversy with any summary measure of individual health
- Strong assumptions linking to individual preferences
 - Constant proportional trade-off
 - Risk neutrality
 - Additive independence
- No practical alternatives

Discomfort with the QALY: NICE's response

- Greater prescription in QALY methods to ensure consistency
 - Public preferences
 - Elicitation method
 - EQ5D preferred
- NICE Citizens' Council
- Need to demonstrate inadequacy of the QALY:

“If the assumptions underlying QALYs ... are considered inappropriate in a particular case, then evidence to this effect should be produced and analyses using alternative measures may be presented as an additional non-reference-case analysis.” (NICE Methods Guidance, 2008)

Example of bortezomib in multiple myeloma

“The manufacturer argued that survival gain is the single most important outcome for people with relapsed multiple myeloma, that there is a lack of robust utility data ... and that the EuroQoL-5D (EQ-5D) ...is not sensitive to some important facets of multiple myeloma.”

“The Committee did not accept this view ... multiple myeloma and its treatments (including the adverse effects of treatment) would have significant effects on health-related QoL, that such effects are important to patients, and that sources of information to allow estimation of QALYs gained are available. “

NICE. Bortezomib monotherapy for relapsed multiple myeloma, 2007 (www.nice.org).

Challenge II: interpersonal comparison of health

Table 5.1 Summary of the reference case

Element of health technology assessment	Reference case	Section providing details
Defining the decision problem	The scope developed by the Institute	5.2.5 & 5.2.6
Comparator	Therapies routinely used in the NHS, including technologies regarded as current best practice	5.2.5 & 5.2.6
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HRQL, health-related quality of life; NHS, National Health Service; PSS, personal social services; QALYs, quality-adjusted life years.

Equity weighting

“An additional QALY has the same value regardless of the other characteristics of the individuals receiving the health benefit.”

Alternative viewpoint: patients' characteristics matter

- Severity
- Lifetime health experience
- Non health-related disadvantage
- Short life expectancy
- Degree of 'blame'

Those that gain health

Generally known

Those that lose health

Generally unknown

NICEs response: analytical versus deliberative approaches

Explicit social weights

- Equity-weighted QALYs
- Opportunity costs
- Which characteristics?
- Would end of life matter?
- Whose preferences?
- Ready for prime time?

Deliberative?

- Other factors taken into account
- More nuanced
- Lacking transparency?

Deliberation informed by analysis?

- Threshold analysis
- Which utilities?
- Which QALY weights?
- What opportunity cost?
- When do QALY limitations matter?

