CHOICES | Childhood Obesity Intervention Cost-Effectiveness Study

# Common Terms Related to Examining the Cost and Impact of Initiatives: Cost-Effectiveness Analysis, Cost-Benefit Analysis and Return on Investment

*Cost-Effectiveness Analysis (CEA) Compared to Cost-Benefit Analysis (CBA)*[1]

Both Cost-Effectiveness Analysis (CEA) and Cost Benefit Analysis (CBA) are types of decision analysis techniques. They both measure "value for money" and are used to help decision makers make better* choices (*better = the choice that is most aligned with the decision maker's preference, selecting the option that maximizes utility).

**Cost-effectiveness analysis** relates the costs of a program to its key outcomes or benefits.

**Cost-benefit analysis** requires assigning a dollar value to health outcomes, including life, and this is difficult to do. For this reason, the CHOICES project uses cost-effectiveness analysis as the decision analysis technique.

| Method | Number of types of effects included | Effect type common to interventions compared | Measurement of Consequences | Decision Rule | Example |
|---|---|---|---|---|---|
| Cost-Effectiveness Analysis | Single | Yes | Natural units (e.g. cases) or summary health measure (e.g. quality-adjusted life years) | e.g. Cost per Case Prevented<br>Choose policy if: Cost per Case Prevented is lower than decision-makers willingness -to-pay for a prevented case. | A cost-effectiveness analysis of a company wellness program would evaluate the program in terms of its costs versus the reduction in sick days taken by employees. |
| Cost-Benefit Analysis | Multiple | Not necessary | All consequences monetized using 'willingness-to-pay/accept' | Choose policy if:<br>(Benefit – Cost ) > 0 | A cost-benefit analysis of a company wellness program could measure benefits as the money the company saved in reduced sick days |

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Business analysts and managers generally apply cost-benefit analyses to projects that are more technical or industrial, because it is relatively easy to place monetary values on benefits of such projects, as they may be intended to impact the revenue or profitability of the organization. In the public sector, it is often difficult to assign monetary value to some kinds of societal benefits such as improvement in population health or life expectancy gains, or improvements in environmental quality.

The CHOICES project uses cost-effectiveness analysis as the decision analysis technique given the emphasis on human outcomes (such as reduction in BMI and cases of obesity prevented). There are not general thresholds for obesity outcomes (like cases of obesity prevented) for willingness to pay threshold, so a CBA cannot be conducted without those.

## Return on Investment (ROI)[1, 2]

Often people casually talk about the "return on investment" (ROI) in public health interventions. This can be confusing since, in business economics, analysis of return of investment is usually concerned solely with *financial* returns to the investor. For example, a manufacturing company might do an ROI analysis to inform a decision about investing in a new piece of equipment for a factory. Similarly, policymakers must consider the return that will come from spending money on a public health intervention. While the principal concern of the manufacturing company deciding about equipment is *financial* return on investment, for those investing in public health interventions such as childhood obesity prevention, the primary goal is improved health and quality of life – not just financial returns. Therefore, usually for public health interventions, we are more interested in CEA, not ROI, as CEA analyzes both the financial returns (offset by intervention costs) *and* health benefits simultaneously.

The CHOICES project ROI measure focused narrowly on economic returns in the health care sector is reported as the Health Care Costs Saved per $1 Invested in intervention implementation. This measure is useful for public sector payers who may be interested to know if the investment in obesity prevention will lead to lower future expenditures on health care. However, it is important to remember that this measure of "return" does not include the intrinsic value of improvements in health associated with obesity prevention.

*References:*

[1] Drummond, M. F., Sculpher MJ, Torrance GW, O'Brien, B., Stoddart, G. L.(Eds.) (2005). Methods for the economic evaluation of health care programmes. (3rd Edition). New York:Oxford University Press.

[2] Kenney E, Cradock A, Resch S, Giles C, Gortmaker S. *The Cost-Effectiveness of Interventions for Reducing Obesity among Young Children through Healthy Eating, Physical Activity, and Screen Time*. Durham, NC: Healthy Eating Research; In press. Available at: http://healthyeatingresearch.org.

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