

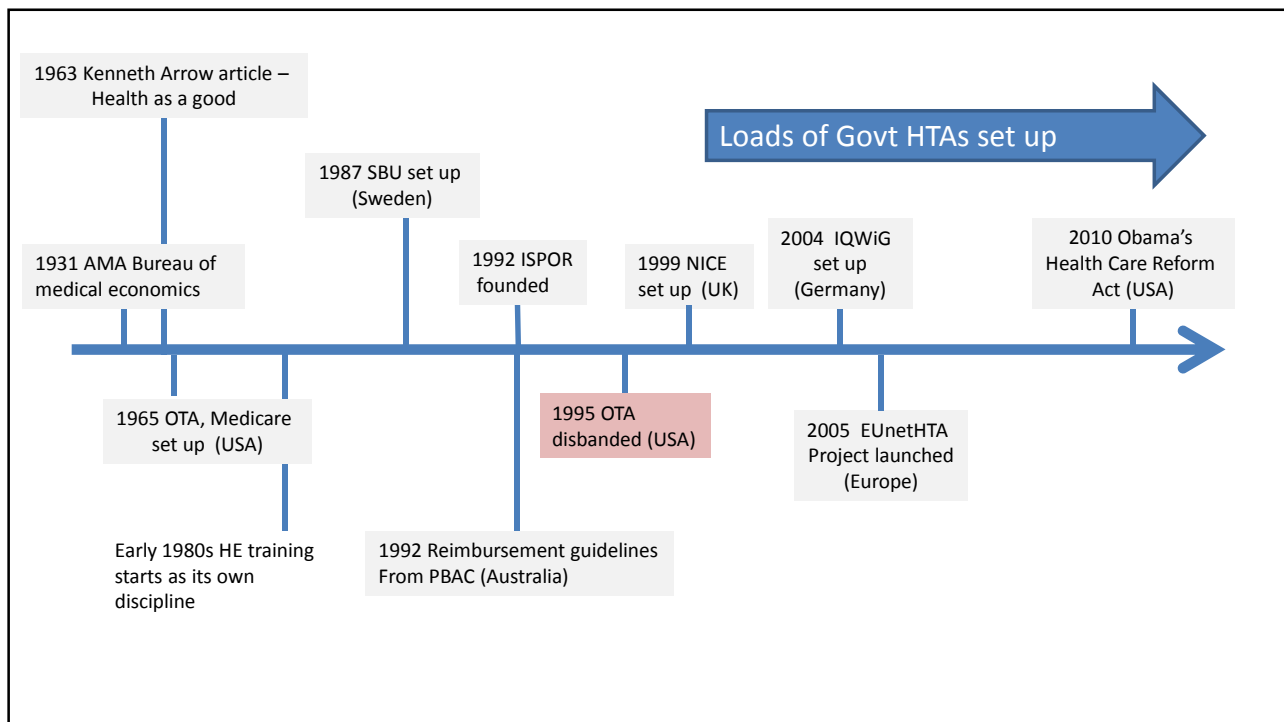
Health Economics and Medical Writing

Ruth Whittington
Rx Communications



Content

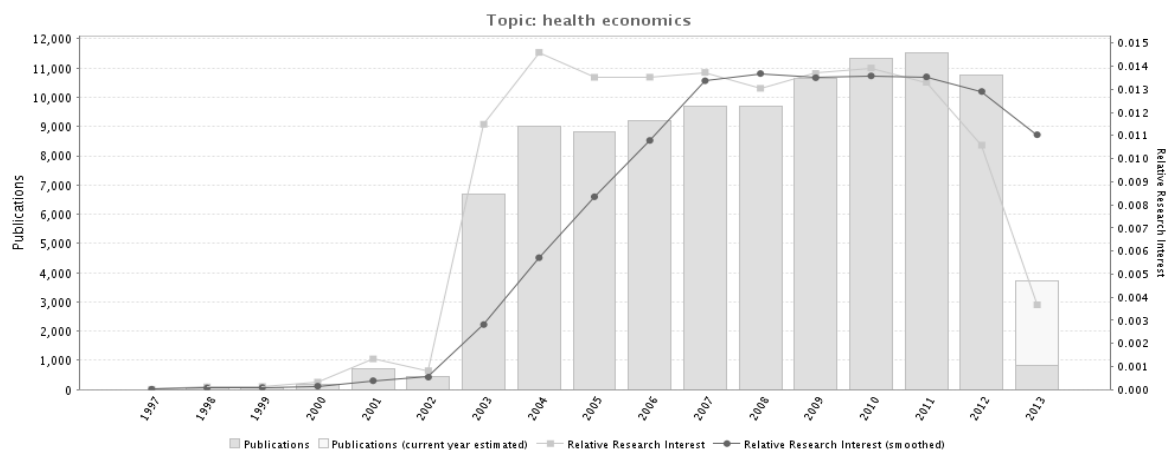
- In the beginning
- Why so important?
- The basics
- Anatomy of a health economist
- Working effectively with health economists



