

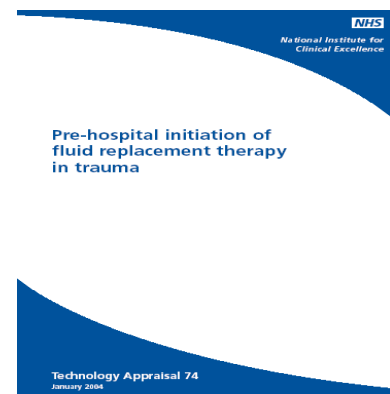
A view from NICE: Technology Appraisals

- Helen Knight, 9 May 2013



What is a NICE Technology Appraisal?

- A review of clinical and economic evidence leading to recommendations on the appropriate use of new and existing technologies for the NHS in England and Wales
- Funding direction
- NHS constitution
- Consultees can appeal



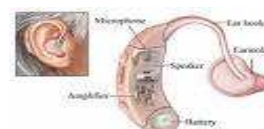
NICE's Procedural Principles



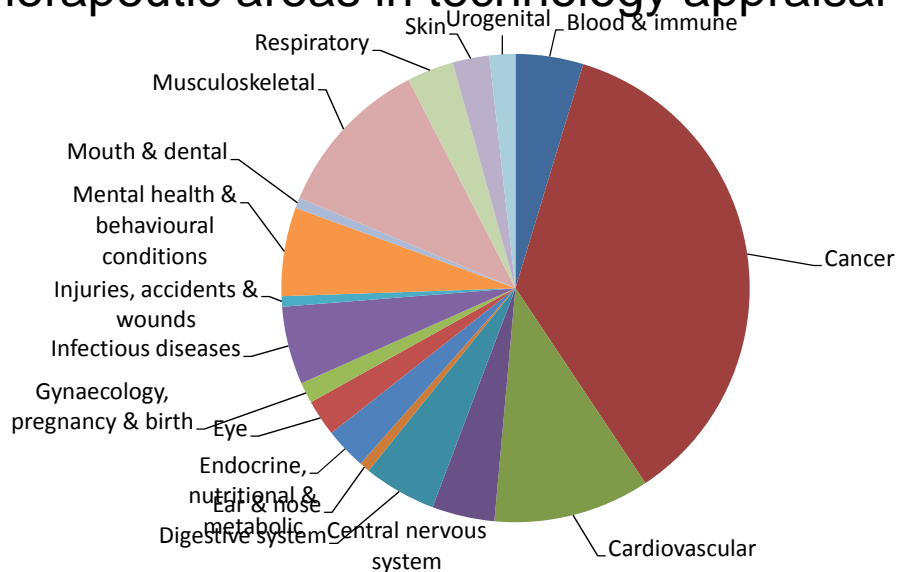
What technologies?



- >75% of appraisals: drugs
- Some: medical devices (e.g. hearing aids, inhalers; insulin pumps)
- Very few:
 - Diagnostics (e.g. liquid-based cytology)
 - Procedures (e.g. surgery for morbid obesity repairing hernias)
 - Health promotion tools (e.g. patient education models for diabetes)



