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ENABLING AN INTEGRATED PATHWAY DEVELOPMENT: A HEALTH ECONOMIC APPROACH

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WHAT WE WILL COVER TODAY:

- Economic concepts
- Practical example of using these concepts in decision making

Learning objective

- to introduce some of the tools of economic appraisal, their strengths and limitations, and how to use them to make robust (resource allocation) decisions across pathways of care.

"Economics of Ethical Decision making: the science behind the art of tough choices"

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RESOURCE ALLOCATION

- Prioritizing between health interventions, whatever the health financing system, is an important first step to approaching an optimal allocation of resources in the health sector
- health interventions that will maximize the benefits to society, whilst also accounting for the distribution of these benefits and other equity concerns
- That is, resource allocation of health interventions should be as efficient and equitable as possible

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What is health financing for universal coverage?

Interactive WHO skills building session on governance for strategic purchasing

WHO/B.Mathivet

Governance for the purchasing of health services has received little attention in either research or policy communities, despite its importance. Making purchasing more strategic requires effective governance arrangements. The key issues include how to assess governance arrangements in a country's health system, and how to strengthen and improve them. To address these questions, the WHO's Department of Health Systems Governance and Financing hosted a skills-building workshop on 8 October 2018, as part of the Global Symposium on Health Systems Research in Liverpool.

Read more

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SCENARIO

- We are board members of a commissioning body (?) HSE national/ S-SW HG, that relates to a local cancer centre.
- Cancer X – need to agree and commission patient pathway
- We have to choose between a number of treatment options with different costs and outcomes – A, B and C.

MISSION STATEMENT

But first, look at the board's mission statement.

"*Our mission is to secure the most* ***effective***, ***equitable*** *and* ***efficient*** *services for our population, within the resources entrusted to us.*"

the relative importance of these criteria needs to be ascertained

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EQUITY

- Reduced inequalities in health status between individuals, under the constraint of there being no "levelling-down" of any individual's health to reduce inequalities. This is consistent with egalitarianism (Williams and Cookson, 2000).
- Favouring of the most disadvantaged. This is consistent with Rawls' theory of justice, utilitarianism under conditions of diminishing marginal utility, Sen's theory of equalising people's capabilities, and Dworkin's combination of the no-envy principle with the principle that justice requires compensating people for their disabilities (Williams and Cookson, 2000)
- A frequent interpretation of equity is equal treatment for equal need **(horizontal equity)**. (Malaria Rx, Obstetric care)
- two important **vertical equity criteria**: severe health conditions and poverty reduction
- an improvement in health from a severe health condition is valued more highly by individuals than the same size improvement in health for a less severe condition (palliative care, transplantation, heart surgery)
- policy makers may want to go further and give preferential treatment to the poor. This is because they have in general a greater need for support than the non-poor, due to their lower (income, and probably health) starting point (McIntyre and Gilson, 2000). (nutritional services, universal school meals- more examples in developing countries)

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EFFECTIVENESS

- **Clinical effectiveness** is the extent to which specific **clinical** interventions do what they are intended to do
- **Cost effective** (is something that is a good value, where the benefits and usage are worth at least what is paid for them.) An assessment or determination of the most efficient and least expensive approaches to providing health care and preventive medicine services.

- **RULE OF RESCUE**
- The principle of the rule of rescue is that society and each individual has the ethical duty to do everything possible to help those in immediate life-threatening distress, irrespective of how costly or how small the benefit is (Hauck *et al.*, 2003). Note, though, that it is equivalent to giving first preference to *the most* severe health conditions, notably emergency care for life-threatening illnesses.

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EFFICIENCY

- Efficiency, is a measure of the quality and/or quantity of output (i.e. health outcomes or services) for a given level of input (i.e. cost). So efficiency gains could help to contain costs
- However, no one wants to contain costs by reducing health outcomes, so seeking efficiency gains should also be seen as a means of extending coverage for the same cost
- …defined as maximizing the overall health level of society from a given resource constraint. That is, the perspective is limited to health and not a broader perspective that also accounts for other aspects of utility

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All three criteria are intrinsically worthy but there may have to be a trade off between them.