HE journals

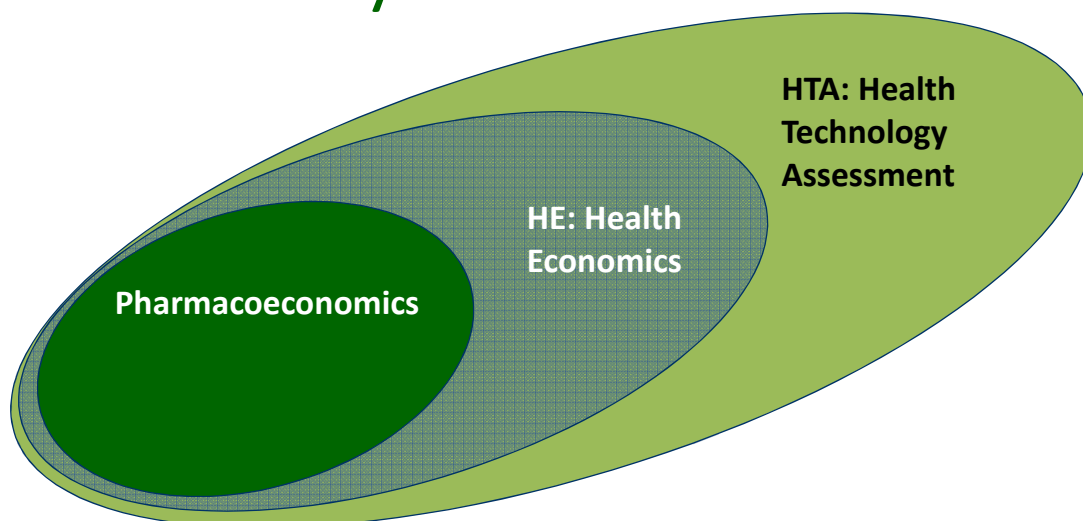
- 1981 Health Affairs journal (Project HOPE)
- 1982 Journal of health economics
- 1986 The Milbank quarterly
- 1992 Health economics
- 1992 PharmacoEconomics
- 1992 Quality of life research
- 1998 Value in health
- 2001 The European journal of health economics : HEPAC

HE publications



Gopubmed.org search term "health economics" accessed 15/04/2013.

How do they fit?



Why so important?

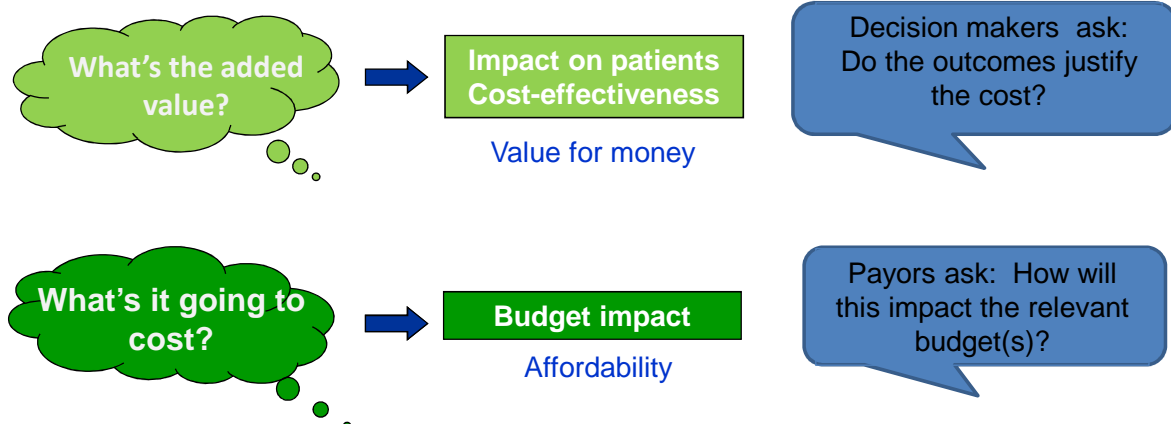
- Tighter budgets
- More expensive healthcare treatments
- Aging populations
- Public expectations
- Slower economic growth
- Increasing number and types of healthcare professionals

