

Economic Evaluation

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Economic Evaluation

- ▶ Last time, we discussed CBA
- ▶ Two other approaches
 - ▶ Cost effectiveness analysis
 - ▶ Cost utility analysis

Cost Effectiveness and Cost Utility Analysis

- ▶ Estimates costs associated with 2 or more medical treatment options for a given health care objective
 - ▶ cost effectiveness ratio = $\frac{C_1 - C_0}{E_1 - E_0}$
 - ▶ $C_1 - C_0$ = change in social costs incurred due to treatment
 - ▶ $E_1 - E_0$ = gain in health outcome
 - ▶ in life-years (CEA)
 - ▶ in quality-adjusted life years (CUA)
- ▶ Advantage over CBA: don't need to convert *benefit* to dollars
Note: still need to discount because life in 2 years is worth less than life today

QALYs

QALY (quality-adjusted life years) = life expectancy * measure of the quality of remaining life-years

- ▶ health utility index usually between 0 (death) and 1 (full health)
- ▶ developed from survey answers (respondents rate various health outcomes, or have to choose between 2 alternative health outcomes)
- ▶ mostly US, UK, and Canada surveys

Drawbacks of QALYs

- ▶ survey methods may be biased
- ▶ does not tell us whether society is better off (as with CBA)
- ▶ values older people less because successful treatment of older person saves fewer life-years

What are DALYs

DALY (disability-adjusted life years) = life expectancy * measure of the disability associated with the remaining life-years

- ▶ disability weights usually between 0 (full health) and 1 (death)
- ▶ generated using data from Ministries of Health across the world
- ▶ age adjustments for the fact that infants and older people need care and adults give care (higher weight) – exacerbates the ageism
- ▶ good measure of population health of a country, comparable across countries, but not used for economic evaluation very often

CEA/CUA Calculations

| Treatment option | cost | life-years gained | health-utility index | QALY |
|-------------------|-----------|----------------------|-------------------------|------|
| Current procedure | \$20,000 | 2 years | 0.7 | 1.4 |
| New procedure | \$110,000 | 8 years | 0.4 | 3.2 |

- ▶ CE ratio = $\frac{\$110,000 - \$20,000}{8 - 2} = \$15,000$
new medical option costs \$15,000 per life-year gained; low so new procedure should be adopted
- ▶ CU ratio = $\frac{\$110,000 - \$20,000}{3.2 - 1.4} = \$50,000$
higher cost per QALY because quality of life is lower with new procedure; maybe shouldn't be adopted

Example of CEA/CUA

Autologous vs. traditional community blood donations

- ▶ autologous donation (donor and recipient are same person) are safer but admin and collection costs are higher
- ▶ Is the increased safety worth the costs? Case is total hip replacement surgery
- ▶ additional cost per unit of autologous blood transfused = \$68
- ▶ QALY saved per unit transfused = 0.00029 (2.5 hours of perfect health)
- ▶ CU ratio = $\frac{\$68}{0.00029} = \$234,483$
- ▶ costly way of saving a life

Economics of HIV/AIDS

- ▶ Q: Should resources for HIV be allocated to prevention or treatment?
- ▶ A: Prevention; treatment comes at huge cost in terms of avoidable deaths

Other arguments besides cost-effectiveness

- ▶ scale of HIV/AIDS is so high, must treat
 - ▶ equalizes spending across needs, but does not maximize health
- ▶ CEA could bias findings toward prevention (lots of assumptions made)
 - ▶ disability weights don't matter much because mostly people die
- ▶ ethical arguments:
 - ▶ 'rule of rescue': but should prevent case rather than rescue later
 - ▶ donors given for treatment, not prevention: but doesn't maximize global health
 - ▶ same std of care everywhere: sure, but need to raise enough money to do that

Some policy implications you've learned about

- ▶ On average, medical spending is worth it (value of lives saved $>$ increased costs of medical care); but on the margin, we are wasting money (marginal product of health care is low at current levels of expenditures).
- ▶ **Certificate of need** laws are needed because the medical arms race leads to excess capacity and therefore higher costs; however, it is difficult for the government to choose the optimal quantity so they don't usually have an effect.

Implications for policy

- ▶ Economic theory predicts that monopolistic hospitals should not **cost shift** from poor patients to rich patients because they should already be profit maximizing among the rich patients and thus will lose profits if they raise the prices for these patients. However, if the losses from poor patients are greater than the profits from rich patients, the hospital will close and the demand for the nearest hospital will rise, increasing prices there.

Implications for policy

- ▶ Excess demand in **nursing homes** would disappear if the government raised the reimbursement rate or if certificate of need laws did not restrict new homes from opening.
- ▶ If different prices can be charged to different customers, the firm can increase profits and consumers can benefit from greater consumer surplus (except in the case of perfect **price discrimination**). Offering a lower price to one group does not adversely affect the consumers paying the higher price – they would pay the high price even if the other consumers didn't exist.

Implications for policy

- ▶ **Community rated malpractice insurance** reduces the deterrent effect of malpractice.
- ▶ When **insurance distorts the market prices** of goods and services (drugs and medical care), the overall cost of achieving a given level of health rises.
- ▶ Pharmaceutical companies tend to have both **economies of scale and scope** because few drugs are profitable so they need a lot of drugs in production and different kinds of research will have spillovers to other projects.

Implications for policy

- ▶ With **community rated insurance**, the healthy subsidize the sick, and the healthy are less likely to have insurance.
- ▶ Workers pay for employer-provided health insurance through lower wages. However, workers near the minimum wage are more likely to be laid off with an employer insurance mandate. And, if health care costs rise faster than inflation, **employer mandates** can hurt our competitiveness.
- ▶ Taxing the rich and giving to the poor reduces both of their incentives to work; thus, **redistributing** the pie, shrinks the pie.

Implications for policy

- ▶ Because the uninsured who are Medicaid-eligible are enrolled when they present at the hospital, it may be cheaper to increase **take-up** to prevent a bad health event requiring emergency care.
- ▶ The government should implement tax rates higher than the external costs for addictive substances if people are time inconsistent or myopic, according to **rational addiction theory**.
- ▶ **Advertising bans** may not have an effect on consumption if advertising mostly causes brand switching.
- ▶ **MLDAs** may increase marijuana use.
- ▶ **Restaurant smoking bans** may harm children.

More importantly, you have new tools

For thinking about any other policy you are interested in:

- ▶ supply and demand analysis
- ▶ marginal analysis ($MC=MR$)
- ▶ opportunity costs
- ▶ present discounted value computation
- ▶ elasticity
- ▶ game theory
- ▶ profit maximization