



Incorporating Health Economics into Grant Proposals

Health Economics Short Course

For more information and course dates, please visit our website: <http://go.unimelb.edu.au/i8ba>

Or email us: health-economics@unimelb.edu.au



COMMONWEALTH OF AUSTRALIA

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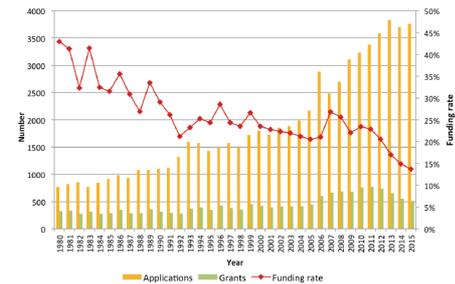
What can Health Economics do for you?

Centre for Health Policy
Melbourne School of Population and Global Health



Funding environment

Figure 2: Rising application numbers and falling funding rates in the Project Grants scheme, 1980 – 2015



NHMRC structural review



Why is economics required?

- **Efficacy versus efficiency:** what do trial results mean in the real world?
- **Modelling:** how do we extrapolate trial results into the future or generalise to a wider population?
- **Complementary skills:** gains from trade; capacity building
- **Publications:** increase academic output
- **Pragmatism:** funders are explicitly asking for economics



Specifics

8 e Build capacity in key enabling areas (e.g. genomics) and disciplines that will deliver health system impact (e.g. health economics) with NHMRC People Support Schemes (p.3).

13. Enhance Health Services Research. Focus efforts on capacity-building and new schemes in health services research and health economics.

a. Build capacity in health services research and health economics to understand, assist and evaluate translation.

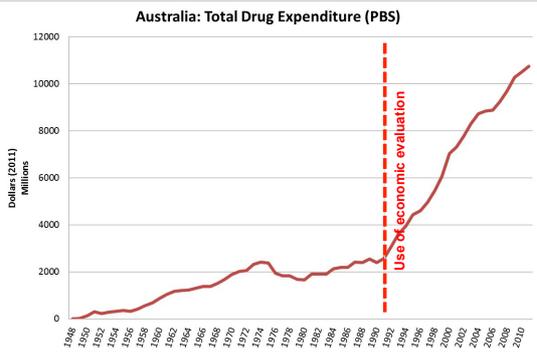
b. Refine NHMRC selection criteria to encourage health services research.

c. Establish an influential institute of health services research.

“Issue: Lack of capacity in key enabling areas such as genomics and bioinformatics. There is an urgent need to build capacity in a range of disciplines, including some newly emerging disciplines, in which Australia lacks strength, particularly in genomics, bioinformatics, biostatistics, health services research and health economics. Such capacity-building must extend from initial training at an undergraduate level right through to scholarship and fellowship levels.” (p.142)

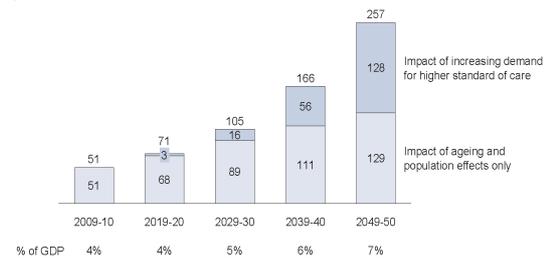
Option: Encourage collaboration among research organisations to build capacity in key enabling areas. The development of new courses for emerging areas can be slow. One possible model that could be considered is the collaborative approach employed by Biostatistics Collaboration of Australia (BCA). BCA is based on collaborative arrangements that enable the pooling of teaching expertise to provide for a Masters of Biostatistics degree offered by universities participating in the BCA. The model was developed specifically to address the shortage of well-trained graduates in this field, and provides essential prerequisite knowledge for doctoral and postdoctoral training in biostatistics. This could be employed for similar specialist disciplines for which rigorous postgraduate coursework is an essential component, such as genomics, bioinformatics, health economics and health services research.

