Overview

Workplace-based Return-to-work Interventions: A Systematic Review of the Quantitative and Qualitative Literature

Volume 1

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Introduction

Employers, insurers and workers have expressed a growing interest in workplace-based return-to-work (RTW) intervention studies. However, studies in this area are relatively scarce, and they have been conducted using a variety of research designs.

To provide a comprehensive summary of the most effective workplace-based RTW interventions and to direct future research priorities in this area, the Institute for Work & Health carried out a systematic literature review of international studies on RTW published since 1990. This project was initiated at the request of the Workplace Safety & Insurance Board.

The concept of disability management applies to both work-related and non-work-related conditions. To focus the review on a relatively homogeneous group of workers, and to keep the review process both feasible and manageable, we made the following choices:

$ We limited our scope to interventions for workers with pain-related conditions.

$ We examined only RTW interventions which actively involved the workplace, and included clinical interventions only when they were closely tied to the workplace.

$ For clinical interventions, we limited our scope to those initiated by the workplace and those delivered by healthcare professionals (HCP) who were physically and organizationally part of the workplace, such as workplace-based occupational physicians.

How the Report is Organized

The first volume B the *Overview* B provides a brief, top-level report on the review=s objectives and methods. It focuses on the summary of evidence from the literature synthesis and makes recommendations about future workplace-based RTW interventions.

The second volume B the *Full Report* B provides considerably more in-depth analyses of this complex area of literature. It is the source for the information in the *Overview* but contains additional detail. For example, it expands on the review=s methodology, quality appraisal and best evidence synthesis and on the RTW interventions themselves. The *Full Report* also contains comprehensive discussions of findings from both the quantitative and qualitative literatures.

The third volume B *the Appendices* B contains additional figures and tables; the data extraction summary tables for the systematic reviews; quantitative studies; and qualitative studies summarizing the main findings of each study for which data was extracted. Recommendations related to future research in this area are also included. *(Copies of published studies from which data was extracted, including all supplemental and related papers, are provided under separate cover.)*

Objectives of This Systematic Review

$ To synthesize evidence on effectiveness of workplace-based RTW interventions and strategies aimed at helping workers with musculoskeletal (MSK) pain and other pain-related conditions return to work after a period of work disability. Effectiveness is determined by examining evidence regarding the consequences B for example, reduced work disability duration or reduced levels of pain B associated with workplace-based RTW interventions and strategies. Besides looking at effectiveness, we also examined the impact of interventions on costs to the system, such as wage replacement costs .

$ To expand our understanding of how injured or ill workers and how stakeholders experience the return-to-work process. We achieved this by including qualitative as well as quantitative research on return to work.

$ To provide an assessment of the methodological strengths and limitations which characterize quantitative and qualitative studies conducted in the field of RTW.

$ To lay the groundwork for evidence-based messages on effective RTW for employers, insurance companies, workers, unions, and other stakeholders.

What is a Systematic Review?

A systematic review is a kind of research that has a clearly formulated question, that uses systematic and explicit methods to identify, select and critically appraise relevant research, and that collects and analyzes data from studies included in the review (30).

A systematic review usually involves the following steps (24):

1. identifying the question
2. defining inclusion and exclusion criteria
3. searching the literature
4. selecting studies that meet inclusion/exclusion criteria
5. assessing the quality of selected studies and eliminating those in which quality is not sufficient
6. extracting in a systematic way key elements from the studies
7. developing tables, graphs and text which synthesizes the information across all the studies
8. developing the results and reporting them

How is Our Systematic Review Unique?

$ It is the first systematic review of the literature that focuses solely on workplace-based interventions.

$ The review included quantitative studies, qualitative studies and other published systematic reviews involving workplace-based RTW interventions. Combining the quantitative and qualitative literature within a single systematic review is

somewhat unique. However, our approach reflects a growing consensus that both quantitative and qualitative studies are essential if one is to develop a complete understanding of a social phenomenon B in this case, the implementation of workplace-based RTW interventions (32;73).

$ Most systematic reviews in the clinical area focus on studies using a randomized controlled trial design. But RTW interventions do not always lend themselves to this classic approach. So we cast our nets more widely and captured a broader range of study designs which were included in our review.

Description of Methods

Literature Search

The literature search was based on three strategies:

$ a comprehensive and systematic review of electronic bibliographic databases (MEDLINE, CINAHL, EMBASE, PsycInfo, Sociological Abstracts, ASSIA [Applied Social Sciences Index and Abstracts] , and ABI [American Business Index])

$ a review of working papers from relevant research institutes (Institute for Work & Health [IWH)]; Institut de recherche Robert-Sauvé en santé et en sécurité du travail [IRSST]; National Institute of Disability Management and Rehabilitation [NIDMAR]; Canadian Workplace Research Network [CWRN]; Finnish Institute of Occupational Health; Occupational Health and Safety Agency for Healthcare (OHSAH); National Institute for Occupational Safety and Health [NIOSH]; RAND Institute; W.E. Upjohn Institute; Liberty Mutual Research Centre; Danish National Institute of Social Research; and Workers' Compensation Research Institute [WCRI])

$ a review of personal libraries

*. **A list of the broad search terms used in our literature search can be found in Table 1.1. in*

Appendix 1.

All members of the steering committee (with backgrounds in clinical psychology, kinesiology, occupational therapy, anthropology, sociology, epidemiology, nursing, occupational medicine, and physiotherapy) were involved in developing the search strategy.

Study Selection Process

The process involved merging citations identified during the electronic search of our seven databases; removing duplicate citations; reviewing personal libraries; reviewing reference lists from applicable studies; and reviewing peer-reviewed working papers from relevant research institutes.

Then the titles and abstracts for 4124 studies were reviewed for inclusion in this systematic review. ***Inclusion/exclusion criteria are described in Table 1 below*.

Titles and abstracts were reviewed, and an initial screen of full papers (where necessary) was carried out by two independent reviewers. In the end, 35 quantitative studies, 15 qualitative studies and 15 systematic reviews which met the inclusion criteria remained. These were then appraised further for methodological quality.

Eleven quantitative studies, 13 qualitative studies, and nine systematic reviews met our quality appraisal criteria and proceeded to the data extraction stage. ***Details of the methodologies used to assess quality of these studies are described in Volume 2 of the Full Report*. For quantitative studies, only those assessed as having high or very high quality were considered for data extraction. Because the pool of available qualitative studies was relatively small, those with medium, high or very high quality were retained for data extraction. These studies provide basis for our summary of the evidence and our conclusions.

We considered an additional 30 papers as supplemental or related to the

primary article on the same study. ***A detailed breakdown of the flow of studies and of reviews from the initial search strategy to data extraction can be found in Volume 3, Appendix 2, Figure 2.3.*

Critical appraisals of research quality, including methodological details of each study, were conducted for each of the quantitative and qualitative studies (Volume 3, Appendices 3 and 4). This critical appraisal looked at quality, methodological strengths and weaknesses of each study, and also elicited recommendations for future research.

