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Early Occupational Health Management of Patients with Back Pain

A Randomized Controlled Trial

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Study Design. A randomized controlled trial in occupational health practice was conducted.

Objective. To study the efficacy of early management of workers with low back pain by occupational physicians, as compared with management by the supervisor only.

Summary of Background data. Health care and university workers with back pain and on sick leave for less than 1 month were included in the study.

Methods. Patients with low back pain for at least 10 days on sick leave were randomly assigned to early management by the occupational physician (n = 61) or to a reference group with management by the worker's supervisor during the first 3 months of sick leave (n = 59). The patients were observed for 1 year and compared in terms of time until return to work, pain intensity, functional disability, and general health perception. The occupational physicians were provided with management guidelines.

Results. No significant differences were found after 3 and 12 months of follow-up evaluation in terms of time until return to work (hazard ratio, 1.3; 95% CI, 0.90–1.90) or in terms of other health outcomes. Recurrences, however, occurred more frequently in the intervention group, but the total duration of sick leave in 1 year did not differ between the groups.

Conclusions. The findings do not show a significant positive effect of an early intervention by occupational physicians on workers with low back pain. This might reflect the early phase of disability or the low intensity of the intervention resulting from overestimation of the physicians' compliance with the guidelines. [Key words: low back pain, occupational health services, occupational physicians, occupational rehabilitation, randomized clinical trial, return to work, sickness absence] **Spine 2002;27: 1844–1851**

Back pain is a frequently occurring health problem with substantial economic impact because of sick leave and long-term disability. In contrast to its magnitude, there are only a few reports of effective preventive interventions.[20] Therefore, the minimization of disability and sick leave among workers with low back pain remains a challenge for physicians. In the past decade evidence-based guidelines have changed clinical management of back pain to a more activating approach that aims at restoring functioning. This aim also is pursued in the workplace.[2,4] Recently, guidelines have been published on the occupational health management of patients with low back pain.[3,37]

Occupational physicians play an important role in return to work management of patients with back pain. However, the efficacy of back pain management by occupational physicians has hardly been investigated. Moreover, a literature review on vocational outcomes of interventions for back pain concluded that clinical interventions are not effective in decreasing time to return to work.[33] More successful are those interventions that are carried out in an occupational health setting[17,37] and that advise to stay active in case of nonspecific low back pain.[13,23] In occupational health practice, it is often recommended to have early interventions to enhance return to work. Occupational health guidelines recommend active rehabilitation and return to work strategies if the worker is having difficulty returning to normal occupational duties. In line with these recommendations, we performed a randomized clinical trial to determine whether early active management by an occupational physician can reduce absence from work and improve other back pain–related health outcomes.

Methods

Study Population. The occupational health services of eight different academic and peripheral hospitals in the Netherlands participated in the study. Patients in these hospitals were eligible if they had been on sick leave with low back pain for at least 10 days and were working in a department that had approved participation. Additional criteria specified pain located below the scapula and above the gluteal fold, no consultation with occupational physician for low back pain in the past 3 months, no pregnancy, and an understanding of the Dutch language.

The administrative worker or the occupational health nurse of the specific occupational health service informed eligible subjects about the project. After informed consent, a sealed opaque envelope containing a note was opened. This note stated whether the patient was assigned to the occupational physician (*i.e.,* the intervention group) or to the reference group. The assignment was based on block randomization using a random numbers table.

The supervisors of all the patients included in the trial were informed about the research project with a leaflet containing information about their responsibilities in the patient's return to work process. They were advised to stay in contact with the worker, to allow a gradual return to work, and if care was needed, to refer a worker to his or her general practitioner.

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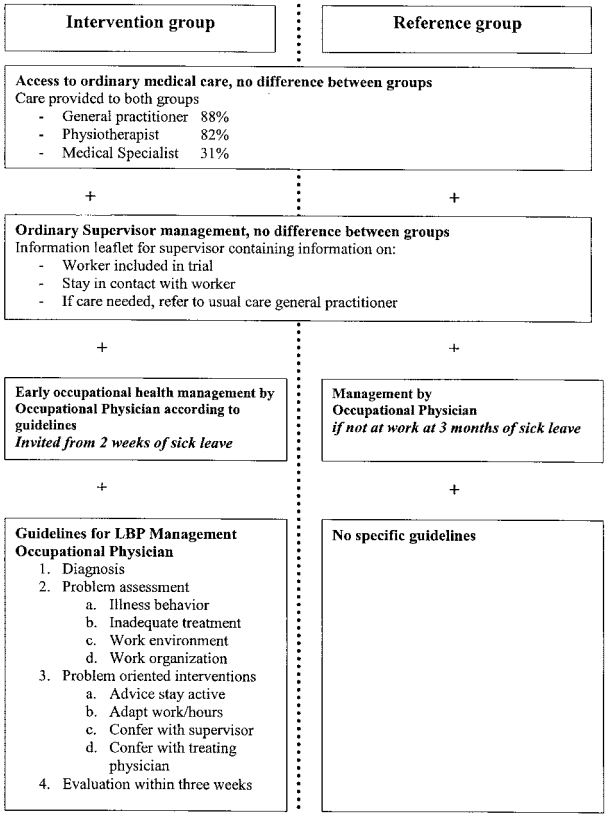

Figure 1. Trial organization and content of intervention.

