



An Institiúid Cúrsa Saoil
& Sochair
UNIVERSITY
of GALWAY
Institute for Lifecourse
& Society

ENABLING
EQUITY
ACROSS THE
LIFE COURSE

Institute for Lifecourse and Society - ILAS International Research Training Series



Multidisciplinary Perspectives on Evaluative Frameworks for Assessing the Economic and Social Value of Public Policy Interventions

A range of methods from a diverse mix of disciplinary fields may be employed to provide evidence on the economic and social value of public policy interventions. Evidence generated from such methods are increasingly used to inform decision-making by policy makers and practitioners in Ireland and internationally. In this context, there exists a need to explore, compare, and reflect on the methodological components of evaluative frameworks employed across the public policy domain. This workshop aims to contribute to this conversation by firstly, providing two introductory workshops on the methods of health economic evaluation and social return on investment, and secondly, by providing a reflective seminar of the use of such methods to inform policy and practice.

DATE: Monday, 15th September 2025

VENUE: G006, ILAS Building, University of Galway

[Register here](#)

The objective of this workshop is to equip participants with the knowledge and tools to conduct health economic evaluation and social return on investment. Participants will be enabled to: a) Understand and appraise the principles and steps of the method of health economic evaluation. b) Understand and appraise the principles and steps of the method of social return on investment. The event will consist of a mixture of presentations, discussions, and seminars. This workshop is suitable for all those involved in the generation, synthesis, and use of evidence on economic and social value to inform public policy and practice decisions (including professionals, academics, researchers, and decision-makers).

Speakers



Prof. Paddy Gillespie is Professor of Health Economics and Director of the Health Economics and Policy Analysis Centre (HEPAC) at the J.E. Cairnes School of Business and Economics and the Institute for Lifecourse and Society (ILAS). His research activity is focused on the application of the techniques of health economic evaluation and health technology assessment to inform health policy and healthcare practice. He is health economics lead for the Primary Care Clinical Trials Network Ireland (HRB PCCTNI), Evidence Synthesis Ireland (ESI), and the Diabetes Collaborative Clinical Trial Network Ireland (HRB DCCTNI). He leads the health economics research programme for the Translation pillar of the Research Ireland Centre for Medical Devices (CÚRAM), and for the Influencing pillar of the University's Institute for Clinical Trials.



Dr Cormac Forkan has been a lecturer in the School of Political Science and Sociology since October 2002. He is the Programme Director for the BA Youth and Family Studies (GY120). Cormac is also affiliated with the UNESCO Child and Family Research Centre at NUI Galway and has acted as the lead researcher on a number of significant national research Projects. Prior to joining NUI Galway, Cormac lectured in the Waterford Institute of Technology on the Applied Social Studies Course (Social Care). He started his professional career as a Youth Worker for Foróige, the National Youth Development Organisation.



Dr Tania de St Croix was a youth worker for twenty years before becoming an academic. For the last decade she has worked at King's College London, where she is Senior Lecturer in the Sociology of Youth and Childhood. Her research is on the value and evaluation of youth work, and her teaching is on informal education, education policy, and social sciences for social change. She wrote the book "Grassroots youth work: Policy, passion and resistance in practice" and has published in journals including Journal of Education Policy, Journal of Youth Studies, and Youth and Policy. She loves hiking, creative writing, vegan cooking, and volunteering at her local youth club.



Prof. Caroline McGregor is the Director of the Institute for Lifecourse and Society (ILAS) and a Senior Researcher at the UNESCO Child and Family Research Centre. Her expertise is in social work, with extensive experience in teaching, research and publishing on issues related to children, young people, and families. She co-authored "Support and Protection Across the Lifecourse" (2021) with Professor Pat Dolan. Since 2012, she has collaborated on research focused on persons with direct care experiences, family support, prevention, early intervention, and child protection. Additionally, she has worked as an SFI investigator on a CURAM focusing on impact orientation of principal investigators and science advocacy training.

Schedule

Time	Details
09:30 - 10:00	Registration
10:00 - 10:15	Welcome <i>Prof. Caroline McGregor, Director, Institute for Lifecourse & Society.</i>
10:15 - 11:45	Methodological Perspective Workshop 1: "Health Economic Evaluation for the Health Technology Assessment of Health and Social Care Interventions." <i>Presented By: Prof. Paddy Gillespie, Health Economics and Policy Analysis Centre, Institute for Lifecourse & Society.</i>
11:45 - 12:15	Break
12:15 - 13:45	Methodological Perspective Workshop 2: "Social Return on Investment (SROI) for the Evaluation of Alternative Education Provision Interventions." <i>Presented By: Dr Cormac Forkan, UNESCO Child and Family Research Centre, Institute for Lifecourse & Society.</i>
13:45 - 14:45	Break
14:45 - 15:45	Seminar and Reflection on Evaluative Frameworks for Public Policy <i>Presented By: Dr Tania de St Croix, Kings College London.</i>
15:45 - 16:00	Reflection and Closing Remarks <i>Prof. Paddy Gillespie, HEPAC, Institute for Lifecourse and Society.</i>



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Methodological Perspective Workshop 1:

*Health Economic Evaluation for the Health Technology
Assessment of Health and Social Care Interventions*

Professor Paddy Gillespie

Health Economic & Policy Analysis Centre (HEPAC)

J.E. Cairnes School of Business and Economics

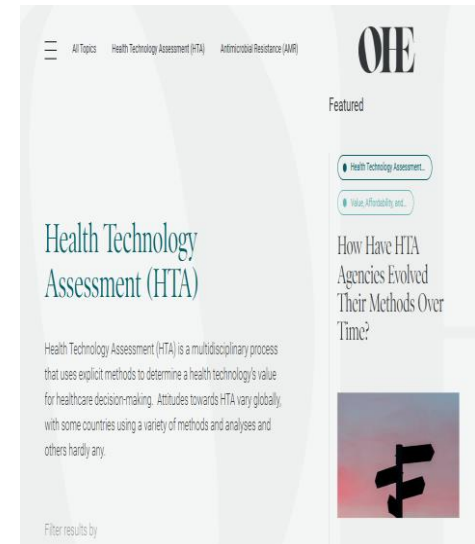
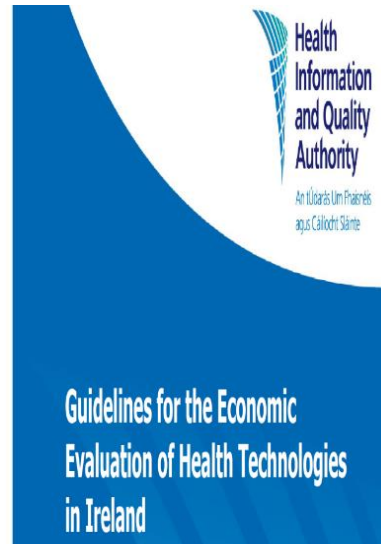
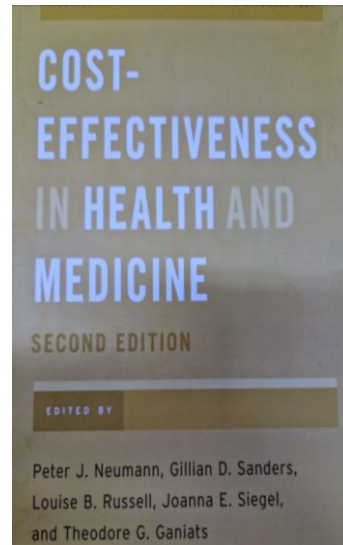
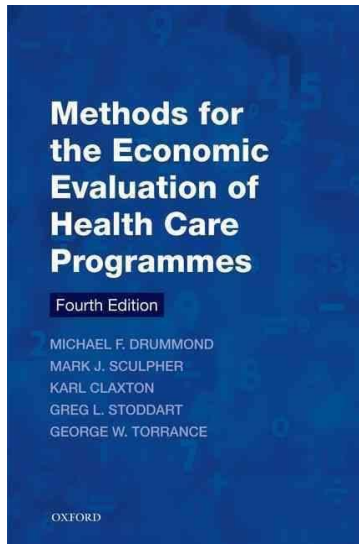
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Overview

- *Value Framework: Health Economic Evaluation for Health Technology Assessment*
- *Why Health Economic Evaluation?*
- *What is Health Economic Evaluation?*

Selected Source Materials



- Drummond et al (2015). *Methods for the Economic Evaluation of Health Care Programmes*. Oxford University Press.
- Neumann et al (2017). *Cost Effectiveness Analysis in Health and Medicine*. Oxford University Press.
- Health Information and Quality Authority (HIQA). *Guidelines for the Economic Evaluation of Health Technologies in Ireland*. <http://www.hiqa.ie/>
- Office of Health Economics (OHE) - <https://www.ohe.org/leading-health-economics-publications/health-technology-assessment/>

Selected Case Study



Expansion of the childhood immunisation schedule to include varicella (chickenpox) vaccination: Health Technology Assessment

Publication date: 13 July 2023

Arising from the findings of this HTA, HIQA's advice to the Minister for Health and the Health Service Executive is as follows:

- Varicella (chickenpox) is a common, highly infectious, vaccine-preventable, disease, mainly affecting children. Although typically a mild disease, serious complications requiring hospitalisation occur in approximately one in 250 cases and it can also lead to long-term skin scarring. One in three who have had varicella will develop herpes zoster (shingles) during their lifetime. Varicella is also associated with significant productivity loss mainly due to absence from paid work for those caring for people who are sick with the disease.
- The current evidence suggests that varicella vaccination is safe and effective in preventing varicella, including severe disease and its complications. While both one- and two-dose strategies are effective in preventing severe disease, a two-dose strategy is more effective in preventing varicella (cases and outbreaks).
- From the perspective of the publicly funded healthcare system, a one-dose strategy would be cost effective compared with no vaccination, with an incremental cost-effectiveness ratio (ICER) of €8,700 per quality-adjusted life year (QALY) gained. Relative to a one-dose strategy, a two-dose strategy would be less cost effective with an ICER of approximately €45,000 per QALY gained.