Which, in your view, should generally take precedence?

Choose now

FACTS ABOUT CANCER "X"

- Universally rapidly fatal if not treated
- Incidence of "X" is 300 new cases every year
- 3 possible treatment packages, A, B & C
- Good trial evidence on typical outcomes and typical costs
- Budget for treating "X" is €1,500,000 per year
- *(All costs fall in first year, thereafter costs of care no different from population average)*

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OPTIONS: PER TYPICAL PATIENT…

- "A" *(current treatment)*
  adds 3 years of life @ € 5,000
- "B"
  adds 5 years of life @ € 6,000
- "C"
  adds 6 years of life @ € 15,000

Which looks most attractive on first impression? ***Choose now***

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EQUITY

- In a moment we will consider equity – by which we mean, for this exercise, equity of **access** to treatment.
- There is an affordability issue.
- The budget is fixed but some of the treatments may exceed our capacity to pay for everyone.
- Let's see how many patients we can afford to put through the treatment programme

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POPULATION COVERAGE ("EQUITY")

- Budget for cancer "x" = € 1,500,000
- A @ € 5,000 = 300 people
- B @ € 6,000 = 250 people
- C @ € 15,000 = 100 people

- "A" is the only option that allows universal access to treatment (300 new cases per year).
- *Now you have seen the "equity" trade off:* ***Choose now.***
- *If you have changed your mind, why?*

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EFFICIENCY

- In a moment we will look at cost, effectiveness, equity and efficiency in one table.
- We will look at **efficiency** in terms of getting the ***greatest number of years of life from our budget***.
  - in treatment "A", 3 added years of life for 300 people yields 900 life-years;
  - in treatment "B", 5 added years for 250 people yields 1250 life-years
  - in treatment "C, 6 added years for 100 people yields 600 life-years.
- Now look at the table and choose again.

COST, EFFECTIVENESS, EQUITY AND EFFICIENCY

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Therapy	Cost (£)	Effectiveness (years added per patient)	Equity (patients treated from budget)	Efficiency (total years gained from budget)
A	5,000	3	300	900
B	6,000	5	250	1250
C	15,000	6	100	600

Are you attracted to the most effective, equitable or efficient? Choose now

SUMMARY SO FAR:...

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- A is the most equitable; everyone has access.
- B is the most efficient; it maximises total population health gain from a fixed budget.
- C is the most effective.
- A & B satisfy the "utilitarian" ethic: they are variations on the theme of "greatest good for the greatest number".
- C satisfies the "Hippocratic" ethic – doing the best that is technically possible - important to clinicians and individual patients

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CHOOSING BETWEEN PATIENTS

- There are no right answers in this scenario and no trick questions
- If you opted for "B" or "C" then you have a further step
- How will you decide who gets the treatment or not? Try to think of a few criteria you might use before moving on.

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SELECTION CRITERIA

- Here are some real-life examples of selection/exclusion criteria used by organisations facing similar tough choices
  - Restrict eligibility to those patients who meet the same criteria as were used in the clinical trials (eg exclude those outside the trials' age band, with renal failure, liver disease, etc)
  - Those with other diseases who have less than 3 years to live anyway
  - Over a certain age (probably illegal now)
  - Those who opt not to be treated (eg side effects)
  - Those with dependants or who are carers
  - First come basis until budget runs out
- (Not an exhaustive list, and not easy, but whatever you use it may face legal challenge!)

EXTRACTS FROM A PATIENT LETTER

- ***This is a real example from the husband of a patient denied "C" type therapy in favour of "B" type therapy***
- "I make the observation that this policy appears to be totally lacking in any element of human compassion …"
- "…there is only speculation that it may not be cost-effective, coupled with a strong desire to save money at all costs."

TWO POPULAR MISCONCEPTIONS

- Health economics is not about being hard-hearted and saying "no".
  - It is about trying to do the most good. If we can't afford to say "yes" to every need and demand, we have to manage scarcity as fairly as possible.
- Health economics is not about "making economies".
  - It is not about withholding money, but about getting it all spent, and doing so to best effect.

