JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

The Role and Uses of Economic Analyses in Health Planning

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Rationale for Economic Analyses

"There's no such thing as a free lunch"

In the context of scarcity, all choices have opportunity costs

Presentation Overview

- Uses of economic analyses in health care
- Different types of economic analyses and methodologies for these analyses
- Limitations of economic analyses

Uses of Economic Analyses

- Decision making
  - Prioritization
  - Advocacy
- Quality Improvement
- Budgeting and Planning

Types of Economic Analyses

- Cost Minimization
- Cost Effectiveness/Cost Utility Analysis
- Cost Benefit Analysis

Cost Minimization

- What is the least costly way to achieve a specific intervention outcome?
  - EMS Example:
    - Intervention outcome = Strengthening pre-hospital care for trauma victims
    - Provide basic first aid/trauma management skills to first responders (police/fire fighter)
    - Increase number of equipped ambulances

Cost Minimization

- Can only be carried out if effectiveness, utility, and safety of interventions are identical.
  - Example: Promotion of seatbelt usage
    - Intervention outcome: increase use of seatbelts
    - Promote seatbelt usage through media campaigns?
    - Implement school-based education?

Cost Effectiveness/Utility Analysis

- What is the least costly way of achieving a given health outcome?
- Costs are expressed in monetary value; benefits are expressed in units of one health outcome
  - Cost/DALY = CUA
  - Cost/PYLG, Death Averted, Injury Averted, etc… = CEA
- Cost effectiveness ration (CER): Costs of intervention/unit of health outcome

Cost Effectiveness/Utility Analysis

- Determining Intervention/Program Costs

Cost of producing the intervention: costs of paid inputs x rate of use for the service

Value of unpaid (donated or volunteered) inputs

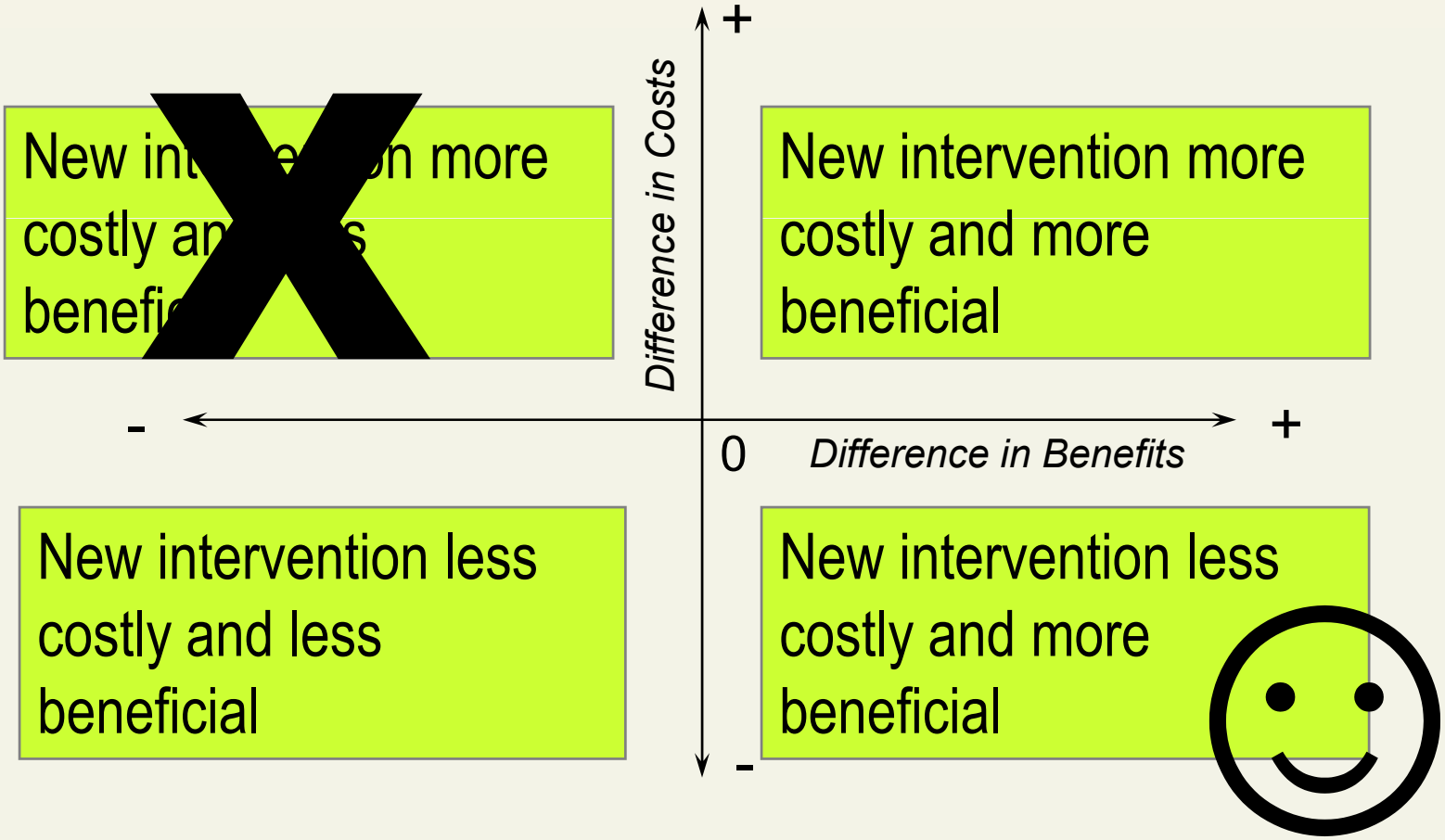
Cost to the consumer/patient of using the service (lost work time, travel expense, etc.)

