Should ICER be NICE (Or Not)?

How ICER's New Cost-Effectiveness Framework Compares with NICE's Guidelines

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Issues Panel

Moderator

Matthew Sussman, MA
Director, Modeling & Evidence
Boston Health Economics, Inc.

Panelist

Dan Ollendorf, PhD
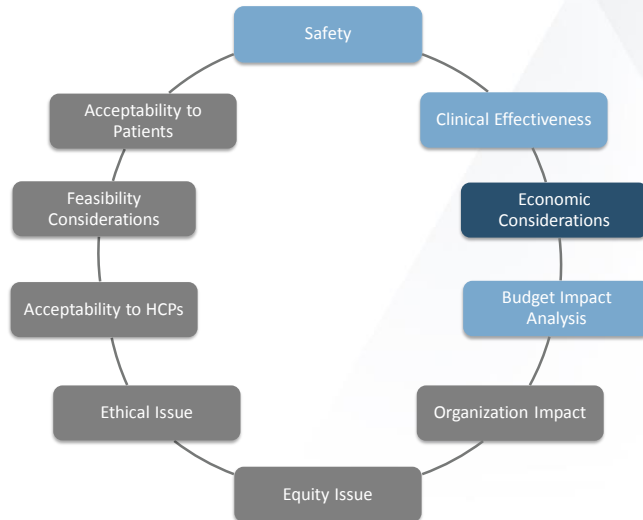*Chief Scientific Officer*
ICER

Panelist

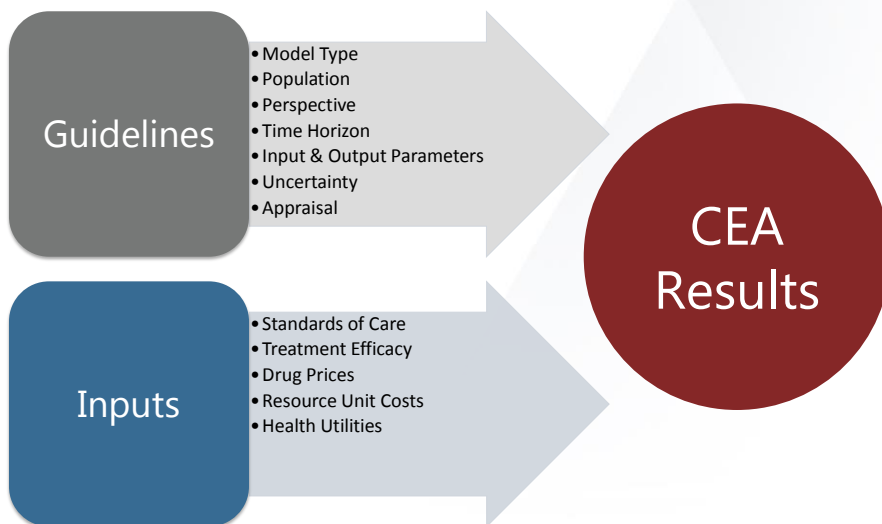**Páll Jónsson, PhD**
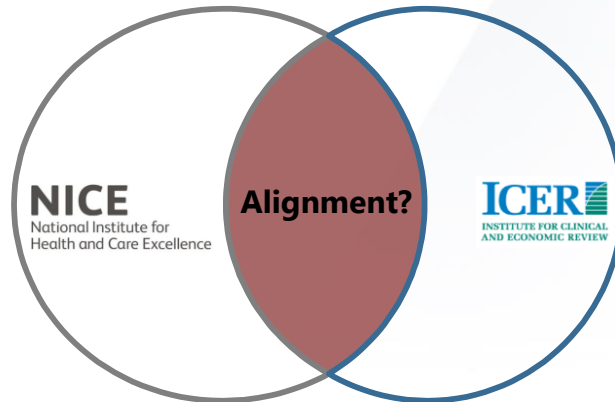*Associate Director, R&D*
NICE

HTA Considerations


```
                        Safety
         Acceptability to          Clinical Effectiveness
            Patients
         Feasibility               Economic
         Considerations            Considerations
         Acceptability to HCPs     Budget Impact
                                   Analysis
         Ethical Issue             Organization Impact
                     Equity Issue
```

*WHO Global Survey on HTA 2015

2

Sources of Variation in CEA Results

Guidelines
- Model Type
- Population
- Perspective
- Time Horizon
- Input & Output Parameters
- Uncertainty
- Appraisal

Inputs
- Standards of Care
- Treatment Efficacy
- Drug Prices
- Resource Unit Costs
- Health Utilities

CEA Results

3

The Issue:

> *Should there be a unified framework for designing, implementing, and reporting CEAs?*

NICE National Institute for Health and Care Excellence

Alignment?