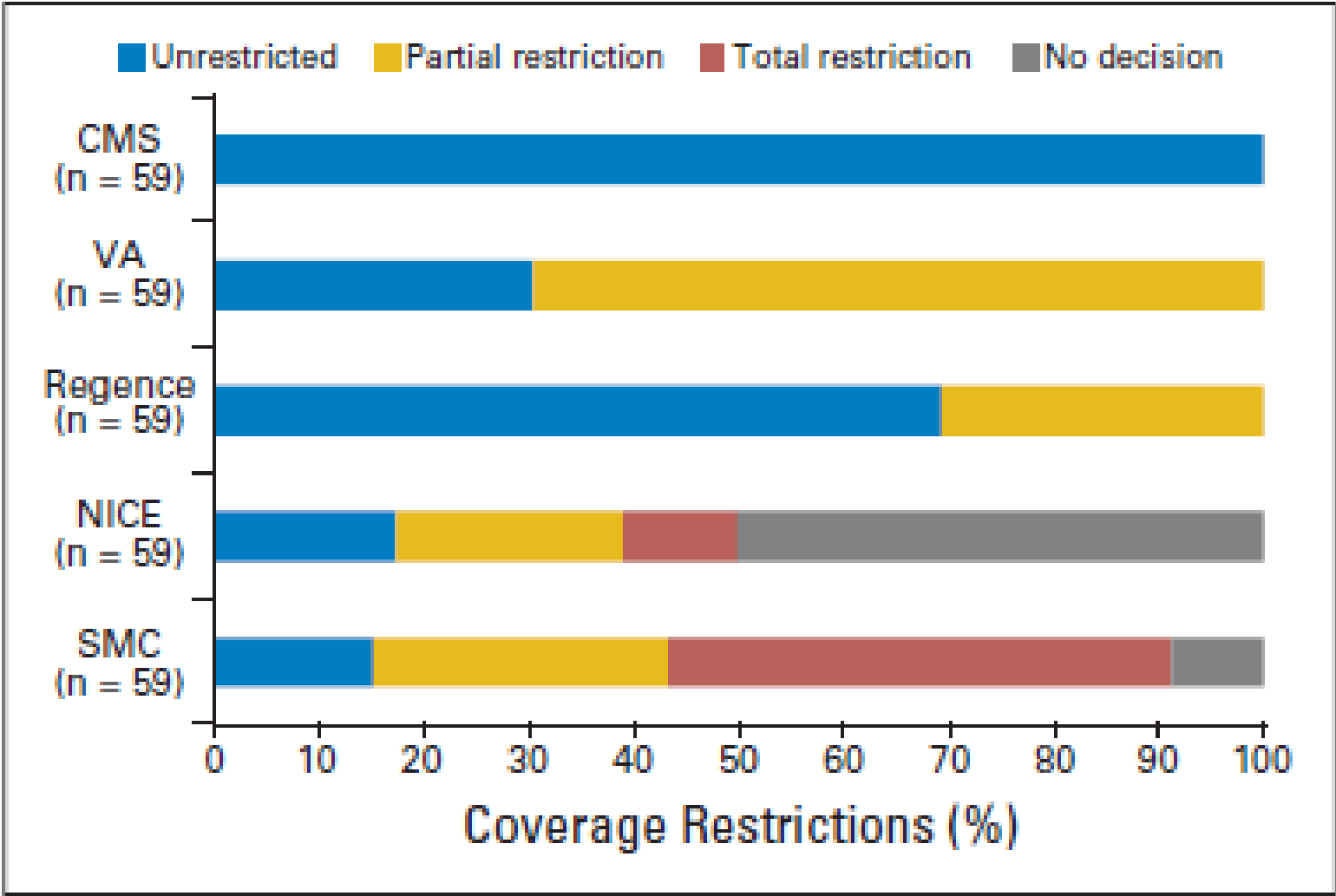
NICE Citizens' Council

“...any changes intended to weight QALYs (for severity) will inevitably make them more complicated and harder to understand... This in turn could lessen their transparency, thereby making any attempt to understand a committee's decision correspondingly more difficult.”

“The alternative - taking severity “into consideration” - would give appraisal committees more flexibility. We would not wish to see a mathematical or other formulaic approach to this task; such a step might simply recreate the rigidity of the QALY component of the decision.”

Report on NICE Citizens Council meeting. Quality Adjusted Life Years (QALYs) and the severity of illness. 2008

But: interventions for patients with short life expectancy



Mason et al. JCO, 2010, <http://jco.ascopubs.org/cgi/doi/10.1200/JCO.2009.26.2758>

NICE supplementary guidance on ‘end of life’ medicines

- Life expectancy <24 months
- Treatment confers average gain of ≥ 3 months
- Small patient population

“The magnitude of the additional weight that would need to be assigned to the QALY benefits in this patient group for the cost-effectiveness of the technology to fall within the current threshold range.” (NICE, Appraising life-extending, end of life treatments, 2009)

Example of sorafenib for advanced hepatocellular carcinoma

“... in light of the end-of-life considerations (the lowest plausible ICER of £52,500)... (the Committee) considered that the magnitude of additional weight that would need to be assigned to the original QALY benefits in this patient group for the cost effectiveness of the drug to fall within the current threshold range would be too great. Therefore the Committee concluded that sorafenib ...would not be a cost-effective use of NHS resources.

NICE technology appraisal guidance 189, May 2010

Challenge III: uncertain and immature evidence

Launch

Market access

Routine use

Regulatory trials
- comparators?
- which patients?
Limited head-to-head
Some safety

Phase IV
- comparative?
- randomised?