Table 1. Criteria for inclusion of studies

	Inclusion	Exclusion
Population of interest	Workers who are off work due to one of the following: $ MSK condition $ Pain-related condition that was neither short-duration/self-limiting nor malignant (e.g., arthritis, headaches), that was episodic or non-episodic, or that was associated with a degenerative or non-degenerative condition $ Chronic pain OR A workers= compensation claimant population	Mental health conditions as a primary condition, phantom limb pain, short duration self-limiting pain (such as in post-operative, or dental pain), pain associated with a malignant condition
Nature of intervention	Interventions specifically aimed at improving RTW outcomes, including $ Disability management interventions and strategies $ Case management practices, which could be implemented in the workplace $ Education to workplace staff, insurance case managers, or workers $ Intervention focusing on general organizational factors, but specifically aimed at improving RTW outcomes	Policies General primary prevention ergonomic interventions Clinical interventions provided outside the workplace
Provider of intervention	Provided by the workplace, or by an insurance company (private or governmental) and which could be provided by the workplace Provided by a healthcare provider in very close collaboration with the workplace (e.g., ergonomic workplace site visit)	Provided by the healthcare provider with no or minimal integration with the workplace (e.g., signing a form allowing the worker to go back to work)
Receiver of intervention	Workers Workplace staff Case managers from insurance company	
Outcomes	Self-reported time to return to work, time on benefits,	Absenteeism which was

	Inclusion	Exclusion
	total duration of lost time, recurrences (number and duration) Point-prevalence of status (e.g., back at work versus not back at work) RTW conditions (e.g. same job/employer/hours) Quality of work life after return to work Quality of life - mental health, functional status, general physical health during and/or after work interruption due to pain-related condition Medication taken during and/or after work interruption due to pain-related condition (particularly analgesics, opioids, NSAIDS, steroidal anti-inflammatories, antidepressants) Costs (healthcare costs, wage replacement costs, intervention costs)	unrelated to MSK or other pain-related conditions
Study design - quantitative	Randomized controlled trial (RCT), Non-randomized trial, Cross-sectional, Pre-post, Time series, Case control, Cohorts (retrospective and prospective) Systematic reviews	Non-comparative studies: case series, case study Narrative reviews
Study design qualitative	Interviews, focus groups	
Year of publication	1990 and after	
Source	Peer-reviewed papers, reviews, from MEDLINE, EMBASE, CINAHL, PsycInfo, Sociological abstracts, ASSIA (Applied Social Sciences Index and Abstracts) and ABI (American Business Index) Peer-reviewed reports from well-established research centers such as WCRI, IRSSTand IWH	Non-peer reviewed publications Books or book chapters
Languages	English and French	

***A list of all papers (quantitative studies, qualitative studies and systematic review papers) selected for quality appraisal and for data extraction is found in Volume 3, Appendix 5.1*.

*** A list of studies which were excluded after quality appraisal is found in Volume 3, Appendix 5.2*

*** A summary of systematic reviews for which data was extracted is found in Appendix 6.* Of *tables f for*

systematic reviews, quantitative studies, and qualitative studies for which data was extracted are found in Volume 3, Appendices 7, 8, and 9, respectively.

Synthesis of the Quantitative Studies

Before summarizing our synthesis of the quantitative literature, we provide some brief explanatory material. First, we describe how we categorized the interventions in the studies included in the review. Next we explain how we organized the outcomes, which is followed by a description of the Abest evidence@ synthesis methodology used in this systematic review. Finally, we provide a brief summary of the results of the synthesis of the quantitative literature on RTW.

Categorization of interventions reviewed

Interventions used in the quantitative studies varied greatly. To assist us in making comparisons across studies and to interpret results, we adapted a conceptual model of intervention developed by Contandriopoulos and colleagues (17).

These researchers proposed a conceptual model for evaluating interventions. Their model conceptualizes interventions as Asystems of organized actions aiming to modify the anticipated course of a phenomenon in a given environment, in a given period of time, to provide a solution to a problematic situation.@

All systems of organized actions can be described in five components: A structure, actors and their practices, processes of actions, outcomes, and an environment@ [1]. Contandriopoulos= model has previously been applied to interventions aimed at keeping job attachment in injured workers (11).

We have developed a conceptual diagram *(Volume 3, Appendix 2, Figure 2.4)* that groups all key interventions generated by data extraction in the intervention groups (no control group).

[1] *The cited text in quotation is a translation from the French text of the authors, in their 2000 publication.*

In our adaptation of model we posit three interrelated structures: The organizational structure, the physical structure and human resources, and the cultural structure:

- $ **O*rganizational structure*** refers to workplace-based policies, rules and regulations which govern how power and financial resources are allocated and exchanged. In the 11 studies reviewed, top management support for disability management, proactive RTW philosophy and joint labour-management committee emerged as organizational structure components relevant to RTW. Of the 11 studies, five (2;18;19;36;39;46-50;66;70-72) examined at least one organizational structure component (*see Tables 1.2 and 1.3 in Appendix 1).*
- $ ***Physical structure and human resources*** refers to the availability and organization of human resources, financial resources and information. This component is strongly linked to size and sector of the firm. The most common actors in the studies reviewed were workers, supervisors, ergonomists and healthcare providers. In some cases these were third parties from outside the workplace.
- $ ***Cultural structure*** encompasses beliefs and values which impact on communication among the actors and which also impact on the organizational structure of the workplace. Cultural structures extracted from the 11 studies were: People-oriented culture, safety culture, and cooperative labour-management. Four of the 11 studies (2;18;19;36;39;46-50;66;70-72) examined at least one of these cultural structure components.

Contandriopoulos= model posits two additional components:

- $ The ***environment*** refers to the context in which a given intervention takes place, and may include social, legal, historical and economic factors. The environment influences all components of the model. Given that the 11 studies were conducted in different countries, the environment structures varied greatly.

- $ ***Processes and practices*** is the central component of our structural diagram. This refers to activities through which actors mobilize resources to arrive at the targeted outcomes.

We will now provide a more detailed description of the ***Processes and practices*** which were used in the workplace-based RTW interventions reviewed.

We organized the intervention components that emerged from the 11 studies reviewed into three categories: Core disability management components, additional disability management components and education:

$ ***Core Disability Management Components (Core DM)***

Certain RTW intervention components have been identified by groups such as the National Institute for Disability Management and Research (51) and by researchers in the RTW field. The following components were frequently found in the interventions of studies reviewed, and they represent well-established disability management activities (13;51). They are:

R *Early contact with the worker*, which was specified as part of all the studies except two (28;87-89)

R *A work accommodation offer*, which was part of all the studies except one (60).

R *Contact between healthcare providers (HCP) and the workplace*, which was part of all the studies, except for two intervention studies (3;58-60), and two observational studies (12;20;38;40)

$ ***Additional Disability Management Components***

These refer to disability management practices which were inconsistently found in the interventions studied. Most have been endorsed as important components of RTW interventions (13;51):

R *Work site visits* which were part of the intervention in only five studies (3;7-10;18;19;34;40;46-50;66;70-72) and which were conducted by different types of providers.

- *Supernumerary replacement* options which were part of two interventions only (18;19;58-60;66;70-72).
- *Highly integrated combined occupational-clinical approaches* which were part of five studies (7-10;18;19;34;40;46-50;66;69-72). Integration of clinical and occupational approaches was defined by the content of the interventions; by the fact that a clinical intervention was offered at the workplace; or by having an occupational healthcare provider from the workplace as an integrated member of the workplace culture, practices and daily operations.
- *A designated RTW coordinator* in-house or third party which was identified in six of the 11 studies (2;3;7-10;18;19;34;36;39;58-60;66;70-72) .
- *Specified meetings between supervisor and worker* which were part of four studies (3;7-10;34;40;46-50).
- *Conflict resolution or the option of dispute resolution* which refers to specifying this function as part of the provider=s role (e.g. the role of a RTW coordinator) or to an course of action available for resolving such disputes. The conflict resolution option was only specified as an aspect of the intervention in one study (3) which involved an intervention provided by insurance case managers.
- *General ergonomic practices* which were specified in two studies (2;7-10;34).

$ *Education*

Many interventions included educational practices which typically targeted three types of audiences: workers, workplace staff or union representatives, and healthcare providers. None of the 11 studies which proceeded to data extraction included education for insurance case managers.

Workers received education through pamphlets (40), continuous education provided by the workplace (7-10;34;58-60), in-services on ergonomic aspects of their work, and in-services about healthy lifestyle (18;19;66;70-72).

