What is the “ Right" Cost Per QALY for Innovative and Life Saving Oncology or End-of-Life Therapies

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Objectives

- To explore the rational and practical implication of NICE revised guideline
- To discuss what is the “right” cost effectiveness criteria for technology adaptation and should there be a higher threshold for cancer drugs, biological, and other end of life care therapies

Main Issues

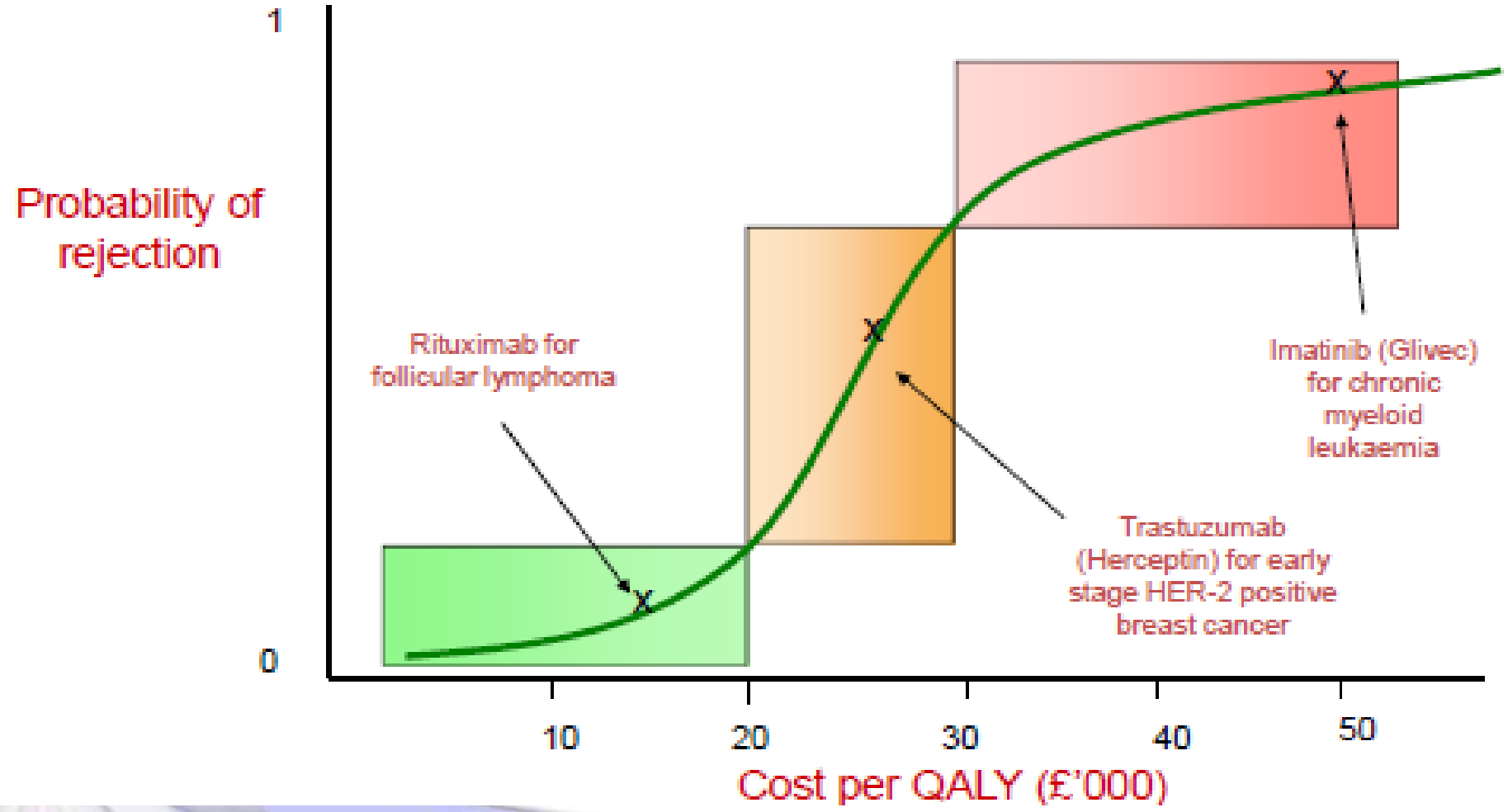
- What is the right threshold for the HTA evaluation?
- Does different disease require different threshold or more consideration should be given beyond the threshold?
- What is the global experience of the threshold application?

General background - NICE

- NICE was established in 1999.
- NICE is responsible for assessing the effectiveness and cost-effectiveness of treatment, and making recommendations to the UK NHS based on the best evidence available.
- Threshold value set at £30,000/QALY gained as the upper limit, but the range of £20,000 – £30,000 has been used for a number of years.