According to earlier studies in occupational health, a sample size of 60 in both arms of the study would be sufficient to demonstrate an effect on sick leave.[17,23]

Occupational Physician Group. Each patient in the intervention group was scheduled for an appointment with the occupational physician as soon as possible after giving informed consent. The patients could receive medical treatment by their general practitioners, therapists, and specialists as usual (Figure 1).

Before and during the research project, the occupational physicians were provided with management guidelines for low back pain. We trained occupational physicians on the use of the guidelines in 10 monthly sessions during the year that patients were included in the study. Every meeting was attended by 60% of the physicians. The guidelines, based on scientific findings and a consensus of opinion among the occupational physicians, have been published elsewhere.[32] They comparable with those developed recently in the Netherlands and Great Britain.[3,37]

In short, the guidelines can be divided into two parts concerning diagnostics and interventions. Three diagnostic categories for low back pain had to be distinguished on the basis of medical history and physical examination: nonspecific back pain, back pain with nerve root compression, or specific back pain (*i.e.*, back pain as a result of a potentially serious medical conditions). Furthermore, the occupational physician had to assess factors with a supposed relation to the duration of disability: disabilities,[27,35] psychosocial problems,[7,9,25,36,38,39] heavy work,[6,11,24] organizational problems,[10,11,18] and inadequate treatment.[5]

The second part of the guidelines deals with interventions aimed at removing barriers for return to normal work. Workers with nonspecific back pain should be advised to stay active. In the case of a disparity between the worker's abilities and the work demands, the occupational physician should advise about exercise and education, or about modifying the work demands. Other interventions involved conferring with the general practitioner or physiotherapist and advising or consulting the employer. Follow-up consultations should take place within 3 weeks and be repeated until the worker returns to work.

To get some insight into the implementation of the guidelines, the physicians had to fill out a tick form for every consultation of a patient included in the trial. From these forms, we derived performance indicators that gave an indication of the extent to which the guidelines were implemented.

Reference Group. In the reference group, patients did not visit the occupational physician during the first 3 months of sick leave. However, if the employee insisted on seeing the occupational physician, this was allowed. Their supervisors received the same information as the supervisors of the patients from the intervention group. All the patients received standard medical treatment as usual by their general practitioners. If the patient did not work full-time after 3 months, he or she was still invited to visit the occupational physician.

Data Collection. Patients were observed for 12 months. Potential confounders were assessed by a questionnaire. At the start of the trial, the patients filled in this questionnaire on demographic factors, perception of working conditions,[34] low back pain characteristics, pain intensity,[19] functional disability,[26,27] general health perception,[16] coping style,[28] and health locus of control.[14]

The follow-up evaluation over the 12-month period consisted of monthly postal questionnaires on health care utilization, the reason for sick leave, and return to work status, with or without adaptations. Sick leave data also were determined from computerized record systems of the occupational health services. Return to work was defined as working as many hours as before absence. Sick leave was measured over a 1-year period. After 3 and 12 months, data were collected with questionnaires on pain intensity, functional disability, and general health perception.

Pain intensity during the week before measurement was rated on a visual analogue scale (VAS) of 100 mm ranging from no pain to very severe pain.[19] The Roland Disability Questionnaire (RDQ) was used to assess functional disability. This questionnaire is reportedly a reliable, valid, and responsive instrument.[8,29] The RDQ contains 24 yes or no questions. The total score can range from 0 to 24, which we transformed to a 0–100 range. General health perception was measured by the Nottingham Health Profile (NHP). The NHP contains 38 yes or no questions in six scales: physical mobility (8 items), energy (3 items), pain (8 items), sleep (5 items), emotional reactions (9 items), and social isolation (5 items). We totaled the yes answers and transformed the score on each scale to a 0 to 100 range. The scales cannot be aggregated to one total score. The NHP has proved to be a reliable and valid instrument for various study populations.[16]

Outcome Measurements. The primary endpoint in this study was time until return to work after a 1-year follow-up period. As secondary outcomes, we used time until recurrence, number of days lost over a 1-year period for all reasons and for

low back pain separately, rates of return to work at 3 and 12 months, pain intensity, functional disability, and the six general health perception scales at 3- and 12-month follow-up assessments. Health care utilization was assessed over 3 months to check whether the reference group would consult their general practitioner more often. The dependent variables were blindly administered without knowledge of the assigned group or other baseline characteristics.

