FINAL GRANT REPORT

Minnesota Workers' Compensation
Health Initiative:
Mandatory Treatment Parameters Evaluation

Grant ID #030652
January 1, 1997 - June 30, 1999

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Description of the Project

Study Population

All workers' compensation claimants living and working in Minnesota that filed a First Report of Injury for a work related low back injury between April 14, 1997, and December 31, 1997, were asked to participate in the evaluation project. Using claimant-reported low back pain or leg pain (sciatica) and pain drawings, each participant was classified as having either regional or radicular low back pain. The study population included those who formally consented to a review of their insurance claims and medical records, as well as agreed to a six-month follow-up survey.

Literature Review

Two literature reviews were performed for this study. The first involved selection of the best tool for assessing disability due to back pain. A number of instruments were examined and associated literature reviewed. This lead to selection of the Roland-Morris disability scale, which was used to assess low back specific functional limitations on both the baseline survey and the follow-up survey.

The other literature review involved potential severity adjustments to be used in statistical modeling of the outcomes of interest. In order to accurately assess the influence of adherence to the parameters on associated claimant outcomes, it was necessary to control for severity of the index injury at the time of the initial survey, as well as any other prognostic factors which might lead to different outcomes between patients. This review lead to the adoption of a variety of severity measures: VAS scales of pain intensity, pain drawings (used both qualitatively and quantitatively), information about prior episodes of low back pain, initial functional and vocational limitations due to low back symptoms, and self-perceived notions of severity.

Design

Using workers' compensation "part of body" and "nature of injury" National Council on Compensation Insurance (NCCI) codes, claimants filing a First Report of Injury after April 14, 1997, were selected to participate in an evaluation project studying health care provider adherence to Minnesota's mandatory treatment parameters for low back injury and the outcomes of workers' compensation medical care. Each week the Minnesota Department of Labor and Industry (DOLI) mailed recent claimants, who met initial selection criteria, the Workers' Compensation Health Initiative Claimant Survey and a medical record release form. The completed survey and signed release were returned to Stratis Health for compilation. The initial survey confirmed the case as a low back injury and captured data necessary for classifying the type and severity of the

low back pain complaint using visual analogue scales (VAS), pain drawings, prior history of back problems, the modified Roland-Morris disability scale, and generic health measures. There were 5,074 claimants invited to participate during the period April 14, 1997, through December 3 1, 1997; of these, 1,022 (20. 1 %) returned a survey with a signed consent form.

Six month after their date of injury, each of the 1,022 claimants who returned the initial survey and a signed consent form were sent the Workers' Compensation Health Initiative Follow-up Survey. This survey assessed claimant reported outcomes of interest: the claimants physical and mental functioning using the SF-12, functional limitations specific to their back pain through the Roland-Morris disability scale, and current work status. In addition, the survey gathered information about co-morbidities, general health habits, some treatment information that could not be obtained from medical records, and demographic information. Of those completing the first survey, 669 (65.5%) returned the follow-up survey.

At the same time, billing data and medical records were requested from the appropriate insurance carriers for those who had returned a valid release of information with their initial survey. These data were by far the most difficult to obtain and to work with. A large number of insurance carriers and third-party administrators had to be contacted to obtain the data. Surprisingly, the majority were quite cooperative and, with a few reminders, sent copies or allowed Stratis Health to copy the records. A medical records copying firm was contracted to perform this task. While this was the most difficult data to obtain, after considerable effort, information on 783 of the 1,022 claimants was obtained. The remaining claims had no medical bills on file with the insurer, could not be located for a variety of operational reasons, or were held by insurers who refused to honor the release of information (even after a request from the Commissioner of Labor and Industry).

Finally, administrative data from DOLI were also obtained for all of the 1,022 individuals who had returned an initial survey and completed release of information. Since this project was a collaborative effort between Stratis Health and DOLI, access to this administrative data was completely unhindered. These data provided indemnity benefit and claim status information as well as some basic claimant information on industry, occupation, job tenure, injury type, prior workers' compensation claims, etc.

All data sources were combined to arrive at a final analysis data set. The existence of a DOLI assigned unique identification number for each of the claimants, and assignment or use of that number for data arriving from all sources, made integration of the data at the claimant level relatively easy.

Analysis

All data were compiled, cleaned, and edited at the level of individual claimants. A computer algorithm was developed to search each claimant's billing and questionnaire data to identify instances of possible non-compliance with the Minnesota Workers' Compensation treatment parameter for low back pain. Cases with possible non-compliance were then flagged for review by Dr. William Lohman, Medical Consultant to DOLI. Dr Lohman made final determinations of compliance status after review of the claimant's medical records.

