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Systematic review of prognostic factors for workers' time away from work due to acute low-back pain: An update of a systematic review

FINAL REPORT TO WORKERS COMPENSATION BOARD OF MANITOBA

Institute for Work & Health
Research Excellence Advancing Employee Health

sharing best evidence

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Contents

Executive summary

How long does it take to return to work following acute low-back pain (LBP)? This systematic review aimed to find out. The goal of this study was to assess the evidence on factors that predict duration of sick leave in workers in the beginning of a LBP-related sick leave episode.

This new systematic review, updated from the previous one published in 2005, was funded by the Workers Compensation Board of Manitoba (WCB) and undertaken by a research team at the Institute for Work & Health. The research team hypothesized that certain factors present at the beginning of a sick-leave absence related to LBP would affect the duration of the leave. These factors are related to low-back pain, the worker, the job and the psychosocial work environment. The research team searched the research literature to assess the evidence on these factors as predictors of duration of absence.

The comprehensive, year-long review had seven distinct phases: (1) developing the central question (2) conducting the literature search (3) identifying relevant publications (4) conducting a quality appraisal (5) undertaking the data extraction (6) synthesizing the evidence, and (7) transferring the knowledge.

The literature search looked for studies reporting on episodes of low-back pain and sick leave that lasted more than one day but less than six weeks. All studies included had to have at least one prognostic factor where return to work (RTW) was the outcome. Thirty relevant publications from 25 studies were identified—ten from the United States and seven from The Netherlands.

The final stage of the review was knowledge transfer. The IWH team conducted a workshop with 34 participants—clinicians, WCB case managers, WCB medical examiners and other disability professionals. This was held on April 6, 2011 in Winnipeg at the School of Medical Rehabilitation, University of Manitoba.

Encouraged by the workshop discussions and findings, future plans include a review of the literature on prognosis of low-back pain and RTW beyond the acute phase. The ultimate goal is to make these finding applicable in the world of work. Extensive plans for future knowledge transfer, dissemination and journal (and other) publications are featured at the end of this report.

Key findings of the systematic review

Strong evidence was found indicating that the following factors influence RTW for those with acute low-back pain:

- workers' recovery expectations (i.e. their predictions about how likely it is they will return to work and/or how long it will be before they are able to return);
- radiating pain (injury severity);
- self-reported pain;
- modified duties;
- workplace – physical factors; and
- treatment-related factors (health-care provider type).

Moderate evidence was found related for:

- the psychosocial work environment;
- claim-related factors; and
- treatment-related factors (not related to the health-care provider: for instance clinical examination results).

Interestingly, the evidence did not point to depression as a factor affecting return to work among workers with acute back pain. It appears that mental health is not a predictor of return to work until back pain becomes chronic. And age, surprisingly, was shown not to be playing a prognostic role. But this seems partially caused by non report of this factor in most studies. Hopefully, future researchers will strive to improve reporting on this factor.

Key messages

Workers' recovery expectations and their interactions with health-care providers are important factors in predicting the likelihood and timing of RTW among workers with acute low-back pain, according to this systematic review.

Back pain related factors like pain and disability remain important barriers in the disability process. The offer of modified duties is clearly helping workers to get back to work. Physical demands in the workplace however are preventing workers from getting back to work in a timely fashion.

Policy implications

This is an important issue that has policy implications. Low-back pain is the second most common cause of work absenteeism in industrialized countries. Most injured workers usually return to work following a relatively straightforward path. However, some disability episodes are long term and disproportionately costly. There is a genuine need for effective RTW programs, as the number of injured workers has been on the increase. For instance in the province of Manitoba the proportion of time loss attributed to back pain has systematically been on a gradual increase from 25.2% in 2000 to 28.3% in 2006 (http://www.wcb.mb.ca/sites/default/files/injury-stats-2000to2006.pdf). These numbers underscore the importance of this problem in Manitoba.

The findings from this new and improved systematic review will be of interest to all those who play a role in return to work. In particular, policy-makers, clinicians, workers' compensation case managers and medical examiners, and workplace disability prevention and return-to-work practitioners will be interested in its findings.

Introduction

If a worker injures his or her back, many want to know how long it will take before he or she is able to return to work. The worker wants to know because being off work can seem endless and lead to insecurity and anxiety. The employer wants to know if the organization or business should make alternate work arrangements, should the injured worker be off work for an extended period of time. Compensation agencies want to know so that they can guide intervention decisions for early and safe return to work. In this study, we will examine which factors best predict disability outcomes for these injured workers, as found in earlier research.

In 2005, we published a systematic review (1) in this area. Since then, this original review has been cited by 26 research papers and it has been used by policy-makers to inform their decisions. In this original review, we searched the literature up until December 2003. For the updated review, we updated the original systemic review—both in terms of methods and in time-frame.

The percentage of patients with acute low-back pain (LBP) whose situation becomes chronic varies from 2 to 33 per cent (2). A delay in return to work (RTW) results in high compensation and treatment costs. In the United States (US), indirect costs of LBP were estimated to be more than US $50 billion per year (3). In the United Kingdom (UK), this is US $11 billion (4); in the Netherlands, it is almost 3.5 billion Euro (5). For Canada, costs have been estimated between $11 to 23 billion in Canadian dollars (6). Up to 70 per cent of these costs are associated with loss of productivity in a minority of cases (7). To prevent costs and personal suffering from long term sick leave and disability, we need to assess prognostic factors that can be influenced by intervention. With this new information, it could be possible to identify which high risk patients should be targeted for intervention.

There is a genuine need for effective RTW programs, as the number of injured workers and therefore time loss have been on the increase in the province of Manitoba (http://www.wcb.mb.ca/sites/default/files/injury-stats-2000to2006.pdf). The proportion of time loss attributed to back pain has systematically been on a gradual increase from 25.2% in 2000 to 28.3% in 2006. These numbers indicate the importance of this problem in Manitoba.

Interpretation of the body of studies on prognostic factors for delayed RTW is challenging. Results can easily be biased if studies are not based on an inception cohort (8). In an inception cohort, patients are included in the study at the same point in the course of their disease. In many studies on RTW, the study population consists of a mixture of workers on sick leave and workers still at work at inception point. The number of patients at work during the follow-up phase depends on both this mixture and on the presence of prognostic factors. Making inferences about the prognosis of RTW from such mixed or varied studies is difficult, and this has led to some confusion.

Furthermore, the quality of the studies that are included should be considered. For this reason, in this review, we additionally provide a quality assessment of all studies and a rating of the evidence. However, it remains unclear as to what the importance or weight of each factor is in prognosis. So we also provide pooled effect sizes.

Hayden et al. (9;10) identified two main approaches used to study prognosis: (1) explanatory analyses and (2) predictive modelling. Explanatory studies focus on the associative relationship between prognostic factors and an outcome, while predictive modelling studies focus on variables taken together to stratify patients on an outcome.