Statistical Analysis. The analysis was performed on an intention-to-treat basis. The results for the intervention group were compared with those of the reference group, independently of the interventions by the occupational physician. Time until return to work was defined as the period between inclusion in the study and return to work. A Kaplan–Meier survival curve was estimated to describe the probability of not returning to work in relation to time since inclusion. Differences in time until return to work and time until recurrence were assessed with Cox regression analyses and tested with a likelihood ratio test. Time until recurrence was defined as the period between return to work and recurrence of sick leave for low back pain. The χ^2 test was used for the analysis of an effect on the rate of return to work at 3 and 12 months. Because the distributions for pain intensity, functional disability, general health perception scores, and total absence during 1 year were not normal, the Mann–Whitney *U* test was used to test differences between the groups.

Baseline scores on the outcome parameters, patient characteristics, and perception of working conditions were checked for potential confounding, which we defined as prognostic factors related to both group and outcome parameter.

Subgroup analyses were performed for time until return to work using Cox regression analyses for three subgroups, based on the hypothesis that occupational health management would be more effective in these specific patient groups. The first subgroup consisted of patients with nonspecific low back pain. Next, we constructed a subgroup with at least two perceived problems in working conditions, which were defined as a score above the 75th percentile on a specific working conditions scale. The last subgroup involved patients having psychosocial problems, which were defined as scores below the 25th percentile on active coping behavior or on internal locus of control.

All analyses were performed with SPSS for windows 6.1.3 (SPSS, Chicago, IL).

■ Results

Study Population

Of the 142 employees who met the inclusion criteria, 22 refused to participate. As a result, 120 employees entered the study after informed consent. The employees who refused to participate did not differ significantly ($P < 0.05$) from the participants in gender, age, occupation, time until return to work, or sick leave during 1 year after potential inclusion. The baseline questionnaire was returned by 117 patients (98%). After 3 months, 110 questionnaires were returned (92%), and 108 questionnaires were completed after 12 months (90%). The monthly questionnaires on health care utilization and sick leave during the first 3 months were returned by 110 patients (92%). Sick leave data could be gathered for all the participants from the computerized systems of their occupational health services. From both these systems and the monthly questionnaires, the reasons for sick leave during the follow-up period could be obtained for 111 patients (92%). Table 1 shows the baseline characteristics of the two groups. No significant differences ($P < 0.05$) were found between the groups for these characteristics.

Table 1. Baseline Characteristics of the Intervention Group (n = 61), the Reference Group (n = 59), and the Total Study Population

Baseline Characteristics	Intervention (n = 61)	Reference (n = 59)	Total (n = 120)
Patient characteristics			
Mean age (years)	38 ± 7.8	39 ± 9.6	39 ± 8.7
Gender (% male)	39	27	33
Low back pain–related characteristics			
Initial diagnosis:			
% Aspecific low back pain	80	72	76
% Suspicion of root compression	20	28	24
History of low back pain			
Sick leave last year (% yes)	33	29	31
Sick leave ever (% more than once)	42	46	44
Mean pain intensity (VAS)	56 ± 22	59 ± 24	58 ± 23
Mean functional disability (RDQ)	57 ± 20	59 ± 20	58 ± 20
Mean general health perception (NHP)			
Pain	55 ± 28	60 ± 27	57 ± 28
Physical mobility	42 ± 23	42 ± 19	42 ± 21
Lack of energy	40 ± 36	43 ± 36	42 ± 36
Emotional reaction	15 ± 20	14 ± 21	14 ± 20
Social isolation	7.7 ± 14	9.8 ± 14	8.7 ± 14
Sleep problems	21 ± 27	21 ± 28	21 ± 27
Work-related characteristics			
Occupation (%)			
Mentally demanding work	28	22	25
Mentally/physically demanding work	51	56	53
Light physically demanding work	21	22	22
Mean working hours	34 ± 8.9	32 ± 8.1	33 ± 8.5
Work experience in present Position (% <10 years)	67	64	66

VAS = visual analog scale; RDQ = Roland Disability Questionnaire; NHP = Nottingham Health Profile.

Although the patients in the reference group were not invited for a consultation with their occupational physician during the first 3 months, 14 patients in this group (24%) went to see their occupational physician during this period on their own initiative. In the intervention group, two patients did not visit the occupational physician, one because the physician's appointment schedule did not permit it before he had returned to work and one because the original diagnosis was changed.

Time Until Return to Work

The median time until return to work was 56 calendar days: 51 days for the intervention group and 62 days for the reference group (Table 2; Figure 2). The hazard ratio of 1.3 for time until return to work suggests a shorter time in the intervention group. The 95% confidence interval of 0.90 to 1.9, indicates that this was not a statis-

Table 2. Pain Intensity, Functional Disability, General Health Perception, and Sick Leave During Follow-up Period