Therapeutic areas in technology appraisal topics



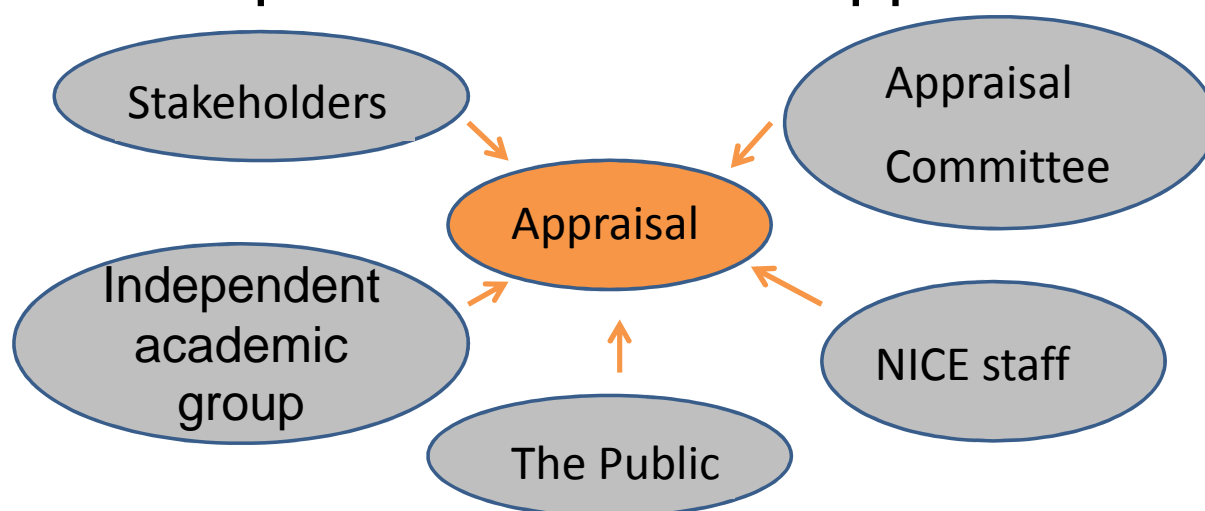
Technology appraisals

People involved

+

Process

Groups involved in an Appraisal



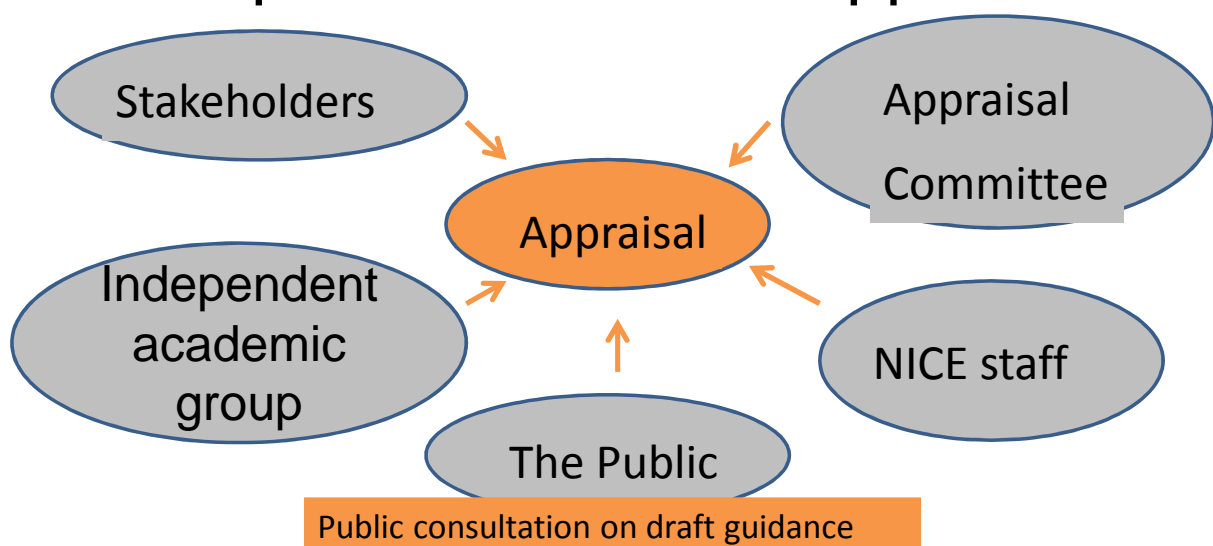
Stakeholders

Input	Consultees Manufacturer national prof. /patient organisations; NHS – Clinical Commissioning Groups, DH	Commentators Comparator manufacturers; relevant research groups
Comment on scope	✓	✓
Submit evidence	✓	
Comment on draft guidance	✓	✓
Right to appeal	✓	