We studied the set of determinants that influence the chance of a certain outcome. We did this in case a disease was present (11). In other words, we examined those factors associated with time until RTW (outcome), in case the sick leave occurred due to low-back pain. Sick leave could be considered a measure of low-back pain severity, or a limitation in activity due to LBP. Based on the International Classification of Functioning, Disability and Health (12), we distinguished between factors related to LBP, those related to the worker, to the job and to the psychosocial environment that influenced duration of an off-work episode.

There were several reasons why the original systematic review needed an update:

1. There has been a considerable amount of relevant studies published in recent years.
2. There has been substantial progress in search methods in the interim years.
3. We did not search all relevant databases in our first systematic review.

Objectives

The objective of this study was to assess the evidence on factors that predict duration of sick leave in workers in the beginning of a LBP-related sick leave episode. Our hypothesis was that there are factors related to LBP, factors linked to the worker, to the job and to the psychosocial environment that influence duration of an episode of sick leave.

Methodology

Identification of studies

The search strategies were designed to capture as much relevant literature on our topic as possible and included three broad categories: prognosis, back and return to work terms (see Appendix I). Terms within each category were combined with a Boolean OR operator and then all three categorizes were combined with a Boolean AND operator. The terms used to describe the back category were those advocated by the Cochrane Collaboration and the Cochrane Collaboration Back Review Group (13;14). We updated the Pubmed search from the original review (1) and added searches in EMBASE and PsycINFO databases to ensure a broader scope of the literature would be captured. The original search strategy was modified with the addition in the prognosis category of the term ‘cohort’, searched in the title, abstract fields, as recommended by Haynes et al (15). We also added terms from Heitz et al (16) in the prognosis category (‘Cohort Studies’ and ‘Risk’ as MeSH terms; and ‘determinat$’ and ‘indicat$’ in the title, abstract fields) as well as in the back category (‘back ache’, ‘backpain’, ‘lumbago’, ‘lumbar pain’, ‘sciatica’ in the title, abstractfields). We included some additional terms in the return to work category that appeared relevant given known articles and indexing in the databases (employee?, reemployment, re-employment, sick$ absence?, and worker? in the title, abstract fields).

As each database utilizes their own controlled vocabulary and allows for different truncation and wildcard symbols, the search strategy was adapted to each, so that

controlled vocabulary was utilized whenever possible. The updated strategy was used to find additional relevant papers from the timeframe and the database (PubMed) that were covered by the earlier systematic review and extended the timeframe to April 2011. We also searched Embase and PsycInfo from inception of the database up to April 2011. We tried to uncover most studies on LBP, prognosis(15;17) and work. The references of all relevant articles and recently published review articles (18) were screened for additional publications.

Criteria for selection of studies

Three reviewers (IS, LdeB, MH) paired up and selected studies meeting the same criteria as the earlier 2005 review—that is, within the old perimeter.

1. Subjects with LBP and sick leave with a duration of more than one day, but less than six weeks, at inclusion in cohort;
2. Relation studies between at least one prognostic factor and RTW as an outcome;
3. Those where outcome was measured in absolute terms (rate), relative terms (odds ratio, rate ratio, hazard ratio), survival curve or duration of sick leave.

If the publication was not clear about these criteria, then the authors were contacted. If consensus between the pair of reviewers could not be reached, the third reviewer resolved discrepancies.

Assessment of methodological quality

Three researchers (IS, LdB, MH), again in pairs, independently scored the quality of the studies that were included using a quality assessment list based on existing lists (2;19). Items fell into in three categories: (1) methodological quality (2) quality of measurement of prognostic factors, and (3) statistical quality.

The items were as follows: adequate description of the study population (3 points), description of response (2 points), the extent and length of follow-up (4 points), an explicit definition of time to RTW (1 point), the number of prognostic factors measured (2 points), and the quality of data presentation (5 points). For further details about the assessment of methodological quality, see Appendix II. Reviewers did not assess research papers that they authored.

In any cases where consensus between the two reviewers was not met, a third reviewer decided on the matter. Summed scores of all items resulted in an overall quality score (maximum was scored at 19). Studies were classified as high quality (those with 12 to19 points), moderate quality (those with 9 to 11 points) or low quality (less than 9 points).

Assessment of available evidence

Levels of evidence were determined by using a rating system similar to that used by *van Hoogendoorn et al*. (2):

- **Strong evidence:** consistent findings in multiple high quality studies;
- **Moderate evidence:** consistent findings in one high quality study and one or more lower quality studies, or in multiple lower quality studies;
- **Insufficient evidence:** only one study available or inconsistent findings in multiple studies.

The significant effect of a factor in one study and a non-significant effect in another study were still considered as consistent findings. A negative effect of a factor in one study and a positive effect of this factor in another study were considered to be inconsistent findings. Evidence could concern both the presence and the absence of an effect.

Data extraction

Results were not pooled due to heterogeneity; factors were measured in several ways and reported using different categories. Better quality studies provided results in such a way that pooling was possible if categorisations were uniform.

The best way to provide a comprehensive overview of the literature was to present results for each study in a descriptive manner.

We defined the outcome as the risk of no RTW. Risk of RTW was recalculated to the risk of no RTW. This means that an Odds ratio or Hazard ratio larger than 1 means a delay in time until return to work.

Results

Selection of studies

The initial search yielded 4,449 research papers. After a screening of all titles and abstracts, 140 papers remained for more detailed review. Full text articles were also retrieved in case title and abstract did not provide sufficient detail. After the full screen of papers, 30 papers from 25 different studies met all of the inclusion criteria. Eleven were articles from the 2003 search, and 19 were from the 2010 search.

The updated search strategy revealed that the original search was thorough; the new search did not lead to papers that should have been covered by the previous review, but were not (see Figure 1). Three papers (20-22) that were selected in the previous review were excluded due to stricter criteria and/or after contact with the authors. The papers that were included were from New Zealand (1), Greece (1), Norway (1), Canada (4), Sweden (1), Belgium (2), The Netherlands (7) and the United States (13). Consensus was reached on quality of the studies. The average quality of studies was 12 with a minimum score of 6 and a maximum score of 16 (out of 19).

Approximately 220 factors were considered in these studies with a maximum of 53 factors in one study (23). See Table 1 for detailed characteristics. Four out of 25 studies seemed clearly underpowered when seeking to have at least 10 subjects per prognostic factor. Eight out of 25 studies used a retrospective design. We did not penalize or exclude studies on that basis. We did exclude studies if not all prognostic factors were established at the defined inception point. See Table 2: Results of the levels of the evidence synthesis.

