
**International Task Force for Prevention
Of Coronary Heart Disease**



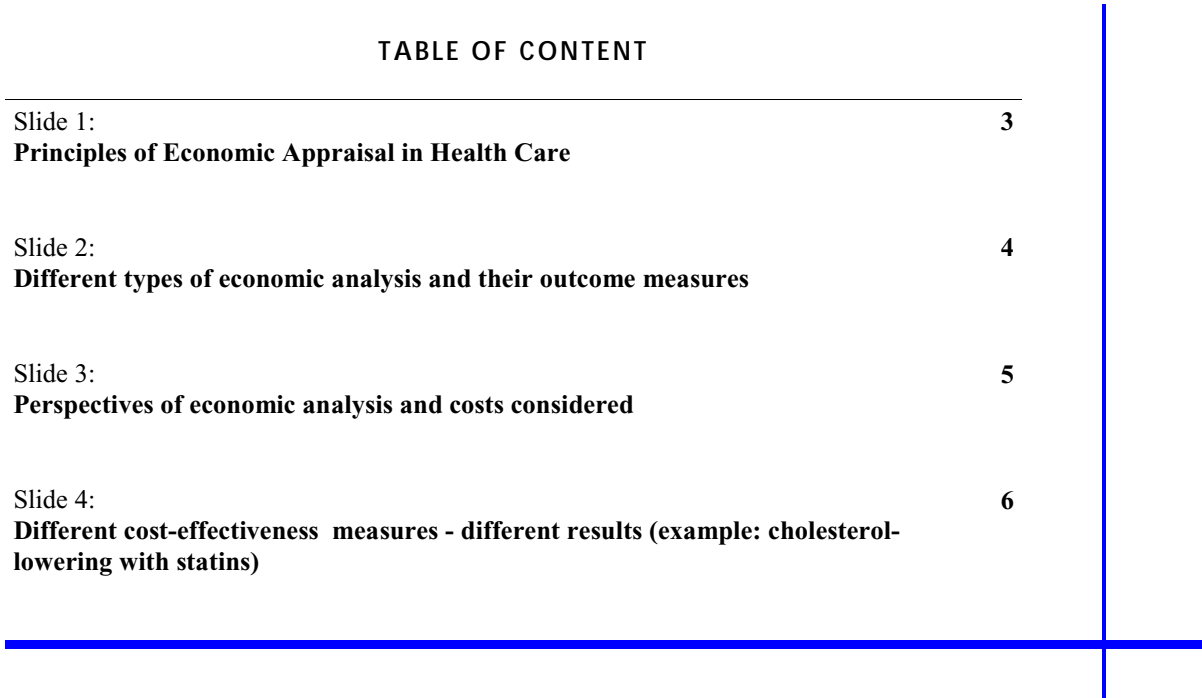
*Clinical management of risk factors
of coronary heart disease and stroke*

*Economic analyses of primary prevention of
coronary heart disease (CHD) and stroke*

