Online Advanced Methods for Cost-Effectiveness Analysis

Presentation 4: Populating Models: Costs and Outcomes
4.2: Measuring health

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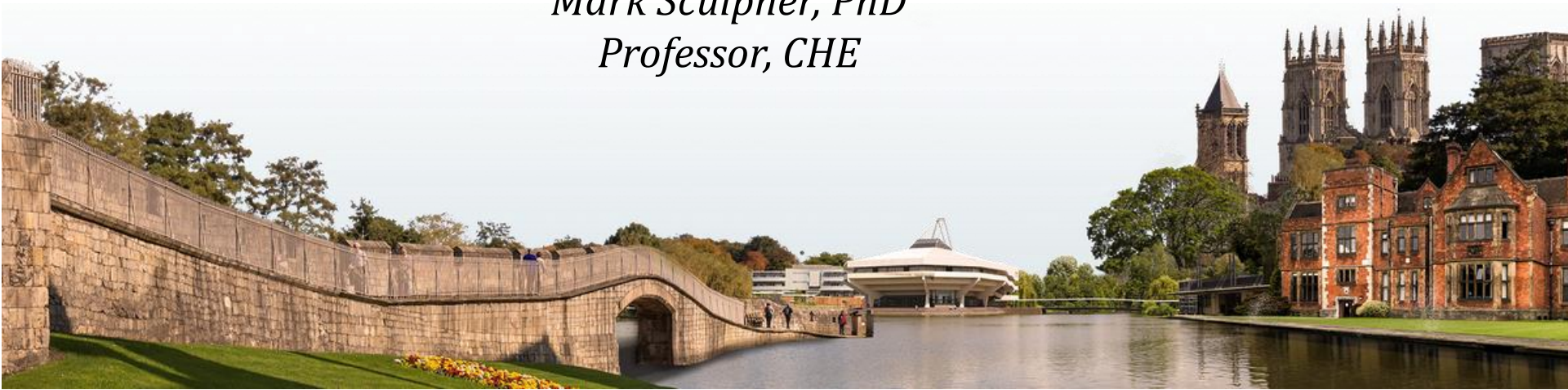


Objectives

- Understand which outcomes for economic evaluation
- Appreciate disease-specific versus generic measures of health
- Consider the importance of outcome valuation for making decisions

Which benefits?

Improving health is central to health sector decisions

Extending from health – equity considerations

Those with rare disease

Those with severe disease

Those with short life-expectancy

Those with disadvantage (e.g. low income)

Broader effects?

Health and care

- Independence
- Social interaction
- Being informed
- …

Other sectors

- Education
- Environment
- Criminal justice
- …

What type of outcome measure should we use?

- Value judgement, no ‘correct’ answer
- What are the health system’s objectives?
- Do effects extend outside the health system?
- Expect inclusion of some measure of health gain

Disease-specific measures of health-related quality of life

St Georges' Respiratory Questionnaire (excerpt)

Questions about how much chest trouble you have had over the past 3 months.

Please tick (✓) *one box for each question*:

	most days a week	several days a week	a few days a month	only with chest infections	not at all
1. Over the past 3 months, I have coughed:	☐	☐	☐	☐	☐
2. Over the past 3 months, I have brought up phlegm (sputum):	☐	☐	☐	☐	☐
3. Over the past 3 months, I have had shortness of breath:	☐	☐	☐	☐	☐
4. Over the past 3 months, I have had attacks of wheezing:	☐	☐	☐	☐	☐

5. During the past 3 months how many severe or very unpleasant attacks of chest trouble have you had?

Please tick (✓) *one*:

- more than 3 attacks ☐
- 3 attacks ☐
- 2 attacks ☐
- 1 attack ☐
- no attacks ☐

Generic measures of health-related quality of life

SF-36 Measure (excerpt)

SF-36 Survey

Date: / /2014 Patient's Name

Visit: □ **Pre-op** ☐ **6 week** □ **3 month** □ **6 month** □ **1 year**

INSTRUCTIONS: Please answer every question. Some questions may look like others, but each one is different. Please take the time to read and answer each question carefully by circling the number that best represents your response.