Externalities: costs imposed on non-users of the service

Cost-effectiveness Analysis

Intervention	Cost per Disability Adjusted Life Year (DALY)
Improved enforcement (LMIC average)	$5.25
Speed bumps at top 25%ile dangerous junctions (LMIC average)	$8.89
Bicycle helmets (China)	$107
Motorcycle helmets (Thailand)	$467

Interpreting outcomes



Cost Benefit Analysis

- What is the least costly way of achieving any positive outcome?
- Both costs and benefits are expressed in monetary value
- Enables comparisons between health and non-health interventions
- Theoretically the most complete method, but in practice the most difficult and most criticized

Cost Benefit Analysis

- Determining Intervention/Program Costs

Cost of producing the intervention: costs of paid inputs x rate of use for the service

Value of unpaid (donated or volunteered) inputs

Cost to the consumer/patient of using the service (lost work time, travel expense, etc.)

Externalities: costs imposed on non-users of the service

Cost Benefit Analysis

- The value of health interventions = the cost of the injury and disease:
  - Human Capital Approach
    - Underestimates the value of benefits that can be gained by intervention
  - Willingness-To-Pay

Human Capital Approach

Direct Costs

- Medical
- Mental health
- Emergency response services
- Law enforcement services
- Judicial services

Indirect Costs

- Premature deaths
- Lost productivity
- Absenteeism
- Economic development
- Quality of life
- Other intangible losses

Willingness-To-Pay

- Benefits: Incorporates intangible costs that are not captured by human capital approach such as pain and suffering

- Disadvantages: requires high level of analytical thinking on the part of the respondent; surveys are difficult to implement

Willingness-To-Pay

- Use of contingent valuation surveys to assess the amount of money individuals are willing-to-pay for a lower risk of injury or what they are willing-to-accept for a higher risk of injury

25%

500Rps

50Rps

50%

Willingness-To-Pay

- Result: Value of Statistical Life (VOSL)
  - Examples:

    United States: USD $5 million (EPA estimate)

    Malaysia: USD $325,000 (Faudzi, 2004)

    India: USD $150,000 (Cropper, 2006)

Cost-Benefit Analysis

- Using VOSL, a Benefit-to-Cost ratio is generated
  - B/C = 1: costs equal benefit, no difference
  - B/C > 1: net benefit
- Not to be confused with return-on-investment
  - ROI = 0: costs equal benefit, no difference
  - ROI = 1: for every 1 dollar invested, 1 dollar benefit

Limitations

- **Does** tell whether an intervention is worth undertaking (relatively, not absolutely)—does it provide *value for money?*
- Does **not** say *who* should undertake it (government, NGOs, private providers)
- Does **not** say *how* to pay for it (patient fees, taxes, insurers, donors, charities, etc.) That is a separate policy choice
- Does **not** ensure equitable distribution of resources

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Limitations

- Estimates of cost and effect assume a particular set of inputs in appropriate proportions; if these are not supplied and used, the cost will be higher or the effect less, or both (e.g., an operating theater without a surgeon, clinics without drugs)

- Cost-effectiveness/benefit ratios show what is *possible*, not *guaranteed*

Conclusions

- Economics is not about at saving money
- It is about trying to do the most good within available resources
- We all make choices, economic evaluation makes those choices explicit