Instances of noncompliance were then aggregated within cases into an overall index of compliance. Six different indices of compliance were developed and used during the analysis. The a priori index was based on three focus group surveys conducted among health care providers (MDs, DCs, and RPTs). The index was based on provider opinions of the relative importance of the various components of the parameters in influencing the outcome of treatment. Focus groups and repeated surveys were used to generate consensus in these opinions,

and then weights reflecting this consensus were developed for each component of the parameters. Each instance of non-compliance was then weighted when aggregating into a final index of compliance for each claim.

Models were built for each of the outcomes examined (change in pain score, change in Roland Morris score, work status, length of disability, satisfaction with treatment, physical and mental components of the SF-12) using demographic information, severity measures, prognostic factors, and claims characteristics. After these models had been refined, the compliance score was added to determine the effect of compliance with the parameter on each outcome.

Collaborations

The primary collaboration for this study was between Stratis Health and DOLI. Dr. William Lohman, Medical Consultant for DOLI, was the primary contact and provided Workers' Compensation and medical expertise to the project. Because DOLI receives the First Report of Injury on all Workers' Compensation injuries, claimants needed for the study were identified, and the initial survey was mailed, by DOLI staff. DOLI also provided the administrative data on benefits and claim status. The Commissioner of DOLI intervened with insurers to elicit their cooperation in forwarding medical records and billing information. Research and Statistics staff at DOLI also carried out a comparison of respondents and non-respondents to the initial survey. The collaboration with DOLI was key in successfully carrying out the project.

Specific Project Objectives

A) To investigate the impact of Minnesota Workers' Compensation Program: Mandatory Treatment Parameters for low back pain on cost, quality, and outcomes.

This objective was the primary focus of the project. During the time period from January 1, 1999, to June 30, 1999, data from remaining needed sources were acquired, SAS code was written to assess compliance with the treatment parameters, and statistical models were developed to assess the impact of compliance with the parameters on outcomes of interest.

B) To identify opportunities for improvement in the workers 'compensation mandatory treatment parameters for low back pain.

The data analyzed to date indicate only moderate compliance with the parameters. However, compliance does prove to be important in achieving system goals. Overall, the parameters behaved as expected: care was more cost-effective when compliant with the parameters without any sacrifice in quality.

C) To develop a model health care quality improvement program for all mandatory workers' compensation treatment parameters in Minnesota.

The project demonstrated that a process combining administrative, medical utilization, and patient-reported data could be successfully implemented to evaluate the overall effects of the treatment guidelines. Stratis Health was able to access various data with questionnaire information, and use computer algorithms to identify and categorize potential care process problems. The project demonstrated the feasibility of the methodology and identified process changes that will be needed to implement an ongoing quality improvement program for the treatment parameters.

Major Findings

- Of 626 claimants with complete information available, care delivered for 443 (70.8%) was completely compliant.

- Assessment of compliance and the effect of compliance on outcomes was assessed through creation of a "compliance index." Six methods of computing a compliance score were used:
  1. Use of focus groups of providers
  2. Use of "strength of evidence" scores on the AHCPR guidelines, which are similar to Minnesota's guidelines
  3. Dichotomous, overall compliance
  4. Dichotomous, within each of three components (active treatments, passive treatments, diagnostic procedures)
  5. Count of non-compliant treatments/procedures
  6. Count of non-compliant treatments/procedures, within each of three components (active treatments, passive treatments, diagnostic procedures)

- The six methods were in general agreement regarding effect of compliance on outcomes.

- Bivariate relationships between compliance and various outcomes showed statistically significant associations of compliance with both scales of the SF-12 (physical and mental) time to return to work, satisfaction with technical quality of the provider, and satisfaction with access to needed care. No association was found between compliance and change in pain from baseline to follow-up, change in Roland-Morris score from baseline to follow-up, work APGAR score, or satisfaction with control over care received.

- After adjusting for differences between claimants in severity of injury, previous back problems, demographics, and occupation, compliance with the treatment parameters was strongly associated with time to return to work (increased compliance lead to decreased time away from work), and marginally associated with the physical component score of the SF- 12.

- Return-to-work models investigating compliance within individual components (active, passive, and diagnostic) found increased compliance within passive and diagnostic treatments lead to decreased time away from work.