- Research showed an increasing likelihood of rejection as the ICER exceeded £15,000 (Rawlins & Culyer 2004)
- Appraisal Committees have previously made recommendations above the normal threshold range when It has explicitly identified additional benefits in new health technologies.

Assessing Cost Effectiveness



Kalipso Chalkidou 2010)

Background of NICE EOL Policy

- In 2008, an Appraisal Committee Ied by Coon was appointed by NICE to appraise on bevacizumab, sorafenib, sunitinib, and temsirolimus for renal cell carcinoma.
- New drugs were better than existing treatments
- However, none of the 4 drugs came even close if £30,000 was used as the threshold;
  - in addition, in comparing 2 of the drugs, an extra £31,185 only extends patient's life by 5 months

NICE Supplementary Advice on EOL

This supplementary advice is applied in the following circumstances and when all the criteria referred to below are satisfied (2009)

- For patients with a short life expectancy, normally **less than 24 months** and;
- Sufficient evidence to indicate that the treatment offers an extension at least an **additional 3 months of life**, compared to current NHS treatment and;
- No alternative treatment with comparable benefits is available through the NHS, and;
- The treatment is licensed or otherwise indicated, for small patient populations.

Recent developments of NICE's approach

- NICE indicates a list of circumstances under which it may be appropriate for the Institute to approve new treatments with a cost per QALY exceeding £30,000 per QALY (NICE, 2009).
- The new advice arguably reflects the concerns of patients and the public about the potential denial of certain oncology treatments, and contributes to finding a solution to the issue of copayments arising from the review by Professor Mike Richards (Richards, 2008).

International comparison of HTA bodies involved in coverage decision

- 19 countries use economic evaluation to inform the reimbursement decision.
- 13/19 – provide clear guidance on the perspective to be used, method of handing uncertainty
- 11/19 – discount date to be used
- 14/19 – requirement for budget impact analysis
- 14/19 - role of the QALY in assessing benefits

What processes are used to make coverage decision?

- A preference for cost-utility analysis (CUA) is specified by the pharmacoeconomic guidelines for England and Wales, Scotland, New Zealand, and the Netherlands.
- NICE (England and Wales) expresses the strongest preference for this methodology.
- The NICE guidelines recommend QALYs as the measure of benefit to be used in the Reference Case, because the QALY is a generic measure “that reflects both mortality and HRQL effects”

- The use of QALYs to inform reimbursement decisions is optional
  - Australia, Canada, Ireland, Sweden, Belgium, Denmark, Finland, Germany, Norway, Portugal
- Use an implicit threshold
  - Australia, Canada, Ireland, the Netherlands, Sweden, New Zealand,
- However, so far, no applications for reimbursement have included such supplementary analyses.

