A COLLABORATIVE EARLY INTERVENTION MODEL USING COMMUNITY PHYSIOTHERAPISTS TO SUPPORT EARLY, SAFE RETURN TO WORK FOR HEALTHCARE WORKERS

by

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Workplace injuries can result in substantial financial losses to employers through disability insurance premiums, worker's compensation premiums and worker replacement costs. The integration of workplace injury prevention programs, supportive recovery resources, and early, safe, return to work (RTW) for injured workers are essential components of workplace disability management practices. Access to resources, such as physiotherapy, in conjunction with modified or transitional work has shown to be effective in facilitating worker re-engagement.

This study investigated if there was an ideal model that would assist healthcare employers in managing acute workplace musculoskeletal injuries. PEARS Plus was developed as a sustainable model which emphasized collaboration amongst the employer, employee, community physiotherapist treatment provider and WorkSafeBC. This model demonstrated that costs savings could be realized by way of reductions in short-term disability (STD) duration, STD claims costs and increased RTW durability and was considered an effective and sustainable way of delivering early intervention services.

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Chapter 1

Introduction

Based on the principle that early identification and early treatment of acute musculoskeletal injuries (MSIs) produce favourable occupational outcomes, an onsite program aimed at preventing injuries and disability among healthcare workers was established. In 2002, the Occupational Health and Safety Agency for Healthcare (OHSAH), in partnership with healthcare employers and healthcare unions, developed and provided funding for the Prevention Early Active Return to Work Safely (PEARS) program. This on-site program offered primary and early secondary prevention, assessment, and treatment of MSIs for healthcare workers and was introduced with three key strategies; Preventing disability would be seen as an extension of injury prevention; this included early secondary intervention, prompt follow-up of injured workers, and workplace modifications, and clinical treatment when required; Secondly, extensive bipartite involvement was required, such that union representatives had meaningful input to the design, implementation, and evaluation of the program; Thirdly, the program included extensive evaluation, using data to provide ongoing guidance for program improvement.

Twenty principles were developed to guide the implementation of the program (Appendix A). The main underpinnings of these principles were to ensure that the program remained voluntary, development was guided by a bi-partite group, services were delivered by a multi-disciplinary team which involved the treating physician, and the primary focus was on workplace assessment and modification. It was a requirement that these principles were agreed upon and adopted by each program site as a mandatory component of both operation and funding disbursement.

A Revised Approach to PEARS

The initial PEARS pilots, at Fraser Health (FH) and Vancouver Coastal Health (VCH), Health Authorities located within British Columbia's lower mainland, demonstrated that disability management programs with primary and early secondary injury prevention assisted in reducing injury duration (Badii et al., 2006, Davis et al., 2004). However, a challenge experienced by both pilots, was that they were implemented independent of existing disability management and prevention services. At the conclusion of the pilots the Health Authorities built the PEARS model into their business strategy and acquired more autonomy in how these services were delivered. This allowed for a more integrated approach and facilitated streamlining of prevention and early intervention services. The fundamental PEARS principles were intertwined into the established Disability Management (DM) model and what remained under the title of PEARS were the on-site physiotherapy services.

During the pilot study period on-site physiotherapy services existed at a single hospital within each of the Health Authorities. At the conclusion of the pilot it was determined that the expansion of these services would benefit healthcare employees and employers. A number of models were considered including the purchasing of services from on-site physiotherapy out patient clinics, the hiring of physiotherapists to exclusively deliver services for PEARS participants, and the development of partnerships with external physiotherapy providers. VCH continued to deliver PEARS services through their on-site resources; however, results of a survey conducted with the Clinical Chief Physiotherapists at FH (70% response rate), determined that space and staffing resources were limited and as such this was not an option. After extensive consultation with the bi-partite advisory committee, it was concluded that establishing a relationship with select external providers

within WorkSafeBC's Provider Network was the most realistic model that would assist in the expansion efforts of PEARS. This expansion was conducted as a pilot study and was referred to as PEARS Plus.

A contractual agreement was established between FH, WorkSafeBC, and select clinics within the WorkSafeBC Provider Network with the goal to assist FH employees in reaching functional levels required to participate in pre-injury work in a safe, timely, and durable manner. Although the contract was established primarily for the delivery of physiotherapy services, it also included features to assist in supporting the employee in their return-to-work (RTW) efforts and encouraged extensive communication with the employer and WorkSafeBC. In addition, resources were provided to each of the clinics to assist them in understanding the specific work demands for healthcare workers and all clinics were provided with the opportunity to visit the workplace and meet regularly with the FH Disability Management Consultant (DMC). Service expectations outlined that the employee was to receive physiotherapy treatment within 48 hours of requesting an appointment, the initial physiotherapy assessment report was to be provided to the employer (FH) and WorkSafeBC within 3 business days of the initial appointment, and treatment and education was to be focused on stay-at-work and/ or return-to-work efforts.

The contract that was established minimized a number of perceived barriers. The provision to wait for claim acceptance prior to acquiring physiotherapy treatment was eliminated, allowing for treatment to begin immediately after the claim was initiated. The employee was not required to pay for services directly even if their claim was not accepted at a later date by WorkSafeBC and there was the assurance that the physiotherapy services would be paid for by the employer. The model focused on connecting all of the stakeholders,

with the employer taking the lead role in supporting the employee. The insurer (WorkSafeBC) worked with the employee, employer, and therapist, delivering the message that "return-to-work is good medicine," and the therapist provided primary guidance about potential medical contraindications. The focus was on recovery in the workplace and the role of the therapist was to reassure the employee that they could recover at the workplace while participating in a modification of tasks, technique, and intensity. This collaborative reassurance and support from all stakeholders was at the crux of this model and was considered as the primary driver in the success of this early intervention initiative.

Chapter 2

Economic Impact of Disability Management

Musculoskeletal injuries associated with workplace activities continue to be the most significant contributor to an employer's worker compensation and long term disability costs. In Canada, musculoskeletal injuries (MSIs) are the most prevalent work-related disabilities, accounting for nearly half of the time-loss injuries (AWCBC, 2001). In British Columbia alone, there were over 173,000 injury claims reported in 2007, this was an increase when compared to the previous year. These claims resulted in 2.8 million days lost from work and of these claims, sprains and strains accounted for greater than 50% (WorkSafeBC, 2007). It is postulated that long term disability numbers exceed that of workplace injury statistics emphasizing the need to focus even more efforts on succinct disability management policies and practices in the workplace.

It has been estimated that disability costs in Canada are rising 8% per year and that between 8% and 12% of payroll can be attributed to employee disability (Beger, 1998). Watson Wyatt (2003) claims that Canadian businesses shoulder an estimated $16 billion in annual costs for employee absences due to illness and injury. As presented by Pransky and Chen (2000), health-related absences from work account for over 650 million days each year in the American workforce, with an estimated total cost of over $300 billion dollars and indirect costs such as losses in productivity, administrative and retraining expenses may be three times as large as the direct and easily measured costs (medical care and wage replacement). For work-related injuries, once absence from work exceeds six months, the probability of ever returning to work becomes quite small (Krause et al., 1998; NIDMAR, 1995). These statistics are a compelling driver for employers to adopt an integrated disability

management system to assist in demonstrating due diligence (from a legal and regulatory perspective); mitigating costs (direct and indirect) associated with employee absenteeism; identifying and address trends and patterns which contribute to negative health and safety outcomes; and responding to the needs of its employee population by implementing appropriate and cost-effective integrated systems.

The Impact of Disability in the Healthcare Sector

Healthcare is presented with many challenges that likely contribute to the increased injury rates seen in this profession. Inglis (2004) outlines data from a workforce study by the Bureau of Health Professions that projects a 12% deficit in availability of nurses for 2010, a 20% deficit by 2015, and a staggering 29% shortage of RNs in 2020. When compared among occupational groups, the absenteeism rate related to injury and illness for full time registered nurses (RNs) was 83% higher than was the rate for the full-time Canadian workforce in 2002 (8.6% compared to 4.7%), this rate was second only to the illness and injury absenteeism rate for nursing aides and orderlies (Canadian Labour and Business Center, 2003). Obrien-Pallas et al. (2004) notes that hospital workers are known to be at high risk for back injuries, with patient handling tasks being implicated in most cases.

