Economic Evaluations in Public Health: What are the ethical implications?

Peel Public Health, Region of Peel, ON

Workshop | June 2014

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Centre de collaboration nationale sur les politiques publiques et la santé

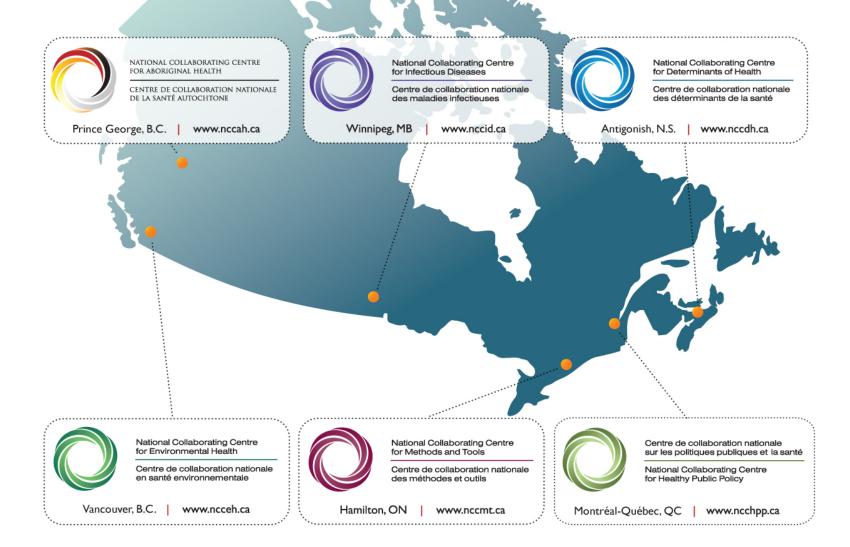
National Collaborating Centre for Healthy Public Policy

National Collaborating Centre for Healthy Public Policy (NCCHPP)

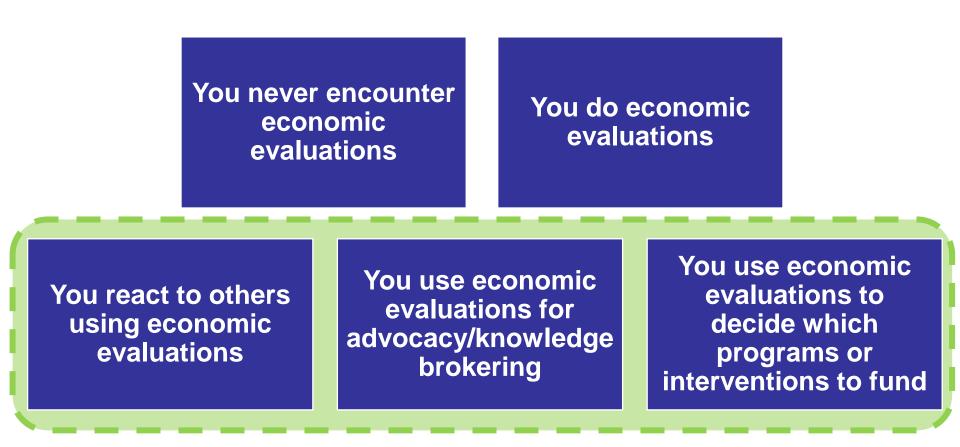
• Our mandate

- Support public health actors in their efforts to promote healthy public policies
- Our areas of expertise
 - The effects of public policies on health
 - Generating and using knowledge about policies
 - Intersectoral actors and mechanisms
 - Strategies to influence policy making

National Collaborating Centres for Public Health



Economic evaluations and you?



Workshop's objectives

- Raise awareness that economic evaluations are <u>not</u> <u>value neutral</u>
- Develop skills to critically analyze economic evaluations to identify the values they <u>implicitly</u> promote or downplay
- Start reflecting on ways to present the results of economic evaluations to decision makers that make these values <u>explicit</u> and relevant in a given context

Based on...

An Introduction to the Ethical Implications of Economic Evaluations for Healthy Public Policy

table, in other words, they may seem to be the

October 2015

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of value judgements and identifies and to be largely devial of edited implications. As essentials time, however, the really is gate Public health editors analysing public retires executed large large and the methy is got different. And the process of controlling manufacture distribution of the address frequency produce are been block and any structure distribution. These decision include anothing and highlighting more equal to be based on the distribution, going more equal to prove considerations are often and any production fraction of the distribumanify by in masses and compare the separated They can be a marked branching mine, simply n De best weitigte information in mestere, or Day can also engage in advances while a single. The test of the second states of party of the second states of the second states are a second state of the second states and the second states are set of the second states and the second states are set of the second states others. Buch choices are recovery, but Day being with them satis of values and essentiation but are often implicit and usually remain in the Interard We will be will and who will pay for each option, and when will have be will and costs account?