| Implementation Tasks | Responsibility | Timeframe |
|---|--------------------------|-----------|
| 8e.1 Evaluate the optimum spread of training awards and fellowships within NHMRC People Support Schemes to address the need for capacity-building. | NHMRC | 2014-15 |
| 8e.2 Support capacity-building in key enabling areas such as genomics, bioinformatics, biostatistics, health economics, health services research, and Indigenous health research, led by universities and supported by key research granting agencies (e.g. NHMRC and ARC). | Universities, NHMRC, ARC | 2014-15 |
| 8e.3 Review NHMRC and ARC funding for respective discipline areas and ensure there are overlaps, not gaps. | NHMRC, ARC | 2014-15 |



Projected Australian Government health expenditure is unsustainable

Treasury Projections of Australian Government Health Expenditure¹ \$bn

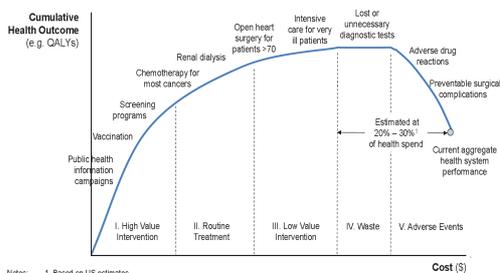


Notes: 1. Excludes state and territory government health expenditure
Source: Australian Government, Intergenerational Report 2010, Canberra, 2010

Source: McKeon Review

Health outcomes are driven by productivity and cost-effectiveness of interventions

Health System Performance



Notes: 1. Based on US estimates
Source: Pacific Strategy Partners analysis; TO Tanga, et al. 'Five-hundred life saving interventions and their cost effectiveness.' Risk Analysis, 1995, 15(3):395-404; Institute of Medicine of the National Academies, Best Care at Lower Cost: The Path to Continuous Learning Health Care in America, 2012; DM Berwick & AD Haselbarth, Eliminating Waste in US Health Care, Journal of the American Medical Association, 2012, 307(14):1513-1516; Pricewaterhouse Coopers (PWC) Health Research Institute, The Price of Cures: Identifying Waste in Healthcare Spending, 2008

Source: McKeon Review

- Economics is concerned with the allocation of scarce resources
- Resources (labour, materials, natural resources etc.) are broadly fixed at any moment in time
- Therefore choices have to be made concerning how to use these resources:
 - more on housing or more on a car
 - more health care or tax cuts

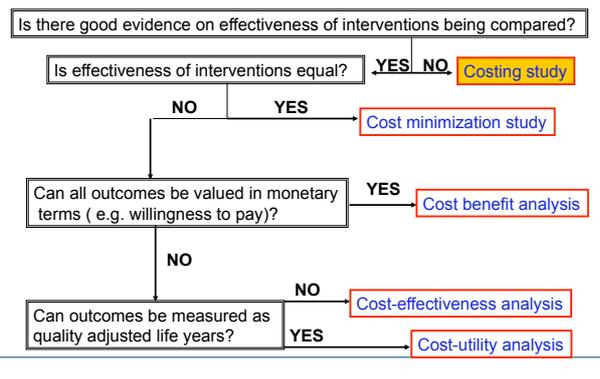
Economics is...

- Not a cookbook....
- "...economics is a branch of logic, a way of thinking. The theory of economics does not furnish a body of settled conclusions, immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking."* J.M Keynes

What is economic evaluation?

- **Premise:** scarce (health care) resources
- **Aim:** to maximise health gain with the available resources
- **Method:** compare cost and effectiveness of therapies
- **Balance:** costs *and* effects
- **Economic evaluation:** explicit criteria for making choices

Types of economic evaluation



Cost of illness

- Form of cost analysis
- Attempts to quantify burden - lost productivity, costs of health care, social services, courts etc.
- Often used for advocacy
- Tells you the size of the problem, but not what you should do about it
- Partial analyses and rarely provides context of cost in relation to overall expenditure

Cost of illness in 1906

"TUBERCULOSIS causes annually more than 150,000 deaths in the United States... If we assume that the net value of a year of human life ... is at least \$50, the real loss to the Nation.. may be estimated at **\$240,000,000 per annum**. These astounding and almost incomprehensible figures are far from being an exaggeration..."