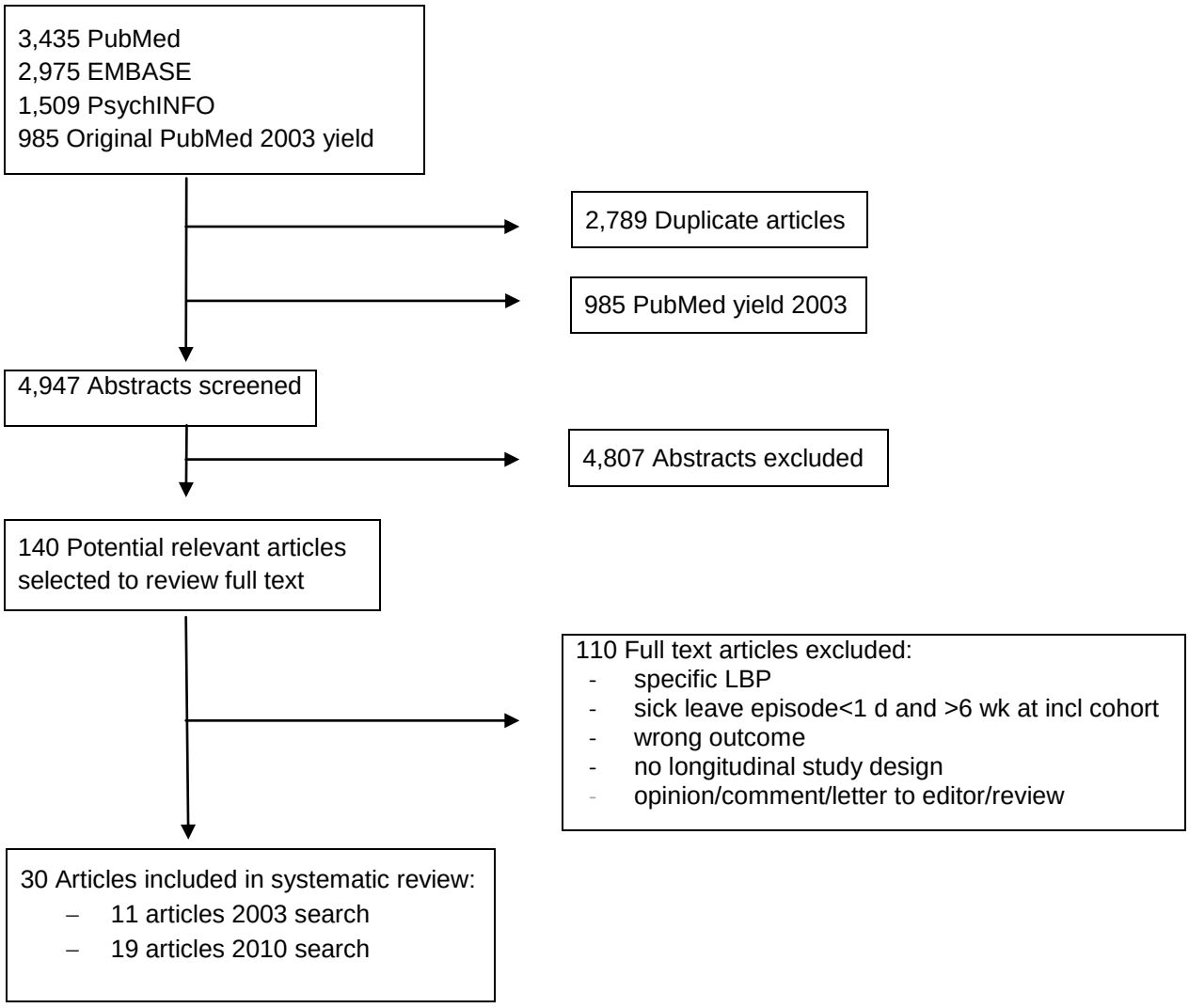

Figure 1: Flowchart chronicling the search process

Table 1: Characteristics of included studies

Reference by first author	Year	Country	Setting	Outcome definition	N	Inclusion time	Follow up (months)	Analysis	N. factors studied	% with RTW	Quality score	Study design/ name
1. Abenhaim (24)	1988	CAN	Workers compensation (WC)	180 or more days of accumulated compensated absence	1720	< 7 days of the onset of absence from work	24	Multivariate Logistic Regression	6	96.4%	14	Retrospective / chart extraction
2. Alexopoulos (25)	2003	Greece	OHS Shipyard	RTW in full duty of a t least 1 day	119	1st day off work	12	Cox proportional hazards	19	>97.5%	15	Prospective
3. Andersson (26)	1976	Sweden	National register	Sickness absence episode	940	1st day sickleave	264	Recovery rates, survival curves	2	>90%	8	Retrospective
4. Baldwin(27)	1999-2002	USA	WC	Patterns	??		12	Multinomial logistic regression	5	?	12	Prospective
5. Burdorf (28)	1993-1994	NLD	OHS	Sickness absence	50	Start sickness absence	24	Cox proportional hazards	4	>90%	7	Prospective
6. Dasinger (29)	1994-1996	USA	WC	Duration of work disability	433	1 day of disability within 14 days of injury	12-48	Cox proportional hazards	18	?	14	Retrospective
7. Du Bois (30)	?	Belgium	WC	Return to the previous occupational level at 3 months after the first day of sick leave,	186	4 to 6 weeks after claim introduction	3	Multiple logistic regression	10	69.9%	12	Prospective
8. Du Bois(23)	2003	Belgium	WC	Time to return to same or other job	346	4 to 6 weeks after claim introduction	6	Forward stepwise logistic regression	53	79.6%	16	Prospective
9. Franklin (31)	July 2002-June 2003	USA	WC	Receipt of wage replacement benefits	1843	<6 weeks after injury	12	X^2 analysis, multivariate logistic regression ad multiple regression	15	>80%	15	Prospective (D-RSC)
10. Fransen (32)	1994-1995	NZL	WC	Compensation status at 3 months	854	< 3 weeks after injury?	3	Multivariate logistic regression	34	76.1%	12	Prospective
11. Fulton-Kehoe (33)	See Franklin	USA	WC	See 9.	1885	See 9.	12	Binary recursive partitioning analysis (CART)	38	>80%	14	Prospective (D-RSC)
12. Gluck (34)	1986-1987	USA	Work injury database	Return to work	8628	Start of claim	2	Cox proportional hazards	9		7	Retrospective
13. Goertz (35)	1984	USA	WC/ Occ Physician	Time loss from work	207	< 30 days of onset	6	ANOVA Multivariate regression	9	>98%	9	Retrospective
14. Hagen (36)	1995-1996	NOR	Insurer	Duration of work incapacity	89.190	After 2 weeks	12	Wilcoxon rank sum test/ Kruskal Wallis	3		9	Retrospective

