



## Using Quality and Cost to Shape Quality Improvement

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### Learning Objectives

- Distinguish the difference between cost-benefit and cost-effectiveness terms based on the academic or policy and practice change process settings
- Outline a cost-effectiveness, cost-benefit, or return on investment model exemplar for motivating and making change

## Outline

- What exactly is health economics?
- What are the many types of cost studies?
- How could we apply these types of studies to the study of a particular intervention?

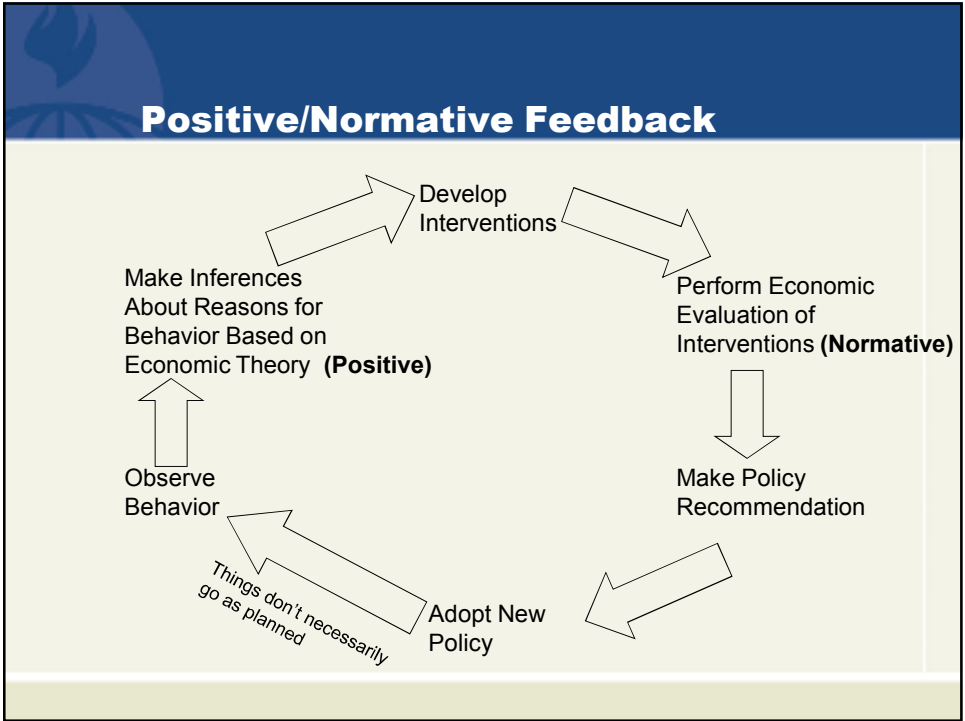
## What is health economics?

## Positive Use of Economics

- Develop theories of expected responses to changes in incentives
  - Assume the objective for individuals and organizations when developing the theory
  - Do not assert that consumers should value different things (length and quality of life) in a particular way
    - Allow consumers to express their own preferences
- Study how people, organizations, and governments behave
  - Test whether the assumed objective explains behavior
- Revise theories if they are unable to explain behaviors

## Normative Use of Economics

- Ask whether there is something wrong with the market such that the government needs to impose a regulation
- Use data about tradeoffs individuals are willing to make
- Aggregate and assume that this represents tradeoffs society is willing to make
- Project changes in health or other outcomes with an innovation in care or policy
- Compare the costs of innovation with the benefits from innovation
- Make a policy recommendation



### What are the many types of cost studies?

## Comparative effectiveness (CER)

- Term we hear a lot about in the news
- Multiple definitions, even within the United States
- **None** are cost-effectiveness but they are worth a quick review to understand how quality measures can be thought of as a way to influence policy before we add cost

## Congressional Budget Office

- "...a rigorous evaluation of the impact of different options that are available for treating a given medical condition, for a particular set of patients."

KF5

## Institute of Medicine

- **KF4** CER is the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat and monitor a clinical condition, or to improve the delivery of care. The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.

