ECONOMIC EVALUATION IN HEALTH CARE
Outline of the Session

1. What is Economic Evaluation?
2. Why do Economic Evaluation?
3. What is Costing useful for?
4. Types of Economic Evaluation approaches
   1. Cost- Minimization Analysis
   2. Cost- Effectiveness Analysis
   3. Cost- Benefit Analysis
   4. Cost- Utility Analysis
5. Some Outcome Measures
6. Other issues (uncertainty, limitations of EE
7. How you will make use of EE information
What is Economic Evaluation?

Definition:
‘…the comparative analysis of alternative courses of action in terms of both their cost and consequences’.

Drummond, M. F. et al. 1997

It involves the gathering and examination of data about interventions or programmes to allow them to be assessed.
Why do Economic Evaluation?

• “improve strategies, programs, and interventions
• make more informed decisions in future planning
• clarify the options available
• account for the expenditure of public funds” (Grüninger, 1997)
Why Do Economic Evaluation?

• To assist in **choosing** between options – “An aid to decision-making, not a substitute for thought”
  – E.g. comparing different HIV prevention programmes in terms of their cost and their effectiveness in preventing new HIV cases – cost per HIV-case prevented
  – E.g. comparing different HIV treatment programmes in terms of their effectiveness in extending life and their cost – cost per Life Year gained
What is costing useful for?

- Determining the resource requirements of an intervention
- Identifying important cost issues for potential savings – e.g. the optimal use of personnel in delivering health care
- Budgeting for Strategic planning
- Assessing efficiency in two “equivalent” programs
  - Which one yields the greatest benefit with a given amount of resources

It is therefore a common component in all types of economic evaluation
Types of Economic Evaluation

• Four main techniques:
  – Cost-minimization analysis
  – Cost-benefit analysis
  – Cost-effectiveness analysis
  – Cost-utility analysis

• All attempt to compare the inputs with the outputs
• All use similar costing methods to estimate the inputs
• Main distinction = way in which outcomes (benefits) are evaluated
• Each has advantages and disadvantages – selection depends on the question you are asking and the alternatives you are comparing
Cost-minimization analysis (CMA)

- Outcomes between two or more alternatives are identical (e.g. exactly the same number of life-years gained)
- Thus the evaluation aims to identify the least costly (cheapest) intervention
- Only addresses technical efficiency & costs of inputs
- CMA is limited in use because it is not often that the outputs are exactly the same (intangible/ differential effects)
Cost-effectiveness analysis (CEA)

- Probably the most used approach. When the outcomes of the different interventions are different but can be measured in the same terms (natural units) then the inputs are costed. For example:
  - CEA of different interventions for averting heart attacks
  - CEA of different ARV regimens for HIV+ adults

- Competing interventions are compared in terms of cost per unit of consequence e.g cost per patient with and without heart attack.

- The measures of outcome have to be common to all alternatives to allow comparison.
Cost-benefit analysis (CBA)

- Costs and benefits (effects) of an intervention are both valued in monetary terms e.g. CBA can give information on whether a health intervention should be funded based on societal gains, in comparison to other health programmes - e.g. mass vaccination programme for measles.

- CBA allows comparison of programmes between health care and other sectors (allocative efficiency). If the benefits of implementing the intervention are greater than the costs, then the programme should be funded.

- CBAs are used infrequently in health care because it is difficult of expressing health benefits directly in monetary units – Human capital & willingness to pay approaches.
Cost-utility analysis (CUA)

• Lies between CEA and CBA – assesses technical efficiency \textit{(doing it right)} as well as allocative efficiency \textit{(doing the right thing)} but only within the health care sector.

• Benefits expressed in terms of a multi-dimensional unit of outcome (e.g. QALYs or DALYs etc). This measure of outcome combines values of mortality and morbidity with values based on preferences of patients and related individuals regarding health states.

• Interventions are compared in terms of cost per unit of utility gained.
**CUA and efficiency**

**CUA and technical efficiency**
- This is important for interventions leading to differing life expectancy and differing quality of life
  - E.g. ARVs versus treatment and prophylaxis of OIs for HIV-positive people

**CUA and allocative efficiency**
- CUA can assess allocative efficiency in the health sector (By using a common outcome measure (e.g. QALY or DALY) you can compare two or more interventions in the health sector irrespective of their difference in target illness.)
Some outcome measures

- The consequences/results of an intervention. It can be a specific outcome of the intervention but refers to an overall *Health Improvement*…

- There are various non-mutually exclusive classifications of outcomes:
  - Direct, Indirect and Intangible
  - Final and intermediate outcomes
  - Natural/physical units and utility/generic units

**Some examples**
- Deaths averted
- Condom use increase
- Malaria cases prevented
- Fully Immunized Children
- QALYs gained
- DALYs averted
- Life years gained
- Reduction of pain
- Levels of cholesterol reduced
- HIV cases avoided
- Increase in productivity at work
- Number of VCT sites per 10,000 population
- Healthy Years Equivalent
Achieving NSP Objectives

- How do you achieve this?
  - Through the provision of efficient and effective interventions

- How do we decide which intervention to implement?
  - Economic evaluation can inform our decision-making
Simplified criteria to guide decision-making for cost-effectiveness

1. Alternative is less costly and less effective
2. Alternative is less costly and more effective (dominated strategy)
3. Alternative is more costly but less effective
4. It is more costly but also more effective; if the extra cost is worth the extra benefit then choose this alternative
Summary

• EE is a useful tool for resource allocation
• Accounting for uncertainty
  – Sometimes we cannot be certain about some aspects of the economic evaluation, especially future costs (e.g. inflation rate) and benefits
  – Sensitivity analysis: use a range of estimates based on different assumptions to assess if changes in the value of a variable will affect the results of the analysis for both costs and effects
• In some cases cost-effectiveness/utility criteria needs to be complemented by other important considerations: ethics, equity, etc.
Key messages

- Economic evaluation is “an aid to decision-making, not a substitute for thought”
- Select type of economic evaluation based on the question to be addressed
- Always remember and account for uncertainty in the results
Some references for Economic Evaluation

  - [http://www.trentfocus.org.uk/Resources/introduction_health_economic_evaluation.htm](http://www.trentfocus.org.uk/Resources/introduction_health_economic_evaluation.htm)