Reference by first author	Year	Country	Setting	Outcome definition	N	Inclusion time	Follow up (months)	Analysis	N. factors studied	% with RTW	Quality score	Study design/ name
15. Heymans (37)	10-2000-9- 2002	NLD	OHS	Lasting RTW & first RTW HR<1 is longer duration until RTW	299	Sick listed 3-6 weeks	12	Cox proportional hazards	25	96%	16	Prospective
16. Heymans (38)		NLD	OHS	Lasting RTW	628	<8weeks	12	Cox proportional hazards + bootstrapping	21	?	14	Prospective
17. Kapoor (39)		USA	WC	Actual RTW: full duty work or modified work	300		3	Logistic regression, multiple regression			8	Prospective
18. Krause (40)	Jan 1994-Dec 1996	USA	WC	Duration of work disability	433	1 days of temporary disability within 14 days of injury	12-48	Cox proportional hazards	18	?	14	Retrospective
19. Lotters (41)	?	NLD	OHS	Fully returning to the original job	253	2-6 weeks	12	Cox proportional hazards	39	>90%	13	Prospective
20. Nordin (42)	1994	USA	Clinical setting	Return to work	162	Within 1 week of onset of pain	?	Multiple logistic regression	13	?	11	Prospective
21. Pransky (43)	Jan 1997-June 1998	USA	WC	Prolonged length of disability, cumulative number of days on disability payments	494	>12 days after injury, mean 15.53 days, SE 0.33	12	Cox proportional hazards	23	68%	10	Prospective
22. Prkachin (44)	?	CAN	WC	RTW status at 3 month	148	Within 4 to 6 weeks after first claim of injury	3	Stepwise logistic regression (backward elimination)	24?	64%	9	Prospective
23. Schultz (45)	?	CAN	WC	RTW status at 3 month	111	Within 4 to 6 weeks after first claim of injury	3	Stepwise logistic regression (backward elimination)	24	64%	12	Prospective
24. Schultz (46)	?	CAN	WC	RTW status at 3 month	111	same	3	Stepwise logistic regression (in blocks)	41	64%	9	Prospective
25. Steenstra (47)	Jan 1999-Jan 2001	NLD	OHS	First RTW, lasting RTW, total days on sick leave	615	Less than 3 days after injury	12	Cox proportional hazards Linear regression	27	>95%	15	Prospective
26. Turner (48)	See Franklin et al	USA	WC	See 9.	1068	See 9.	12	X^2 analyses, and logistic regression	8	81.6%	15	Prospective
27. Turner (49)	See Franklin et al	USA	WC	See 9	1885	See 9.	12	Forward stepwise logistic regression	12	81.6%	15	Prospective

Reference by first author	Year	Country	Setting	Outcome definition	N	Inclusion time	Follow up (months)	Analysis	N. factors studied	% with RTW	Quality score	Study design/ name
28. van Doorn (50)		NLD	Insurer	Time loss from work	1.119	<72 hours after onset of disability 13 years 5 Retrospective	156	Cox proportional hazards	10	>70%	14	Retrospective
29. van der Weide (51)		NLD	OHS	Working as many hours as before absence HR>1 faster RTW	116	>10 days	12	Cox proportional hazards	25	Approx. 90%	15	Prospective
30. Webster (52)	Jan 2002-Dec 2003	USA	Insurer	Length of wage replacement payment	8443	Acute disabling back pain	24	Multivariate linear regression	9	90.2%	6	Retrospective

Table 2: Results of the levels of evidence synthesis

Levels of evidence	Construct studied	Effect estimates found in previous studies
		>1 = longer time until RTW, Odd ratio or Hazard ratio (95% Confidence interval), a CI containing the value 1 means a non significant finding
Strong evidence: consistent findings in multiple high quality studies	Recovery expectations (23;30;37-39;41;45-49)	• Expect to rtw within 6mo? aOR 1.14 (1.04-1.25)[23] • Dependent on confounders adjusted for [49] • Recovery expectations (0–10)[48]: Very low (0) aOR=3.08 (1.46–6.48), Low (1–4) aOR=2.05 (0.98–4.26), Moderate (5–7) aOR=1.66 (0.99–2.76), High (8–9) aOR=1.44 (0.82–2.52), Very high (ref=10)= 1.00, Don't know/didn't answer aOR=5.89 (3.16–10.96)/aOR=2.93 (1.36–6.32) • Expected >10 days= 2.83 (2.04-4.00)[47] • Not very sure to rtw <6mo (<10 on a 10 point Likert scale) OR= 4.6 (2.1-10.3)[30] • Self-predicted timing to RTW: HR 0.95 (0.91–1.00)/ Self-predicted certainty full work resumption: ns[37] • Perception RTW in 6 wk: aHR= 2.32 (1.29–3.33)[41] • OR=1.26 (1.11-1.44) [45] • OR=1.22 (1.02-1.45)[46] • P<0.001[39] • Self-predicted timing to RTW: aHR= 0.95 (0.91–1.00)[38]
	Radiating pain (injury severity) (27;30-33;35;42;44;49;50;53)	• aOR=4.9 (2.8-8.4)[53] • aOR=6.25 (4.42-8.96)[50] • p=0.0186, p=0.0010[35] • Injury severity (ref mild sprain/strain), Major sprain/strain aOR=1.28 (0.80–2.03), Radiculopathy aOR=1.95 (1.30–2.91), Reflex/sensory/motor abnormalities aOR=3.72 (1.83–7.58)[49] • p<0.05[33] • Severe leg pain (7-10) OR 1.92 (1.11-3.33)[32] • OR= 2.5 (1.1-5.8)[30] • Nr, significant bothersomeness[27] • nr[31], Ns[42] • RTW: p=<0.01, Days lost: p<0.001[44]
	Self report of disability (23;27;32;37;38;41;42;47;49;51)	• Diminished mobility single item; aHR= 1.97 (1.45-2.70)[47] • Single item: Stuck to bed from Oswestry: OR=1.23 P=0.11; ns[23] • RDQ score (ref 0–11); 12–15 aOR=3.11 (1.45–6.63); 16–17 aOR=5.03 (2.33–10.89); 18–24 aOR=7.01 (3.44–14.29)[49] • Oswestry score : 21–40 aOR= 3.10 (1.41–6.80), 41–59 aOR= 3.98 (1.84–8.62), 60 aOR= 3.43 (1.57–7.51)[32] • GHQ-28 (6+) OR=1.87 (1.29-2.71)[32] • Non significant[30;37;38;43;45] • aHR=1.05 (0.92-1.18)[41] • aHR=1.22 (1.11, 1.37)[51] • Significant[27;46] • aOR=1.40 (1.05-1.88) p=0.02[42]