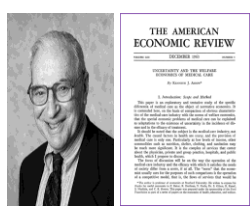
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HTA of the expansion of the childhood immunisation schedule to include varicella vaccination
Health Information and Quality Authority

- From a societal perspective, which also considers productivity loss associated with absence from paid work due to both illness and caring for those who are ill, both one- and two-dose vaccination strategies would be cost saving compared with no vaccination.
- The incremental five year budget impact to the HSE of a varicella vaccination programme was estimated at between €13.1 million (one-dose) and €28.1 million (two-dose short interval).

Overview

- *Value Framework: Health Economic Evaluation for Health Technology Assessment*
- *Why Health Economic Evaluation?*
- *What is Health Economic Evaluation?*



Why Health Economic Evaluation?

- Put simply, **Health Economics** is the application of the *discipline of economics* to the topics of *health* and *healthcare*.
- It is the application of the *theoretical models* and *empirical techniques* to the analysis of *decision-making* by *individuals*, *patients*, *healthcare providers* and *governments* in relation to *health* and *healthcare*.
- It seeks to analyse *key questions* relating to *health* and *healthcare*, at *individual* and *population* levels, and to identify and evaluate *solutions* to *healthcare resource allocation* problems:
 - *i.e.* Given *resource scarcity* within healthcare sectors, *choices* must and will be made regarding *what* quantity and *mix* of healthcare is produced, *how* to produce it, *who* pays for it, and *how* it is to be *distributed*
- *Economics is the study of choice*

What Health Economists do?

- Should we even apply **Economics** to the analysis of *health* and *healthcare*?

Economics: the biggest fraud ever perpetrated on the world? 

Do you do Twitter? It is a playful but also a powerful medium. You can amuse, annoy, proclaim, inform, report, and certainly upset. Sometimes a few informal words can lead to a much more thoughtful response. On one dark winter's night recently, I sent a stream of tweets about the impact of economic thinking on health. I have witnessed the power of economics to strengthen the case for investments in global health. I have seen economists take an increasingly important and valuable leadership role in shaping the debate about development assistance for health. And in thinking about sustainability for the post-2015 era, I have been grateful to economists for emphasising that traditional ways of thinking about economic growth simply do not apply when sustainability is our chief concern. But there is a but. The tenets of economics—the centrality of the market, the importance of competition—have begun to influence, distort, and damage the values on which universal health systems

were originally built. Economic instrumentalism, the notion that unless we can prove the economic value of an idea or an intervention it is socially worthless, is now dominant in much of government. We see institutions supposedly dedicated to health now incorporate wealth into their mission statements. The health community has too often colluded with politicians to appease economists who measure value with a financial metric only. It's surely time to challenge economists, their discipline and their arguments, and counter with an alternative philosophy that puts lives ahead of margins and wellbeing before returns on investment. The following essay is a rebuttal by three respected economists who strongly disagree with the ten tweets I sent. I hope this dialogue provokes you to tweet too.

Richard Horton
richard.horton@lancet.com

A series of tweets from the Editor of *The Lancet*, Richard Horton, alleged multiple failings of economics and economists (panel).¹ An informed critique of economics and its practitioners should be welcomed as a means to improve the discipline, but these comments seem to demonstrate a poor understanding, and undermine Horton's intent.

Apart from a natural inclination to defend our chosen profession, our response to Horton's criticisms tackles what we see as some fundamental misconceptions about economics and economists—among other things, their motivation, view of life, and understanding of others' motivations and behaviours. We believe that economics is a toolkit that enables better understanding of how people live, and how societies work. In doing so, it gathers and analyses data with statistical methods, formulates theories, constructs models of complex systems, and sometimes makes predictions. Economics is not a way of life, nor does it aim to promote one—although many economists do express preferences for societal goals such as low unemployment, reduced inequalities, and improved health, as do many other people. Economics does not exclude, or seek to exclude, other explanations of human behaviour—from the anthropological to the psychological—but adds another dimension to understanding why people do what they do.

What is economics about? The promise economics offers is seductive: how to allocate scarce resources in society. It's a false promise.² "Economists write as if

the economy-society, and societal problems-economic problems. The conflation is false too."³ The first two tweets are more an introduction than a cogent set of criticisms. Economics is, apparently, a "fraud", and offers a "false promise". There is no evidence given to support these assertions, so we cannot answer the case. The statement that economics concerns the allocation of scarce resources in society is true, but in the tweets

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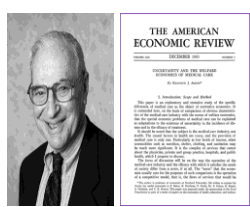
Panel: Tweets from @richardhorton: "Economics, second only to 'management', may just be the biggest fraud ever perpetrated on the world."

The case against economics:

- 1 The promise economics offers is seductive: how to allocate scarce resources in society. It's a false promise.²
- 2 Economists write as if the economy-society, and societal problems-economic problems. The conflation is false too.³
- 3 Once there was political economy – economics, ethics, politics. Economists have stripped morality from economics, leaving an and science.⁴
- 4 The high points of economic thinking are theories, not data. Reliable experimentally derived data are anathema for most economists.⁵
- 5 Economists see health as an economic good. It is an opportunity cost, with zero intrinsic value.⁶
- 6 Rationality, for the economist, means subjecting every thought/decision to a cost-benefit analysis. A wholly narrow view of humanity.⁷
- 7 The big idea in economics is the market. The assumption is that human beings make cost-benefit decisions based only on self-interest. No.⁸
- 8 The essence of economics is price. For those in health who argue for access free at point of delivery, we kill the soul of the economist.⁹
- 9 Economists deny the existence of citizens. They see only consumers.¹⁰
- 10 Finally, it's acceptable to worsen the lives of some provided the gains of others compensate. Economists institutionalise inequality.¹¹

Definition: An **economic good** is any *good or service* that is **scarce** relative to our **wants** for it.

- Healthcare* is an **economic good** because the **resources** that are used to produce healthcare services are **finite**
 - i.e. more of resources can only be devoted to the production and consumption of healthcare by diverting them from some other use.*
- Healthcare* is an **economic good** because our **wants** for healthcare have **no known bounds**
 - i.e. No healthcare system, anywhere in the world, has achieved levels of spending sufficient to meet all its citizen's wants, needs and demands for healthcare (e.g. waiting lists, patients on trolleys etc.)*
- i.e. the key economic concept of **opportunity cost** is prevalent in all decision-making relating to *health* and *healthcare**



Why Health Economic Evaluation?

What Health Economists do?

- Offer **theoretical** framework for exploring human behaviour
 - Economists ask different questions, generate different predictions
 - Focus on variables such as: *costs, benefits, prices, income, trade-offs*
- Offer **theoretical** rationale for government intervention
 - *Public policy intervention to address market failures.*
- Offer **empirical** methods for estimating relationships
 - *Statistical Analysis*: concerned with estimating *statistics* and *associations*
 - *Econometric Analysis*: concerned with *causality*
- Offer **empirical** methods for evaluating public policy
 - **Health Economic Evaluation**
 - Forms one component of the wider multidisciplinary research field of *Health Technology Assessment (HTA)*

Why Health Economic Evaluation?

Offer **empirical** methods for evaluating public policy

1. Does it do any harm?

– *Safety*

2. Can it work?

– *Efficacy*

3. Does it work?

– *Effectiveness*

*Evidence for Health
Policy/Healthcare
Decision-Making*

4. Is it worth doing compared with the other things we could do with the same resources?

– *Value for Money / Efficiency* / *Cost Effectiveness*

• *Maximising outcomes from available resources*

5. Is it affordable given current budgetary resources?

– *Affordability*

Selected Case Study



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HTA of the expansion of the childhood immunisation schedule to include varicella vaccination
Health Information and Quality Authority

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Why Health Economic Evaluation?

Offer **empirical** methods for evaluating public policy

- *Health Economic Evaluation*

- *A set of economic tools*

- Concerned with '**value for money**' or '**cost effectiveness**': i.e. evidence to inform decision makers on the efficient allocation scarce resources to supply health technologies or health and social care interventions.
 - Forms a central tenet of **Health Technology Assessment (HTA)**



- *Health Technology Assessment (HTA)*

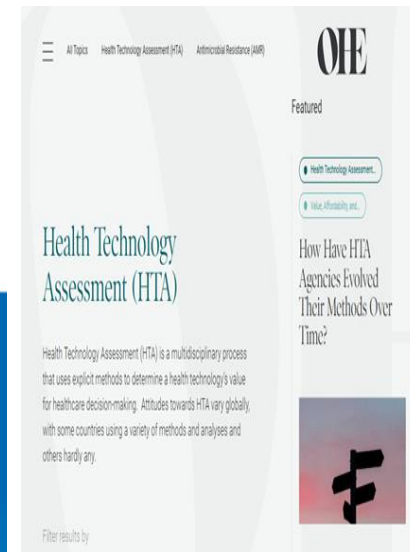
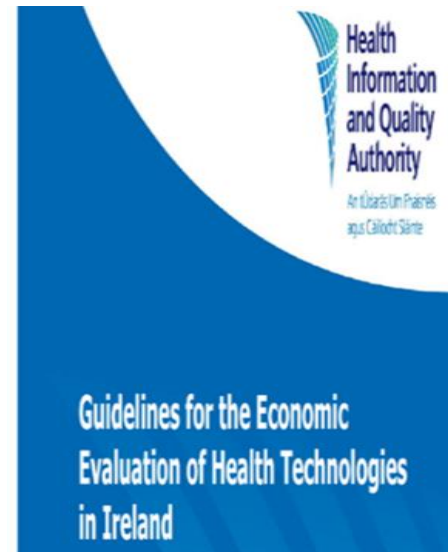
- *A complementary set of analytical tools*

- A **multidisciplinary** field of policy analysis, concerned with the medical, social, ethical, and **economic** implications of development, diffusion, and use of health technologies.
 - HTA is a component of '**reimbursement** and **market access**' policy in many jurisdictions.