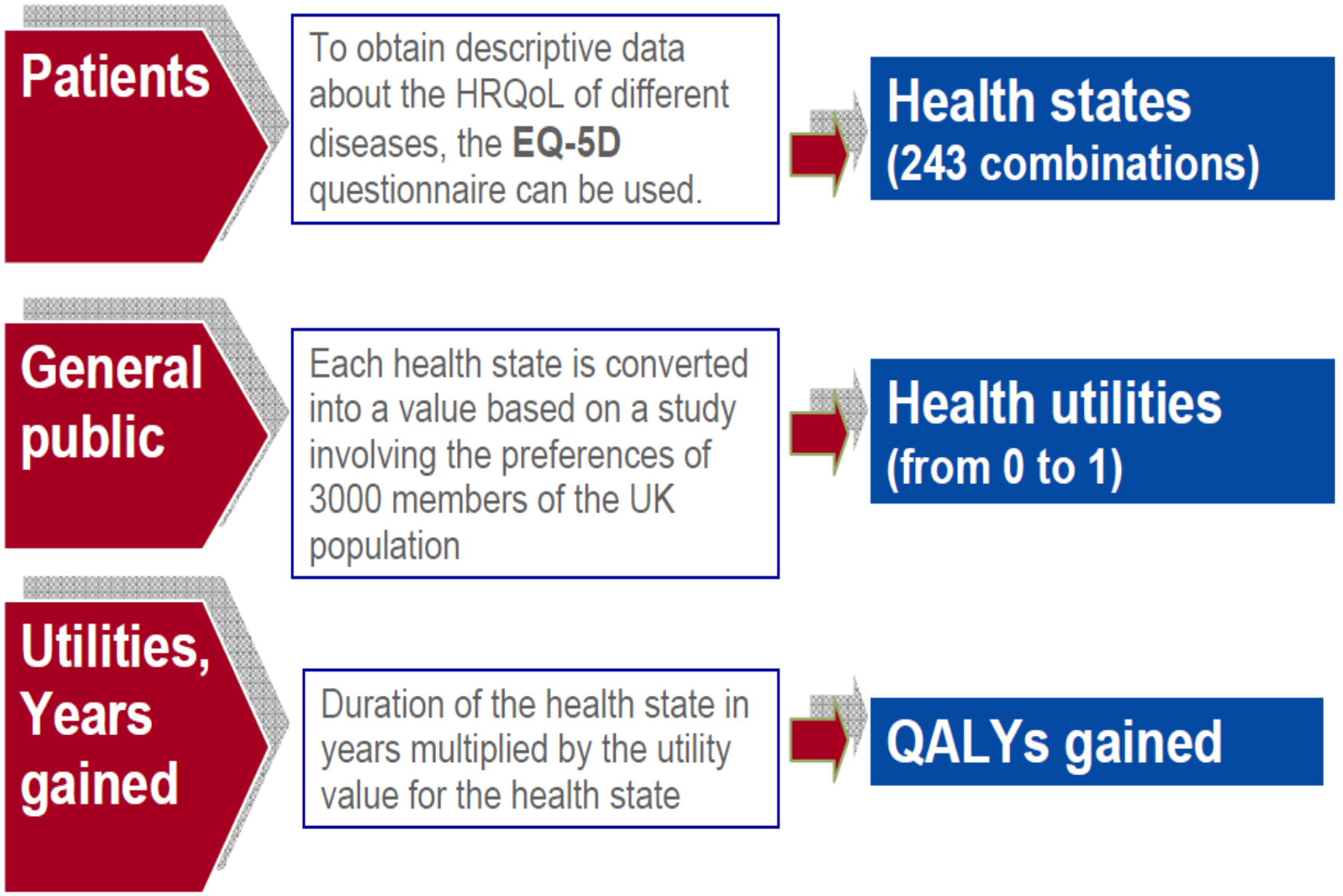
Coverage Decision

- 以NICE最近審查給付之的10種藥爲例
- England and Wales, Scotland, Norway, Finland and Australia (只有五個國家可以完整查到這10種要的資料)
- Australia - all ten drugs were approved but in each case the availability of the drug was restricted
- NICE had the highest approval rate without any restrictions (4/10 drugs with positive recommendations)
- Only two drugs were completely rejected for use in NHS Scotland.
- Finland and Norway were most likely to make negative reimbursement decisions (7/10 drugs)

Issues in Using the QALY

- Currently, NICE seeks use of the EQ-5D
- Assessment of health gains- EQ-5D
- Valuing health states: the assumption of CPT underlying TTO
- Social value judgments
  - Maximum population health
  - QALY egalitarianism - equity
  - Distribution

A Simplified QALY framework



Assessment of health gains - from an individual perspective

- 採用QALY作爲coverage decision criteria 的問題

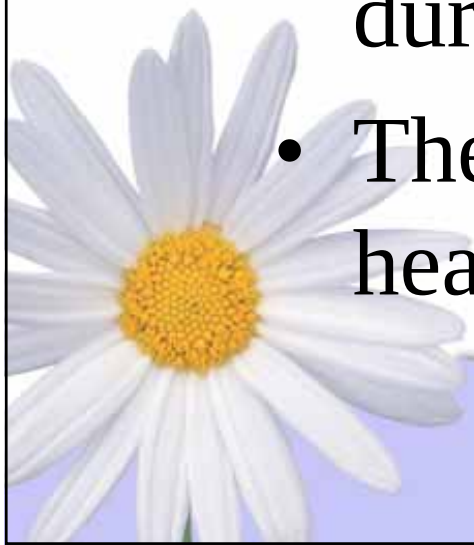
Sensitivity of EQ-5D as a descriptive system

- Its sensitivity to the changes of health status in cancer patients.
  1. Omission of the vitality dimension
  2. Limited number of levels associated with each dimension which might lead to a ceiling effect

Valuing health states: the assumption of CPT underlying TTO

- In generic preference-based measures such as EQ-5D, descriptive data on HRQoL is obtained from patients, then each health state is converted into a **value** based on a study involving the preferences of members of the general public.
- The assumptions underlying TTO -constant proportional trade-off
- CPT denotes that a person is willing to trade off a constant proportion of life time to obtain a proportion of improvement in HRQoL, regardless of the number of the life years remaining
- Length of the health states and corresponding value

- Miyamoto and Eraker (1988) reported that about 25% of respondents did not trade off any time to improve their current health when the duration was under 1 year, whereas time was traded off when the duration was more than one year.
- They referred it to as ‘indifference to health quality at short durations’.



