

Istituto di Management Scuola Superiore Sant'Anna Doctoral seminars on health economics 14 and 15 May 2018

These seminars will be led by Gwyn Bevan and take place in the mornings of Monday 14 and Tuesday 15 May. On the 14 May we will examine the bases and limitations of cost-effectiveness analyses, and on 15 May models of governance. The rest of this note gives the syllabus, learning objectives, reading and assignments.

Monday 14 May

9.30 - 10.50 Cost-Effectiveness Analysis (CEA): deriving Quality-Adjusted Life Years (QALYs), discounting and league tables

This seminar introduces cost-effectiveness analysis (CEA), which seeks to measure costs in monetary units and benefits in Quality-Adjusted Life Years (QALYs). We focus on the much-cited paper by Alan Williams on the development of the idea of and how they are used to seek efficiency by maximising health (as measured in QALYs) subject to a budget constraint. This leads into the construction of league tables of Cost/QALY in which the intervention with the lowest Cost/QALY is the most 'efficient'. We examine the assumptions underlying the concept of QALYs, discounting and of using cost/QALY to set priorities.

Objectives

To be able to explain:

- the principle of cost-effectiveness analysis (CEA);
- different ways of measuring Quality of Life (QoL);
- bases of estimating Quality-Adjusted Life Year (QALYs),
- meaning, implications and controversies of cost/QALY;
- controversies over discounting.

Key Reading

Begin by reading the paper by Alan Williams on the development of the idea of Costs per Quality-Adjusted Life Year (QALYs) as a way of comparing the cost-effectiveness of different interventions that aim to improve health

- Williams A (1985) The economics of coronary artery bypass grafting. *BMJ* **291**: 326-329.¹

In reading this paper consider the following questions:

- What is a QALY? That is to say how does it take account of: quality of life; survival; uncertainty; and costs and benefits over time?
- What are the advantages and disadvantages of measuring benefits of health care in QALYs rather than monetary units?
- How does CEA handle interpersonal comparisons?
- What is the difference between choosing between interventions that offer you a trade-off between duration and quality of your life; and making a trade-off between your duration of life and someone else's quality of life?

Then read a review of the issues raised by discounting:

- Oliver A (2013) A normative perspective on discounting health outcomes. *Journal of health services research and policy*, **18**(3): 186-189.

Consider the following questions:

- On what basis does Oliver argue for discounting health outcomes at a low annual rate of 0.5%?
- What impact does using a discount rate of 0.5% have on the valuation of year of life 100 years hence compared with the conventional annual rate of 3.5%?
- What do you think are the effects of discounting costs at 3.5% and health outcomes at 0.5%? Does this make deferring interventions to the future more or less cost-effective?

Further reading

- Loomes G, McKenzie L (1989) The use of QALYs in health care decision making. *Social Science and Medicine* **28**(4): 299-308.
- Nord E (1992) Methods for quality adjustment of life years. *Social Science and Medicine* **34**: 559-69.
- Daniels N (1990) Am I my parents' keeper (Chapter 5: 86-113) in *Just health care*. Cambridge: Cambridge University Press.
- Broome J (1994) Discounting the future. *Philosophy and Public Affairs*, **23**(2): 128-156.

10.50 - 11.10 Coffee break

11.10 - 12.30: CEA and policy decisions

This seminar explores limitations of trying to use the results of CEA in making policy decisions in health care and public health. We begin with the problem that Health Technology Assessments that produce evidence in incremental cost-effectiveness ratios (ICERs), in Costs/ QALY, do not enable assessment of the fundamental economic question of opportunity costs.

¹ There is a website celebrating the work of Alan Williams at <http://www.york.ac.uk/che/alan-williams/>

We then explore issues raised by the ambitious attempt to apply CEA to all treatments in Oregon as a means to extend coverage for the poor by limiting services to be included in the basic package for Medicaid. In the US, the indigent who have no health insurance, are only eligible for coverage by Medicaid (which is jointly financed by each State and the Federal government). The problem for each State is what to do as costs escalate. In Oregon, in the early 1990s, to limit total State spending on Medicaid, the State reduced the numbers who were eligible. This resulted in eligibility level being less than half that of the defined Federal poverty level. The State Governor, John Kitzhaber aimed to reform the system in Oregon to provide universal health insurance coverage through Medicaid for all the indigent without increasing total expenditure, which meant determining a reduced package of services for this larger insured population². The initial attempts to set these priorities were by using CEA, which produced the paradoxical outcome of tooth capping being more cost-effective than appendectomy, and resulted in CEA being abandoned. Changes were made in the analytic approach taken to rationing so that the state legislature could agree a programme of universal coverage.