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EXTRACT FROM MP'S LETTER (UK EXAMPLE)

"…I hope that that between you and the hospital something can be done for my constituent…"

This is an actual quote, and fairly typical. It doesn't address the fundamental problem of managing scarcity and choice. And it disadvantages someone else who is displaced.

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A VIEW FROM AN EXPERT

- This scenario was sent to Prof Alain Enthoven, a respected American health economist and health care manager.
- Look at his reply.

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RESPONSE FROM ALAIN ENTHOVEN

- "Your example really made me think. The typical American reaction would be that everybody should have treatment C and "we don't accept that resources are limited." That got us to 13.5% of GDP and rising. Reflection would drive me back to treatment A. It would just be too unfair to deny people any treatment at all in order to pay for a more effective treatment for some. But the attraction of the greater total life years is hard to pass up. I think I could face people and explain the choice of treatment A, but not the others."

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NO RIGHT ANSWERS – JUST AN OPEN AND INCLUSIVE PROCESS

- Health economic appraisal helps quantify the trade-offs that confront us. It lays the decision process open to scrutiny and challenge. But it doesn't tell us what to do!
- In this scenario that's your call!
- Now let's add in quality of life, not just length of life. We can start to look at quality-adjusted life years (QALYs)
- To illustrate, look at this famous quote.

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HUBERT BLAND

"Length must be measured by sensation, not yards.

The English Channel is wider to someone who is seasick than the Atlantic to someone who is not."

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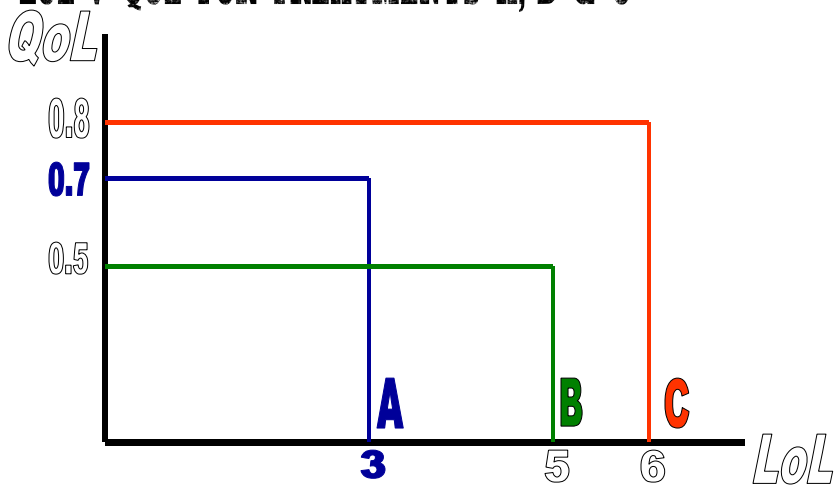
QUALITY OF LIFE

- Let's assume we have a score-card that allows patients to assess their quality of life (QoL) from 0 (worst possible quality of life) to 1 (best possible quality of life).
- The trial data show that, for our three treatments:
  - Patients give "A" a score of **0.7** QoL on average for the 3 years of added life
  - Patients give "B" (which is more aggressive) a score of **0.5** QoL on average for the 5 years of added life
  - Patients give "C" (which is more expensive because of the support that comes with it) a score of **0.8** QoL over the 6 years of added life.
- See how that pans out in the next chart

LOL V QOL FOR TREATMENTS A, B & C



QUALITY-ADJUSTED SURVIVAL

Which would you choose now?

EFFECTIVENESS AND EFFICIENCY, MEASURED IN "QUALITY ADJUSTED LIFE YEARS (QALYS)

- Now have a look at the new **effectiveness** criterion. The calculation works like this:
- A: 3 added years at 0.7 QoL per year = 2.1 QALYs
- B: 5 added years at 0.5 QoL per year = 2.5 QALYs
- C: 6 added years at 0.8 QoL per year = 4.8 QALYs

- Efficiency is now measured as total QALYs purchased for the population from the given budget

- Remember that cost has not changed, so affordability of treatment has not changed, so now look at the new table of effectiveness, equity and efficiency.