The licensing requirements for new medicines remain the same:

- Efficacy
- Safety
- Quality

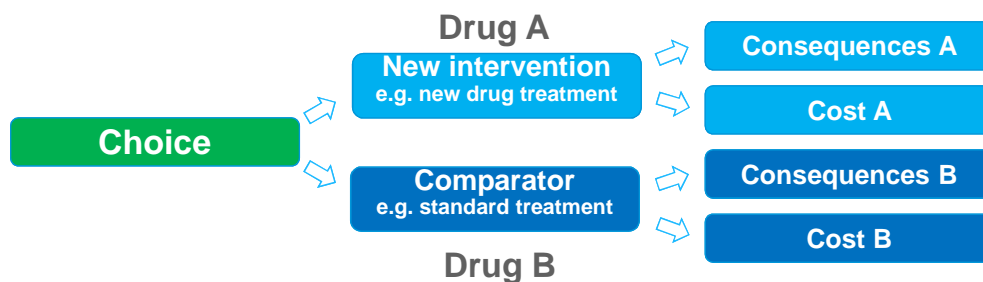
But now there are 2 more hurdles to overcome...

Value and affordability – the 4th and 5th hurdles



What is an economic evaluation of a healthcare intervention?

- The systematic appraisal of costs and benefits of healthcare-related projects
- Implies the concept of 'choice'



9

Cost, price and value

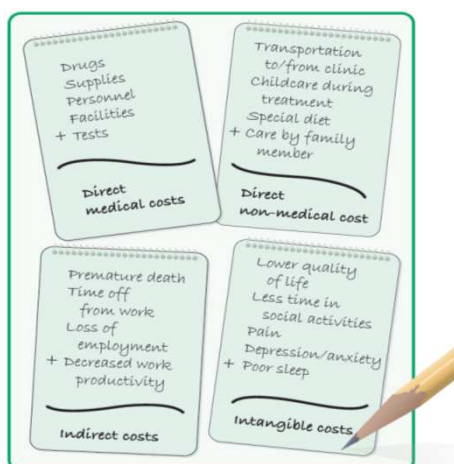
- **Cost** – the amount of money used up to produce something – often fixed, may help determine price
- **Price** – the amount of money that is paid for the item – can be ex-manufacturer, wholesale, public/list prices. Determined by novelty, cost to bring to market, competitors, governments
- **Value** – the “worth” of the item – differs according to perspective. Often the more valued, the higher the price BUT often the party who pays for the healthcare neither receives it or is involved in its delivery...



Types of cost

Direct medical costs:
directly associated with
the treatment or
intervention

Indirect costs:
those which result
from loss of time due
to illness (e.g. loss of
productivity)



Direct non-medical costs: those associated
with the use of the
intervention but not
directly (e.g. transport to
clinic, childcare)

Intangible costs:
those related to health per
se and quality of life that
can be difficult to measure

Other cost types

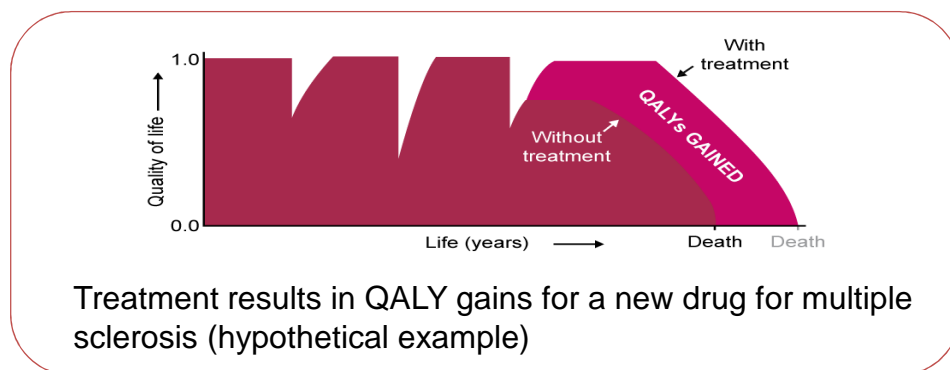
- **Opportunity costs:** The cost of an alternative that must be forgone in order to pursue the chosen intervention
- **Incremental costs:** Additional total costs of a healthcare product or service compared with an alternative
- **Marginal costs:** Additional or reduced costs that result from slight changes to the treatment or intervention

