

ANALYSIS OF AN EARLY INTERVENTION DISABILITY PROGRAM

by

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ABSTRACT

Analyzing the cost benefit of early intervention in disability management is a challenging area of study due to the overall lack of standardized programs and measures. The purpose of this study was to determine if early intervention is an effective way to manage disability related costs, to assess data quality and provide recommendation to the Corporation on how best to measure its return on investment into the early intervention program (EIP). The study is a mixture of quantitative based analysis combined with an exploratory research design approach. Basic descriptive and inferential statistics were utilized in conjunction with gathering other key indicators to determine if an EIP is an effective means of managing disability related costs. This research demonstrates the benefits and challenges of capturing data in order to measure the overall value of investing in EIP. The study concludes with recommendations on how to improve data collection and the importance of being able to show a statistically significant positive change as a result of the EIP to ensure future investment on the health and wellness of employees.

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INTRODUCTION

Disability management is best described as an overarching term that encompasses a full spectrum of workplace programs designed to facilitate employment for employees who may have an existing disability or sustained a disability (Dyck, 2006). Early intervention programs (EIP) are a component within the initial part of the disability management spectrum and can be defined as the area within the spectrum that focuses on prevention, as well as the provision of support to an employee to navigate the options for rehabilitation and accommodation within the first 30 days following a disability that may impact attendance and/or work performance.

Showing the cost benefits of early intervention in the discipline of Disability Management is a challenging area of study due to the overall lack of standardized programs and measures. EIP are usually the first programs to be eliminated during tough economic times. The reasons that these types of programs often are the first to go is partially due to the time and funding that is required to show a return on the investment, poor benchmarks and incomplete data collection from the inception of the program. As a result many senior management teams often do not have the time and/or the resources to capture and show the cost benefits of investing in early intervention.

The purpose of this study was to determine if early intervention is an effective way to manage disability related costs for the organization, to assess data quality and provide recommendation to the Corporation on how best to measure its return on investment into the EIP.

This study was undertaken with a Corporation with approximately 425 employees, which when provided with the option, preferred to remain anonymous. For the purpose of this study, it will from now on be referred to as “the Corporation” and every effort will be made to ensure that it cannot be identified. The Corporation was willing and supportive during the research process,

and provided access to anonymized data. To respect the Corporation's request, this thesis draws on corporate documentation (e.g. program documentation, mission statement) without providing explicit references.

The Corporation's main mandate is to deliver supports and services to adults living with disabilities. Their mission is to promote inclusion so that people with disabilities have more choices about how they live, work and contribute. The Corporation has approximately 425 full-time employees. In a corporation of this size, employees are key in facilitating the vision and mission. In order for employees to carry out the vision and mission that promotes inclusion so that people with disabilities have more opportunities within the community, it only makes sense that they lead by example and implement a program that addresses the disability related needs of its employees.

Prior to 2009, the Corporation did not have an EIP as part of its disability management approach. It was as a result of discussion undertaken by the writer/researcher that the Corporation made a commitment to continually improving the disability related services of its own employees, which led to the development and implementation of the EIP. The writer/researcher of this thesis was involved in developing the framework of the EIP and its implementation with the Corporation's Human Resource Department.

The purpose of this study was to determine if early intervention is an effective way to manage disability related costs for the organization, to assess data quality and provide recommendation to the Corporation on how best to measure its return on investment into the EIP.

The purpose of the EIP is to facilitate a proactive, appropriate and customized return to work program for employees with occupational and non-occupational disabilities. The goal of

the program is to support effective return to work (RTW) in a caring, safe and timely manner that will reduce the economic and social impact of work related illness and injury.

The Corporation's primary interest in this study is to learn whether the EIP is an effective means to managing health and disability related costs. While cost is not the only motivating factor for early intervention strategies, it is a key factor that is beneficial for both labour and management. Through reducing the economic impact of work related illness for both employee and employer there are indirect benefits that draw attention to the investment in workplace wellness. The secondary objective for this thesis is to assess data quality and provide recommendations to the Corporation on how best to measure its return on investment of the EIP. An exploratory research design was used to structure the research and determine the outcome measures. Part of the analysis of the data also includes a formative evaluation and retrospective analysis. This results in the final objective of the study which was to produce the Corporation with some baseline benchmarks as well as to provide recommendations for data collection and quality overtime.

The thesis begins with a review of relevant literature in regards to the current shift and attention to disability management and focus on EIP as well as, the importance of labour management commitment in program redesign. Chapter Two will review types of data collection and the challenges with data collection for EIP. Once the reader is provided with some context of EIP and research challenges, the phases of development for the Corporation's EIP will be summarized. An overview of the methodology for this quantitative based research will be shown in Chapter Four. Data results along with a detailed interpretation will follow in Chapter Five. This thesis ends with a discussion of the objectives of this study, a summary of key findings, and concludes with recommendations for the Corporation.

CHAPTER ONE, CONTEXTUAL INFORMATION ON EARLY INTERVENTION PROGRAMS

Background

A literature review has been conducted with the majority of information collected via the internet, journal articles and text books in order to support the exploratory research approach. The research criteria that were used to search relevant information for the literature review included early intervention programs in unionized environments and methods of data collection that are central to quantitative research regarding the cost benefits realized for the Corporation's EIP.

Databases searched included Pubmed and Google Scholar. Specific Canadian sources such as Human Resources and Social Development Canada; National Institute of Disability Management and Research; Public Health Agency of Canada; Statistics Canada and the Corporation's EIP Cost Comparison were also utilized. The literature provided information on the importance of Early Intervention and Disability Management programs. Highlighted was the importance of joint labour-management commitment along with a variety of methods for data collection and the challenges that exist when doing a comparative analysis for EIP.

Disability Management and Prevention

It was not until 1981 where the United Nations started to realize that the effects of disability in the work force, if not addressed, could have a significant impact on the economy and labour shortage. They began to view all employees, including those with disabilities, as valuable assets to the work force and worth retaining and investing in rather than providing ever-increasing costs of providing benefits to support employees with disabilities to remain out of the work force (Harder & Scott, 2005).

Harder and Scott (2005) found literature dating back to 1975 that pointed out the shortcomings of the medical model when it was utilized to address rehabilitative purposes. They found that applying the medical model to rehabilitation created a clash because employees with permanent disabilities and chronic illnesses did not fit within the scope of rehabilitation due to the focus of the medical model on diagnosis and a cure to an identified pathology. This resulted in no action in supporting people with disability to remain within the workforce resulting in increased pressure on the economy and a strained labour force.

It was here where the shift in the approach to rehabilitation began to focus on prevention as an all-encompassing topic that included everything from corporate culture, health and safety, ergonomics, engineering design, accident investigation, root cause analysis, employee selection, to health promotion programming. As a result disability management and prevention as a whole emerged as the process of facilitating early and safe return to work while striving to decrease the human and financial cost of disability (Harder & Scott, 2005).