Workplace staff or union representatives received training in general disability management, in how to use medical restriction forms (7-10;34), training in participatory

ergonomics (46-50), support as needed from third party disability management experts (3;58-60), pamphlets on disability management (69), continuous education (7-10;34;58-60), and safety training (2;36;39).

Education offered to healthcare providers (HCP) included training in disability management guidelines (69), support from disability management experts (58-60), and continuous education on disability management by the workplace (7-10;34;58-60).

Categorization of outcomes examined

Two types of outcomes were considered in the literature review of quantitative studies: Work disability duration and quality of life. ***Note:*** *Studies that analyzed costs as well as outcomes were considered in a separate category. These studies were categorized as economic analyses and are referred to as such throughout this document.*

R ***Work disability duration outcomes***

Work disability duration remains the most commonly used outcome in RTW research. Many types of outcomes fall into this category: time of first return to work; total work disability duration within a given time period; point-prevalence of RTW status; number of recurrences within a given time period; and average duration of recurrences.

In all studies retained for data extraction, the work disability duration was obtained from administrative databases or from self-report *(Table 1.4 in Appendix 1).*

Previous research has documented a great discrepancy between RTW measures derived from administrative database and self-reported return to work, a discrepancy which increases with time (21). Administrative databases reflect time on benefits which does not necessarily concur with actual return to work. It is therefore important to examine both sources of information for this outcome.

R ***Quality of life outcomes***

In this outcome category, we found a wide spectrum of measures and constructs. Four main constructs emerged: General health, condition-specific functional status, symptom severity, and pain levels.

All constructs were measured by self-report using various instruments, most with established reliability and validity. Even though these constructs do not measure exactly the same phenomena, they are still highly correlated. For that reason, and to make the level of detail in the synthesis manageable, we collapsed across constructs to report on quality of life outcomes. Details of the instrumentation used are contained in the data extraction tables of the studies.

We had also planned to conduct evidence synthesis regarding quality of work life as an outcome. However, none of the studies reviewed included such an outcome.

R ***Economic analyses***

Economic analyses generally considered the following four costs: wage replacement costs, compensated healthcare costs, other healthcare costs and intervention costs.

Our ability to compare these analyses was limited by the fact that compensation and healthcare systems varied considerably across the studies reviewed. Since few studies reported intervention program costs, we were unable to calculate outcome/costs ratios.

Few studies used statistical analyses to evaluate the significance of differences in costs associated with alternative interventions/strategies. The absence of such statistical analyses deserves some discussion.

The paucity of statistical analyses relates to two issues:

$ Claims costs data distribution are highly skewed. A small percentage of individuals incur the largest percentage of costs, and this distribution violates the assumptions of normality (42). Due to the skewed distribution of costs, statistical analyses are more likely to result in non-significant results.

$ Very small and statistically non-significant differences in costs can nevertheless translate into large net cost reduction at a population level. For this reason, many researchers choose not to use statistical analyses in their economic analyses.

Therefore, we retained studies which did not use statistical analyses in our synthesis of studies which undertook economic analyses.

Although the different types of costs examined in the studies are not directly comparable, we combined studies across categories of costs as a first step in the synthesis of evidence. Details about the specific economic analyses undertaken and

the results of the analyses are provided and discussed.

Best evidence synthesis guidelines

The nature of research in this area is marked by a high level of heterogeneity in terms of study designs, types of interventions, population sampled, units of analysis, statistical analyses used and jurisdictions. When such a high level of heterogeneity is encountered, the most appropriate approach is to use the Abest evidence@ synthesis developed by Slavin (62;63).

Best evidence synthesis is based on three aspects of the evidence examining a given question: Quality (methodological quality of studies); quantity (number of studies identified);and consistency (how consistent the results are across different studies).

Studies were ranked on a scale from Astrong evidence@ to Ano evidence, Awith Amoderate evidence,@ Alimited evidence,@ Amixed evidence@ and Ainsufficient evidence,@ fitting in between the two extremes. ***The specifics of our best evidence guidelines are found in Table 2. They are based primarily on the guidelines used in a systematic review of prevention incentives of insurance and regulatory mechanisms for occupational health and safety conducted by Tompa et al from the Institute for Work & Health (68).*

Table 2. Best evidence synthesis guidelines

Strong evidence

Minimum quality: Very high
Minimum number of studies: 3 very high quality studies
Consistency: Very high quality studies must all agree, and > 50% of high quality studies are consistent with very high quality studies.

Moderate evidence

Minimum quality: High
Minimum number of studies: 3 high quality studies
Consistency: > 100% of high quality converge on the same finding
OR
66% of very high quality studies converge on the same findings,
with> 50% of other studies are consistent with very high quality studies.

Limited evidence

Minimum quality: High
Minimum number of studies: 2
Consistency: Two studies converge on the same findings.

Mixed evidence

Minimum quality: High
Minimum number of studies: 2 or 3
Consistency: If there are two studies, they do not converge on the same findings. If there are three studies, only two are consistent.

Insufficient evidence

Minimum quality: High
*Minimum number of studies***:** 1

No evidence

There are no high or very high quality studies on the subject**.**

We focused our best evidence synthesis on the relationship between the three categories of outcomes - work disability duration, quality of life and economic analyses - and the following RTW intervention components:

$ the three Core DM components: *Early contact, work accommodation*, and *contact between HCP and the workplace*
$ work site visit component in interventions
$ supernumerary replacement component in interventions
$ presence of RTW coordinator in interventions
$ educational component in interventions
$ the relationship between healthcare provider and the workplace (*narrative review**)
$ cultural and organizational workplace factors

**Note: We conducted a narrative review on the relationship between healthcare providers and the workplace, as a best evidence synthesis was not possible due to the heterogeneity of the interventions involved.*

We did not examine the option of conflict resolution as it was found in only one study (3). Nor did we address the role of general ergonomic change in the workplace, as this was often offered with the first goal of primary prevention.

Summary of Quantitative Synthesis

Our best evidence synthesis supports that RTW interventions can reduce work disability duration and associated costs. The evidence regarding improving quality of life outcomes was weaker. The results of the best evidence synthesis of the quantitative studies are summarized in Table 3.

A moderate level of evidence was found supporting that the three Core DM components significantly reduce work disability duration and associated costs. Our synthesis also shows that other RTW components, such as ergonomic work site visits and the presence of RTW coordinators, can be critical to a successful RTW intervention. Cultural and organizational factors in the workplace may also play an important role in determining whether an RTW intervention will have a positive impact on workers and the workplace.

Table 3. Summary table of evidence synthesis for the outcomes of work disability duration, quality of life outcomes and costs

Intervention components	Level of evidence for the work disability duration outcome	Level of evidence for quality of life outcomes	Level of evidence for outcome of costs
Three core components	Moderate	Mixed	Moderate
Work site visits	Moderate	Moderate for no impact	Moderate

Supernumerary replacement	Insufficient	Insufficient	Insufficient
RTW coordinator	Moderate	Mixed	Moderate
Educational - Healthcare providers	Limited for no impact	Limited for no impact	No evidence
Educational - Managers and supervisors	Moderate	Insufficient	Insufficient
Educational - Workers	No evidence	No evidence	No evidence
Educational - Insurance staff	No evidence	No evidence	No evidence
Cultural structure - People-oriented	Limited	No evidence	No evidence
Cultural structure - Safety culture	Limited	No evidence	No evidence
Labour-management cooperation	Moderate	Mixed	Limited

In terms of educational components in RTW interventions, we found limited evidence that educating healthcare providers led to no reductions in work disability duration and to no impact on quality of life outcomes. However, there was moderate evidence that education provided to supervisors and managers led to reductions in work disability duration. (This consisted primarily of education on participatory ergonomics (46-50), as well as safety training (2;36;39)).

We noted that no studies which met our quality criteria focused on educational components provided to workers or insurance managers. Therefore, we could not synthesize evidence in these areas.