1. In general, would you say your health is?

Excellent (1)	Very Good (2)	Good (3)	Fair (4)	Poor (5)

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago (1)	Somewhat better now than one year ago (2)	About the same as one year ago (3)	Somewhat worse now than one year ago (4)	Much worse now than one year ago (5)

Generic versus disease-specific outcomes in resource allocation

- Disease-specific outcomes could be adequate if:
  - A decision maker is focussed only on one disease
  - The effects of a treatment only relate to that disease (no adverse events on other diseases)
  - The opportunity cost of the decisions only fall on patients with that disease
    - ‘ring-fenced’ budgets
    - no adjustment between budgets
- Does such a decision maker exist?

The need for valuation: not just for economics

	Treatment A	Treatment B
Diarrhoea	Moderate	Absent
Hot flushes	Present, mild	Present, mild
Breast swelling	Absent	Present
Physical energy	Lacking energy	No problems
Life expectancy	Option A better by 2 months	

The QALY is as old as the hills

Socio-Econ. Plan. Sci. Vol. 6, pp. 49–68 (1972). Pergamon Press. Printed in Great Britain

ANALYSIS OF A TUBERCULIN TESTING PROGRAM USING A HEALTH STATUS INDEX*

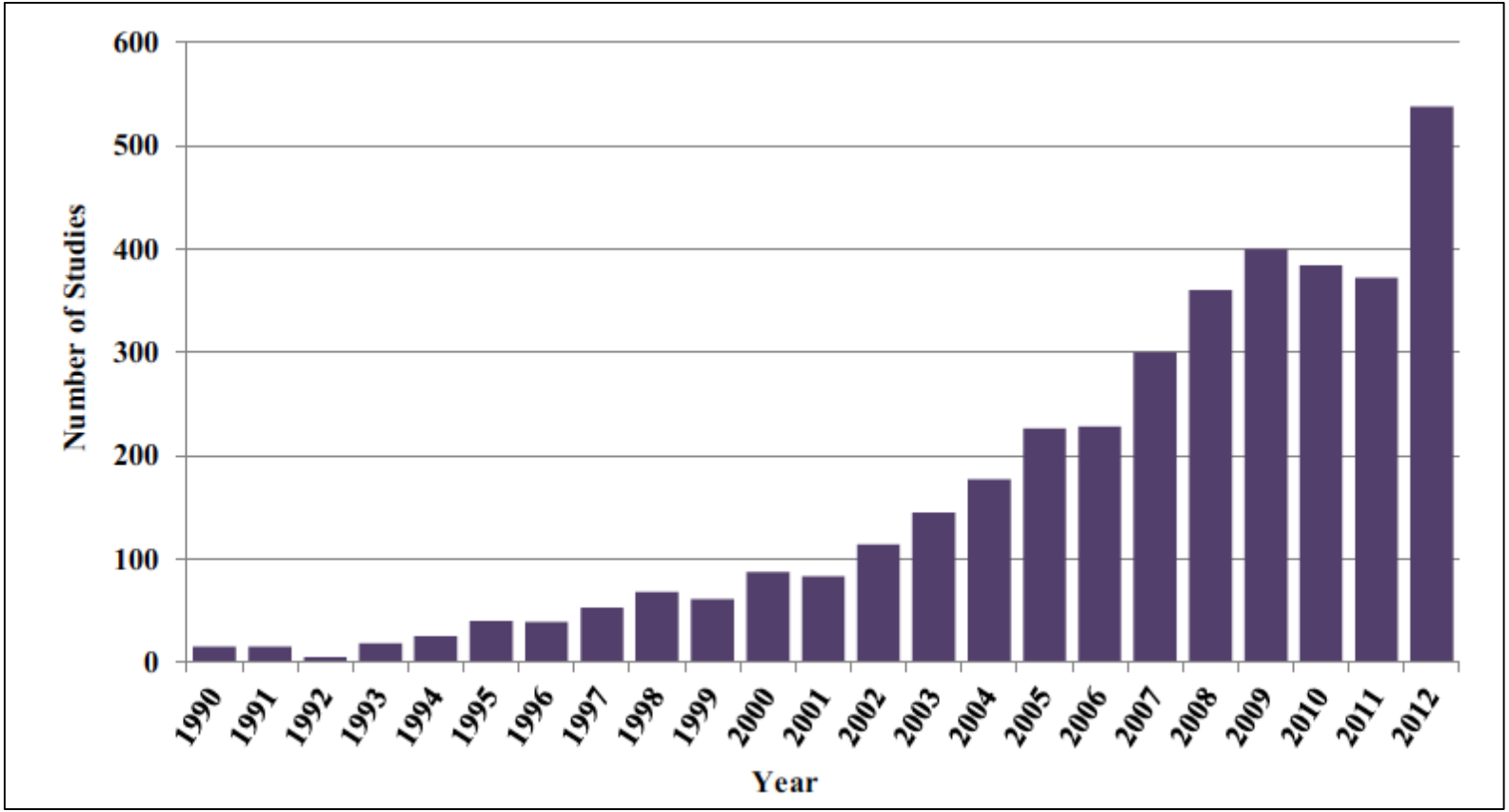
J. W. BUSH,† S. FANSHEL‡ and M. M. CHEN§