Franchee et al. (2005) confirms research that describes the evolution of a wider conceptualization of disability management that expands from the medical model and crosses into a more bio-psycho-social model. As a result of this expansion disability management professionals no longer focus on medical case management but cross over into organizational culture shifts that focus on EIP, RTW outcomes, policies, and employee health and wellness. The challenge with this new focus is the development of standardized outcomes, definitions of disability, training and the acceptance of both the employer and employee (Franchee et al., 2005).

Anema et al. (2009) conducted an exploratory analysis on disability policy in a six country cohort study. The study revealed a substantial number of differences between countries

in medical interventions and workplace interventions. The main outcome of the study was that a policy change is needed to encourage interventions such as EIP or RTW and that these interventions need to be supported by less strict compensation policies. They also identified that a collaborative policy change is needed by politicians and stakeholders. The focus should be more on a workplace that appreciates the humanity of each employee and to ensure that employees are valued, feel secure and believe in a future. The study supported this by finding a correlation that a system change from a medical model insurance system to more of a bio-psycho-social approach in Saskatchewan resulted in a decline in the number of claims and duration of claims, as well as, increased recovery of those with whiplash injuries when this shift in approach was applied.

While disability management is an overarching term that encompasses a full spectrum of workplace programs designed to facilitate employment for employees who may have an existing disability or sustained a disability. Operationally, Dyck (2006) identifies eight elements required for any successful Disability Management Program within the spectrum as requiring:

“Management-Labour Commitment and Supportive Policies; Stakeholder Education and Involvement; Supportive Benefits Programs; A Coordinated Approach to Injury/Illness Management; A Communication Strategy; A graduated Return-To-Work Program; Performance Measurement and Workplace Wellness” (p. 194).

This research solely revolves around the element that occurs prior to and at the beginning of a graduated RTW program within the disability management spectrum defined as Early Intervention (Dyck, 2006). Early intervention deals with prevention, as well as the engagement of support to an employee to navigate and facilitate the options for rehabilitation within the first 30 days they are absent from the work place. The next phases are the rehabilitation and return to

work (RTW) plan that assist and provide flexible and creative return to work options for the employee to return to work in a timely fashion (Dyck, 2006).

The first and foremost key element identified within a comprehensive EIP is the importance of “Management-Labour Commitment and Supportive Policies” (Dyck, 2006, p. 07). Without this commitment and supportive policies as the foundation of any disability management program, there is potential risk of program failure because the goals, objectives and benefits of the program are not clearly understood.

Dyck (2006) describes management-labour commitment as needing to be sensitive to the impact of disability on employees, families, co-workers and the organization by which they are employed. The importance of ensuring the employer is knowledgeable on relevant legislation and “duty to accommodate” when developing supportive policies and management-labour agreements that protect employability is also important. Indicators of management-labour commitment include the design and implementation of a benefit plan that rewards a safe and timely return to work as well as the employer being cognizant of the potential effect of management practices on employee wellness. The indication of flexible and creative return-to-work options and the cooperation of management-labour efforts to reduce employee absenteeism are also important factors to consider. Once management-labour is clear on the goal, objectives, benefits and their responsibilities they are more likely to be engaged and therefore more inclined to make future investment into a successful program.

Unions play an equally significant role as disability management professionals do in improving workplace safety, health and wellness. Strengthening the relationship between disability management professionals and union representatives creates the potential to implement an EIP which in turn enhances accommodation and return to work opportunities within a

unionized environment. In order to facilitate and strengthen this relationship, it is important that disability management professionals understand the roles and functions of collective bargaining within the context of disability management as outlined in Table 1 below:

Table 1

Role Similarities of Disability Management and Collective Bargaining Representatives

Disability Management Professionals	Collective Bargaining Representatives
1) Identify the goal of a disability management program which is preventing and managing employee absenteeism and retention.	1) Identify and bargain for the goals within the collective agreement that include issues such as managing employee absenteeism and retention.
2) Incorporate objectives of evaluating and monitoring ill or injured workers to reduce employee absenteeism and increase employee retention.	2) Are concerned with personnel practices and monitor the effects of employee absenteeism and employee retention strategies within organizations.
3) Show the benefits and outcomes of a disability management program that include cost effectiveness, retention and workplace wellness.	3) Bargain for or against benefits and programs that are supposed to improve workplace safety, health and wellness.

(Adapted from Shrey et al., 2006.)

Both disability management and the collective bargaining process involve activities such as analyzing cost and labour market trends; having a clear understanding of how people currently behave in the labour market and using data to predict and forecast future needs and developments. Statistics Canada is the primary source of labour market data. Disability

management professionals along with those who are involved in collective bargaining will conduct analysis on potential labour force and participation rates as well as labour productivity.

Similar to any disability management program, an unregulated labour market could be devastating to many employers and affect them in a negative way. Issues covered in most labour standards legislation that are also covered in a disability management program include, maximum hours of work, vacation/sick pay, discrimination, health and safety. Through having clearly defined standards and legislation benefits both the employer and employee are provided with a guide and the tools needed to regulate the labour market. For example, minimum wages specify the wage rates for various types of employment and individuals; maximum hours of work specify the maximum number of hours per day or week that an employer can demand from employees. Having basic disability management standards around issues such as “duty to accommodate” within collective agreements bring more clarity to both employer and employee (Phillips, 1981).

Unfortunately employers who have not set identified benchmarks that address disability related absences at the inception of their disability management programs will have ongoing challenges in measuring long-term trends and the cause and effect on performance of their programs. This lack of outcome measurement results in having minimal data that that only measures the cost from one fiscal year to another. While the data on cost is valuable it does not provide enough information on the cause of what requires adjustment within the program to reduce the costs or employee absence.

The lack of nationally standardized benchmarks also create challenges to measure disability management programs globally leaving the only common measure of compliance with

Human Rights Legislation under “duty to accommodate” and discrimination clauses within some collective agreements (Saint-Cyr, 2007).

Harder and Scott (2005) argue that in Canada, the Canadian Charter of Rights, the Canadian Human Rights Act and the Employment Equity Act all clearly identify the responsibility of accommodation. Each province in Canada has provincial human rights statutes that address duty to accommodate to varying degrees. This makes Human Rights legislation paramount in providing a solid foundation from which other benchmarks, such as absences due to disability related limitations, can be developed to measure the wellness of employees and advance the importance of disability management within the workforce.

Having standards and legislation across all jurisdictions incorporated within collective agreements as it does for minimum wage, vacation pay and statutory holidays would strengthen and force employers’ obligations in regards to achieving and ensuring disability management programs address workplace wellness. It would also ensure programs were set up with consistent measurable data that could be collected nationally.

In 1999, the Supreme Court of Canada decided two cases that had major legal implications and reinforced the duty to accommodate individuals. The first case reaffirmed that employers who design workplace standards have an obligation to be aware of the differences between individuals and must build equality in workplace standards. The second case clearly defined that employers governed by Human Rights Legislation, that have employees with disability related conditions, should accommodate these employees if it does not cause undue hardship to the employer (Human Resources and Social Development Canada, 2002).