We conducted a narrative review of the relationship between healthcare providers and the workplace. It suggests that a strong occupational component is a critical feature among the most promising combined occupational-clinical RTW interventions. (18;19;46-50;66;70-72) .

The nature and intensity of healthcare provider intervention needs to be carefully considered relative to the duration of work disability. Work-specific guideline-based clinical interventions of low intensity might be optimal in the acute phase, with more

intensive ccupational-clinical interventions being necessary for later phases.

Regarding quality of life outcomes, the level of evidence for the various RTW components considered varied between insufficient to limited. This is clearly an area of research which needs further enquiry. Our results also draw attention to the importance of including quality of life as an important outcome when evaluating RTW interventions.

Synthesis of the Qualitative Studies

This section presents our approach to the data from our systematic review of 13 qualitative research papers which met pre-determined criteria for relevance and were of sufficient quality to inform the issue of workplace-based return to work.

The meta-ethnographic approach

A meta-ethnographic approach (15;22) was used to synthesize the findings from these studies. Meta-ethnography is designed to go beyond merely describing and summarizing studies. Instead, this approach brings together findings on a particular theme in a way that yields a whole which, in conceptual terms, is larger than the sum of its parts.

To carry out this challenging task, we instituted a process that considered topic relevance, methodological appropriateness and quality appraisal. This process also involved a re-interpretation of findings through Akey concepts@ in the selected studies. The purpose was to derive concepts that encompassed more than one of the studies being synthesized. Such concepts were examined in relation to others in the original study and across studies using a process similar to Aconstant comparison@(65). (*Table 1.8 in Appendix 1).*

This process of analytic synthesis yielded new insights into the process of workplace-based return to work that were not evident in any one paper. These new insights highlight the fact that RTW is a precarious event requiring trust and good will among diverse stakeholders. They also illuminate ways that intermediaries can better facilitate this process.

Key concepts from the qualitative studies

Key concepts relevant to the process of workplace-based RTW were developed through a process of multiple, detailed and critical analytic readings of the qualitative literature. This process involved three levels of analysis. First, we included notions that were mentioned explicitly in many studies, such as the interests and roles of various stakeholders, and the experience of injured workers and employers. These included complex relations employers can have with unions and physicians when working to arrange RTW for an injured worker. We also explored the intricacies associated with the physical and social integration of an injured worker while on modified work.

Second, we included notions present in several studies which explained important processes across studies, such as the relationship between the injured worker and his or her co-workers, and how injured worker frailty can affect the success of return to work. Third, the key concepts included the less explicit but underlying notions of trust and good will that were not directly tapped by the authors of many of the studies. We felt these notions provided a useful and coherent explanatory model for findings in *all* of the papers reviewed (4-6;16;23;29;37;45;52).

*** Please see Table 4 below for a brief overview of Key Concepts and Table 1.8 in Appendix 1, Volume 3 for a detailed listing of Key Concepts.*

Table 4. Number and character of studies involving key concepts

Key Concept	Total number of studies (n=13)	Studies involving workers only (n=4)	Studies involving employers only (n=2)	Studies involving actors in range of RTW roles (n=7)
Trust and goodwill	10	4	1	5
The worker and Athe system@	8	3	-	5
Contact with the worker	7	3	2	2
Employer-physician contact	8	1	1	6
Modified work	12	3	2	7

Unions	4	-	-	4
Supervisors	9	3	2	4
Organizational environments	9	1	2	6

Summary of the Qualitative Synthesis

The critical reading and analysis of the qualitative studies, and the conceptual tool of >key concepts allowed for a meta-ethnographic synthesis of the qualitative literature that yielded three main findings relevant to workplace-based RTW.

First, return to work is a socially fragile event. This means that a successful return to work is not straightforward; it requires planning and sensitivity to the needs and experiences of workers, co-workers, supervisors, managers, and healthcare providers.

Second, return to work requires complex coordination among various parties, each who have their own needs and agendas. This analysis finds that coordination can be achieved if a strong role is given to intermediary players who can negotiate, translate, and facilitate RTW processes. A *rehabilitation or occupational health professional* can help with the arrangement of suitable modified work by facilitating communication and processes between employers and physicians. Similarly, *supervisors* can play a key role in return to work by mediating between the injured worker and other workplace elements such as social relations with co-workers and the type of modified work available.

The third, and perhaps most important finding of this meta-ethnographic analysis, is that conditions of good will and trust are central to the success of any RTW arrangement, even when RTW procedures are standardized and the workplace has a proactive approach to injury. This finding draws attention to the social environment of RTWBan arena underlying and shaping the success or failure of any RTW intervention.

Summary of the Systematic Review

This systematic review was innovative because it incorporated both quantitative

and qualitative literature. This novel approach reaped great benefits, as we developed a more encompassing view of the RTW process, a view which is both evidenced-based and contextualized in the social fabric of the workplace.

In this section, we will first review our main findings from the systematic review. The results come from careful pooling of information from both the best-evidence synthesis of the quantitative literature and the meta-ethnographic synthesis of the qualitative literature.

We will then discuss three themes that emerged from our literature review which are associated with the three Core Disability Management components: Early contact with the worker; a work accommodation offer; and contact between healthcare providers and the workplace (40).

Next, we will discuss the various actors in the RTW process and their culture. Finally, we will present our recommendations for future workplace-based RTW interventions.

We will now review the results of the best-evidence synthesis regarding the impact of core and additional disability management components, as well as the results of the review regarding the roles of various RTW actors and of systems in the RTW process.

$ ***Main findings about work disability duration and associated costs***

Based on our review of the quantitative literature, we found that workplace-based RTW interventions can and do reduce the work disability duration of injured or ill workers. They also reduce associated wage replacement and healthcare costs.

Our best evidence synthesis of the quantitative literature provided moderate evidence that interventions which include the three core disability management components (early contact with the worker, offer of a work accommodation, and healthcare provider contact with the workplace) lead to important reductions in work disability duration and associated costs.

Similarly, there was moderate evidence that interventions including the following

additional disability components - ergonomic work site visits, presence of a RTW coordinator, education about RTW or safety training to the workplace, and labour-management cooperation in RTW - reduced work disability duration and associated costs.

It is important to note that moderate evidence in favour of workplace-based RTW interventions (i.e. reduced duration of work disability and associated costs) involved studies with a follow-up period of just one year or less.

Only one study in our review examined these outcomes beyond one year. It noted continued impact on work disability duration and associated costs at a mean of 6.4 years post-injury (46-50). Sustainability of return to work is of primary concern when examining the impact of work disability on workers. A first return to work is far from being sustainable, as a study of Ontario workers with permanent partial impairments has established (14).

Workplace injury led to future loss of income in workers associated with subsequent work disability periods as well as lower labour market earnings (53;67). Clearly, more research is needed to address the sustainability of effects beyond one year after onset of the work disability.

$ ***Main findings about quality of life outcomes***

The benefits of workplace-based RTW interventions in terms of workers= quality of life were less evident. Mixed evidence was obtained regarding the impact on quality of life outcomes of interventions which included the three core disability management components: Early contact with the worker, offer of a work accommodation, and contact between healthcare provider and the workplace.

For additional disability management components, evidence supporting a positive impact on quality of life ranged from insufficient to mixed for: supernumerary replacements, education to the workplace, the presence of a RTW coordinator and labour-management cooperation. Even moderate evidence supporting *no* impact on quality of life was found for interventions with work site visits. There was limited

evidence to support *no* impact on quality of life for interventions with education for healthcare providers. Of note is the fact that none of the quantitative studies examined quality of *work* life when returning to work.

These results are cause for concern but should be viewed cautiously in light of methodological aspects of the studies considered, reasonable outcomes to expect, and the larger social context of workers.

The measures used in the studies under review were generally adequate to examine quality of life as the majority were condition-specific measures, which are more sensitive to change than general health perception questionnaires (33). However, sample sizes were often small and may have led to insufficient statistical power to detect clinical differences.

