www.ispor.org

Susan Griffin, PhD
University of York
Heslington, York, UK

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

Distributional cost effectiveness analysis (DCEA)

Susan Griffin, PhD
Senior Research Fellow
Centre for Health Economics
University of York, UK

Equity and inequality

"people might wish for more equal outcomes across rich and poor groups, or across healthy and sick groups"
ISPOR Task Force Report

- 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

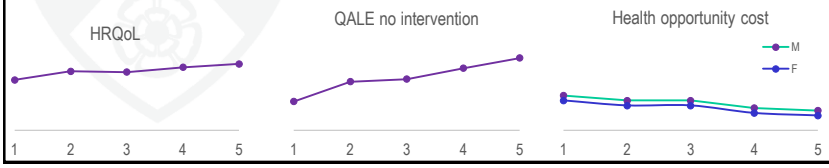
HTA for resource allocation

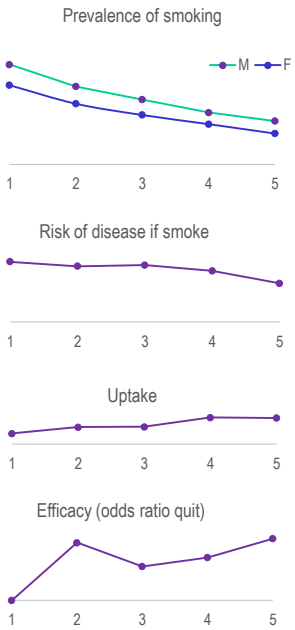
"Improving health means both increasing the average health status and reducing health inequalities"
Murray, Frenk 2000

- 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

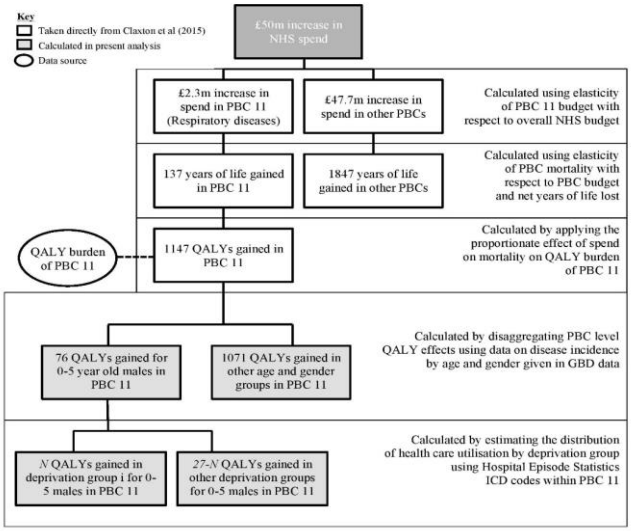
Distributional CEA

- 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





Distribution of health opportunity cost

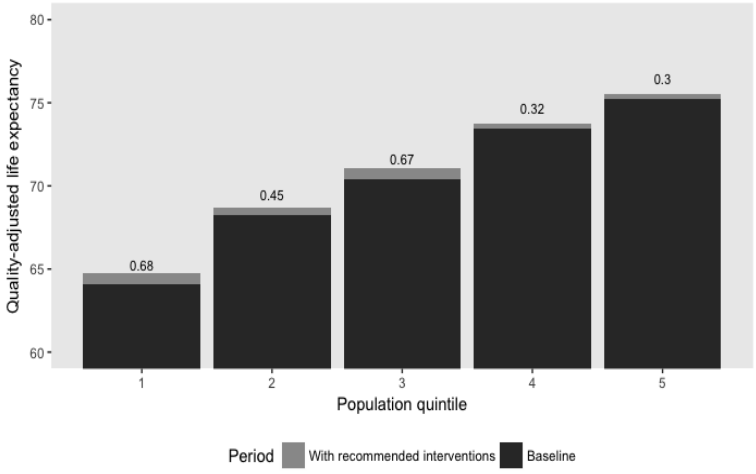


Who gets additional QALY?		
1 QALY	Men	Women
IMD1 (worst off)	0.14	0.12
IMD2	0.12	0.10
IMD3	0.12	0.10
IMD4	0.09	0.07
IMD5	0.08	0.06