Introduction into health economics

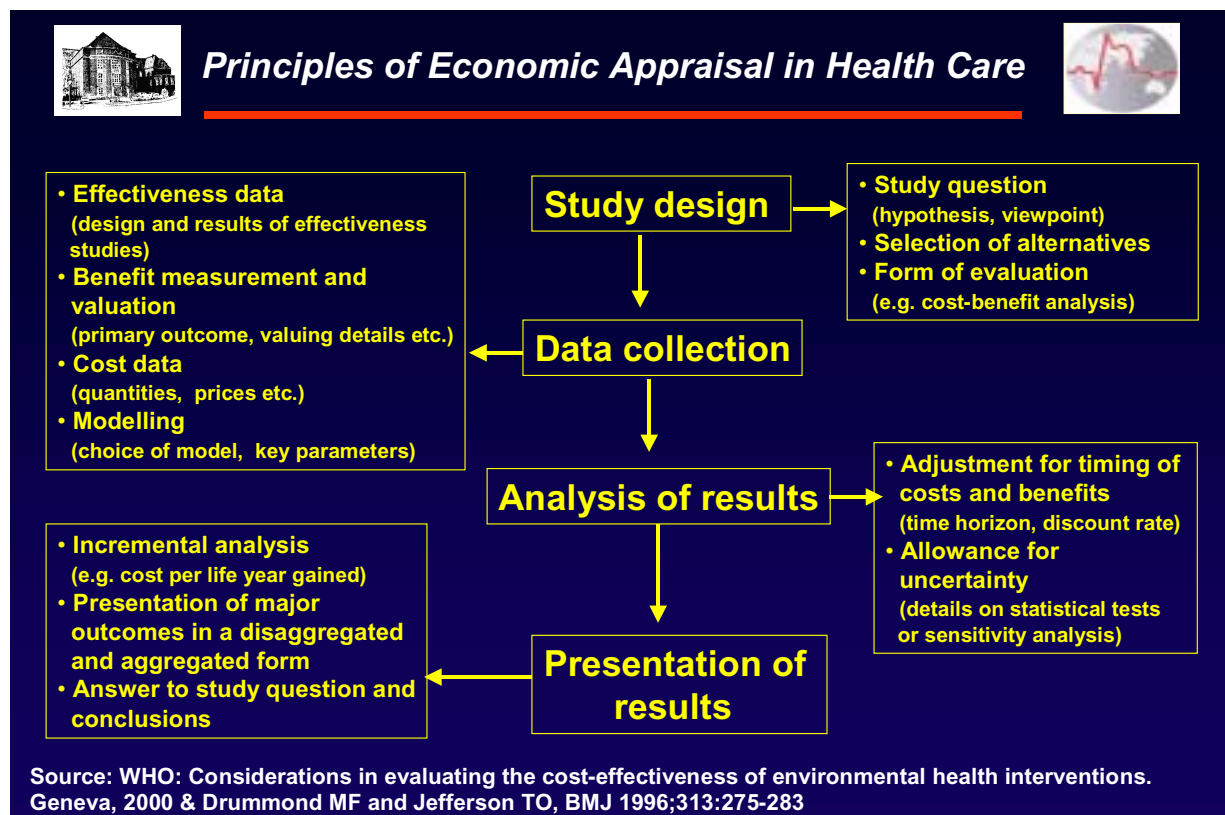
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Slide 1:

Principles of Economic Appraisal in Health Care



Principles of Economic Appraisal in Health Care

This slide gives a checklist of important quality aspects of economic evaluations, which should be reported in economic analyses.

1. Study design

The study question, its economic importance and its viewpoint (see slide 3) should be outlined. The rationale for choice of the comparator (alternative intervention or "doing nothing") and a detailed description should follow. The form of evaluation (see slide 2) used should be stated and justified.

2. Data collection

Details on the data source (trial, meta-analysis) should be given. The primary outcome measure(s) of the analysis should be clearly stated. If health benefits have been valued, details should be given of the methods used and the subjects for whom valuations were obtained (e.g. patients, health care professionals). Cost data should report quantities and unit prices separately and methods for estimation of both quantities and prices should be given. The currency and price date should be recorded and details of any adjustment for inflation, or currency conversion, given. Details of any modelling used in the economic analysis should be stated.

3. Analysis of results

There are two reasons for adjustment of the results for timing: costs and benefits do not all occur at the same point of time and there is a positive rate of time preference, which means e.g. people prefer having 100 Euro now than 2 years later. Discounting of costs and benefits is the recommended method to obtain equivalent present values. The discount rate and the time horizon over which costs and benefits are considered should be given. If costs or benefits are not discounted an explanation should be given.

Since any economic model underlies uncertainty and assumptions, details on the sensitivity analysis (multivariate, univariate, threshold analysis) or the stochastic tests (report of confidence interval around the main variables) should be reported.



4. Presentation of results

Results should be presented, reporting an incremental analysis (e.g. incremental cost per life year gained), which compares the relevant alternatives. The main components of costs and benefits (e.g. life-years gained or improvements in quality of life) should be reported in a disaggregated and aggregated form. The original study question should be answered and the conclusions made should follow clearly from the data reported.

Since economic analysis in health care is a complex feature, the main emphasis should be made on transparency and a clear rationale of choices made.

Slide 2:

Different types of economic analysis and their outcome measures

 Different Types of Economic Analysis and their Outcome Measures 			
Type	Objective	Technique	Outcome measure
Cost-minimisation analysis	Determines which of two options with equal benefits has lowest costs	Compares costs between different options thought to be equally effective	
Cost-effectiveness analysis	Determines how a given goal is achieved most efficiently	Relates costs to some measures of outcome	Natural units (e.g. LYG, life-years gained [saved] or treatment-specific terms e.g. reduction in LDL level)
Cost-utility analysis	Determines the best way of spending given health care budget	Relates cost to healthy years gained	Healthy years (e.g. quality-adjusted life years [QALY], healthy years equivalents)
Cost-benefit analysis	Determines how much more or less of societies resource should be allocated to achieve a defined goal	Compares input and output in monetary units	benefits converted into monetary terms

Source: Adapted from Drummond MF and Jefferson TO on behalf of the BMF Economic Evaluation Working Party. BMJ 1996;313:275-283 and Ebrahim S, Br Med Bull 2000;56(2):557-570;

Different types of economic analysis and their outcome measures

Different types of economic analysis can answer different study questions using varying techniques and outcome measures.