Strong evidence: consistent findings in multiple high quality studies (continued)	Pain intensity (23;27;28;30-32;35;37;38;41;42;44;45;49;51)	• Interference in daily activities aOR= 4.7 (1.8-12.5)[30] • Intensity HR=0.94 (0.90–0.98)[38], Duration HR= 1.00 (0.97-1.00) [in weeks][38] • Pain interference aOR= 1.57 (1.27-1.94)[23] • No. pain sites (ref 0–2), 3–4 aOR=1.92 (1.22–3.03), ≥5 aOR=1.71 (1.01–2.92), Pain change: Better: 1, unchanged aOR: 1.47 [0.98-2.20] worse=1.31 [0.81-2.11], Colineair with RDQ[49] • HR=1.12 (1.04-1.20)(37) • Mild: ref, Moderate: OR=1.08 (0.52-2.27), Severe: OR=1.47 (0.74–2.91)[32] • Adjusted for in MVA[31;48] • p =0.0010[35] • aHR=1.17 (1.05–1.29), Duration HR=1.09 (0.68-1.75)[41] • past week: p<0.05, Pain, no sites, change all p<0.05[33] • ns[30;38;42;44;45]
	Treatment related factor – content (47;49;51)	• First provider (ref primary care), Occupational medicine aOR=1.78 (0.99–3.20), Chiropractor aOR=0.41 (0.24–0.70), Other aOR=1.93 (1.31–2.84) [49] • Not seeking care, HR=1, Treatment GP or medical specialist, HR=1.95 (1.59- 2.38). Seeking OP care=1.83 (1.32-2.50)[47] • Occ. Physician intervention: aOR=1.30 (0.88-1.90)[51]
	Physical demands (occupation)(23;49)	Blue collar: aOR= 2.27 (1.21-3.92)[23] Construction: aOR=1.88 (1.12–3.17)[49] Manufacturing aOR=1.98 (1.04–3.77)[49]
	Modified duties(32;33;35;43;49)	• Unavailability of light duties aOR=1.66 (1.22-2.46)[32] • Alternative duty available p=0.0008[35] • Supervisor listens - employer called about RTW - offered accommodation p<0.05[33] • Modified duties not available: ns[43] • Job accommodation not offered aOR=1.91 (1.31–2.76)[49]
Strong evidence (but the two high quality studies are from the same author from the same country)	Job satisfaction measure (All in all, were you satisfied with your job?) (27;32;37;40;42;49;51)	• HR=1.35 (1.49-1.59)[37] • Good: HR=1, Reasonable: HR=0.93 (0.79- 1.07), Moderate: HR= 1.25 (0.96-1.64), Poor HR=1.70 (1.06-2.70)[38] • ns[32;40;42;49;51], nr[27]
Strong evidence: NO EFFECT	Lifestyle (23;25;28;31;31;32;37;49;49;51)	• Alcohol: ns[31;49] • Tobacco use[23;25;28;31;32;37;49] • Physical activity (habitual)[32;37;51]
	Pain Catastrophising scale(23;49)	• ns[23;49]
	Education(25;27;31-33;43-45;48;49)	• Not in final model [25;27;31;33;43-45;48] • aOR: high school=1, less then high school=0.92 [0.55-1.54], vocational or some college= 0.78 [0.54-1.14], college=0.53 [0.23-1.18][49] • Secondary/trade: OR=0.95 (0.68–1.34), diploma/degree: OR=0.66 (0.37–1.15)[32]

Moderate evidence: not enough high quality studies	Workplace psychosocial (23;25;33;35;37;38;40;41;43;45;46;49;51)	• Hectic job: disagree:OR=1, Agree aOR=1.84 (1.16–2.91), Strongly agree aOR=2.16 (1.32–3.54)[49] • Co-workers: ns[38;40;49]; aHR 1.05 (0.86-1.28)[41] • Supervisor: ns (49); Low support: RR1=0.81 (0.66-1.00); RR2=0.81 (0.66-1.01); RR3=0.79 (0.64-0.99); RR4=0.79 (0.63-0.99)[40] • Job Content Q: ns [23;25;37;38;45] • Job control: ns[37], Acute phase: ns, Subacute/chronic phase: RR1=0.53 (0.40-0.72), RR2=0.53 (0.40-0.72), RR3=0.58 (0.43-0.79), RR4=0.59 (0.43-0.80) [40] • Social support (at work) HR 0.96 (0.92–1.00) [37], ns [38] • Emotional effort= ns; Lack of variation in work= ns; work tempo & work quantity: aHR=0.82 (0.73-1.00); Problematic relations with colleagues 0.82 (0.73-1.00) per 10 scale units [51] • Job demands - RR1=0.70 (0.57-0.86), RR2=0.69 (0.57-0.85), RR3=0.74 (0.60-0.92), RR4=0.74 (0.60-0.92); Job strain- Acute phase: ns; Subacute/chronic phase: RR1=0.55 (0.40-0.75), RR2=0.51 (0.37-0.70), RR3=0.54 (0.39-0.75), RR4=0.56 (0.40-0.78) [40], ns[38;46] • Perceived job difficulty: 0.0013[35] • Skill discretion: ns [25), OR=0.91 (0.81-1.01)(45] • Negative workplace issues ns[43]
	Treatment related factors – Pain observation(43;44;46)	• Pain guarding: OR=1.14, p=0.01[44] • Waddell non organic signs: OR= 1.69 (1.15, 2.23)[46] • Symptoms inconsistent with clinical findings: ns[43]
	Claim related factors(43;45;49;53)	• Delayed nurse case manager referral aHR 0.64 (0.42-0.98)[43] • Daily benefits paid: <Ca$40=1.0, Ca$40-Ca$50= 1.3 (0.7-2.5), Ca$50+=1.8 (1.0-3.4) [53] • Health insurance (ref no insurance) • Insurance, not through employer aOR=0.96 (0.60–1.53); through employer: aOR=0.66 (0.44–0.99) • Medical visit to claim receipt, d (ref <14); aOR=1.32 (0.87–1.99) • Attorney involved: aOR 1.32 (0.54-3.27) [49] • Perceived fair treatment: ns[45]
Moderate evidence: one high quality study and two lower quality studies that show a positive effect	Workplace-organizational – System for Work Disability Prevention/Claim reporting(32)	• Supervisor listens - employer called about RTW - offered accommodation p<0.05[33] • Modified duties not available: ns[43]
Moderate evidence for self report: not enough high quality studies, (but balanced by four non significant findings)	Job tenure(25;27;28;37;43;49;52)	• aHR=1.02 (1.00-1.03)[43], • P<0.001[52],significant studies from same group also in review by *Shaw et al*. [54] • Nr, ns[25;27;28;37;49]
Moderate evidence for self report: not enough high quality studies	Prior claim(32), Previous injury > 1 month off work(48), Prior health related work absence >2 weeks(43), History of sick leave(25;47)	aOR=1.08 (0.78–1.50)[32] aOR=1.62 (1.14–2.31)[48] aHR=1.30 (1.00-1.69)[43] not significant [25;47]