The question remains: How healthy can we expect workers to feel when they return to work after an injury or illness? We might predict they will feel less healthy than usual when faced by the challenge of returning to their jobs. But there is a general expectation that, in the longer term, they will return to their pre-injury or pre-illness level of health.

However, even if all those involved in helping workers resume their usual job activities act with the best of intentions, the risk of premature return to work must be recognized. Workers who return to their jobs too early are at higher risk of relapse (54), and if re-injury occurs, this may generate fear among other workers about return to work.

When workers report poor health following return to work, it is likely that this will affect them in other life roles - as caregivers, parents, and volunteers in the community - and this may translate into other indirect and human costs. No research has been done to measure and describe the personal costs to workers - such as lost vitality and their inability to pursue other interests - associated with premature return to work.

More research is needed to assess the human cost of work-related injuries in non work-related aspects of workers= lives, and to investigate what kinds of interventions will improve the health of workers returning to work. As well, future research should include measures of quality of work life to quantify the impact of return to work on this

aspect of workers= experiences.

$ *Main findings about workplace social relations and the actors in the RTW process*

When we turned to the qualitative literature, we found many rich depictions of the various Aactors@ in the RTW process B their roles and challenges, how their activities and attitudes affect others in the workplace, and how human interactions are deeply embedded in each and every workplace-based RTW intervention.

The role of the supervisor in the RTW process appears to be of particular importance. As well, the need to integrate healthcare providers, other than physicians, emerged as an important finding.

The importance of the impact of systems, such as the healthcare system and unions, on the potential of success of RTW interventions also needs to be considered. Difficulties the worker faces in negotiating these systems was evident.

How Our Two Syntheses Converged

We were interested to note that our syntheses of the quantitative and qualitative literature converged around three main themes -- despite the fact that the two syntheses processes had occurred quite separately from each other. We will now discuss our findings related to these themes: *Early contact with the worker*; *the work accommodation process*, and *healthcare providers and the workplace*.

$ *Early contact with the worker*

Early contact with the worker was frequently part of the interventions reviewed. In six of the seven quantitative intervention studies reviewed, contact with the injured or ill worker occurred within the first three months of injury. Of those, three studies specified that contact was made within the first week following injury (3;7-10;18;19;34;66;70-72). These contacts were made by the workplace, by a healthcare provider tied to the workplace, or by the insurer.

The qualitative literature focused more exclusively on early contact made by the

workplace. It clearly highlights that contact *per se* is not sufficient to contribute constructively to the RTW process (5;52;57). The nature of the contact is critical in maintaining the worker=s attachment to the workplace.

Such contact must be friendly, tactful and informative. Workers benefit from obtaining information on their rights, from being linked with appropriate professionals and insurance offices, and from being asked about their needs (41;45).

In some instances, contact with the worker may be complicated by pre-existing workplace relations problems. Awareness of pre-existing issues is important.

The initial contact by the employer can motivate workers to return to work. It reminds them that people in the workplace care about them (45). Early contact also provides a window of opportunity for initiating the RTW process in a respectful manner, which can promote a climate of trust and goodwill.

$ ***The work accommodation process***

Work accommodation, also known as modified work, remains a pivotal component of effective workplace-based RTW interventions. This knowledge is well accepted in the disability management area and supported by strong empirical evidence (43). Two well-designed prospective studies in our review, conducted with Ontario claimants, supported the high effectiveness of work accommodations on reducing work disability duration (12;20;38).

Rich contextual information was derived from the qualitative literature regarding the optimal conditions under which modified work should be offered. The process by which a work accommodation is offered demands creativity and flexibility. It appears to works best when it involves cooperation between worker, co-workers and supervisor.

Modified work should be tailored to the worker=s needs. It should minimize social dislocation of the worker, be useful and have production value. These social aspects of modified work are clearly involved in the successful outcome of a work accommodation process (16;23;41).

In the absence of third party input on ergonomic aspects of the modified work, modified work is often handled by the supervisor (5). If such changes are poorly

tailored to the worker=s physical condition, the risk of re-injury can be high (6). For that reason, ergonomic work site visits can facilitate appropriate matching of the physical demands and conditions of the modified work to the worker=s capabilities, and avoid a scenario where re-injury risks are high.

The evidence from our systematic review of the quantitative literature suggests that ergonomic work site visits lead to significant reductions in work disability duration and associated costs. These visits are conducted by third party specialists, such as physiotherapists, ergonomists, occupational therapists. The intervention costs of involving these professionals is offset by reductions in wage replacement costs up to six years after entry in the intervention program (46-50). Our review suggests that ergonomic work site visits should be considered a core disability management component.

The impact of relationships with co-workers in the work accommodation process is well captured by the review of the qualitative literature. Co-workers can resent the extra workload associated with a work accommodation in their unit (5;23;45). In turn, workers returning to work may not feel comfortable asking for help and explaining their needs (16;23).

One potential solution to this strained dynamic is the supernumerary replacement position. Having an extra person to take on the work which cannot be completed by the worker returning to work can resolve these issues. This remains an uncommon arrangement, possibly because it requires financial agreements to cover the costs of the supernumerary replacement position. Only one study reviewed (18;19;66;70-72) was considered in the best-evidence synthesis on supernumerary replacements. Results of this study were supportive of the effectiveness of interventions which include a supernumerary arrangement, however future research needs to replicate this finding.

Many players are involved in the provision of a work accommodation to injured or ill workers, and in the larger RTW process. Best evidence synthesis of the quantitative literature suggests that the role of the RTW coordinator may be a key factor in the optimization of the effectiveness of RTW interventions. The RTW coordinator can facilitate communication between multiple players and coordinate the services

provided by them.

One of the most telling Astudy stories@ about the role of RTW coordinators is the one found in the Scheel study (58-60). This intervention involved setting up workshops designed to encourage physicians to use Active Sick Leave (ASL) program. The intervention involved availability of RTW coordinators, and sending written reminders to physicians to use the ASL program (58-60). When the RTW coordinators were withdrawn from the program, the targeted physician behaviour (use of the AActive Sick Leave@ program) dropped to zero. Without the RTW coordinator, the physicians no longer used ASL.

The qualitative studies highlight many possible points of Acommunication break-down@ in the RTW process. This includes breakdown in communication between healthcare providers and the workplace (4;15;29), and also between the worker and complex systems, such as the insurer or the healthcare system (6;57)(6;57). In many ways, the RTW coordinator can fill those gaps of communication by acting as a liaison between multiple parties, by organizing meetings, and ensuring that all language is understandable to workers.

$ ***Healthcare providers and the workplace***

The review of the qualitative studies focused on the relationship between the physicians and the workplace. The review of quantitative studies focused on healthcare providers' RTW activities if they fell into the following categories:

$ the clinical service was provided in the workplace and had a close tie with the workplace
$ the intervention, such as an education program for physicians, was initiated by the workplace.

We conceptualize the role of the healthcare provider in relation to the workplace as a continuum of integration. At one end of the continuum, we find a minimum of contact between healthcare provider and the workplace B as little as one phone call. At the other end of the continuum, we find highly combined occupational-clinical RTW intervention programs (7-10;34;46-50)(69)(18;19;66;70-72).

Interventions reviewed often included both a minimal contact between physician and the workplace, and an integrated occupational-clinical RTW intervention program. The Aintegration@ was characterized by high involvement of disciplines other than medicine within the context of the workplace. They often included a strong ergonomic component led by ergonomists, physiotherapists (40), and occupational therapists (7-10;34)(40)(18;19;46-50;66;70-72).

Another defining feature was the facilitation of multidisciplinary discussions through planned meetings and communications between the multiple players from both the clinical and workplace domains (7-10;34;46-50).