Department of Community Medicine, University of California at San Diego, La Jolla, California

(*Received* 21 *June* 1971)

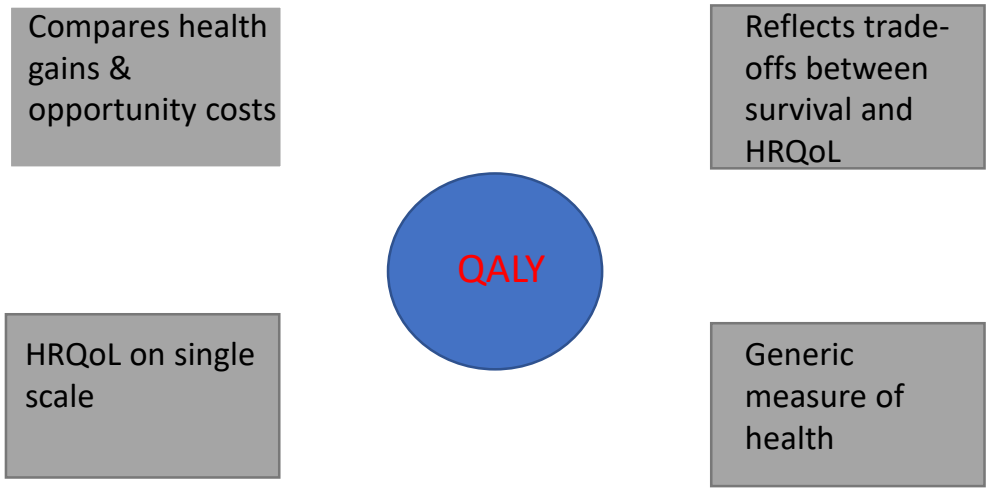
A function status index and a health status index are defined and a county-wide tuberculin testing program is analyzed to illustrate their uses in health planning. Each member of a target population belongs to one of several levels of function, from well-being (S_A), valued 1.0, to through various levels of dysfunction ($S_B, S_C \ldots$), through death (S_K), valued 0.0, and the utility numbers thus assigned between 0 and 1 are called function weights. The distribution of the population cohort among the various levels over time corresponds to a stochastic process where group prognoses make up the transition probability matrices. Using a set of function weights, the function status of a person or population can be computed for each point over time, with and without a program. Output, the expected difference between the two function-histories with or without the program, is measured in function–time units that are independent of disease form, permitting comparisons among health programs for different diseases. The output measure can be used in cost–effectiveness, mathematical programming and other optimization models, as well as in other areas of health services research.

