Does early intervention improve return to work rates outcomes in clients with low back pain?

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Date reviewed: October 2002

Due for review: October 2004

Clinical Question

'Does early intervention improve return to work rates outcomes in clients with low back pain?'

Clinical Scenario

Early intervention is a concept supported by a range of rehabilitation providers to provide return to work outcomes. Is there evidence to support early intervention in increasing these outcomes?

Summary of key findings

- 5 studies located which fit the inclusion/exclusion criteria
- 3 RCT's located and appraised
- One RCT found a statistically significant reduction in the number of days of sick leave for an intervention group that received examination, information, reassurance and encouragement to engage in normal activity as soon as possible. The authors concluded that return to work was faster for clients who received this intervention, however there was no statistical comparison for return to work over time.
- One study concluded that follow-up by resource people increased the use of an Active Sick Leave program in Norway, but that there were no statistically significant difference in the number of days off work between the intervention and control groups.
- One study concluded that in clients without a history of musculoskeletal pain in the last two years, an early activation program resulted in fewer days off work due to musculoskeletal pain, and that this result was statistically significant.

Clinical Bottom Line

Early intervention could reduce the number of days off work for a person with a back injury or reduce the risk of developing chronic pain. Early intervention may include examination by doctor and physiotherapist, information in relation to their injury and encouragement or information or specific advice on how to engage in physical activity. However, further studies are required to determine which of the interventions are appropriate to facilitate or improve return to work outcomes and to provide specific timeframes for when these interventions may be most effective.

Limitation of CAT

The summary of evidence has been prepared without the process of peer review.

The critical appraisal was directed at early intervention and this is often referred to as a concept rather than a specific intervention at a point in time.

Methodology

Search Strategy

The search strategy was developed in conjunction with the levels of evidence as outlined by NHMRC (2000), and aimed at the following study designs

Level I	Systematic reviews and meta-analysis
Level II	Randomised control trials
Level III	Control trials, cohort or case control analytical studies
Level IV	Case series: Post test, pre-test/post-test
Level V	Expert opinion including literature/narrative reviews, consensus statements, descriptive studies and individual case studies.

Search terms

Client:	back pain, back injury, spine pain, low back pain, chronic back pain
Intervention:	early intervention, early contact, patient contact, initial contact, worksite visit, early contact, contact
Comparison:	Nil
Outcome:	return to occupation, return to vocation, occupational outcomes, vocational outcomes, return to work, sick leave, absence, return to work rates

Sites/resources searched

- National Health and Medical Research council
- New Zealand Guidelines Group
- Healthbase
- National Guidelines Clearing house
- UK Guidelines
- Effective health Care Bulletins
- Centre for Clinical Effectiveness
- WorkCover NSW
- Motor Accidents Authority
- Cochrane Database
- DARE (Database of abstracts of reviews of effectiveness)
- PEDro

- Pubmed
- Scottish Intercollegiate Guidelines Network
- National Associations of Neurological Occupational Therapists

Inclusion/exclusion criteria

Inclusion

- Studies that referred to Early intervention in regard to back pain
- Studies which referred to return to work outcomes
- Studies published in English

Exclusion

- Studies which failed to address early intervention

Results

Search results

The following search results are articles that were found which were within the inclusion/exclusion criteria.

Table 1: Design of articles obtained from searches

Methodology of Studies Retrieved	Number located	Source of Evidence
Clinical Practices Guidelines	0	N/A
Systematic reviews or Meta-analysis	0	N/A
Randomised Control Trials	3	Pubmed
Controlled Trials, cohort or case-control studies	2	Pubmed
Case series: Post-test only, pre-test/post-test	0	N/A
Expert opinion including literature/narrative reviews, consensus statements, descriptive studies and individual case studies	0	N/A

Specific results

The articles appraised were the randomised control studies as they represented the highest level of evidence. The three articles are appraised in Tables 2, 3 and 4.

Table 2: Description of Articles by Hagan et al (2000)

Objective of study

To investigate the effect of a light mobilisation program on the duration of sick leave for patients with subacute back pain.

Intervention investigated

Intervention group (N = 237) – examination in a spine clinic which involved signing a consent form, answering a standard questionnaire, examination with a physician and examination with a physiotherapist. It was noted that patients were informed of good prognosis and the importance of staying active, provided with stretches and exercises and provided with information on how to manage their back pain.