Finally we look at the paradox of how a behavioural change programme for those at high risk of developing (Type 2) diabetes that is estimated to be highly cost-effective is also estimated to have a negligible impact of the projected diabetes epidemic.

Objectives:

To be able to explain:

- Why Donaldson et al argue that ‘the incremental cost-effectiveness ratio (ICER) has nothing to do with cost effectiveness’?
- Why the Oregon Health Services Commission (OHSC), decided to begin with CEA to derive a priority list of care to be provided for all the indigent and OHSC abandoned CEA when they saw the results it produced.
- Why a cost-effective behavioural change programme will have negligible impact on the projected diabetes epidemic.

Key Reading

Begin by reading:

- Donaldson C, Currie G, and Mitton C (2002) Cost effectiveness analysis in health care: contraindications. *BMJ* **325**: 891-94. <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1124387/>>

Consider why information on the ICER does not enable us to assess opportunity costs?

² you can see him arguing for recent reforms of health care in Oregon at <https://www.youtube.com/watch?v=3ta418ZSmbw>

Then read David Eddy's reflections on what went wrong with CEA in Oregon:

- Eddy D (1992) Oregon's methods. Did cost-effectiveness analysis fail? *Journal of the American Medical Association* **266**: 2135-41.

Consider the following questions:

- Why was tooth capping given a higher priority than treatment for ectopic pregnancy in Oregon's list using cost/QALY?
- Was this paradoxical outcome due to errors in estimating costs and benefits or is it an intrinsic weakness of CEA?

Then have a quick look at this paper that evaluates the cost-effectiveness of a behavioural change programme:

- Roberts, S., Craig, D., Adler, A., McPherson, K., and Greenhalgh, T. (2018). Economic evaluation of type 2 diabetes prevention programmes: Markov model of low-and high-intensity lifestyle programmes and metformin in participants with different categories of intermediate hyperglycaemia. *BMC medicine*, 16(1), 16.
<<https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-017-0984-4>>

Read the background (p2) and the principal findings and implications for policy makers (pp 9 and 10). Try to understand why a low intensity lifestyle programme was estimated to be highly cost-effective for the high risk population (defined by HbA1c) (£186/QALY) but to reduce the percentage who went on to develop diabetes from 38% to 37% only.

Further reading:

- Tengs TO (1996) An evaluation of Oregon's Medicaid rationing algorithms. *Health Economics* 5: 171-81.
- Hadorn DC (1991) Setting health care priorities in Oregon. *Journal of the American Medical Association* 265: 2218-2225.

There is a wonderful series of papers by David Eddy published by the *Journal of the American Medical Association (JAMA)* when CEA was being applied in Oregon:

- Eddy DM (1992) Cost-effectiveness analysis: a conversation with my father. *JAMA*. 267:1669-1672, 1674-1675.
- Eddy DM (1992) Cost-effectiveness analysis - Is it up to the task? *JAMA* 267: 3342-2348.
- Eddy D (1992) Cost-effectiveness analysis: will it be accepted? *JAMA* 268:132-136.
- Eddy DM (1992) Applying Cost-effectiveness Analysis: The Inside Story. *JAMA* 268:2575-2582.

Tuesday 15 May: Models of governance

9.30 - 10.50 Competition between hospitals and insurers

In the 1990s, governments in a number of countries in addition to the UK introduced hospital competition in an 'internal market' based

on selective contracting: New Zealand, Italy and Sweden. But they later largely abandoned this policy. It was then re-introduced in the 2000s in England (but not in the devolved countries of the UK), with an emphasis on patient choice. In Italy, the region of Lombardy has also tried using hospital competition. In the Netherlands, over 20 years a more complex model was implemented of competition between insurers for health services, which are empowered to contract selectively. Variants of this model have also been introduced in Germany, Switzerland and Israel.