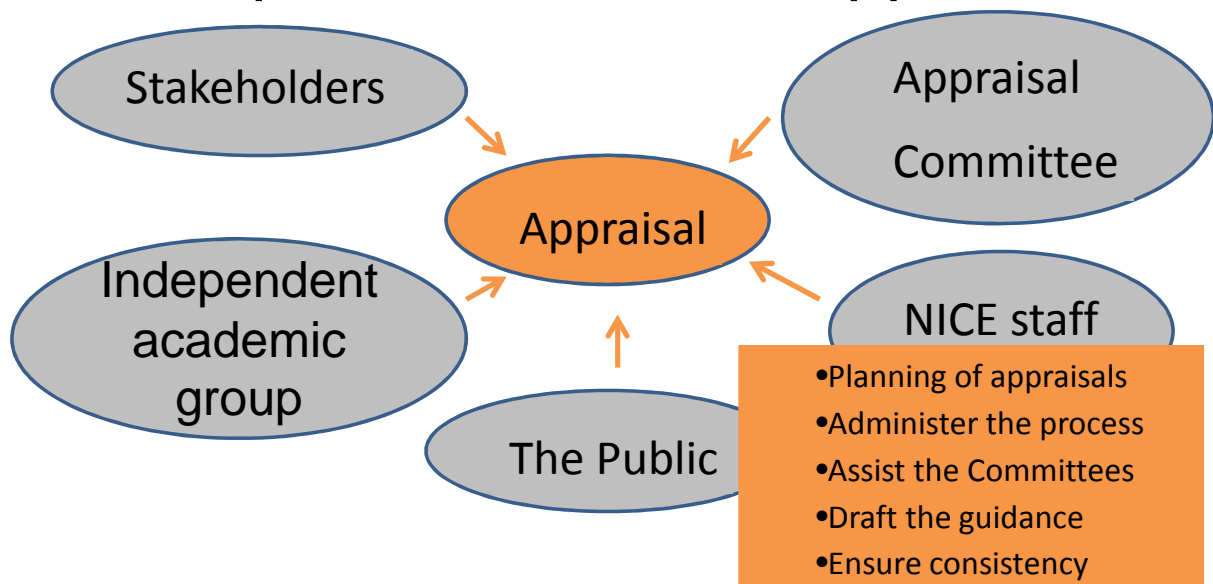
Independent academic group

- Carry out systematic review and develop economic model (MTA)
- Critique the evidence submitted by manufacturer (STA)
- Report to the Appraisal Committee
- Attend Committee meeting to answer questions
- Commissioned through NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC)

Groups involved in an Appraisal



Groups involved in an Appraisal



Appraisal Committee

- Standing Committee - working across the whole spectrum of technologies/interventions and conditions
- 34 (including Chair) members drawn from Primary Care, Secondary Care, Royal Colleges, Patient Groups, Health Economists, NHS Management, Public Health, Healthcare Industries, Biostatisticians
- 1 meeting per month (2-3 appraisals per meeting)
- 2 weeks before each meeting: Committee members receive all evidence, expert statements and comments
- Members with a conflict of interest for a particular drug cannot participate in an appraisal including that drug

The Overall Process

Topic selection, referral and scoping



Appraisal

Technology Appraisals Process - Scoping

National
Horizon
Scanning

Topic Selection
Criteria

DH/NICE
panel

Consultation on
proposed appraisal

- Intervention
- Population
- Comparators
- Outcomes

DH decide
on
referral

Final Remit
and
Scope

Scoping
workshop

Written
comments
received

Referral

Topic formally
referred

Appraisal begins

Topic not referred

Scoping

Population	Usually the patients indicated in the marketing authorisation
Intervention	Technology to be appraised
Comparators	Established NHS practice in England
Outcomes	Outcomes which have an impact on: - survival - health related quality of life (HRQoL)