Over the past decade there has been an enormous transformation in healthcare (Greenglass and Burke, 1999). To compensate, healthcare professionals are being asked to work longer hours, contribute more overtime, and deal with more critical situations as a result of a shift from in-patient care to more focus on out-patient care with the average hospital stay lasting 4.9 days, a decrease from 7.3 days in 1980 (Inglis, 2004). These organizational phenomena, in addition to workplace demographic factors, put the current healthcare profession at higher risk for injury and illness absence. Furthermore, it highlights

the need to develop policies and procedures to improve retention of this workforce, especially those related to early intervention and recovery in the workplace.

Disability Management in the Workplace

Disability Management (DM) has been defined as "a systematic, goal oriented process of actively minimizing the impact of disability on an individual's capacity to participate competitively in the work environment; and maximizing the health of employees to prevent disability or further deterioration when disability exists" (Dyck, 2000, p.7). It has been demonstrated that the most promising opportunity to successfully return an injured worker to the workplace occurs within the first 30 days of the injury occurrence (Dyck, 2000). However, more recently it has been posited that this opportunity may be even shorter for successful re-integration and the emphasis on the actions taken during this brief period of time is of utmost importance (60 Summits proceedings, 2008).

If provided with the appropriate supportive resources, prompt claim adjudication, and employer support and re-engagement, individuals will likely return to work without delay. However, if claims adjudication is lengthy the worker is not provided with supportive resources and the employer does not re-engage the worker through workplace modifications or gradual return to work planning, then these initially straight forward injury claims will likely become complex and incur lengthy absences from the workplace.

Messaging to the worker must be consistent and focused amongst all stakeholders participating in the process and these processes need to be streamlined and demonstrate collaboration amongst the players with the main objective being the worker's connection to the workplace (Franche et al., 2005, 2007; Frank et al., 1998; Harder & Scott, 2005). If

stakeholders fail to collaborate and do not keep the connection with the workplace then opportunities for recovery at work will be lost and claim duration will continue to increase.

Historically employers focused their efforts on returning the injured worker to the workplace once they had fully recovered or were considered 100%. In this practice, the worker was removed from the workplace to "get better" before any discussion around returning to work occurred. What evidence has suggested is that workers, on a day to day basis, are rarely functioning at 100% regardless if they have a workplace injury or not (Aronsson, 2005; Burton, 2005; White et al., 2005). Furthermore, there are detrimental effects for an individual if they are suddenly removed from the workplace due to an unexpected injury (Harder, 2003). This disengagement may elicit feelings of helplessness and shift an individual's locus of control away from injury recovery as their primary objective.

Early Intervention

The prognosis for employees returning to work is much greater under favourable conditions that include, but are not limited to: a high level of communication between employee, supervisor, union representative (if applicable) and DM consultant; coordination of rehabilitation efforts with healthcare providers, physician, insurer, and workplace; and flexibility within the workplace to provide job modifications and transitional work as needed. These efforts must appear seamless to the employee and occur promptly after the disability has occurred. This is necessary to maintain the worker's affiliation with the workplace (Stultz, 1995).

Gatchet et al. (2003) outlined that greater cost savings are associated with early intervention and "high risk subjects who received early intervention displayed statistically

significant fewer incidents of chronic pain disability on a wide range of work, healthcare utilization, medical use, and self report pain variables" (as cited in Harder & Scott, 2005). Similarly, in a study conducted in Winnipeg, Cooper and Yassi (1996) found that a program that provides prompt management in the workplace and maintains the injured worker on the job through modified work can decrease the worker's perception of disability 6-months after the injury.

The benefits of connecting employees to the workplace early within their injury can not be underestimated. This connection plays an important role in decreasing the social and psychosocial impact of injuries, both of which can become major barriers to return-to-work over the period of a claim. In turn, it can promote a positive experience for the employee by minimizing the learned helplessness that is caused by repeated experiences of averse, non-controllable situations (Harder & Scott, 2005).

Maintaining workers at the worksite by preventing illness or injury is the ultimate form of early intervention. However, when injuries do occur, the employer needs to make every effort to connect with the employee immediately after the injury and provide supportive resources that will assist the employee to stay in the workplace and /or participate in a recovery plan that incorporates the workplace. "Appropriate, timely emphasis on early intervention is critical in ensuring that people with acquired disabilities are able to return-to-work (RTW) and resume their normal activities of daily living. Too long a delay, measured in only days, not weeks, can lead to some very dire unintentional consequences" (Harder & Scott, 2005, p. 89).

The Role of the Physiotherapist in Injury Recovery

Historically, physiotherapists have worked in isolation from the workplace and their efforts to assist employees in recovery have not typically been coordinated with those of the employer. More recently there has been an increased demand for physiotherapists to work in conjunction with their patient's employer and insurer to assist in a recovery plan that is workplace based and focused on specific job demands. This has resulted in the physiotherapist adapting their treatment plan from that of a more traditional, clinical-based plan to that of a more collaborative, occupationally-based one. In these situations, aside from having to merely treat and focus on their patient's recovery and functional reconditioning, physiotherapists also provide various stakeholders (i.e. patients/workers, employers, and insurers) with medical limitations and return-to-work (RTW) recommendations. These recommendations are often used to clear an injured worker to perform duties of a position or participate in a work environment that the physiotherapist may not be very familiar with. This action may leave some physiotherapists feeling pressured to produce acceptable treatment plans that are not only timely and effective, but also meet the needs of the stakeholders involved.

Problems that may arise from a physiotherapist's uncertainty about the organizational factors that could influence their patient's successful and long-term RTW include either: over-treating their patients, thus delaying and/or preventing workplace-based, early intervention and RTW opportunities; or clearing their patients to RTW prior to sufficient recovery, therefore placing them at a greater risk for re-injury and further disablement (Kosny et al., 2006; Lemstra & Olszynski, 2004).

To address these workplace issues, physiotherapists have started moving beyond their traditional clinic-based roles and treatment approaches. Other identified roles that some physiotherapists have incorporated into their practices include those of an ergonomist; an early intervention treatment provider; a group leader for physical reconditioning programs; a patient advisor/educator/advocate; and/or workplace communicator. Furthermore, many physiotherapists are now being hired by various workplaces to treat and provide early intervention services on-site, from within the workplace environments. For off-site physiotherapists, many clinics have started establishing close partnerships with various workplaces resulting in opportunities for direct-access referrals for prompt and effective physiotherapy interventions. Benefits that might result from this early access to physiotherapy assessments and treatment include: 1) prevention of chronic injuries resulting from acute MSIs; 2) prevention of costs associated with MSIs and the subsequent interventions and 3) prevention of delayed treatment. This increased emphasis on examining the cost-effectiveness of various treatment interventions may be a result of rising economic costs associated with musculoskeletal injuries (Staal et al., 2005). However, it is the timing of these services that needs to be considered if prevention and cost containment are the primary focus.

Currently the practice of seeing a physiotherapist is based on a wait-and-see policy. This suggests that some people may be waiting too long before gaining access to physiotherapy and this delay in treatment may increase the risk of poorer recovery outcomes being experienced by the individual (Bekkering et al., 2005). A physiotherapist can play an integral role in the worker's recovery from an MSI if they incorporate interventions that are connected to the workplace and focus on restoring activity. They need not be the gatekeeper

of the DM process, but they can provide pertinent information about the current functional status of the worker, collaborate with the employer to establish a workplace based recovery plan, and assist in delivering education that focuses on recovery within the workplace (Harder & Scott, 2005). The key is ensuring that the right services are delivered at the right time to optimize recovery of the individual.

