

fewer days of work than patients taking placebo, but no controlled study has compared work loss among patients receiving different effective treatments.

Review of Benefit- and-Cost Analyses of Cimetidine

Several analyses of the resource cost implications of cimetidine have been undertaken in the past few years. One major study, by Robinson Associates, Inc., estimated that if cimetidine had been used in 80 percent of duodenal ulcer patients, 1977 cost for duodenal ulcer disease in the United States would have been reduced by \$645 million. This conclusion rests on subjective estimates provided by selected physician experts of the clinical and health system effects of cimetidine, and on independent estimates of the costs of duodenal ulcer disease based in part on the costs of peptic ulcer disease in 1977 projected by SRI.

Our critical review of the Robinson Associates study focuses on the following five areas: 1) the accuracy of the clinical and health system effects projected by their physician experts, 2) the relation between a percentage reduction in health services devoted to ulcer disease and savings in health resources, 3) the accuracy of the estimated total costs of all duodenal ulcer disease used as a baseline for percentage savings, 4) the applicability of projected percentage effects to the total population of patients with duodenal ulcer disease, and 5) the validity of the

methods used to compute average percentage effects due to cimetidine. We question some of the assumptions and methods used in each of these areas. Aside from the fundamental issue of possible inaccuracy in the physician estimates, we believe the Robinson Associates study overstates expected savings by twofold to threefold. Potential bias introduced by the selection of physician informants would increase the magnitude of the overestimate.

Despite our criticisms of the study by Robinson Associates, available data and analyses support the belief that cimetidine currently saves more health resources than it costs. Whether further studies will affirm this conclusion or new developments will alter cimetidine's cost effectiveness are empirical questions for the future.

Suggestions for Further Research

If the object of analysis is to help inform clinicians and health policy decisionmakers about the efficient use of resources in the care of patients with ulcer disease, then the most helpful approach would be to do a CEA of alternative interventions oriented to particular groups of patients, comparing incremental clinical benefits to marginal resource costs. Rather than enumerate the resource and health implications for a cross-section of the population in a single year, the analysis might equally or more usefully focus on a cohort of patients and project effects over their lifetimes.

INTRODUCTION

This case study has both a specific and a general objective. The specific objective is to assess available evidence about the benefits and costs of cimetidine, a recently introduced pharmaceutical agent, in the treatment of peptic ulcer disease. The general objective is to present an approach to the evaluation of medical technology that emphasize; salient features of both the patient population and the medical intervention of interest. The specific purpose serves the general one—we present our analysis of cimetidine and ulcer disease as an application of the general model for benefit-and-cost evaluation. '

Peptic ulcer is a logical choice for this kind of evaluation for several reasons. As a diagnostic category, it comprises several anatomically and epidemiologically distinct entities, but these are sufficiently related to make peptic ulcer a valid diagnosis. This common medical problem has a

¹We use the term "benefit-and-cost analysis" to encompass both cost-effectiveness and cost-benefit (or benefit-cost) analyses.