ICER INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW

NICE Quick Facts

NICE National Institute for Health and Care Excellence

Founded in 1999

Mission:
- "An independent public body that provides national guidance and advice to improve health and social care in England"
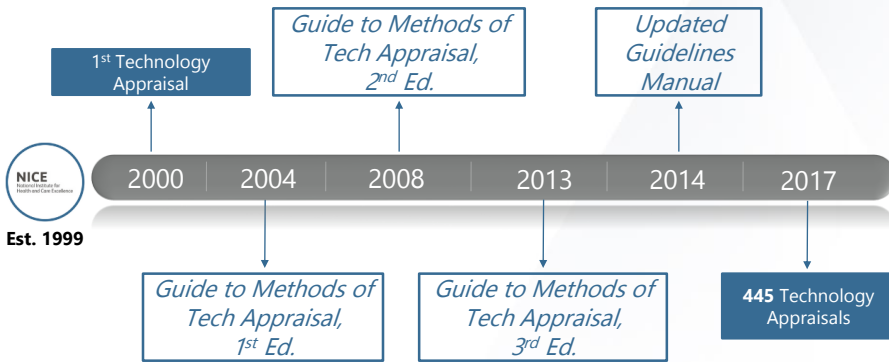
Evaluations:
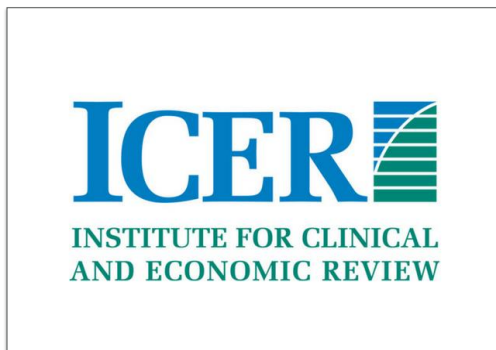- Clinical & cost effectiveness

Decisions:
- Legally-binding (Jan. 2005)

*Developing NICE guidelines: the manual. 2017

The NICE Timeline

| | 1st Technology Appraisal | | Guide to Methods of Tech Appraisal, 2nd Ed. | | | Updated Guidelines Manual | |

NICE
National Institute for
Health and Care Excellence

Est. 1999

| 2000 | 2004 | 2008 | 2013 | 2014 | 2017 |

Guide to Methods of Tech Appraisal, 1st Ed.

Guide to Methods of Tech Appraisal, 3rd Ed.

445 Technology Appraisals

ICER Quick Facts

ICER
INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW

Founded in 2006

Mission:
- "Non-profit organization that evaluates evidence on the value of medical tests, treatments, and delivery system innovations"
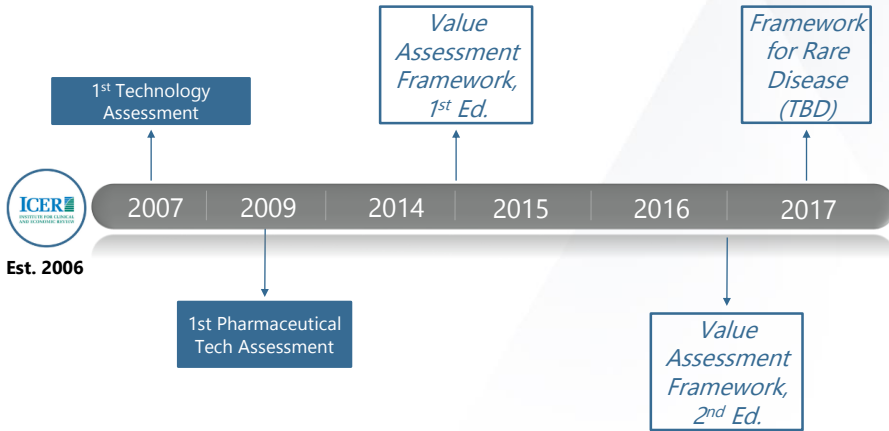
Evaluations:
- Long-term value for money
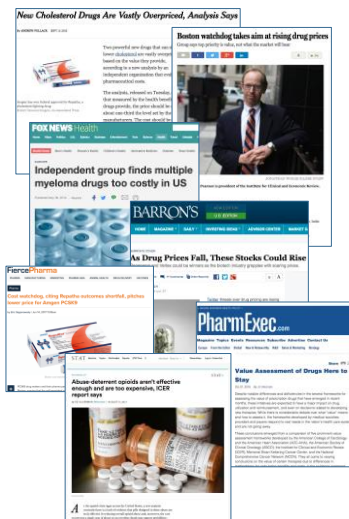- Short-term affordability

Decisions:
- Not legally-binding

The ICER Timeline

| 1st Technology Assessment | | Value Assessment Framework, 1st Ed. | | | Framework for Rare Disease (TBD) |

ICER Est. 2006

| 2007 | 2009 | 2014 | 2015 | 2016 | 2017 |

1st Pharmaceutical Tech Assessment

Value Assessment Framework, 2nd Ed.

