

# Principles of Pharmacoeconomics



Direct  
medical

Direct  
nonmedical

Costs (\$)

Benefits (\$)

Direct  
benefits

Indirect  
benefits

Intangible  
benefits

Direct  
medical  
savings

Direct  
nonmedical  
savings

Productivity

Human capital  
Willingness to pay

Patient preferences  
Pain and suffering

Willingness to pay

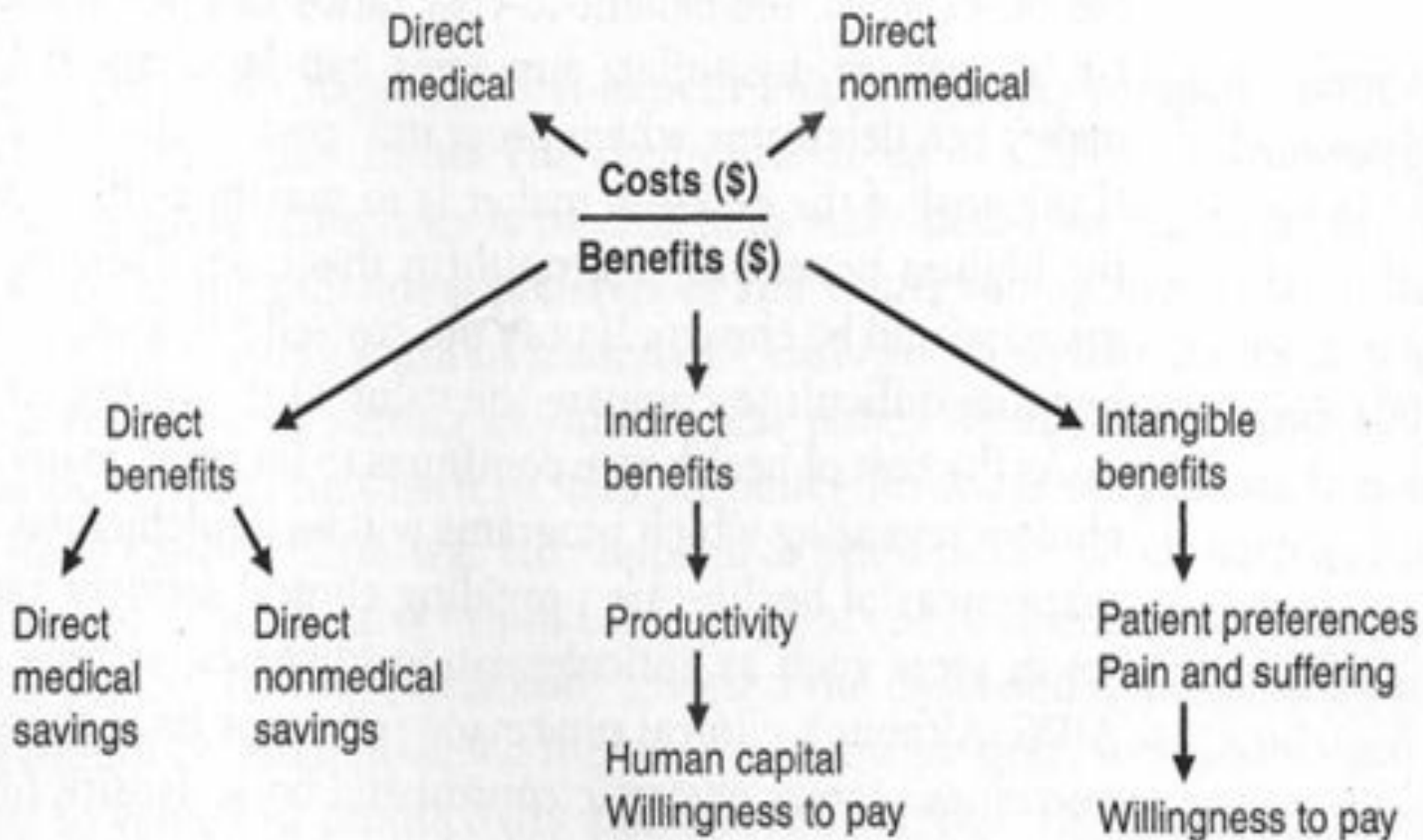


Figure shows the basic components of CBA. As •  
shown, there are two categories of costs, direct  
medical and direct nonmedical, **and three**  
**categories of benefits, direct benefits (both**  
**medical and nonmedical), indirect benefits**  
**(productivity), and intangible benefits.** CBA  
can incorporate as few as one category of benefits  
.or as many as all three of the benefit categories

## Measuring Indirect and Intangible Benefits •

Various methods have been developed to estimate  
.the monetary value of health benefits

The two most common methods seen in the  
pharmacoeconomic literature are the **human  
capital (HC)** approach and the  
**.willingness-to-pay (WTP) approach**

# Human Capital Method

As indicated previously, indirect **benefits are increases in productivity or earnings because of a program or intervention.** **The HC approach is one way to measure indirect benefits. The HC approach assumes that the value of health benefits equals the economic ..productivity that they permit**