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Indeed, some of the values that under the manufacture and advances or and the definition and others are particle that the source of the space time. This makes that is source of presentions. This makes that is source of the statistics can have particular definition implications that are that reserved and important implications. Implications that and both research and important for the product of public hearth, and out the other in utilizity analysing term. And as prodiferent character shifts to other hearth, there is notice in classics or exploration contexes. There is notice in characterizity have obligate with respect to excession evolutions. This puts exercise enteries into context in terms of extension along produces to entrying the underlying choice. For generics to the enteries they present.

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Québec

An Introduction to the Ethical Implications of Economic Evaluations for Healthy Public Policy October 2015 relining Vestor - Per discussion Fully, in other words, they may seem to be then of reduc judgements and blockspins and to be largely densed of other implements. As means the large block word, the welly in quite Answering policy questions with economic evaluation Public health extens analyzing policy options distant. But the proce shally by it makes and compare for expected distant dates effects of policies on the health of the population They can be an inscitut inclusing mines, simply providing the best analysis information to feature matters, or they can also engage to ential and play lifetower best of or are establing offers to ensure - questions of a behicking With other of wall terefs? Web adapted to by axially, and observes? and in collect shines e Description of completes, The đ Ž 00 £ where everyth of the efficient percenting if themselves, using it, or reacting to j. examine of the rest methods of expression examines. "This is followed by a lock of the te-codinating and without exampliane that is the background is expression exclusions. The Dans a light best of space and remains of the first sector of the sector state of the sector sector is the sector Ē reason, many of the official efficient ned settim considers some questions should be benefits should be defined in exclusions in fight unders presented in exercisis evaluations. Fish-service used to enables, inflamos, and In such that hereast descents of the light of these optably policy detablies, may seem also to hard Interingthis whether Québec Proposition Reports

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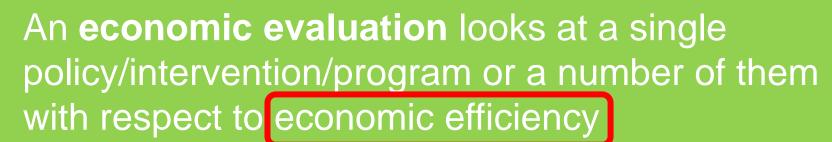
Overview

- 1. What is an economic evaluation?
- 2. Cost-benefit and cost-utility analyses
- 3. Shared assumptions
- 4. Exercise
- 5. Conclusion and evaluation

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What is an economic evaluation? (1)



?

Effectiveness

Which intervention can achieve the most X?

...at the least possible cost?

Efficiency

Efficiency presupposes effectiveness

What is an economic evaluation? (1)

An economic evaluation looks at a single policy/intervention/program or a number of them with respect to economic efficiency

A ratio of costs to benefits, negative to positive effects Effectiveness Efficiency

Which intervention can best ...at the least possible cost?

Efficiency presupposes effectiveness

Example: A social housing program

- **Results:** The average cost is \$34,194 per household. The average change in health utility scores in the intervention group attributable to the intervention is +0.001 for all households. The estimate is statistically insignificant.
- **Conclusion:** At face value, the intervention is not value for money.

Adapted from: Lawson, K. D. et al. (2013). Investing in health: is social housing value for money? A cost-utility analysis. *Journal of Epidemiology and Community Health, 67*, 829-834.

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Not effective

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What is an economic evaluation? (2)

To assess efficiency, we need to be able to directly compare costs and effects in the form of standardized units.



Identify: Perspective matters

- Which costs and effects count?
 - Individual, administrative unit or social perspective
- Healthy public policy can be especially sensitive
- Example: bike lanes
 - Costs: Municipality
 - Benefits: Municipality, Health Ministry, Transportation Ministry, etc.



Source: wikimedia.commons.org Photographer: <u>Arne Hückelheim</u>

1. Is the perspective the right one to capture relevant costs and benefits?

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- 2. Are all relevant costs and benefits included?

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An example:

The addition of each supervised injection facility will prevent 11 cases of HIV and 65 cases of HCV each year. As a result, there is a net cost saving of CDN\$0.686 million (HIV) and CDN\$0.8 million HCV) for each additional supervised injection site each year. This translates into a net benefit-cost ratio of 1.21: 1 for both HIV and HCV.

Everything is in \$\$\$

- Market prices and *imputed* prices
- Are we measuring ability to pay?