ICER's Rising Influence

"We *use ICER* and others in our formulary deliberations. They are not the decision-making body, so to speak, but they are *one of many types of data that we look at*." [*]

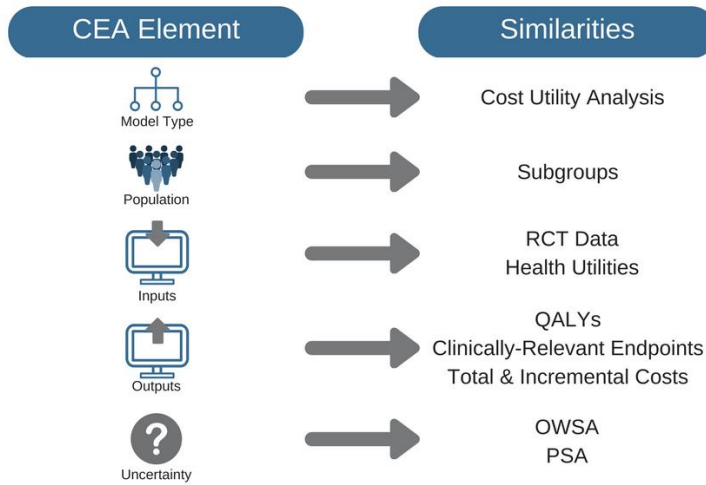– Michael Sherman, CMO at Harvard Pilgrim Health Care, Aug. 2017 [*]

59%

of payers indicated use of ICER reports

– Dymaxium Research: March/April 2017 [*]

*AJMC TV 2017
*ISPOR Value & Outcomes Spotlight 2017

Framework Similarities

CEA Element	Similarities
Model Type	Cost Utility Analysis
Population	Subgroups
Inputs	RCT Data Health Utilities
Outputs	QALYs Clinically-Relevant Endpoints Total & Incremental Costs
Uncertainty	OWSA PSA

Key Panel Questions

What is different between the frameworks?

Will the differences lead to disparate model results and appraisals?

Is there a rationale for regional variations?

Should the differences be reconciled?

Panelist Discussions

- Dan Ollendorf, ICER
  - Organizational, structural, and environmental similarities and differences

- Páll Jónsson, NICE
  - Organizational procedures, decision-making process, and special considerations

- Q&A

ICER & NICE:

Organizational Similarities, Environmental Differences

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AND ECONOMIC REVIEW

Dan Ollendorf, PhD
Chief Scientific Officer
8 November 2017

NICE & ICER: Are the organizations so different?

- NICE vision
  - Driver of:
    - Using evidence to inform the ambition for health and social care
    - Engaging and influencing central and local government and the NHS
    - Visible impact on national and local strategies and policies
  - Enabler of:
    - Products designed to support individual decisions and system-level quality improvement
    - Topics and priorities aligned with health and care system needs
    - Presentation and delivery integrated with quality improvement and performance management systems
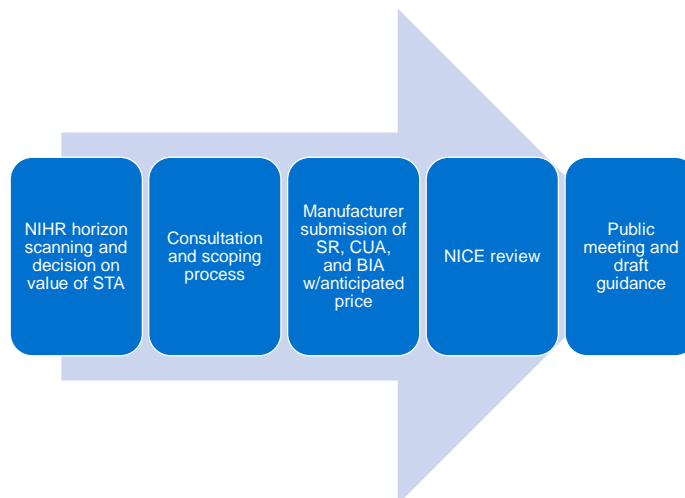
ICER

NICE & ICER: Are the organizations so different?