	Intervention Group	Reference Group	P*
Pain intensity (mean VAS scores)			
At 3 months	31 ± 25	38 ± 26	0.21
At 12 months	24 ± 25	30 ± 26	0.18
Functional disability (mean RDQ scores)			
At 3 months	26 ± 24	32 ± 28	0.38
At 12 months	20 ± 22	21 ± 23	0.57
General health perception (mean NHP scores)			
Pain			
At 3 months	26 ± 29	33 ± 32	0.27
At 12 months	18 ± 26	22 ± 30	0.49
Physical mobility			
At 3 months	17 ± 17	23 ± 21	0.15
At 12 months	15 ± 20	19 ± 21	0.15
Lack of energy			
At 3 months	18 ± 28	22 ± 35	0.70
At 12 months	20 ± 34	10 ± 26	0.11
Emotional reactions			
At 3 months	11 ± 20	14 ± 24	0.93
At 12 months	12 ± 23	8.7 ± 17	0.72
Social isolation			
At 3 months	5.5 ± 15	6.1 ± 17	0.68
At 12 months	4.5 ± 15	3.4 ± 11	0.96
Sleep problems			
At 3 months	11 ± 20	15 ± 24	0.38
At 12 months	8.5 ± 19	8.5 ± 21	0.76
Sick leave			
Time to return to work: median (IQR)	51 (22–110)	62 (22–174)	0.16
Return to work at 3 months (%)	69	63	0.48
Return to work at 12 months (%)	93	86	0.20
Time to recurrency: median (IQR)	262 (89–?)	? (294–?)	0.01
Time of recurrent episode: median (IQR)	10 (5–28)	17 (3–128)	0.53
Absence over a one year period (mean)			
For low back pain	114 ± 113	134 ± 126	0.54
In total	125 ± 110	145 ± 124	0.50

* *P* value for Mann–Whitney *U* test, χ^2 test or likelihood ratio test.
VAS = visual analog scale; RDQ = Roland Disability Questionnaire; NHP = Nottingham Health Profile; IQR = interquartile ranges.

tically significant difference. According to the findings, 34% of the patients (n = 41) did not fully return to their work within the 3-month follow-up period: 31% in the intervention group and 37% in the reference group. The odds ratio for rate of return to work at 3 months was 0.77 (95% confidence interval, 0.36–1.6). After 1-year of follow up,, 12 patients (10%) had not recovered from the first episode of low back pain but there was no difference between the groups. We did not find any confounding factors.

Time Until Recurrence and Sick Leave Over a 1-Year Period

Recurrences could not be determined among the patients who had not fully returned to their job before the end of the follow-up period (n = 12). For nine other patients, the reason for the second and subsequent absence periods could not be established. These cases were all excluded from this analysis.

The rate of recurrence was 25% (n = 12) in the reference group and 51% (n = 26) in the intervention group. The hazard ratio was 2.4 (95% confidence interval, 1.2–4.7), meaning that the estimated risk of recurrence was 2.4 times greater for the intervention group. The mean duration of sickness absence for low back pain and the total duration of sick leave in 1 year did not differ between the two groups.

Pain Intensity, Functional Disability, and General Health Perception

Mean scores and standard deviations after 3 and 12 months of follow-up evaluation for pain intensity, functional disability, and general health perception are presented in Table 2. The scores dropped sharply from baseline to the 3-months assessment. Because of loss to follow-up and missing values, the numbers in the intervention group ranged from 52 for pain intensity to 55 for the other parameters at the 3-month follow-up assessment, and from 49 to 50 at the 12-month follow-up evaluation. The numbers in the reference group ranged from 54 to 56 at the 3-month follow-up assessment, and from 49 to 51 at the 12-month follow-up evaluation. No significant differences ($P < 0.05$) were found between the intervention and reference groups. No confounders needed to be included in the analyses.

Cointerventions

For the first 3 months of sick leave, the groups did not differ in terms of consultations with general practitioners, therapists, or specialists. Of the whole group, 88% went to see the general practitioner, and 21% had more than three consultations. The analysis showed that 82% of the patients visited a physical therapist or related practitioners and 45% had more than 12 visits. Also, 31% of the patients visited a specialist, 14% more than twice.

Subgroups

Nonspecific low back pain was diagnosed in 90 patients: 49 in the occupational physician group and 41 in the reference group. The subgroup with problematic working conditions comprised 55 patients, 25 of whom were assigned to the intervention group. Of the 39 patients categorized as having psychosocial problems, 20 belonged to the intervention group. Time until return to work did not differ between the occupational physician group and the reference group for any of the three subgroups. The nonspecific low back pain subgroup showed a trend of effective intervention by the occupational physician ($P = 0.10$). The hazard ratio for the occupational physician group was 1.4 (95% confidence interval, 0.93–2.2), indicating that the chance of returning to work was 1.4 times greater for the occupational physician group.