Despite these two ground breaking decisions, “duty to accommodate” is still not incorporated within many collective agreements to provide further clarity to employers and

employees in regards to their rights to accommodation in the workplace. Yet the literature review indicated that organizations are concerned with the personnel practices of recording the development and maintenance of its human resources. The literature review also indicated that without this foundation incorporated finding other common benchmarks nationally, to measure employee wellness, will create a challenge (Human Resources and Social Development Canada, 2002).

The development and maintenance of human resources is equally important to disability management programs. Most organizations continue to monitor and are concerned with the performance, training, development, and employee compensation (Phillips, 1981). Performance appraisals are tools that are used to help employers and disability management professionals determine the contribution of the employee within the organization. Hakala (2008) states that employees performance is no longer an annual ritual but a continuous process for employees and human resource consultants to ensure that an employee is clear on the organizational vision as well as the progress in achieving the vision for each employee. While performance appraisals and training are not a direct concern to collective bargaining professionals, they are key to negotiations regarding workload expectations. As a result this provides the employee with clear expectations and the employer with an understanding of their duty to accommodate should disability become a factor.

Before this clarity can occur, the function of the Collective Bargaining Cycle needs to change so that more theory and models of disability management can be incorporated. Similar to disability management, employers involved within the collective bargaining cycle have traditionally been reluctant participants. Disability management professionals must consider the following eight attitudinal postures when implementing and incorporating a disability

management program within an organization as these attitudinal postures can transfer over into preconceived prejudices and misunderstandings of persons with disabilities in the workforce. It may also account for why standardization in defining disability and developing best practices and benchmarks is so challenging.

Often there are many misunderstandings and attitudinal postures that result between employer and employee. Phillips (1981) states eight possible categories of attitudinal postures of employers and employees within collective bargaining as follows:

1. Ideology. The employee organization is dedicated primarily to an ideology, such as, socialism or class equality, which the employer opposes. Ultimately, each party seeks to destroy the other.
2. Conflict. The employer seeks to eliminate the employee organization while the employee organization fights for survival and improved security arrangements.
3. Containment-aggression. The employer seeks to contain the employee organization within limited bounds while the employee organization aims at extending its scope of activities.
4. Power bargaining. Both the employer and employee organization accept the existence of each other. Emphasis is placed in tough bargaining tactics to get all that is possible from the opposite side.
5. Accommodation. This is characterized by serious bargaining within established boundaries and willingness to compromise whenever necessary. Familiar routines are followed and both parties maintain a "live and let live" policy.
6. Cooperation. Both the employer and the employee organization accept each other's problems as also being problems of their own. Even though the parties will have their

differences on traditional collective bargaining issues, each regards the other as a responsible party.

7. Deal bargaining. This refers to secret deals between employers and representatives of the employee organization. Each side gives something, but those employees not party to the negotiations are never told the true extent of, or reasons for, the compromise. In some cases, the end result may be detrimental to the membership.

8. Collusion. This implies that employers and employee representatives make illegal agreements that adversely affect the interests of other employers, other employees and the consuming public (p. 81-82).

The Centre for Chronic Disease Prevention and Control (CCDPC) estimates that 87% of disabilities in Canada are chronic disease related (2008). This type of data is what union representatives and/or labour management committees need to be aware of in order to understand how important early intervention is in regards to disability management. Implementing an EIP has the potential to greatly benefit the recovery of injured or ill personnel, and assist workers to stay at work or return to productive and safe employment as soon as physically possible (Saint-Cyr, 2007).

In summary, the literature review shows convincing evidence that management-labour commitment is a key element in the development of an EIP. The literature also illustrates that EIP benefits both employer and employee when data is collected from the beginning as it provides benchmarks that helps to define “duty to accommodate” legislation as well as address the performance, financial and socioeconomic impacts on employees and employers.

CHAPTER TWO, THE CHALLENGES WITH DATA COLLECTION

The foundation in achieving a successful EIP is ensuring reliable data is collected and the outcomes of the program are measurable using the data collected. Research conducted during the literature review found that it is paramount to develop measurable benchmarks for all employees not only within a program but across programs to define effective measures and enhance disability management programs (Dyck, 2006).

Dyck (2006) and the American Institute of Medicine and National Research Council (2002) state that there is a variety of data collection techniques available and that if more care was taken to collect this type of data, more methods on ways to evaluate disability programs would emerge. Due to a lack of standardization in regards to data collection, best practice has yet to be determined. In Canada there is a variety of data collected on persons with disabilities. One of the largest and most reliable data collected nationally is through the Participation Activity Limitation Survey (PALS) (Statistics Canada, 2001).

PALS is a survey designed to collect information on both adults and children in Canada who have a disability (specifically, those people whose everyday activities are limited because of a condition or health problem). It provides information on the prevalence of certain types of disabilities and the supports available for persons with disabilities. It also provides information on the employment profile, income and societal participation (e.g., work, school, social activities) of persons with disabilities. All levels of government, associations, researchers and non-governmental organizations use the PALS data to support the planning of services needed by persons with disabilities to ensure that they are able to participate fully in society (Statistics Canada, 2001).”

Saint-Cyr (2007) indicates that her research showed that the probability of return to any form of employment decreases rapidly with the passage of time away from work and that the economic and social impact of work-related illness and injury has been well documented. She goes on to state that it is estimated that worker disabilities cost Canadian employers a total that ranges from \$10 to \$20 billion dollars per year. In addition, absences due to disability or illness are among the most challenging human resource situations facing employers. This type of data is what helps to provide the argument and reasoning on how EIP benefit the recovery of injured or ill personnel, and help employers assist injured and ill workers to stay at work or return to productive and safe employment as soon as physically possible (Saint-Cyr, 2007).

Human Resources and Social Development Canada (2002) identified that more research is needed to identify clearly the full range of direct and indirect costs of disability. They also noted that disability management interventions have failed at times to obtain support of senior management despite impressive returns on the investment due to expenditure reductions and accruals to programs other than those that incur cost (Human Resources and Social Development Canada, 2007).

Unfortunately there is little reliable data collected nationally on EIP for employees with disabilities and the effectiveness of EIP's cannot be ascertained. Part of this is due to differences of the definitions of disability and the differences between the purposes of each program. This inability to find reliable data may also be due to fact that there are few studies in the literature that measure the causal effect of health benefits on employee health (Nicholson, 2006).

In Canada alone Worker Compensation legislation is not consistent across jurisdictions. For example, Worker Compensation Boards have no obligation to re-employ people who are injured on the job in the provinces of Alberta, British Columbia, Saskatchewan, or Nunavut,

Yukon or Northwest Territories. Yet these jurisdictions all have return-to-work programs that are highly recommended by each of their own Worker Compensation Boards. This impacts a researcher's ability to gather reliable data because each jurisdiction has their own approach to disability management and to program measurement. Determining the effectiveness of programs also becomes challenging if there is no standard to which employers must adhere. Relying solely on standards under Human Rights Legislation provides minimal benchmarks for an organization to determine the effectiveness of the program especially as it pertains to early intervention (Saint-Cyr, 2007).