- ICER mission
  - ICER is a trusted non-profit organization that evaluates evidence on the value of medical tests, treatments and delivery system innovations and moves that evidence into action to improve the health care system. To accomplish this goal ICER performs analyses on effectiveness and costs; develops reports using innovative methods that make it easier to translate evidence into decisions; and, most distinctively, fills a critical gap by creating sustainable initiatives with all health care stakeholders that can align efforts to use evidence to drive improvements in both practice and policy. Through all its work, ICER seeks to play a pivotal role in creating a future in which collaborative efforts to move evidence into action provide a foundation for a more effective, efficient, and just health care system.

ICER

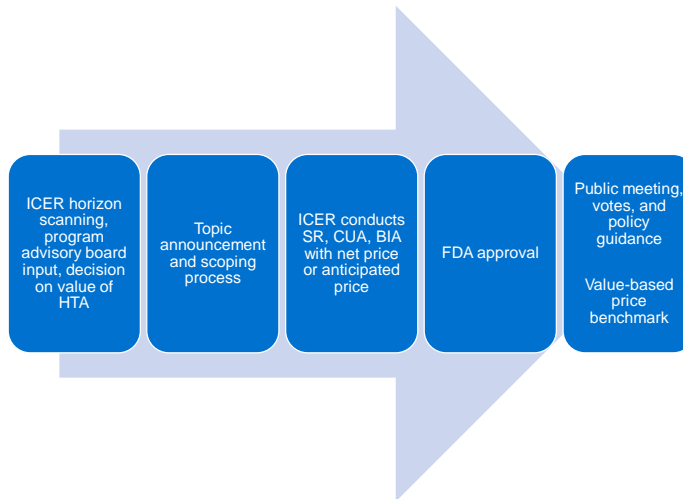# Structural Differences

Review Timing: NICE

| NIHR horizon scanning and decision on value of STA | Consultation and scoping process | Manufacturer submission of SR, CUA, and BIA w/anticipated price | NICE review | Public meeting and draft guidance |

Review Timing: ICER

ICER horizon scanning, program advisory board input, decision on value of HTA → Topic announcement and scoping process → ICER conducts SR, CUA, BIA with net price or anticipated price → FDA approval → Public meeting, votes, and policy guidance / Value-based price benchmark

ICER

Special Populations and Circumstances

- NICE:
  - End-of-life criteria and connection to CDF
  - Highly specialized technologies program
    - Focus on ultra-rare disease
    - Allowance for higher C-E threshold (3-5 times standard threshold range of £20,000 - £30,000 per QALY)
    - Additional allowance for QALY weighting for major gains (i.e., ≥10 vs. comparator)
  - Standard budget impact threshold of £20m annually, based on NHS budget realities

ICER

Special Populations and Circumstances

- ICER:
  - No specific adjustments for end-of-life or cancer
  - Value framework adaptation for rare conditions
    - Focus on ultra-rare disease
    - Presentation of multiple C-E thresholds but reliance on standard threshold for value-based price ($100,000 - $150,000 per QALY)
    - No additional allowance for major QALY gains but discussion of contextual considerations and other benefits
  - Standard budget impact threshold of $915m annually based on GDP growth and FDA approval volume

ICER

Environmental Differences

What are the REALLY important differences?

- Differences in technical approach, process, and special accommodations are really at the margin
- At the core, general principles of CUA, transparency, and multi-stakeholder environment apply to both ICER and NICE
- So what is really different?
- Social mores
- Political climate

ICER

The Environment for HTA: USA and UK

Concerns	UK	USA
Equity	Welfare state principles: do what maximizes health gain for all of us	Fair innings: everyone gets a shot at bettering health
Tradeoffs	Basic recognition that all gov't investment decisions require tradeoffs	Who needs government? We all deserve everything!
Economic evaluation	CUA has a role in prioritizing investments	See above, and it's all about clinical benefit
Politics	NICE = Necessary (evil?)	NICE = Rationing by death panels

ICER

Summary

- Technical differences between ICER and NICE actually fairly minor
- If we traded places, we would likely morph into the other pretty quickly
  - Some structural aspects are by design, many more by necessity
- Why so similar? Because at the end of the day we are working toward the same goals
  - Using evidence for action
  - Improving population health, efficiency and quality of care