- In the return-to-work model, the six methods of computing compliance scores generally agreed in terms of effect on return to work of a one standard deviation change in compliance score. For each standard deviation increase in non-compliance, the associated relative risk from the proportional hazards models was from 0.8 to 0.9. Comparing two claimants whose compliance score differs by one standard deviation, the claimant with higher non-compliance has an estimated l/. 8 5 = 1. 18 times higher "risk" of returning to work than the claimant with lower non-compliance.

- In the physical component score of the SF- 12 model, non-compliance on passive treatments was associated with decreased physical component scores. For each one-standard deviation increase in non-compliance, there was an associated 0.75 increase in the physical component score.

Challenges

One design issue that contributed to the need for a project extension was obtaining and working with billing and medical record data from insurance carriers and third party administrators. Although project staff were generally successful in this endeavor, it took considerably longer and involved more staff time than originally planned. Few insurers currently maintain electronic databases for medical billing information, which necessitated reconstruction of the billing from paper records and data entry at Stratis Health. Information in claim files is not segregated by type; medical records are intermixed with other documents, reduplicated, and seldom found in chronological order.

Another design issue that also contributed to the need for the extension was the lower than expected response rate to the initial survey. At the beginning of the project, the sample size goal was 2,000 individuals on which complete data (initial and follow-up survey, DOLI administrative data, and billing and medical record data) would be available for analysis. This was based on prior experience at DOLI in surveying injured workers. However, these earlier efforts had not sought claimant permission to obtain and review medical records. It is suspected that the request for release of information in this project-in combination with increased polarization (between labor and management) in workers' compensation brought on by changes in the benefit structure-reduced participation.

The response to the initial survey in 1997 was lower than expected (20%), giving approximately 1,000 individuals; and the response to the follow-up survey 6-months later was 70%, giving approximately 700 cases for analysis. The response rate lead to concern about representativeness of the respondents, and an analysis was performed comparing administrative data from respondents and non-respondents. Although there were some statistically significant differences, the analysis determined that there were no true meaningful differences. Large sample sizes contributed to statistically significant differences when true differences were quite small.

The lower than expected response rate also lead to the need to recompute power calculations. After performing these calculations, it was found that project goals could be achieved by creating an "index of compliance" for each injury. This allowed the use of one value for compliance for each claimant, instead of entry of individual components of compliance into statistical models as originally planned.

Accomplishments

In January 1995, Minnesota became the first state to institute mandatory treatment parameters for workers' compensation-covered low back injuries. For this reason, there is considerable interest in and beyond Minnesota in how well providers accept and follow such treatment parameters, and in associated patient outcomes. A series of state Supreme Court decisions [Jacka inter alia] in 1998 have confirmed the legal standing of the treatment parameters as mandatory rules governing the provision of medical care to injured workers in Minnesota. This has dramatically increased stakeholder interest in evaluating the operation of the parameters, their application by insurers and managed care plans, and, most importantly, their effect on the quality and outcomes of care.

The project had two significant accomplishments. First, it showed that adherence to the treatment parameter decreased the duration of disability, while at the same time producing equivalent results to less restricted treatment on the other outcomes assessed. One of the most significant concerns about treatment parameters in workers' compensation cases is the possibility that they would reduce costs at the expense of quality of care. Among the claimants studied in this project, patients whose care adhered to the treatment parameters obtained the same degree of pain relief and improvement in functional limitations, had the same degree of satisfaction

with their care, and reported similar levels of general health as patients whose care exceeded the guidelines. However, they were off work for a shorter period of time. All of these results persisted with correction for any differences in severity of initial injury and any of the other prognostic factors studied.

Second, the project demonstrated that a process combining administrative, medical utilization, and patient-reported data could be successfully implemented to evaluate the overall effects of a complex "episode of care" treatment guideline that integrates recommendations on diagnosis, treatment, and follow-up of cases over time. While there have been studies looking at the effect of single "point of use" guidelines on various diagnostic tests or treatment modalities, Stratis Health and DOLI are unaware of a previous study evaluating a treatment parameter designed to regulate all of the relevant care for a specific condition, from onset to resolution. The method designed for this project can be adapted for on-going quality assessment and improvement of such parameters. Previously, evaluations of entire episodes of care resorted to labor intensive peer-review methods or relied solely on patient-reported outcomes. In this project, we have used various data sources already available, supplemented them with patient-reported data, and used computer algorithms to identify and categorize potential care process problems. Further refinement of the methodology should produce a more thorough, but still efficient, evaluation system than typical utilization review. Moreover, the methodology goes beyond cost considerations and incorporates important health and functional status outcomes.