Issues in using the QALY – Social value judgments

- From individual perspective to resource allocation
- The principal objective of health care is to **maximize population health** using available resources (Culyer, 1997)
- In cost-utility analysis, the overall health benefits of an intervention are calculated by aggregating the QALY gains.
  - QALY-maximisation rule.

- 'QALY egalitarianism' – all QALYs are of equal social value, regardless of whom they accrue to and the context in which they are enjoyed
  - In other words, 'a QALY is a QALY is a QALY' under all circumstances. (Culyer, 1992).
- However, maximizing health is not the only purpose of health care.
  - Welfarist: maximization of social welfare
  - Extra-welfarism - beyond the pursuit of aggregate health gain. - distribution

- The NHS also has **equity** objectives such as seeking to “improve the health of the poorest fastest” (DH, 2003).
- This objective suggests that we are interested not only in the total number of QALYs, but also in how these QALYs are distributed amongst individuals.

- NICE recognizes that society may have preferences regarding the use of health care funding that involve some **sacrifice of total QALY gains** in order to achieve a more desirable **distribution** of health.
- As well as making scientific value judgments, the Institute accepts the need to incorporate these social value judgments into its advice:

- Decisions about whether to recommend interventions should not be based on evidence of their relative costs and benefits alone.
- NICE must consider other factors when developing its guidance, including the need to distribute health resources in the fairest way within society as a whole.” (NICE, 2008a)

- Potential sources of social value can be broadly divided into two categories (Schwappach, 2002):

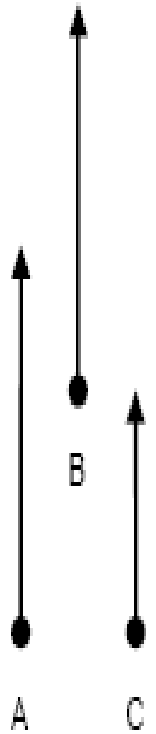
1. factors concerning specific characteristics of the patient or intervention (e.g. patient's role in society)
2. and factors concerning the nature of the health improvement (e.g. gain in life expectancy).

Table 1 Simple ranking exercise results (adapted from Donaldson et al., 2008)

Overall rank	Average rank	Factor
1	2.9	Pre-treatment quality of life
2	3.1	Availability of alternative treatments
3	3.2	Pre-treatment life expectancy
4	4.4	Age
5	5.9	Health-related lifestyle
6	6.1	Prior health care consumption
7	6.3	Dependants
8	7.4	Employment status
9	9.0	Gender
10	9.2	Social class

Respondents showing a tendency to place greater importance on ‘need’ factors rather than on personal or socioeconomic characteristics.

Severity - theory



Problem level		Example (in terms of mobility)
1	None (healthy)	
2	Slight	Can move about anywhere, but has difficulties with walking more than 2km.
3	Moderate	Can move about without difficulty at home, but has difficulties in stairs and outdoors.
4	Considerate	Moves about with difficulty at home. Needs assistance in stairs and outdoors.
5	Severe	Can sit. Needs help to move about – both at home and outdoors.
6	Very severe	To some degree bedridden. Can sit in a chair part of the day if helped up by others.
7	Completely disabled	Permanently bedridden.
8	Dead	

Eight-level severity scale (adapted from Nord et al., 1999)

Discussions

- Cost-effectiveness should be a criterion in the decision making process, but ICER is not the only criteria used in technology adoption

  A higher ICER not necessary means automatic rejection
- 'Multiple factors are involved in the decisions to adopt a new technology

Factors may influence reimbursement decision

- Available resources
- Drugs for rare diseases
- Drugs that increase survival, & other clinical benefit
- Willingness to pay
- Budget impact (cost to government)
- Cost-effectiveness (ICER)
- Life-threatening condition (cancer drugs are more likely get positive recommendation)

Thank You

When the conditions described above are met, the Appraisal Committee will consider

- The impact of giving greater weight to QALYs achieved in the later stages of terminal diseases, using the assumption that the extended survival period is experienced at the full quality of life anticipated for a healthy individual of the same age

