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APHCRI Stream 13

Health Economics
Economic Thinking in Policy Making

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Outline of Session

- Cost effectiveness and all that
  - What is it (in brief)
  - Economic incentives for behavioural change
- Government decision making
  - How cost effectiveness studies are used
  - How decisions are taken
    - Who bears what costs

Cost effectiveness and all that

- Cost benefit analysis
- Cost effectiveness analysis
- Cost utility analysis

Cost Benefit Analysis

"The rationale for a formal CBA rests on the premise that a project or policy will improve social welfare if the benefits associated … exceed the costs. The benefits and costs include … any indirect benefits or costs through externalities or third party effects. Thus CBA requires evaluation of social benefits and social costs."

(Folland et al)

Cost Benefit Analysis (2)

General idea is to calculate a benefit to cost ratio

- This can then be used absolutely (compared to 1)
- It can be used to compare options – and choose the option with the best ratio
- Or the ratio can be compared with a standard – if don't get returns of X then don't do it.

Cost Benefit Analysis (3)

However need to estimate all costs, and to estimate all benefits in dollar terms.

It is difficult to :

- Value a life or a change in health status in dollar terms
- Encompass all components of costs and benefits

Cost effectiveness analysis

- Avoids issue of “pricing the priceless” by simply counting the events (eg lives saved, life years saved, DALY)

- Then assesses cost per success

Cost utility analysis

- A special case of cost effectiveness analysis
  - Using preferences for health to rank alternative interventions
  - Uses measures of patient/community preference for health outcomes, which are combined as
    - Quality Adjusted Life Years (QALYs)
- Addressess interventions that have multiple outcomes (eg longer life and better quality of life)

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Summary

- Cost benefit analysis
  - Need dollar values for benefits
- Cost effectiveness analysis
  - Benefits are counted, based on known measures like life years, or expert based measures like DALYs
- Cost utility analysis
  - Benefits measurements are based of preferences, most often QALYs

Incremental cost effectiveness analysis

$$ICER = \frac{Cost_{NEW} - Cost_{COMPARATOR}}{Effectiveness_{NEW} - Effectiveness_{COMPARATOR}}$$

- Looks at marginal cost per marginal effectiveness

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QALYs : Examples

Intervention	£/QALY at 1990 prices
Cholesterol testing and diet therapy	220
Neurosurgical intervention for head injury	240
GP advice to stop smoking	270
Antihypertensive treatment to prevent stroke	940
Pacemaker implantation	1,100
Hip replacement	1,180
CABG (left main vessel, severe angina)	2,090
Breast cancer screening	5,780
Home haemodialysis	17,260

How do we measure costs

- Usually measured in monetary terms
- Need a complete assessment of costs within the framework or perspective chosen
- Perspectives include:
  - perspective of health system
  - perspective of whole of society
  - perspective of patient
  - perspective of funder

How do we measure costs

- When using a societal perspective, in principle need to include all costs, eg Drug programs may have costs for :
  - Drugs
  - Distribution and storage
  - Reduced GP/specialist visits
  - Reduced hospital stays
  - Change in patients discharged to nursing homes
  - Reduced loss of work days
  - …..

Behavioural changes

- Any change to financing of medical care is likely to create incentives for behavioural change
  - That is often the purpose
- But not all the change will be what is wanted, and all must be considered
- In the USA where Medicare relativities were changed to follow Relative Value Study outcomes
  - While evidence is mixed, physicians in some situations do change work patterns to recoup income
  - it is argued 70% of “loss” in CABG surgery recovered
  - Ophthalmologists varied work mix when cataract benefits were reduced

Behavioural changes

- In Australia
  - The bulk billing incentive has reversed the decline in bulk billing
  - The PIP incentive to implement electronic prescribing helped increase the level of electronic prescribing
  - The PBS authority system leads to more care in prescribing very expensive pharmaceuticals

Behavioural changes

- Patient behaviour is also influenced by financial incenitives and other factors
  - The Gardisil debate
  - The impact on GP attendance of bulk billing
  - Taxes on tobacco

Cost component example

- SIP payments for completion of diabetes cycle of care
  - SIP costs
  - Division program costs
  - Additional GP visits
  - Additional visits to endocrinologist
  - Change in pharmaceutical usage
  - Less hospital visits
  - More podiatry
  - More ophthalmology
  - More dietitian visits
  - More exercise physiology costs
  - Change in diet
  - More walking shoes?
  - Time off work/time on government benefits

Cost component example

- This measure also included payments to practices which completed a cycle of care for a 20% or more of their diabetic patients
  - This provides an incentive for those with less than 20% to increase activity
  - But may provide an incentive to stop at 20%.