ICER

Questions

dollendorf@icer-review.org

ICER

Health Technology Assessment
NICE's perspective

Páll Jónsson
Associate Director, Research and Development

NICE National Institute for Health and Care Excellence

National Institute for Health and Care Excellence

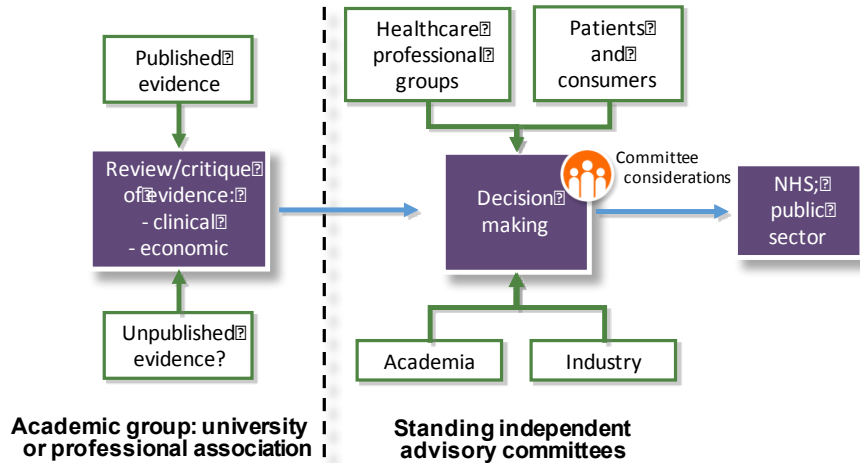NICE is a **non-departmental public body**

We provide national **guidance** and **advice** to improve **health and social care**

a year in review 2016-2017

31 Published

53 Published

25 Published

37 Published

20 Published

GUIDELINES
Supports decisions in health, public health and social care.

TECHNOLOGY APPRAISALS
Guides the use of new and existing medicines and treatments within the NHS.

INTERVENTIONAL PROCEDURE GUIDELINES
Helps new treatments and tests to be introduced into the NHS in a responsible way.

QUALITY STANDARDS
Set out the priority areas for quality improvement in health and social care.

EVIDENCE SUMMARIES
Assesses the evidence to help you make decisions. Advice, rather than formal NICE guidance.

NICE National Institute for Health and Care Excellence

Technology Appraisal: The Decision-Making Process

Published evidence	→	Review/critique of evidence: - clinical - economic
Unpublished evidence?	↑	

Academic group: university or professional association

Healthcare professional groups | Patients and consumers

Decision making → Committee considerations → NHS; public sector

Academia | Industry

Standing independent advisory committees

Technology Appraisal: The Principles

NICE National Institute for Health and Care Excellence

Process and methods guides

Guide to the methods of technology appraisal 2013

http://publications.nice.org.uk/pmg9

Published: 04 April 2013

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NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

SOCIAL VALUE JUDGEMENTS

Principles for the development of NICE guidance

"The purpose of this document is to provide an overview of the principles and methods of health technology assessment"

"All NICE guidance, and the procedures NICE uses to develop its guidance, should be in line with the Institute's legal obligations and the social value principles set out in this document"

NICE's Procedural Principles

Scientific Rigour · Inclusiveness · Transparency · Independence · Challenge · Review · Support for implementation · Timeliness · Accountability for reasonableness
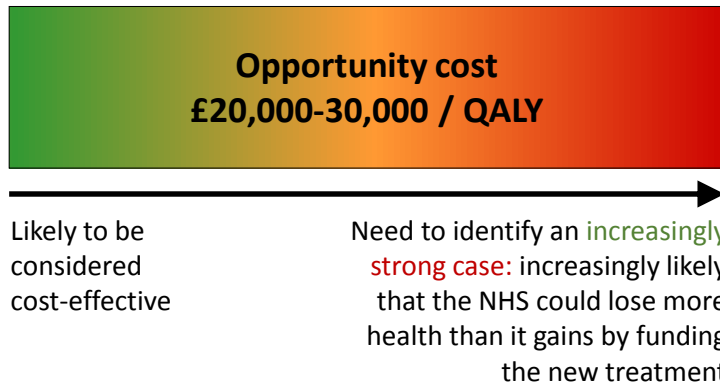

The reference case

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 NICE	5.1 5.1
Comparator(s)	As listed in the scope developed by NICE	2.2 2.2 5.1 5.1
Perspective on outcomes	All direct health effects, whether for patients or, when relevant, carers	5.1 5.1
Perspective on costs	NHS and PSS	5.1 5.1
Type of economic evaluation	Cost–utility analysis with fully incremental analysis	5.1 5.1
Time horizon	Long enough to reflect all important differences in costs or outcomes between the technologies being compared	5.1 5.1