- 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



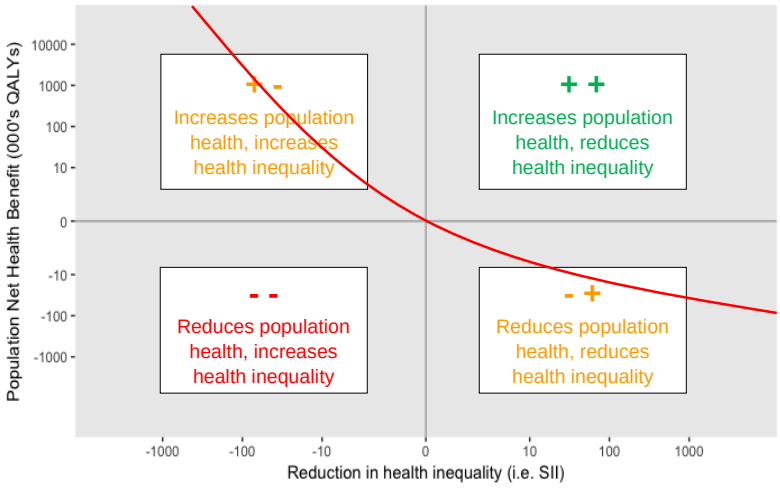
Health equity impact plane

Net health benefit on y axis

Net impact on health inequality on x axis

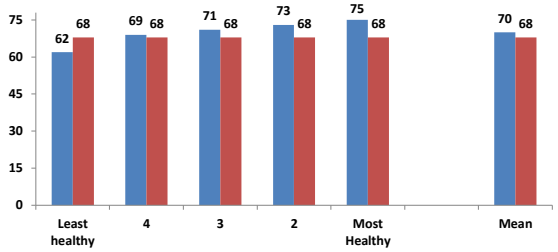
Dominance criteria provide partial ordering consistent with range of inequality aversion

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

- Asaria M, Griffin S, Cookson R. Distributional Cost-Effectiveness Analysis: A Tutorial. Medical Decision Making. 2016;36(1):8-19
- Asaria M, Griffin S, Cookson R, Whyte S, Tappenden P. Distributional Cost-Effectiveness Analysis of Health Care Programmes - A Methodological Case Study of the UK Bowel Cancer Screening Programme. Health Economics. 2015;24(6):742-54
- Cookson R, Mirelman A, Griffin S, Asaria M, Dawkins B, Norheim O, et al. Using Cost-Effectiveness Analysis to Address Health Equity Concerns. Value in Health. 2017;20(2):206–212
- Dolan P, Shaw R, Tsuchiya A, and Williams A. QALY maximisation and people's preferences: a methodological review of the literature. Health Economics. 2005;14(2):197–208
- Dolan P, Tsuchiya A. Determining the parameters in a social welfare function using stated preference data: an application to health. Applied Economics. 2011;43(18):2241-50
- Guindo LA, Wagner M, Baltussen R, Rindress D, van Til J, Kind P, et al. From efficacy to equity: Literature review of decision criteria for resource allocation and healthcare decisionmaking. Cost Effectiveness and Resource Allocation. 2012;10(1):9
- Love-Koh J, Asaria M, Cookson R, Griffin S. The social distribution of health: estimating quality-adjusted life expectancy in England. Value in Health. 2015;18(5):655-62.
- Love Koh J, Cookson R, Claxton K, Griffin S. Estimating social variation in the health effects of changes in healthcare expenditure. Medical Decision Making. 2018;In submission.
- National Institute for Health and Care Excellence. Nice's equality objectives and equality programme 2016-2020. NICE; 2016
- Robson M, Asaria M, Cookson R, Tsuchiya A, Ali S. Eliciting the level of health inequality aversion in England. Health economics. 2017;26(10):1328-34
- Tugwell P, de Savigny D, Hawker G, Robinson V. Health policy: Applying clinical epidemiological methods to health equity: the equity effectiveness loop. BMJ: British Medical Journal. 2006;332(7537):358
- Wagstaff A, Paci P, Van Doorslaer E. On the measurement of inequalities in health. Social science & medicine. 1991;33(5):545-57
- 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