Knowledge about use
Safety data increases

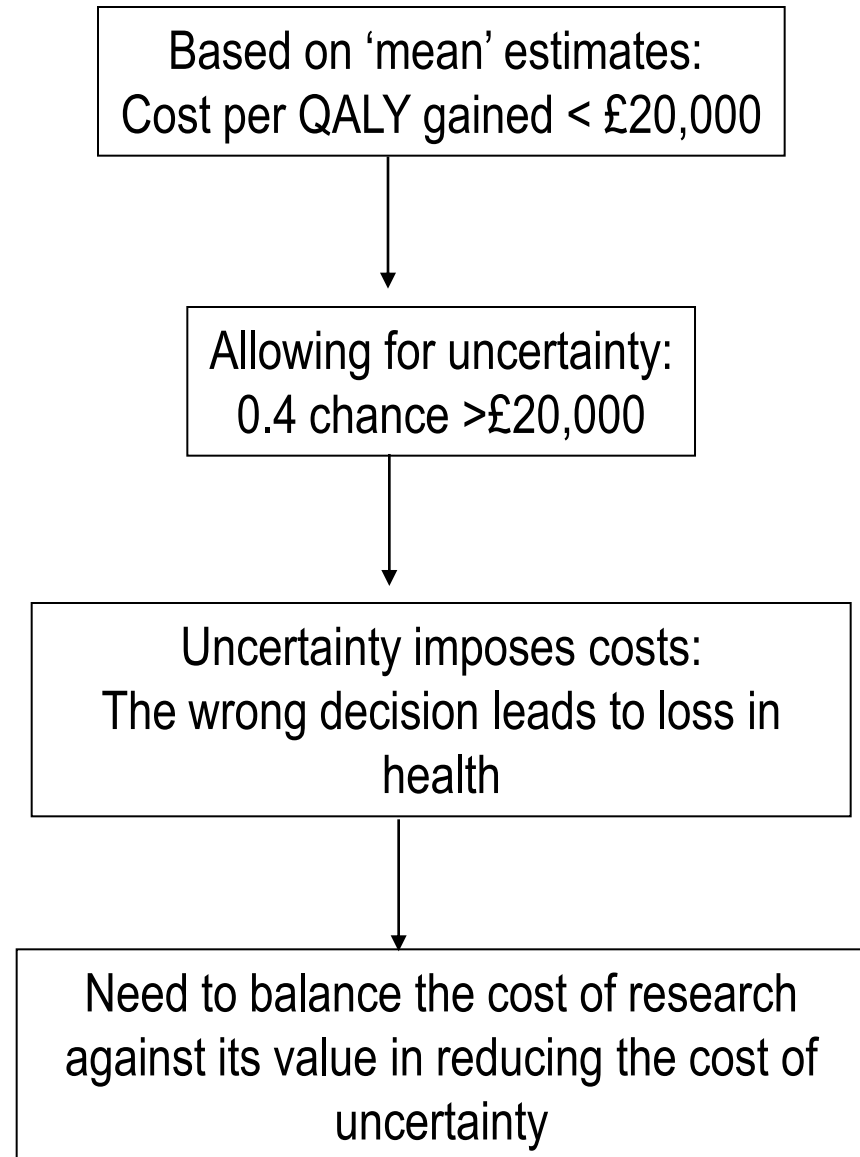
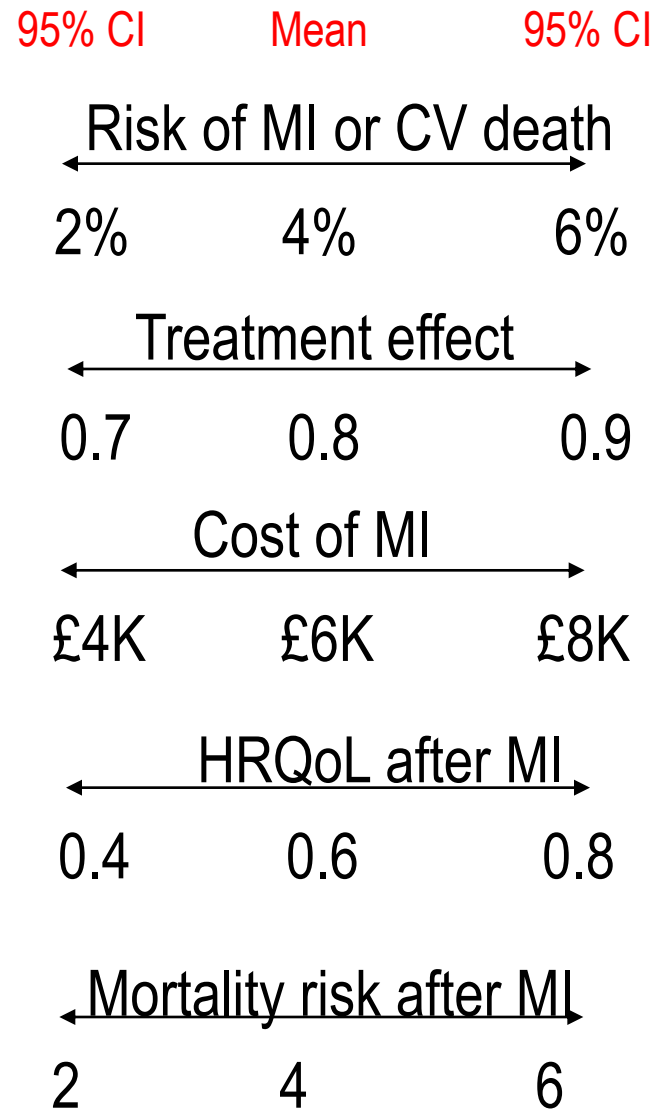
Limited evidence

Potential for more evidence

Limits to gaining more
evidence

Uncertainty matters

The evidence



Making decisions under uncertainty

More nuanced decisions available to NICE

Arrangement

Considerations

Only in research

- Cost per QALY < £20,000
- Research of value and feasible
- Define what research is needed

Patient access schemes

- Reduces effective price of product
- Lowers cost per QALY
- Can reduce the cost of uncertainty

Conditional guidance

- Define what research is needed
- Will research be undertaken by manufacturer?
- Cost of reversing the decision

Conditional guidance
(at lower effective price)

- Can incentivize research (get premium price)
- Cost of NHS undertaking the research
- Cost of reversing the decision

Conclusions

- NICE has strengthened over its 11 years duration
- Despite numerous challenges: policy, methods, process
- Generally principles have remained in tact
- But flexibility essential
- New government wants to 'reform' NICE
 - Value based pricing
- Unlikely to be removed

Thank you

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