Adapted from: Jozaghi, E. et al. (2013). A cost-benefit/cost-effectiveness analysis of proposed supervised injection facilities in Montreal, Canada. *Substance Abuse Treatment, Prevention, and Policy, 8* (25), 1-8.

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1. Net present value (NPV)

Benefits minus costs

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1. Net present value (NPV)

Benefits minus costs

2. Ratio of benefit to cost More than 1 = value for money

Adapted from: Jozaghi, E. et al. (2013). A cost-benefit/cost-effectiveness analysis of proposed supervised injection facilities in Montreal, Canada. *Substance Abuse Treatment, Prevention, and Policy*, 8 (25), 1-8.

Strengths

Limitations

- Universal: common language to compare very disparate things
- Flexible: can handle any kind of benefit

- Prices: translating some benefits into dollars is difficult
- Biases: who and how do we ask about translating intangibles into dollars?

- 1. Is it the right perspective to capture relevant costs and benefits?
- 2. Are all relevant costs and benefits included?
- 3. Is the evaluation valuing things accurately or measuring ability-to-pay?

Cost-utility analysis (CUA) 1

An example:

Ontario's Universal Influenza Immunization Program costs approximately twice as much as a targeted program but reduces influenza cases by 61% and mortality by 28%, saving an estimated 1,134 QALYs per season overall. Reducing influenza cases decreases health care services cost by 52%. The incremental cost-effectiveness ratio is Can\$10,797/QALY gained

Costs are in \$\$\$

Benefits are in QALYs (Quality-Adjusted Life Years)

- 0 to 1 scale of general health
- Values come from questionnaires

Adapted from: Sander, B. et al. (2010). Economic Appraisal of Ontario's Universal Influenza Immunization Program: A Cost-Utility Analysis. *PLoS Medicine*, 7(4), 1-11.

Ageism

QALY = number of years of life x quality of life

- As they age, people have:
 - Fewer years of life left
 - Years of decreasing quality

Age	QALY/year
Under 25 years	0.94
25-34	0.93
35-44	0.91
45-54	0.85
55-64	0.80
65-74	0.78
Over 74	0.73

Saving a 20-year old (life exp. 82): 52.5 QALY
Saving a 65-year old (life exp. 82): 12.9 QALY

Adapted from: *Peters, J. L. & Anderson, R.* (2013). The cost-effectiveness of mandatory 20 mph zones for the prevention of injuries. *Journal of Public Health*, 35 (1), 40-48.

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- 4. Is it fair that saving the life of an older person counts for less (ageism)?

Double Jeopardy

QALY = number of years of life x quality of life

- For an individual with a chronic condition or disability, each year of life is worth fewer QALYs
- Saving 20-year old w/o disability: 52.5 QALY
- Saving 20-year old w/ disability: 42 QALY

Age	QALY/year		
	No disability	With disability (-20%)	
Under 25 years	0.94	0.75	
25-34	0.93	0.74	
35-44	0.91	0.73	
45-54	0.85	0.68	
55-64	0.80	0.64	
65-74	0.78	0.62	
Over 74	0.73	0.58	

Adapted from: *Peters, J. L. & Anderson, R.* (2013). The cost-effectiveness of mandatory 20 mph zones for the prevention of injuries. *Journal of Public Health*, 35 (1), 40-48.

Δ = 10.5

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Cost-utility analysis (CUA) 2

Strengths

Limitations

- Comparability: can compare health impact of interventions with differing aims
- Focus on broad measure of health: holistic but without \$\$\$

- **Bias:** "Ageism," "Double Jeopardy"
- Narrow: do not capture benefits other than health-related

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Methodological individualism

Methodological individualism assumes that all social phenomena can be explained with reference only to the actions and beliefs of individual human beings.

Do I prefer to pay taxes to fund a housing program or not?



Source: www.lumaxart.com

Do we prefer, as a society, to raise taxes to pay for a housing program or not?



Source: www.lumaxart.com

Methodological individualism

Methodological individualism assumes that all social phenomena can be explained with reference only to the actions and beliefs of individual human beings.



- Harder to capture some social phenomena
- Tend to promote autonomy, individual liberty
- Can downplay solidarity, justice, equity

Source: www.lumaxart.com

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- 7. Is the policy or program evaluated aiming at fostering or sustaining social phenomena?

Utilitarianism

The preference-satisfaction view:

The option that satisfies the most individual preferences is the better one, the right one.

- Maximizing the number of satisfied preferences
 - Not a specific distribution (inequity, inequality)
 - Not ranking preferences (wants/needs)
 - Not judging preferences (adaptation to a polluted area, acquired taste for fast food, etc.)