- There are two basic components to calculating HC: **wage rate** and **missed time (days or years) because of illness.**
- In HC it is necessary to have some estimate of income. Income estimates can be obtained from several sources (self-report; or any other data source that provides income estimates based). **Missed time (days or years) because of illness can be obtained by self-report**

# **Advantages and Disadvantages of the Human •** **Capital Method**

Measuring indirect benefits using the HC •  
approach has several advantages. It is fairly  
straightforward and easy to measure. Income  
estimates can be obtained or estimated from  
publicly available sources, and days lost from  
illness can be readily obtained from the patient or  
.another secondary source

- The HC approach also has several disadvantages. The primary concern with using the HC approach is that it may be biased against specific groups of people, **namely unemployed individuals**. It assumes that if a person is not working, he or she **has little or no economic benefit**. **Children and unemployed elderly individuals are two groups with which bias can occur.**



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The earnings for some individuals may not equal •  
the value of their output. For example, there is a  
large difference between the daily wage rate of a  
**professional football player compared with**  
**.that of an elementary school teacher**

- The HC method also does not incorporate values for pain and suffering if these values do not impact productivity. **There may be certain disease states or conditions (e.g., menopause, hair loss) that may not impact productivity but do have an impact on a person's health-related quality of life.** For example, many women experience problems with menopause, including moodiness, hot flashes, and irregular cycles.

## Willingness-to-Pay Method

The WTP method can value both the indirect and **intangible** aspects of a disease or condition. The WTP method determines how much people are willing to pay to reduce the chance of an adverse health outcome

To elicit WTP values, respondents are presented with a hypothetical market describing the benefits of a particular health care intervention (e.g., program, pharmaceutical, medical device). Respondents are then asked to value the health . care intervention in a dollar amount

**Measuring WTP should include two general elements, a hypothetical scenario and a .bidding vehicle**

## Bidding Vehicles •

After the program or intervention has been adequately described, respondents are then asked to "bid," or **place a value on the program or intervention**. Bids can be obtained through a variety of formats, **such as open-ended questions**, closed-ended questions, a bidding game, or a payment card. Below is a brief description of each of the methods

**Open-Ended Questions** Open-ended questions simply ask respondents how much— they would be willing to pay for :the program or intervention. Here is an example

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**What is the maximum amount that you would be willing to pay for a 1-hour consultation with a ?pharmacist**

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The respondent would then write in their maximum .WTP amount

This method is used the least because it results in .WTP values that vary widely

- **Closed-Ended Questions** Closed-ended questions are also called "take-it-or-leave-it" questions. Respondents are asked whether or not they will pay a specified dollar amount for the program or intervention. Here is an example:
  - **Would you be willing to pay \$60 for a 1-hour consultation with a pharmacist?** .Yes      No
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- This method more closely resembles the marketplace. When consumers shop for products, they must decide based on the price of the product whether to "take-it-or-leave-it." One drawback to this method is that only one question is asked, so only one WTP value can be elicited from a respondent. Thus, a very large sample would be required to determine the overall WTP value.
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- **Bidding Game** The bidding game resembles an auction in that several bids are offered to reach a person's maximum WTP. Before soliciting a second response, the bids are adjusted based on the first response. This iteration could go on a number of times, but it is suggested that three times is optimal. Here is an example:
- **Would you be willing to pay \$60 for a 1-hour consultation with a pharmacist?**
- **Yes** If yes, ask: "Would you be willing to pay \$80?"
- **No** If no, ask: "Would you be willing to pay \$40?"
- This method is useful to try to arrive at a person's maximum WTP value. It is time consuming and is best conducted via a face-to-face interview or over the Internet. In addition, the WTP values can be biased depending on how high (or low) the first bid is. This is called "starting point bias."
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**Payment Card** The payment card method provides the respondent with a list of possible WTP amounts (i.e., payment card) to choose from. Here is an example:

**What is the maximum amount that you would be willing to pay for a 1-hour consultation with a pharmacist? Please circle your choice.**

\$150	\$90	\$30
\$130	\$70	\$10
\$110	\$50	\$0

This method is very easy to use and it provides respondents with a range of values to choose from. Providing respondents with a range of values can bias their WTP values. The range provided can "suggest" the value of the intervention and can influence what respondents say. Also, "range bias" can influence the WTP amount. For example, if the range of values was from \$0 to \$75 versus \$0 to \$150, the respondents' WTP amount can vary depending on which range or starting point was provided .

## Advantages and Disadvantages of the Willingness-to-Pay Method

- The main advantage of the WTP approach is that it is a method to place a dollar value on intangible benefits.
- However, there are several disadvantages to the WTP methodology. It is difficult for people to place a dollar value on a health benefit or an increase in health-related quality of life or satisfaction.
- Because a "hypothetical" or artificial scenario is presented, it is possible that respondents might give a "hypothetical response" or that the respondent! may not understand the value of the market (e.g., pharmaceutical care program" being presented) .
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**Thank You**