(50 in 1906\$ ~ 1200 in 2008\$) Source: Huber, Consumption: It's relation to man (1906)

A century later...

*"In addition to the tremendous human cost, chronic diseases exact a tremendous financial toll on our health care resources. Care for patients with diabetes costs **\$130 billion each year alone**, and this amount is growing. Tackling chronic diseases is also straining our public health departments..."*

Barack Obama, Health Care Plan, 2008

Australian example

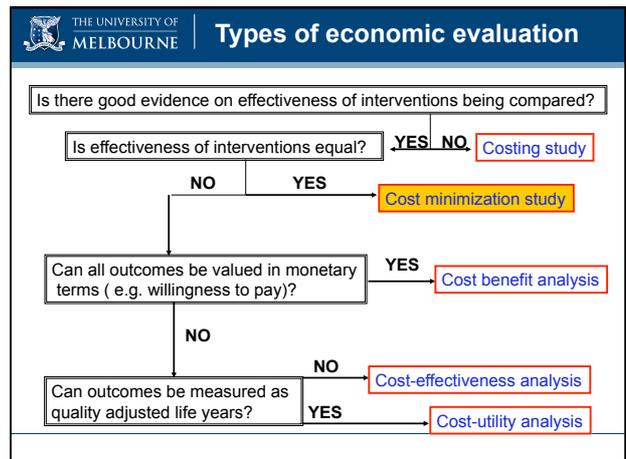
Table 1 Annual costs of foodborne illness in Australia

| Area to which costs apply | Cost (\$ million) |
|--|-------------------|
| Individuals and business: all productivity and lifestyle | 771.6 |
| Individuals: premature mortality | 231.5 |
| Health care services | 221.9 |
| Business: food safety recalls | 14.0 |
| Governments: foodborne illness surveillance and investigation, and maintaining food safety systems | 10.0 |
| Total | 1,249.0 |

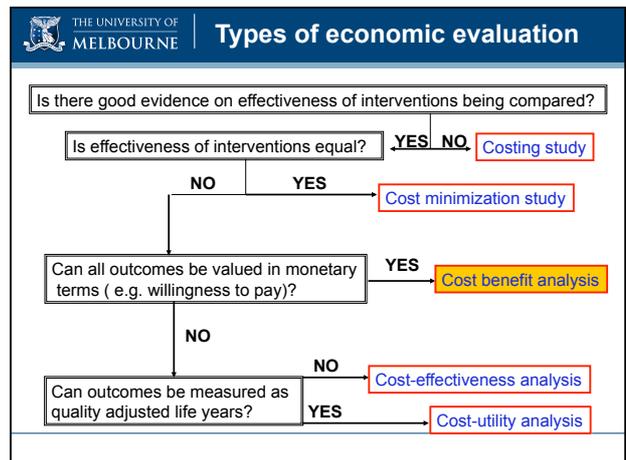
The annual cost of foodborne illness in Australia, DOHA 2006

Economic impact ~1% GDP ; ~0.2% of total health spending

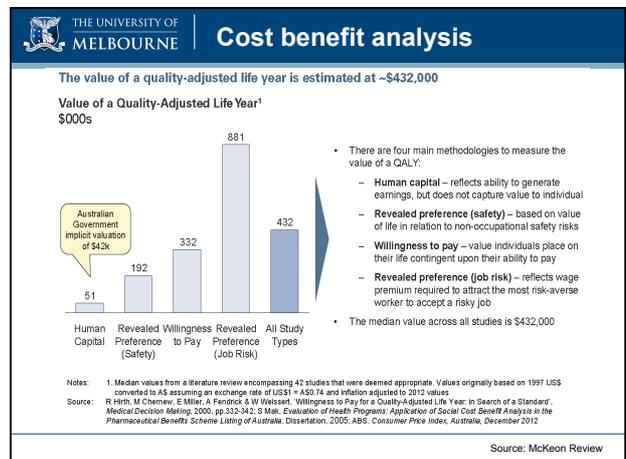
771/998,274 221/94,000



- Cost minimisation**
- Special form of cost effectiveness analysis
 - Compare at least two treatments
 - Outcomes measured using same measure (e.g number of stroke events)
 - Outcomes statistically equivalent
 - with sufficient power to say that they are the same; not just to say that there is no evidence of difference
 - Cost-effectiveness analysis is preferable