Moderate evidence: not enough high quality studies,	Workplace – Physical factors: Physical demands at the job (self report: tasks like lifting, bending and twisting (23;25;29;31-33;37;38;40-43;45;49)	• Heavy lifting - excessive amount of work - job very hectic - can take breaks p<0.05[33] • Lifting about 3/4 day or more: OR 1.98 (1.30-3.04), rest ns[32] • Whole body vibration: aOR=3.23 (1.50-6.97)[42] • Not reported[29] • All other studies: ns[23;25;31;33;37;38;40;41;43;45;49]
Moderate evidence for NO effect	Depression (CES-D) scale (23;32;45;55)	• Not in MVA[23;32;45]
	Treatment related factors – Clinical examination(23;27;42;44)	• Ns on all 18 tests[23] • Abnormal heel walk: aOR=2.53 (1.18-5.41) p=0.02, Abnormal gait: ns, Abnormal toe walk: ns[42] • Time on walking test: ns[27;44]
Insufficient evidence (not enough studies)	Presence of language barriers (43)	aHR=1.54 (1.05-2.27)[43]
Insufficient evidence (inconsistent findings)	Age (all studies)	Mostly not reported
	Sex (all studies)	Mostly not reported
	Pain medication(23;31;43;52)	• Pain medication: cOR=0.89 P=0.58[23] • No. of opioid prescriptions in 6 wk 0x aOR=1, 1x aOR=1.5 (1.0–2.3), 2x aOR=1.8 (1.1–3.0), 3x aOR=(2.5 1.4–4.3), >3 aOR=2.2 (1.3–3.6) [31] • Potentially impairing medications: OR=1.16 (0.92-1.49)[43] • Morphine equivalents: (mg) 450= difference in number of disability days=69.1 [49.3, 89.0], p< 0.001; 226–450=43.8 [23.7, 63.9], p< 0.001; 141–225= 21.9 [3.2, 40.6], p=0.022; 1–140=5.2 [14.6, 25.0, p=0.609; 0= 0 [52]
	Mental health (28;33;45;46;48;49;56;57)	• ref= >50 (above population mean)=1, 41–50 aOR=1.11 (0.66-1.87), 30–40 aOR=0.86 (0.51– 1.47), < 30 aOR=1.10 (0.63–1.94), correlated >0.5 with RDQ[49] • ref= >50 (above population mean)=1, <2 SD aOR=1.59 (0.82–3.08), 1–2 SD aOR=1.84 (0.99–3.42), <1 SD below mean aOR=1.66 (0.91–3.03)[48] • Not in final model[33] • Not significant[45] • OR=1.03 (0.99-1.07)[46] • OR=1.03[28]
	Fear Avoidance Beliefs(23;31;33;38;48;49)	• Both work and physical scales: ns[23] • Work fear-avoidance High (5–6) aOR=4.64 (1.57–13.71), Low–moderate (3–4.9) aOR=2.96 (0.98–8.90), Very low† (3) aOR=1.00 [48] Different. aOR Fear-avoidance* reference: (≤3)=1, Low-moderate (>3– <5) aOR= 1.38 (0.73, 2.62), High (5– <6) aOR=1.67 (0.89–3.13), Very high (6) aOR=1.71 (0.88-3.30)[49] • HR=0.98 (0.97–1.00)[38] • Not in final model[31;33]
	Work relatedness	• Work related injury: aOR=0.36 (0.15-0.87)[42] • ns[23;47] • Blame work: Work aORs=1.05 (0.60–1.83), Self aOR=0.96 (0.47–1.99), Someone/something else aOR=0.91 (0.45–1.85), No one/nothing aOR=1.00 • Don't know/didn't answer aOR=1.54 (0.49–4.84)[48]

Key Findings

There are a number of factors that are supported by strong evidence. This means that there are multiple high quality studies that agree on the significance of a particular prognostic factor, and no conflicting results from other studies.

Recovery expectations

The factor that is supported by the most evidence is 'recovery expectations' (23;30;37-39;41;45-49). This is a construct where the worker predicts how long he or she thinks it will take before return to work is possible and/or how likely he/she thinks that he/she will be returning to work. This is a strong indicator for RTW that could be suitable for use in screening or the assessment of workers at, for instance, the four-week point post-injury, as is common at the WCB in Manitoba.

We are not entirely sure what determines workers' expectations. *Turner et al*. in the 2008 (49) publication, reports that the predictive value of expectations is highly dependent of the confounders added to the statistical mode. From *Turner et al*., it seems that recovery expectations might be determined by injury severity, functional status, having a hectic job, receiving an offer for job accommodation, a number of pain sites, a previous injury and the type of health-care provider involved in the case. This finding explains the somewhat different results of the *Turner et al*. 2006 (48) publication based on the same (D-RISC) study. Nevertheless, this simple question could be ideally suited for screening. This way, those at high risk could be further questioned to determine their recovery expectations.

Health-care providers

The next factor that is supported by strong evidence is the treatment-related factor: content of care (47;49;51). In other words, it matters with which health-care provider the worker is in contact. Some caution, however, is warranted. Referral bias might play a role, which means that more severe cases are either referred to different providers or are seeking the care of certain providers. Evidence on the effectiveness of interventions should only be based on randomised controlled trials.

The finding that seeking care from a chiropractor results in shorter time on disability benefits (28 is in concordance with evidence of effectiveness of chiropractic care and manipulation from Cochrane reviews. Summaries on the effectiveness of

interventions in acute and sub-acute low-back pain can be found in the Cochrane databases. The Institute for Work & Health (IWH) houses the Cochrane Back Review group, and further questions can be addressed to IWH.

Disability

The factors 'self report of disability' (23;27;32;37;38;41;42;47;49;51) and 'pain intensity' (23;27;28;30-32;35;37;38;41;42;44;45;49;51) are often correlated, but asking questions on both still seems to improve a prediction of prognosis. This means that a worker should be asked both about functional limitations and about the pain intensity that they experience. Both can be easily measured in several ways with well-validated questionnaires. In Ontario, the Workplace Safety and Insurance Board (WSIB) uses the *Roland Morris Disability Questionnaire* and a 10-point Visual Analogue Scale (VAS) pain rating scale to monitor baseline values and progress at the end of treatment within their programs of care.

Radiating pain

Radiating pain—distinctly different from 'non-specific' low-back pain—is a well-known factor that is often reported as 'injury severity' (27;30-33;35;42;44;49;50;53). It has clear neurological implications. In patient assessments, neurological findings are often considered to be a 'red flag' that warrants further clinical investigation. Since this fact is commonly known, more recent studies have often excluded patients with neurological complications associated with some cases of radiating pain. Therefore, this factor is no longer found in more recent studies.

Workplace factors

Unfortunately, workplace factors are not considered as much as expected. There has been a shift away from a biomedical to a biopsychosocial model. However, the measurement of workplace-related factors is clearly lagging. Often, measures are used that are not valid for workers off work due to low-back pain.

However, there are a few work-related factors, supported by strong evidence, shown to be predictive for RTW.

Physical demands

Physical demands measured by occupation (23;49). This indicates that those with more physical work are slower to return to work. These measures are most often derived from coding of occupations in databases, for example, that of the National Occupational Codes (NOC) (58), often used in Canada. These measures may, at first, seem crude, but they can be more predictive than self-reported measures where the worker is asked about physical demands in the job. Studies that use self-reported measures only provide moderate evidence for an effect of physical demands on RTW. Some studies found an effect of what seemed excessive physical demands (32;33;42). However, most studies did not find an effect of self-reported physical demands (23;25;29;31;33;37;38;40;41;43;45;49). Self-reported physical demands likely lack precision in measurement in such a way that no clear relationship can be established. This is because a worker probably perceives physical demands of the job differently after getting injured at work.