Human Resources and Social Development Canada (1997) state that the consolidation of RTW program criteria would help with assessing the effectiveness of disability related programs. They also state that, "without agreement on at least the general goals of policies, it can be difficult or impossible to focus evaluation efforts" (Human Resources and Social Development Canada, 1997, p.5).

The National Institute of Disability Management and Research (NIDMAR, 2005) annual report introduces the benefits of an auditing tool that they developed known as the Consensus Based Disability Management Audit (CBDMA). The CBDMA tool is becoming internationally known as a tool to support early intervention and the return to work of ill, injured and workers who have disabilities. It is linked to best practices globally. It is a tool that helps to set a global standard for professionals and provides data that highlights the benefits and need for disability management programs.

NIDMAR (2005) claims that the CBDMA is a tool that measures the performance of employer's disability management programs through providing information about workers with disabilities that are reintegrated back into the workplace. The development and testing of the

CBDMA included both large government and non-government corporations such as Labour Canada, Weyerhaeuser Company, the Workers' Compensation Board of British Columbia and Correctional Service of Canada, along with their unions (National Institute of Disability Management and Research, 2005).

The CBDMA standards are designed to: “Establish a minimum acceptable benchmark for disability management programs; Identify opportunities for disability management program improvement; and encourage the adoption of best practices in disability management. Questions are grouped into three main categories: Disability Management Policy and Workplace Resources; Disability Prevention; Early Intervention and Timely Return to Work Process (National Institute of Disability Management and Research, 2004)”.

The eight qualities that Dyck (2006) defines as the key elements of a quality disability management program are measured through 16 different categories and include over 180 questions. The 16 categories within the CBDMA include: Joint Worker-Management Support and Empowerment; Responsibility, Accountability and Authority; Workplace Culture and Policy Development; Information and Communication Management; Benefit Design and Influences; Knowledge and Skills of Disability Management Practitioner(s); Accident Prevention and Safety Programs; Occupational Ergonomics; Health Promotion and Wellness; Injury, Disability, and Lost-time Patterns; Disability Cost Benefit Data; Early Intervention and Worker Communication Protocol; Case Management Procedures; Return to Work Coordination; Transitional Work Options; Workplace Accommodations (National Institute of Disability Management and Research, 2004).

The category that measures the Early Intervention and Worker Communication Protocol focuses on the extent of early intervention and the immediate response to the rehabilitation needs

that prevent the employee from feeling powerless and reinforces their responsibility for recovery. It maintains the focus that employee participation is critical to have the best and most successful outcome. Emphasis is on support to the employee, ensuring access to information related to treatment, accommodation and resources to facilitate a successful RTW. Measures involve the effects of EIP and its role in maintaining direct, continuous contact with the employee and reviewing all of the objectives to be included in the RTW plan to obtain the best outcomes. The theory is that when this type of involvement is done in a caring fashion, it provides assurance that both workers and management value the employee as a contributing member of the work group (National Institute of Disability Management and Research, 2004).

By collecting data and measuring the outcomes of a disability management program, companies are able to analyze and see the value of the program by measuring the reduction of absences and improvement of on the job productivity. However, one of the challenges that Nicholson (2006) notes is that at times data only shows cost effectiveness for employees with severe disability and not for the average employee.

Another important issue that does not receive much attention but should is what the Institute of Medicine and National Research Council define as “coverage error” (p.75). “Coverage error is produced by the failure to include all eligible people on the list or framework used for identifying and sampling the population of interest. The use of screening questions to identify the population of interest leads to an additional source of coverage error-the exclusion of persons due to inaccurate classification at the time of screening” (Institute of Medicine and National Research Council, p. 75.)

The Institute of Medicine and National Research Council (2002) identify potential coverage errors that exist in each method of data collection. Often household-based surveys

eliminate from the sampling those with no fixed address and those admitted to institutions. An example of this is within the PALS survey that uses the Canadian census for contacting people and surveying those with no fixed address or in institution may not get counted or interviewed. As well First Nations living on reserve are also not counted which impacts Canadian statistics greatly and excludes a total population that also experiences disability issues (Statistics Canada, 2001).

Other areas that need to be taken into account that are noted are the person's ability to respond to the survey and those who do not respond at all. Taking a bio-psycho-social-cultural approach could assist with this but it is also challenging. The Institute of Medicine and National Research Council (2002) note that current data collection efforts fail to measure environmental impacts and should examine both factors that cause barriers and ones that accommodate disabilities.

Coverage error was not something that was required for this research but it is important to mention because it may be helpful in future research by the organization to look at surveying employees who have left the organization, accessed LTD, or experienced other environment impacts and have accessed other interventions outside of the EIP to address any limitations that may have affected their work.

The CBDMA does not identify clearly the coverage error of its auditing tool. What it does say is that it was, “ developed using a consensus-based model, combining the key elements identified as essential when administering successful disability management programs with feedback from field trials to produce a tool that has not only content validity, but also relevance and utility (NIDMAR, 2005)”.

Dr. Ernest Skakun, Director of Psychometrics, Division of Studies in Medical Education at the University of Alberta, and a recognized expert in the field of test design, performed the targeted statistical analysis on CBDMA. Results showed that those with a disability management program showed lower and fewer workers compensation claims for both short and long-term disability. The evaluation also showed that all the elements of the CBDMA are relevant to the measurement of quality disability management programs. Most notable were the Transitional Work Options and Workplace Accommodations which was reported to show savings of more than \$100,000 in a single year operating location (National Institute of Disability Management and Research, 2005).

The Correctional Services of Canada is currently using the CBDMA tool in fifty institutions across Canada. It is interesting to note that other agencies, such as Worksafe BC and Labour Canada, which were involved at the beginning of developing the tool, have not produced any documentation on how the tool worked in their respective areas. There is also no information on the difficulties identified and limitations with using the tool (National Institute of Disability Management and Research, 2005). Research on the cost of implementing the tool where a disability program does not exist also would be helpful to assess whether this tool can be used across disciplines and jurisdictions.

Human Resources and Social Development Canada (2000) estimated that the annual costs to the federal government of income support programs and provision of goods and services to people with disabilities are more than \$6 billion annually. This does not include the provincial programs and private sector insurance plans, or the lost income and forgone taxes from people who are capable to work but who face barriers which prevent employment. This type of information is important for Unions to be aware of as it helps them to understand the need for

programs, such as EIP, and how it and a comprehensive disability management program can greatly benefit the recovery of injured or ill union employees, and support these workers to stay at work or return to productive and safe employment as soon as physically possible (Saint-Cyr, 2007).

While research is able to show that collecting data from disability management programs helps to show the overall benefits of the specific program, it is important to ensure that measurable benchmarks for all employees are established from the beginning. If this is not done research will not be considered reliable or meaningful. Standardization of program benchmarks will remain a challenge and defining and establishing an acceptable coverage of error range will remain unknown. This lack of standard process prevents the attention and appetite for corporations to promote and continuing to invest in prevention and employee wellness. It also prevents the vision and view of how much people with disabilities can contribute to the workforce. As a result cost will continue to rise in both short term disability (STD) and long term disability (LTD) claims preventing the ability to have employees stay or return to a safe, healthy and productive workforce.