Slide 3:

Perspectives of economic analysis and costs considered

<i>Perspectives of Economic Analyses and Costs Considered</i>	
Perspective	Costs of primary interest
Societal	All medical and nonmedical costs: <ul style="list-style-type: none"> • Hospitalisation • Long-term care • Home care • Social welfare services Productivity losses (indirect costs) Intangible costs
Third party payer	Charges that pertain to reimbursement of providers Average, not marginal cost
Healthy care provider	Variable costs that influence the expenses of providing health care
Patient	Costs that affect out-of-pocket payments Lost wages (indirect costs)
Employer	All insurable direct costs Lost wages (indirect costs)

Source: Luce BR, Elixhauser A: Standards for socio-economic evaluation of health care products and services. Springer-Verlag Berlin Heidelberg New York. 1990

Perspectives of economic analysis and costs considered

The perspective from which an economic analysis is carried out determines the costs considered. From each viewpoint there are differing information needs and criteria of evaluation. Specific costs may or may not be appropriate from different perspectives. This slide summarizes the types of cost that would be examined from each perspective. For health politics the societal perspective is the relevant viewpoint, since it considers all costs (direct and indirect) relevant to the society as a whole.

Slide 4:

Different cost-effectiveness measures - different results (example: cholesterol-lowering with statins)

		Least cost agent according to pretreatment LDL-C level (mg/dl)		
Cost-effectiveness measures	Comment	190 to 205	205 to 220	220 to 245
Cost per 1% reduction in LDL-C level	- considers only annual drug costs - ignores additional effects of pharmacotherapy (e.g. impact on HDL-level) - assumes incorrectly a constant rate of marginal return to LDL-C reductions	Fluva- statin 20	Fluva- statin 20	Fluva- statin 20
Incremental cost per LYG relative to no therapy	- fails to take into account the magnitude of the LDL-C reduction required	Fluva- statin 20	Fluva- statin 20	Fluva- statin 20
Cost per LDL-C reduction required to meet target level	- considers outcomes only in intermediate terms but not final outcomes such as life expectancy	Fluva- statin 20	Fluva- statin 40	Atorva- statin 10
Incremental cost per LYG of agents reaching target LDL-C level relative to no therapy	- includes wider effects of pharmacotherapy on final health outcomes - Comprises additional effects of pharmacotherapy (e.g. HDL-level)	Fluva- statin 20	Fluva- statin 40	Atorva- statin 20
Incremental cost per LYG of agents reaching target LDL-C level relative to least-cost agent able to reach target (mg/day)	- includes wider effects of pharmacotherapy on final health outcomes	Fluva- statin 40	Atorva- statin 20	Atorva- statin 20

LYG = life-years gained, target level = 160mg/dl
 Source: Morris S and Godber E, Pharmacoeconomics 1999;16:193-205

Different cost-effectiveness measures - different results (example: cholesterol-lowering with statins)

This slide illustrates the effect of using different cost-effectiveness measures in the economic evaluation of cholesterol-modifying pharmacotherapy as an example. The analysis included fluva-, atorva-, simva-, prava- and lovastatin and cholestyramine (see also slide B4). Morris et al. focused on primary prevention of coronary heart disease (CHD) in Canada. Epidemiological data for the risk factors used in the CHD risk model were obtained from the Canadian Heart Health Survey. Data from 116 clinical studies were included in the study. The choice of perspective was that of the Canadian public healthcare system. Costs were estimated in Canadian dollars and calculated in constant 1997 to 1998 prices (\$US1 = \$Can1.31). Included cost components were initiation to therapy, drug therapy, monitoring of therapy and costs from treatment of CHD events.

Following a simplified version of the recommendations of the National Cholesterol Education Program (NCEP ATP II) they defined offset of drug therapy at LDL-C levels 190 mg/dl in individuals at otherwise average risk and target LDL-C level at 160 mg/dl.

This table lists the summarised results of this study according to cost-effectiveness measure and pre-treatment low-density lipoprotein cholesterol level. The authors recommend the use of the last two cost-effectiveness measures as they include wider effects of pharmacotherapy on final health outcomes, consider additional effects of pharmacotherapy on other types of cholesterol (e.g. HDL-C) and include additional effects of LDL-C modification over and above those required to reach the target level. Based on these cost-effectiveness measures fluvastatin should be recommended for patients with moderately elevated LDL-C levels and atorvastatin in patients with higher LDL-C levels.