Cost Analysis Basics and How to do a Cost-Effectiveness Analysis

Types of Cost Analysis

Cost-Effectiveness Analysis

- Compares the cost of an intervention to a non-monetary benefit such as health outcomes.
  - Therefore, this is the more common type of cost analysis in public health.
- The intervention is judged to be good if the outcomes are worth the cost.
- Cost-utility analysis, which uses quality-adjusted life years (QALYs) as an effective outcome, is an example of this type of analysis.

Cost-Benefit Analysis

- Compares the cost of an intervention to a monetary benefit.
- To do this, you need hospitalization or some other medical expenditure data.
- The intervention is judged to be good if the savings are greater than the cost.
- Return on Investment (ROI) is an example of this type of analysis.

Key Points in Doing Any Type of Cost Analysis

1. Know what the outcome or savings would be without the intervention.
   In order to say how much better the intervention outcomes are, you have to know the status quo. One option is to use a control group. Another is to record patient measures prior to the intervention to compare with measures after. Another option is to use peer-reviewed publications which have already done this comparison work.

2. Define the time horizon for the results of the analysis.
   Are your conclusions valid for a six month period after intervention? 1 year? 5 years?

3. Define which costs are included in your analysis.
   It's always a good idea to document what you did. Not only can you then replicate your work again – others can too. Inclusion of direct costs such as staff time, materials and facilities are obvious to most people. However, other costs incurred from administration, or from staff training, or by participants may also be appropriate to include. It may also be appropriate to assign donated time or facilities an actual cost figure if these factors will not always be donated when the intervention is done. Know your audience and what cost factors would be important to them.

   Here is an example of a cost tracking worksheet:

Resource	Units Used	Unit Cost	Total Cost
Staff (teaching)	# x and type	$ y	$ x * y
Staff (recruitment)	20 hours	$25/hour	$500
Materials	.	.	.
Facilities	.	.	.
Admin	.	.	.
Grand Total			**$ Sum(Total Cost)**

Cost Analysis Calculations

Cost analysis has two sets of equations to evaluate the incremental change of the intervention:

Cost	and	**Effect or Benefit**
$I_1 - I_0$	**:**	**$I_1 - I_0$**

Where I_0 is the measure of the status quo before the intervention,
And I_1 is the measure of the outcomes after the intervention.

Cost-Effectiveness Analysis Example

Since it is most likely that you will only have data for a cost-effectiveness analysis in the field of public health, this is the example given. Please see additional reading for others.

A lifestyle change program is measuring physical activity levels with the goal of having participants reach 150 minutes of activity a week.

$Cost_0$: $0 (Status quo – no program previously)
$Cost_1$: $5,000 (Program cost of running intervention for 6 months)

$Cost_1$ is the Grand Total Cost from your cost tracking worksheet.

Net Cost = $Cost_1 - Cost_0$
= $5,000 – $0
= $5,000

$Effect_0$: 20 people reported 150 minutes of activity per week at intake
$Effect_1$: 70 people reported 150 minutes of activity per week at 6-month follow-up

Net Effect = $Effect_1 - Effect_0$
= 70 – 20
= 50

Cost-Effectiveness = $5,000 spent to achieve change toward the program goal of 150 minutes of activity a week in 50 people
or $5,000 / 50
= $100 spent per effective person

Is $100 an acceptable cost for each person who successfully reaches activity goals as a result of the program intervention? This is a judgment you, your administration, or funder must make.

Additional Reading for Other Types of Cost Analysis

Yates, BT. 1999. Measuring and Improving Cost, Cost-Effectiveness, and Cost-Benefit for Substance Abuse Treatment Programs: A Manual. U.S. Dept of Health and Human Services, National Institutes of Health, National Institute on Drug Abuse. Bethesda, Maryland. NIH Publication Number 99–4518.
Available for download at: http://www.nida.nih.gov/impcost/impcostindex.html