Early Referral

Staal et al. (2005) reports there are numerous benefits associated with physiotherapists working with employees and employers to identify RTW opportunities while participating in physiotherapy treatment interventions. The premise being that staying connected to the workplace, in some capacity, not only helps draw the injured worker's attention away from negative issues such as pain, but it also helps to minimize their focus on and perception of their disability and functioning (Staal et al., 2005). Not all findings support this notion and some outline that the provision of early referrals to treatment or programs either made no significant difference in the length of time an injured employee was off work, or delayed the time that it took for the claim to close (Davis et al., 2004; Lemstra & Olszynski., 2004; Malmivaara et al, 1995; Shaw et al., 2006; Sinclair et al., 1997). On the other hand, several studies have shown that early reporting of the signs and symptoms of injury was associated with better occupational outcomes (Badii et al., 2006; Cooper et al., 1996; Franche et al., 2007; Molde Hagen et al., 2003; Pinnington et al., 2004; Robert & Stevens, 1997; Shaw et al. 2006; Tate et al., 1999). In a three-year follow-up study where early interventions were delivered through a clinic that provided information, reassurance, and encouragement to engage in physical activity the intervention group had significantly fewer days of sickness compensation (average 125.7 days per person) when compared to the

control group (169.6 days per person) whose members received usual care through their own physicians (Molde Hagen et al., 2003). This difference observed was primarily due to a more rapid RTW during the first year for the intervention group. In a longitudinal study which measured early workplace-based RTW strategies, it was found that the offer and acceptance of a work accommodation and healthcare provider advice to the workplace on how to prevent re-injury or recurrence was seen as a critical strategy in an early RTW intervention (Franche et al., 2007).

Shaw et al. (2006) noted that early access to physiotherapy treatment and exercises helps to benefit injured workers by improving their levels of physical functioning, reducing their back pain, and/or increasing their perceptions of control and self-efficacy over their injuries. It was suggested that therapists should work with patients to help desensitize any fears or concerns they may have, which in turn could alter their pain attitudes and beliefs. Findings from the Pinnington et al., (2004) and Robert and Stevens (1997) articles identified that patients valued direct referrals to physiotherapy mainly for the convenience and reassurance it provided. These variables helped contribute to the patients' overall positive assessment of the management of their injuries and RTW.

In terms of perceived pain and disability outcome measures, two studies reported on the same early intervention program that occurred at a Canadian hospital in Winnipeg, Manitoba (Cooper et al., 1996; Tate et al., 1999). Findings from these studies showed nurses who had experienced back injury and who received workplace-based early intervention programs (that included physiotherapy as a treatment option), reported decreased levels of pain and disability after a six month follow-up period when compared to a group of injured nurses that received usual care. In the Cooper et al. (1996) report, the authors stated that the

mean pain scores (Visual Analog Pain scale (VAS)) in the group of intervention nurses who received early treatment dropped from a rating of 25.8 to 4.9 in a six month follow-up period. Similarly, disability scores (Oswestry Low Back Disability Questionnaire (OSW)) for this group also decreased during this time from a mean score of 18.6 to 4.4. The correlations for the reference group of nurses that received usual care showed virtually no difference in their mean VAS and OSW scores at time of follow up (r=0.77 vs. r=0.76) (Cooper et al., 1996).

In 2002, an early intervention program also known as PEARS, was introduced as a pilot at two large urban hospitals in British Columbia, Canada. The Vancouver General Hospital (VGH) pilot had an overall participation rate of 39% and included the analysis of occupational groups such as registered nurses (RNs), health science professionals, and facility support staff. During the pilot period, shorter return-to-work times were realized; however, there were no significant differences in the times to return to regular duties for RNs. In addition, the program did not appear to influence the overall rate of time loss for MSIs and the authors noted that this may be due to the program being run in isolation from the other activities that reduced time loss already in place at the hospital (Davis et al., 2004). Davis et al. (2004) noted that the program marked a "shift from what was previously occurring at VGH in several important ways" (p. 10). He noted that PEARS was able to bridge a gap between prevention programs and the claims management processes currently in place; that their was strong union involvement in its design, implementation, and evaluation which provided a case for funding additional pilots; and the strong commitment to evidence-based decision making was a driver in the development of the data systems to support effective monitoring (i.e. development of the Workplace Health Indicator Tracking and Evaluation (WHITE) system).

The other pilot, conducted at Royal Columbian Hospital, attempted to understand how the PEARS program influenced: (1) the incidence of all reported injuries, (2) the incidence of reported MSIs, (3) the incidence of time-loss MSIs, (4) the mean duration of time-loss, and (4) the mean compensation and healthcare costs (Badii et al., 2006). Over the course of the pilot there were 261 participants of which 30% (64) incurred time loss days. Ninety percent of these participants received physiotherapy from the PEARS physiotherapists, and of these 34% participated in a graduated RTW plan.

The Badii et al. (2006) study reported that participation in the PEARS program led to a reduction in time loss measures from 111.8 lost days per 100K productive hours (in the reference period) to 88.9 days (during the PEARS period). This equated to a total decline of approximately 870 days in duration of time that employees were absent from the workplace. Badii et al. (2006) also noted that the intervention group showed the fastest rate for return to work when compared against the historical time period reference groups.

The pilot demonstrated that it was effective in returning injured employees back to work in a shorter time when compared to the control group. This result is somewhat different from the pilot at VGH which did not show any differences when compared to the control hospital. This could be a result of the relative sample size of the participants, 62% at RCH and only 39% at VGH, or in how the integrated teams were structured at each of the participating hospitals. However, the messaging that seems to be prevalent in both pilots is that having access to early rehabilitative services that offer assessments, treatment, and workplace modifications makes a difference. Both pilots recommended that these services be delivered in a coordinated effort and that there is ongoing communication between the employer, employee, and rehabilitation provider. Both authors (Badii et al., 2006; Davis et

al., 2004) suggest that this linkage is absent with community based MSI intervention programs and that community providers do not address the injured worker from an occupational standpoint.

Importance of the Present Study

The effective management of an injured employee's safe and timely RTW continues to be a challenge for many stakeholders. Unnecessary complications surface when access to appropriate treatment or interventions is delayed or non-existent for the injured employee. Studies have shown that the longer an employee is away from the workplace, the more disengaged they become and the probability that they will successfully return back to work decreases (Curtis and Scott, 2004). All stakeholders benefit from the appropriate management of injuries which focus on creating intervention opportunities immediately or shortly after the acute MSI absence has been reported. It has been shown that a collaborative model with consistent messaging aligned with keeping the employee connected to the workplace and early RTW planning helps to set the employees' and employers' expectations about recovery and RTW readiness right from the start. In addition, opportunities for cost savings exist if therapists are provided with the resources to work in close collaboration with workplaces and the insuring agency when planning an injured worker's recovery. It has been demonstrated that early contact with the worker, communication between the workplace and healthcare providers, work accommodation, ergonomic assessment, manager education and participation, and the presence of "goodwill and mutual confidence" are all important factors in the RTW process (Franche et al. 2005, 2007; Frank et al., 1998).

PEARS Plus was designed to provide a sustainable model which focuses on workplace collaboration between the employer, the employee, the insurer, and the treating

therapist to support an employee's recovery and early, safe, RTW. This pilot study evaluates the impact of RTW outcomes provided through this collaborative model, also known as PEARS Plus, allowing for referral to select physiotherapy providers prior to claim adjudication and decision. It was hypothesized that this model (PEARS Plus or RG1) would demonstrate a reduction in short-term disability (STD) duration, a reduction in STD claims costs and an increase in RTW durability when compared against the PEARS model (RG2) and the non-intervention model (Stream 1 Physiotherapy or RG3). Specifically, the hypotheses considered were: (1a) There would be a significant reduction in short-term disability (STD) duration for the PEARS Plus group (RG1) when compared to that of the PEARS group (RG2) and the non-intervention group (Stream 1 Physiotherapy or RG3) and (1b) there would be a significant reduction in disability duration for the PEARS group (RG2) when compared to the non-intervention group (RG3). Hypothesis 2 outlined that (a) there would be a significant reduction in STD claims costs for the PEARS Plus group (RG1) when compared to that of the PEARS group (RG2) and the non-intervention group (Stream 1 Physiotherapy or RG3) and (b) there would be a significant reduction in STD claims costs for the PEARS group (RG2) when compared to the non-intervention group (RG3). Lastly, Hypothesis 3 examined the concept of return to work durability to determine if the lessons learned during the physiotherapy treatment assisted the employee in preventing re-injury within the first 3 months after return to work. To explore this, H_3 tests if return to work plans for those participating in PEARS Plus (RG1) would be more durable than those participating in PEARS (RG2) which would be more durable than the non-intervention group (RG3).

