The effectiveness of standard care, early intervention, and occupational management in worker's compensation claims

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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
The study examined interventions for spinal and upper extremity injury at work. Standard care comprised minimal clinical intervention, reassurance of a good prognosis, encouragement to resume normal activity, and management exercises. It was compared with early intervention (immediate access, intensive therapy) and occupational management (worker rotation schedules, reduced lifting loads, ergonomic redesign of tasks).

Type of intervention
Rehabilitation and primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised employees from two companies within the meat industry.

Setting
The setting was primary care. The economic study took place in companies in the province of Saskatchewan, Canada.

Dates to which data relate
Both the effectiveness and cost data were collected between 1999 and 2000. The prices were from 1999 and 2000.

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

Link between effectiveness and cost data
The study involved both retrospective and prospective costing, which seemed to have been carried out on the same sample of patients.

Study sample
The study sample was selected by comparing claims made in two companies in 1999 and 2000. Company A was selected as it was the largest corporation in the only city without direct access to the EIP as of 1 January 2000. Company B was chosen as a control company. It was in the same industry and was thought to be most similar in terms of size, working hours, work demands and psychosocial factors. Both companies were reported to be unionised and to have similar management structures. Company B differed in that it did have access to EIP. The sample was appropriate for the study question, as it contained individuals who had made claims for injuries sustained at work.
The sample size did not appear to be considered in the initial sample selection. However, adjustments for sample size were made in the Cox proportional-hazard models. Company A had 185 employees whereas company B had 232 employees. Company A's employees increased to 285 for the second year of the study. During the study, company A introduced the occupational management strategy.

**Study design**

The study is best described as a comparative study with historical and concurrent controls. The authors made three comparisons:

- company A with standard care only (1999) versus company B with EIP (1999);
- company A over time with standard care (1999) and then with the occupational management strategy (2000);

The study was multi-centre since two companies were used. Claims data were collected over one year for each comparison. For the comparison of both companies in 2000, there was some loss to follow-up. One case was censored in company A versus 16 cases in company B. No attempts to blind those collecting or analysing the data were reported.

**Analysis of effectiveness**

The analysis used participants for whom there were complete data. The primary outcome of interest was the effect of the occupational intervention on work-related back and upper extremity musculoskeletal injuries, compared with standard care and early intervention. The authors measured the number of time-loss injury claims per 100,000 hours worked and the total number of days lost per 100,000 hours worked. A secondary analysis was carried out to investigate the relationship between time to claim closure and a number of covariates. The covariates included age, gender, duration of employment, wage, prior WCB time-loss claim, and injury location and severity. This analysis provided some information on potential confounding factors.

The reason that company A had not adopted the EIP earlier, and the degree of worker support for either the EIP or the occupational management strategy, were not considered as potential confounding factors although they may have had an impact on the results.

Company A and company B were reported to be of similar size and to work similar hours. The authors stated that the only known difference was the direct accessibility to EIP available to company B.

**Effectiveness results**

For work-related upper extremity musculoskeletal injuries:

- in company A in 2000, there were 0.6 time-loss injury claims per 100,000 hours worked and 12.3 days lost per 100,000 hours worked;
- in company A in 1999, there were 2.3 time-loss injury claims per 100,000 hours worked and 138.5 days lost per 100,000 hours worked;
- in company B in 2000, there were 8.9 time-loss injury claims per 100,000 hours worked and 662.6 days lost per 100,000 hours worked;
- in company B in 1999, there were 7.3 time-loss injury claims per 100,000 hours worked and 731.6 days lost per 100,000 hours worked.

For back injuries:

- in company A in 2000, there were 0.6 time-loss injury claims per 100,000 hours worked and 1.1 days lost per 100,000
hours worked;

in company A in 1999, there were 2.6 time-loss injury claims per 100,000 hours worked and 60.9 days lost per 100,000 hours worked;

in company B in 2000, there were 5.4 time-loss injury claims per 100,000 hours worked and 280.1 days lost per 100,000 hours worked;

in company B in 1999, there were 4.0 time-loss injury claims per 100,000 hours worked and 141.0 days lost per 100,000 hours worked.

The authors calculated hazard rate ratios for factors associated with time to injury claim closure.

The hazard ratios in company B were:

19.88 (95% confidence interval, CI: 7.95 - 39.77) for physical therapist involvement;

2.88 (95% CI: 1.45 - 5.73) for chiropractor involvement;

4.38 (95% CI: 1.55 - 12.41) for a neutral relationship between the employer and WCB representative;

3.74 (95% CI: 1.99 - 7.05) for a negative relationship between the employer and WCB representative;

3.42 (95% CI: 1.27 - 9.20) for a back or upper extremity strain or sprain; and

2.99 (95% CI: 1.20 - 7.49) for a serious injury.

