

Case Study #2: The Feasibility of Economic Evaluation of Diagnostic Procedures: The Case of CT Scanning

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INTRODUCTION

In the past, the evaluation of medical **procedures—when it has occurred at all—has focused** on the assessment of the procedures' effectiveness in altering the status of patients' health or improving the accuracy of diagnosis. Economic criteria, such **as** the immediate or induced costs of a procedure, have seldom been included in the evaluation.

Recently, however, as the Nation's ability to pay for new advances in medical procedures has been increasingly taxed, interest in economic evaluation has been rising, and the application of economic criteria has gained acceptance. One manifestation of the increasing legitimacy of economic evaluation of medical technologies is the passage of the Health Services Research, Health Statistics, and Health Care Technology Act of 1978 (Public Law 95-623), establishing a National Center for Health Care Technology which is mandated to consider, among other things, the cost effectiveness of medical technologies.

In spite of this new interest, the actual application of economic evaluation to medical procedures remains limited. Except for preventive services such as immunization and asymptomatic screening (11,31,32,33,34,40), little effort has been devoted to performing this type of evaluation. Although some recent literature represents a start in this direction (42), the territory of economic evaluation of medical procedures remains largely uncharted.

Nowhere do questions of the feasibility and usefulness of economic evaluation arise more than in the area of evaluating diagnostic procedures. Diagnostic testing has been widely characterized as subject to uncontrolled and explosive growth (16), and the existence of tradeoffs between the information obtained and the cost of such testing is often noted (22). But just how such tradeoffs should be measured is an issue that has not been pursued at length.

Computed tomographic (CT) scanning was introduced in 1973. Initially limited to the head, CT scanning can now be used to detect diseases in other parts of the body. The use of this diagnostic technology has initiated a controversy of unprecedented proportions. This controversy has been cast in terms of the tradeoff between the benefits and costs of CT scanning. Consequently, a great deal of literature extending beyond the boundaries of traditional clinical evaluation has emerged. Numerous articles and reports have been published that describe the historical pattern of diffusion of CT scanners in hospitals and private practices throughout the United States (5,10,35), the operating costs of CT scanning units (13,14), patterns of utilization of CT scanners in particular institutions (2,25,29), and most important here, the cost effectiveness of CT scanning (15,17,23,24,41,46). Many of these studies have been reported in clinical journals, demonstrating the intense interest of the medical community not only in the