Learning objectives

To be able to describe

- The design of three models of quasi markets in health care:
 - The 'internal market' model in which individuals have no choice of insurer / purchaser or provider, but the insurer / purchaser (in principle) contracts selectively.
 - The 'internal market' model in which individuals have no choice of insurer / purchaser, but patients can choose providers and the insurer / purchaser (in principle) contracts selectively.
 - Insurer competition in which the individuals can choose between health insurers, which, as purchasers, are (in principle) contracts selectively (but in practice patients can choose providers).
- The requirements for the effective operation of these different kinds of markets.
- The evidence of their impacts and obstacles to their effective operation.

Key reading

- Le Grand, J. (2009). Choice and competition in publicly funded health care. *Health Economics, Policy and Law*, **4**(4): 479-488.
- Bevan G, Skellern M. Does competition between hospitals improve clinical quality? A review of evidence from two eras of competition in the English NHS. *BMJ* 2011; **343**: doi:10.1136/bmj.d6470
<[http://eprints.lse.ac.uk/40065/1/_Libfile_repository_Content_Bevan,%20G_Does%20competition%20between%20hospitals%20improve%20clinical%20quality_Does%20competition%20between%20hospitals%20improve%20clinical%20quality%20\(LSE%20RO\).pdf](http://eprints.lse.ac.uk/40065/1/_Libfile_repository_Content_Bevan,%20G_Does%20competition%20between%20hospitals%20improve%20clinical%20quality_Does%20competition%20between%20hospitals%20improve%20clinical%20quality%20(LSE%20RO).pdf)>
- Bevan G and van de Ven WPMM. Choice of providers and Mutual Healthcare Purchasers: can the English NHS learn from the Dutch reforms? *Health Economics, Policy and Law*, 2010, **5**(S3): 343-363.
<https://www.researchgate.net/profile/Gwyn_Bevan/publication/44607150_Choice_of_providers_and_mutual_healthcare_purchasers_Can_the_English_National_Health_Service_learn_from_the_Dutch_reforms/links/00b495376ee8b3aa9b000000/Choice>

-of-providers-and-mutual-healthcare-purchasers-Can-the-English-National-Health-Service-learn-from-the-Dutch-reforms.pdf>

Consider the following questions:

- What are the key arguments that Le Grand advances to justify competition between hospitals?
- What are the pros and cons of having competition between insurers and hospitals?
- Why has it proved so difficult to implement effective competition between hospitals in England and the Netherlands, but the Netherlands has been able to implement effective competition between insurers.
- How do you explain the finding that hospitals that are exposed to greater competition have lower mortality rates of Acute Myocardial Infarction? Is this evidence that the policy of hospital competition in England has improved quality of care within hospitals that are exposed to greater competition?

Further reading

- Tuohy CH. Reform and the politics of hybridization in mature health care states. *Journal of Health Politics, Policy and Law*. 2012 **37**(4): 611-32.
- Mays N and Dixon A. Assessing and explaining the impact of New Labour's market reforms. *Understanding New Labour's market reforms of the English NHS*. London: King's Fund, 2011: 124-142.
http://nhshistory.net/New_Labour's_Market_Reforms.pdf
- Maarse, H., Jeurissen, P., and Ruwaard, D. Results of the market-oriented reform in the Netherlands: a review. *Health Economics, Policy and Law*, 2016 **11**(2): 161-178.
- Thomson S, Busse R, Crivelli L, van de Ven W, and Van de Voorde C. Statutory health insurance competition in Europe: a four-country comparison. *Health policy*, 2013 **109**(3): 209-225

10.50 - 11.10 Coffee break

11.10 - 12.30: Economics of identity and reputations

We have examined limitations of the quasi market introduced into the NHS in the 1990s. The (new) Labour Government elected in 1997 abandoned the idea of competition as a driver of improved performance and hoped that increasing spend would enable the NHS to improve, but the only measure that increased was that of waiting lists for hospital admission. Focus groups identified waiting times for access as the overriding problem for the NHS. In response to a 'crisis' in the NHS in the winter of 1999/2000, the Blair government, alongside a commitment to sustained increases in funding, introduced a regime of annual performance 'star' ratings

with strong sanctions for failing to meet demanding targets for waiting times. This was a dramatic change from the policy of increasing funding for hospitals that had failed to hit targets. We examine the original rationale for this policy, how it developed, improvements in reported performance, and problems of gaming. Evidence comes from of a 'natural experiment' between England and Wales, which after devolution relied on policies based on altruism for hospitals and schools.