KF6

## United States Department of Health and Human Services (DHHS)

- **KF7** *Comparative effectiveness research is the conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in “real world” settings. The purpose of this research is to improve health outcomes by developing and disseminating evidence-based information to patients, clinicians, and other decision-makers, responding to their expressed needs, about which interventions are most effective for which patients under specific circumstances.*
  - *To provide this information, comparative effectiveness research must assess a comprehensive array of health-related outcomes for diverse patient populations and sub- groups.*
  - *Defined interventions compared may include medications, procedures, medical and assistive devices and technologies, diagnostic testing, behavioral change, and delivery system strategies.*
  - *This research necessitates the development, expansion, and use of a variety of data sources and methods to assess comparative effectiveness and actively disseminate the results.*

## Slide 11

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**KF4** Source: Annals of Internal Medicine. August 4, 2009  
vol. 151 no. 3 203-205  
Kevin Frick, 12/30/2009

**KF5** After this slide, I'd like to give 10 seconds of pondering music so that students can study the definition  
Kevin Frick, 12/30/2009

## Slide 12

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**KF6** After this slide, I'd like to give 30 seconds of pondering music so that students can consider what is and is not in the combination of the three definitions  
Kevin Frick, 12/30/2009

**KF7** Source: <http://www.hhs.gov/recovery/programs/cer/cerannualrpt.pdf>  
Kevin Frick, 12/30/2009

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
<b>Cost-effectiveness</b>	



## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-effectiveness	<b>Have single most important outcome in natural units</b>

## Natural units

- This is not a question of natural and “unnatural” units
- Rather natural units are things we can measure as actual physical/clinical measures
  - Blood pressure changes
  - HbA1C changes
  - Changes in visual acuity
  - Changes in BMI
- Compare with “constructed measures”
  - Particularly QALYs, DALYs, and dollars that are measures of abstract concepts over time

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-effectiveness	Have single most important outcome in natural units
<b>Cost-utility</b>	

## Important Note

- Cost-utility is a subset of cost-effectiveness
  - Not because it is expressed as incremental dollars per incremental natural unit
  - But because it is expressed as incremental dollars per unit of something

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-effectiveness	Have single most important outcome in natural units
Cost-utility	<b>Express outcome in quality or disability adjusted life years</b>

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
<b>Cost-minimization</b>	
Cost-effectiveness	Have single most important outcome in natural units
Cost-utility	Express outcome in <i>quality adjusted life years</i> or <i>disability adjusted life years</i>

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-minimization	<b>Any outcome—compare cost of alternatives with similar outcomes</b>
Cost-effectiveness	Have single most important outcome in natural units
Cost-utility	Express outcome in quality or disability adjusted life years

## Cost minimization

- Not all studies that end up being cost minimization studies start as cost minimization studies
- Often expect different outcomes but upon empirical analysis find similar outcomes
- Realize that it is only necessary to ask which costs less

## Similar outcomes

- Do not have to be identical
- Could be not statistically significantly difference
- Could be not clinically different

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## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-minimization	Any outcome—compare cost of alternatives with similar outcomes
<b>Cost-consequence</b>	
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## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-minimization	Any outcome—compare cost of alternatives with similar outcomes
Cost-consequence	<b>Multiple outcomes in natural units</b>
Cost-effectiveness	Have single most important outcome in natural units
Cost-utility	Express outcome in quality or disability adjusted life years

## Multiple outcomes issues

- This could be thought of as researchers just “giving in” and not being able to think of a way to combine things
- However there are times when the results may be both outcomes and satisfaction with the process of results may affect individuals with such diverse interests that it is impossible to combine across measures and individuals

## Types of Cost-Outcome Analyses

Type of Analysis	Outcome
Cost-minimization	Any outcome—compare cost of alternatives with similar outcomes
Cost-consequence	Multiple outcomes in natural units
Cost-effectiveness	Have single most important outcome in natural units
Cost-utility	Express outcome in quality or disability adjusted life years
<b>Cost-benefit</b>	

## Types of Cost-Outcome Analyses

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Cost-consequence	Multiple outcomes in natural units
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Cost-benefit	<b>Express outcome in dollars—how much monetary burden is avoided</b>