The hazard ratios in company A were:

1.50 (95% CI: 0.829 - 2.429) for a back or upper extremity strain or sprain;

1.67 (95% CI: 1.05 - 27.20) for a serious injury.

**Clinical conclusions**

The authors concluded that access to the early intervention generated "substantial" differences in injury claims experience when compared to the company with access to the occupational intervention. This was true even when injury location and severity were accounted for.

**Modelling**

The authors used Cox proportional-hazard models to determine the association between time to claim closure and numerous covariates (e.g. age, duration of employment and wage).

**Measure of benefits used in the economic analysis**

No summary measure of benefit was estimated. The study was therefore classified as a cost-consequences analysis.

**Direct costs**

The authors did not report discounting of the costs. However, the costs were collected over not more than two years (1999 and 2000), thus discounting was unnecessary. The quantities and the costs were not reported separately. The perspective for the economic analysis appears to have been that of a third-party payer. The study focused on the medical, wage-replacement and total cost of injury claims and was based on data from actual claims. The costs were reported for the year in which they were collected. In other words, the price year for the costs collected in 1999 was 1999, and the price year for the costs collected in 2000 was 2000. No adjustment for inflation was reported.
Statistical analysis of costs
No statistical analysis of the costs was reported.

Indirect Costs
Wage-replacement costs were included in the study.

Currency
Although not explicitly stated, the costs appear to have been measured in Canadian dollars (Can$).

Sensitivity analysis
No sensitivity analysis was reported.

Estimated benefits used in the economic analysis
The study was classified as a cost-consequences analysis. See the 'Effectiveness Results' section.

Cost results
For company A, the total compensation per 100,000 hours worked was $25,878 in 1999 and $6,028 in 2000. The corresponding figures for company B were $133,902 (1999) and $120,459 (2000), respectively.

Synthesis of costs and benefits
Consistent with the cost-consequences classification, the authors did not combine the costs with the benefits.

Authors' conclusions
The authors recommended "primary injury prevention protocols and, if required, secondary prevention protocols emphasizing minimal clinical intervention, reassurance of a good prognosis, encouragement to resume normal activities, simple exercises, and strategies to reintegrate the worker back into the workforce as soon as is safely possible".

CRD COMMENTARY - Selection of comparators
The authors aimed to compare occupational management with early intervention and standard care. Standard care represented the normal practice in the setting of the study. Occupational management was a relatively new alternative. Early intervention was chosen as a further comparator since it had recently been introduced within the province. The comparators were appropriate for the objective of the study, which was to determine whether occupational management would have a substantial effect on injury claim incidence, duration and costs in comparison with the alternative.

Validity of estimate of measure of effectiveness
The analysis used a comparative study with historical and concurrent controls, which was appropriate for the study question. There is a potential for performance bias in studies with non concurrent controls (i.e. is the change due to the intervention under study?). The study sample seems to have been representative of the study population, as it was taken from appropriate companies with workers making claims for back and upper extremity injuries. The two companies that provided claims data were reported to be comparable in terms of the type of industry they represented, the number of workers and the total number of hours worked. Some analysis for confounding factors was undertaken, although two potentially confounding factors were not discussed. These were the reason that company A had not adopted the EIP earlier, and the degree of worker support for either management strategy.
Validity of estimate of measure of benefit
The authors did not derive a measure of health benefit. The analysis was therefore categorised as a cost-consequences study.

Validity of estimate of costs
The cost perspective used in the economic analysis seems to have been that of a third-party payer. The authors estimated the medical and rehabilitation compensation costs and wage replacement costs. There was insufficient detail to determine whether the wage-replacement costs adequately represented the indirect costs. It is unclear whether all the costs were included, for instance whether the cost of pain killing drugs was accounted for, as a detailed breakdown of the costs was not given. Since the difference in cost between the interventions was extensive, small omissions in the costs may not have a great effect on the principle results of the study. The costs were not reported separately from the quantities.

Other issues
The authors made appropriate comparisons of their results with those from other studies, including a population-based randomised trial. They reported that their findings were consistent with earlier research. The issue of generalisability to other settings was not addressed. The authors did not present their results selectively. A number of limitations were presented, including the fact that a randomised trial was not possible.

Implications of the study
The authors recommended primary injury prevention combined with secondary prevention when required. Further research into identifying which individuals would benefit from rapid and enhanced care was suggested.

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