Chapter 3

Participants

The participants for this study included 289 healthcare workers employed by Fraser Health Authority. Participation was voluntary and to be eligible workers had to have sustained Health Care Only (HCO) or Short Term Disability (STD) claims for acute MSI incidents. Each participant belonged to one of three different treatment groups. Reference Group 1 (RG1) included workers who participated in the off-site physiotherapy model also known as PEARS Plus (n=92). Claims for this group were managed through WorkSafeBC Prevention Region 31 (Abbotsford). Participants in this group ranged from 21 to 64 years of age ($M = 44.53$, $SD = 8.53$). Reference Group 2 (RG2) included workers who participated in the on-site physiotherapy model also known as PEARS (n=93). Claims for this group were managed through WorkSafeBC Prevention Region 20 (Burnaby). Participants in this group ranged from 23 to 63 years of age ($M = 44.53$, $SD = 10.45$). Reference Group 3 (RG3), also considered the non-intervention group, included workers who participated in Stream 1 Physiotherapy services as part of their recovery (n=104). Claims for this group were managed through WorkSafeBC Prevention Region 30 (Surrey/Langley). Participants in this group ranged from 22 to 66 years of age ($M = 44.35$, $SD = 11.01$). Primary occupations included within this study were registered nurses and nursing assistants (Table 1). The acceptance of participants occurred over a one year period, from May 1, 2007 to April 30, 2008 and all claims were given an additional six (6) months post completion date of the project to develop prior to generating data for analysis. For the purpose of the pilot study acute MSIs were considered overexertion injuries resulting from a single workplace incidence or event. MSIs resulting from repetitive motion were excluded from this project.

Three different models were considered in this study. The PEARS Plus model (RG1) emphasized collaboration between the employer, the insurer (WorkSafeBC), and the community physiotherapist and provided supportive services that allowed for stay at work and early return-to-work interventions. The employee did not need to have an accepted claim to participate or see their physician prior to and early participation was strongly encouraged. Referral to the PEARS Plus program was conducted by the employer based on the eligibility criteria agreed upon by the bi-partite working group (Appendix B). The PEARS model (RG2) was initially established as a stand alone program for British Columbia Health Authorities that was later integrated into existing DM services and delivered onsite at the workplace to support stay at work and early return-to-work interventions. This program was designed to be independent of WorkSafeBC and was similar to the PEARS Plus program in that the employee did not need to have an accepted claim to participate or see their physician prior to and early participation was strongly encouraged. The referral was coordinated by the employer and based on eligibility criteria very similar to that of PEARS Plus. The third model, Stream 1 Physiotherapy (RG3), was seen as the non-intervention model as there were no formal processes in place that allowed for collaboration amongst stakeholders or early participation in physiotherapy services to support stay at work or modified return-to-work activities. Instead this group received physiotherapy services as outlined in the existing contract between WorkSafeBC and the Physiotherapy Association of British Columbia (PABC). All referrals for physiotherapy were conducted through WorkSafeBC or the Attending Physician.

The allowable participation period for each of these groups was limited and ranged from 7 weeks as seen in the PEARS (RG2) model or up to 8 weeks (or a maximum of 22

visits) as seen in the PEARS Plus (RG1) model and the non-intervention group (RG3). Fee schedules did not differ for the PEARS Plus and non-intervention group and both groups were paid on a 'per visit' basis through WorkSafeBC. The PEARS physiotherapists were employees of Fraser Health and as such did not receive payment for services through WorkSafeBC.

Design

This quasi-experimental evaluation was based on a pilot study that was initiated by the primary researcher (a Disability Management graduate student and employee of Fraser Health). This thesis is part of the overall evaluation for this pilot study. The secondary data used for the purpose of this thesis had personal identifiers removed and the data set used only contained RTW statistics associated with each of the three reference groups. Ethics approval was not sought for this project as the results reported were specific to the programs and not the individual participants. Data was extracted from two sources; the Enterprise Data Warehouse (EDW) owned and operated by WorkSafeBC and the Workplace Health Incident Tracking and Evaluation (WHITE) system, the internal database system at FH. The EDW contains WorkSafeBC claimant information such as claim status, claim history, worker demographic information and claim payment information. WHITE contains FH employee information on illnesses and injuries and allows for the tracking and reporting of workplace and non-workplace incidents and illnesses, safety and prevention efforts, and health histories and immunizations. This system is integrated with the FH payroll and benefits systems and allows for information to be retrieved determining status, trends, and priorities in Workplace Health at FH.

For data analysis purposes FH provided WorkSafeBC with extracts from the WHITE database which included claim numbers for participants in RG1 and RG2 that had claims during the pilot project period. For RG3, FH provided WorkSafeBC with a list of injured workers who had acute MSIs during the pilot period and had their claim managed by Prevention Region 30. This list was then assessed by Health Care Services, a division in WorkSafeBC, to determine if payments for Stream 1 Physiotherapy services had been made. Claims with payments on them were included in the final list of claimants to be analyzed. RG1, RG2, and RG3 lists were merged and WorkSafeBC subsequently mapped the claim numbers to the claim numbers in the EDW and generated the final table containing the information on participant demographics, claim type, claim duration, and costs associated with the claim for statistical analysis.

Measures

Prior to project implementation, claims data was analyzed using both WHITE and EDW to ensure that the project's statistical analysis requirements could be met. Findings from the review and preliminary analysis confirmed data assumptions about volume, availability, and reliability; identified any anomalies; confirmed level of mapping that would be required between WHITE and EDW data; confirmed scope of claims to be included in the project; defined project reference groups and determined whether additional identifiers had to be captured in WHITE by FH in order to support performance measurement requirements. The final agreed measures that were tracked and subsequently reported on were, STD duration, STD claims costs and RTW durability. STD duration and claims costs were measured for all STD claims included in this study (i.e. HCO claims did not have a duration component and were not included in this evaluation) and RTW durability was measured by

assessing claims at 3 months post first final payment to determine if any additional payments had been made on the claim.

Treatment of Data

To calculate average STD duration a 6-month truncation was applied to all claims to ensure that each claim was given a similar time frame to mature. Truncated measures were used to eliminate the bias arising from the fact that claims with injury dates at the beginning of the pilot (May 1, 2007) had one year and 6-months to develop, whereas claims with injury dates at the end of the pilot (April 30, 2008) had only 6-months to develop. For this reason all claims were truncated at 6-months and the trade off was between the degree of claim completeness and timeliness of analysis. To analyze return to work outcomes for the three models Analysis of Variance (ANOVA) was used to measure STD duration and STD claims costs. This analysis was used in place of a Multivariate Analysis of Variance (MANOVA) as it was expected that STD duration and STD claims costs (dependent variables) would be highly correlated not leaving enough variance after the first dependent variable was fit (French et al., 2002). Recognizing that multiple ANOVAs increase Type I error the p-value was set at $p<0.01$ to minimize this effect. Having an alpha level of .01 made the criterion more stringent and only the lowest 1% of the distribution was rejected. Differences observed across these groups were further analyzed using the multiple comparison measure, Tukey-Kramer method. RTW durability was measured using the Chi-Square test of association as the variables were considered categorical. Counts of those that had remained in the workplace were compared to those that had STD payments made on their claim within three months after the first final STD payment. If no STD payments had been made on the claim 3-months post first final payment then this claim was categorized as durable. If an STD

payment had been made on the claim within 3-months of claim closure (or first final STD payment) then the claim was categorized as not durable.

