

## The Importance of Pharmacoeconomics

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Pharmaceuticals account for at least ten percent of the total healthcare expense in every country, and in some countries it can amount to 30 percent or more. Clearly this level of expense is sufficient for professional efforts to contain costs for pharmaceuticals to the lowest acceptable level. Simply stated, that is the invitation for pharmacoeconomic work. Unfortunately, the older method of selecting a drug product based upon the lowest price per bottle or carton no longer is effective, and is actually quite obsolete. That method is referred to as a cost-minimization technique. Today, we know that the costs for physician follow-up for product failures and the expenses of repairing damage done to patients from adverse events must be added in, as well as necessary monitoring or other required laboratory tests. Therefore, one can see how the most expensive drug product from among a group of other drugs in that identical therapeutic category could turn out to be the least costly drug to use on a global perspective. This is where pharmaco-economics makes its contribution.

Today, large healthcare organizations and insurers use these techniques to determine which drug products should be paid for and added to their prescribing formularies circulated to physicians. Let us look at one simple example to see how this works in practice. Let us say that we are considering one antihypertensive drug from among the 8 or so Angiotensin Receptor Blocker (ARB) agents. Drug A costs \$2.00 per day; Drug B is \$2.50 and Drug C is \$3.50 per day. Next we need to explore the clinical literature reports from the Phase III clinical trials. There we will learn that drug A is effective for 65% of treated patients; drug B for 70% and drug C for 90% of treated patients.

Treating 100 patients for a month (30 days) would cost: ( $\$/\text{day} \times 30 \times 100$ ):

Drug A: \$ 6,000

Drug B: \$ 7,500

Drug C: \$ 10,500

Next, we look again at the percentage effectiveness numbers above. For:

Drug A, it is 65% effective, meaning that 35 patients out of every hundred will have to return to their physician and receive a new prescription. If a physician visit is \$100, then drug A requires another \$3,500 added to its cost; Drug B (70% effective) has 30 patients needing

a second physician visit for a \$3000 expense and Drug C results in 10 persons requiring a physician visit for an additional expense of \$1,000.

So far, the costs for the three drugs are:

Drug A \$ 6,000 + \$ 3,500 = \$ 9,500

Drug B \$ 7,500 + \$ 3,000 = \$ 10,500

Drug C \$ 10,500 + \$ 1,000 = \$ 11,500

The next step is to add in the cost of repairing the effects of adverse events times their percentage of occurrence. This information is required in many countries in the labeling and in the package inserts and in advertisements. Let us for the sake of discussion say that ADE treatment per 100 patients costs \$6,000 for drug A; \$7,000 for drug B and \$5,000 for Drug C.

Now the full cost of using each of the three alternative drug products amounts to:

Drug A \$ 9,500 + \$ 6,000 = \$15,500

Drug B \$ 10,500 + \$ 7,500 = \$18,000

Drug C \$ 11,500 + \$ 5,000 = \$16,500

In this hypothetical example, drug C would be the most efficient one offering the best value and it should be the pharmaceutical product selected for formulary inclusion and for insurance coverage. Physicians associated with that organization should be educated about this pharmaco-economic evaluation and advised to use Drug C when they face patients with the medical condition treated by these three drugs.

This process needs to be repeated when a new drug product is introduced into this market place and the calculations re-performed to ascertain what the optimal choice is in the new environment. Similarly, if there are significant price adjustments, then the calculations should be repeated to see whether the previous decision remains valid.

Pharmaco-economics, as you may see, is an essential tool in the pharmaceuticals procurement realm. It monetizes clinical outcomes and provides the most objective and accurate guidance for drug purchases.

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