Novel Approaches to Value Assessment, Within the Cost-Effectiveness Framework

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Distributional cost effectiveness analysis (DCEA)

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Equity and inequality

- People are averse to inequality in health
  - Surveys indicate willingness to sacrifice health for a more equal distribution
- “Equity” and “fairness” are common decision criteria for resource allocation in healthcare decision making
- Defining what is fair is contentious but unavoidable
  - Inaction or focus on average health gain implements no inequality aversion

HTA for resource allocation

- Reduction of unfair inequality in health noted as a policy objective
- CEA used to inform change in average population health
- Deliberative decision making process to determine value for money
- No formal process for health inequality
  - Limited informal evidence for distribution of intervention benefits
  - No information on distribution of opportunity cost
- Policy that maximises health may not minimise inequality

“people might wish for more equal outcomes across rich and poor groups, or across healthy and sick groups”

ISPOR Task Force Report

“Improving health means both increasing the average health status and reducing health inequalities”

Murray, Frenk 2000
**Distributional CEA**

- Stakeholder determination of decision criteria and unfair health inequalities
- DCEA provides information of intervention impacts with respect to overall health and specified health inequality
  - Decision model inputs differ by equity relevant characteristics
  - Convert total cost to distribution of health opportunity cost
  - Opportunity costs do not necessarily fall on intervention recipients

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**Distribution of health opportunity cost**

<table>
<thead>
<tr>
<th>1 QALY</th>
<th>Men</th>
<th>Women</th>
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</thead>
<tbody>
<tr>
<td>IMD1 (worst off)</td>
<td>0.14</td>
<td>0.12</td>
</tr>
<tr>
<td>IMD2</td>
<td>0.12</td>
<td>0.10</td>
</tr>
<tr>
<td>IMD3</td>
<td>0.12</td>
<td>0.10</td>
</tr>
<tr>
<td>IMD4</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>IMD5</td>
<td>0.08</td>
<td>0.06</td>
</tr>
</tbody>
</table>

- NHS spend benefits most deprived more than least deprived
- Opportunity cost disproportionately falls to most deprived
Compare distributions

- Inequality can be measured in different ways
  - Absolute
  - Relative
  - Shortfall

Health equity impact plane

**Net health benefit on y axis**
**Net impact on health inequality on x axis**

Dominance criteria provide partial ordering consistent with range of inequality aversion

Where there is a ‘trade off’ further assumptions are required to rank interventions
Equally distributed equivalent

- Social welfare measures of inequality
  - E.g. Atkinson (relative inequality), Kolm (absolute inequality)
- Inequality aversion parameter describe extent of welfare loss due to inequality
- EDE is level of health, if equally distributed, would yield same welfare as existing distribution
- Maximise EDE health

Discussion

- Same types of models employed for CEA are readily adaptable to DCEA
- Challenges in obtaining evidence
  - Differences in treatment efficacy between groups
  - Differences in uptake between groups
  - Distributions of opportunity costs
- Quantitative information on health inequality puts objective on a par with average health for informing judgement about value for money
References

- White M, Adams J, Heywood P. How and why do interventions that increase health overall widen inequalities within populations. Social inequality and public health. 2009;65-82