Benefits or outcomes

- Intermediate endpoints: markers
- Final outcomes:
 - Clinical: (treatment outcome, lives saved)
 - Economic: (costs spent and/or saved)
 - Humanistic:
 - patient reported outcomes (PROs)
 - Preference-based outcomes or utilities e.g. QALYs

Quality-adjusted life-years (QALYs)

QALYs are a utility score (0 = worst, 1 = best) based on the QoL experienced by a patient during the life-years gained from treatment



15

Data required for HE analyses

- Healthcare resource allocation
- Costs
- Clinical effectiveness
- Other health outcomes – PROs, etc.









16

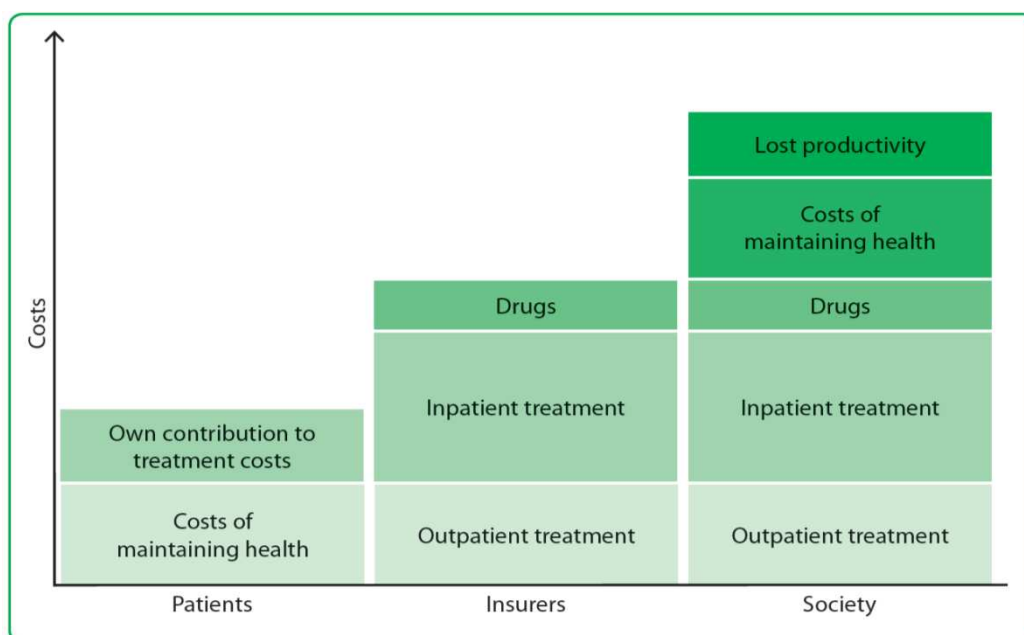
Data sources for HE analyses

Types of study designs commonly used to provide health economics data:

- Prospective
- Retrospective
- Patient registries
- Other (e.g. expert opinion, Delphi panels, pricing documents developed from national databases (e.g. Drug Tariff in the UK, Rote Liste in Germany))

17

Value		Cost of doing research
	Retrospective study	
	Data collection alongside a clinical trial	
	Computer model	
	Prospective health outcomes study	



Types of economic analysis

- Two most common:
 - Cost-effectiveness analysis (CEA)
 - Costs are related to a single common effect
 - Outcomes stated in cost per unit of effect or effect per unit of cost.
 - Compares benefits of alternative treatments
 - Cost-utility analysis (CUA)
 - Takes into account the effect of treatment on quality and quantity of life.
 - Compares treatments using utility – usually measured in Quality-adjusted life-years (QALYs)