Two questions emerged from both the quantitative and qualitative studies which focused on the theme of the healthcare providers and the workplace:

$ ***What is the optimal intensity and nature of healthcare provider involvement?***

While the role of healthcare providers remains critical in the RTW process, the importance of their role may not be proportional to the intensity of the intervention required. This may come as a great relief to these busy and often overworked professionals.

The review of quantitative studies suggests that the optimal intensity of healthcare provider involvement may differ according to the injury phase. The developmental aspect of work disability has been described as occurring in three phases: acute, sub-acute, and chronic (44;64).

Although certain models differ regarding the demarcation points between the acute/subacute/chronic phases of disability, by six months post-injury, chronicity of work disability is established. In accordance with this phase-specific model of MSK conditions, different components of combined occupational-clinical approaches may be optimal for different phases.

We considered four quantitative studies (40)(46-50)(69)(18;19;66;70-72), involving various intensities of healthcare involvement, various types of population (still working

or off work), and different phases of work disability in our efforts to understand the optimal nature and intensity of healthcare provider involvement.

Acute phase of work disability In this phase, a low intensity guideline-based and work-specific clinical consultation conducted by a physiatrist and a physiotherapist led to positive results for individuals who were either limited in their work capacity but still working, or off work (40). With the same type of population, a high intensity occupational-clinical intervention was also very effective in reducing work disability duration, in reducing costs, as well as in improving functional status (18;19;66;70-72). However, it remains unknown if the same benefits could have been obtained with a lower intensity intervention.

Subacute phase of work disability When it came to workers who were completely off work and in the subacute phase, occupational and combined occupational-clinical interventions proved to be effective and to reduce costs (46-50). However, it is the occupational component of the combined approach which appears to be the potent component of the combined approach. This suggests that in the subacute phase, the high level of clinical involvement of the combined approach may not be necessary to achieve the same positive results. The occupational component, based primarily on the participatory ergonomic approach, seems to be the critical component of this intervention.

Chronic phase of disability No studies were conducted with the point of entry into the study trial occurring during the chronic phase. This is understandable given that the longer workers remain off work, the more likely they are to not return to work. The incentive to initiate contact and to offer a RTW intervention so late in the work disability process is simply not present. However, future research exploring the optimal intensity and nature of healthcare providers during the chronic phase of disability is needed.

Returning to the question of optimal intensity, qualitative studies highlighted the

presence of a disconnect between employers and physicians (4;5;16;29), with each group having different agendas and different roles. Employers often experience frustration attempting to access physicians; once contact is made, they may have difficulty working with the physicians to facilitate early and safe return to work.

Our review suggests three possible explanations for physicians= behavior in the RTW process (16). First, they often have a long-standing relationship with their patients and see themselves as the patient advocate. Therefore, they will err on the side of caution and not recommend a return to work until they are sure that the worker is ready to cope with the work demands.

Second, physicians may not want to jeopardize their relationship with the patient, and so they may be reluctant to Ago against@ patient wishes if the patient is not ready to return. Third, there is no financial incentive for the physician to work towards an early return to work, like there is for the employer.

In some regards, it may be beneficial to have such opposing interests within the RTW process to ensure a balanced approach to return to work. Nevertheless, the disconnect between employers and physicians remains an important problem to address.

$ ***How can communication between the workplace and the physician be facilitated?***

Educational programs have been considered aids in facilitating the uptake of guideline-based interventions. These interventions are aimed at bridging the gap between the workplace and the healthcare system, and at promoting maintenance of workers= usual activities. However, our findings from the quantitative studies suggest there are major problems when it comes to achieving acceptable uptake and implementation of these guideline-based clinical interventions (58-60;69).

Challenges in changing the behavior of physicians have been noted before, and research suggests that multiple approaches addressing both social and scientific influences - are required to initiate and support guideline-based change in practice (28;35).

One Norwegian intervention of high intensity, involving workshops for physicians,

availability of RTW coordinators, and written reminders to physicians (58-60) led to minimal increases in uptake of the targeted guideline-based intervention - from 11.5% to only 17.7% (69-71). A Dutch study (69) found that even when attendance to training was acceptable, actual implementation of the guidelines remained poor. Poor uptake of the guideline-based interventions remains a very likely explanation for the negative findings of these studies regarding the effectiveness of the interventions.

It should be noted, however, that one guideline-based intervention in Finland offered to workers who were not severely work disabled led to positive findings in terms of work disability duration (40). This may support the effectiveness of such interventions in certain types of conditions.

We found that both RTW coordinators and rehabilitation and occupational healthcare providers can play important roles in bridging the communication gap between the healthcare system and the workplace.

We were interested in discovering how physicians and other healthcare providers might be helped and supported during the RTW process - both in terms of implementing guideline-based interventions and in communicating with the workplace.

A key finding of the review of quantitative studies was the fact that in the Norwegian study, the increase in use of the targeted intervention dropped to zero when the RTW coordinators were withdrawn from the program (58-60). The presence of an RTW coordinator had a critical impact on the uptake and implementation of this guideline-based intervention. A RTW coordinator can also greatly facilitate the communication between employers and healthcare providers, and extend the area of influence to other actors, including the worker.

We also wanted to determine whether occupational healthcare providers can play a leading role in bridging the communication gap between the employer and the healthcare system. When we looked at the qualitative literature we found that, in some cases such providers have the opportunity to physically go to the workplace and conduct work site visits (39).

Rehabilitation and occupational health care providers possess both the medical and occupational background knowledge needed to assess an injured or ill worker=s situation. They can also relate to both the workplace and to the medical system, and

have sufficient credibility to be heard by all parties.

Findings and reflections: The actors in the RTW process and their culture

Current models of work disability incorporate the notion that for RTW programs to work, there needs to be multiple players involved in a cooperative process (25;27;29;61).

Our review of qualitative studies focused largely on the interpersonal aspects of these actors in the RTW process. The review of both qualitative and quantitative studies addressed the culture in which these actors operate, cultures which reflect the beliefs and values of the actors, and how these, in turn, influence behavior.

Since we have already presented some findings about the role of healthcare providers, we now turn to what the literature reveals about other actors in the RTW process and their culture - the workplace actors, the insurer, and the union, as they relate to the main actor, the worker. We will also discuss ways to support the actors in the RTW process.

$ *The workplace culture and the role of the supervisor*

The supervisor is often responsible for making initial contact with the worker. This person also plans and implements a work accommodation, and mediates any overall tensions which may arise between the worker and the workplace. Supervisors also face production demands which can compete with the demands of optimal RTW process (5).

The qualitative literature contains many examples of how the RTW process can be marred by distrust and damaged relations (5;15;23;36;41;57)(5;16;23;37;41;57). A process more likely to result in positive outcomes is characterized by goodwill, trust and flexibility. When workers and/or supervisors distrust each other, a social breakdown can occur. This may lead to a Ahardening@ of each respective position and decreased motivation to cooperate (23).

In many respects, the themes of goodwill and trust found in qualitative studies are echoed by the construct of workplace people-oriented culture found in the quantitative studies (2;36;37). People-oriented culture, a measurable aspect of workplace culture,

is demonstrated through the company=s ability to foster trust between management and labour. People-oriented culture also refers to the workplace=s commitment to empower workers in decision-making, by sharing and seeking information with workers cooperatively.

A closely related measurable aspect of workplace culture is safety culture (36;37), which reflects a workplace=s commitment to safety issues, through active leadership, safety diligence, and safety training. It is closely related to people-oriented culture (36;37).

Our review found that both people-oriented culture and safety culture were associated with shorter work disability duration. Of interest is the fact that the presence of these two aspects of workplace culture are also associated with primary prevention outcomes such as reduction in incidence of injuries (36;39).

This suggests that primary and secondary prevention share common facilitators and risk factors (26). Indeed, primary and secondary prevention have traditionally been examined separately, with separate research designs and separate research teams. But we are beginning to realize that these two silos have more in common than we first believed.