CHAPTER THREE, THE PHASES OF DEVELOPMENT FOR THE EARLY INTERVENTION PROGRAM

The Corporation began developing the EIP in 2009 but the program itself was not implemented until January 2010. The Human Resource consultant liaised with the collective bargaining representative and confirmed agreement with them before developing the program. The following 6 phases provide detailed information on the planning and justification for the development of the EIP. It is important to have this detailed information in order to understand the context of the approach to the methodology of the analysis. Following is an explanation of the implementation and the measures developed to effectively evaluate the program.

Disability is not gender or race specific and affects all therefore it is important to note that while this EIP is specific to this Corporation, it is culturally neutral and can be adapted to any organization. This Corporation states within their mission statement that they are committed to preventing and managing absences away from work while ensuring employee health and wellness. As stated earlier, an EIP is a component of a comprehensive disability management program. It is the part of the program that encompasses prevention, as well as the engagement of providing support to an employee to navigate and facilitate the options for rehabilitation within the first 30 days they are absent from the work place. The purpose is to facilitate a proactive, appropriate, customized RTW program for employees with occupational and non-occupational disabilities.

Phase 1- Social Assessment and Situational Analysis

Before the inception of the EIP the Corporation had a rehabilitation committee that was made up of one Human Resource (HR) representative and one union representative that reviewed and assisted employees who were either on short or long term disability. The Rehabilitation

Committee was and continues to be an integral part of the process in assisting ill or injured employees to return to work. The committee reviews cases on a monthly basis, assists in identifying rehabilitation requirements and a return to work option. They also are responsible to make recommendations regarding LTD and rehabilitative employment training and/or permanent placement for eligible cases. Cases reviewed by the Committee are generally those in which the return to work will be protracted or determined if the employee can handle full hours with modified duties on a trial basis or recommended to access LTD benefits. Prior to the EIP, there was no disability management coordinator or an Occupational Health Nurse to provide clinical expertise and/or guidance (Human Resource Representative, Personal Communication, January, 2009).

The existing Rehabilitation Committee played an integral part in the development of the EIP by assisting ill or injured employees' return to work. It was believed that through the addition of an occupational health nurse retained on a contractual, as needed basis, the Rehabilitation Committee would gain the clinical expertise to support decisions and become more responsive at the beginning of an illness or injury to facilitate a proactive, appropriate, customized, early return to gainful employment. The EIP was set up with the objective to ultimately depend on the participation of all stakeholders including the ill/injured employee (personal communication, January, 2009).

Phase 2 - Epidemiological Assessment

The EIP data being researched was new to the Corporation. The data was limited and there were challenges with collection. The Corporation itself was going through a change from having no EIP to having one. Therefore it was in its infancy stages when this study was conducted. It is important to note that existing tracking methods pre-EIP for STD costs was at

best rudimentary making it difficult if not impossible to determine the cost per individual and number of individuals that received STD benefits without breaking confidentiality. Therefore the only data available to use as a baseline was the total cost of disability benefits divided by the total number of employees for the 2008/2009 fiscal year. There was no available data that was broken down into specific indicators such as age or type of disability; it was only identified by name and STD cost.

Phase 3 –Administrative, Policy Assessment and Intervention Alignment

As mentioned above, upon initial assessment it was determined that the Corporation's Rehabilitation Committee was at a disadvantage in disability management without the expertise of a Disability Management Coordinator or Occupational Health Nurse. Therefore, the Corporation contracted an Occupational Health Nurse on a as needed basis (Human Resource Representative, Personal Communication, 2008).

In order to procure this service, the Corporation needed to complete a job demand analysis for each position within the organization. This analysis provided a description of the roles and responsibilities to allow for the development of a comprehensive return-to-work plan for each position. Completion of 5 job analyses cost the Corporation a total of \$5,000 (Human Resource Representative, Personal Communication, 2009).

The cost for the hiring of an Occupational Health Nurse on an ad hoc basis was \$150/hr (average of 4 hrs. per week); if there was a need for an Occupational Health Specialist, cost would be \$300/hr. As the cost was minimal and there was joint labour-management commitment, the Corporation forged ahead with the EIP with their vision of improving and investing in the health and wellness of their employees with disabilities (Human Resource Representative, Personal Communication, 2009).

The next steps resulted in creating and developing the purpose of the EIP. Following are the five goals developed for the EIP:

- To assist and support employees to successfully return to work within the first 30 days following an injury or illness, reducing the cost of disability to both the employee and the Corporation;
- Ensure the earliest and safest return to work plan, while allowing employees to maintain their benefits and a level of income, as well as to support their continued contact with co-workers;
- To work cooperatively and jointly with the Union and assist them to fulfill their role of protecting jobs and benefits for their members;
- To minimize the negative impact of disability on the employee's family, co-workers, supervisors and the community; and
- To build mutual trust between all stakeholders through improved cooperation (Human Resource Representative, Personal Communication, 2009).

Below is the policy statement developed by the Corporation (2009) to guide the implementation of the EIP:

To recognize the responsibilities of both the Corporation and the union towards employees who may become ill/injured. The Early Intervention Program is committed to providing an early return to productive employment for employees who become disabled through occupational or non-occupational injury or illness. The Early Intervention Program will assist employees in achieving a timely and effective rehabilitation, while maintaining their personal dignity and financial stability. Additionally, this program will provide an effective means of managing health and disability related costs. This policy is

intended to achieve effective disability management by ensuring: prevention, early intervention, ongoing case management and meaningful work consistent with the employee's physical and mental capabilities without risk of re-injury or risk to others. Participation will not prejudice receiving the rights negotiated under the collective agreement (p.2).

A confidentiality policy was also developed (2009) that required the committee to maintain the confidentiality of the employee's personal information throughout the process. Any documents respecting employee's medical information with respect to cases before the Rehabilitation Committee are to be securely stored in locked filing cabinets as per regulated in the Freedom of Information and Protection of Privacy Act.

The company that was hired to provide occupational health expertise maintains consistent standards required of health care professionals. Confidential medical information is disclosed only under legal requirement, or on written authorization of the employee. Any request for consent of the employee to release medical information to the employer or others will specify the nature of the information, the purpose for its release, the person to whom it may be released and the time frame for which the consent is valid. Due to the potentially sensitive nature of medical information collected while working with an employee, the detailed medical files are kept confidential and stored separately in secure cabinets at the qualified companies office. Complete confidentiality of personal health information is assured (Human Resource Representative, Personal Communication, January, 2009).

Phase 4 - Implementation

The EIP program was implemented using an environmental change strategy. In the past employees did not reach the Rehabilitation Committee until they were deemed requiring short-

term or long-term disability (STD/LTD). The environmental change strategy here required agreement from the Corporation and the Union that the EIP is a voluntary program for all employees. An employee who has been off with an illness or injury for a duration of over six consecutive days, and where there is a doctor's certificate that indicates a potential value of a referral to the EIP will be contacted by the Human Resources Consultant (Human Resource Representative, Personal Communication, January, 2009).

