

# The Back Pain Outcome Assessment Team

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This assessment team chose to focus on back pain because of the high prevalence of the condition in the population and the high cost of related medical care and disability compensation. Furthermore, wide geographic variations in the use of hospitalization and surgery for back pain have been well documented. It is estimated that 60 percent to 80 percent of the adult population will have low back pain at some time, and low back pain is the second leading reason for all physician visits. We chose the broad rubric of "low back pain" as the scope of inquiry because diagnostic criteria for back problems are often ambiguous, multiple conditions may coexist, and definitive diagnosis is often impossible. The broad hypothesis underlying our research is that variations in the use of surgery, hospitalization, and diagnostic technologies are often related to physician practice styles, and can be substantially reduced with little or no adverse effect on patient outcomes.

The specific objectives of this assessment team are to:

1. Characterize geographic variation in the use of lumbar spine surgery and describe the outcomes of surgical care;

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2. Characterize the content and outcome of nonsurgical hospitalizations for back problems;
3. Examine the value and sequencing of diagnostic tests for low back problems; and
4. Disseminate information to modify clinical practice styles.

## BACKGROUND

Low back pain is a pervasive disorder but, unlike cancer or heart disease, it is rarely fatal. Although the differential diagnosis is broad, most cases of back pain cannot be given a definite diagnosis. Given these generally benign characteristics, the economic impact of back pain is surprising. Based on surveys conducted by the National Center for Health Statistics (NCHS), the national cost of direct medical care for low back pain in 1977 was estimated to be \$12.9 billion, with indirect costs of \$3 billion (Snook 1988). Back symptoms are the leading cause for all visits to orthopedic surgeons and neurosurgeons, and the second leading symptomatic cause of all physician visits (Cypress 1983). Despite a near consensus by experts that lumbar spine surgery is performed too frequently, data from the National Center for Health Statistics (NCHS) demonstrate that the number of hospital discharges for lumbar spine surgery rose substantially between 1979 and 1985.

A wide variety of nonsurgical treatments are also advocated for low back pain, and the numerous alternatives attest to the absence of a single uniquely successful treatment. The scientific evidence for the efficacy of most treatments is limited. In fact, the Quebec Task Force on Spinal Disorders concluded that there is "little clinical proof or epidemiologic validation to support the current methods of treating disorders of the spine" (Spitzer, LeBlanc, Depuis, et al. 1987, 38).

Wide variations among hospital markets in the use of hospital care and surgery for back pain have been well documented. Wennberg, McPherson, and Caper (1984) found eightfold variations among hospital markets in the rate of both medical and surgical admissions for back pain. It has been estimated that the rate of back surgery in North America is approximately six times that in Europe (Waddell 1982). This wide variability suggests a poor professional consensus about what constitutes appropriate care.

## ACTIVITIES OF THE ASSESSMENT TEAM

### GEOGRAPHIC VARIATION AND OUTCOMES OF LUMBAR SPINE SURGERY

Characterizing these aspects of spine surgery will first require review and synthesis of the existing literature on outcomes of major surgical procedures (laminectomy, discectomy, and fusion); analysis of large claims data bases; and a cohort study of surgical candidates, to better define symptomatic, functional, and cost outcomes of lumbar spine surgery. The literature review process will focus initially on outcomes of surgery for spinal stenosis, since this is the most common diagnosis leading to surgery among elderly patients (most of whom are Medicare beneficiaries).

Geographic variations in the use of surgical procedures are being examined within Washington state and also among major regions of the United States. These analyses are using hospital discharge data from the Commission Hospital Abstract Reporting System (CHARS) in Washington state, and the annual Hospital Discharge Surveys of the NCHS.

Surgical outcomes will be determined in part from the CHARS data base and from Medicare claims data. These large data bases will provide estimates of the frequency of mortality, in-hospital complications, readmission, reoperation, and nursing home placement. Data on symptom resolution and improvement in functional status are unavailable from these computerized data bases, and will be examined in a cohort study conducted by the Maine Medical Assessment Foundation. Most of the orthopedic surgeons and neurosurgeons in the state of Maine who perform spine surgery will contribute patients to this cohort study, which will examine treatments and outcomes for patients seeking care with sciatica or pseudo-claudication (a cardinal symptom of spinal stenosis). Ultimately, a formal decision analysis of the surgical decision will be constructed incorporating probabilities, patient preferences for various health states, and costs determined from the previous steps.

### CONTENT AND OUTCOME OF NONSURGICAL HOSPITALIZATIONS

Nonsurgical hospitalizations for low back pain are even more common than surgical hospitalizations, with even wider geographic variations. Our study of geographic variations in this type of hospitalization will

also rely on the CHARS data base and the annual Hospital Discharge Surveys. These data bases, and the Medicare claims data base, will also be used to describe the content of medical back admissions in terms of length of stay, diagnostic and therapeutic procedures, and charges. Literature syntheses will then be designed to examine the most commonly identified therapeutic procedures, including traction and various therapeutic injections. Outcomes will be characterized by examining subsequent rehospitalizations and surgery in the Medicare claims data and CHARS data base. A patient survey will augment these data by providing both patient perceptions of the role of hospitalization in improving symptoms and functional status, and patient satisfaction with care. Physician surveys and focus groups will help to characterize common physician policies for the use of hospitalization and various procedures. Ultimately, all of these data will be used to assess the feasibility of avoiding or shortening nonsurgical hospitalizations, and for shifting activities to the ambulatory sector.

#### VALUE AND SEQUENCING OF DIAGNOSTIC TESTS

We will synthesize the published literature concerning sensitivity, specificity, side effects, and costs of the expensive technologies used to diagnose herniated discs and spinal stenosis. The most important of these are myelography, computed tomography, and magnetic resonance imaging, although a variety of other tests (e.g., thermography) are sometimes used. Both the study results and rigor of the research methods will be considered in trying to develop the best estimates of test performance characteristics for each of these diagnostic procedures. A decision analysis will then be used to clarify the optimal role and sequencing of these tests, and this analysis will ultimately be merged with the surgical decision tree.

#### DISSEMINATING INFORMATION TO MODIFY PRACTICE STYLES

As data are collected on rates of hospitalization and surgery, there will be an opportunity to provide targeted feedback of this information to physicians and hospitals in high-use areas. In addition, data on patient outcomes should inform the development of recommendations for the appropriate use of hospitalization and surgery, which could be disseminated by professional and payer organizations. Ultimately, we hope to design innovative methods for providing feedback, educating physicians, and disseminating recommendations that would help to make the use of hospitalization and surgery more consistent and rational.

In addition to these efforts, we hope to develop novel patient education materials that could assist patients in making surgical decisions. Since lumbar spine surgery is almost always elective, patients should have a major role in making decisions, but the presentation of complex information is problematic. One potential innovation we hope to develop is a computer-based interactive videodisc that could provide age-, diagnosis-, and procedure-specific information on the outcomes of spine surgery or nonsurgical care. Such a program would make use of pithy videotaped interviews, clear graphic materials, and the probabilities of various outcomes derived from the activities proposed. These would be combined in a program that would allow patients to choose the material in which they had the most interest and to examine the information at their own pace.

By itself, the high variability in use of services for back pain implies that some care may be unnecessary. Studies of inappropriate hospital care and of industry-based interventions suggest a potential for substantial savings in the care of low back pain (Wiesel, Feffer, and Rothman 1984; Payne 1987). Furthermore, many experts now believe that much back-related disability may be iatrogenic, a result of unnecessary surgery or physician-prescribed sedentariness. We believe this may be a clinical problem for which costs can be reduced while the quality of medical care is simultaneously maintained or even improved.

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