Commonwealth decisions

- Decisions may be made at various levels, depending on delegations
  - Officials level (very few matters involving funding as funds are usually fixed)
  - Ministers level – some matters are delegated to ministers either by way of rearranging funds within an allocation, or on minor matters adding to a pool for an open ended program (MBS or PBS)
  - Cabinet (or the Expenditure Review Committee) can decide on anything, and are responsible for all major financial decisions

Commonwealth decision making
Role of cost effectiveness

- PBS legislatively requires analysis of effectiveness and cost
- New medical technology uses cost effectiveness analysis but does not legislatively require it
- Other policy proposals would consider costs and benefits of the proposal and alternatives, but generally no formal cost effectiveness analysis would be undertaken

Government decision making Pharmaceuticals

- PBS decisions taken basically on cost effectiveness
- PBAC makes recommendations based on cost effectiveness
  - A 2001 Australian study showed drugs were:
  - unlikely to be recommended if they cost over $A76,000 per life year
  - unlikely to be rejected if they cost less than $A42,000 per life year (1998-99 prices)
- By law, government cannot accept items unless they are recommended by the PBAC
- They can however reject items recommended by the PBAC

Examples

- Mostly recommendations accepted. Interesting examples include:
  - Herceptin
  - Gardisil
- Related matters
  - Meningococcal vaccine
  - RU486

Government decision making Medical

- New procedures and technologies are assessed by MSAC
- There is no legislative requirement to accept these recommendations
- Contentious examples include:
  - drug eluting stents
  - PET
  - Hyperbaric Oxygen treatment of ulcers

MSAC evaluation of drug eluting stents

- On the basis of trial data alone, the technology is cost-effective if a cost of $3,700- $6,200 is considered acceptable to avoid a target lesion revascularisation.
- However a sensitivity analysis to estimate the cost-effectiveness in Australian clinical practice indicates that the cost per 'target lesion revascularisation avoided' may be higher than this figure. Australian clinical practice data is required to resolve this uncertainty.

- The Minister for Health and Ageing noted this recommendation on 2 March 2005.

Decisions outside PBAC and MSAC

- e.g. COAG agreed to spend $872m over 6 years from 2009-10 to improve the health of all Australians, with an objective of
  - Reducing the proportion of people who smoke, are at unhealthy body weight, and/or do not meet national guidelines for physical activity and healthy eating
  - With a range of programs to be supported to address this objective

Who bears the costs/receives the benefits

- There are few examples with lots of winners like the anti-biotic treatment of helico-bacter pylori where:
  - Additional antibiotic costs (for Commonwealth and patients) more than offset by
    - Reduced ulcer drug costs (for Commonwealth and patients) and additional
  - Savings on hospital visits (State public hospitals, Commonwealth MBS, patients and private insurers on all other hospital costs)
    - Although the beds may be filled from the waiting list
  - Patients have better outcomes
  - Only losers the drug companies

Who bears the costs/receives the benefits

- In many cases if Commonwealth spends more to improve patient outcomes, it takes pressure off state hospitals
  - e.g. the various cancer programs – breast, cervical, colo-rectal

- While all costs should be included in any cost effectiveness study, decisions by the Commonwealth may be focussed on their own budget.

Commonwealth decisions

- Cabinet decisions reflect whole of government priorities, and frequently
  - The Treasurer and Minister for Finance see a need to maintain the governments fiscal rectitude
  - The other ministers see that money spent on health is money not spent on their portfolios
  - So proposals must show a strong public benefit, or perhaps a net saving to the Commonwealth, to succeed

Commonwealth decisions

- Benefit can be difficult to show for changes in primary care :
  - where outcomes are diffuse, but direct costs are clear
- For example
  - Incentives for activities which are known to improve outcomes (e.g. providing diabetes cycles of care, encouraging asthma self management plans)
  - Providing patients access to services of different providers (e.g. practice nurses, psychologists)

Example: Practice Nurses

- Practice nurses are currently very restricted in the services they provide for which MBS benefits are payable

- If the restriction was to be lifted so that other services they provide within their competency could be charged to the MBS, what would happen?

Impact of lifting restrictions on practice nurses

- More costs to the Commonwealth and patients for services provided by practice nurses
- May be less costs in relation to GP services if they reduce activity, or
  - Unchanged costs in relation to GP services if they reduce waiting times
- More demand for practice nurses, increasing wage pressures
- More demand for practice nurses drawing them from hospitals and nursing homes
- Perhaps reduced demand on emergency departments with more services available in GP surgeries

Conclusion

- In order to influence policy makers, researchers needs to consider
  - Cost effectiveness in relation to overall community costs (to the extent possible)
  - Cost effectiveness in relation to Commonwealth/State costs
    - If formal cost effectiveness not possible at least a comprehensive view of costs and benefits
  - Costs and benefits of alternate approaches

Conclusion

- In order to influence policy makers, researchers needs to consider
  - Total costs to the Commonwealth/State
  - Who are winners and losers in both financial and health terms
  - Any possible unintended financial or health consequences
  - Incentives for changed behaviour by all participants

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THANK YOU

Conclusion

- Overall the decisions which are made are always balances of costs and benefits.
- While sometimes the political costs and benefits outweigh the health and financial costs and benefits, mostly the decisions are as rational as possible
- To assist these rational decisions, the more formally the costs and benefits can be provided, the more likely an appropriate decision will be taken.

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DALYs

- Disability-Adjusted Life Years are added across the population
- A measure of the burden of disease
- Reflects total amount of healthy life lost to all causes, whether from premature mortality or from some degree of disability during a period of time
- Disabilities can be physical or mental
- Weights are based on expert opinion, not on patient/population preferences

QALYs

- Quality adjusted life year
- Takes into account both quantity and quality of life generated by health care interventions
- The product of life expectancy and the a measure of the quality of the remaining years of life
- Assigns a weight from 1 (perfect health) to 0 (death) to represent quality for each year

QALYs (2)

- Weights are based on patient/community preferences - there are a range of ways of assessing this
  - Rating scales
  - Health Thermometers
  - Standard gamble
  - Time trade-offs