■ Discussion

In this randomized controlled study investigating vocational rehabilitation of workers with low back pain by occupational physicians, we did not find a significant difference in return to work measures or health mea-

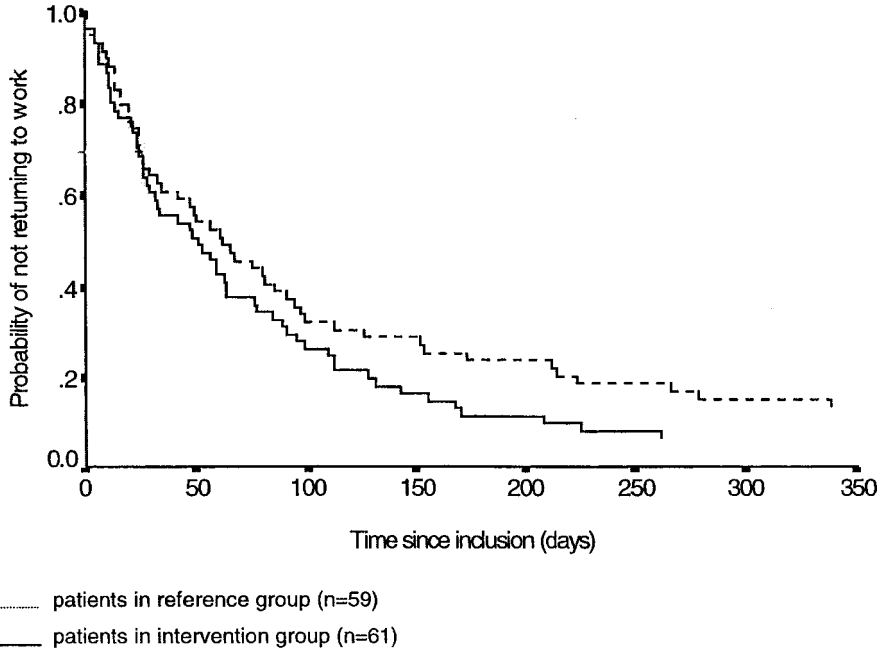

Figure 2. Cumulative probability of not returning to work by time since inclusion in intervention (n = 61) and reference group. (n = 59).

sures. Recurrences were more frequent in the occupational physician group.

We were able to conduct a randomized controlled trial, which is special in the occupational health field, in which mostly nonrandomized historical cohort studies are conducted. The internal validity of our study was good, with characteristics such as an adequate randomization procedure, treatment options presented as equally effective for the participants, comparability of both groups on all important prognostic factors, a follow-up rate exceeding 90% of all the patients, and an intention-to-treat analysis.

We encountered some difficulties in the assessment of sick leave because data from the computerized record system of the occupational health services and from the self-report in the monthly questionnaires differed. In 79% of the episodes, the difference was 1 week or less, but in 14% it was more than 2 weeks. However, no systematic bias in reporting was found. We decided to use the data from the computer records because the occupational health service and the employers also use these data. These data had the advantage of being gathered without any knowledge of the intervention.

In this study, management by the occupational physician showed a trend toward shorter sick leave that was not significant. The lack of a significant result could have resulted from the following factors that reduced the impact of the intervention and diminished the contrast between the two groups.

First, the number of patients from the reference group that crossed over to the occupational physician during the first 3 months was quite high (24%). Because we used an intention-to-treat analysis, these patients were analyzed as belonging to the reference group. If we assume efficacy of the intervention, this crossover improved the outcome for the reference group. We analyzed the results of the group that crossed over. They returned to work more frequently in the beginning, but less frequently in the end. The intention-to-treat analysis seems to be the only way to account for the influence of this selected group.[40]

Second, we had to restrict return to work management by only the supervisor to a maximum of 3 months of sick leave because of ethical and political reasons. Moreover, there is some evidence that information leaflets for supervisors can improve sickness absence resulting from low back pain.[30] This could have led to the favorable outcome of the trial in both the intervention and reference groups. Our level of no return to work in 1 year (12%) compares favorably with that found by Loisel et al (45%).[21]

Third, the intervention by the occupational physician was not as early as intended. In 36% of all the cases, the occupational physician did not see the patients before 4 weeks of sick leave. Another reason for less contrast between the groups was that the natural course of an episode in the reference group was quite favorable, with more than 60% of the patients returning to work during the first 3 months. It was not easy to increase this already high rate of return to work by means of an intervention. It is possible that the heterogeneity of the study population obscured an effect in a specific subgroup. This was difficult to assess because of the lack of statistical power in these subgroups. We found, however, a trend for a more favorable outcome in the subgroup with nonspecific low back pain. It can be argued that rehabilitation advice is more effective in this subgroup.

Although we tried to maximize the implementation of the guidelines, the compliance of the occupational physicians with the guidelines could be considerably improved. In another article, we have described the assessment of compliance, showing deviance from the

guidelines in most cases.[31] The occupational physicians were most frequently noncompliant with the following aspects of the guidelines: encouragement of activity (14.3%), inadequate therapy (17.4%), and evaluation within 3 weeks (46.7%). It is known that self-report of compliance with guidelines leads to an overestimation of the implementation.[1,22] Moreover, a better compliance was related to a shorter time until return to work and a higher patient satisfaction score. This indicates that lack of compliance also may be a cause of this study not finding an effect.

Unfortunately, the statistical power of the study was too low to distinguish between the absence of an effect or the presence of only a small effect. Also, small decreases in sickness absence can be practically relevant because the intervention by an occupational physician is relatively cheap and the costs of sickness absence are high. Therefore, we recommend larger sample sizes for future studies, which will enable them to detect small differences in sickness absence.

