Money Matters: How Cost-Effectiveness Studies Are Done

No one likes to admit that money matters in health care, but it does. One tool for comparing the cost of treatments or interventions, such as chemoprevention, is the cost-effectiveness study.

A cost-effectiveness study compares the incremental cost of treatment to the incremental benefit. To determine cost per life-year gained, a researcher will take the cost of the treatment—usually determined in part from the average wholesale price for a drug or data from Medicare or a large health maintenance organization when determining the costs of surgery and other procedures—and compare that with the number of years of life saved by the treatment, while accounting for years lost to side effects from the treatment.

“Doctors really like to know in black and white what the benefit is—life-year saved. But quality of life is important, too,” said Victor R. Grann, M.D., clinical professor of medicine at Columbia University in New York.

Quality-adjusted life-year calculations take into account the cost a person associates with a variety of factors, such as taking a pill every day for the rest of a person’s life and the side effects of an intervention. “Doctors hate this concept [quality-adjusted life-year] because they think they’re curing everyone,” said Grann.

The threshold for cost-effectiveness is often set at either $50,000 or $100,000 per life-year or quality-adjusted life-year. The lower number comes from an analysis of the cost-effectiveness of renal dialysis done for Medicare in the 1970s, Grann said, but researchers will arbitrarily raise the cutoff for their studies to the higher amount to account for the changing value of the dollar.

Grann and other researchers will often use data from clinical trials in their computer models to analyze cost-effectiveness. For each run of the model, they will sample data from people in both arms of the trial and average the costs incurred by each one. By running the model multiple times, the results level out.

Cost-effectiveness studies are often used to compare one treatment with another for health policy or insurance situations, but they can also help researchers determine where they can reduce costs associated with the intervention, said Ian M. Thompson, M.D., of the University of Texas Health Science Center at San Antonio. They can see if reducing a drug’s cost, toxicity, or dose can improve its cost-effectiveness.

For example, an analysis of the cost-effectiveness of finasteride by Steven B. Zeliadt, Ph.D., a postdoctoral fellow at the Fred Hutchinson Cancer Research Center in Seattle, showed that the drug could be cost-effective only if the apparent increase in high-grade tumors was proven to be false and if the price of the drug was dramatically reduced.

“It’s hard to put into financial terms the price of having a cancer and the price of preventing it,” said Scott M. Lippman, M.D., of M. D. Anderson Cancer Center in Houston, “but it’s a valuable piece of information.”

—Sarah L. Zielinski