Cost-effectiveness analysis (CEA)

Cost-effectiveness ratio (CER)

- Ratio of cost to benefit - the lower the ratio the more the treatment is preferred

Incremental CER (ICER)

- Compares costs and benefits of a new treatment with existing treatments
- Can only be used when the same measures of effectiveness are used

$$\text{ICER} = \frac{\text{Cost of A} - \text{Cost of B}}{\text{Benefit of A} - \text{Benefit of B}}$$

- Less effective and more costly treatments are “dominated”
- Treatments that are more effective and cheaper are “dominant”

Cost-consequence analysis

- Variant of CEA
- No ratios – each cost and unit of effectiveness is tabulated separately
- Each component affecting choice of treatment is listed
- Allows decision-makers to put in their own figures and decide.

Component Affecting Choice of Treatment	Drug A		Drug B	
	Units	Costs (€)	Units	Costs (€)
Direct use/costs				
Medical care				
Drug price				
Other drugs				
Physician visits				
Hospital stays	4 days	1600	2 days	800
Home care				
Other medical care (e.g. dialysis)				
Non-medical care				
Transportation				
Equipment (e.g. crutches)				
Paid caregiver time				
Indirect use/costs				
Resources				
Patient absence from work	7 days	770	10 days	
Patient disability days				
Total direct and indirect costs				
Impact of symptoms				

Cost-utility analysis (CUA)

- Is a form of CEA, but costs are assigned to utility values (i.e. a standard numerical value of health improvement)
- Can measure across different treatments
- Usually measured in QALYs, also DALYs, HYE
- Some controversy – efforts being made to find a better value of health.

Other Analyses

Cost-benefit analysis:

- Less common these days
- Costs and benefits are in monetary units – using willingness-to-pay studies

Cost-minimisation analysis

- Only compares costs – treatments are assumed to be equivalent

Other Analyses

Cost of illness study:

- Not a true analysis as doesn't compare efficiencies of two treatments
- Analyses costs (direct and indirect) incurred by society due to a particular illness
- Quantifies burden of illness (uses either incidence or prevalence)

Budget impact model or analysis

- Determines the impact of introducing a new drug or device etc within a particular healthcare setting.
- Complementary to cost-effectiveness analysis

Models for health economic evaluations

Models are used to:

- Predict events in the absence of experimental data
- Estimate economic data not captured during a clinical trial
- Extrapolate data beyond trials to final endpoints

Model accuracy depends on:

- Validity of assumptions (quality of input data)
- The needs and purposes of the decision-maker
- Whether implications make sense

Sensitivity analysis:

- A technique for examining how different assumptions in a model alter the results (e.g. Monte Carlo simulation)