Control group (N = 220) – treated with primary health care, involving at least one visit to their general practitioner, however any other treatment they accessed or the number of times they were reviewed by their GP was not registered. They were invited to the local insurance company to complete the questionnaire that was completed by the control group at the spine clinic.

Primary Outcomes Measures

- Sick leave data – total length of sick leave and frequency of sick leave were measured at 6 and 12 months.
- Return to full duty work

Further to this, questionnaires were completed at 3,6 and 12 months, however this is part of a larger multicentre investigation and not discussed in the article.

Results

Sick leave data

- The patients in the intervention group had fewer sick days than the control group, which was a statistically significant result (P = 0.0002). The intervention group had a mean of 95.5 days of leave and 95%CI 82.2 – 108.8. The mean number of days of leave for the control group was clinically significant at 133.78 and 95%CI 118.9 – 148.5.
- The men in the intervention group had significantly fewer sick days than the men in the control group (P = 0.001). The men in the intervention group had a mean number of sick days of 91.1 and 95%CI 75.1 – 1.9. The men in the control group had a mean number of days of leave 138 and 95%CI 117.3 – 158.7.

- The women in the intervention group had fewer days of sick leave than the women in the control group, however his was not a statistically significant result (P = 0.055)

- The number of patients being granted part time sickness compensation was higher in the intervention group (mean = 36.1 days, 95% CI = 28 to 44.2) than the control group (mean = 32.7 days, 95% CI = 24.4 to 41), this was not a statistically significant result (P = 0.565)

Return to full work

- 3 month follow-up 51.9% intervention group had returned to full duty, 35.9% control had return to wok on full duty (RR = 1.45)
- 6 month follow-up 61.2% of intervention group had returned to full duty work, 45% of control group had returned to work to full duty (RR = 1.36)
- 12 month follow-up 68.4% of the intervention group had returned to work on full duty work with comparison of 56.4% on control group (RR = 1.21)
- The were no apparent gender differences and no significant differences in the number of patients participating in rehabilitation program.

Authors conclusions

Early intervention consisting of examination, information and recommendations to remain active had a statistically significant effect in reducing sick leave for patients with low back pain.

Reviewer appraisal comments

Validity

- Patients were randomised to the control and intervention group with the use of an externally generated random number table and were done in bock of 20 patients, however the clinician was blinded by not knowing the block size
- The secretaries who completed the allocation were independent parties, not involved in the treatment process
- Blinding of the treatment providers was not discussed, however they were only treating the intervention group.
- No discussion in regard to the sample size
- The patients in the control group were aware they were not receiving the same treatment as the intervention group
- There was no record kept of the treatment given to the control population by their treating professionals

Results

- Between group comparisons were completed for gender, civil status, education, job security, previous lifetime sick leave for low back pain and the diagnosis from primary health care professional on sickness certificate II.
- Statistical analysis was completed for results between groups.
- Study included significant and insignificant results
- The author concluded that compared with results from treatment offered by conventional primary health care, patients with subacute low back pain return to work sooner if they are referred to a spine clinic offering

consultation with examination, information, reassurance and encouragement to engage in physical activity as normally as possible. However, there was no statistical comparison between the groups on this measure over time. It is noted that there were more subjects in the intervention group returning to work at 3,6 and 12 month intervals, compared to the control group. This was not a statistically significant result at any of the intervals or comparison over time.

- Between groups statistical analysis was conducted on the sick leave outcome measure only, and not on the return to work outcome measure. The statistically significant results were that over a period of one year the intervention group has less sick days for the year. This therefore does not reflect hey get back to work sooner, however outlines they have fewer days off work.
- No information on the cost of the program was included

Table 3. Appraisal of Article – Scheel et al (2002)

Objective of Study

Active Sick Leave (ASL) interventions have been poorly utilised by users. ASL is an option used by the Norwegian National Insurance Administration to assist in a rapid return to work. It involves the NIA paying 100% of the workers wages, allowing the employer to employ a full-time replacement. The authors designed two strategies to improve the use of ASL. This study evaluated the effectiveness of the two strategies for patients with low back pain. These were:

- Continuing education workshop for GPs on low back pain and ASL
- Resource person for each region providing pro-active support to GPs and patients by following up and maintaining communication.

Number of Subjects

Total of 6179 patients with low back pain included in the study

Intervention Investigated

Randomised clusters of 65 municipalities were developed at 3 counties in Norway. Stratified randomization of the municipalities were done by an external statistical consultant using computer generated random numbers and patients were allocated to one of two intervention groups or a control group. The target group in the study was patients with low back pain.
Data was gathered from Norwegian National Insurance Administration (NIA). Selected patients had to be absent from work for > 16 days from 1 September 1998 until 30 November 1999. Two intervention groups were compared with a control group and with each other.