Principle components of an appraisal

1. Evidence collection from stakeholders
2. Independent assessment or critique
3. 1st Appraisal Committee meeting: evidence consideration and draft guidance (meeting in public)
4. Consultation on the draft guidance and all evidence
5. 2nd Appraisal Committee meeting: consideration of comments on the draft guidance and finalisation of guidance (meeting in public)
6. Opportunity to appeal

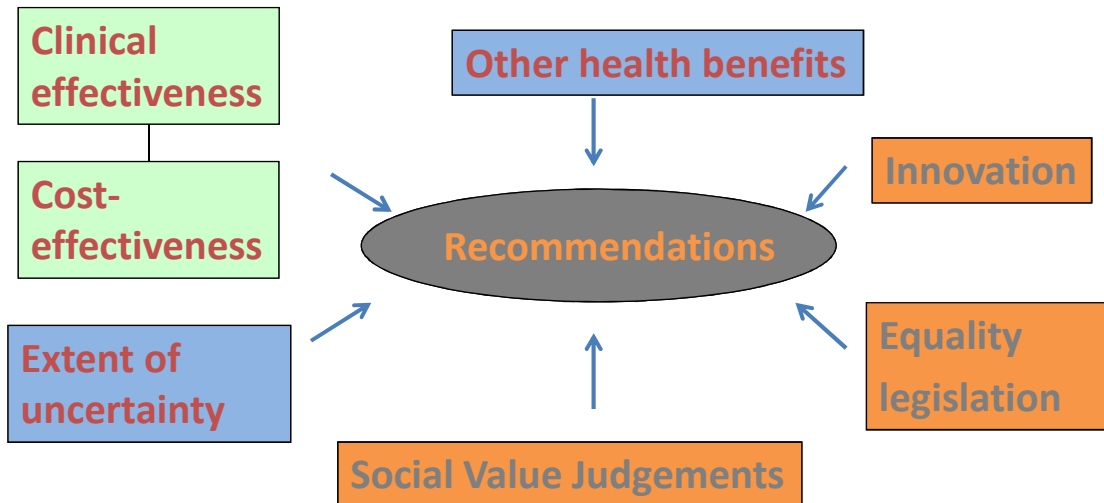
2 Types of Appraisal:

- Single Technology Appraisal (STA)
 - Single technologies, single indications, close to introduction to the NHS
 - Based on evidence provided by manufacturer, patient/ clinical expert input, plus independent critique
 - Used from 2006 onwards, takes ~35 weeks
- Multiple Technology Appraisal (MTA)
 - Reviews, complex appraisals, classes of technologies
 - Based on evidence provided by manufacturer and independent academic group, patient/ clinical input
 - Used from 1999 onwards, takes ~14 months

Manufacturers submissions

- In STA, manufacturer's submission is the main evidence base
- Audience is primarily the Appraisal Committee
- NICE submission template
 - Indicate required information and format
 - Aim to reflect NICE methods guide
- A good submission?
 - Clear, transparent and succinct
 - Justification of variables, methodology etc.
 - Exploration of alternatives and uncertainty (with justification)

Committee decision making



Economic evaluation

- How well does the drug work in relation to how much it costs compared to established practice in the NHS ?
- Recognises the reality of fixed NHS resources
Exposes the opportunity cost of new interventions, that is if you spend money on a new healthcare intervention, you have to take away the health care from someone else
- Enables consistency and fairness across all decisions