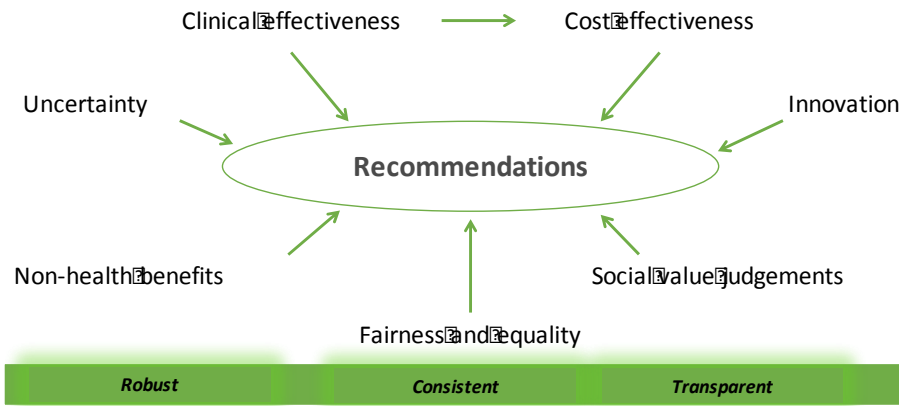|		
Synthesis of evidence on health effects	Based on systematic review	
Measuring and valuing health effects	Health effects should be expressed in QALYs.The EQ-5D is the preferred measure of health-related quality of life in adults.	5.3.1
Source of data for measurement of health-related quality of life	Reported directly by patients and/or carers	5.3.3
Source of preference data for valuation of changes in health-related quality of life	Representative sample of the UK population	5.3.4
Equity considerations	An additional QALY has the same weight regardless of the other characteristics of the individuals receiving the health benefit	5.4.1
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	5.5.1
Discounting	The same annual rate for both costs and health effects (currently 3.5%)	5.6.1

No fixed ICER threshold

**Opportunity cost
£20,000-30,000 / QALY**

Likely to be
considered
cost-effective

Need to identify an increasingly strong case: increasingly likely that the NHS could lose more health than it gains by funding the new treatment

Flexible decision making

Certainty of the ICER

HRQL inadequately captured

Innovative nature of technology

Non-health objectives of the NHS

Life extending treatment at the end of life

£20,000 per QALY

£30,000 per QALY

£50,000 per QALY
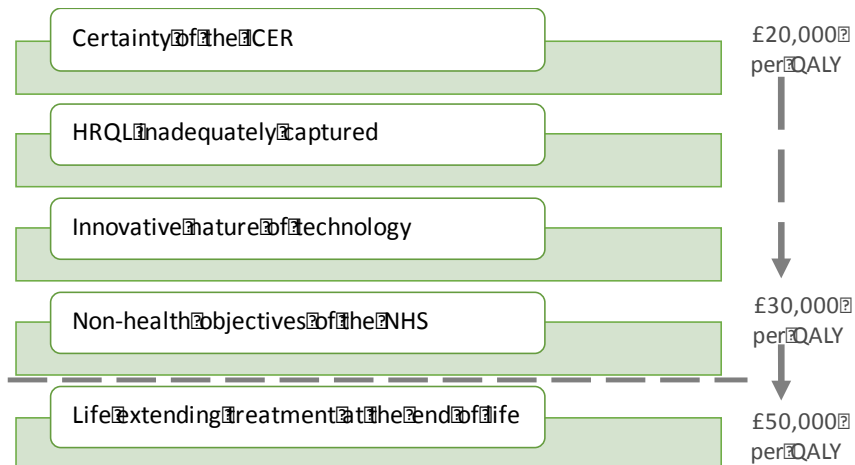
Decision-making: considerations

Clinical effectiveness → Cost effectiveness

Uncertainty

Innovation

Recommendations

Non-health benefits

Social value judgements

Fairness and equality

| *Robust* | *Consistent* | *Transparent* |

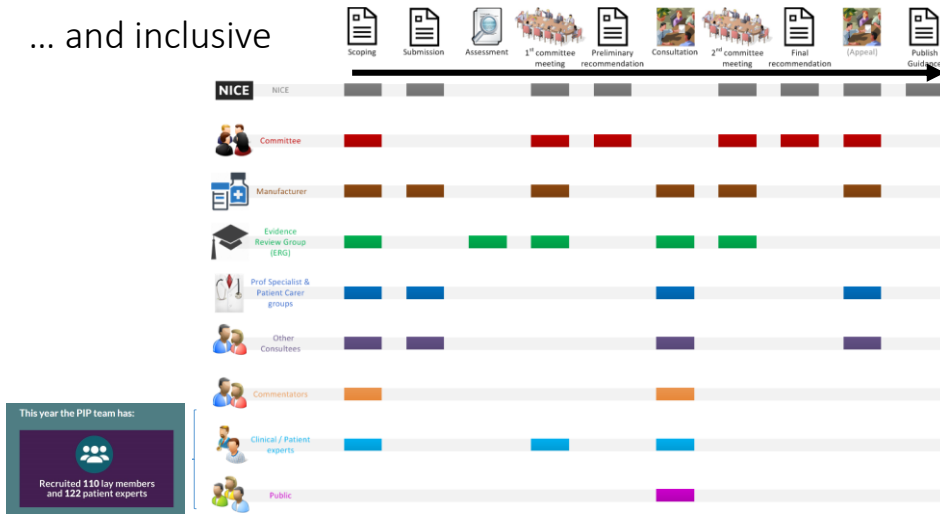
In practice, this is complex…

Decision factors

The value assessment framework as implemented implemented by NICE's independent committees includes a multitude of decision factors