Why Health Economic Evaluation?

HTA, Reimbursement, and Market Access

- HTA appraisal processes inform how **Health and Social Care Payers** (*i.e.* governments, social insurers, private insurers, programme budget holders *etc.*) determine **access** (*i.e.* via **reimbursement**) to **Health Technologies** (*e.g.* drugs, devices, diagnostics, surgical procedures, *etc.*).
- Just as **Health and Social Care Systems** vary worldwide, **Payer appraisal processes** differ from **country to country**, and may differ across different payers within countries, and by **type of health technology**



Why Health Economic Evaluation?

Where is it applied?



In theory: It may be applied to all **Health Technologies**

Health Technologies

Pharmaceuticals

Medical Devices

Diagnostics

Surgical procedures

Care Pathways

Clinical Guidelines

Public Health

Screening

Vaccination

Behavioural Interventions

In practice: While the field has grown rapidly in recent decades, it has done so in a lopsided fashion, focusing on **pharmaceuticals**

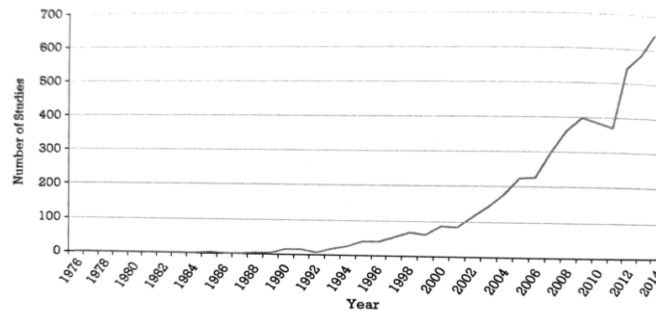


Figure 1.1 Growth in English-language published cost-per-QALY studies by year, 1976–2014.
Source: Tufts Medical Center Cost-Effectiveness Analysis (CEA) Registry (Center for the Evaluation of Value and Risk in Health n.d.).

Intervention ^a		
Pharmaceutical	2,258	45.2
Surgical	675	13.5
Screening	591	11.8
Medical procedure	559	11.2
Care delivery	550	11.0
Health education/behavior	465	9.3
Medical device	378	7.6
Diagnostic	361	7.2
Immunization	329	6.6
Other	279	5.6

In future: Potential to expand on focus and application with new **EU-HTA Regulations (HTAR)**



IMPLEMENTING THE EU HEALTH TECHNOLOGY ASSESSMENT REGULATION

WHAT IS HTA?

HEALTH TECHNOLOGY ASSESSMENT:

Procedure for assessing the added value, effectiveness, costs and broader impact of health care interventions including medicines, medical devices and procedures.

- Is a new medicine more effective in treating a certain disease?
- Do expected costs and benefits present sufficient value-for-money when compared to alternative healthcare interventions?
- How to compare a new medicine to an existing one considering patients, the disease, and the outcome for the patient?
- Will the use of a new medical device result in better diagnosis or treatment?

HTA DOMAINS

CLINICAL DOMAINS

- Health problems and currently used health technologies (e.g. medicines, medical devices, surgical procedures).
- Description of health technology under assessment.
- Relative clinical effectiveness.
- Relative safety.

NON-CLINICAL DOMAINS

- Economic evaluation.
- Ethical aspects.
- Organisational aspects.
- Social aspects.
- Legal aspects.

WHAT'S IN THE EU HTA REGULATION?

FRAMEWORK FOR JOINT HTA COOPERATION

- Joint clinical assessments (JCAs).
- Joint scientific consultations (JSCs).
- Identification of emerging health technologies.
- Common procedures and methodologies across the EU.

KEY PRINCIPLES OF THE HTA REGULATION

- Only on clinical domains of the assessment: No economic assessment or any conclusion on pricing and reimbursement.
- Driven by EU HTA bodies who remain responsible for drawing conclusions on added value for their health systems.
- High quality, timeliness and transparency.
- Use of joint work in national HTA processes.
- Input from independent experts.
- Stakeholder engagement and inclusiveness.
- Progressive implementation.

TIMELINE FOR MEDICINES

- 12 January 2025: New oncology medicines and advanced therapy medicinal products will be assessed at EU level.
- 13 January 2028: Orphan medicinal products to be added to the joint work.
- 13 January 2030: All new medicines will come under the scope of the regulation.

Why Health Economic Evaluation?

Health Economic Evaluation in Practice in Ireland

Health (Pricing and Supply of Medical Goods) Act 2013

<https://www.irishstatutebook.ie/eli/2013/act/14/enacted/en/html>

The Executive shall have regard to



- (a) the health needs of the public,
- (b) the cost-effectiveness of meeting health needs by supplying the item concerned rather than providing other health services,
- (c) the availability and suitability of items for supply or reimbursement, or both, under section 59 of the Act of 1970,
- (d) the proposed costs, benefits and risks of the item or listed item relative to therapeutically similar items or listed items provided in other health service settings and the level of certainty in relation to the evidence of those costs, benefits and risks,
- (e) the potential or actual budget impact of the item or listed item,
- (f) the clinical need for the item or listed item,
- (g) the appropriate level of clinical supervision required in relation to the item to ensure patient safety,
- (h) the efficacy (performance in trial), effectiveness (performance in real situations) and added therapeutic benefit against existing standards of treatment (how much better it treats a condition than existing therapies), and
- (i) the resources available to the Executive.

9 criteria to be taken into account for reimbursement decision-making in Ireland

Why Health Economic Evaluation?

Health Economic Evaluation in Practice in Ireland

The **Health Act 2007** outlines the statutory function of the **Health and Information Quality Authority (HIQA)** as the Regulatory Agency responsible for **Health Technology Assessment (HTA)** in Ireland.

HIQA Guidelines: Reference Case i.e. Value Framework

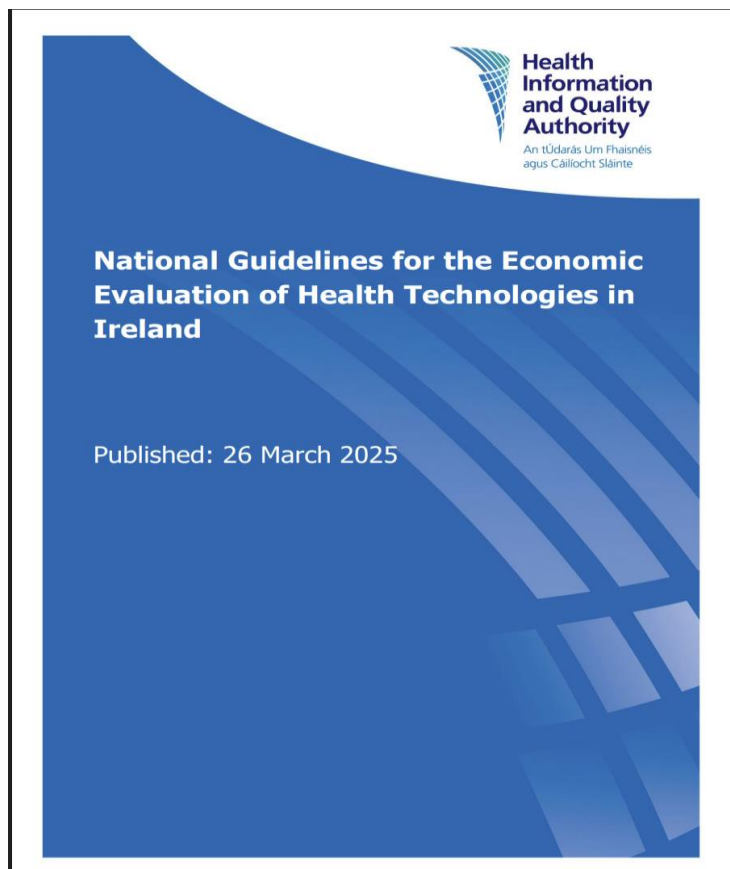


Table 1.1 Summary of the reference case

Element of technology assessment	Reference case
Evaluation type	Cost-utility analysis
Perspective on costs	The publicly-funded health and social care system in Ireland (HSE)*
Perspective on outcomes	All health benefits accruing to individuals
Choice of comparator	Routine care in Ireland
Synthesis of effectiveness	Based on systematic review
Outcome measurement	QALYS^
Discount rate	Apply an annual rate of 4.0% on costs and outcomes occurring after the first year
Sensitivity analysis	Probabilistic and deterministic sensitivity analysis
Equity rating	Equal weighting should be applied to the outcome measure

Overview

- *Value Framework: Health Economic Evaluation for Health Technology Assessment*
- *Why Health Economic Evaluation?*
- *What is Health Economic Evaluation?*

What is Health Economic Evaluation?