Passive strategy (21 municipalities, 2045 patients)
Consisted of providing information to patients, NIA, GPs and employers. New ASL check box was provided in the form for GPs. Standard agreement between employer and employee to facilitate a return to work plan was made. A desktop summary for GPs outlining clinical guidelines for low back pain and reminding of ASL was provided.

Proactive Strategy (22 municipalities, 2233 patients)
All of the above were included additionally continuing education workshop for GPs on ASL and low back pain were provided. A resource person for each region providing pro-active support to GPs and patients by following up patients on sick leave for greater than 16 days. Assist with coordination and communication amongst parties.

Control Group (22 municipalities, 1902 patients) Intervention not discussed.

Four separate measures of days off work were compared.

Primary Outcome Measures

- Total number of days on sick leave during the study period (ordinary or active)
- The number of days of days on ordinary sick leave
- The number of days on ordinary sick leave before starting ASL
- Compared the total number of days off, including all episodes of sick leave for patients who used ASL in the intervention and control groups.
- Study measured what effect demographics such as sex, age, strata and season (independent variables) have on the outcome of ASL (dependent variable).

Results

- The predominant result identified was that ASL was used higher in pro-active intervention municipalities (17.7%) compared with the passive intervention (10.8%) and control group (12.4%) (p = 0.018). Patients who were on sick leave for > 4 weeks (P=0.016) used ASL more than patients who were on sick leave for > 12 weeks (P=0.067) although the size of the difference between the two groups was small.
- Results on total number of days off work indicated that patients in the pro-active group took less days off work (15.4 days less) (95% CI [-8.2,39.1]) although the differences were not statistically significant

- Patients who used ASL in the pro-active group started ASL sooner (20.6 days) than those in other groups. However there were no significant differences found.
- There were no significant differences across the three groups with respect to demographics however the proportion of females in the passive group taking sick leave was 5-6% higher than other groups.
- Study indicated that the use of the resource people contributed to the increased use of ASL (they followed up individual patients). The use of ASL declined to the level of two other groups once the resource people terminated their work in the communities. (P=0.49)

Authors Conclusions:

They concluded that passive interventions tailored to address barriers to the use of ASL. However, there was no statistically significant result to show the increased use of the ASL . Alternatively, follow up by resource people did increase ASL use (by making direct contacts to patients and motivating them). The study provides further support for patient mediated intervention investigation.

Reviewer Appraisal Comments

Validity –

- Participants were assigned to intervention and control groups by using stratified randomization of the municipalities (computer generated numbers).
- Eligibility criteria was selected and subjects were chosen accordingly. Adequate information was provided about the subject assignment process.
- There were between group and within group statistical analyses for the two intervention and control groups
- The article did not clarify whether the subjects in pro-active, passive and control intervention groups were informed about the study or its purpose. (Unknown whether bias was controlled).
- The article did not indicate whether the assessors such as Doctors, treating professional were blinded about the study.
- Adequate sample size used (p.3 -" the total sample size was estimated based on ability to detect a difference in dropout from the workforce…..estimated a sample size of approximately 2500 would be needed" On page 5 states" a total of 6179 patients with low back pain were included representing 7056 episodes of sick leave.)
- Drop outs from the study were not indicated
- Study had a clear objective, clearly defined the two strategies they were researching, used appropriate methods to obtain results.

Results –

- Chi Square test and T tests were used to compare the use of ASL and length of Sick leave among the study groups.
- Logistics regression model was used to examine the interaction between client demographics and the use of ASL.
- Using pairwise comparisons compared between intervention groups and in some instances compared within groups.
- Study included significant and non significant Results.
- No information on program costs provided

- The authors concluded that personal follow up of patients by resource people is the key ingredient in pro-active intervention. The study did not show a statistically significant result that this effectively reduce the number of days off work. They reported that the patients would be followed up at a later date to determine whether increase in early return to modified work reduced sick leave, prevented long term disability, or impacted quality of life.

Table 4. Appraisal of Article by Linton et al (1993)

Objective of Study

To evaluate the effects of an early intervention program which underscored function for acute musculoskeletal pain (MSP) problems at the primary care level through two investigations of the effects of early treatment

Intervention Investigated

Two investigations (previous vs no previous history of MSP) with two treatment groups (Treatment as Usual and Early Activation) and four assessment periods.

