Health Economics: Pharmaco-economic studies

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Outline

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Introduction

• Health Care sector
  – important sector in all countries
  – in most countries a major part is financed by socialised budgets
    • health care budgets are limited
    • control of health-care expenditure
    • choices need to be made

• Evaluation of health-care strategies
  – evaluation of clinical results
  – evaluation of costs
Economic evaluation studies

• Definition [Drummond et al 2005]
  – Economic evaluation is the comparative analysis of alternative courses of action in terms of both their costs and [clinical] consequences

• Multidisciplinary approach:
  – Social Sciences and Health Care Professionals

• undertaken since the 1970ies
Objective of economic evaluation

• Decision-making:
  – to choose between alternative clinical strategies
  – only one factor in the decision making process

• Optimise the use of health care resources

• Maximise health outcomes of a population
Steps of an economic evaluation

• Define the alternative clinical strategies
• Identify relevant clinical outcomes for patients
• Identify relevant cost data
• Collect clinical outcomes
• Collect cost data
• Test the uncertainty of data
  – one way and/or multiway sensitivity analysis
Viewpoint for analysis

• Different viewpoints of economic evaluation studies
  – society
  – patient
  – the payer, *e.g.* sickness fund or Ministry of Health
  – provider, *e.g.* hospital(s)

• Depends on the decision-maker

• is essential when defining what cost data to include in the study
Cost items (1)

• A study should include the most important cost items
  – that differ between the different clinical strategies
  – that have a “heavy” impact on final cost results
  • resources very rarely used can be omitted
  • resources with very low unit prices can be omitted

• In pharmaco-economic studies
  – costs of the drugs (quantities and unit prices)
  – associated costs, *e.g.* associated drugs, devices or exams
  – avoided costs, *e.g.* hospitalisation
Cost items (2)

• For each resource used, quantity and unit cost should be defined

• Data sources
  – cost studies
  – health care resource use surveys
    • observation
    • face to face interviews
    • questionnaires
  – tariff
  – salary of health care professionals
Cost-minimisation analysis

• The clinical results of the strategies evaluated are (nearly) the same
  – analysis of clinical literature
  – e.g. different types of Heparin
• Costs of the different clinical strategies are assessed
  – the less costly should be chosen
Cost-effectiveness analysis

• Clinical result is measured by **one clinical outcome indicator**
  – possible if **one main dimension** for clinical outcomes
  – e.g. blood pressure, life years gained.

• **Effectiveness indicators**
  – **final end-point** (e.g. life years gained)
    • advantage : time horizon
    • but rarely available in clinical studies
  – **intermediate end-point** (e.g. blood pressure)
    • it should be demonstrated that they lead to an improvement in health criteria → **surrogate end-point**
Sources of clinical data

• Literature
  – clinical trial(s)
  – meta-analysis
  – observational studies

• Specific studies
  – CEA alongside a clinical trial : efficacy
  – Observational studies : effectiveness
  – advantages and disadvantages of both study types?
Result of CEA

• Comparison of strategies
  – incremental analyses of costs, than incremental analysis of effectiveness
  – if strategy A is more effective and less costly
    • strategy A dominates strategy B
  – if strategy A is more effective and more costly
    • Incremental Cost-Effectiveness Ratio (ICER) (e.g. 20 000 € per life year gained)
    • the question for decision-makers: are they willing to pay?
Cost-utility analysis (1)

- CUA is a generalisation of CEA
  - when survival and quality of life are important criteria
- CUA requires a knowledge of patient preferences, measured by (cf. lesson of M. Dubois)
  - rating scales (e.g. visual analog scale)
  - standard gamble
  - time trade off
- Quality of life data collected by (cf. lesson of M. Dubois)
  - questionnaires with multiple dimensions (e.g. mobility, daily activities, pain, anxiety)
    - generic questionnaires
    - specific questionnaires, e.g. for cancer patients
Cost-utility analysis (2)

• Clinical result of a CUA
  – aggregates a criterion of effectiveness (generally life years gained) with a criterion measuring the quality of life
  – e.g. QALY : Quality Adjusted Life Years

• Incremental analyses of costs; than incremental analysis of QALYs
  – if strategy A is more effective and less costly
    • strategy A dominates strategy B
  – if strategy A is more effective and more costly
    • Incremental Cost-Utility Ratio (e.g. 50 000 € per QALY)
    • The question for decision-makers : are they willing to pay ?
Cost-consequences analysis

• CCA seeks to draw up an inventory of all the costs incurred by the strategies and all the outcomes, positive or negative,
  – might include quality of life data

• CCA does not link resources to clinical results by means of an explicit criterion
  – decision-makers have a wider margin of freedom and must give a weight on the different data
Cost-benefit analysis

• In CBA clinical outcomes are expressed in monetary terms = benefit
  – Willingness to pay (WTP) of the population

• But: assigning a monetary value to health-care issues poses problems
  – to date not used in applied pharmaco-economic studies

• Result of CBA : benefit - costs
  – The question for decision-makers : is the result of CBA positive?
Databases for economic evaluations

• Literature search for economic evaluations
  – in multidisciplinary databases (e.g. Web of Science)
  – In biomedical databases (e.g. Medline)
  – in specific databases for economic evaluations
    • NHS Economic Evaluation Database
    • Health Economic Evaluation Database (HEED)
  – Internet
NHS Economic Evaluation Database

• Provider
  – NHS Centre of Reviews and Dissemination of the University of York (UK)
  – Articles selected for NHS’ health care professionals

• website
  – http://www.crd.york.ac.uk/crdweb/

• provides for all articles
  – structured summary
  – references
Health Economic Evaluation Database

• **Provider**
  – Office of Health Economics (OHE) of the Association of British Pharmaceutical Industry (ABPI)
  – for pharmaceutical industry

• **website**
  – free for information on the database
  – but very expensive for full access

• most exhaustive database for pharmaco-economic studies
Guidelines for economic evaluations

• In the 1980ies the quality of economic evaluations was
  – heterogeneous
  – even published studies were not always of good quality

• In the early 1990ies some countries wish to include pharmaco-economic studies for reimbursement and pricing decisions
  – Australia
  – Canada (Ontario)
  – → Need for guidelines
Guidelines (2)

- In the 1990ies many countries publish guidelines
- Guidelines were elaborated by
  - Health Authorities
    - useful for economic evaluations that are conducted to be used for one specific decision, *e.g.* reimbursement of drugs
  - Experts in Health Economics
    - from Universities, health care industry and/or hospitals
    - useful for all economic evaluations
Guidelines (3)

• Guidelines are reviewed and analysed by ISPOR (International Society for Pharmacoeconomics and Outcomes Research)
  – presented on website: http://www.ispor.org/PEguidelines/index.asp
  – 35 guidelines
  – comparison based on 33 criteria, e.g.
    • authors
    • main policy objective
    • perspective
    • choice of comparator
Guidelines (4)

• French guidelines published by
  – Collège des Economistes de la Santé (CES)
    • Guide méthodologique pour l’évaluation économique des stratégies de santé
    • link on CES website: http://www.ces-asso.org/sites/default/files/upload/rapports/HAS-dec-2010.pdf
  – Haute Autorité de Santé (Commission Evaluation Economique et Santé Publique)
    • Choices in Methods for Economic Evaluations (October 2012)
    • http://www.has-sante.fr/portail/jcms/c_1120711/choix-methodologiques-pour-l-evaluation-economique-a-la-has