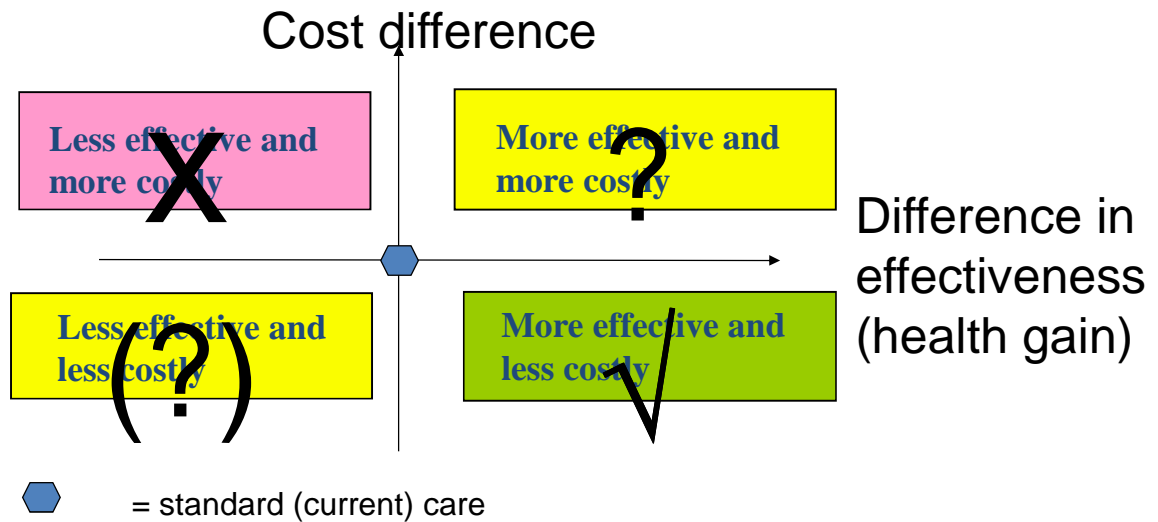
NICE methods reference case

Element of HTA	Reference case
Defining the decision problem	The scope developed by NICE
Comparator(s)	As listed in the scope developed by NICE
Perspective on outcomes	All direct health effects, whether for patients or, when relevant, carers
Perspective on costs	NHS and PSS
Type of economic evaluation	Cost–utility analysis with fully incremental analysis
Time horizon	Long enough to reflect all important differences in costs or outcomes between the technologies being compared
Synthesis of evidence on health effects	Based on systematic review

NICE methods reference case

Element of HTA	Reference case
Measuring and valuing health effects	Health effects should be expressed in QALYs. The EQ-5D is the preferred measure of HRQoL in adults.
Source of data for measurement of health-related quality of life	Reported directly by patients and/or carers
Source of preference data for valuation of changes in health-related quality of life	Representative sample of the UK population
Equity considerations	An additional QALY has the same weight regardless of the other characteristics of the individuals receiving the health benefit
Evidence on resource use and costs	Costs should relate to NHS and PSS resources and should be valued using the prices relevant to the NHS and PSS
Discounting	Same annual rate for both costs and health effects (currently 3.5%)

Comparison of a new treatment with standard care



Cost effectiveness

Incremental cost-effectiveness ratio (ICER):

$$\frac{\text{cost}_{\text{new}} - \text{cost}_{\text{current}}}{\text{health gain}_{\text{new}} - \text{health gain}_{\text{current}}}$$

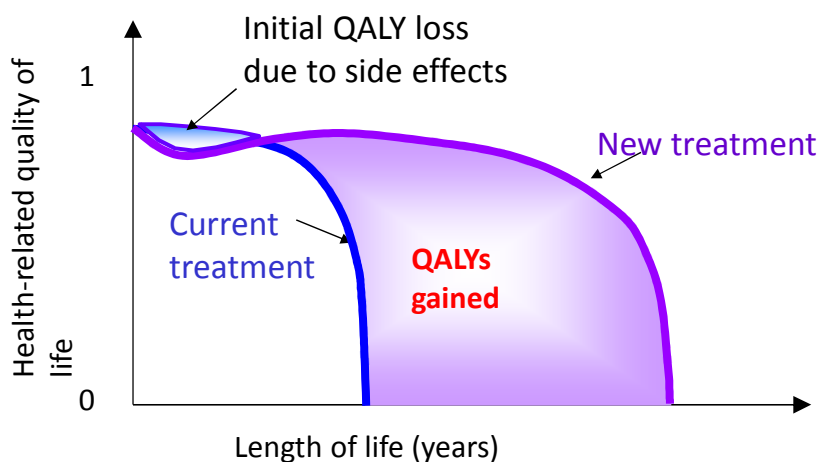
Health gain expressed as quality adjusted life years (QALYs)

