

Intro to health economics

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Pediatrics Residents and Fellows Research Course

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Outline

- Some definitions
- What is health economics?
- Costs and outcomes
- Framework for decision-making
- Types of economic evaluations
- Beyond economic evaluation – other examples of health economics research

Two key foundational concepts

What is opportunity cost?

- <https://www.youtube.com/watch?v=x-hYzRncxTc>
- (3 min video)

Opportunity cost

- Scarcity means there are more possible ways to use a given set of resources (time, money, etc) than can be done
- When we choose to use resources to meet one need, we give up the opportunity to use them to meet another.
- The benefits associated with the next best alternative use of resources, is the OPPORTUNITY COST
- We want to choose uses of resources such that the benefits outweigh their opportunity cost
- ** *note this is not about money!*

Can you think of examples in health care?

Thinking on the margin

- When thinking about use of resources, we think about "the margin", the best use of the next unit of resources
- If you had \$1000 where would you invest it?
- If you had one hour how would you use it?
- Decision making by thinking about the next action
- Don't need to know all the answers to start improvement

What is economics?

What is health economics?

- Economics is:
 - The study of how people choose to employ scarce resources that could have alternate uses.
 - Choice in the context of scarcity
- Health economics is:
 - Resource allocation in health care
 - Production of health and its distribution across populations
 - How to get best health for population with given resource constraints
 - “The application of economic theory, models and empirical techniques to the analysis of decision making by individuals, health care providers and governments with respect to health and health care.”

Morris, Devlin, Parkin. Economic Analysis in Health care
2007

Health economics is about:

- A way of thinking
- A set of theories, models, techniques
- That contribute to:
 - Resource allocation decisions
 - Aiming to get the most health for given resources

Equity considerations as well – not just maximum health but considerations of the distribution of health