Employees who are currently working but experiencing symptoms that may lead to an absence due to illness or injury will also be able to self-refer themselves to the EIP by contacting their Human Resources Consultant. For employees who enroll in the program, the Human Resource Consultant and the Occupational Health Nurse (where determined required) will facilitate the RTW plan in consultation with the Manager/Supervisor. The Human Resource Consultant monitors the RTW and consults with the Occupational Health Nurse when required. The Union member from the Rehabilitation Committee may also be involved for cases that are before the committee (Human Resource Representative, Personal Communication, and January, 2009).

If an employee turns down the EIP program and the absence continues, the Human Resource Consultant will have a further conversation with the employee about the benefits of the program or have the employee provide a self-directed plan on how they will be proactive and take the steps required to RTW. For those employees that have been off work and claim they were on sick leave, that have a pattern of missing work, the human resource consultant will ask for a letter of clearance that states their limitations and inability to RTW. This letter will help the human resources consultant determine if any accommodation needs are required to enable a successful RTW and if the employee is eligible for leave benefits. Asking for this letter of

clearance is what is specified and required within the collective agreement when someone goes off on sick leave for a longer period of time. If there is no letter of clearance provided to the Human Resource Consultant, the employee will be referred to the EIP (Human Resource Representative, Personal Communication, 2009).

Phase 5- Process Evaluation

Process evaluation is very valuable in the assessment of EIP. Process and input into this program involved completing the job analysis for each position within the organization, contracting out the expertise of an Occupational Health Nurse, developing goals and policies that enabled the ability to identify quantifiable measurements to determine if the EIP would reduce costs.

Table 2 outlines each stakeholder's role and responsibility to be followed that includes the injured/ill employees who were required to make themselves reasonably available to the employer and the rehabilitation committee who all need to work consistently within the EIP principles and actively engage in RTW plan (Human Resource Representative, Personal Communication, January 2009).

Table 2

Process Evaluation of Roles and Responsibilities Within the Early Intervention Program

Role	Responsibilities
Ill/Injured Employee	<p>Completing all required forms; Speaking with all parties involved to discuss the potential for early RTW or accommodation plans;</p> <p>Participating in an agreed upon early RTW/accommodation plan if approved by the ill/injured employee's physician and; Cooperating with any recommended medical and rehabilitation intervention plans, if approved by the employee's physician; Employees also have a right to self-refer to the EIP.</p>
Manager/Supervisor	<p>The Manager will ensure employees complete the Doctor's Certificate after six (6) consecutive scheduled days off from work and provide a completed a copy to the Human Resource Consultant;</p> <p>The manager is responsible to provide a safe working environment, to keep in touch with the employee and to maintain the connection with the workplace; The manager should be consulting with the Human Resource Consultant and employee to develop a suitable RTW plan; Management is responsible to control other workplace responses such as co-worker support of the returning employee keeping in mind the health and safety of all; The manager is responsible to ensure other workers are not burdened which could potentially increase illness or injury; The manager is responsible to promote positive support in the transition back to work.</p>

**Rehabilitation
Committee**

Rehabilitation Committee members consisting of the Union and Employer will participate in the design and implementation of the EIP; Provide direction to the Human Resource Consultant; Contract out medical expertise when required to assist with RTW plans; Consider recommendations from the Occupational Health Nurse where one is involved; Approve individual RTW plans where there will be a direct cost to the EIP, and approve costs; Review ongoing effectiveness of the EIP; Make recommendations regarding LTD Rehabilitative Employment training or permanent placement for eligible cases; Approves STD Trials as per the union agreement; Attend all meetings and provide input and enhancement or changes to the EIP; Assist in disability management prevention and health promotion; Provide Quarterly Reports.

**Human Resource
Consultant**

To be an active participant on the Rehabilitation Committee; To assist in decision making in regards to RTW plans; Receive the Doctor's Certificates from Managers/Supervisors for employees who have been absent for over 6 days. Based on the information provided on the Doctor's Certificate, make a determination of value to the employee of participating in the EIP; Make initial contact by telephone (within one working day) after notification with the ill/injured employee to determine if the EIP process should be initiated; Explain the EIP to the employee, including the roles and responsibilities of all parties involved in the

program; Send out the Early Notification Package if the EIP process is required; If the employee is interested in participating in the EIP, provide the Occupational Health Nurse with basic information on the employee (name, phone number, address, last date worked, etc.) as required; Gather and review information about the employee's illness/injury and develop a RTW/accommodation plan in conjunction with the Rehabilitation Committee and Occupational Health Nurse where medical expertise is required; Follow-up with the employee and manager to ensure the RTW plan was successful or if it requires adjustment; Assist with transition back to work; regular, modified or rehabilitative. Monitors the RTW and report on outcomes; Educate the workforce on the importance of disability programs; Collect and evaluate information to monitor the success of the program; Communicate program outcomes to Senior Management; Provide knowledge transfer on the program parameters; Provide monthly reports.

Union Representative To be an active participant on the Rehabilitation Committee; To provide notification from the employee if required Provide information to the employee when required; Ensure the guidelines within the Collective Agreement are being followed and respected; To assist in decision making in regards to RTW plans that are presented to the Rehabilitation Committee; Represent the employee in matters of job security and re-employment options; Promote and

educate employees on the benefits of the Early Intervention Disability Management Program.

Occupational Health Nurse

To be an active participant on the Rehabilitation Committee on an as needed basis; To be contracted and involved with employees on an as needed basis as determined by the Rehabilitation Committee; Gather and review information about the employees illness/injury and develop an RTW/accommodation if appropriate; In consultation with the employee's physician and Rehabilitation Committee refer the employee for independent medical examinations; In consultation with the employee's physician refer the employee for additional treatment services (i.e. Counseling, physiotherapy); Communicate with the employee, employee's physician, appropriate employer designate, appropriate union designate and the Rehabilitation Committee throughout the employee's absence to monitor his/her progress to ensure that the RTW plan is followed; Provide status reports.

Phase 6 - Impact and Outcome Evaluation

The clear goal of any disability management program is directly related to the purpose of the program which is to prevent and manage absence from work. As Dyck (2006) quotes, “You can’t manage what you can’t measure” (p.145). Quantitative data are data that can be counted or quantified and were the main type of data utilized to determine the impact and outcome of implementing the EIP. Descriptive statistics were used to summarize the characteristics of the sample which consisted of 95 employees and 9 different variables. Inferential statistics were used to evaluate whether the observed relationship is by chance or reflects a relationship among the factors (Marlow, 2005).

The collection of reliable data may result in being able to demonstrate measurable outcomes that show the benefits and areas that require improvement within any program. Some key areas that are measured to show the impact and outcomes of an EIP for the purpose of this analysis include measuring and collecting data that relates to cost effectiveness, and efficient collection of data (Dyck, 2006).

In order to collect efficient data that relates to cost effectiveness of the program it is imperative to review the goals and measurable indicators in the original purpose of implementing the EIP. This is done by evaluating and measuring the existing policies and costs that are directly related to best practices so that benefits of the program can be measured not only within the performance of the specific program but compared and analyzed nationally.