→ **cost per QALY gained**

Quality adjusted life years

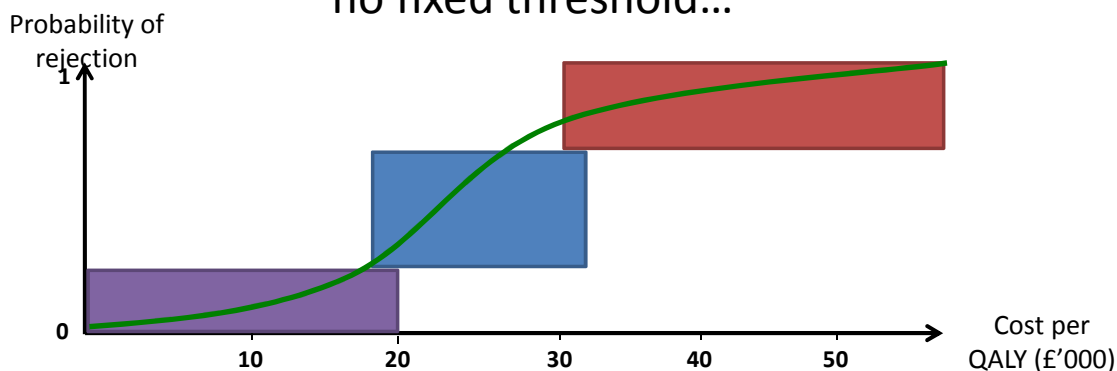
- Basic concept:
 - Health care should improve the quality of your life and/or increase your life expectancy.
 - Therefore an index which combined quality of life with life expectancy could be used to compare the benefit of all health care interventions.
 - A way of measuring health benefit consistently across all interventions and conditions
 - $\text{QALY gain} = \text{life years gained} \times \text{quality of life index}$

The **Q**uality **A**ddjusted **L**ife **Y**ear



Consideration of Cost Effectiveness

no fixed threshold...



Probably cost effective

- Make **explicit reference** to:
- Certainty
 - HRQoL adequately captured?
 - Innovative nature
 - Social value judgment

Need to identify an **increasingly strong case** with regard to same factors

Looking Beyond the ICER application of 'special circumstances'

Table 1

Application of 'special circumstances' in the appraisal of some products with incremental cost-effectiveness above £30 000 per quality adjusted life year
From Rawlins, Barnett, and Stevens. (2010) *Br J Clin Pharmacol.*; 70: 346–349

Topic	ICER ('000s)	Severity	End of life*	Stakeholder persuasion	Significant innovation	Disadvantaged population	Children
Riluzole (motor neurone disease)	38–42	✓	✓	✓			
Trastuzumab (advanced breast cancer)	37.5	✓			✓		
Imatinib (chronic myeloid leukaemia)	36–65	✓			✓		
Imatinib (gastrointestinal stromal tumour)		✓	✓		✓		
Pemetrexed (malignant mesothelioma)	34.5	✓	✓			✓	
Ranizumab (age-related macular degeneration)	>>30	✓		✓	✓		
Omalizumab (severe asthma)	>30	✓		✓	✓		
Sunitinib (advanced renal cancer)	50	✓	✓	✓	✓		
Lenalidomide (multiple myeloma)	43	✓	✓		✓		
Somatotropin (growth hormone deficiency)	n/a			✓	✓		✓
Chronic subcutaneous insulin infusion (childhood Type 1 diabetes)	n/a			✓			✓

*End-of-life considerations have only been explicitly taken into account since January 2009 on the basis of supplementary advice from the Institute to the Appraisals Committee. ICER, incremental cost-effectiveness ratio (£ per quality-adjusted life year).

