Cost-benefit analysis CBA

CBA monetizes outcomes [costs already are measured in currency value], i.e. In CBA, the ***outcomes*** of the **all** alternatives are measured using monetary values, that is, the monetary value attached to the ***health states*** produced by all interventions. The value may be attached by patients, health professionals or by the general population, but the last is preferred [(1)].

Advantages and Disadvantages of CBA

One **advantage** is that many ***different*** outcomes can be compared as long as the outcomes are valued in monetary units. The **disadvantage** is that placing economic values on medical outcomes is not an easy task and there is no universal agreement on one standard method for accomplishing this task [(2)].

To illustrate the advantage of **CBA compared with CEA**, Table 7.1 shows examples of various programs and interventions and their corresponding cost-effectiveness and cost-benefit ratios. (CBA ratios are expressed as benefit-to-cost ratios, where the higher the number, the more cost-beneficial.) [(2)].

TABLE 7.1. COMPARISON OF COST-EFFECTIVENESS RATIOS AND BENEFIT-TO-COST RATIOS*

Program or Intervention	*Cost-Effectiveness Ratio*	*Benefit-to-Cost Ratio*
AIDS prevention and awareness program	$230,000/case prevented	8.4:1
Vaccination program for children	$104,000/case prevented	0.3:1
Smoking cessation intervention	$3700/quit	6.7:1
Diabetes medication adherence program	$67/normoglycemic patient	15.1:1
Breast cancer screening program	$50,000/life year saved	2.4:1

Assume you are a **decision maker** and you must choose one program from Table 7.1 to implement in your organization.

Assume that you only had cost-effectiveness ratios available to help make the choice. How would you choose?

Any one of us can quickly see that it would be difficult to compare the programs using only cost-effectiveness ratios because of the **varying** outcomes (e.g., case prevented, life years saved) [(2)].

On the other hand, the benefit-to-cost ratios can be ranked, and the different programs with similar, as well as dissimilar, outcomes can be compared.

If only the **cost-effectiveness** ratios were available, it would be more **difficult** to compare the value of the **various** interventions [(2)].

Conducting a Cost-Benefit Analysis

The **first step** in a CBA is to determine the ***type*** of program or intervention to be considered. The **second** step is to identify **alternatives**. In many cases, the alternative is to "do or do nothing." In other cases, the alternative could be to implement a similar program that is smaller or larger in scale or to implement a different program. For example, a clinical pharmacist would like to start an asthma clinic. The possible comparisons regarding costs and benefits could be between these [costs & benefits] of **having** an asthma clinic with those of **not having** an asthma clinic. Another comparison could be implementing an asthma clinic for **all patients** who had an asthma-related emergency department visit or **part** of them. A third comparison could be between implementing an **asthma clinic** with implementing a **diabetes clinic**.

To illustrate the components of a CBA, we will use the example of an asthma clinic. The clinic will focus on people with asthma who have had an asthma-related emergency department visit. In this example, the alternative will be no asthma clinic. After the program or intervention and alternatives are identified, the **third step** is to identify the costs and benefits [(2)].

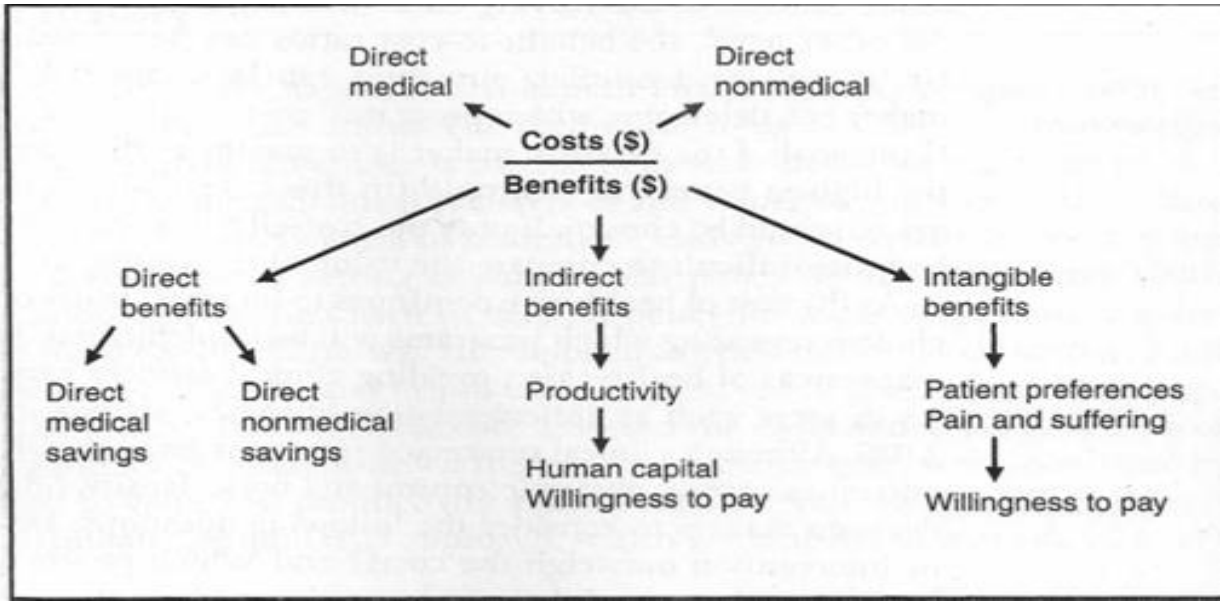

Figure 7.1. Components of cost-benefit analysis (CBA). This schematic represents the types of costs measured when conducting a CBA. Input costs (the numerator) usually consist of direct medical and direct nonmedical costs. The benefits of alternatives can include measures of direct medical and nonmedical costs avoided, indirect costs avoided (measured by human capital [HC] or willingness-to-pay [WTP] methods) and intangible costs avoided (measured by patient preferences or WTP methods).

This figure illustrates the basic components of CBA. As shown, there are **two categories** of **costs**; direct medical and direct nonmedical, and ***three categories*** of ***benefits***, direct benefits (both medical and nonmedical), indirect benefits (productivity), and intangible benefits. CBA can incorporate as few as one category of benefits or as many as all three of the benefit categories [(2)].

Before starting any pharmacoeconomic analysis, it is important to determine the **perspective** of the study. Because of its focus on **social** welfare and policy and the incorporation of **indirect** (productivity) or **intangible benefits**, economists recommend that CBAs should be conducted from the **societal perspective** [(2)].

Difference between Costs & Benefits

In CBA, both costs and benefits are measured in monetary values. For example, in the asthma program, a cost to the program could be an increase in medical costs related to visits to the pharmacy. A "cost saving" or benefit as a result of the program could be a ***reduction in medical costs*** for asthma-related emergency department visits [(2)].