Normative Frameworks: Welfarism versus Extra-Welfarism



Introduction

It is standard to consider health economics as the application of the discipline of economics to questions of health. Its primary concern is the allocation of scarce resources within the health sector, and in both philosophy and methodology it draws upon the theories, both normative and positive, developed within its parent discipline of economics. Health economists work in a variety of areas. Much work is of an explanatory nature examining issues relating to the nature of health care systems as well as health more generally. The vast majority of this explanatory work is conducted within the neoclassical framework. With respect to normative assessments, however, health economics has

frequently moved in its own distinct directions, at times rejecting aspects of the standard economics approaches yet managing to retain a foot in the mainstream economist camp.

This paper focuses on the development and spread of ideas in health economics and health care decision making. The paper explores three themes in greater detail. First, it explores welfarist economics and the capability approach and how they combine in so-called 'extra-welfarism' within health economics. This provides a basis for considering how the idea of capabilities moved initially into the field of health economics. Second, it describes how these ideas have spread, and have influenced both academic thought and health policy and practice. The context of UK decision making is used to illustrate these issues. Third, the recent interest in a more direct application of the capability approach is explored in the context of the limitations of extra-welfarism, but also acknowledging the influence of extra-welfarism on the acceptability of non-welfarist

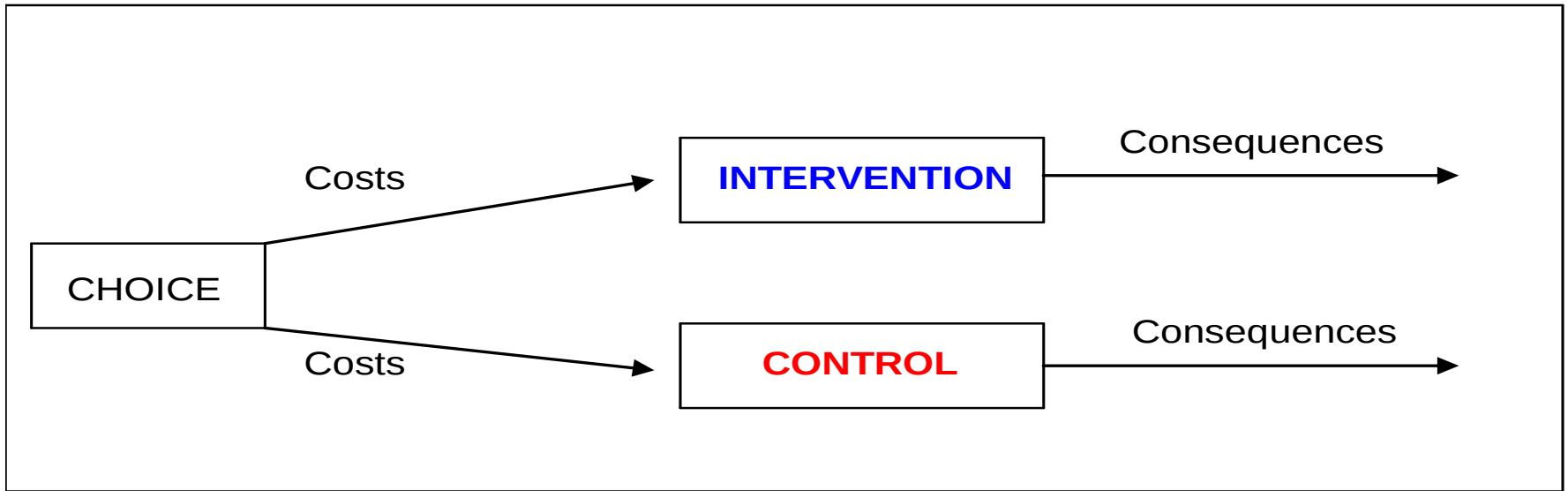
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Extra-Welfarist Health Economic Evaluation Techniques Dominate

What is Health Economic Evaluation?

- **HEE** is defined as the **comparative** analysis of alternative courses of action in terms of *costs* and *consequences* (Drummond *et al*, 2015)



- **Aim:** To assess the relative *cost effectiveness* or *value for money* of alternatives under consideration: **Intervention** *vrs.* **Control**.
 - *i.e.* what is the expected *cost effectiveness* of the **Intervention** relative to the **Control**?

What is Health Economic Evaluation?

Impact Inventory



Sector	Type of Impact (list category within each sector with unit of measure if relevant) ^a	Included in This Reference Case Analysis From...Perspective?	
		Health Care Sector	Societal
Formal Health Care Sector			
Health	Health outcomes (effects)		
	Longevity effects	☐	☐
	Health-related quality-of-life effects	☐	☐
	Other health effects (eg, adverse events and secondary transmissions of infections)	☐	☐
	Medical costs		
	Paid for by third-party payers	☐	☐
	Paid for by patients out-of-pocket	☐	☐
	Future related medical costs (payers and patients)	☐	☐
Future unrelated medical costs (payers and patients)	☐	☐	
Informal Health Care Sector			
Health	Patient-time costs	NA	☐
	Unpaid caregiver-time costs	NA	☐
	Transportation costs	NA	☐
Non-Health Care Sectors (with examples of possible items)			
Productivity	Labor market earnings lost	NA	☐
	Cost of unpaid lost productivity due to illness	NA	☐
	Cost of uncompensated household production ^b	NA	☐
Consumption	Future consumption unrelated to health	NA	☐
Social Services	Cost of social services as part of intervention	NA	☐
Legal or Criminal Justice	Number of crimes related to intervention	NA	☐
	Cost of crimes related to intervention	NA	☐
Education	Impact of intervention on educational achievement of population	NA	☐
Housing	Cost of intervention on home improvements (eg, removing lead paint)	NA	☐
Environment	Production of toxic waste pollution by intervention	NA	☐
Other (specify)	Other impacts	NA	☐

What is Health Economic Evaluation?

Costs

- **Health Care Resources**
 - **Intervention/Technology**
 - Health Professional Time
 - GP Visits
 - Outpatient Clinic Visits
 - A&E Visits
 - Hospital Admissions
 - Drug Prescriptions
 - Tests
 - Procedures
 - Medical Devices
 - Consumables & Materials
- **Productivity Losses**
 - Lost output due to morbidity/illness
 - Lost output due to premature mortality
- **Other Social Costs**
 - Environment
 - Legal or criminal justice
 - Education
 - Housing
 - Social Services
- **Patient and Family Resources**
 - Out-of-pocket expenses
 - Time Input
 - Informal Care
 - Travel Expenses
- **Macroeconomic Costs**
 - Health Economy
 - Economy

What is Health Economic Evaluation?

Consequences: Health

Intermediate Outcomes

– *Disease Specific*

- **Clinical Outcomes**

- Biomarkers
- Health Status
- Disability Status
- Health Related Quality of Life
- Adverse Events

- **Process Outcomes**

- Hospital Admissions
- Cases Detected

Final Outcomes

– *Generic*

- **Mortality**

- Life Expectancy
e.g. Life Years Gained

- **Mortality and Morbidity**

- Healthy Years or Quality Adjusted Life Expectancy

Quality Adjusted Life Years (QALYs)

Disability Adjusted Life Years (DALYs)

Healthy Year Equivalents (HYEs)

Health Years in Total (HYTs)

What is Health Economic Evaluation?

Techniques	Valuation of Costs	Valuation of Consequences
Cost Effectiveness Analysis (CEA)	Monetary units (€, \$, £)	Natural units (e.g. <i>life years gained, disability days saved, points of blood pressure reduction, etc</i>)
Cost Utility Analysis (CUA)	Monetary units (€, \$, £)	Healthy years (typically measured as <i>quality adjusted life years (QALYs)</i>)
Cost Benefit Analysis (CBA)	Monetary units (€, \$, £)	Monetary units (€, \$, £)
Cost Minimisation Analysis (CMA)	Monetary units (€, \$, £)	Equivalence in Consequences/Outcomes: <i>i.e. preference for lowest Cost alternative</i>

- **CUA** and **CEA** are the **predominant methods**
- **CUA** is the **preferred technique** because it presents the consequences of treatment in terms of a **generic health outcome** that is comparable across **multiple disease areas** and **multiple interventions types**.
- **CMA** and **CBA** not widely utilised. However, recent developments have increased the application of **CBA**, and of all the methods, it potentially addresses the broadest scope for comparison within and beyond 'health'.

What is Health Economic Evaluation?

What are the requirements?

Are both **costs** and **consequences** of the alternatives examined?

Is there a comparison of two or more **alternatives**?

No	No		Yes
	Examines only consequences	Examines only costs	
	1A Partial Evaluation: Outcome Description	1B Partial Evaluation: Cost Description	2 Partial Evaluation Cost Outcome Description
Yes	3A Partial Evaluation: Efficacy or effectiveness evaluation	3B Partial Evaluation: Cost analysis	CUA CEA CBA CMA

- *i.e.* This definition indicates that if **costs** and **consequences** of alternatives are not considered, then claims of *cost effectiveness* cannot be made

What is Health Economic Evaluation?

Steps

- Identify objective of interest
- Identify all relevant alternative treatment interventions
- Identify, Measure and Value the **Consequences**
 - i.e. the **outcome** data (**effect, utility** or **benefit**) of each treatment.
- Identify, Measure and Value the **Resource Use**
 - i.e. the **cost** data of each treatment
- Compare alternatives in terms of their **Outcomes and Costs**
 - i.e. the **discounted** outcomes and costs at their present values
- Apply **Decision Rules** and identify the preferred option(s)
 - i.e. the alternatives ranked in terms of **incremental cost effectiveness**
- Examine and present the **Uncertainty**
 - i.e. the **stochastic, sensitivity** and **probabilistic** (i.e. CEACs) analyses

HIQA Guidelines for **HEE** in Ireland

Table 1.1 Summary of the reference case

Element of technology assessment	Reference case
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Perspective on costs	The publicly-funded health and social care system in Ireland (HSE)*
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Cost Utility Analysis is preferred as it facilitates the comparison of relative *cost effectiveness* across a wide range of **health technologies** and **interventions**, and a wide range of **conditions** and/or **disease** areas.