- 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’s Views

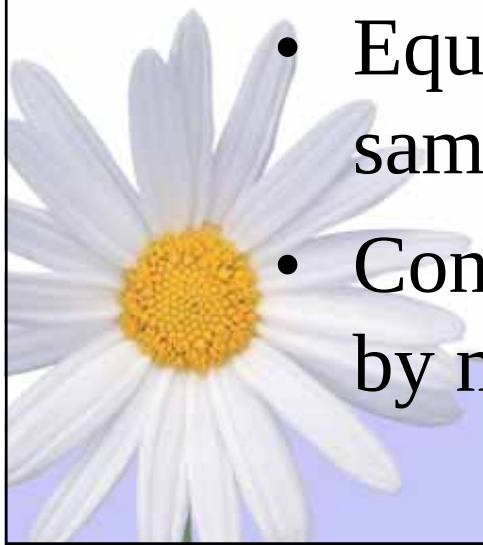
- In developing this supplementary advice the Appraisal Committee previous decisions, together with the relevant principles of **Social Value Judgments** have been taken into account.
- The change reflects the beliefs and desires of the British public and it has also responded to scientific and public concern.
- Regard has been given to the circumstances in which it might be appropriate to support the use of treatments outside its cost per QALY threshold range.
- NICE's responsibility to recognize the potential for long term benefits to the NHS of new innovation products

Objectives of NICE Supplementary Advice

- "The objective of the supplementary advice was to ensure that the Appraisal committees fully consider all the benefits which it is appropriate to take into account in appraising treatments designed to extend life, at the end of life for small populations and in particular to ensure that where benefits are not or not adequately captured in the reference case, that the Appraisal Committees are provided with an appropriate supplementary analysis”

Controversies

- NICE is not to decide on health budget by setting a fixed threshold but to maximize the health gains from a fixed budget
- NICE threshold: opportunity cost of accepting a technology i.e. health gain foregone by other patients
- Equity issue: should all patients be assumed the same in considering health gains or losses?
- Concerns arising from politicians and influence by media



Implications

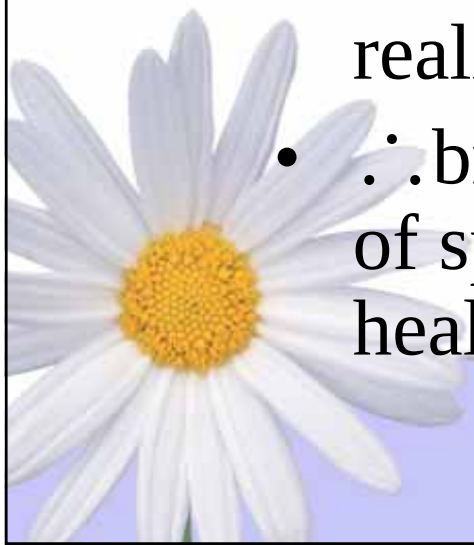
- Treatments that may have been previously ruled out as not sufficiently cost effective for routine use in the NHS might now be recommended for use
- Treatments that are licensed for small patient populations and that will increase a short life expectation by at least 3 months will be considered
- NICE will support the development of novel treatments for smaller patient groups that provide innovative benefits over and above existing NHS care.

- Appraisal Committees will consider the impact of giving greater weight to extensions to life when people have a short remaining life span
- Interventions with a large budgetary impact may be appraised using a lower threshold due to opportunity cost and equity consideration
- The value reflected in the currently adopted threshold may need to be reviewed regularly to reflect the impact of changes and budget over time
- New technologies will be assessed individually based on their merits compared to existing ones

Equity issue

- Is there any ground for ensuring equity in health gains and losses of different categories of patients?
- Is there any ground for recommending technologies with higher lCERs because of their positive impact on equity?
- 2 groups of patients affected: those who receive new treatments and those who bear the opportunity cost

- Assumption: the health gain foregone by those who bear the opportunity cost (typically elderly and in the last year of life) is valued less than that of those who receive the new treatment
- To ensure equity, the patients who did eventually bear the opportunity cost need to be identified for characteristics analysis but this is realistically not achievable
- ∴broad generalizations are often made instead of specific identification of patients whose health gains are displaced



A moving threshold

Not deemed desirable:

- Threshold only provides a means for optimum allocation of a fixed budget, but not necessarily representing the society's willingness to pay for health.
- Introduce uncertainty and provide less secure environment for innovation.
- May encourage unnecessary high risk investment in developing new technologies.
- Strengthening the lower bound of the current range would enhance the efficiency of future NICE guidance.

Summary of messages

- Final outcome of NICE appraisal process is influenced by many social, economic and political factors
- NICE sees itself not to determine the health budget for UK by setting an independent threshold, but to ensure the maximum health gain from a fixed budget
- NICE threshold is best to be fixed to avoid uncertainties for parties concerned
- Although assumptions are inevitably made in recommending new technologies, opportunity cost consideration is important to achieve optimum weighting of the health gains/losses between different patient groups