We were interested in finding out what kind of organizational strategies can foster people-oriented and safety-focused culture, and support optimal RTW processes. Formal education to the workplace can be instrumental in maintaining optimal workplace culture.

For example, safety training in the workplace is frequently part of workplace policies and procedures. The observational studies (2;36;39) reviewed showed that safety training was associated with reduced work disability duration. The occupational intervention in the study by Loisel (46-50) was highly intensive. It involved a two-day workshop for workplace staff focusing on both primary and secondary prevention aspects, such as management of occupational risk factors for back pain, ergonomic analysis and participatory ergonomics.

However, workplace culture cannot simply be taught. Much social research attempts to understand how we can motivate, initiate and sustain human behavior

change (1;55;56). In the area of clinical settings, educational, motivational and behavioral strategies have been used to change behavior (31).

In the workplace setting, aside from formal education which we have discussed, motivational strategies could involve providing concrete external incentives such as rewarding workers for certain types of people-oriented or safety-oriented behavior. Internal motivations for adopting more respectful and safe behavior might be changed by examining the pros and cons of certain types of behaviors, experimenting with new behaviors and planning for new behaviors (55;56).

Behavioral strategies, such as top management modeling and endorsement of the targeted workplace culture by operationalization of policies, can be effective. As well, the introduction of third party actors, who bring with them and model new workplace cultural aspects, can facilitate the uptake of new behaviors.

Goodwill, trust, and flexibility are inspired and sustained by various human experiences. They seem to be first and foremost self-perpetuating. A workplace which is already people-oriented is more likely to stay that way than a workplace which is not. For that reason, it is important not only to initiate new people-oriented and safe behaviors, but also to focus on sustaining the gains in developing optimal workplace culture.

A workplace culture characterized by goodwill, trust and flexibility, and which is people-oriented and safety focused, reinforces and is reinforced by particular types of organizational structures. These include top management support for disability management, proactive RTW policies and RTW management incorporated in supervisor evaluation. These concrete steps in the unrolling of workplace values and beliefs can offer incentives, motivations and procedural information which support optimal RTW processes. Clearly, both cultural and organizational structures are tightly interconnected.

Workplaces face the very real pressure to prosper financially in order to remain viable. RTW processes are more difficult to implement in workplaces experiencing fiscal constraint. Even for a financially healthy workplace, return to work can be expensive, involving increased costs of making arrangements for modified work and increased commitments in time and energy.

Workplaces need to Abuy in@ the RTW process. Managerial consensus about the RTW process can facilitate the buy in. As well, certain strategies such as tracking and disseminating workplace injury information, and building health and safety components in managerial jobs, can lead to wider support of the RTW process.

$ ***The role of the insurer***

The qualitative studies in our review highlight the many difficulties workers face in meeting their Aduty to cooperate@ with workers= compensation boards (5;6;23;29;41;57). Their navigation through that system is arduous, marked by a lack of information about process and procedures, when workers are feeling vulnerable and less than self-reliant. The frustrations and confusion engendered by this process can understandably lead to further communication break-downs between the worker, insurer, and employer.

The nature of insurance system involvement varied across interventions within the quantitative studies we reviewed. In one Swedish intervention (3), RTW-focused case management was provided by insurance staff. The intervention involved: a workplace ergonomic assessment to facilitate the planning of a work accommodation; a focus on early contact with the worker; and the presence of a RTW coordinator. The intervention was successful in reducing work disability duration and associated costs, most likely because it facilitated communication among various parties - insurer, worker and employer.

Insurance companies can contribute to the RTW process with concrete financial arrangements. In a Norwegian study, the targeted program (58-60), Active Sick Leave, the social insurance administration covered 100% of workers= normal wages during the work accommodation period,. It also covered the costs of the supernumerary position if it was needed.

There are too few studies examining the impact of supernumerary replacements to reach any conclusions regarding their effectiveness. However, they offer a potentially fruitful insurance-supported option to facilitate the work accommodation process and reduce the burden on co-workers.

Future studies should examine the impact of insurance-based case management and insurance-supported supernumerary replacements on the satisfaction of workers with the insurance system. One possible positive spin-off of proactive RTW case management may also be higher job satisfaction of insurance case managers.

$ ***Unions and labour-management relationships***

Unions and labour representatives are mandated to protect the best interests of workers. However, the best way to do so, at least within the context of the RTW process, is not always obvious.

Unions can face conflicting responsibilities. For example, an employee seniority agreement which protects one group of workers can interfere with the process of work accommodations (4;5;16) (29). Because unions naturally respect the rights of injured or ill workers to remain away from their jobs as long as necessary, they may impede the process of return to work.

However, when unions and labour representatives buy into the RTW process, their involvement is beneficial (4;29). Indeed. Indeed, strong labour-management relationships and strong labour involvement are part of successful intervention programs. Given that conflict resolution in the RTW process was not a frequent component of RTW interventions in the studies reviewed, unions could play an important role in resolving such disputes.

Developing good relationships between unions, management, and intervention providers is key to the RTW process. Future research should pay even more attention to the role of labour and unions and to finding ways to enlist their support.

Recommendations

Our literature review provides answers to two vital questions: *What interventions are most likely to work? Under what conditions do interventions work best?*

What interventions are most likely to work?

$ ***We recommend that workplace-based RTW interventions include the***

following core disability management strategies: Early supportive contact with the worker, the offer of work accommodation, and contact between healthcare provider and workplace. There is moderate evidence that interventions which include these three components lead to important reductions in work disability duration and in associated costs. There is mixed evidence that these programs lead to improvements in quality of life outcomes.

$ ***We recommend that workplace-based RTW interventions include a strong ergonomic component, as facilitated by the ergonomic work site visits.*** There is moderate evidence that work site visits lead to reductions in work disability duration. There is moderate evidence that they lead to associated cost reductions. There is moderate evidence that work site visits have no impact on quality of life.

$ ***We recommend that workplace-based RTW interventions include the services of a RTW coordinator***. There is moderate evidence that the presence of an RTW coordinator is associated with reduced work disability duration and associated costs. There is mixed evidence regarding its impact on quality of life.The RTW coordinator has a critical role in the RTW process. The coordinator can act as a liaison among RTW actors, prompt them to follow RTW protocols, and contribute to the development of a common language around the RTW process which would be accessible to the worker.

$ ***We recommend that supervisors be supported in the RTW process as their role is central*.** Support can take many forms: Formal education, information provided by RTW coordinator, input derived from an ergonomic work site visit, top management support for proactive return to work, RTW management incorporated in supervisor evaluation and in production quotas expectations, option of a supernumerary replacement.

- ***We recommend that rehabilitation and occupational healthcare providers be more directly involved in bridging the* gap between the *workplace and the healthcare system.*** These providers can share the responsibility for interactions between workplace and physician. They can serve as liaisons, bridging the different worlds of the healthcare system, the workplace, and the worker.

- ***In the acute phase of work disability, for individuals who are not severely work-disabled or who may even still be working with some limitations, a low intensity guideline-based and work-specific clinical intervention by a physician or rehabilitation/occupational specialist is sufficient to lead to reductions in work disability duration and associated costs*.** The work-specific intervention reviewed involved a basic clinical examination, reassurance about prognosis, information about good posture, advice to stay active and avoid bed rest, prescribed sick leave if necessary, consultation with a physiotherapist focusing on assessment of daily activities including work activities, and feedback to the worker=s general practitioner.

- ***In the sub-acute phase of work disability, a combined occupational-clinical intervention with a strong occupational component, involving a high degree of ergonomic input, has been effective in reducing work disability duration and associated costs.*** It is important to note however, that the most effective component of the combined approach appears to be the occupational component. It remains unclear if the healthcare providers= input during the sub-acute phase requires a degree of intensity as high as the one found in the Loisel combined occupational-clinic approach (46-50).