A worrisome finding was that the risk of sick leave recurrence as a result of back pain was higher in the intervention group. This might indicate that an early intervention leads to an earlier recurrence of back pain. However, because the duration of sick leave over the 1-year period was the same in both groups, we considered this as not a really serious side effect.

This study did not show a positive effect on pain intensity, functional disability, or general health perception. The reasons for not finding a large effect for these outcome variables are the same as those for sick leave. Moreover, we note that reduction of pain was not a main target of the treatment guidelines since patients were encouraged to become active again in spite of the pain. Furthermore, the baseline scores on the Nottingham Health Profile scales (emotional reactions, social isolation, and sleep problems) were too low to show a response. The same low scores have been reported before in a relatively healthy population.[16] The management of return to work by the occupational physician according to the guidelines seemed to be acceptable by patients. Participation in a randomized study was more problematic because 15% of the eligible patients refused to participate, one third of whom insisted on a visit with the occupational physician. This indicates that support by the supervisor only is not as meaningful an alternative for many workers as we had assumed.

We identified two other randomized trials in which an intervention comparable with that in our study was performed.[33] Greenwood et al[12] studied case management of workers on sick leave of 2 weeks duration in the United States. A rehabilitation nurse evaluated health and psychosocial problems among workers and advised them about return to work. The intervention group (n = 121) remained off work for an average of 102 ± 148 days, but did not differ from the reference group (n = 163) with standard care, which had an average sick leave of 110 ± 149 days. These findings compare well with those in our study. We found a mean sick leave duration of 83 ± 95 days for the intervention group (including censored cases in which sick leave was assessed until the time of censoring) and 115 ± 124 days for the reference group, which was also not statistically significant (95% CI for difference of the means, −8.2–71.9).

In contrast to these findings, Indahl et al[15] reported positive results from a simple intervention performed in a spine clinic. Patients with more than 8 weeks of sick leave were assured that their back pain was of a benign character and urged to resume light normal activity. The proportional hazard ratio for return to work was 2.23 (range, 1.74–2.84) in this intervention group (n = 463), as compared with conventional treatment. In this study, however, the duration of sick leave at inclusion was much longer than in our study. Comparison with other studies suggests that interventions are more effective among patients with a longer duration of sick leave.

In conclusion, we could not demonstrate that early management by the occupational physician had a substantial effect on return to work or health outcomes. However, the occupational health setting remains an important area for further investigations into the effectiveness of interventions for returning patients with low back pain to work. Future studies should be directed at workers on sick leave longer than 4 weeks. These studies should give special attention to physician compliance with the guidelines for management of return to work of patients with back pain.

■ Key Points

- Occupational physicians were provided with guidelines for early occupational health management of workers with back pain.
- Time until return to work was not shorter after early return to work management by occupational physicians, as compared with management by the supervisor.
- For pain, disability, and other health outcomes, there was no difference in outcome between the occupational physician group and the supervisor group.
- More attention should be given to implementation of practice guidelines.
- Active management of return to work by occupational physicians should be directed at workers on sick leave longer than 1 month.

References

1. Adams AS, Soumerai SB, Lomas J, et al. Evidence of self-report bias in assessing adherence to guidelines. Int J Qual Health Care 1999;11:187–92.
2. Anonymous. Scientific approach to the assessment and management of activity-related spinal disorders: A monograph for clinicians. Report of the Quebec Task Force on Spinal Disorders. Spine 1987;12:S1–59.
3. Aulman P, Bakker-Rens RM, Dielemans SF, et al. Het handelen van de bedrijfsarts bij lage rug klachten (Occupational Management of Workers With Back Pain). Eindhoven: the Netherlands: NVAB, 1999.
4. Bigos S. Acute low back problems in adults. In: Bigos S. Bowyer O, Braen G,