...and widely used

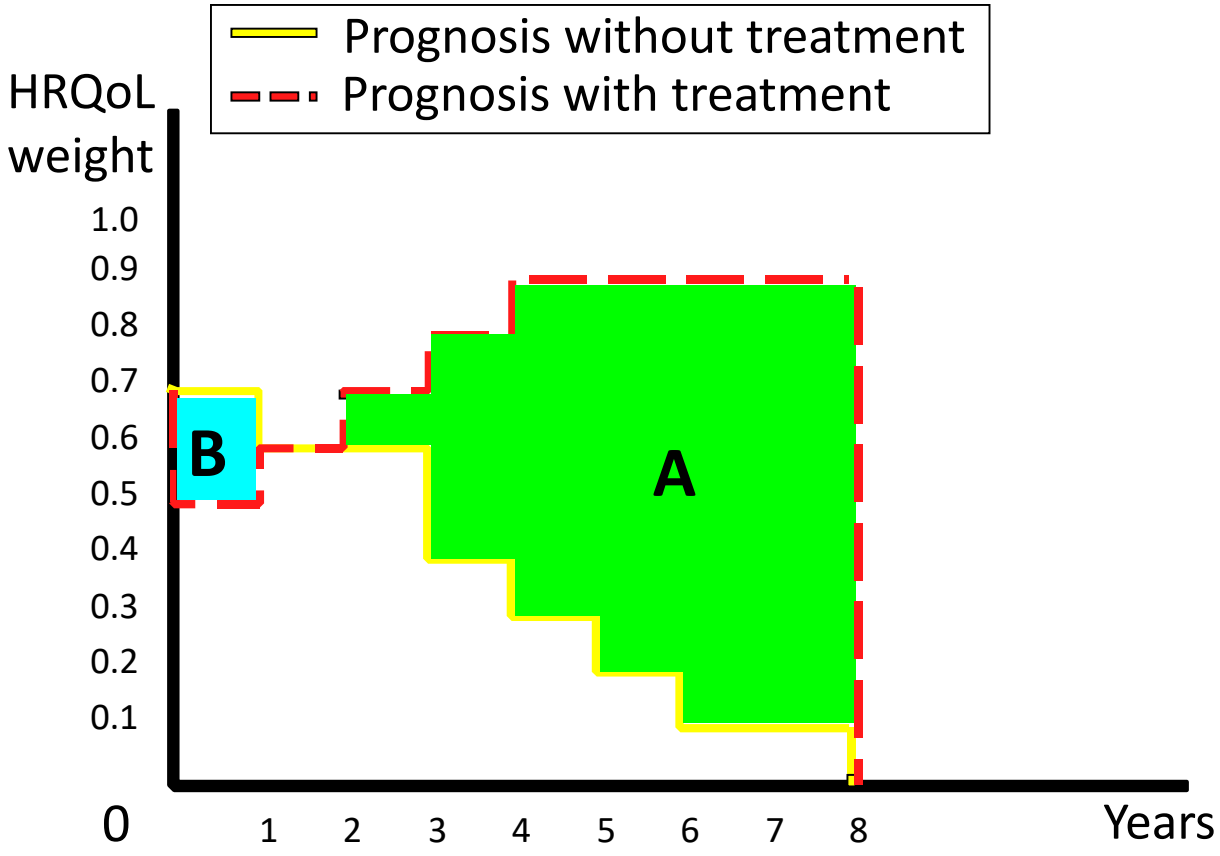


Neumann *et al. Value in Health* 2015; 18:271-77

The QALY and decision-making



The QALY diagrammatically



Weaknesses of the QALY

- Strong assumptions relating to individual preferences
  - Constant proportional trade-off
    - 10 years at 0.5 = 5 years at 1.0
    - 10 months at 0.5 = 5 months at 1.0
- Range of suggested weaknesses
- But QALYs …
  - Provide a consistent method of health valuation
  - Indicator of health outcome: QALY doesn't make decisions
  - Have been routinely measured in numerous studies

Alternatives to the QALY

Healthy-year equivalent
- Theoretical improvement
- Lack of application

Mehrez A, Gafni A. *Medical Decision Making* 1989; 9: 142-149

Saved young life equivalent
- Theoretical improvement
- Lack of application

Nord E. *British Medical Journal* 1992; 305: 875-877

Health years in total
- 'Avoids' QALYs perceived discrimination
- Lack of application

Basu *et al. Value in Health* 2020;23: 96-103

Summary

- Outcome side of economic evaluation highly contested
  - Health gains central
  - Is some people's health gain worth more than others?
  - Are their effects outside health?
- These are value judgements and no social consensus likely
  - Accountable decision makers need to make choices
- Generic measures crucial to support resource allocation decisions
- Quantifying trade-offs (valuation) essential in making decisions
- No perfect measure of health reflecting universal preferences
- QALY a widely understood and used measure of health