The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Treatment for low back pain by primary care practitioners (rural or urban), chiropractors (rural or urban) and orthopaedic surgeons.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with acute low back pain of less than 10 weeks' duration presenting to a range of health care providers.

Setting
Secondary and primary care. The economic study was carried out in North Carolina, USA.

Dates to which data relate
Effectiveness and resource use data were collected from patients enrolled in the study between June 1992 and March 1993. The fiscal year was not explicitly specified.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
Costing was undertaken prospectively on the same patient sample as that used for the effectiveness study.

Study sample
The power calculations appear to be post hoc and had a 95% power to detect a 10% difference in the rate of functional recovery at 2 and 4 weeks (functional recovery defined as a 7 point improvement in the Roland & Morris back pain scale). A total of 208 practitioners and 1,633 patients participated in the study. Consecutive patients presented with low back pain to a random selection of urban (n=48) and rural (n=39) primary care physicians, urban (n=32) and rural (n=32) chiropractors, orthopaedic and neurological surgeons (n=29) and primary care physicians, nurse practitioners and assistants in a health maintenance organisation (HMO) (n=28). The corresponding figures for the number of patients were 278, 366, 310, 296, 181, and 202, respectively. Depending on the provider, the means age of patients ranged from 38 years to 44 years, the proportion of Caucasians from 65% to 92% and the proportion of men from 42% to 55%. The
average participation rate was 74% and 92% for the eligible practitioners and patients, respectively.

**Study design**
This was a prospective cohort study, carried out in North Carolina. Duration of follow-up was 24 weeks or until patients declared themselves "completely better". Loss to follow up was 5%.

**Analysis of effectiveness**
The analysis of effectiveness was based on treatment completers only (data were available for 95% of all patients enrolled into the study at 6 months). Outcome measures were time to functional recovery, mean disability scores on the Roland-Morris scale, self-declared state of "completely better", and patients' satisfaction with care. All outcome measures were gathered via interviews with patients at baseline, and at 2, 4, 8, 12, and 24 weeks or until the patients declared themselves "completely better". Patients had significantly different demographic and prognostic characteristics for the different health care providers. Significant differences included: age, ethnic group, income, first episode of back pain, sciatica, mean functional-loss score, and workers compensation claims. The effects of confounding variables on the health outcomes were investigated.

**Effectiveness results**
Nonparametric Kaplan-Meier analysis and Cox proportional-hazard model showed no significant differences in the length of time to functional recovery among the study groups. The patient groups were not significantly different in terms of self-declared state of "completely better" and mean disability scores on the Roland-Morris scale at 24-week follow-up. The patients receiving care from chiropractors were reported to have the highest level of satisfaction compared to other types of care delivery, (p<0.001).

**Clinical conclusions**
The choice of provider makes no difference to clinical outcomes.

**Measure of benefits used in the economic analysis**
No summary benefit measure was identified in the economic analysis, and only separate health outcomes were reported.

**Direct costs**
Costs were not discounted as this was not appropriate for the short time span of the study. Quantities were thoroughly reported separately from the costs. The cost analysis covered the costs of outpatient services (from a large health insurance carrier), medications (from the average wholesale cost to the pharmacist plus 40%), physical therapy, and other modes of treatment. The cost boundary adopted was that of the health care provider, and was based on charges. Actual data from either patient records or patient surveys were used to provide the physical quantities of resource use and then average charges were applied to the physical quantities. The date to which the price data referred was not explicitly specified.

**Statistical analysis of costs**
Costs were highly skewed and were presented as means and medians with appropriate 95% confidence intervals. Log transformation (data not shown) and nonparametric tests were performed.

**Indirect Costs**
Indirect costs were not reported.

**Currency**
US dollars ($).

**Sensitivity analysis**  
No sensitivity analysis was performed.

**Estimated benefits used in the economic analysis**  
Not applicable.

**Cost results**  
The adjusted mean outpatient cost per episode of back pain (adjusted for base-line prognostic variables) was:

- Urban primary care providers, $508 (95% CI: 418 - 598);
- Rural primary care providers, $474 (95% CI: 394 to 555);
- Urban chiropractors, $783 (95% CI: 698 to 868);
- Rural chiropractors, $611 (95% CI: 524 to 698);
- Orthopaedist, $746 (95% CI: 633 to 858);
- HMO provider, $435 (95% CI: 328 to 542).

The costs were estimated over the 24 week length of the study.

**Synthesis of costs and benefits**  
Not performed.

**Authors’ conclusions**  
The authors concluded that there were no clinical difference in outcomes among the different providers. Patients were more satisfied with chiropractor treatment but primary care practitioners provided the least expensive treatment for acute low back pain.

**CRD COMMENTARY - Selection of comparators**  
No specific health technology was regarded as the comparator.

**Validity of estimate of measure of effectiveness**  
The internal validity of the effectiveness results may not be assured given the observational design of the study.

**Validity of estimate of measure of benefit**  
With respect to lack of a summary benefit measure in the economic analysis, the study may be regarded as a cost-consequences study.

**Validity of estimate of costs**  
Quantities were reported separately from the costs and adequate details of methods of cost estimation were given. In view of the lack of sensitivity analysis, and statistical analysis of the costs, the results may need to be treated with some caution.

**Other issues**  
The issue of generalisability to other settings or countries was not addressed.
Source of funding
Supported by grant (HS06664) from the Agency for Health Care Policy and Research.

Bibliographic details

PubMedID
7666878

DOI
10.1056/NEJM199510053331406

Original Paper URL
http://www.nejm.org/content/1995/0333/0014/0913.asp

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Acute Disease; Adult; Chiropractic /economics; Family Practice /economics; Fees and Charges; Female; Health Care Costs; Health Maintenance Organizations; Health Services Research; Humans; Low Back Pain /economics /therapy; Male; North Carolina; Orthopedics /economics; Outcome Assessment (Health Care) /economics /statistics & numerical data; Patient Satisfaction; Proportional Hazards Models; Prospective Studies

AccessionNumber
21995005049

Date bibliographic record published
30/11/1999

Date abstract record published
30/11/1999