Job satisfaction

A simple job satisfaction measure was supported by strong evidence to be predictive for RTW (27;32;37;40;42;49;51;59). Again, job satisfaction is probably determined by other factors at work, but it is a strong indicator that can be used in screening or assessing at the very start of the work disability process.

Modified duties

The offer of modified duties, or workplace accommodation improved RTW outcomes as well. This factor was reported in a number of ways, but two high quality studies (32;33;49) found the factor to be predictive. Interestingly, enough the offer, not the actual implementation of the modified duties seems prognostic, which might be an indicator of job type rather than the result of a successful intervention, since in some sectors modified duties are (perceived) harder to implement than in others..

Strong evidence for no effect

There is strong evidence that there is no predictive effect of ‘lifestyle factors’ (23;25;28;31;32;37;49;51), ‘pain catastrophising scale’ (23;49) and ‘education’ (25;27;31-33;43-45;48;49) on RTW. Pain catastrophising was profiled in two high

quality studies, and no significant effect was found. Pain catastrophising might play a role at a later stage in the work disability process.

Most factors showed moderate evidence. 'Workplace psychosocial factors,' for example, seemed important, but it is very difficult to reach conclusions due to a lack of consensus among researchers. Similarly, having had *a prior* claim seems to be an indicator for faster RTW, but there are no sufficiently high quality studies to confirm this hypothesis. Results seem different between studies in a worker's compensation setting and those in a sick leave setting (where work relatedness isn't required).

However, for some of the factors, the available evidence indicates that it will be unlikely that future studies will, in fact, find a prognostic effect. Surprisingly, the factor 'depression' did not reach the final multivariable model in three studies. This finding seems to indicate that depression does not play a major role in the acute phase of injury. It could, however, become important at a later stage, when the worker is away from work for a longer period of time. Likewise, the results of a clinical examination do not seem to be prognostic for time away from work, where of course it doesn't mean that no clinical examination should be performed.

Age and sex were two categories for which insufficient evidence was determined. This was surprising since in the previous review, these items were identified as prognostic. Recent studies, however, indicate that the initial results might be false. Age and sex are often added as confounders to a statistical model without providing actual effect estimates, which makes it hard to reach conclusions. In a working population that is aging, reporting the effect of age might be a first step in disentangling the mechanisms at play in older age groups. And this could inform improvements in care for this growing demographic.

'Fear avoidance beliefs' were not shown to be prognostic for RTW in this systematic review. This may be due to the content of the questionnaire. Fear avoidance beliefs could be less valid in a population where back pain is work related or at least work relevant.

One factor that has recently been of great interest to researchers is opioid use for pain management. However, it has not yet been studied sufficiently. It may, however, prove to be highly prognostic in future studies.

Knowledge transfer workshop: Discussing the results with practitioners

A workshop was organized on April 6, 2011 at the Department of Occupational Therapy, School of Medical Rehabilitation, University of Manitoba (Winnipeg, Manitoba). It was attended by 34 participants: 19 from Workers Compensation Board, 11 clinicians, and four other work disability professionals. The morning session was attended mainly by clinicians and WCB case managers; the afternoon session was mainly attended by clinicians and WCB medical examiners.

The workshop had four parts. An overview of the study design and methods was provided. A discussion took place regarding prognostic factors, according to the knowledge and experience of the practitioners involved. All factors identified in this discussion were found in the literature search, which meant that information was available on the strength of the evidence for all factors mentioned. This is an indication of the high skill and knowledge level of workshop participants. Next, a set of q-cards containing the most important constructs found in the evidence synthesis were disseminated among smaller groups of five participants. Each of these groups discussed the importance of each prognostic factor and determined relevance based on the clinical practise and experience of the groups' members.(see Table 3).

Table 3: Agreement between research and practice

Important according practice	Evidence from review
Psychosocial	Insufficient evidence
Fear avoidance beliefs	Insufficient evidence
Work relatedness of back pain	Insufficient evidence
Kinesiophobia	Insufficient evidence
Depression	Moderate evidence for NO effect
Treatment related: content	Moderate evidence
Workplace-psychosocial	Moderate evidence
Claim-related factors	Moderate evidence
Workplace modified duties	Strong evidence
Pain	Strong evidence
No consensus: recovery expectations (5/7), radiating pain (4/7), disability (4/7), workplace-physical factors (6/7), provider (6/7)	

Results of the workshop

The results from the workshop indicated that there are some discrepancies between current practice and the findings from our systematic review. We made it clear to participants that we limited our examination to those that were in the early phase of work disability/sick leave, and that some of the factors mentioned might be based on clinical experience with patients that are at a later stage in the disability process.

Many factors mentioned were in the psychological domain. The shift from a biomedical model to a biopsychosocial model (60) appears to have concluded with a strong emphasis on psychological factors. However, from our review, it seems that some of these factors should still be considered in conjunction with some of the biomedical factors. The psychosocial factors that were mentioned lacked evidence.

This was mainly due to a lack of consensus among researchers. Participants considered workplace factors, like supervisor and co-worker support and work-life interference, to be psychosocial factors, which may be important. At the workshop, we presented preliminary findings, the final results with regards to job satisfaction was not presented at the workshop and can be considered as a workplace psychosocial factor. There was no complete consensus on some of the factors supported by strong evidence; recovery expectations was endorsed by 5 out of 7 groups, radiating pain and disability by 4 out of 7 groups and workplace physical factors and healthcare provider by 6 out of 7 groups.

Overall, the workshop was successful, and it was received with great enthusiasm. It was rated 4.4 on a 5-point scale (see Appendix III for full results).

We asked participants what they thought should be the next steps for research. The recommendation was to further translate the results, with applicable ramifications. Participants wanted something that could be used in practice.

Based on this feedback from the workshop, we have submitted an application for further research. The proposed research will take the investigation further; it will review the literature on prognosis of low-back pain and RTW beyond the acute phase. Here, we expect to find stronger evidence of the factors mentioned by practitioners in the subacute and chronic phase.

Additionally, we want to create a guidebook based on the current review. We would involve stakeholders in the development of this new resource and incorporate the available evidence on effective interventions from the Cochrane review, in collaboration with the Cochrane Back Review group, at IWH.

Recommendations

The evidence summarized in this review can be used to develop an approach for identifying those at high risk for poor outcomes. Resource prioritization and allocation would be informed by this new review.The factors identified in this review could be used to screen those workers at high risk of long term or permanent disability. A screening tool can be developed and should first be validated within the setting it will be used in order to obtain reliable risk estimates and a sufficiently powerful prediction

(also known as explained variance). Such a tool should be based on prior knowledge and thorough validation procedures are available (61). The screening tool should then be evaluated for its effectiveness on improvement of care for those off work due to low-back pain (62). Of course these findings can be used to educate those working in the field of work disability prevention in Manitoba. The workshop developed in this study is an excellent learning tool to do so according to workshop participants.