... and inclusive

		Scoping	Submission	Assessment	1st committee meeting	Preliminary recommendation	Consultation	2nd committee meeting	Final recommendation	(Appeal)	Publish Guidance

This year the PIP team has:

Recruited **110** lay members and **122** patient experts
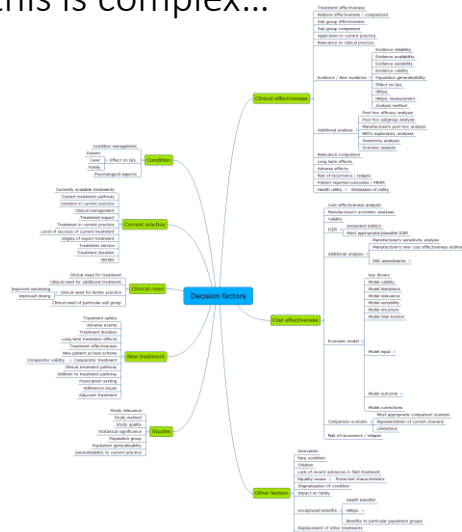
Special considerations

End of Life Treatment

2.2 When the conditions described in 2.1 are met, the Appraisal Committee will consider:

2.2.1 The impact o stages of ten extended su anticipated fo

Budget impact test

2.2.2 The magnitu assigned to Technology App effectiveness range.

From 1 April 2017 we introduced a budget impact test for technologies within the Technology App

This will assess the f

Highly specialised technologies guidance

If the budget impact commercial discussi funding the technolc

We only consider drugs for very rare conditions. The majority of our topics are identified by the National Institute for Health Research Innovation Observatory.

NHS England has in commissioning grou

A commercial discus cases, NHS England

They aim to notify technologies that r

timeframes:

Cancer Drugs Fund

Recommended for use within the CDF (new)

- new drugs, in d
- new indication:

We consider that there is plausible potential for the drug to satisfy the criteria for routine commissioning, but there is significant remaining clinical uncertainty which needs more investigation, through data collection in the NHS or clinical studies. This means the CDF will fund the drug, to avoid long delays, but we need more information on its effectiveness before it can be considered for routine commissioning (when the guidance is reviewed).

NICE National Institute for Health and Care Excellence

Guidance   Appraisals   Evidence resources   Implementation   Get involved   Communications

Science policy and research

Thank you!
pall.jonsson@nice.org.uk

 BHE

Thank You! Questions?
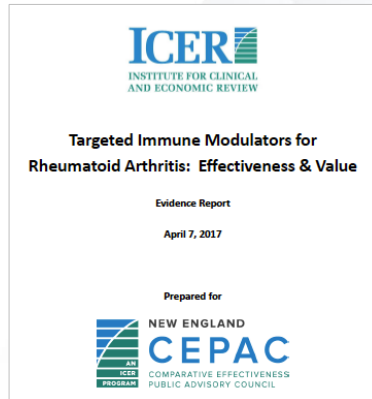
Enquiries following today's panel are welcome:
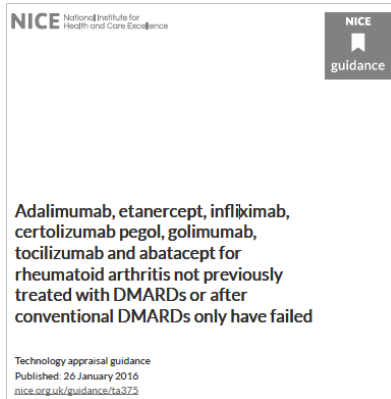
Matthew Sussman, MA

Director, Modeling & Evidence

Boston Health Economics, Inc.

E-mail: msussman@bhei.com

Appendix. Case Study in Rheumatoid Arthritis

NICE National Institute for Health and Care Excellence

NICE guidance

Adalimumab, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab and abatacept for rheumatoid arthritis not previously treated with DMARDs or after conventional DMARDs only have failed

Technology appraisal guidance
Published: 26 January 2016
nice.org.uk/guidance/ta375

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Targeted Immune Modulators for
Rheumatoid Arthritis: Effectiveness & Value

Evidence Report

April 7, 2017

Prepared for

NEW ENGLAND
CEPAC
COMPARATIVE EFFECTIVENESS
PUBLIC ADVISORY COUNCIL

Appendix. Case Study in Rheumatoid Arthritis

Common Objective

Assess the cost-effectiveness of biologics plus methotrexate among RA patients with moderately-to-severely active disease who had an inadequate response to conventional DMARDs