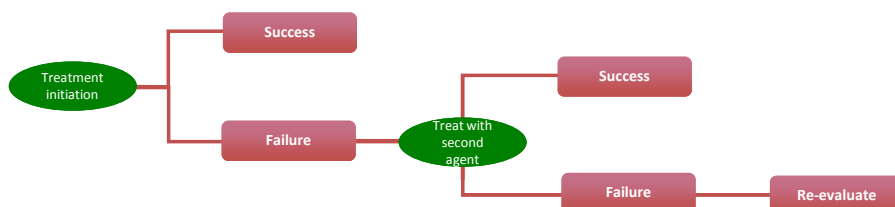
27

Health economic models

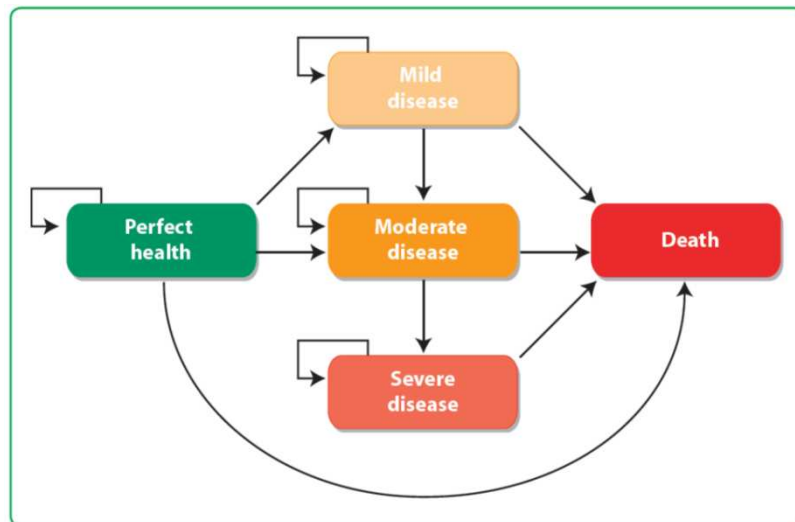
Simple models - **decision tree**

- Probabilities based on clinical outcomes data are put into the model
- Model can predict probabilities of patients in a population and therefore costs
- Are usually too simplistic for chronic disease progression

An example of a simple decision tree



Markov model of a progressive disease



Limitations of economic models

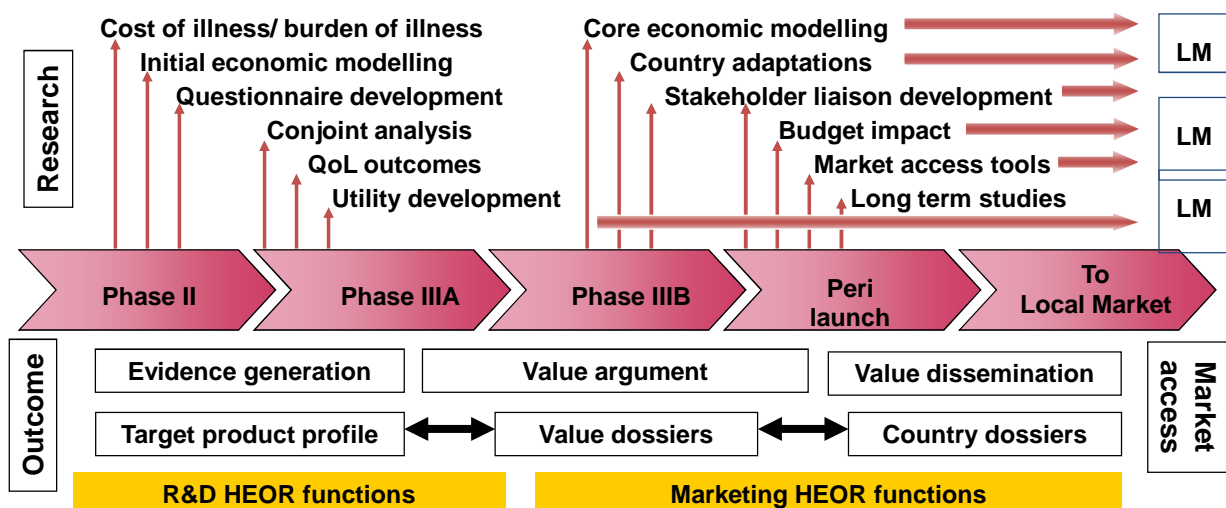
- Lack of good quality clinical data as a base
- Possible bias in observational data
- Transparency of assumptions and approximations
- Validity of assumptions and approximations
- Poorly communicated to decision-makers

Anatomy of a Health Economist

- Before HE departments, was solely statistics or epidemiology-based
- Loves numbers not people
- Doesn't know about/doesn't care about publication ethics or guidelines
- Doesn't think anybody can understand his research but himself
- Has written 3 papers, took 3 years to publish each of them, thinks this is a normal timeline
- Wants every pub. in Value for Health to impress his colleagues and add to CV



Health Economists roles through the drug life cycle



Medical writers and health economists

- Medical writers often considered unfit to help
- Health economists often unable to write
- Health economics publications often need to go to clinical or lay (Non-HE) audiences
- Both sides require training to be able to work together

Tips for aspiring HE medical writers

- Don't overstate your expertise in HE
- Do educate your clients on publications ethics and policy
- Do ensure you learn up on the types of analysis being done by your clients – and give good advice as to best audiences
- If in doubt, get a health economist to review
- Attend courses in Health Economics and statistics
- Use ISPOR resources as background information www.ispor.org
- Ensure you know where your client is within drug development so you know their issues and can help with publication strategy

Thank you!

Ruth Whittington

Rx Communications

ruth.whittington@rxcomms.com