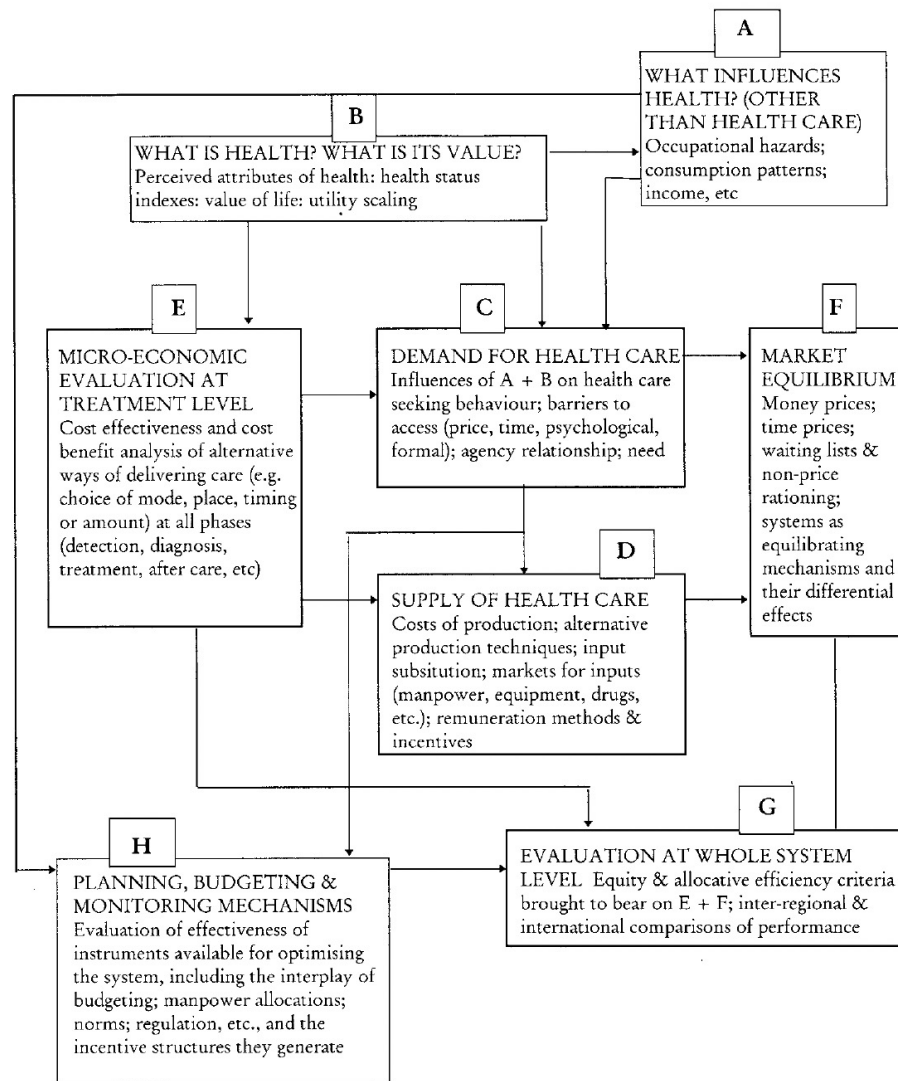


Figure 1 Health economics: structure of discipline

Health economics is... A LOT

What influences health?

What is health? What is its value?

Demand for health care

Supply of health care

Market equilibrium

Micro-economic evaluation at treatment level

Evaluation at system level

Planning, budgeting, monitoring

Williams A. Health economics: the cheerful face of a dismal science. In *Health and Economics*, Williams A (ed.). Macmillan: London, 1987.

Maynard and Kanavos. HEALTH ECONOMICS: AN EVOLVING PARADIGM. Health Economics, 2000.