Chapter 4

This pilot study evaluated if differences in return to work outcomes of early intervention services provided through a collaborative model existed across select reference groups. The three primary outcomes outlined for this pilot study were; (1) to decrease the duration of time loss acute MSIs by returning injured employees to their regular duties earlier (reduction in STD duration) when compared against specified reference groups; (2) decrease the costs associated with lengthy absences from work (reduction in STD claims costs) for participants measured against specific reference groups and; (3) assist in promoting a culture within the workplace that conveys the message that it is beneficial to remain connected to the workplace while recovering from injury through the use of early physiotherapy services, education and transitional return-to-work (reduction in re-current injuries / increase in RTW durability) for participants. This study attempted to demonstrate that the pilot program, PEARS Plus (RG1) would perform better than the PEARS program (RG2) and better than the non-intervention group, Stream 1 Physiotherapy (RG3).

Preliminary Analysis

Prior to commencing the pilot, preliminary analysis was conducted to determine if there would be adequate acute MSI claims to conduct the study. It was found that FH's STD claims, related to acute MSIs (overexertion resulting from a single incidence), accounted for 56% ($2,414,562) of FH's STD claims costs. Other MSIs accounted for another 2% of the STD costs. For this analysis, year of injury (2005) STD claims were identified from WorkSafeBC's EDW and included an accident type of overexertion but excluded repetitive motion and Y (aggression) claims. In addition, and based on 2005 data HCO claims related

to acute MSIs accounted for 55% (364) of the HCO claims in that injury year and 73% ($106,482) of the HCO claims' medical aid costs as identified by the WHITE database.

Primary Analysis

Data was evaluated according to the required assumptions and these assumptions were not violated; consequently, the planned statistical analyses were considered appropriate and subsequently completed. Separate one-way ANOVAs were used to determine if the means for the dependent variables, STD duration and STD claims costs, across the three treatment groups differed. When the means for STD duration were analyzed a statistically significant difference was found across the three treatment groups, R-Sq (adj) = 7.91%, F (2, 241) = 11.44, with $p<0.01$. The results demonstrated that there were differences across the three treatment groups for the dependent variable, STD duration. Given the significant results, the Tukey-Kramer method was used (99% Simultaneous Confidence Intervals to minimize Type 1 error) and it was demonstrated that STD duration for RG3 (CI = 12.45 – 54.44) and RG2 (CI = 3.62 – 49.88) was greater than RG1. This supports the original hypothesis that the PEARS Plus model (RG1) would perform better than the other two models in that there would be a reduction in STD duration. There was no difference noted between RG3 (CI = -15.17 – 28.55) when compared to RG2.

When the means for STD costs were analyzed a statistically significant difference was found across the three treatment groups, R-Sq (adj) = 9.83%, F (2, 241) = 14.25 at $p<0.01$. The results demonstrated that there were differences across the three treatment groups for the dependent variable, STD claims costs. The Tukey-Kramer method (99% Simultaneous Confidence Intervals to minimize Type 1 error) demonstrated that STD costs for RG3 (CI = 1707 – 6744) and RG2 (CI =1367 – 6917) were greater than RG1. This

supports the original hypothesis that the PEARS Plus model (RG1) would perform better than the other two models in that there would be a reduction in STD costs. There was no difference noted between RG3 (CI = -2539 – 2706) and RG2.

The chi-square test of association was used to test if return to work plans for those participating in PEARS Plus (RG1) would be more durable than those participating in PEARS (RG2) or Stream 1 Physiotherapy (RG3). This test was used to determine if there was an association between program type and RTW durability. The chi-square value for the reference groups was determined to be 5.238 with 2 degrees of freedom. A value of 5.99 was required for statistical significance at the 0.05 level with 2 degrees of freedom. The chi-square value for the reference groups was considered non-significant (p-value = 0.073), and as such the hypothesis was not supported (Table 2, Figure 1). However a limitation to this analysis was that the counts used for this analysis were small, with some counts less than 5, therefore it was more accurate to conclude that durability could not be reliably assessed.

Discussion of Findings

For 6-month Truncated STD duration (results meet statistical significance requirement at $p < 0.01$ level) it was demonstrated that the duration of an STD claim was statistically lower for PEARS Plus (RG 1), $M = 40.84$, $SD = 31.75$ when compared to the PEARS (RG2) model, $M = 67.60$, $SD = 56.62$ and Stream 1 Physiotherapy (RG3), $M = 74.29$, $SD = 50.86$. The six-month truncated STD claim costs (results meet statistical significance requirement at $p < 0.01$) demonstrate that there was a statistical difference between PEARS Plus (RG1), $M = \$ 4081$, $SD = \$3393$ when compared to PEARS (RG2), $M = \$8223$, $SD = \$7024$, and Stream 1 Physiotherapy (RG3), $M = \$8307$, $SD = \$6115$. Both of these outcomes support the hypotheses that the six-month truncated duration and claims costs of an STD

claim would be lower in PEARS Plus (RG1) when compared to the other two treatment groups. There was insufficient evidence to conclude that there was a significant difference in 6-month truncated STD duration and claims costs between PEARS and Stream 1 Physiotherapy not supporting the hypothesis that PEARS (RG2) would perform better than the Stream 1 Physiotherapy (RG3) group for STD duration and STD claims costs. When assessing RTW durability it was determined that there were insufficient claims within the reference groups to reliably assess durability and as such the hypothesis that PEARS Plus (RG1) claims would be more durable than the other treatment groups was not supported.

Chapter 5

Discussion

The purpose of this study was to investigate if there was an ideal model that would assist healthcare employers in managing acute workplace MSIs. The model developed and subsequently evaluated was PEARS Plus. This model was built off of its on-site predecessor, PEARS, which was introduced to Health Authorities in 2002 and evaluated in 2004 and 2006. The PEARS Plus model was developed as a more sustainable approach than its predecessor and was firmly integrated into existing DM practices and emphasized collaboration amongst the employer, employee, community physiotherapist treatment provider and WorkSafeBC. It was hypothesized that costs savings could be realized by way of reductions in STD duration and STD claims costs and increased RTW durability by focusing on a collaborative model which emphasized recovery in the workplace and was driven by the employer. There were a total of 289 participants, who met the study criteria and chose to participate. Of those participants, 244 claims had STD duration and STD claims costs. The other 45 claims were Health Care Only (HCO) claims that did not have any duration costs associated and as such were not included in this evaluation. All participants were employees of Fraser Health Authority and at the time of the evaluation were actively working within the hospital or community delivering healthcare services. All data was collected over a one year period from May 1, 2007 to April 30, 2008 and data was given an additional 6-month maturation period prior to analyzing.

Research Hypotheses

The three research hypotheses outlined that differences would be observed across all three treatment groups with the PEARS Plus group (RG1) performing better than the PEARS

group (RG2) and the PEARS group performing better than the non-intervention group, Stream 1 Physiotherapy (RG3) for all three measures; STD duration, STD claims costs and RTW durability. The results of this research suggests that the PEARS Plus group is a sustainable alternative to the PEARS approach in providing early, safe RTW interventions.

STD Duration

There is substantial literature (e.g. Badii et al., 2006; Cooper et al., 1996; Davis et al., 2004; Franche et al., 2005, 2007; Harder & Scott, 2005; Kosny et al., 2006; Loisel et al., 1994, 1997; Staal et al., 2005; Tate et al., 1999) that corroborates the need for early supportive resources such as physiotherapy to assist in decreasing injury duration. During this pilot study it was investigated whether the use of an off-site model, that was closely connected to the workplace and WorkSafeBC (the insurer), would be a viable option when compared against its predecessor, PEARS, which contained similar features but was located within the workplace. What was found was that the offsite model (PEARS Plus or RG1) performed statistically better than that of the on-site model and the non-intervention group (RG3) when analyzing STD duration. What was interesting in these findings was that the PEARS model (RG2) did not perform better than the non-intervention group (Stream 1 Physiotherapy) and there were no differences noted between these groups. This finding is similar to that from the VCH evaluation where a reduction in injury duration was not realized (Davis et al., 2004). However in a previous publication (Badii et al, 2006) findings demonstrated that this program did make a difference when compared against a control group within in a similar WorkSafeBC Prevention Region and against historical data. As the three models were compared during the same time frame, historical data was not considered. However the condition that was different to the previous evaluation was that each of the

treatment groups was managed by different WorkSafeBC preventions regions and FH corresponding DM teams.