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Ethical implications:

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- 10. Should some preferences be disregarded because they reproduce and reflect existing injustices (paternalism)?

Making values explicit

Individualism + Utilitarianism =

Ethical framework called Welfarism

- Value conflicts resolved within evaluations
 - Weights, etc.
 - Rarely done
- Also can be tackled during decision-making process
 - Making assumptions explicit
 - Cost-Consequence Analysis (CCA)
 - Multi-Criteria Decision Analysis (MCDA)

Questions?



Source: www.lumaxart.com

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Exercise

- Small group discussion to report back to larger group with 3 responses:
 - 1. How would you present the results of this economic evaluation **to a decision maker** in a way that takes into account the underlying ethical implications?
 - 2. Would your presentation change if the decision maker in question was working (A) in a **municipality**, (B) in a provincial **health authority** or (C) in a provincial **transportation authority**?
 - **3**. Why?

The handout (1)

The problem: Casualties on local, residential streets

Two options:¹

	Do nothing	Install 20-mph zones
Effects on casualties	Fatal: -4.3%/year	Fatar: -57% for 10 years + -4.3%/year
(effectiveness)	Serious: -7.9%/year	Serious: -26% for 10 years +)-7.9%/year
	Slight: -6.2%/year	Slight: -22% for 10 years + -6.2%/year
	(Background trend)	(Effects of the zones + background trend)



Source: www.flikr.com Photographer: Pmcologic

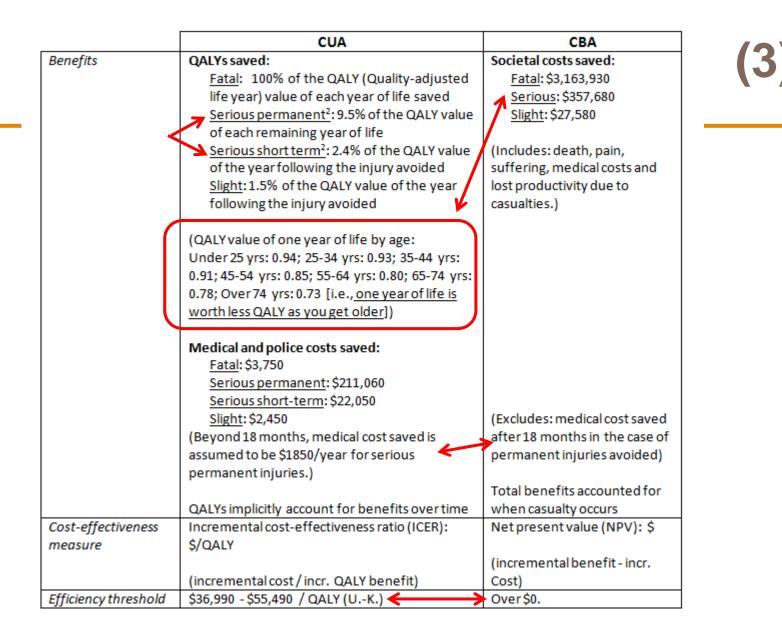


Source: www.flickr.com Photographer: Richard Drdul

The handout (2)

Two methods:

	Cost-utility analysis (CUA)	Cost-benefit analysis (CBA)
Recommended by	Health authority	Transportation authority
Perspective <	Public service sector perspective	Societal perspective
Discount rate (costs and benefits)	3.5%	3.5%
Costs	Cost of construction : a little <u>over</u> \$130,000/street km (total amount annuitized over 10 years at 1% interest rate)	Cost of construction: a little <u>unde</u> r \$130,000/street km (total amount assumed to occur the first year)
	Cost of maintenance : \$1,850/street km/year (arbitrary value)	Cost of maintenance : \$1,850/street km/year (arbitrary value)



The handout (4)

Results:

	CUA	CBA		
Low casualty area	\$825,000 / QALY	NPV: -\$46,990		
(mean: 0.6 cas. /km/	(Incremental cost: \$123,750	(Incremental cost: \$138,920		
year)	Incremental benefit: 0.15 QALY)	Incremental benefit: \$91,930)		
High casualty area	\$163,350 / QALY	NPV: \$167,590		
(mean of 1.6 cas.	(Incremental cost: \$115,980	(Incremental cost: \$140,210		
/km/year)	Incremental benefit: 0.71 QALY)	Incremental benefit:		
		\$307,800)		

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Evaluation

• Please take 2 minutes to fill out the evaluation form.

THANKS!

Are you interested in this topic? Visit us at www.ncchpp.ca for more resources

Presenters: Olivier Bellefleur & Michal Rozworski



Centre de collaboration nationale sur les politiques publiques et la santé

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