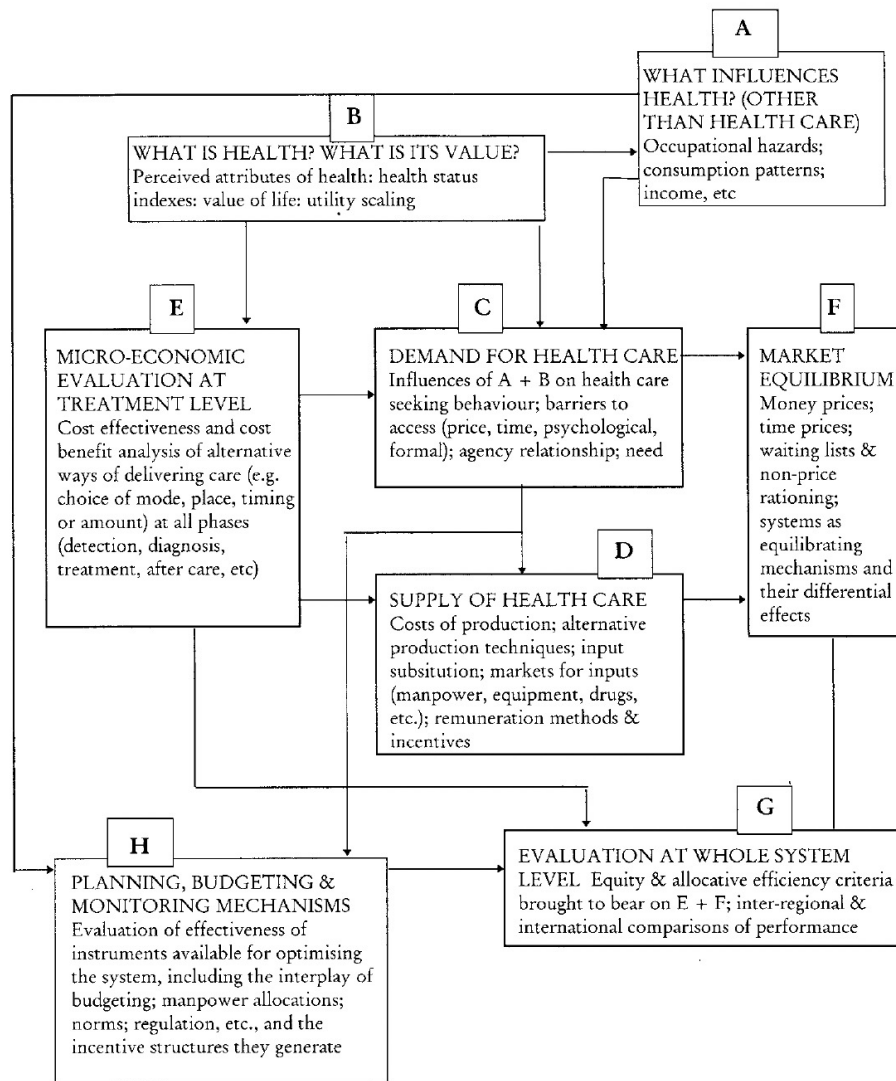


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Economic evaluation

- Comparative analysis of both costs AND consequences of alternative courses of action
- Course of action:
 - Treatments, interventions, programs, ways of organizing care, preventive measures etc
- Takes into account the decision-makers viewpoint – supporting a decision

Economic evaluation

Comparative analysis of alternative courses of action in terms of **both** their **costs** and **consequences**

It is a structured exercise – requires pre-planning

1. Statement of question/problem being addressed (includes perspective)
2. Specify options to be evaluated
3. Identify all costs and benefits of both options
4. Measure (where possible) all costs and benefits
5. Value (where possible) all costs and benefits
6. Adjust values for differential timing (discounting)
7. Incremental costs and outcomes
8. Assess the impact of uncertainty on results
9. Draw a conclusion and make recommendations.

Drummond, M. (2005). *Methods for the economic evaluation of health care programmes*. New York, NY. Oxford University Press

Two types of economic efficiency

- Technical efficiency – we are producing a given outcome (health) for the least cost

“Doing things the best way”

- Allocative efficiency – we are maximizing overall health from an available budget

“Doing the best things”

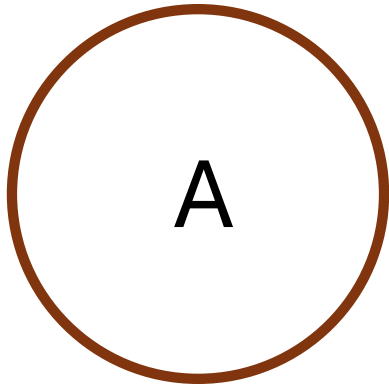
Framework for decision making

- A framework for decision-making that incorporates economics alongside studies of outcomes or effectiveness
- If decision-makers are considering a new way of doing things (new drug, new disease management program, new clinical service organization)
- Should we adopt the new thing, or maintain the status quo?

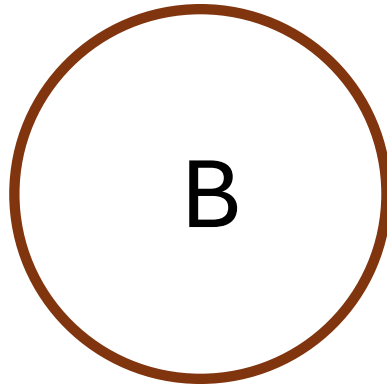
Framework for decision-making

*Considering **costs** and **outcomes** together
relative to the **comparator***

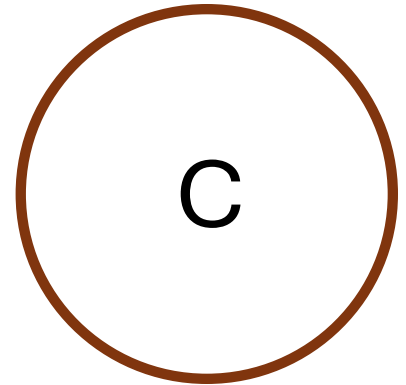
COSTS MAY:



DECREASE

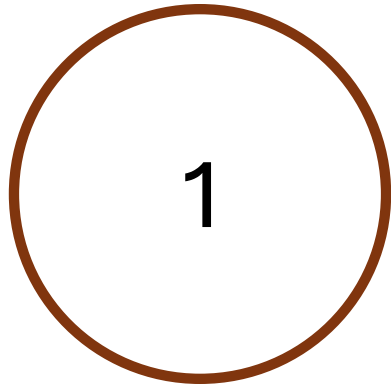


REMAIN
UNCHANGED

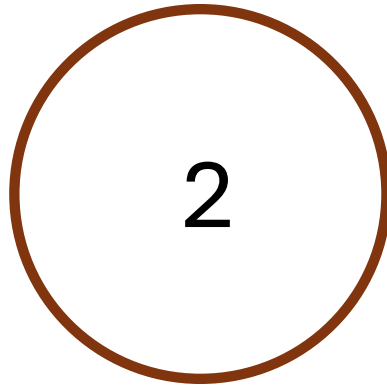


INCREASE

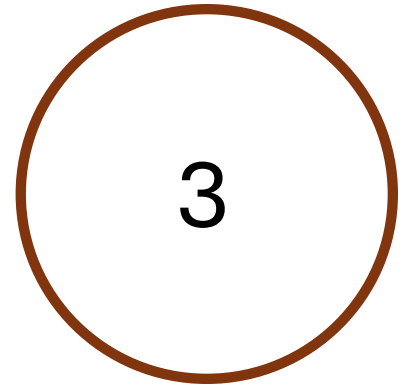
OUTCOMES MAY:



IMPROVE



REMAIN
UNCHANGED



WORSEN

Matrix linking effectiveness and cost

		EFFECTIVENESS decreasing		
		1	2	3
COST increasing	A			
	B			
	C			

- ✓ recommend new drug/program
- X do not recommend new drug/program
- ? judgement required
- ~ indifferent

Compared with the current drug/program, the new drug/program is:

1. more effective
2. of equal effectiveness
3. less effective

- A. less costly
- B. of equal cost
- C. more costly

Matrix linking effectiveness and cost

		EFFECTIVENESS decreasing		
		1	2	3
COST increasing	A	✓	✓	?
	B	✓	~	X
	C	?	X	X

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Main methods of economic evaluation

Method	How are costs valued?	How are benefits values?
Cost benefit analysis (CBA)	money	Money (stated preferences)
Cost effectiveness analysis (CEA)	money	'natural' units Death averted (or life saved) Clinical measures Intermediate outcomes (sometimes but caution)
Cost utility analysis	money	Quality adjusted life year
Cost consequence analysis	money	Multiple outcomes simultaneously considered (without explicit weighting)

Identify, measure and value:
Costs

Cost Categories

examples

consider perspective

HEALTH SECTOR

Drugs	Equipment
Diagnostics	Hospital
Ambulance	Healthcare providers
Homecare	

PATIENT/FAMILY

Out-of-pocket
Co-payments
Travel

PRODUCTIVITY

Employment related, costs of missed work

Table 2: Perspectives of economic evaluations and their related costs			
Perspective		Types of Cost	Examples
Societal perspective	Public payer	Direct costs to publicly funded services (other than health care)	Social services, such as home help, meals on wheels* Income transfer payments paid (e.g., disability benefits) Special education
		Direct costs to publicly funded health care system	Drugs, medical devices Equipment, space, facilities, and associated overhead costs Aids and appliances paid by government Health care providers and other staff Medical services, including procedures Hospital services Emergency visits Ambulance services Diagnostic, investigational, and screening services Rehabilitation in a facility or at home* Community-based services, such as home care, social support* Long-term care in nursing homes*
		Direct costs to patients and their families	Out-of-pocket payments (including co-payments) for drugs, dental treatment, walking aids Cost of travel for treatment, paid caregivers Premiums paid to, and benefits received from, private insurers† Income transfer payments received (e.g., disability benefits)
	Publicly funded health care system	Time costs to patients and their families†	Patient's time spent for travel and receiving treatment Lost time at unpaid work (e.g., housework) by patient and family caring for the patient
		Productivity costs	Lost productivity due to reduced working capacity, or short-term or long-term absence from work (during friction period) Costs to employer to hire and train replacement worker for patient