## Using the results

- With all the types of analyses spelled out we can not talk about the advantages and disadvantages for use
- In particular, compare the level of abstractness and the subjectiveness of decision making
  - Abstractness—are the measures very direct
  - Subjective decision making—how much a decision maker's own values influence the decision

## Types of Cost-Outcome Analyses

	Type of Analysis	Outcome
More Abstract ↓	Cost-minimization	Any outcome—compare cost of alternatives with similar outcomes
	Cost-consequence	Multiple outcomes in natural units
	Cost-effectiveness	Have single most important outcome in natural units
	Cost-utility	Express outcome in quality or disability adjusted life years
	Cost-benefit	Express outcome in dollars—how much monetary burden is avoided



### Types of Cost-Outcome Analyses

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More Abstract
More Subjective Decision Making

- ### Return on investment
- Closest to cost-benefit analysis since it involves only dollars and cents
  - However, the perspective is also important
    - In other words, whose cost and whose benefits are considered matters
      - Society as a whole?
      - The whole health care system?
      - A specific health care payer?
      - A particular health care provider/facility?
      - The patient
  - Return on investment tends to focus on a particular provider or facility

## Exemplar

## Guided Care

- Described in more detail
  - Leff et al. Guided care and the cost of complex healthcare: a preliminary report. *American Journal of Managed Care*. 2009; 15(8): 555-559.
- Practice-based team including a registered nurse, 2-5 physicians, and other office staff

## Guided Care Nurse

- Performs a comprehensive assessment at home
- Creates an evidence-based care guide
- Monitors and coaches the patient monthly
- Coordinates the efforts of all of the patient's providers of healthcare
- Smooths the patient's transitions between sites of care
- Promotes patient self-management
- Educates and supports family caregivers
- Facilitates access to appropriate community resources

## Basic Guided Care Results— Annualized Rates

	Guided Care (N=433)	Control (N=402)
Hospital admissions	0.75	0.96
Hospital days	4.14	5.77
SNF admissions	0.18	0.28
SNF days	2.67	4.90
ED visits	0.36	0.43
Primary care visits	9.85	10.13
Specialist visits	8.36	7.89
Home healthcare episodes	0.96	1.27
DME items	4.05	3.14
Tests	36.32	33.14

## Details on the basic results

- None of the differences were statistically significant

## Conversion to dollars

- Assume 55 patient case-load
- Apply average per unit cost
- Basic result suggests \$171,000 saving on medical care for the 55 patients
- Basic analysis suggests a \$96,000 cost for the guided care nurse
- Net savings of \$75,000
- Difficulty is that the confidence interval includes the potential for greater expenditures

## What is this result?

- Health care system cost-benefit with limited inclusion of services
- If we see savings from year 1 then there is no need to perform a return on investment analysis
- However, there may be a need for some initial investment before we see change in practice
- Then we would have to ask how long it takes to make up for that initial investment—that would be a return on investment analysis

## Return on investment

- How many years it takes to make up for an initial investment?
- What is the financial rate of return?
- A provider implementing guided care would have to consider how the changes affect reimbursement
  - What is good for the system has potentially uncertain consequences for a provider

## Other analyses that could be performed

- Cost-consequence
  - Describe general outcomes for the patient, the patient's family, and the providers
- Cost-effectiveness
  - If cost savings emerge then there is little need for this but the key would be to choose a single outcome to summarize the patient experience
    - Could be time to death
- Cost-utility
  - Could attempt to measure health related quality of life and calculate quality adjusted life years

## Take away messages

- Comparative effectiveness has attracted a lot of policy attention but is not necessarily going to be accompanied by cost data
- Cost-effectiveness is a term that is broadly used but has a particular academic meaning that is reflected in the literature
- To change policy we often need to describe something that is over a shorter period than academic cost-effectiveness articles focus on and with a more limited perspective than academic articles focus on

## Next steps

- Use the information you have heard today and any other information you have on the many types of economic evaluations to understand whether what is presented at conferences and in the literature matches decision makers' needs
- Lobby for more useful (and more usable) information
  - This is as important for practicing health economists to do as for nurses or any other group who uses economic results to do