“rather than apply formal ‘equity weightings’ on QALYs and ICERs, NICE expects their committees to exercise their collective judgement in the application of these special considerations when the ICER exceeds £20,000–30,000 per QALY”

Appraising life-extending end of life treatments

Criteria:

- Life expectancy < 24 months
- Extension to life > 3 months
- Small patient population

Allows Appraisal Committee to consider:

- Giving greater weight to QALYs achieved in later stage of terminal disease
- The magnitude of additional weight needed to bring QALY benefits within a range that is normally accepted as good use of NHS resources

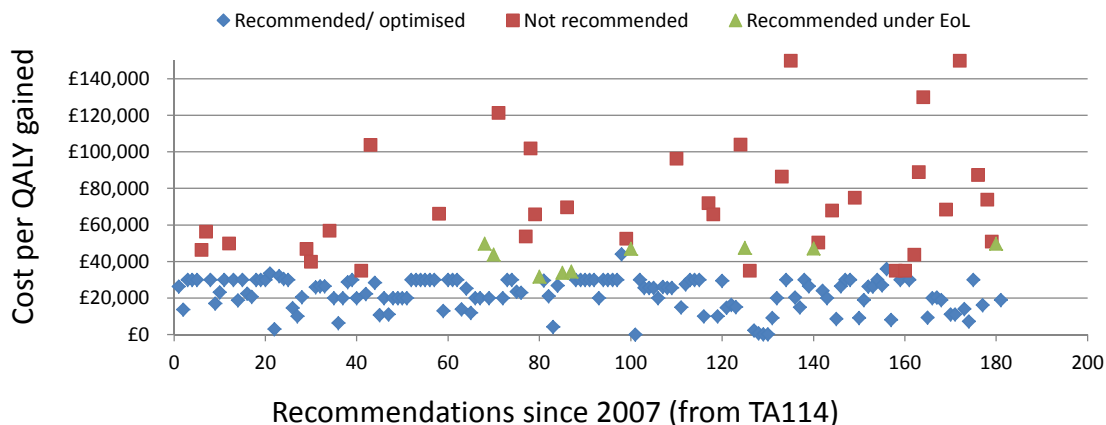
In practice, it means that drugs with ICERs > £30,000 can be recommended for this population.

However, the Appraisal Committee must be satisfied that both evidence and assumptions are plausible

Innovation in NICE Appraisals

- Where innovation is considered to be a specific and identifiable benefit of the technology
- The Appraisal Committee investigates
 - potential to make a **distinctive** and **substantial** impact on health-related benefits
 - how it might improve the way that a current need is met
 - whether it can be regarded as a '**step-change**' in terms of outcomes for patients
- Where satisfied that the product is a 'step change'
 - demonstrate either that that product's identified innovative characteristics have been taken into account in cost effectiveness calculation or
 - how it has separately evaluated them and what their impact is on its judgement of the most plausible ICER

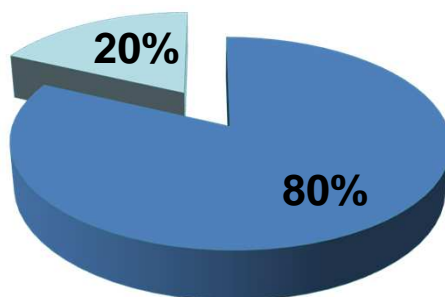
Most credible ICER presented for technologies appraised by NICE since 2007



Breakdown of recommendations

255 appraisals published up to Feb 2013, 503 individual decisions

'no' or
'only in research'



recommended for routine use
or under specific circumstances

Patient Access Schemes

- 2009 PPRS includes possibilities for
 - Flexible Pricing
 - Patient Access Schemes (PAS)
- NICE can only consider PAS after formally approved by Department of Health
- NICE has no role in negotiating PAS
- NICE is a 'price taker'