CADTH Guidance Document for the Costing of Health Care in Canada, 2016

Health Sector – sources of cost data

Hospitalization	Discharge Abstract Database (DAD)
Physician Visits	Physician Claims
Medications	PIN dispense data
ED visits	National Ambulatory Care Reporting System (NACRS)
Diagnostic Imaging	Physician Claims
Lab Tests	Lab data

AHS Data & Analytics

Patient/Family – sources of cost data

Travel

Parking

Insurance

Out of pocket costs

Surveys – family reported

Productivity - sources

Median hourly wage

Surveys – family reported

Identify, measure and value:
Consequences

Measuring benefits (consequences, outcomes)

Clinically meaningful
measures

- Condition-specific measures
- Disease rates
- Quality of life (QoL)
- Mortality rates

Caution!

- Intermediate outcomes (BP, FEV₁, viral load)

Measuring benefits - sources

Can get limited information on benefits from health system data

- Death
- Maybe patient satisfaction?
- Some areas collect QoL measures

Measuring benefits - techniques

Quality adjusted life years (QALYs)

- Euroqol, HUI, SF-6D
- Discrete choice experiment
- Contingent valuation

What is a QALY?

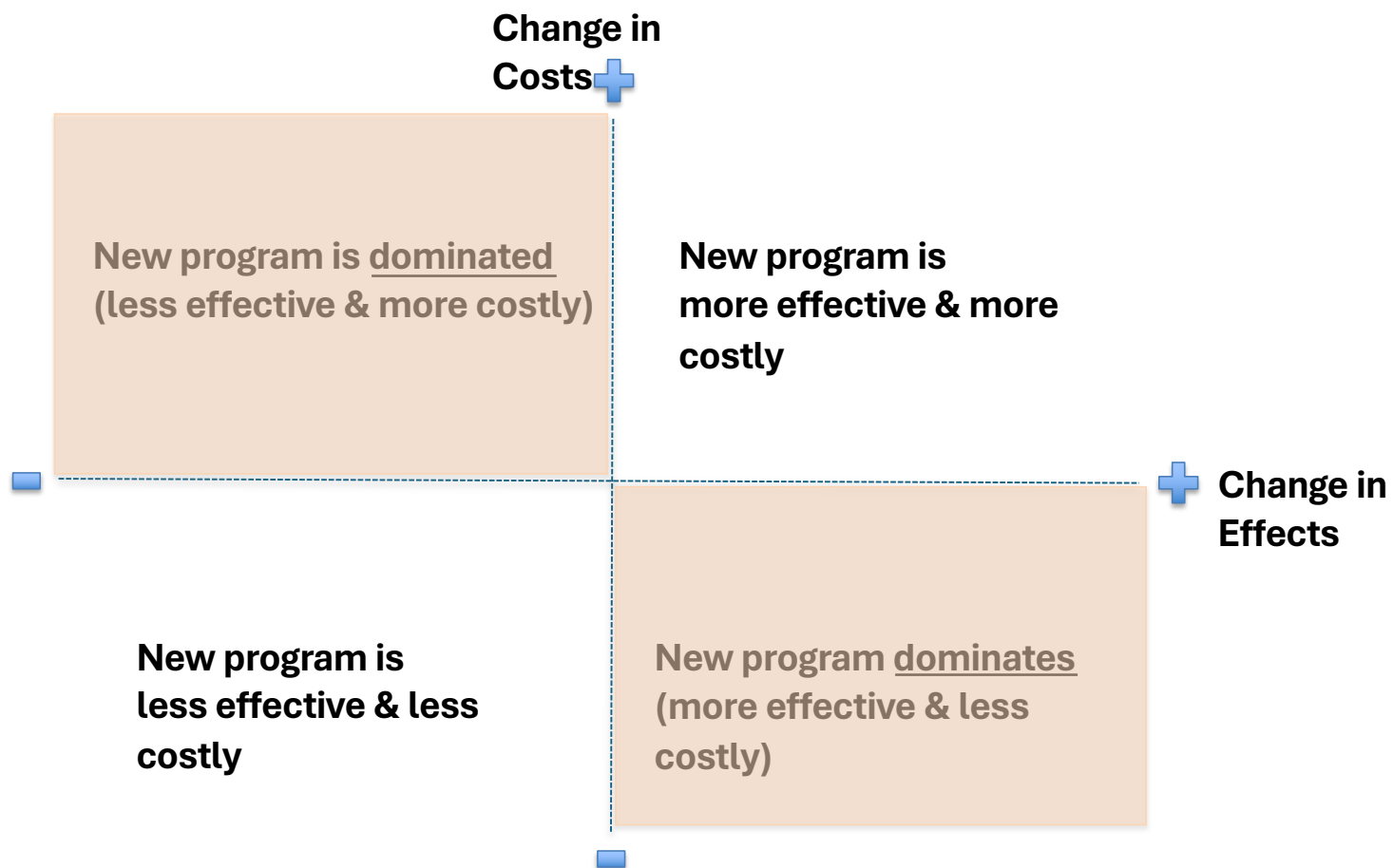
- Measure that includes both length of life and quality of life
 - Life years are weighted by quality of life (=‘utility weight’)
 - 1= full health, 0 = dead
 - One QALY is equivalent to one year living in perfect life
 - Can capture changes in length of life, quality of life or both AND compare them in a common ‘currency’ which is the QALY
-
- What is better 20 years at 0.5 utility or 10 years at 0.8 utility?
 - Or 15 years at 0.5 compared to 10 years at 0.8?

