Session 1: Review of Economic Evaluation and Tobacco Control

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A scarcity of resources

Committing resources to X means sacrificing the benefits of Y

= Opportunity Cost

One criterion for choice is **EFFICIENCY** = maximising the benefit from available resources
Economic Evaluation (EE)

“The comparative analysis of alternative courses of action in terms of both their costs and their consequences”

Requires:
- a comparison of two or more alternatives
- examination of both costs and consequences

The incremental approach: “what is the difference in costs and difference in health outcome of Option A compared with Option B?”
# Main types of EE

<table>
<thead>
<tr>
<th>Type of analysis</th>
<th>Valuing resources</th>
<th>Valuing health outcomes</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost minimisation</td>
<td>£</td>
<td>-</td>
<td>Comparison of interventions with similar clinical effects</td>
</tr>
<tr>
<td>Cost-consequence</td>
<td>£</td>
<td>Listing of separate consequences with no common valuation</td>
<td>Comparison of health and non health, but without explicit decision rule</td>
</tr>
<tr>
<td>Cost effectiveness</td>
<td>£</td>
<td>Single indicator of morbidity or mortality</td>
<td>Comparison of interventions which differ on one, and only one, measure of effect</td>
</tr>
<tr>
<td>Cost utility</td>
<td>£</td>
<td>Index of morbidity and mortality (QALY)</td>
<td>Comparison of any health care interventions: may trade off health effects</td>
</tr>
<tr>
<td>Cost benefit</td>
<td>£</td>
<td>£</td>
<td>Comparison of any health or non-health interventions</td>
</tr>
</tbody>
</table>
Simple Evaluation Matrix

Health outcome:

Costs:

<table>
<thead>
<tr>
<th>Reject A</th>
<th>HIGHER</th>
<th>Trade-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORSE</td>
<td></td>
<td>BETTER</td>
</tr>
<tr>
<td>Trade-off</td>
<td>LOWER</td>
<td>Adopt A</td>
</tr>
</tbody>
</table>
Best practice/ critical appraisal

“Drummond” checklist

1. Was a well-defined question posed in answerable form?

2. Was a comprehensive description of alternatives given?

3. Was there evidence that effectiveness had been established?

4. Were all the important and relevant costs and consequences for each alternative identified?

5. Were costs and consequences measured accurately/appropriately?
Best practice/ critical appraisal

“Drummond” checklist

6. Were costs and consequences valued credibly?

7. Were costs and consequences adjusted for differential timing?

8. Was an incremental analysis performed?

9. Was allowance made for uncertainty?

10. Did presentation/discussion of results include all issues of concern?
Challenges in public health EE I

- Drummond et al. (2009); Weatherly et al. (2009):
  - Attribution of effects (good quality evidence)
  - beyond QALYs and valuation of outcomes
  - inter-sectoral costs and consequences
  - distributional effect (equity implications)
Challenges in public health EE II

• Kelly et al. (2005):
  – multiple interventions’ effect
  – behaviour change necessary to ensure uptake
  – social variation (practice) < biological (RCTs)
  – dynamic nature of implementation

• Payne et al. (2013)
  – objective > maximising health gain in the inter-sectoral context of public health practice
The NICE reference case I

<table>
<thead>
<tr>
<th>Element of assessment</th>
<th>Reference case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparator</td>
<td>Interventions routinely used in the public sector</td>
</tr>
<tr>
<td>Perspective on costs</td>
<td>Public sector, including the NHS and PSS, or local government.</td>
</tr>
<tr>
<td></td>
<td>Societal perspective (where appropriate)</td>
</tr>
<tr>
<td>Perspective on outcomes</td>
<td>All health effects on individuals.</td>
</tr>
<tr>
<td></td>
<td>For local government guidance, non-health benefits may also be included</td>
</tr>
<tr>
<td>Type of economic evaluation</td>
<td>CCA, CBA, CUA</td>
</tr>
<tr>
<td>Synthesis on evidence on outcomes</td>
<td>Systematic review</td>
</tr>
</tbody>
</table>
### The NICE reference case II

<table>
<thead>
<tr>
<th>Element of assessment</th>
<th>Reference case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure of health effects</td>
<td>QALYs</td>
</tr>
<tr>
<td>Measure of non-health benefits</td>
<td>Case-by-case basis</td>
</tr>
<tr>
<td>Source of data for measurement of health-related quality of life (HRQL)</td>
<td>Reported directly by patients or carers</td>
</tr>
<tr>
<td>Source of preference data for evaluation of changes in HRQL</td>
<td>Representative sample of the public</td>
</tr>
<tr>
<td>Discount rate</td>
<td>1.5% on both costs and health effects</td>
</tr>
<tr>
<td>Equity weighting</td>
<td>An additional QALY has the same weight</td>
</tr>
</tbody>
</table>

N.B. Also Gates reference case – developed by NICE International, York University and HITAP (Thailand)
Tobacco Control and EE

Population

Multiple considerations:
- age
- socioeconomic status
- comorbidity status
- pregnant/ post-partum
Tobacco Control and EE

Objectives

Cessation – \(\downarrow\) Current smokers
Prevention – \(\uparrow\) Never smokers

Policy will likely constitute a mix of both
Tobacco Control and EE

*Intervention level & type*

Individual vs population

Individual (cessation) = behavioural, pharmacological, non-conventional

Population (prevention/cessation) = behavioural (children/schools), mass media, law enforcement, taxation policy
## Health and wider consequences of tobacco use

<table>
<thead>
<tr>
<th>Impact</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of life</td>
<td>Number of life lost, years of life lost, QALYs lost</td>
</tr>
<tr>
<td>Health and social care costs</td>
<td>Costs to NHS (hospitalisation, primary care), costs to social services</td>
</tr>
<tr>
<td>Business costs</td>
<td>Productivity losses, employment losses</td>
</tr>
<tr>
<td>Household costs</td>
<td>Expenditure on tobacco products</td>
</tr>
<tr>
<td>Public services costs</td>
<td>Fires, litter, sickness and incapacity benefits, budgetary impact (tobacco taxes and revenue)</td>
</tr>
<tr>
<td>Indirect impact</td>
<td>Second hand smoke (both health and non-health)</td>
</tr>
</tbody>
</table>
Summary

• Economic Evaluation provides a framework for assisting decision making based on efficiency
• Public health poses challenges beyond traditional EE methods
• NICE provide guidance and a “reference case”. Other reference cases exist e.g Gates Foundation
• Synthesis of range of evidence and modelling ever more important
• Tobacco control requires many of identified difficulties being addressed simultaneously

  www.nice.org.uk/article/PMG4

  www.york.ac.uk/media/che/documents/MEEP%20report%20final%20PDF.pdf

  http://phrc.lshtm.ac.uk/papers/PHRC_D1-05_Final_Report.pdf