The use of data will help to determine the hypothesis of whether EIP is cost effective to the organization and help to measure the overall impact of the EIP on the organization and its employees. A solid methodology needs to be established that outlines the hypothesis, the

variables to be measured, and the sample size. Without this foundation it is very difficult to determine the impact and outcome of any EIP.

CHAPTER FOUR, PROCEDURES LEADING TO THE RESEARCH

Before accessing the data a research proposal was provided to the University of Northern British Columbia (UNBC) Research Ethics Board to ensure the study was ethical and feasible. Along with the proposal was a formal letter of approval from the Corporation to conduct the research. Upon review of the research proposal and approval to conduct the research from the Corporation, the UNBC Research Ethics Board provided their approval to move forward with the research.

The research began with a request of the raw data from the Human Resource representative who was in charge of data collection and management of the EIP program. The data were delivered in an EXCEL file. The raw data itself had missing data points due to capacity issues within the organization and the inability to enter all data in real time. Univariate statistics were used to identify the percentage of missing data in each indicator that was of statistical relevance in explaining the outcomes of the research. As mentioned in Chapter 2, missing data was identified as a significant challenge in researching EIP and proved to be a challenge in this research as well.

Central to quantitative research is the question of sample size and sampling techniques. The study sample included solely the employees of the Corporation. For the purpose of this research it is important to establish that the Corporation maintained and adhered to strict standards to protect the privacy of its employees through collecting and only providing anonymized data. The data remained anonymized not only to protect the privacy of employees but was also due to the fact that the identity of the employees was not required.

Sample

The sample included approximately 425 full-time equivalent employees. The time span and costs being measured begin in the fiscal year of April 1, 2008, to December 31, 2011. All illness events lasting six days or longer were included in the analyses. Illness events less than six days were considered outside the scope of this research.

Data Limitations

Since the Corporation was primarily interested in finding out whether the EIP was an effective means of managing disability related costs, the variable being tracked by the Corporation over time was the cost of ill or injured employees pre-EIP and post-EIP. Excluded were costs from other prevention programs such as the Employee Assistance Program (EAP). As mentioned, cost was the only measurable variable available to formulate a comparison for a cost benefit analysis pre and post-EIP. The pre-EIP data available to the researcher was not broken down into specific indicators such as age cohorts, gender, or type of disability.

Methodology

An exploratory research design was used to first identify deficits in the data to determine whether EIP is an effective means of managing disability related costs for an organization, to assess data quality and provide recommendation to the Corporation on how best to measure its return on investment into the EIP (Borden & Abbot, 2008).

The hypothesis for this research is that the EIP has provided an effective means to managing disability related costs for the Corporation. The dependent variable, cost, was assessed (1) with and without the EIP, and (2) pre and post-EIP. Data collected was for employees in the organization who received any type of STD benefit that resulted in a cost for the organization. Data collected for EIP costs were independent from the STD cost. The EIP cost for each

employee who accepted the program received additional benefits to STD benefits such as paid assessments to support and determine the best RTW plan. Each employee who received any STD/EIP benefit was then categorized using the following 9 key indicators to establish a baseline and to determine if there was any correlation between indicators and post-EIP cost as follows:

1. Number of employees referred to the EIP
2. Number of employees referred who declined EIP
3. Number of employees who accepted EIP
4. Age Cohort
5. Gender
6. Referral date to the EIP
7. Missing data
8. RTW date
9. Primary disability type

When assessing the data the researcher realized that there were challenges with data quality. There was missing data that was primarily due to a rudimentary system in its collection which resulted in error and missing data that is further discussed later on in the analysis.

As a result of the data collection challenges only two analytic statistical methods were utilized to address the primary research question: a one-sample t-test, and an independent groups t-test. The one-sample t-test involved comparing the post-EIP cost to the pre-EIP cost. The independent groups t-test involved comparing the EIP costs for individuals who accepted referral into the program with the costs for individuals who did not accept the referrals. Descriptive statistics were applied to relevant indicators to help support and identify future recommendations on how best to measure the benefits of EIP for the organization.

CHAPTER FIVE, PRIMARY DATA ANALYSIS RESULTS

When looking solely at the average costs per FTE pre and post-EIP, the data appears to support the hypothesis that early intervention has provided an effective means to managing disability related costs for the Corporation. In Table 3 below, the \$1536.54 pre-EIP cost value was calculated by taking the total disability related cost for the organization for the year and dividing it by the number of full time employees ($\$655,164.91/426.39 \text{ FTE's} = \$1536.54/\text{FTE}$). The post-EIP cost was calculated in the same way ($\$564,236.33/421.69 \text{ FTE's} = \$1338.03/\text{FTE}$). Table 3 below illustrates the results of these cost calculations:

Table 3

<i>Pre and Post-EIP Average Costs</i>				
pre/post-EIP	Fiscal Year (Apr 1-Mar 31)	TOTAL COST/YEAR	TOTAL # OF FTE's	AVERAGE COST/FTE
pre-EIP	2008-2009	\$655,164.91	426.39	\$1536.54
Implementation Phase	2009-2010	\$515,372.13	426.39	\$1208.69
post-EIP	2010-2011	\$ 564,236.33	421.69	\$1338.03

The challenge with looking solely at disability related cost per FTE each year is that other variables may have a direct impact on cost increases or decreases for the Corporation. The values in Table 3 include all employees for the organization. Therefore, the cost includes employees that may have not received any disability benefits which does not provide an accurate cost or number of employees who received disability benefits. It is important to point out the time span from pre-EIP and post-EIP is minimal and that the difference in FTEs is not significant but helps when comparing pre and post-EIP cost to support the hypothesis by showing a savings of \$198.51 per FTE since the implementation of the EIP.

Tracking other key indicators such as age and disability type helped to further support the hypothesis of whether EIP is an effective means of managing disability related costs for this cooperation and provided baseline data of where the Corporation may want to focus in future prevention efforts having a direct result of the identified cost savings. For example, through collecting other key indicators from January 1, 2010 to December 31, 2011 the data identified that there were a total of 95 employees who required short term disability assistance that resulted in a cost to the organization. That is approximately 25 percent of the organizations employees that received STD costs in as little as 15 months. While the disability claims for this organization are high it is important to highlight that there was a 12.9 percent reduction in disability related costs within the first 15 months of the EIP program.

Table 4

Measure of Average (Mean) Cost of EIP and STD Cost Post-EIP

Mean/Std.Deviation	EIP Cost	STD Cost
	Employees (n=95)	
Mean	\$1,340.40	\$5008.15
Std. Deviation	\$921.06	\$5293.28

Table 4 provides the results and the average disability related costs for 95 out of 425 employees who may or may not had received EIP and/or STD costs but were known to be away from work for longer than 6 days due to disability. Data points were only available post-EIP. Table 4 is different than Table 3 as it shows the cost per 95 employees who may have been referred to EIP and/or received STD and/or EIP benefits rather than an average cost across all 425 employees who may or may not have received or required disability benefits providing a more accurate disability related cost per employee. The next table (Table 5) below is a comparison of post-EIP cost with the average pre-EIP cost of \$1536.54.