COST-UTILITY ANALYSIS

	LoL x QoL	QALYs	Population Health Gain (QALYs)
A	3 x 0.7	2.1	2.1 x 300 = 630
B	5 x 0.5	2.5	2.5 x 250 = 625
C	6 x 0.8	4.8	4.8 x 100 = 480

A is now most equitable and most efficient. C is more effective than before but still only 100 people get treated. **Choose now**

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'BOARD' CONSIDERS PUTTING MORE MONEY IN

- Let's assume that the chosen treatment for our cancer centre is "A", if present budget is fixed, but …
- .. HSE board members want to explore a 20% uplift in this budget, ie extra £300,000, with the suggestion that this comes from the chiropody budget because, it is suggested, "no-one dies from lack of foot care".
- Some patients can now switch from "A" to "B" or "C".
- Which of those gives the better return on investment?
- Or should the money be left in chiropody?

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MARGINAL COST AND BENEFIT

- We now turn to added cost and added benefit. This incremental step is known as "***marginal analysis***"
- The extra cost per patient of moving from "A" (£5,000) to "B" (£6,000) is £1,000.
- The extra cost per patient of moving from "A" (£5,000) to "C" (£15,000) is £10,000.
- The extra benefit per patient of moving from "A" (2.1 QALYs) to "B" (2.5 QALYs) is 0.4 QALYs
- The extra benefit per patient of moving from "A" (2.1 QALYs) to "C" (4.8 QALYs) is 2.7 QALYs
- Now look at the next table and choose which is the better option, moving from A to B, or from A to C.

MARGINAL ANALYSIS: ADDED BENEFIT AND ADDED COST

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	Marginal cost per patient (£)	Marginal benefit per patient (QALY)	Extra patients treated per £300,000	Population QALY gain
A to B	1,000	0.4	300	120
A to C	10,000	2.7	30	81

Choose now

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- But before we confirm our decision to spend more in cancer X let us just check what we would be losing if we took the money from chiropody.
- The benefit foregone is known as "opportunity cost".

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OPPORTUNITY COST: CHIROPODY FOR THE ELDERLY

- (These are imaginary figures for this exercise)
- Cost per person per course of 10 sessions is £500
- Added years - nil directly (but assume 10 more years of natural life expectancy in which to enjoy the benefit)
- QoL gain 0.05 per year
  - 0.05 QoL x 10 years = 0.5 QALYs per case
- Summary: gain from investing £300,000 in chiropody
  - 600 cases and 300 QALYs

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COMPARISON OF OPPORTUNITY COSTS

- If we spent the money on the "A" to "B" shift we would treat 300 people and generate 120 QALYs
- If we left the money in chiropody we would treat 600 people and generate 300 QALYs
- Perhaps the money is best left in chiropody, but it is your call!

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SUMMARY

- This scenario considered the following economic concepts:
  - Effectiveness, efficiency and equity
  - Cost-effectiveness analysis
    - (cost per life saved)
  - Cost-utility analysis
    - (cost per QALY)
    - By using QALYs we could also explore trade-offs between very different conditions – cancer and foot care.
  - Marginal analysis
  - Opportunity cost

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TAKE-HOME LESSONS

- There is a trade-off between effectiveness, efficiency and equity: finite resources and excess demand requires us to confront these.
- Economic considerations help lay out the choices more explicitly, and be more rational, but do not tell us what to do!
- We can improve efficiency by taking a more strategic approach when providing or buying health services, e.g. decide which services to purchase based on information on the health needs of the population
- There is no avoiding value judgements and other considerations: therefore commissioners need to consult with the public and providers

THANK YOU

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Acknowledgements (for cancer example)
Dr Peter Brambleby
Public Health Doctor
previously DPH – Norwich/ Croydon