- Cost benefit analysis**
- Measure outcomes and inputs in dollars
 - Enables comparisons across sectors and different clinical outcomes
 - Addresses issues such as net gain to society
 - Addresses the question of whether the program is worthwhile to society



Evaluation of Mobile Mammographic Screening

- In small Australian towns do you take the health services to the patients, or make patients come to health services?
- Travel costs can be used to measure the demand for a service and the gains from improving access
- One of the only cost-benefit analyses in Australia is to determine which rural towns should receive mobile mammographic screening services

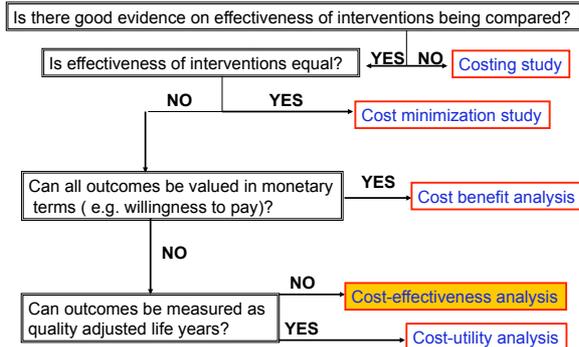
Cost-benefit example

Table 3
Benefits and costs of mobile screening

| Town | Distance | Problem of being screened (average) | | Average CV | Total benefits ΣCV | Total cost | Benefit-cost ratio |
|------|----------|-------------------------------------|-------------|------------|----------------------------|------------|--------------------|
| | | Fixed unit | Mobile unit | | | | |
| 1 | 15 km | 0.37 | 0.37 | \$1.46 | \$2521 | \$12776 | 0.2 |
| 2 | 20 km | 0.24 | 0.27 | \$3.59 | \$8743 | \$18484 | 0.5 |
| 3 | 20 km | 0.32 | 0.34 | \$4.75 | \$8346 | \$14513 | 0.6 |
| 4 | 50 km | 0.38 | 0.42 | \$20.37 | \$35803 | \$19897 | 1.8 |
| 5 | 50 km | 0.28 | 0.32 | \$15.59 | \$16516 | \$9874 | 1.7 |
| 6 | 65 km | 0.32 | 0.36 | \$24.39 | \$37546 | \$15579 | 2.4 |
| 7 | 95 km | 0.26 | 0.35 | \$32.65 | \$34503 | \$14340 | 2.4 |
| 8 | 130 km | 0.23 | 0.32 | \$43.11 | \$77144 | \$23210 | 3.3 |
| 9 | 135 km | 0.19 | 0.29 | \$39.05 | \$80024 | \$26845 | 2.9 |
| 10 | 160 km | 0.21 | 0.32 | \$48.20 | \$120436 | \$36056 | 3.3 |

It is worth providing mobile units – when towns are >30 km from a fixed site.

Types of economic evaluation



Cost effectiveness analysis

- Most common used method of economic evaluation
- Compares costs and outcomes
- Requires a common, unambiguous outcome measure
- Outcomes measured in natural units
 - cases detected
 - deaths prevented
 - life years gained

CEA example

Cost-effectiveness of lowering blood pressure with a fixed combination of perindopril and indapamide in type 2 diabetes mellitus: an ADVANCE trial-based analysis

Paul P Glasziou, Philip Clarke, Jan Alexander, Mohana Rajmohan, Elaine Beller, Mark Woodward, John Chalmers, Neil Poulter and Anushka Patel

- Intervention involved use of blood pressure drugs in diabetes
- Intervention cost \$1350 (over four years)
- Intervention group experienced lower hospital & other health care costs ~\$800 in savings
- Net cost was around \$502.
- Increase in life expectancy 0.05 life years over remaining lifetimes

Cost-effectiveness plane