et al, eds. Clinical Practice Guideline No. 14. Rockville, MD: U.S. Department of HHS, Public Health Service, Agency for Health Care Policy and Research, 1994.
5. Bigos SJ, Battie MC. Acute care to prevent back disability: Ten years of progress. Clin Orthop 1987;221:121–30.
6. Buckle P, Stubbs D. The contribution of ergonomics to the rehabilitation of back pain patients. J Soc Occup Med 1989;39:56–60.
7. Coste J, Delecoeuillerie G, De Lara AC, et al. Clinical course and prognostic factors in acute low back pain: An inception cohort study in primary care practice. BMJ 1994;308:577–80.
8. Deyo RA. Comparative validity of the sickness impact profile and shorter scales for functional assessment in low back pain. Spine 1986;11:951–4.
9. Deyo RA, Diehl AK. Psychosocial predictors of disability in patients with low back pain. J Rheumatol 1988;15:1557–64.
10. Gates LB. The role of the supervisor in successful adjustment to work with a disabling condition: Issues for disability policy and practice. J Occup Rehabil 1993;3:179–90.
11. Goertz MN. Prognostic indicators for acute low back pain. Spine 1990;15: 1307–10.
12. Greenwood JG, Wolf HJ, Pearson RJ, et al. Early intervention in low back disability among coal miners in West Virginia: Negative findings. J Occup Med 1990;32:1047–52.
13. Hagen EM, Eriksen HR, Ursin H. Does early intervention with a light mobilization program reduce long-term sick leave for low back pain? Spine 2000;25:1973–6.
14. Halfens RGJ. Locus of control: beheersingsoriëntatie in relatie tot ziekte en gezondheidsgedrag (Locus of Control in Relation to Sickness and Health Behavior). Maastricht, the Netherlands: Rijksuniversiteit Limburg, 1985.
15. Indahl A, Velund L, Reikeraas O. Good prognosis for low back pain when left untampered: A randomized clinical trial. Spine 1995;20:473–7.
16. Konig-Zahn C, Furer JW, Tax B. Nottingham Health Profile (NHP). In: Konig-Zahn C, Furer JW, Tax Be, eds. Het meten van de gezondheidstoestand: Beschrijving en evaluatie van vragenlijsten: I. Algemene gezondheid (Measurement of Health Status: Description and Evaluation of Questionnaires: I. General Health). Assen, the Netherlands: Van Gorcum, 1993:100–14.
17. Lindstrom I, Ohlund C, Eek C, et al. The effect of graded activity on patients with subacute low back pain: A randomized prospective clinical study with an operant conditioning behavioral approach. Phys Ther 1992;72:279–90.
18. Linton SJ. The manager's role in employees' successful return to work following back injury. Work Stress 1991;5:189–95.
19. Linton SJ, Gotestam KG. A clinical comparison of two pain scales: Correlation, remembering chronic pain, and a measure of compliance. Pain 1983; 17:57–65.
20. Linton SJ, van Tulder MW. Preventive interventions for back and neck pain problems: What is the evidence? Spine 2001;26:778–87.
21. Loisel P, Abenhaim L, Durand P, et al. A population-based, randomized clinical trial on back pain management. Spine 1997;22:2911–18.
22. Lomas J, Anderson GM, Domnick-Pierre K, et al. Do practice guidelines guide practice? The effect of a consensus statement on the practice of physicians. N Engl J Med 1989;321:1306–11.
23. Malmivaara A, Hakkinen U, Aro T, et al. The treatment of acute low back pain: Bed rest, exercises, or ordinary activity? N Engl J Med 1995;332: 351–5.
24. Marras WS, Lavender SA, Leurgans SE, et al. Biomechanical risk factors for occupationally related low back disorders. Ergonomics 1995;38:377–410.
25. McNeill TW, Sinkora G, Leavitt F. Psychologic classification of low back pain patients: A prognostic tool. Spine 1986;11:955–9.
26. Roland M, Morris R. A study of the natural history of back pain: Part I. development of a reliable and sensitive measure of disability in low-back pain. Spine 1983;8:141–4.
27. Roland M, Morris R. A study of the natural history of low-back pain: Part II. Development of guidelines for trials of treatment in primary care. Spine 1983;8:145–50.
28. Schreurs PJG, van de Willige G, Tellegen B, et al. De Utrechtse coping lijst: UCL Omgaan met problemen en gebeurtenissen (The Utrecht Coping List. Coping With Problems and Events). Lisse, the Netherlands: Swets & Zeitlinger, 1988.
29. Stratford PW, Binkley J, Solomon P, et al. Assessing change over time in patients with low back pain. Phys Ther 1994;74:528–33.
30. Symonds TL, Burton AK, Tillotson KM, et al. Absence resulting from low back trouble can be reduced by psychosocial intervention at the work place. Spine 1995;20:2738–45.
31. van der Weide WE, Verbeek JH, van Dijk FJ. Relation between indicators for quality of occupational rehabilitation of employees with low back pain. Occup Environ Med 1999;56:488–93.
32. van der Weide WE, Verbeek JH, van Dijk FJ, et al. An audit of occupational health care for employees with low back pain. Occup Med (London) 1997; 47:294–300.
33. van der Weide WE, Verbeek JH, van Tulder MW. Vocational outcome of intervention for low back pain. Scand J Work Environ Health 1997;23:165–78.
34. van Veldhoven M, Meijman T. Ontwikkeling van de VBBA (Development of the VBBA). In: van Veldhoven M, Meijman T, eds. Het meten van psychosociale arbeidsbelasting: De vragenlijst beleving en beoordeling van de arbeid (VBBA) (Measurement of Psychosocial Work Load: The Development of the Questionnaire Perception and Evaluation of Work). Amsterdam: Nederlands Instituut voor Arbeidsomstandigheden (NIA), 1994:71–97.
35. von Korff M, Deyo RA, Cherkin D, et al. Back pain in primary care: Outcomes at 1 year. Spine 1993;18:855–62.
36. von Korff M, Ormel J, Keefe FJ, et al. Grading the severity of chronic pain. Pain 1992;50:133–49.
37. Waddel G, Burton AK. Occupational health guidelines for the management of low back pain at work: Evidence review. Occup Med 2001;51:124–35.
38. Waddell G. Understanding the patient with back pain. In: Jayson MIV, ed. The Lumbar Spine and Back Pain. 1st ed. Edinburgh: Churchill Livingstone, 1987:419–34.
39. Waddell G, Newton M, Henderson I, et al. A fear-avoidance beliefs questionnaire (FABQ): The role of fear-avoidance beliefs in chronic low back pain and disability. Pain 1993;52:157–68.
40. Weiss NS. Clinical epidemiology. In: Rohman KJ, Greenland S, eds. Modern Epidemiology. 2nd ed. Philadelphia: Lippincott-Raven, 1998:519–28.