- ***Insurance providers can consider expanding their investment in the following activities: Supporting and facilitating ergonomic work site visits, increasing the focus on RTW in their case management, and supporting supernumerary replacements.*** Ergonomic input in RTW interventions appears

to be a key factor in successful RTW outcomes. As well, a RTW focused insurer-based case management program was effective in achieving positive RTW outcomes. And finally, although the evidence was insufficient to make definitive conclusions, it suggests supernumerary replacements may be an effective RTW strategy.

$ ***Researchers need to include longer follow-up periods to adequately assess sustainability of RTW. As well, they need to incorporate in their studies the following aspects: Assessment of quality of life and quality of work life, and assessment of the impact of work disability in non-work-related roles of workers.*** Detailed appraisals of the methodological quality of the research in both quantitative and qualitative areas and recommendations are found in the Appendices 3 and 4 of this document.

Under what conditions do interventions work best?

$ ***Trust, goodwill, and flexibility among RTW actors are the essential conditions for a RTW intervention to be successful.*** These attributes are echoed both in the qualitative literature and in the measurable constructs of people-oriented workplace culture and safety culture found in the quantitative literature. They have been associated with optimal RTW outcomes.

$ ***The process by which work accommodation is offered should involve creativity, flexibility, and cooperation between worker and supervisor*****.** Work accommodation should be tailored to the worker=s needs, should minimize social dislocation of the worker, and should have production value.

$ ***We must develop a common RTW language to enable better communication among various RTW actors, including the worker.*** In order to develop a common language, meetings and roundtables should be organized to bring

together the multiple stakeholders involved, with representatives of workers, unions, employers, insurers, and healthcare providers, under the direction of professional facilitators.

$ ***We must foster "buy in" of all stakeholders in the RTW process*.** It is clear that optimal return to work requires commitment of all parties involved. Bringing the stakeholders together, exploring their goals, constraints, and resources, will enhance harmonization of their efforts and maximize successful RTW process.

In summary, our systematic review represents the most comprehensive review to date which focuses on the literature concerning workplace-based RTW interventions and processes. None of the interventions or processes we identified are new; we found no single intervention or approach to be more highly effective than all others.

But significant new knowledge can be derived from this review. This knowledge is reflected in the confidence we now possess which allows us to speak definitively about what is and what is not effective in RTW.

Both the knowledge and our confidence are firmly founded on the highly systematic approach used to conduct our reviews of both the quantitative and qualitative RTW literature.

A strong evidence base is essential if we are to engage the stakeholder community in expanding practices around effective return to work. It also helps those interested in generating and carrying out future research identify priority areas for investigation.

Looking Ahead: Knowledge Transfer & Exchange

Introduction

Now that the evidence on workplace-based RTW interventions has been collected, quality-appraised and synthesized, we are ready to consider the challenge of moving this vital information off the page and into practice.

To fully appreciate this task, it is important to have a basic understanding of the knowledge transfer and exchange (KTE) model developed and currently practiced at the Institute for Work & Health (IWH).

Within the last decade, researchers and research-user stakeholders have recognized that the publication of single studies does little to facilitate the actual penetration of research knowledge into Areal-world@ environments.

At the same time, a growing body of evidence generated in various domains B such as continuing medical education and guideline implementation B suggests that Aresearch transfer@ should be a deliberate process, built on the best evidence about what is effective in enhancing knowledge uptake.

As various organizations have taken up the challenge of KTE, the original strategy for research transfer (pushing research knowledge out to potential audiences) soon transmuted to knowledge transfer and exchange or KTE.

The KTE philosophy recognizes that while researchers have knowledge to share which could be used to improve practice, practitioners possess real world, experiential knowledge which could be used to improve research. Indeed, KTE is built on the premise that ongoing relationships between knowledge providers and knowledge users provide an infrastructure for two-way knowledge transfer and exchange.

Thus, the focus has shifted from project-by-project research transfer to building relationships between researchers and audiences that foster an ongoing exchange of knowledge, ideas and experience for mutual benefit. The Institute for Work & Health, was among the earlier adopters of this philosophy and has developed a model of knowledge transfer and exchange that can be readily applied to transferring the research knowledge on workplace-based RTW interventions.

The Institute=s KTE model is grounded in evidence and synthesized into five foundation principles. In operation, these principles are easily expressed as five questions:

Question 1: **What does the research say?**

Evidence teaches that research messages are more likely to be taken up when

they are expressed as compelling ideas that relate to the day-to-day decision-making of the audience and when they clearly address the question: AWho should act and what should be different?@

The Summary and Recommendations sections of the review provides a full description of the essential disability management components, and the workplace conditions that optimize implementation of review findings. Translating this evidence into specific messages for individual audiences is the next task, and here the Aexchange@ philosophy would serve us well.

Question 2: Who is the audience for this information?

The evidence shows that audience-specific delivery works. It also suggests that a comprehensive awareness of the target audience(s) is essential toward understanding specific barriers and facilitators to knowledge uptake .

Beginning with this principle that focuses attention on the audience, we can identify three distinct target groups which are mentioned repeatedly in the various studies (each of these audience groups can be subdivided further at a later stage):

Workplace Audience

This audience includes injured workers, their co-workers, their supervisor(s), top management and, where applicable, the union. In some instances the workplace may include specialized players such as RTW coordinators, disability managers, or other in-house occupational health specialists.

Healthcare Audience

This includes those who provide healthcare for injured workers such as physicians, physiotherapists, occupational therapists, and ergonomists. Such healthcare providers may act in a manner quite removed from the workplace or in synchrony with the workplace.

Insurer Audience

This includes people involved in relevant workers= compensation systems - in this case, WSIB policy-makers and those involved in service delivery teams. This audience also incorporates specific players working within private

insurance delivery systems.

Question 3: Who is the best messenger?

The evidence indicates that the audience=s perception of the credibility of the messenger is directly related to the uptake of the knowledge transferred. Our next steps should be to discuss and identify the most credible messengers from the audiences we have identified.

Question 4: How should the message be delivered?

Numerous techniques and methods for delivering research knowledge have been described and studied. Some work better than others, depending on the audience and the message, but interactive engagement appears most effective with all audiences. The next step includes some consideration and discussion of message delivery strategies.

Question 5: What effect(s) should we expect?

If the research knowledge is applied, what should change? This requires thinking about what should change at all levels of the RTW system. Designing an evaluation at the outset of the knowledge transfer planning can help to ensure the right impacts are measured.

Applying our KTE model to findings from the systematic review of RTW interventions

The content of the systematic review of workplace-based RTW interventions provides a rich source of knowledge to apply the model. Specifically, we recommend that the WSIB, in collaboration with the IWH, begin translating this evidence into messages by engaging representatives of the various audiences described above.

The continued involvement of IWH knowledge transfer and exchange partners will help move this process along. Audiences must be involved at each of the following stages:

$ translating the evidence into messages for practice

$ planning specific mechanisms for transfer

$ determining what impacts are of interest

One tested transfer mechanism that may be considered is the A*Work-Ready@* model. This was developed as a facilitated workshop aimed at bringing together a range of players involved in managing soft-tissue injury and RTW. The model is highly interactive and uses a case-study approach to discuss real-life scenarios, along with a tutorial to consider what the evidence contributes towards solutions.

From Research Report to Practice

The systematic review has defined which actions are most reliable in enhancing RTW and reducing worker disability and associated costs. The next step is moving our findings from concept to reality.

As KTE members of the systematic review team, we believe the Institute and the WSIB now stand on the brink of a common goal: promoting this new understanding of RTW with key players B both within the WSIB itself and also beyond its borders. The outcome we all desire is return to work after illness or injury that is safe, timely and sustained, and that serves the best interests of everyone involved.

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