Economic evaluation and policy

Bengt Jönsson
Stockholm School of Economics
Sweden
“The role of economics in the medical care system is understandably a matter of some controversy. It generates a suspicion that ruthless, profit-seeking tycoons will be turned lose in a field in which it is rightly felt that humanitarian considerations should predominate. It is also seen as a potential threat to ´clinical freedom´,....”

Foreword by Alan Williams
Some basic premises

• Resources in health care are not allocated in an efficient way
• Economic principles can be used to improve on this situation
• Economic evaluations at “program level” is an important tool for guiding decisions towards cost-effectiveness
What have we achieved in the last 30 years?

- The numbers
  - Studies and authors
- Theoretical developments
  - Do we have a set of agreed principles?
- Application
  - Quality and relevance
- Policy impact
  - Does anybody care?
A growing number of health economists

• Most health economists do economic evaluation
  – Within the health care system
  – Within the health care industries
  – As consultants

• Economic evaluation is less prominent in academic health economics
  – Few papers in leading journals
Number of published studies
As recorded in the HEED database

- **All studies**
- **Applied**
For which countries are the studies done?

<table>
<thead>
<tr>
<th>Country</th>
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<th>Applied studies</th>
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Where do the authors come from?

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Authors and applications?
A European perspective

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<td>Switzerland</td>
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</table>
Theory: Cost-benefit analysis

• Human capital approach
  – Weisbrod (1960)
  – Mushkin (1958)

• Value of “life and limb”
  – Schelling (1968)
  – Mishan (1971)

• Contingent valuation
Contingent valuation
The expressed preference approach

• Developed in environmental economics in the 1960/70s

• Applied to value of life in the 1980s

• Developed for health care interventions in the 1990s
  – Johannesson (1996)

• Few applications so far
Theory: Cost-effectiveness analysis

• Klarman (1965)
• 1976 OTA USA “Development of medical technology: Opportunities for assessment”
• More acceptable to the health technology researchers, who were predominantly MDs
  – Avoid the stigma of valuing health and life in monetary terms
The cost-effectiveness ratio

\[ \text{CE ratio} = \frac{C_1 - C_2}{E_1 - E_2} \]
The Cost-effectiveness ratio
In search of the principles

• Define the alternatives 1 and 2
• Define the costs to be included
• Define the effectiveness measure
• Calculate the incremental cost-effectiveness ratio
• Find a benchmark value for assessing if it is within a range that can be considered to be cost-effective.
Theory: Cost-effectiveness analysis

• Alternative theoretical approaches
  – Extra welfarism
  – Explicit inclusion of equity criteria

• Welfare economic approaches
  – Garber and Phelps (1997)
    • Optimal insurer
  – Meltzer (1997)
    • Social perspective
The perspective of the study

• Social perspective
  – All health benefits are considered
  – All costs are considered

• Decision maker perspective
  – All health benefits are considered
  – Only part of the costs considered
    • Which part?
Social perspective on costs

1. **Direct costs** – resources used
   - Within the health care system
   - Outside the health care system
   - Informal care

2. **Indirect cost** – resources lost
   - Loss of production due to morbidity

3. **Cost in added years of life** – resources lost and used
Published studies after type of study.

The dominance of costing studies

- Cost-consequence analysis 5396
- Cost-effectiveness analysis 3691
- Cost analysis 3382
- Cost utility analysis 1244
- Cost minimisation analysis 1008
- Cost of illness 1003
- Cost benefit 395
Outcome measurement in cost-effectiveness analysis

• Surrogate endpoints
  – mm Hg, mMol Chol, BMD, IOP, etc.
• Events
  – MI, stroke, fracture, death
• Survival
  – # survivors, 5-year survival, life-years
• Quality (and quantity) of life
  – Quality adjusted life years (QALY)
The rise of the QALY
A major step forward

• Strong face validity
• Easy to understand and compute
• Strong empirical research agenda behind
  – EQ-5D and HUI
  – Assessment of health states with SG and TTO
• Not a perfect measure of health outcome or utility
  – But good enough
What is an acceptable cost per QALY?

• QALY league tables
• Definition of bench-mark value
  – NICE 30 000 UKP
• Willingness to pay
  – 500 000 SEK based on value of life estimates
• Important future area for empirical research
The return of cost-benefit
The acceptability curve

The diagram shows the probability of the cost-effectiveness (CE) ratio being acceptable as a function of the CE threshold (in 1000 SEK per Life Year Gained). Two curves are depicted: one for DM (Dark Green) and one for Non DM (Yellow). The probability ranges from 0.0 to 1.0, increasing as the CE threshold increases.
The practice

How well are we doing?

• Guidelines
  • They compensate for a lack of knowledge by those who do studies
  • They compensate for the lack of an appropriate textbook
  • They are an instrument for certain interest groups to control a new and important field of health policy
  • They are there to make sure that decision makers get unbiased, high quality studies organised in a way that facilitates review and decision-making
The practice

How well are we doing?

• Guidelines
  – They are there to make sure that decision makers gets unbiased, high quality studies organised in a way that facilitates review and decision-making
    • A necessary and sufficient tool?
    • Is standardisation enough?
    • Expressed versus revealed preferences for studies
The practice


År mellan publikation och lansering

Years between publication and launch

År efter lansering

Year after launch
The practice

Five common mistakes

1. Inappropriate choice of alternatives and indications
   A technology is never cost-effective in itself, only in a defined indication in comparison to the relevant alternative

2. No rational for the costs in included or excluded; “health care perspective”?

3. Calculation of average rather than incremental cost effectiveness ratios

4. Models used for simulating the consequences of the alternatives studies are not transparent and validated

5. Irrelevant outcome measures
Impact on policy
Doing better and feeling worse?

“This volume is a product of tension, of confusion and of dissatisfaction. ....The dissatisfaction arises because those most closely concerned with reviewing the performance persistently feel that despite so much effort, intelligence and goodwill at its disposal, the system still often respond in disappointingly erratic and inefficient manner.”

Foreword by Alan Williams
The Economics of Medical Care
York conference proceedings1972
Economic evaluation and health policy
The achievements

• Significant improvements in theory and understanding of basic principles
  – Cost-benefit analysis
  – Cost-effectiveness analysis

• Significant progress in empirical application
  – CVM in cost-benefit analysis
  – QALYs in cost-effectiveness
  – Modelling and analysis of uncertainty
Economic evaluation and health policy

The achievements

- Large number of health economists trained in economic evaluation
- Large number of published studies
- Accepted framework for policy decisions
  - Regulation and HTA
- Strong influence on the basic perceptions of resource allocation in health care
  - Scarcity, choice and opportunity cost
Economic evaluation and health policy
The future

• Great expectations for contributions from economic evaluation to policy
• Management of expectations necessary
  – The mission is efficiency, not cost-containment
• A vital discussion of theory and principles
  – Our role is as educators, not accountants
• Data is key to credibility and policy impact
  – Early involvement of health economists in development of technology
  – Follow-up studies of consequences in clinical practice