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Point of View

Ernest Volinn, PhD

Occupational health physicians in the foregoing trial underwent thorough training in the early management of back pain; their training was based on up-to-date, evidence-based guidelines. Even so, patients assigned to those occupational health physicians did little better on health outcomes, notably time-to-return-to-work, than did patients assigned to a reference group. As with any trial, those who disagree with the findings of this trial may draw attention to certain of its features. There was a trend toward earlier return-to-work for patients assigned to occupational health physicians, and had the population sizes of the groups in the trial been larger, the trend may have been significant. Patients in both groups also received extensive treatment extraneous to the trial, which may have confounded the results. For instance, 82% of those in both groups visited a physical therapist or related practitioner. This was an "intention-to-treat" trial, and despite the random assignment of patients to the occupational health physician group and the reference group, about one-quarter of those assigned to the reference group crossed-over and saw an occupational health physician. Additionally, cross-national studies suggest that back pain patients in The Netherlands may respond to their pain differently than back pain patients elsewhere.[2,4]

Standing back from particular issues that may be raised, however, a negative result in the trial was to be expected. Most back pain patients, if they miss any time from work at all, resume work in a matter of days or weeks.[1,5] According to data from several countries, the curve that describes the rate of patients still off work declines steeply with time.[11] A literature review written by the lead author of the foregoing article concludes that, other than the recommendation of activity as usual and the avoidance of bed rest, interventions that attempt to alter the return-to-work curve have had little success.[9] Might research efforts, then, be redirected toward innovative approaches?

There is a suggestion of such an approach in the foregoing article. Investigators sent a pamphlet to workplace supervisors of back pain patients in both the intervention and reference groups. The pamphlet advised supervisors to "stay in contact with the worker, to allow a gradual return to work and if care was needed to refer a worker to their general practitioner." The pamphlet, particularly because it came from an authoritative source, may have served as an active intervention for both groups in the trial. Whatever the effect of occupational health physicians, it may not have been additive with the effect of the pamphlet. Mailing a pamphlet to supervisors presumably is more cost-effective than is intervention by occupational health physicians. Pamphlets,[3,8] among other low-cost interventions,[12] have had an effect in other studies. Alternatively, the return-to-work curve for the first 8 weeks of time loss from work may prove to be resistant to change, and resources may be concentrated on workers whose time loss extends beyond this time.[6,7,10] The foregoing study, in short, may be seen as a signal, yet another one, to test such innovative approaches.

References

1. Andersson GBJ, Svensson O, Oden A. The intensity of work recovery in low back pain. Spine 1983;8:880–4.
2. Burton AK, Symonds TL, Zinzen E, et al. Is ergonomic intervention alone sufficient to limit musculoskeletal problems in nurses? Occup Med 1997;47:25–32.
3. Burton AK, Waddell G, Tillotson KM, et al. Information and advice to patients with back pain can have a positive effect: a randomized controlled trial of a novel educational booklet in primary care. Spine 1999;24:2484–91.
4. Hansson TH, Hansson EK. The effects of common medical interventions on pain, back function, and work resumption in patients with chronic low back pain: a prospective 2-year cohort study in six countries. Spine 2000;25:3055–64.
5. Hashemi L, Webster, BS, Clancy EA, et al. Length of disability and cost of workers' compensation low back pain claims. J Occup Environ Med 1997;39:937–45.
6. Indahl A, Velund L, Reikeraas O. Good prognosis for low back pain when left untampered: a randomized clinical trial. Spine 1995;20:473–7.
7. Lindström I, Öhlund C, Eek C, et al. The effect of graded activity on patients with subacute low back pain: a randomized prospective clinical study with an operant-conditioning behavioral approach. Phys Ther 1992;72:279–92.
8. Symonds TL, Burton AK, Tillotson LM, et al. Absence resulting from low back trouble can be reduced by psychosocial intervention at the work place. Spine 1995;20:2738–45.
9. Verbeek JHAM. Vocational rehabilitation of workers with back pain. Scand J Work Environ Health 2001;27:346–52.
10. Von Korff M, Moore JC. Stepped care for back pain: activating approaches for primary care. Ann Intern Med 2001;134:911–7.
11. Waddell G. The Back Pain Revolution. Edinburgh: Churchill Livingstone, 1998;103–17.
12. Wood DJ. Design and evaluation of a back injury prevention program within a geriatric hospital. Spine 1987;12:77–82. *Address reprint requests to*

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