- The method focuses on the comparison of **costs** in *monetary terms*, and **health outcomes** in *healthy years* in the form of *quality adjusted life expectancy*

What is Health Economic Evaluation?

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The **perspective** from which *costs* are captured is a crucial consideration

This choice dictates the *costs* that are included in the analysis

This may be that of the *healthcare provider*, the *healthcare system*, the *third-party payer*, the *patient*, or *society*

Why Health Economic Evaluation?

Costs

- **Health Care Resources**
 - **Intervention/Health Technology**
 - Health Professional Time
 - GP Visits
 - Outpatient Clinic Visits
 - A&E Visits
 - Hospital Admissions
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All *health benefits* to individuals should be captured

It follows that *time horizon* is a key consideration.

In principle, it should be the **period** over which the *health outcomes* (and *costs*) of the alternative options being compared might be **expected to differ**.

Often the appropriate *time horizon* will need to be the **patients' lifetime**. In other cases, it may be **shorter**.

This consideration will dictate the **mode of analysis**

What is Health Economic Evaluation?

Mode of Analysis: *How is evidence captured and analysis conducted?*

- **Option 1: Trial-Based Economic Evaluation**

- **Randomised Controlled Trial (RCT)**

- *All data (e.g. effects, outcomes, utilities, resource use, costs) collected via a single RCT which compares the alternative treatment options.*

- **Option 2: Decision Model-Based Economic Evaluation**

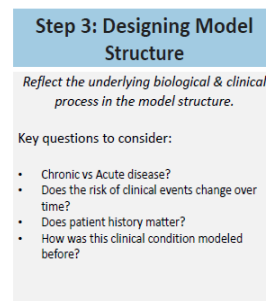
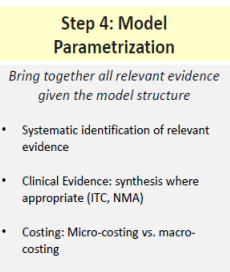
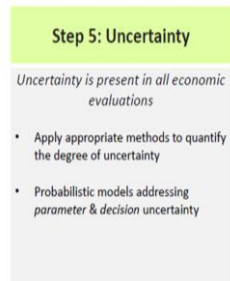
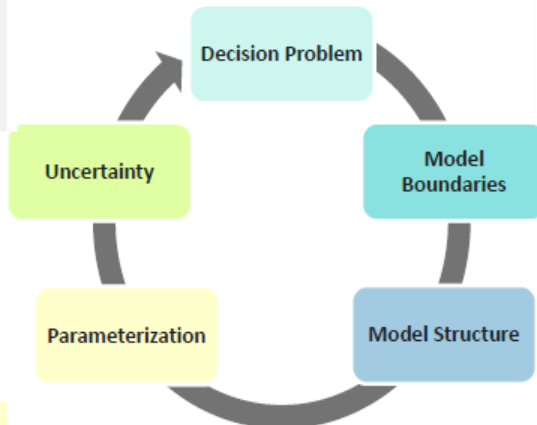
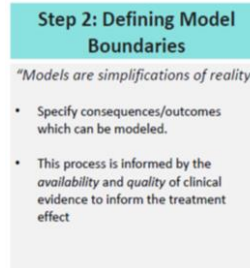
- **Decision Analytic Model**

- Model employing *mathematical relationships* to define and compare a series of expected consequences that would result from the set of alternative treatment options being evaluated, by synthesizing information from multiple sources
 - *Epidemiological, effects, outcomes, utilities, resource use and costs data systematically identified and/or synthesised from a variety of published and unpublished sources.*

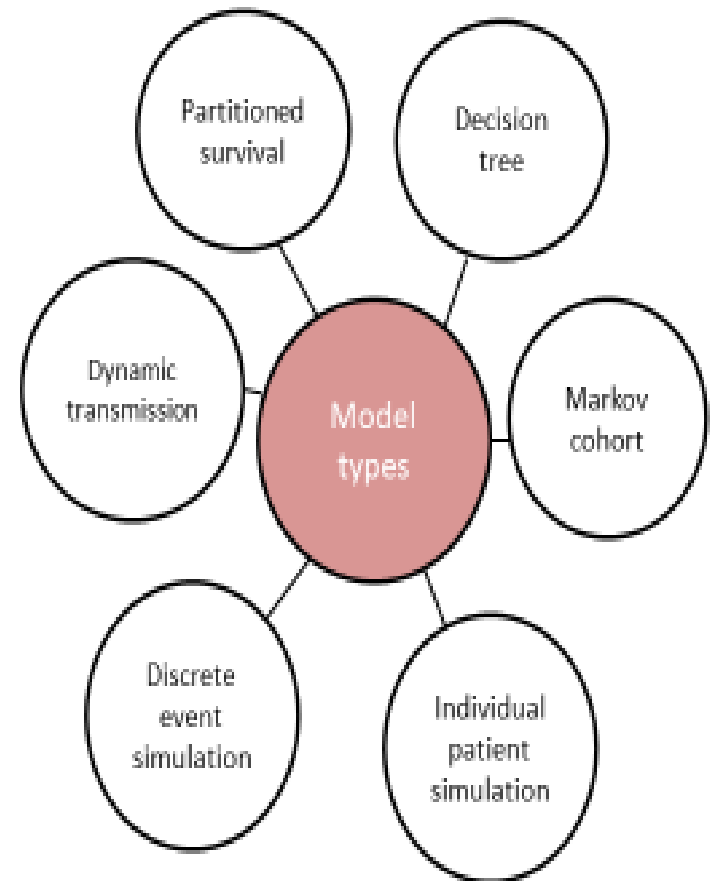
- **Option 3: Option 1 + Option 2**

What is Health Economic Evaluation?

Decision Analytic Models



Types of Decision Analytic Models

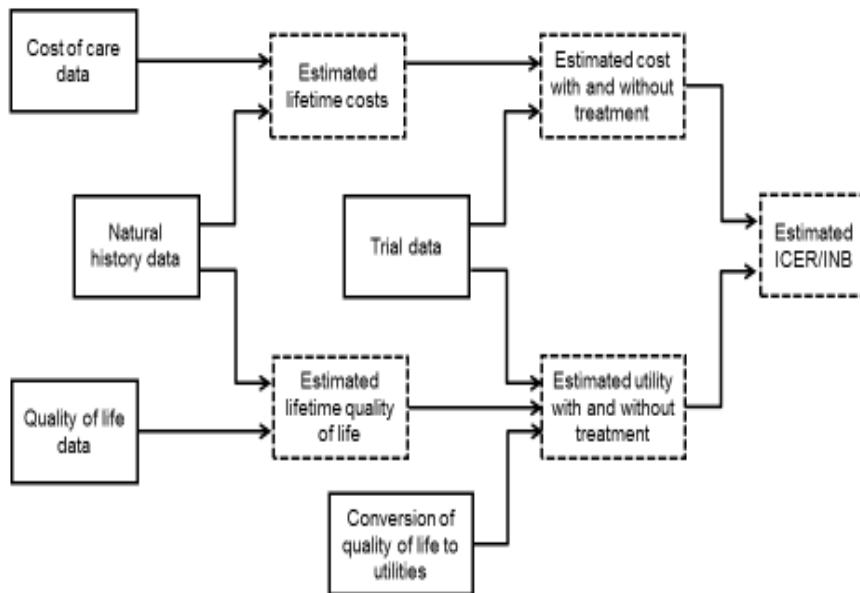


What is Health Economic Evaluation?

Input Parameter Data for Decision Analytic Models

Key Role for Evidence Synthesis Methods

- The quality of evidence that goes into the model can have a profound effect on the output of the model



Types of information	Types of source evidence	Uses of evidence within model
Adverse effects	Evidence synthesis	Design and specification of model framework
Compliance	Expert judgment	Model validation
Current practice	Methodological theory and empirical evidence	Modelling and analytical approach
Epidemiology	Observational research	Population of model parameters
Modelling methods	RCT	Sensitivity and uncertainty analysis
Natural history	Reference sources	
Patient preferences	Routine data sources	
Prescribing rates		
Prognosis		
Resource use		
Results and methods from other models		
Clinical outcomes		
Unit costs		
Utilities		

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The appropriate comparator(s) set is that which would be **displaced** by the new Health Technology

The preferred comparator is '*routine care*': i.e. the intervention or technology most widely used in clinical practice for the target population

e.g. *specific interventions, alternative treatment sequences, alternative rules for starting and stopping therapy, etc*

What is Health Economic Evaluation?