Patient Access Schemes in published guidance

TA	Treatment	Indication	Type of PAS
TA129	Bortezomib (Velcade)	Multiple myeloma	Response-rebate
TA155	Ranibizumab (Lucentis)	Macular degeneration (Acute wet AMD)	Dose-capping
TA162	Erlotinib (Tarceva)	Non small cell lung cancer	Cost equalisation
TA169	Sunitinib (Sutent)	Renal cell carcinoma	first cycle free
TA171	Lenalidomide (Revlimid)	Multiple myeloma	Dose-capping
TA176	Cetuximab (Erbix)	Metastatic colorectal cancer (first Line)	Discount
TA179	Sunitinib (Sutent)	Gastrointestinal stromal tumour	first cycle free
TA180	Ustekinumab (Stelera)	Moderate to severe psoriasis	weight equalisation
TA185	Trabectedin (Yondelis)	Advanced soft tissue sarcoma	cost after fifth cycle met by manufacturer
TA186	Certolizumab pegol (Cimzia)	Rheumatoid arthritis	first 12 weeks free of charge
TA192	Gefitinib (Iressa)	Non small cell lung cancer	fixed cost per patient
TA215	Pazopanib (Votrient)	Advanced renal cell carcinoma	Discount
TA218	Azacitidine (Vidaza)	Myelodysplastic syndromes, CML, AML	Discount
TA220	Golimumab (Simponi)	Psoriatic arthritis	100 mg = 50 mg
TA221	Romiplostim (Nplate)	Chronic idiopathic (immune) thrombocytopenic purpura	Discount
TA225	Golimumab (Simponi)	Rheumatoid arthritis	100 mg = 50 mg
TA233	Golimumab (Simponi)	Ankylosing spondylitis	100 mg = 50 mg
TA235	Mifamurtide (Mepact)	non-metastatic osteosarcoma	reduced cost
TA238	Tocilizumab (RoActemra)	Systemic juvenile idiopathic arthritis	Discount
TA241	Nilotinib (Tasigna)	Imatinib-resistant chronic myeloid leukaemia	Discount
TA247	Tocilizumab (RoActemra)	Rheumatoid arthritis	Discount
TA251	Nilotinib (Tasigna)	First-line treatment of chronic myeloid leukaemia	Discount
TA254	Fingolimod (Gilenya)	Highly active relapsing-remitting multiple sclerosis	Discount
TA258	Erlotinib (Tarceva)	non-small-cell lung cancer	Discount
TA259	Abiraterone acetate (Zytiga)	Castration-resistant metastatic prostate cancer	Discount
TA265	Denosumab (XGEVA)	prevention of skeletal-related events with bone metastases from solid tumours	Discount

Value-based pricing

- To be introduced by DH in Jan 2014 when current PPRS expires
- 'aims to address a broad set of objectives
 - **improve outcomes for patients** through better access to effective medicines;
 - **stimulate innovation** and the development of high value treatments;
 - **improve the process for assessing new medicines**, ensuring transparent, predictable and timely decision-making;
 - include a **wide assessment**, alongside clinical effectiveness, of the range of factors through which medicines deliver benefits for patients and society;
 - ensure value for money and **best use of NHS resources**
- The new system must also be stable and sustainable over the longer term, so that industry is able to plan and prioritise research in areas which can deliver the greatest potential benefits to patients and society.'

Overview of rationale for VBP



Current Process	Issues	VBP solutions
<p>Does drug give enough benefit* to justify moving funds and depriving some other patients of their treatment? Right decision if:</p> <ul style="list-style-type: none"> • Care equally about all patients • Only care about patients 	<p>We may care more about some patients...</p> <ul style="list-style-type: none"> • eg with severe condition, large unmet need 	<p>Apply QALY weightings</p> <ul style="list-style-type: none"> • Burden of Illness • Therapeutic Innovation and Improvement
	<p>Treatments affect people beyond patients</p> <ul style="list-style-type: none"> • Family, carers • Beneficiaries of government spending 	<p>Include "Wider Societal Benefits"</p> <ul style="list-style-type: none"> • Effect on contribution to society... • ...and use of society's resources

*measured in Quality-Adjusted Life Years (QALYs), the universal unit of health gain

National Institute for Health and Clinical Excellence

Any questions?