Results

	Median Incremental Costs per QALY Gained	
	NICE*	**ICER^**
Moderate RA	~$69,000	
Severe RA	~$56,000	
Moderate-to-severe RA		$206,974

Completed Jan 2016, 2015 British pounds converted to 2016 USD
^Completed April 2017

Appendix. Case Study in Rheumatoid Arthritis:
Appraisal/Key Takeaways

NICE
National Institute for
Health and Care Excellence

Biologics + MTX recommended for:

- *Severely active disease*
- *Disease that has not responded to combination of cDMARDs*

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AND ECONOMIC REVIEW

Biologics + MTX resulted in:

- *Improved health outcomes*
- *CE estimates well above CE thresholds (price discounts should be applied)*

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Appendix. Case Study in Rheumatoid Arthritis: *Model Component Comparison*

Model Component	NICE	ICER
Model structure	Individual sampling model	Cohort model
Population	Biologic DMARD-naïve	Biologic DMARD-naïve
	-Moderate patients who failed cDMARDs -Severe patients who failed cDMARDs	Moderate-to-severe patients who failed cDMARDs
Interventions	Biologics + MTX	Biologics + MTX
Comparator	MTX alone	MTX alone

Red: differences in model approaches; Yellow: mixed bag; Green: similarities in model approaches

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Appendix. Case Study in Rheumatoid Arthritis: *Model Component Comparison, cont.*

Model Component	NICE	ICER
Time horizon	Lifetime	Lifetime
Treatment sequencing	Pre-defined lines of therapy	Market basket
	4 switches: *2 biologics (rituximab + MTX -> tocilizumab + MTX) followed by MTX alone and lastly non-biologic therapy (NICE guidance)*	3 switches: *2 biologics followed by MTX alone*
Treatment response	EULAR (linked to HAQ)	ACR (linked to HAQ)
	Scenario analysis: ACR data mapped to EULAR response	

Red: differences in model approaches; Yellow: mixed bag; Green: similarities in model approaches

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Appendix. Case Study in Rheumatoid Arthritis: *Model Component Comparison, cont.*

Model Component	NICE	ICER
Time on treatment	6 months	6 months
HAQ progression	Initial improvement on tx; worsening over time	Linear improvement over time while on tx
Post-treatment rebound	HAQ rebounds to baseline HAQ after d/c	HAQ rebounds to baseline HAQ after d/c
Hospitalizations	Costs based on HAQ score *Constant until HAQ of 2.25*	Hospital days based on HAQ *# hosp days = 0.38 * HAQ*

Red: differences in model approaches; Yellow: mixed bag; Green: similarities in model approaches

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Appendix. Case Study in Rheumatoid Arthritis: *Model Component Comparison, cont.*

Model Component	NICE	ICER
Utilities	Based on: HAQ and simulated pain score	Based on: age, disease duration, baseline HAQ, sex, current HAQ, # previous DMARDs, radiographic progression (mTSS) *Did not include pain*
Disutilities	From SAEs: -0.156	From SAEs: -0.156
Mortality	Linked to *baseline* HAQ	Linked to *current* HAQ

Red: differences in model approaches; Yellow: mixed bag; Green: similarities in model approaches

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Appendix. Case Study in Rheumatoid Arthritis: *Key Questions for the Panelists*

- Model Structure
  - ICER tends to favor conducting cohort-based models. Is there a rationale for doing so?
  - Do we expect results to differ much between patient simulation and cohort-based models?

- Treatment Sequencing
  - Should treatment sequencing/switching be based on treatment guidelines, real-world practice patterns, or a market basket approach?
    - *Treatment guidelines & real-world practice patterns: region-specific*
    - *Market basket approach: region-agnostic*

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Appendix. Case Study in Rheumatoid Arthritis: *Key Questions for the Panelists, cont.*

- Disease Activity, Functioning, and Progression
  - Is there reason to believe that the manner in which disease activity, functioning, and progression are measured varies across regions?

- Intermediate Calculations
  - Should the methods for calculating utilities and mortality vary across regions?

Appendix. Case Study in Rheumatoid Arthritis: *Key Questions for the Panelists, cont.*

- Value-based Pricing
  - What is the rationale for conducting (vs. not conducting) value-based pricing assessments?

- Appraisal
  - What is the rationale behind the lower and upper limits of the CE threshold?
    - *E.g., despite reservations, ICER follows the WHO suggestion of a threshold range of 1-3 times the per capita GDP. NICE's current threshold (~£20,000-30,000/QALY) falls short if applying the same methods (~£30,000-90,000/QALY).*