The design of this study had each of the treatment groups being handled by different prevention regions. This was noted as a limitation of the study and this finding could indicate that there are differences in how claims are handled across the WorkSafeBC Prevention Regions and FH offices. In addition, the differences observed across the treatment groups may not be related to program design at all and may actually be related to the individuals managing the claims. This observation was noted for two reasons. Historically there has been a strong relationship between the FH DM group and prevention region 31 (Abbotsford) in that these two teams work well together and STD duration trending has demonstrated that these groups exhibit better performance outcomes than the other prevention regions and corresponding FH offices. This performance was magnified with the PEARS Plus results demonstrating significant decreases in STD duration when compared to the other treatment groups. Informal information was collected from the FH and WorkSafeBC groups to gain a better perspective of what they thought worked and did not work with the pilot study. One of the messages from the group was that their relationship and ability to work well together supported the contractual elements outlined in the pilot. This concept was supported in the literature in that collaboration amongst the stakeholders is imperative to assist in supporting the worker and decreasing bureaucratic delays (Franche et al., 2007; Harder & Scott, 2005). However, for this assumption to be truly understood it would be necessary to permeate the same program across FH and then compare the results by individual WorkSafeBC Prevention offices and measure specific milestones for both FH and WorkSafeBC to determine if differences exist. In addition, qualitative information gathered

from the participants that explored the drivers behind injury duration would provide additional information about potential differences across these groups. This was not done in the initial study as the purpose was to quantitatively evaluate if there was any merit in the design of PEARS Plus and the inclusion of WorkSafeBC as a collaborative partner.

An additional benefit, not anticipated, but realized was that the contractual agreement may have encouraged WorkSafeBC to increase efficiencies in their decision making process minimizing claim adjudication and decision timeliness. Although this may have not been the intent of the pilot at the onset, the built in accountability for the insurer did assist in increased efficiencies in relation to timely claim decisions. Removing this barrier may have provided the participant with a more supportive environment that encouraged recovery and decreased some of the uncertainty and mistrust which is commonly seen in lengthy claim decisions (Harder & Scott, 2005).

The Badii et al. (2006) and Davis et al. (2004) studies emphasized that it was more beneficial to have physiotherapists directly on-site, as it allowed for greater connection and understanding of the workplace. The Kosney et al., (2006) and Lemestra and Olszynski, (2004) studies both indicated that there may be some uncertainty about organizational factors by the physiotherapists when working with employers that could lead to over treating or a delay in RTW, emphasizing that connection with the workplace must exist. Lastly, findings from the Pinnington et al. (2004) and Robert and Stevens (1997) articles identified that patients do value direct referrals to physiotherapy mainly for the convenience and reassurance it provided and that it helped contribute to the patients' overall positive assessment and management of their injuries and RTW. What the findings from this evaluation have demonstrated is that the location of delivery for physiotherapy services may

not be the primary driver for a successful early intervention model. Having the option of a community based physiotherapy group may allow for additional flexibility for the participant and facilitate participation at a clinic that is close to their workplace if still connected to the workplace or close to home if currently away from the workplace. This challenges previous assumptions by these authors and indicates that other factors such as employer involvement and stakeholder collaboration may have a greater contribution to the success of early intervention models.

STD Claims Costs

With duration being the most significant driver of claims costs it is not surprising to see similar results in the findings associated with costs as to what was realized in the duration findings. The actual costs of physiotherapy visits themselves are substantially lower than that of wage replacement costs; therefore, if a claim has a longer duration it will likely also have higher costs. As with the duration findings, PEARS Plus (RG1) performed better than both the PEARS group (RG2) and Stream 1 Physiotherapy (RG3) when considering STD claim costs. Again there were no differences noted between the PEARS (RG2) model and Stream 1 Physiotherapy model.

Claims cost is an interesting variable to measure in a program evaluation. For this study only direct costs were considered and although the data used for the purpose of this thesis only considered wage replacement costs and healthcare costs, subsequent evaluations included employer top-up costs and noted that indirect costs such as losses in productivity and administrative and retraining expenses may be three times as large (Pransky and Chen, 2000). What the results demonstrated was that the PEARS Plus model was a cost effective solution to providing early intervention support services and any increase in costs seen as a

result of providing physiotherapy services prior to claim adjudication was mitigated by the significant reduction in costs associated with duration. This finding was also evident in claims that were later disallowed by WorkSafeBC where the employer paid for the physiotherapy treatments. In the PEARS (RG2) model, the employer was responsible for the salary and benefits of the physiotherapists on staff. Although this evaluation included all direct costs of the PEARS physiotherapist time for participant's claims, this information is not typically reflected in WorkSafeBC reports. In addition, the costs of maintaining and stocking the PEARS treatment facility are not typically considered in WorkSafeBC reports; however this is still a direct cost to the employer. These hidden costs, although not measured, increased the cost of the claim to the employer and the trade off between having an on-site facility that performed marginally versus decreasing the baseline budget was considered by FH when making additional recommendations for the future of PEARS. One of the benefits of utilizing community physiotherapists in the PEARS Plus model was that overhead costs were not absorbed by the employer and the day-to-day management of these therapists was the responsibility of the select clinics.

RTW Durability

In addition to a reduction in STD duration and STD claims costs, it was hypothesized that the PEARS Plus model would allow for more durable RTWs because the model emphasized education about injury prevention and was closely connected to the workplace at claim onset. This focus was thought to assist in promoting a culture that conveyed the message that it was beneficial to remain connected to the workplace while recovering from injury through the use of early physiotherapy support services, education, and transitional return-to-work.

To measure durability all claims were analyzed at 3 months post first final STD payment. If there were payments on the claim that indicated additional treatments or time loss associated with the claim then the claim was coded as not durable. However, if the employee remained in the workplace without incurring additional time loss or payments associated with health care costs related to the claim in question then they were deemed as durable or successful. The limiting factor with this analysis was the sample size. The pilot only looked at participants within a one year period and during that period there were substantially more durable return to works than there were successive disabilities. When considering the success of the program this is a positive finding; however, it is a limiting factor when trying to perform statistical analysis. What was interesting was that community therapists in general, produced more durable RTWs then the on-site PEARS program therapists. Although this observation is not supported statistically it could be a consideration when looking at resources and implementation of similar programs within the workplace.

Limitations

Before concluding remarks are made regarding the current findings, some limitations regarding the methodology used in this study must be acknowledged. It should be recognized that both PEARS Plus (RG1) and PEARS (RG2) were outlined as voluntary programs and it is difficult to know if this self-selected participant group was considered to be more motivated to RTW than those who choose not to participate. As such, it is unknown if these participants would have had a decreased STD duration regardless if they had participated in the pilot program or not. As the eligibility criteria defined who could participate in the pilot study, specific information about the injury was not evaluated, nor was specific characteristics of the participants considered. As such, differences in composition

across the reference groups, could not be identified, and it is unknown if this impacted RTW outcomes.

The non-participant group was not evaluated in this study. This decision was made early in the data analysis design as an additional level of data collection (qualitative) was required to truly understand the differences between these two groups. This was beyond the scope and resources available for this initial pilot study and has been recommended for the expanded version of this pilot study.

The sample size for this evaluation was limited as participants had to meet the inclusion criteria and had to be interested in participating. Although acute MSIs are the primary workplace injury reported to WorkSafeBC by FH this population is still considered to be a subset of all workplace injuries reported. A larger sample size would have enhanced credibility to the comparative analysis between the reference groups.