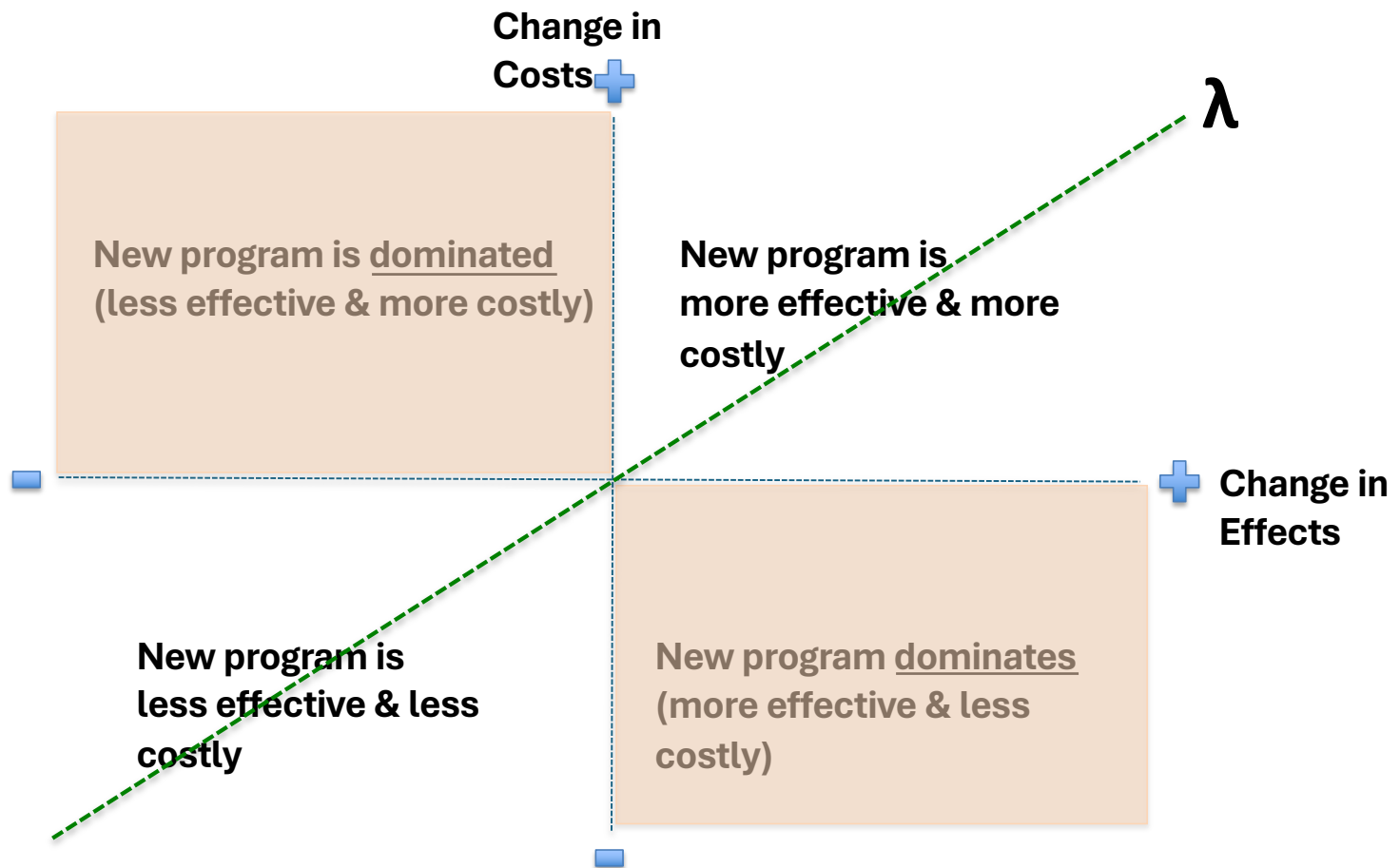
QALY 'league' tables - example

• <i>Health state</i>	<i>QALY</i>
• Normal health	1.0
• Atopic eczema – not recurrent	1.0
• Asthma – symptom free	0.97
• JIA – controlled	0.77
• Vision loss	0.5
• Extremely bad health	0.0

Revisiting decision rules - ICERS

Cost effectiveness plane





The “ICER”

Incremental cost-effectiveness ratio

$$\frac{\text{change in costs}}{\text{change in outcomes}}$$

**Summary measure – economic value of
an intervention**

What other questions do health economists consider?

- How do we determine "how much is good value", what is societal willingness to pay for a QALY?
- How do patients and parents trade off between the risks and benefits of different treatments?
 - Patient preference research?
- What are the socioeconomic impacts of childhood illness on families?
 - Going beyond health care system costs

What is health economics? What does a health economist do?

“Health economists make the world a better place”

- <https://www.youtube.com/watch?v=pQO3Ezs9ICw>

(12 minutes)

Reflections

- What's your key takeaway?
- Any surprises?

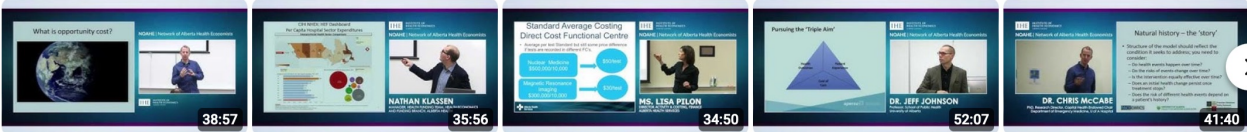
Recap

- Fundamental concepts
- What is economics, what is health economics?
- What is economic evaluation?
- Decision making framework
- Main types of economic evaluation
- Costs and outcomes
- Interpreting ICERS
- Other examples of health economics research

Want to learn more?

- Reach out to me – I can connect you with Health Economics researchers here
- Institute of Health Economics/ NOAHE
 - Seminars
 - Teaching sessions

IHE/NOAHE Evidence into Practice Luncheon Series: Health Economic Training Sessions ▶ Play all



Session 1: Core Concepts: Orientation to Evidence...	Session 2A: Orientation on Costing: Hospital Costing	Session 2B: Orientation on Costing: Diagnostic Imaging	Session 3: Measuring Health Outcomes	Session 4: Vehicles for Conducting Health Economi...
Network of Alberta Health Econo... 3.3K views • 8 years ago	Network of Alberta Health Econo... 2.4K views • 8 years ago	Network of Alberta Health Econo... 634 views • 8 years ago	Network of Alberta Health Econo... 9.1K views • 8 years ago	Network of Alberta Health Econo... 5.5K views • 8 years ago

- <https://www.youtube.com/channel/UCiZylm-fUrbOAn7wh2lpyGg>