Study 1: Patients with a history of MSP during the past two years but not sick listed during the most recent three months. Groups designated (1) Treatment as usual: history of MSP; (2) Early Activation: history of MSP.

Study 2: Patients who have not been sick listed for MSP during the last two years. Groups referred to (3) Treatment as usual: no history of MSP (4) Early Activation: no history of MSP.

Study 1

Treatment as usual, history of MSP

Following current waiting list procedure, examination by General Practitioner, treatment prescribed included possible sick leave and rest for 2-3 weeks, analgesics for severe pain and in rare cases, physical therapy for persistent pain (waiting list more than three months). Examination and discussion no more than ten minutes. Patient was advised to take medications and participate in activities in direct relation to the current pain level.

Early activation history of MSP

To ensure early intervention appointment made to see a General Practitioner at time slots reserved for this purpose. Examination ten minutes – consisted of a history and systematic examination to rule out aggressive diseases or problems that require medical treatment. Physical therapist functional examination thirty minutes in addition to discussion about results, prognosis, treatment and training program. Specific advice provided as to how the patient might help him/herself to improve and which activities should be maintained during the recovery period. If deemed necessary, individual treatments were administered with a time limit of a maximum of twelve weeks.

Treatment as usual, no history of MSP

Study 2

Received the same treatment as in Study 1.

Early activation, no history of MSP

The same active treatment as for the early activation group in Study 1 provided.

Primary Outcome Measures

For Early Intervention Groups:

Follow up contacts conducted at three weeks to assess progress. If progressing satisfactorily, no further intervention provided. If problem not responding, a new appointment could be provided and a conference at work could discuss a 'modified' return to work plan.

A clinical follow up was conducted at 12 weeks but no extra resources or programs provided.

Results

Study 1: Participants with a history of MSP

Treatment Satisfaction

The Early Activation Group waited a mean of 2.8 days to see the doctor as compared with the Treatment as Usual group, a difference which is significant ($P<0.001$). The Early Activation Group was more satisfied with the information they received pertaining to self help programs than were the control group ($P=0.05$). There were no significant differences between the groups with regard to how satisfied they were with the doctor's examination and treatment information received.

Treatment Outcome

1. *Within Group Outcome*

The results of within group comparisons between pre-test and twelve month follow up indicated statistically and clinically significant improvement between pre and 12-month follow-up in both groups and indicate substantial improvement at follow-up relative to pre-treatment. The measures used were pain experienced today, pain during the past week, pain free days, sleep quality, stress, depression, well being and pain control.

2. Between Group Outcome

There were no significant between group differences on outcome measures; pain discomfort today, pain discomfort during the last week, number of pain free days, sleep quality, medicine consumption, feeling stressed, feeling blue, well being or degree of coping with pain

Sickness Absenteeism

There was no statistically significant between group differences during the one year follow up (P=0.05). In terms of development of chronic pain problems (200 days off work) there was no significant between group differences with the Early Activation group producing 12% and the Treatment as Usual control 11% chronic patients.

Follow Up

At one year follow up those receiving the Early Activation were more satisfied with the treatment they received (P=0.002) and reported more frequently having received advice about training programs they could perform themselves (P=0.005) and a 'return to work' contact at their workplace (P=0.047). However, there were no significant between group differences concerning practice of training exercises, how much they helped, how much support at work they received, improvements at work or what factors were hindrances.

Study 2: Participants with no history of MSP

Treatment Satisfaction
The Early Activation group received an examination and treatment with significantly less waiting time (P=0.0001) than did the Treatment as Usual group. Satisfaction with information about treatment was significantly better in the Early Activation group (P=0.022). There were no significant between group differences on the remaining variables of satisfaction.

Treatment Outcome

1. Within Group Outcome

Clinically and statistically significant improvements P<0.001 for pain today/past week, pain free days, sleep quality between pre and 12 month follow-up relative to pre-treatment

2. Between Group Outcome

Due to a lower activity level at the pre-test the Early Activation group had larger improvement on the Activities Index (P=0.06) but there was no significant between group differences in the other outcome variables (pain intensity today/past week, pain free days, sleep quality, stress, depression, well being, pain control) (P>0.05)

Sickness Absenteeism

The Early Activation group had statistically significantly fewer days off work because of MSP relative to the control group (P=0.03). The Early Activation group had a larger proportion of people without a single day off work because of MSP (32%) than the control group (23%) during the 1 year follow up as well as fewer people with absences of 11 or more days. With regard to development of chronic problems patients, the Treatment as Usual control group had an eight times greater risk of developing a chronic pain problem compared to the Early Activation group (risk ratio=8.2:95% CI=1.47-45.25).