All data considered in this evaluation was truncated at 6-months meaning that each claim was only give a period of 6-months to mature and if STD duration or claims costs were attached to the claim beyond the 6-month time period, this information was not captured. This treatment, although considered a limitation, assisted in normalizing the data recognizing that the claims at pilot initiation had a longer period to mature than the claims accepted at the pilot conclusion. Again this was a decision made by the project team at the initiation of the pilot study recognizing that the trade-off would be in completeness of the claim. As this was a workplace based program, the opportunity for a longer study period did not exist and it was not expected that a substantial amount of information would be gained if the study period was extended due to the average STD duration of a claim being less than 6-months.

The most prominent limitation within this study was that each treatment group was managed by a different WorkSafeBC office and its corresponding FH office. Recognizing that the pilot was being introduced to test a different model of delivery for early intervention services, the decision to only test this model in one area within FH was determined. This decision allowed for this model to be tested against its on-site predecessor, PEARS and an area that had not formally received a prior PEARS model. However the limitation to this was that each treatment group was managed by a different group of FH and WorkSafeBC individuals responsible for the claim. Although each of these areas adheres to similar policies and practices (at FH and WorkSafeBC) the mere fact that different individuals were handling the claims may have had an impact on the outcomes. This was the primary driver behind the recommendation to expand the PEARS Plus pilot study across all of FH.

Recommendations

From a statistical measurement perspective, enhancements are required in the data collection methodology and tracking so that participation status of eligible workers, claims, and injuries for each of the reference groups are more easily identified. In addition, a larger reference group would enhance the credibility of the comparative analysis of duration, claims costs, and durability.

Looking forward, and something that should be taken into account in the expanded model, would be the performance of this model across the various WorkSafeBC Prevention Regions and corresponding FH offices. This would provide insight into any tendencies indicating that the results experienced in the PEARS Plus model (RG1) were reflective of the WorkSafeBC Prevention Region / FH Disability Management team performance and not the model itself. In addition it would be of benefit to compare differences between participants

and those that were eligible for the program but chose not to participate. This analysis could be structured as a mixed methods evaluation where duration and claims costs data are collected as well as interview or focus group findings. This approach would be recommended to gain an understanding of the differences in motivation for participation between these two groups. Lastly the findings of this study could have been enhanced through structured feedback from the physiotherapy groups as well as the participant groups. This information may have provided additional insight to the analysis and drivers of duration and cost findings presented within this study.

Summary

This thesis was based on the evaluation of the PEARS Plus model which was initiated and managed by the graduate student. At the time of writing, additional discussions had occurred with WorkSafeBC and FH and it was determined that there was benefit to expanding the PEARS Plus model across all of FH. Many of the lessons learned from this evaluation and subsequent evaluations were incorporated into the expanded version of PEARS Plus with more emphasis being on the qualitative findings gathered from pilot participants, non-participants and community provider staff. Enhancements were made to the data collection, and implementation of the pilot became the primary responsibility of the front line DM teams at FH and WorkSafeBC. The pilot was scheduled to commence in the Fall of 2009 and evaluation will occur after the data has matured for 6-months post pilot completion. If the findings from the expanded model are positive it may support WorkSafeBC in making changes to their policy which would incorporate an early intervention model similar to that of PEARS Plus for all employers in British Columbia.

In closing, research has demonstrated that access to supportive resources such as physiotherapy in conjunction with modified work or transitional duties programs have shown to be effective in facilitating return to work for temporarily and permanently disabled workers (Badii et al., 2006; Cooper et al., 1996; Davis et al., 2004; Franche et al., 2005, 2007; Harder & Scott, 2005; Loisel et al., 1994, 1997;, Staal et al., 2005; Tate et al., 1999). The PEARS Plus model combined elements of early intervention, physiotherapy, workplace connection and collaboration amongst the workplace, insurer, and physiotherapy provider. It was this collaborative relationship, which assisted in minimizing bureaucratic barriers, decreasing delays to receipt of benefits, provided for immediate and ongoing contact with the employee, including stay at work and transitional or modified work opportunities, and ongoing monitoring by the workplace, the insurer, and the physiotherapist. In this model the workplace assumed responsibility for the injured worker and was the driver in engaging the employee in the services and transitioning them into the workplace. In addition this model removed the financial burden of hiring and maintaining on-site therapists through the use of existing services that would be offered to an injured worker with an accepted claim. The PEARS Plus (RG1) model demonstrated that it was an effective and sustainable way of delivering early intervention services and in the end performed statistically better than its on-site predecessor.

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Appendix A – PEARS 20 Principles

1. *Preventing disability must be seen as an extension of preventing the injury*

   Disability Prevention programs must contain a strong link between primary (injury) prevention, and prevention of unnecessary time loss. Accommodating the injured worker should be seen as an opportunity to prevent further injuries not only for this injured worker but also for the workforce in question. There must be a commitment to necessary ergonomic changes.

2. *The focus of post-injury intervention must be on workplace assessment and modification.*

   PEARS must go beyond a "medical rehabilitation model" to work at how workplace changes could be implemented swiftly to prevent extensive time loss from being necessary. In considering what accommodations are needed the following hierarchy should be used: own job; own job with modifications; own job minus certain tasks or reduced work hours; different job within the same unit or department; other department.

3. *All modified work assignments must be meaningful*

   Modifications should not increase the workload of co-workers, and all aspects of PEARS must be consistent with the collective agreements.

4. *PEARS should build on previous experience within the workplace*

5. *There must be an evidence-based education component and communication plan delivered for each of the stakeholder groups*

   PEARS and its underlying principles should be fully explained to the workforce, the injured worker, the joint committee members, managers, treating physicians and other practitioners, etc.

6. *There must be recognition of and respect for existing patient-doctor relationships*

   In addition to an evidence-based package for practitioners pre-prepared, the worker's physician must be apprised of the nature of the specific work program being proposed for his/her patient, and invited to comment on any changes recommended to hasten recovery and avoid risk of future harm.

7. *PEARS must be entirely voluntary*

   There must be no discipline, negative consequences or any threats thereof for non-participation. All details of PEARS must be set out in writing and informed consent sought.

8. *PEARS must be designed for rapid intervention*

PEARS personnel should aim to reach the worker within 48 hours of the injury if possible. All work modifications should be designed to last, if possible, no longer than a 7 week period, noting that some flexibility may be required, and that if the return-to-work is not entirely successful by that point, there will be a seamless transition to other coverage.

9. *PEARS should be independent of WCB claims processing*

The in-house joint labour-management team, in consultation with experts must make all decisions regarding PEARS. Participation or non-participation in PEARS should not imply eligibility for WCB benefits or denial thereof. All healthcare workers that report having been injured at work will immediately be referred to PEARS and contacted, if deemed appropriate by the PEARS team, with no attempt to await WCB adjudication as to its work-relatedness or acceptability by the WCB.

10. *Income continuity as part of PEARS should begin upon the injured worker's entrance into PEARS and continue as long as the worker is participating in PEARS*

All attempts will be made to maintain income whether supernumerary or not and whether fully back to work or only partially, as long as the individual is in the program.

11. *Provisions should be made for in-house rehabilitation wherever possible, either on-site or organized away from the workplace*

12. *Union representatives must be involved in all stages of the design and implementation of PEARS, including decisions regarding accommodation of the injured worker*

Medical information (e.g. specifics of diagnosis and related medical conditions) will be shared with union representatives as well as management representatives only at the request and written consent of the injured worker. Information regarding limitations/capabilities will, however, be shared on a need-to-know basis. Medical evidence to support need for accommodation, however, will be shared according to collective agreements.

13. *The types of injuries to be the focus of intervention should, initially, be acute musculoskeletal injuries*

More chronic musculoskeletal injuries and other injuries will be included as appropriate.

14. *The scope and parameters of PEARS should be as broad as possible, within the confines of the resources available*

Whenever possible, no categories of workers or occupational groups shall be excluded.