Another example of the impact of 'naming and shaming' through public ranking comes from this being used to highlight Zambia's appallingly high rates of maternal mortality. Reducing this was Millennium Development Goal 5 (MDG 5).

In contrast we look a system of 'naming and faming' through competitive benchmarking for the health service in the region of Tuscany in its famous dartboard with evidence from a natural experiment across the regions of Italy to show the power of this system.

Learning objectives

To be able to:

- Describe requirements for a system of reporting performance to generate incentives for improvement from its impact on the reputations of providers.
- Summarise evidence showing the power of reputation effects.
- Summarise what is meant by the 'economics of identity'.
- Explain some current mechanisms for carrying out comparative benchmarking and assessment, *e.g.* the STAR rating system, school league tables and the Tuscan dartboard;
- Identify the critical factors that support or hinder positive impact from this kind of comparative benchmarking.

Key reading

First read:

- Bevan, G., A. Evans, S. Nuti, (2018) Reputations Count: Why benchmarking performance is improving health care across the world, *Health Economics, Policy and Law*.
<http://eprints.lse.ac.uk/86469/>

Then read:

- Akerlof, GA, and RE Kranton, (2010) *Identity Economics: How Identities Shape Our Work, Wages and Well Being*. Woodstock: Princeton University Press. Chapters 1 and 2.
<https://www.researchgate.net/profile/Rachel_Kranton/publication/46555836_Identity_Economics/links/00b7d52b3179f7e751000000/Identity-Economics.pdf>

Consider these questions:

- What are the requirements in reporting information on performance to damage to the reputations of poorly performing organisations?
- How would you summarise the impacts of introducing the 'star rating' system on hospital performance in England compared with its absence in Wales?
- What was in common in 'naming and shaming' in England and Zambia? How do you think will mean its effectiveness varies by culture and context?
- In what ways does the Tuscan system use reputation effects?
- Can the Tuscan system work only at a regional (and not national) level?
- What do Akerlof and Kranton argue matters in the making of a good school?
- How does 'naming and shaming' and 'naming and faming' relate to the economics of identity?

Further reading:

- Evans A. (2017) Amplifying Accountability by Benchmarking Results at District and National Levels. *Development Policy Review*, <http://onlinelibrary.wiley.com/doi/10.1111/dpr.12213/full>
- Bevan G, Wilson D. (2013) Does 'naming and shaming' work for schools and hospitals? Lessons from natural experiments following devolution in England and Wales. *Public Money and Management*, 33(4), 245-252. <http://www.tandfonline.com/doi/abs/10.1080/09540962.2013.799801?src=recsysandjournalCode=rpmm20>
- Bevan G and Hamblin R. (2009), Hitting and missing targets by ambulance services for emergency calls: impacts of different systems of performance measurement within the UK. *Journal of the Royal Statistical Society (A)*, **172**(1): 1-30. <http://eprints.lse.ac.uk/31137/>
- Chassin MR. (2002), Achieving and sustaining improved quality: Lessons from New York State and cardiac surgery'. *Health Affairs* **21**(4): 40-51. <https://www.ncbi.nlm.nih.gov/pubmed/12117152>
- Hibbard JH et al. (2005), Hospital performance reports: impact on quality, market share, and reputation. *Health Affairs*, **24**(4): 1150-60. <http://content.healthaffairs.org/content/24/4/1150>
- Oliver, A. (2007), The Veterans Health Administration: An American success story? *Milbank Quarterly*, **85**: 5-35. <https://www.ncbi.nlm.nih.gov/pubmed/17319805>
- Bevan G. (2006), Setting Targets for Health Care Performance: lessons from a case study of the English NHS, *National Institute Economic Review* **197**: 67-79. <http://journals.sagepub.com/doi/abs/10.1177/0027950106070036>

- Propper C, Sutton M, Whitnall C, Windmeijer F. (2010), Incentives and Targets in Hospital Care: Evidence from a Natural Experiment. *Journal of Public Economics*, **94**(3-4): 318-335.
<http://www.sciencedirect.com/science/article/pii/S004727271000034>

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