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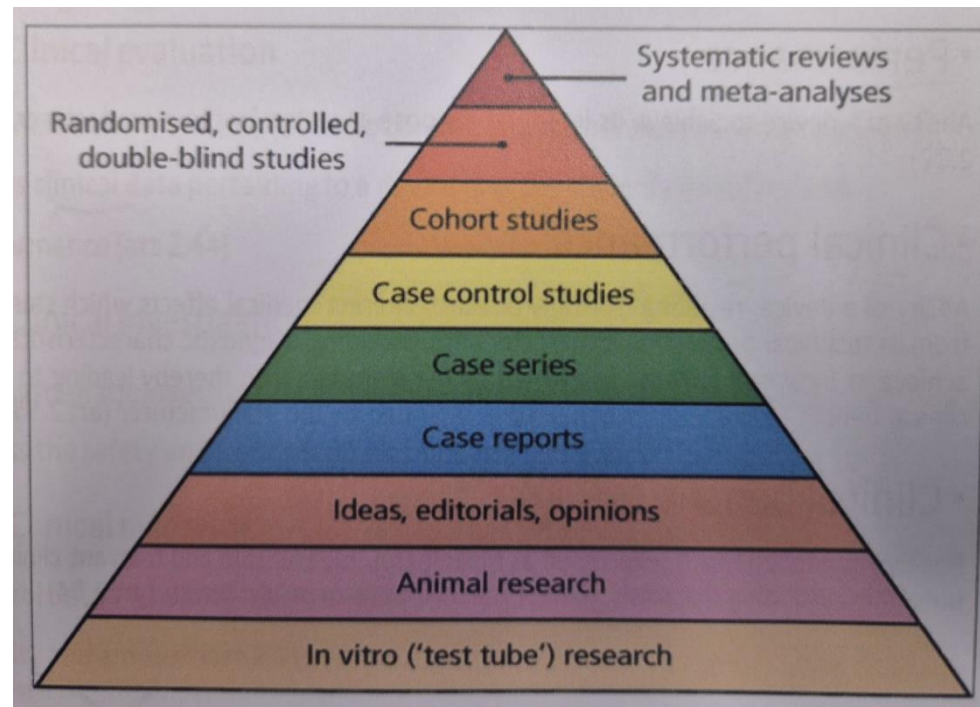
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What is a systematic review?

HIQA guidelines for Interpretation of Economic Evaluations:

- A structured literature review that addresses a question that is formulated to be answered by analysis of evidence, and involves objective means of searching the literature, applying predetermined inclusion and exclusion criteria to this literature, critically appraising the relevant literature, and extraction and synthesis of data from evidence base to formulate findings.
- In other (fewer) words: it gathers, analyses and appraises evidence relevant to a specific research question in a comprehensive & unbiased way



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What is Health Economic Evaluation? Consequences: **Health**

Intermediate Outcomes

– *Disease Specific*

• Clinical Outcomes

- Biomarkers
- Health Status
- Disability Status
- Health Related Quality of Life
- Adverse Events

• Process Outcomes

- Hospital Admissions
- Cases Detected

Final Outcomes

– *Generic*

• Mortality

- Life Expectancy
e.g. *Life Years Gained*

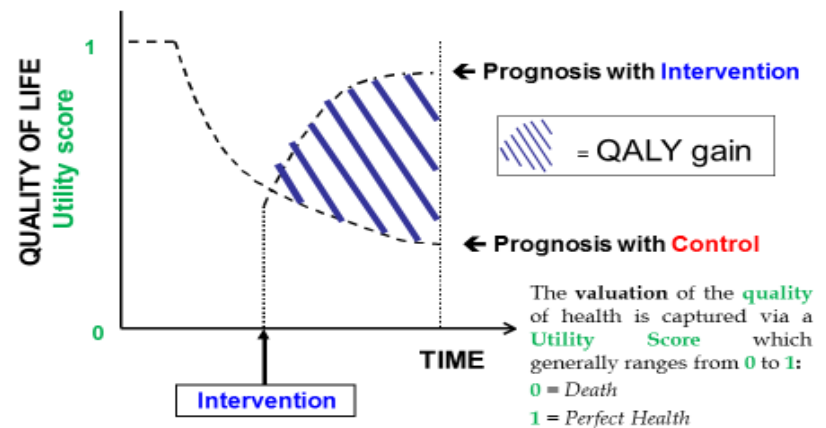
• Mortality and Morbidity

- Healthy Years or Quality Adjusted Life Expectancy

Quality Adjusted Life Years (QALYs)
Disability Adjusted Life Years (DALYs)
Healthy Year Equivalents (HYEs)
Health Years in Total (HYTs)

Quality Adjusted Life Years (QALYs)

- A health outcome that simultaneously incorporates the effect of treatment in terms of its impact on *quality* and *quantity* of life.



What is Health Economic Evaluation?

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All future *costs* and *outcomes* must be discounted back to their *present values* to conduct the incremental analysis

$$PV = FV / (1+r)^t$$

where FV = future value, r = **discount rate**, t = years into the future

Justification: The *theory of time preference* suggests that individuals have a **preference** for **current** consumption over **future** consumption: *i.e. we value present costs and benefits at a higher rate than equivalent future costs and benefits*

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The effects of model uncertainty (that is to say, structure, methods and assumptions) and parameter uncertainty on the outcome of the economic evaluation must be systematically evaluated using sensitivity analysis and scenario analyses for the range of plausible scenarios. The range of values provided for each parameter must be clearly stated and justified. Justification for the omission of any model input from the sensitivity analysis should be included. For the reference case, a one-way sensitivity analysis should be conducted to identify the key model inputs and or assumptions contributing most to uncertainty. Multivariate analysis should be used for key model inputs. Probabilistic sensitivity analysis (PSA), in the form of a Monte Carlo simulation, should be used to assess parameter uncertainty. The expected value of perfect information (EVPI) should also be evaluated.

2.15 Subgroup analysis

Stratified analysis of subgroups is appropriate to account for differences in cost-effectiveness that may arise due to important factors that impact on the target population or its management. Subgroups should ideally be identified a priori based on plausible biological, clinical or care-setting arguments.

Standard guidance for the conduct of **incremental analysis**, presenting results and assessing uncertainty

What is Health Economic Evaluation?

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i.e. A QALY is a QALY is a QALY

*Note: Alternative approaches considered by other jurisdictions include **re-weighting** QALYs by severity of disease, socioeconomic status, or innovative nature of the technology*

What is Health Economic Evaluation?

Decision Rules

An **Intervention** may be deemed as more *cost effective* than a **Control** comparator if, on average:

- (a) It is *less costly* and *more effective*.
- (b) It is *more costly* and *more effective*, but the additional cost associated with the **Intervention** is considered worth paying by policy makers., *i.e.* **Incremental Cost Effectiveness Ratio(ICER) < Threshold Value (λ)**
- (c) It is *less costly* and *less effective*, but the additional cost associated with the **Control** is not considered worth paying by policy makers.

