CHAPTER 14
HEALTH TECHNOLOGY ASSESSMENT

HTA

- *Systematic evaluation of properties, effects and/or impacts of health technologies (medicines, medical devices, vaccines) and interventions.*
- *Approach used to inform policy and decision-making in health care, especially on how best to allocate limited funds to health interventions and technologies.*

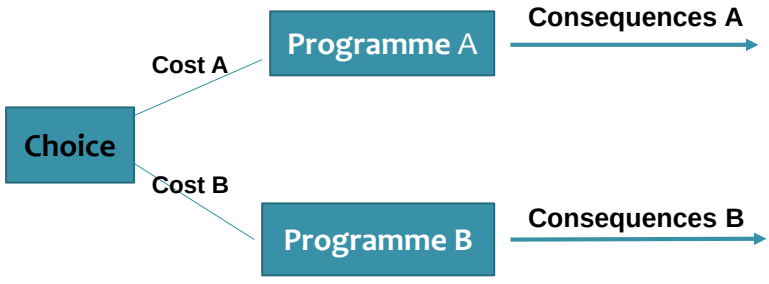
HTA

- Which objectives
  - Max general population health
  - Reduce health inequalities
  - Universal health coverage
- Criteria for priority setting
  - Cost-effectiveness
  - Poverty reduction
  - Target severe diseases
  - Target the young

Which intervention are worthwhile

- **Measure the impact of the health problem**
  - Number of cases; number of deaths; amount of disability, pain or suffering; number of people at risk; amount of lost income due to a health problem ….
- **Resouces needed for intervention (costs)**
  - Personel, buildings, equipment, pharmaceuticals, training, information,
- **Outcomes or consequences (benefits)**
  - Measure impact before and after the intervention or
  - Measure impact with and without intervention

An example



Bhattacharya, Hyde and Tu – *Health Economics*

HTA

- ***Cost effectiveness analysis*** (compares the costs and benefits of different medical treatments)
- ***Cost-benefit analysis*** (the process of choosing an optimal treatment by creating a tradeoff between money and health)
- These approaches only address one objective: maximizing health (e.g. do not consider equity)

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Cost effectiveness analysis

- **Definition:** *the process of measuring the costs and health benefits of various medical treatments, procedures, and therapies.*

Cost effectiveness analysis

- If one treatment is *both* cheaper and more effective than a second treatment, then the second treatment is said to be **dominated** by the first.
  - It is never optimal to use a dominated treatment, because there is always a more effective and cheaper alternative available.

Cost effectiveness analysis

- If neither treatment is dominant, one treatment must be both more expensive and more effective.
  - In such cases, cost-effectiveness analysis is used to help decide whether the extra expenditure is worth it.

Incremental cost-effectiveness ratio (ICER)

- Consider two treatments for the same disease: *A* and *B*. *A* is both more expensive and more effective than *B*, so neither treatment dominates the other.

- The ***ICER*** of using *A* over *B* is:

$$\text{ICER}_{A,B} = \frac{C_A - C_B}{E_A - E_B} > 0$$

Measuring costs

- In order to calculate the ICER, we need to measure the costs of each treatment.
  - not the money costs of resources, but the **opportunity costs**
- Whose perspective?
  - *Society's*: all costs count.
  - *Health care sector*: disregards costs imposed on patients or their families
  - *The patient*: only costs directly borne by patients count.

Which costs count?

- Direct costs
  - Health-care
  - Non health-care (eg transportation costs)
- Indirect costs
  - Patient and family (work and leisure) time
    - at what value? wage?
- Intangible costs
  - Side effects
    - difficult to measure
- Discounting

How is "effectiveness" measured?

- ***One common measure of effectiveness is increased life expectancy.***
- But how do we account for other health benefits that affect quality of life (e.g. increased mobility and freedom from pain)?
  - The **Quality-Adjusted Life Years** (QALY) approach combines quality of life and life expectancy into a single index.

Estimating the value of life

- You may think life cannot be valued economically or has an infinite value. Consider the following example:
  - There is a suitcase across a busy street with a million dollars in it.
  - If you cross the busy street to get the suitcase, there is a 1% chance you will be struck by a bus and killed.
  - Do you risk it?
  - If you answer yes, your life cannot be worth more than $100 million to you ($1 million divided by 0.01).

Conclusion

- Health systems/Insurers can neither cover every single new technology, nor refuse to cover all new procedures
- *selective* about which procedures to cover
  - HTA is a tool that many insurers and national health systems use to make these coverage decisions