The cost-effectiveness threshold: what it is, what its not and how to estimate it?

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Questions of fact and questions of value?

- When costs only displace health ($\Delta h$) with $\frac{\Delta c_h}{k} \geq 0$ (where $k = \frac{v}{\Delta c}$)
- When costs only displace consumption ($\Delta c_c$) with $\frac{\Delta c_c}{v} \geq 0$
- Costs displace both with $\frac{\Delta c_h}{k} + \frac{\Delta c_c}{v} \geq 0$
- $k = \text{health displaced by increased costs}$
- $v = \text{how much consumption give up for health}$
- They are not the same thing ($k=v$ is an empirical question)

Why does $k$ matter?

What about the ‘going rate’?

What it is and what its not

How does the threshold change?
What about waste?

Increase productivity

Only eliminate waste

Current NHS

Cameron’s cash

B1 B2 Budget

1/k1

1/k1

Health

Summary

• Need k what ever view of social value
• What its not
  — Consumption value of health (v)
  — ‘Going rate’ in a clinical area
  — Marginal productivity of ideal NHS
• No simple relationship to changes in budget and prices
• Discretionary expenditure
  — Most growth on things not easily displaced
  — Prices of displaceable activities grown more slowly
  — Innovation in technologies, medicine and service delivery
• Heath production outside health care

How can we estimate it?

• Informed judgement of the cost-effectiveness of things the HCS does and doesn’t do
• Infer a threshold from past decisions
• Find out what gets displaced and estimate its value
• Estimate the relationship between changes in expenditure and outcomes

Expenditure and outcomes in the NHS?

ΔE, variation in overall expenditure

Outcome equations, elasticity of outcome (%ΔM/%ΔE)

ΔMortality

ΔMortality

ΔMortality

Prior or scenarios

Expenditure equations, elasticity of programme expenditure (%ΔE/%ΔB)

ΔE Programme 1

ΔE Programme 2

ΔE Programme 3

ΔE Programme 23

ΔMortality

ΔMortality

ΔMortality

Life years gained

Life years gained

Life years gained

QALYs gained

QALYs gained

QALYs gained

Is this only relevant to the NHS?

• Not about administrative budgets
  — Where do the opportunity costs fall?
• Any restriction on growth in expenditure
  — Opportunity costs on health (k) and consumption (v)
  — e.g., Amendments to basic package etc
• Any impact of costs on health
  — Restricted benefits withdrawal of insurance
  — Health impact of increased co-payments

Relationship between expenditure and outcomes

• Martin et al (2008, 2009)
  — Variations in expenditure and outcomes within programmes
  — Reflects what actually happens in the NHS
  — Estimates the marginal productivity (on average) across the NHS

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• Need to estimate:
  — More programmes
  — How changes in overall expenditure gets allocated across all the programmes
  — How changes in mortality might translate into QALYs gained
  — How uncertain any overall estimate will be
  — How it changes with scale of expenditure change
  — How it changes over time (panel data)