Decision Rules

Cost Effectiveness Plane

More costly

ΔC

Quadrant 1

Quadrant 3

Control

ΔE

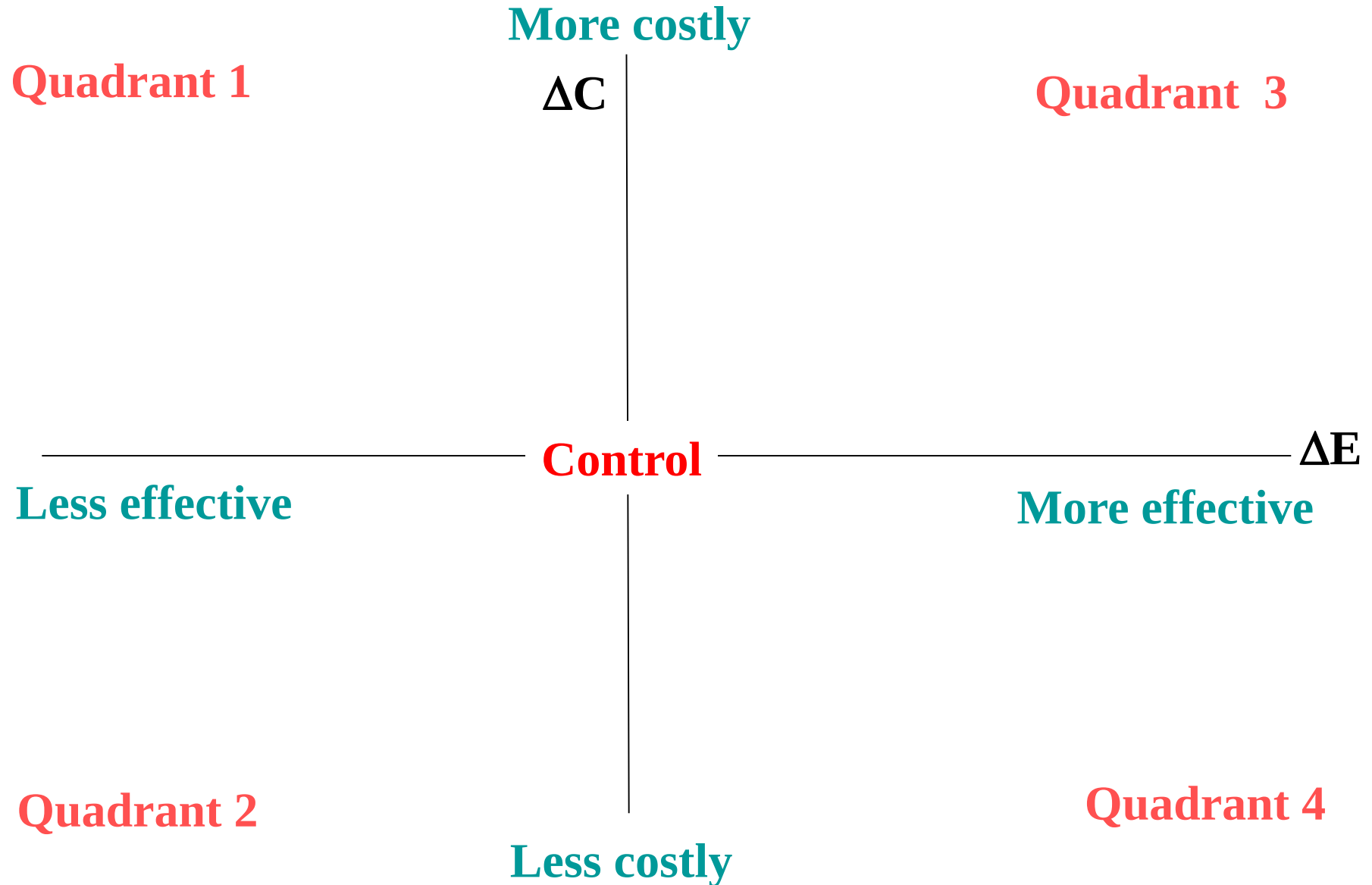
Less effective

More effective

Quadrant 2

Quadrant 4

Less costly



Decision Rules

Cost Effectiveness Plane

More costly

Quadrant 1

ΔC

Quadrant 3

Intervention is less effective and more costly

Intervention is more effective and more costly

Control

ΔE

Less effective

More effective

Intervention is less effective and less costly

Intervention is more effective and less costly

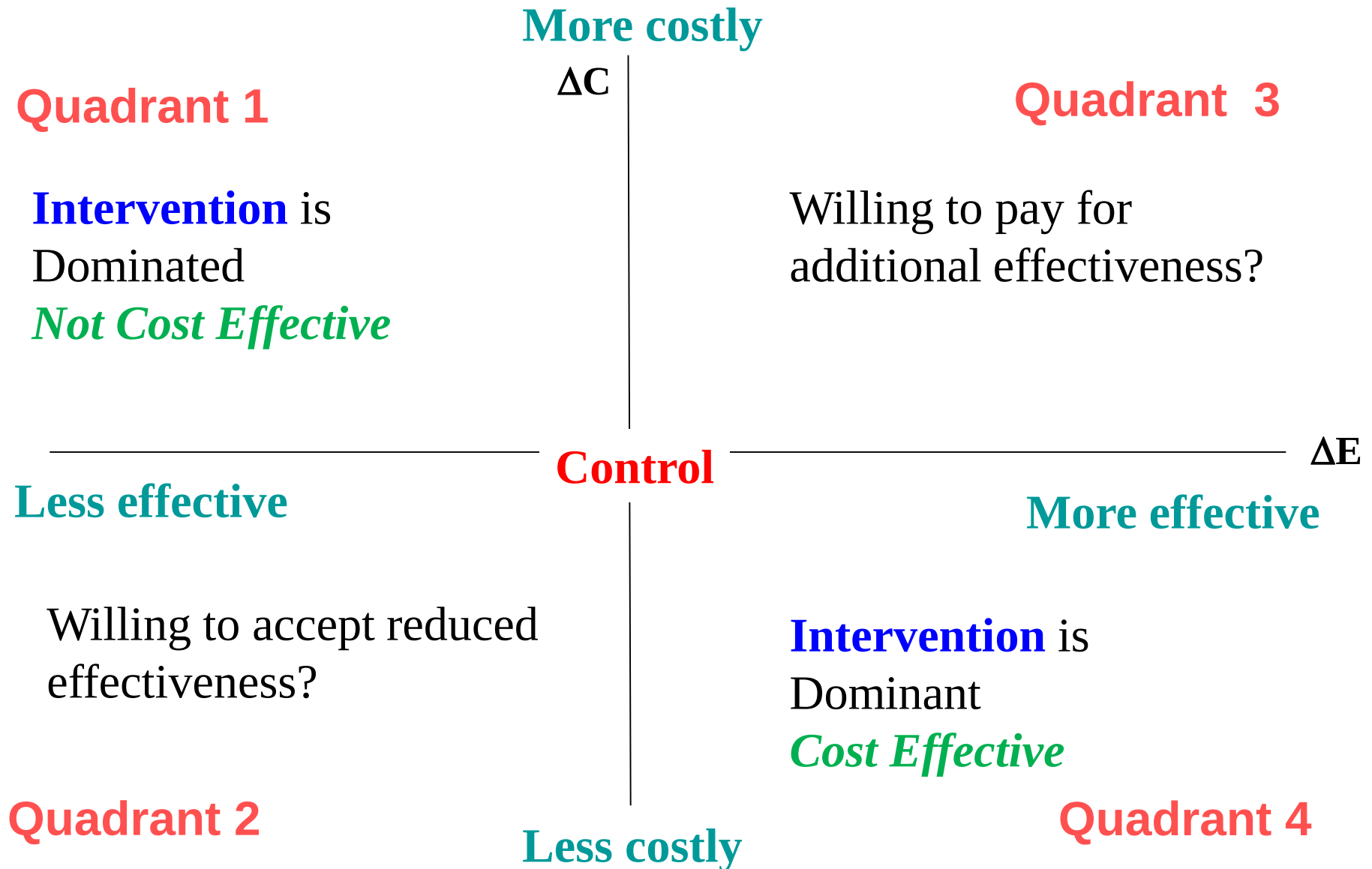
Quadrant 2

Quadrant 4

Less costly

Decision Rules

Cost Effectiveness Plane



Decision Rules

Cost Effectiveness Plane

- Quadrants 1 or 4: *Simple Choice*
- Quadrant 2 or 3 ????

– Trade-Off Quadrants:

Quadrant 2: *Are we willing to accept a less effective treatment so that we can accrue cost savings?*

Quadrant 3: *Are we willing to pay the extra cost for the more effective treatment?*

We need additional information to identify the *cost effective* strategy in these quadrants:

- Incremental Cost Effectiveness Ratio (ICER)
- Threshold Value (λ)

Decision Rules

Incremental Cost Effectiveness Ratio (ICER)

Ratio of the *difference in mean cost* to the *difference in mean effect*

$$\text{Incremental Cost} = (\text{Mean Cost}_{\text{INT}}) - (\text{Mean Cost}_{\text{CON}}) = \Delta C$$

$$\text{Incremental Effect} = (\text{Mean Effect}_{\text{INT}}) - (\text{Mean Effect}_{\text{CON}}) = \Delta E$$

$$ICER = \frac{\Delta C}{\Delta E}$$

E.g. €1000 per **QALY**

E.g. €1000 per **Case Detected**

E.g. €1000 per **Adverse Event Avoided**

Details the additional cost per additional unit of health gain

Decision Rules

Threshold Value (λ)

- Let λ = **Threshold Value** that health policy or healthcare decision-makers are **willing to pay** for an **additional unit of health gain**.
- Compare the **ICER** to the **Threshold Value** (λ) to determine whether or not the treatment strategy is *cost effective*.

E.G: Quadrant 3 (*North East*): **ICER** < λ , the **Intervention** is *cost effective*

- Range of possible **Threshold Value** (λ):
 - **€0** (*only interested in reduced costs*)
 - **€ XXX**
 - **€ YYY**
 - **€ ZZZ**
 - **Infinity** (*only interested in increased effectiveness*)

Decision Rules

Cost Effectiveness Plane

$$\lambda = 0$$

ΔC

Intervention is
dominated

Given λ & ICER,
Intervention
is **Not** *Cost
Effective*

Control

ΔE

Given λ & ICER,
Intervention
is *Cost Effective*

Intervention is dominant

Decision Rules

Cost Effectiveness Plane

$\lambda = \text{Infinity}$

ΔC

Intervention is
dominated

Given λ & ICER,
Intervention
is *Cost Effective*

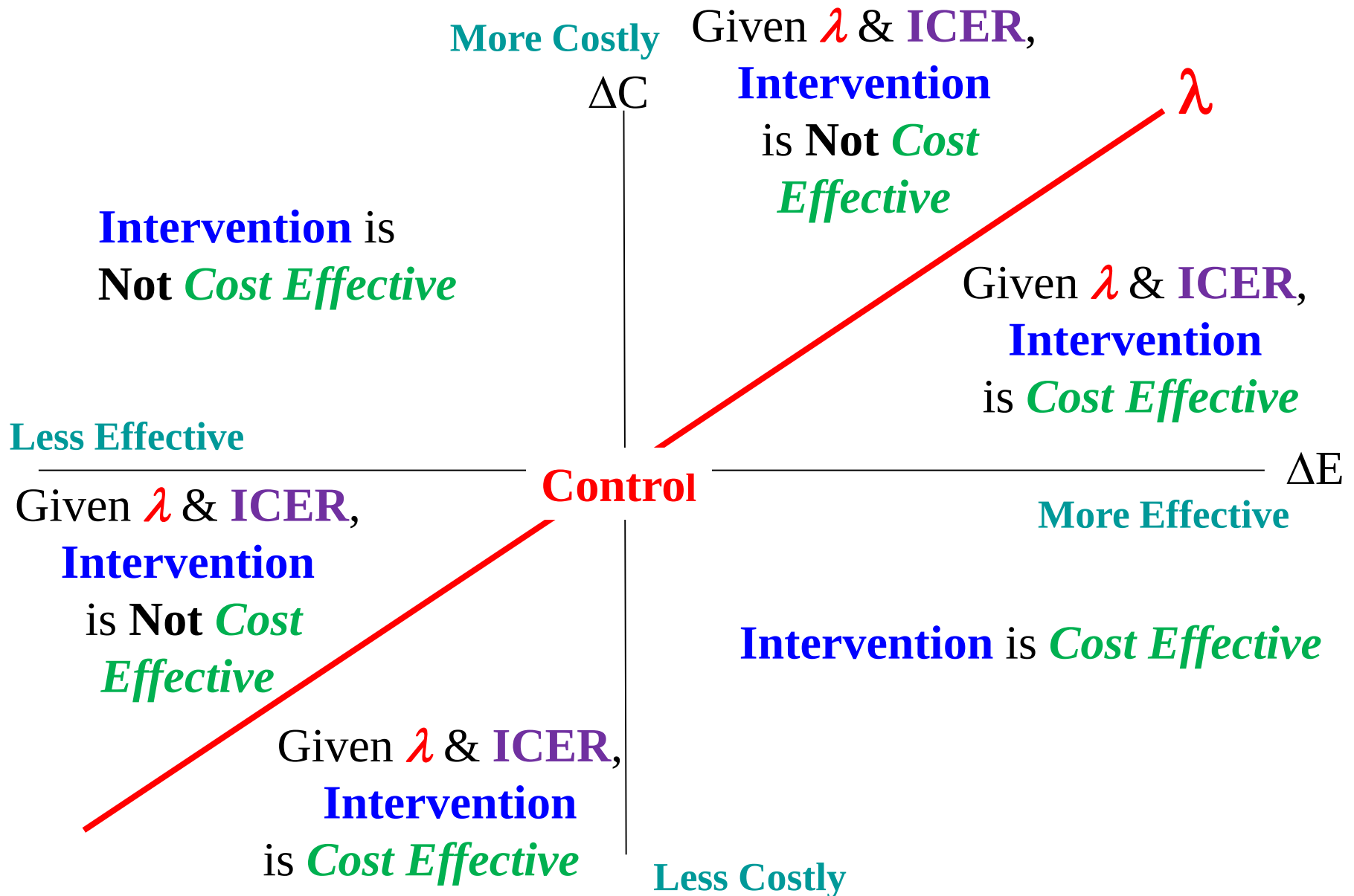
Control

ΔE

Given λ & ICER,
Intervention
is **Not** *Cost Effective*

Intervention is dominant

Decision Rules



What is Health Economic Evaluation?