15. *All injuries must be carefully tracked, and outcomes clearly identified*

Outcome will not be limited to time loss, re-injury rates and cost, but also frequency of new injuries as well as pain, disability and after measures of satisfaction. Appropriate data collection instruments (preferably prepared in collaboration with OHSAH) must be used, a data tracking system must be in place and provisions for evaluation clearly established.

16. *OHSAH will provide technical assistance*

This would include occupational medical expertise as well as policy advice if requested.

17. *OHSAH will be actively involved in all stages of evaluation*

This will allow OHSAH to pool results from various initiatives.

18. *OHSAH will provide technical assistance in procuring needed equipment*

Employers will be asked to purchase whatever is needed, whenever possible. The Workers' Compensation Board shall be approached to provide sufficient funds for incidental costs that are non-wage related and non-claims specific. This will allow for incidental expenses or purchasing of items needed to accommodate the injured worker (e.g. ergonomic chair). (Some PEARS funds should be set aside for needed equipment).

19. *OHSAH funding will be used primarily for hiring qualified individuals to lead and co-ordinate integrated prevention and return-to-work efforts*

Some funds, however, may be used for other needs in order to achieve the goals or injury prevention. For example: the implementation of needed modifications to make the project successful.

20. *OHSAH funding will be provided on a "matching" contribution-in-kind basis*

The employer must at least provide resources equivalent to the amount to be provided by OHSAH. These can be identified as personnel time, wage replacement for employee participation in in-service training related to the program, etc.

Appendix B - Eligibility Criteria for the PEARS Plus Program

Inclusion Criteria

Participants will include any Fraser Health employee who;

- Has experienced a likely work-related* musculoskeletal injury (MSI) resulting from a specific identifiable incident resulting in a sudden onset of symptoms, and
- Has reported his/her injury to FH and WorkSafe BC within 7 days and
- Has no history of related symptoms or injury within a three-month period prior to the current report of and
- Arrives for treatment within seven days of the reported incident.

*All work-related or likely work-related MSIs will be related to a specific or identifiable incident as described on the relevant Accident / Injury form and described during an intake interview to the program. The decision to refer an employee to PEARS Plus will be determined by the FH CMA during intake and is independent of the WorkSafeBC claims entitlement process. This may include consultation with his/her AP, although the participant does not need to see their AP before acceptance into the program is tentatively made, the participant is required to remain in contact with their AP if they are participating in the program.

Criteria for Continuing Eligibility

- Arrive for treatment within 7 calendar days of reporting incident to FH and/ or WorkSafe BC (day one is considered the first day the incident was reported to either party).
- See Attending Physician (AP) within 5 business days from initial visit.

Exclusion Criteria

Given that the program is best suited for prevention (primary and secondary) or musculoskeletal injury, employees exhibiting any of the following characteristics will be excluded from participation in the PEARS Plus Program:

- Employees who appear to have a pathology of a non-MSI origin (e.g. Emotional or psychological distress, Multiple Sclerosis, Systemic Lupus Erythematosus, etc.). It must be acknowledged that the focus of intervention is on work-related MSI, and that the existence of a non-MSI co-morbid condition may not necessarily exclude participation in the program, as long as such a condition is not the primary cause of symptoms or functional disability.
- Employees who are reporting no specific incident / have gradual onset of symptoms or activity related soft tissue injuries will be excluded.
- Employees who do not report the injury / incident within 7 calendar days will be excluded.
- Employees who do not begin physiotherapy treatment within the 7 calendar referral timelines will be excluded.
- Employees who do not seek medical attention (AP) within 5 calendar days of 1st treatment with the PT will be excluded.

Withdrawal Criteria

Participants will be withdrawn from the Program, following:

- Withdrawal of consent to participate*, or

- The participant's lack of satisfactory progress, despite regular and appropriate intervention (e.g. adhesive capsulitis, physiological plateau), as determined by WorkSafeBC or FH (for disallowed claims), or
- The participant's lack of attendance, or a lack of compliance with recommendations put forth by the program staff

*Participants with an accepted WorkSafeBC claim must contact WorkSafeBC prior to withdrawing as withdrawal may affect his/her entitlement to benefits

Appendix C – Descriptive Data

Table 1. Participant Demographics

	RG1	RG2	RG3
Participants (Injured Workers)	92	93	104
% HCO claim	16% (15)	28% (26)	4% (4)
% STD claim	84% (77)	72% (67)	96% (100)
Average Age of Injured Worker	45	45	44
# of Injured Workers by Gender	75F/ 6M/ 11Unsp	69F/ 10M/ 14Unsp	88F/ 10M/ 6Unsp
Occupation Classification of Injured Worker Participants	49% Nurse Assistant 14% Registered Nurses 13% Home Support Workers	41% Registered Nurses 20% Nurse Assistant	38% Nurse Assistant 27% Registered Nurses 14% Licensed Practical Nurse

Table 2. Frequency of Outcome Type by Reference group

	Classification		
Participation Group	Durable RTW	Not Durable RTW	TOTAL
RG1	76 (97%)	2 (3%)	78
	72.89	5.11	
	0.133	1.897	
RG2	59 (88%)	8 (12%)	67
	62.61	4.39	
	0.208	2.961	
RG3	93 (94%)	6 (6%)	99
	92.51	6.49	
	0.003	0.037	
Group Total	228	16	244
Percent	*93*		

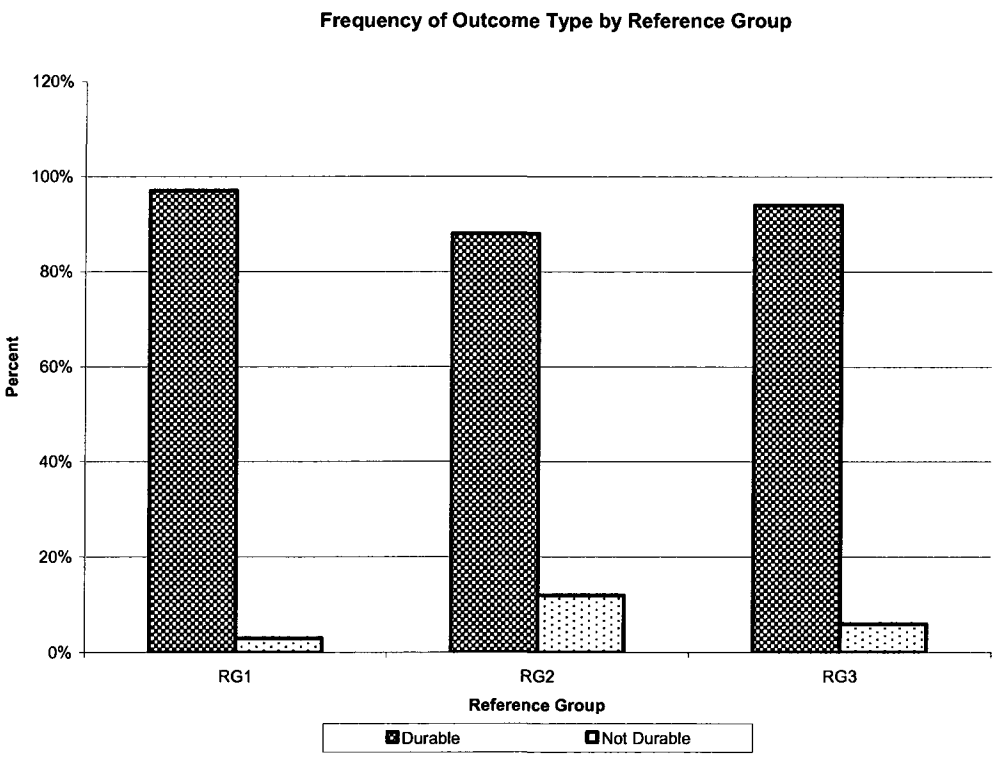

Figure 1. Frequency of Outcome type by reference group comparing durable and non-durable RTWs.