Further dissemination/Knowledge transfer

We have future plans for dissemination and knowledge transfer. We will engage more stakeholders in multiple workshops within IWH educational influential networks. This process should increase future uptake of the findings (63). We will also create a "Sharing Best Evidence" newsletter (http://www.iwh.on.ca/sharing-best-evidence). We will create an e-alert and make the systematic review available on the IWH website.

An article on this systematic review is currently being drafted for the IWH quarterly newsletter *At Work* (Fall 2011 issue) and we will pursue articles in the trade media to target RTW specialists and the human resources (HR) community.

We will set up briefings with WCB staff, disability managers and HR professionals and set in place a mechanism for feedback for early adopters of research knowledge of the review's results.

Publications in peer-reviewed journals and presentations at national and international conferences will be undertaken, such as the *International Conference on Occupational Health* (ICOH) in March 2012 and *Workers' Compensation Research Group* in November 2011. We will ensure that a summary of the grant is available for the *Association of Workers' Compensation Boards of Canada* website.

An abstract has been accepted for the *EPICOH* (the epidemiology subcommittee of ICOH) conference at the University of Oxford, United Kingdom in September 2011. It is anticipated that this research project will result in a peer-reviewed publication in *Occupational and Environmental Medicine* some time in 2012.

Appendix I: Prognosis Search Strategy for Medline

Search (prognosis [MH:NOEXP] OR "survival analysis" [MH:NOEXP] OR "incidence" [MESH] OR "mortality" [MESH] OR "follow-up studies" [MESH] OR "mortality" [SH] OR prognos* [WORD] OR predict* [WORD] OR course [WORD] OR cohort[Title/Abstract]) AND (back OR back pain OR low back pain OR backache OR "back pain"[MESH] OR "low back pain"[MESH]) AND (sick leave OR return to work OR "workers' compensation"[MESH] OR "occupational diseases"[MESH] OR "rehabilitation, vocational"[MESH] OR "employment"[MESH] OR "absenteeism"[MESH] OR "disability evaluation"[MESH] OR "work"[MESH] OR "occupations"[MESH] OR "sick leave"[MESH])

Appendix II: Quality assessment form

Name study: Primary author: Year of publication:		*+ = positive – = negative ? = not clear*
Study population		
A	Description of inclusion and exclusion criteria: positive if criteria were formulated for: age, duration of symptoms, duration of sick leave, comorbity	*+ /–/?*
B	Description of study population: positive if described in what setting the patients are recruited (i.e. general practice, hospital, occupational setting)	*+ /–/?*
C	The sampling frame and recruitment are adequately described.	*+ /–/?*
D	Methods to identify the sample are sufficient to limit potential bias (number and type used, e.g. referral patterns in health care) Incl. sample size/power calculation.	*+ /–/?*
E	The baseline study sample (i.e., individuals entering the study) is adequately described for key characteristics.	*+ /–/?*
Response		
F	Response: Positive if the response rate ≥ 75%	*+ /–/?*
G	Information on non-responders versus responders: positive if information presented about patient/disease characteristics of responders/non-responders or no selective response. + = no selective response, information given, – = selective response, information given, ? = not clear	*+ /–/?*
Follow-up (extent and length)		
H	Positive if the follow-up period was at least 12 months	*+ /–/?*
I	Positive if total number of drop-outs/loss to follow-up < 20% on the last moment of follow-up	*+ /–/?*
J	Information completers versus loss to follow-up/drop-outs: positive if demographic/clinical information (patient/disease characteristics such as age, sex and other potential prognostic predictors) was presented for completers and those lost to follow-up/drop-outs at the main moment of outcome measurement, or no drop-outs/loss to follow-up.	*+ /–/?*
Outcome		
K	Definition of main outcome is described. The method of outcome measurement used is adequately valid and reliable to limit misclassification bias	*+ /–/?*
Prognostic factors		
L	Standardised assessment of patient characteristics and potential clinical prognostic factor(s): positive if standardised questionnaires or objective measurements were used at baseline of at least 4 of the following 7 potential prognostic factors. a) age b) sex c) pain d) functional status e) duration of complaints f) back complaints g) physical workload	*+ /–/?*
M	Standardised assessment of potential psychosocial prognostic factor(s): positive if standardised questionnaires or objective measurements were used at baseline of at least 1 of the following 6 potential prognostic factors: a)depression b) somatisation c) distress d) fear & avoidance e) coping strategies f) psychosocial work-related factors (social support, job decision latitude)	*+ /–/?*
N	Did authors address potential issues surrounding missing data?	*+ /–/?*
Data presentation		
O	Frequencies given of main outcome measure (return to work): positive if frequency, percentage or mean, median (Inter Quartile Range) and standard deviation/CI are reported of the outcome measures	*+ /–/?*
P	Frequencies of all prognostic factors: positive if frequency, percentage or mean, median (Inter Quartile Range) and standard deviation/CI are reported of all prognostic factors	*+ /–/?*
Q	Appropriate analysis techniques: positive if univariate crude estimates are provided. Positive in case hazard ratios, odds ratios, relative risks or relative risk ratios are presented. Negative in case correlations are reported.	*+ /–/?*
R	Multivariate prognostic model is presented: positive if attempt is made to determine a set of prognostic factors with the highest prognostic value. Positive if a manual forward stepwise procedure was used (p_{in} <0.05; p_{out} ≥0.10). Negative in case of an analysis based on an automated forward or stepwise procedure.	*+ /–/?*
S	Sufficient numbers: positive if the number of events in the multivariate analysis was at least ten times the number of independent variables in the analysis	*+ /–/?*

Appendix III: Summary of workshop evaluation

						(1 = strongly disagree to 5 = strongly agree)		
Workshop content	**Strongly Agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**	**Mean**	**MIN**	**MAX**
1) The overview of the workshop objectives was clear and useful.	10	19	0	1	0	4.266666667	**2**	**5**
2) The presentation on the rationale and methods for the systematic review was clear.	12	18	0	0	0	4.4	**4**	**5**
3) The Q-sort interactive session was useful in generating discussion about prognostic factors.	23	7	0	0	0	4.766666667	**4**	**5**
4) The presentation on the results from the systematic review was clear.	13	17	0	0	0	4.433333333	**4**	**5**
5) I welcomed the opportunity to provide my insight and opinions during the discussions.	14	14	2	0	0	4.4	**3**	**5**
Workshop Logistics								
1) The workshop followed the agenda and descriptive information.	13	14	2	0	0	4.379310345	**3**	**5**
2) There was enough time for discussion.	16	13	1	0	0	4.5	**3**	**5**
3) Questions and comments were responded to appropriately.	19	9	2	0	0	4.566666667	**3**	**5**
4) The venue was satisfactory.	10	18	1	1	0	4.233333333	**2**	**5**
						4.43844189		

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