Decision Rules: Ireland



Guidelines for the Economic Evaluation of Health Technologies in Ireland

2.19.3 Interpreting results

One of the implications of making comparisons regarding the cost-effectiveness of different technologies, is that a threshold ratio exists above which a technology is not considered to be cost-effective. Historically, the threshold has varied between €20,000 and €45,000 per QALY, although reimbursement below these levels was not guaranteed, and technologies above these thresholds have been adopted. For reporting purposes, it is pragmatic to report the probability of cost-effectiveness at thresholds of €20,000 and €45,000 per QALY. It is important to note that these thresholds have not been derived empirically. While consideration of the cost-effectiveness of a technology is necessary, it is not the sole basis for decision-making.

- **Ireland** - HIQA: €20,000 - €45,000 per QALY
- **UK** - NICE: £20,000 - £30,000 per QALY (Explicit Range)
- **USA** - \$50,000 per QALY (*historical*) / ICER: \$100,000-\$150,000 per QALY
- **Canada** - CADTH - \$20,000-\$100,000 per QALY
- **Australia** - PBAC - \$50,000 per QALY
- **WHO** - Early 2000s - Proposed a *Cost per Disability Life Year (DALY) threshold of between 1 and 3 times the country's gross domestic product (GDP) per capita*
 - GDP Rules:
 - **Highly cost effective**: < 1 x GDP per capita
 - **Cost effective**: between 1 x GDP per capita and 3 x GDP per capita
 - **Not cost effective**: > 3 x GDP per capita

What is Health Economic Evaluation?

Decision Rules: Ireland



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- The notion of a fixed, optimal **Threshold Value** that is universally applicable in all cases has proved to be **unrealistic** in practice, as decision-making in the real world is much more **complex**.
 - i.e. **cost effectiveness** is not the only criterion that influences decisions
 - i.e. **cost effectiveness** is traded-off against objectives other than *maximising population health*
- In reality, decision makers may **value** certain *patient populations*, or the treatment of *certain diseases*, or certain *types of health technologies*, more highly than others
 - i.e. **Threshold Value** adopted by decision-makers in practice may *exceed* the value or range publically stated
 - i.e. Explicit or implicit '**modifiers**'

‘Modifiers’ of the Threshold Value (λ)

i.e. why ignore the threshold value

- ***Ethical imperatives***

- *On the basis of the ‘rule of rescue’ rather than maximising population health*
 - *i.e. If an identified life is at stake, and if survival depends on treatment, then survival will override all other factors, including the duration of survival, quality of life, and cost effectiveness*

- ***Political climate***

- *On the basis of **political priorities** or crises or pressures, regardless of whether or not the health technology has been shown to be cost effective*

- ***Need or Burden of Illness***

- *On the basis of the **presence of illness** or the **burden of disease**, rather than on the basis of selecting treatments that go to maximising health*
 - **E.g.:** *Multiple examples in Ireland*
 - **E.g.:** *NICE -Cancer Drug Fund and End of Life Care in UK*

‘Modifiers’ of the Threshold Value (λ)

i.e. why ignore the threshold value

- ***Importance in clinical practice***
 - *Takes into account the **current treatment pathway** (if any exists) for a particular condition/ disease area, regardless of whether or not the technology is cost effective*
- ***Innovation***
 - *Takes into account the novelty or innovative nature of the health technology, regardless of whether or not it has been shown to be cost effective*
 - ***E.g.: Gene therapies***
 - ***E.g.: Medical Devices***
 - ***E.g.: Biologic Therapies***
- ***Rare Disease Areas***
 - *Takes into account the ‘orphan’ nature of therapies for rare diseases, with small patient populations, regardless of cost effectiveness*
 - ***E.g. Orphan Drugs***

‘Modifiers’ of the Threshold Value (λ)

i.e. why ignore the threshold value

- ***Budget Impact***

- *On the basis of the budgetary outlay for the health technology, regardless of whether or not it has been shown to be cost effective*

- ***E.g.: Delay in approved cost effective drugs being reimbursed in Ireland***

- *IPHA: New Medicines Waited Almost 2.5 Years For Reimbursement Decisions*
(<https://www.ipha.ie/new-medicines-waited-almost-2-5-years-for-reimbursement-decisions-says-ipha/>)

- ***Process of care issues***

- *On the basis of characteristics of the healthcare product, service or delivery mode, other than its health impacts, that patients have explicit preferences for.*

- ***Equity concerns***

- *On the basis of reducing health inequalities across the population, rather than maximising population health*

What is Health Economic Evaluation?



How important is health economic evaluation evidence component of HTA for decision-making?

- Decision makers involved in health and social care resource allocation decisions give the **greatest weight** and deepest consideration to the **clinical evidence**.
- Decision makers generally view **Health Economic Evaluation** evidence as one input, alongside other considerations – such as **legal, ethical** and **political concerns**, and pragmatic issues of **logistics, feasibility** and **budget impact** – to be considered in reaching decisions.

Why Health Economic Evaluation?

Offer **empirical** methods for evaluating public policy

1. Does it do any harm?
 - *Safety*
2. Can it work?
 - *Efficacy*
3. Does it work?
 - *Effectiveness*
4. Is it worth doing compared with the other things we could do with the same resources?
 - *Efficiency* or *cost effectiveness*
 - *Maximising health outcomes from available resources*
5. Is it affordable given its health budget impact?
 - *Affordability*

- Aid to the decision making processes

Selected Case Study



Expansion of the childhood immunisation schedule to include varicella (chickenpox) vaccination: Health Technology Assessment

Publication date: 13 July 2023

Arising from the findings of this HTA, HIQA's advice to the Minister for Health and the Health Service Executive is as follows:

- Varicella (chickenpox) is a common, highly infectious, vaccine-preventable, disease, mainly affecting children. Although typically a mild disease, serious complications requiring hospitalisation occur in approximately one in 250 cases and it can also lead to long-term skin scarring. One in three who have had varicella will develop herpes zoster (shingles) during their lifetime. Varicella is also associated with significant productivity loss mainly due to absence from paid work for those caring for people who are sick with the disease.
- The current evidence suggests that varicella vaccination is safe and effective in preventing varicella, including severe disease and its complications. While both one- and two-dose strategies are effective in preventing severe disease, a two-dose strategy is more effective in preventing varicella (cases and outbreaks).
- From the perspective of the publicly funded healthcare system, a one-dose strategy would be cost effective compared with no vaccination, with an incremental cost-effectiveness ratio (ICER) of €8,700 per quality-adjusted life year (QALY) gained. Relative to a one-dose strategy, a two-dose strategy would be less cost effective with an ICER of approximately €45,000 per QALY gained.

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HTA of the expansion of the childhood immunisation schedule to include varicella vaccination
Health Information and Quality Authority

- From a societal perspective, which also considers productivity loss associated with absence from paid work due to both illness and caring for those who are ill, both one- and two-dose vaccination strategies would be cost saving compared with no vaccination.
- The incremental five year budget impact to the HSE of a varicella vaccination programme was estimated at between €13.1 million (one-dose) and €28.1 million (two-dose short interval).

*“The **ISPOR Value Flower** outlines the importance of capturing wider elements of value both in the numerator (i.e. Incremental Cost) and denominator (i.e. Incremental Effect) of a cost effectiveness assessment”*

Final Thoughts

- Health Economic Evaluation techniques are the predominant value framework employed in Health Technology Assessment in Ireland and internationally to assess value for money and cost effectiveness.
- These methods provide evidence which goes to inform health policy and healthcare practice decision-making relating to the finance and provision of health technologies and health and social care interventions.
- The national and international guidelines for the conduct of the methods seek to ensure that they produce high-quality evidence in a manner that is robust, consistent, and transparent.
- There is an onus on us all as citizens, patients, advocates, providers, researchers and decision-makers to understand the value frameworks that are employed to inform decisions that impact upon us across society.
- There is also a need for flexibility with respect to the adoption of and adherence to value frameworks, as not all public policies designed to address societal challenges can be assessed or evaluated in the same way.

Overview

- *Value Framework: Health Economic Evaluation for Health Technology Assessment*
- *Why Health Economic Evaluation?*
- *What is Health Economic Evaluation?*



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Methodological Perspective Workshop 1:

*Health Economic Evaluation for the Health Technology
Assessment of Health and Social Care Interventions*

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