Follow Up

The Treatment as Usual control group strongly believed they personally constituted a hindrance to their recovery (P=0.03) however there were no between group differences in measures of satisfaction, treatment received, changes at work, support from supervisors or other hindrances.

Authors Conclusions

Short term absenteeism was less for the Early Activation group as well as an 8 fold difference in the risk for developing chronic pain problems. However the Early Activation did not result in less pain suffering compared with ordinary treatment.

Relatively simple changes in the organisation and treatment of 'first time' acute MSP may enhance recovery.

Since between group differences were only observed in Study 2, an important question is why the Early Activation program only seems to produce better results with first time acute patients. One speculative explanation is that patients with an earlier history of MSP have already learned and begun the 'sick role'.

The results suggest that an Early Activation program may be counter indicated for some patients as the program provides a good deal of attention and treatment which might inadvertently reinforce the sickness behaviour it was intended to prevent. Therefore, the method of administrating the program as well as the time of patient appear to be vital.

Caution in interpreting the results is warranted as data analysis relies on multiple comparisons.

Appraisal Comments

Validity

- Participants chosen according to specific criteria:
  18-65 years old;
  MSP main complaint
  not off work during three months for MSP
  applied to primary occupational health services or to the National Insurance Authority (This network covered the major outlets for people suffering acute MSP since health care and insurance are nationalised)
- Randomly assigned to Treatment as Usual N=106 or Early Activation Group N=134
- Block' randomisation not employed so number of patients in each group varied.
- Sample size not justified.
- The patients in the control group were aware they were not receiving the same treatment as the intervention group.
- Data analysis relies on multiple comparisons]
- No record of treatment provided to the control group

Results

- Results indicate an Early Activation program might be counter indicated as a good deal of attention and treatment could inadvertently reinforce sickness behaviour.
- Specific treatments not confirmed.
- The patients in Study 2 had no history of MSP in the last two years but it was unknown as to whether they had ever had MSP previously to that.
- The relationship between pain intensity and sickness absenteeism is not strong. Consequently Early Activation seems to mainly address the functional aspects of the problem.
- The authors concluded that Early Active Intervention results in reduced sickness absenteeism for patients without a previous history of MSP and a significantly reduced risk of developing chronic pain problems.
- The program was administered within the normal budget and treatment framework for primary health care
- The relationship between pain intensity and sickness absenteeism was not strong. Both groups in studies 1 and 2 greatly decreased their pain levels and no significant between group differences were noted. Consequently Early Activation seems to mainly address the functional aspects of the problem.
- Since Early Activation did not result in significantly greater improvements for patients with a previous history of MSP the type of patient in addition to treatment content seems to be a crucial variable. Thus Early Activation programmes should be cautiously applied. However Early Activation for MSP would appear to decrease the number of days off work and above all the risk for developing chronic problems.

References

Hagen, E, Erikson, H and Urso, H. (2000). Does early intervention with a light mobilisation program reduce long-term sick leave for low back pain? *Spine*, 25(15), 1973 - 1976

Articles Critically Appraised

Level II

Hagen, E, Erikson, H and Urso, H. (2000). Does early intervention with a light mobilisation program reduce long-term sick leave for low back pain? *Spine*, 25(15), 1973 - 1976

Linton, S, Hellsing, A, & Andersson,. D. (1993). A controlled study of the effects of an early intervention on acute musculoskeletal pain problems. *Pain.* 54. 353 - 359

Scheel, IB, Hagen, KB, & Oxman, AD. (2002) A randomised control trial of two strategies to implement active sick leave for patients with low back pain. *Spine*. 27(6), 561 – 566

Related Articles *(within inclusion criteria, not included in the appraisal)*

Level III

Greenwood, JG, Wolf, HJ< Pearson, RJ, Woon, Cl, Posey, P , & Main, CF. (1990). Early intervention in low back disability among coal miners in West Virginia: negative findings. *Journal of Occupational Medicine*. 32(10). 1047-1052.

Yassi, A, Tate, R, Cooper, JE, Snow, C, Valleytyne, S, & Khokhar, JB. (1995). Early intervention for back–injured nurses a large Canadian tertiary care hospital: an evaluation of the effectiveness and cost benefits of a two-year pilot project. *Occupational Medicine*. 45(4): 209-214.