Table 5

Comparison of the post-EIP Cost with the Average pre-EIP Cost Value

Cost	Mean	Std. Deviation	Std. Error Mean
Employees (n=19)			
EIP	\$1,340.4011	\$921.06139	\$211.30597

Table 5 illustrates data for 19 employees that were confirmed to have received EIP benefits resulting in the ability to apply the one-sample t-test and a comparison of the mean post-EIP cost to the average pre-EIP cost value of \$1536.54. The one-sample t-test was not significant, $t(18) = 0.93$, $p = .366$. The non-significant effect means that one cannot conclude that the EIP reduced disability related costs for the organization. Cohen's d test is an estimate of the difference between two means expressed in standard deviation. The Cohen's d test was significant $d=.21$. For a one-tailed, one-sample t-test for a d effect size of .21, the post-hoc power was .23. This means there was a 23% chance of finding a significant effect for the one-sample t-test.

The following table (Table 6) below illustrates both the STD cost of those that accepted EIP and those that declined EIP.

Table 6

Comparison of Average Cost (Mean) of Employees Who Accepted EIP and Those Who Did Not

Accepted Referral	EIP Cost	EIP Std. Deviation	STD Cost	STD Std. Deviation
Employees (n=19)				
Yes	\$1,361.29	\$946.03	\$8313.91	\$6,528.06
No	\$797.68	\$246.94	\$8,455.91	\$2,911.98

An independent groups t-test was conducted to compare the EIP costs for individuals who accepted referral into the program (N = 15) with the costs for individuals who did not accept the EIP referral (N = 3). Levene's test for equality of the group variances was conducted prior to

the t-test, and it was non-significant, $F = 2.87$, $p = .11$. The t-test for results for when equal variances are assumed was non-significant, $t(16) = 1.0$, $p = .331$. However, the variances were clearly different (\$946.03 versus \$246.94), and Levene's t-test was probably non-significant because of the small sample sizes (15 versus 3). The t-test results for when equal variances were not assumed was nevertheless also not significant, $t(13.89) = 1.99$, $p = .066$.

Although independent group's t-tests are known to be robust for small sample data sets, a non-parametric test was also conducted to provide further confirmation of the above findings. The Mann-Whitney U test for the EIP cost comparison of employees who did and who did not accept referral was also non-significant, $p = .314$.

For a one-tailed, independent group's t-test with a d effect size of 1.34, the post-hoc power is .65. This corresponds to the value that was almost significant ($p = .066$). While the data for the dependent variables is statistically non-significant, there are some notable observations. EIP costs for those who refused EIP should not have shown a cost but a cost existed. STD costs showed an increase for those that refused EIP compared to those that received EIP. The standard deviation of cost was also greater for those that refused EIP. An explanation for this will be covered later within the analysis.

In conclusion, the univariate strategy was applied in the collection of disability management data as a way to show the challenges in data collection with EIP. The purpose of analyzing the raw data was to determine whether the hypothesis that the EIP was an effective means of managing disability related cost for the Corporation. Exploratory research was used to identify the cost benefit using baseline data prior to the EIP to clearly define the intervention and to operationalize and measure the effects of the EIP post implementation. The Levene's test provided us whether or not the data was an appropriate for the t-test. The One-Sample t-test was

used in testing the null hypothesis to measure each variable independently of the EIP post implementation. While some of the results confirmed challenges with data collection. Some cost savings in disability benefits were realized post-EIP and when combined with the data received and the observations the hypothesis can still be considered supported and is explained in more detail in the next chapters.

CHAPTER SIX, INTERPRETATION OF THE DATA

The opinion of the human resource consultant for the Corporation (2011), who was responsible for collecting this data, strongly expressed that the data collection was extremely rudimentary and believed to be an inefficient way to capture the data. Challenges in data collection were due to having to input the data manually on an excel spreadsheet per employee and the absence of a standardized system for capturing the different variables from a variety of systems such as but not limited to STD and EIP costs.

Table 7

Missing values within the key indicators and variables (in Percentages)

Missing Data	Referral	RTW	EIP Cost	STD Cost
Employees (n=95)				
% of Missing Data	57.9%	32.6%	80.0%	71.6%

Table 7 illustrates that four out of 9 key indicators had a high percentage of missing data points that related to capturing EIP data for analysis.

Out of 425 employees 95 had been referred to EIP and received STD and/or EIP benefits depending on whether or not they accepted the referral. The missing data here is showing that while an employee may have been referred to EIP they had missing data points regarding RTW, EIP costs, or STD costs. The challenge in data analysis is that the employee may have been referred to EIP but did not have a return to work date, EIP costs may have not been entered or STD costs were not available. Another example is that it may have not indicated that a referral was made to EIP but yet there was an EIP cost associated with the employee. The purpose of showing this is that a high percentage of missing data is consistent with the information that was identified during the literature review and is one of the key challenges in determining the

benefits of EIP. It is also important to illustrate because STD costs from April 2011 to December 2011 were not completed in time for this analysis and accounts for 27 out of the 95 employees that did not have an identified STD/EIP cost listed in this variable but it was known that they were in receipt of either benefit.

Exclusive of this data were costs from other prevention programs such as the Employee Assistance Program (EAP) and for employees who were ill and under the six consecutive day mark. Following employees who may have a pattern of missing work but do not trigger the referral process to EIP may be a key indicator of preventing further illness.

The challenge with collecting data on 9 different indicators and EIP costs variables is the complexity and time it takes to retrieve the data that is tracked manually for each quarter within the fiscal year. Without determining an easier and more comprehensive process for data collection the results may actually prove not to be beneficial for an organization of this size. However, should the hypothesis prove to be accurate any savings that are realized could potentially be reinvested in a more sophisticated data base to efficiently and effectively capture the data.

Overall the univariate strategy seems to support information in the literature where Dyck (2006) and the American Institute of Medicine and National Research(2008) state that while there is a variety of data collection techniques available, if more attention was drawn to collect EIP data more methods on ways to evaluate disability programs would emerge. The lack of standardization leaves organizations such as this Corporation with the inability to determine what best practice is and what type of data is relevant to capture and measure a successful outcome.

Human Resources and Social Development Canada noted disability management interventions have failed at times to obtain support of senior management despite impressive

returns on the investment due to expenditure reductions and accruals to programs other than those that incur cost (Human Resources and Social Development Canada, 2007). If best practices were followed, standardized nationwide and adhered to by all jurisdictions, the effectiveness of EIP could be monitored, evaluated and documented for employers and organizations such as this Corporation.

In a cohort study of 455 adults on long-term disability in the province of Quebec, Canada it was determined that occupational factors influencing RTW differed by gender. Women's risk factors included older age, poor economic status, having dependents and working greater than or equal to a 40 hour work week. In men the risk factor noted where above age 55, physical workload and working greater than or equal to a 40 hour work week (Lederer, 2012).

Tracking the gender of those who accessed STD/EIP in this research proved to be effective data to analyze as the univariate statistics showed minimal missing data. The data analysis confirmed that 65.3% were female and 28.4% were male, 3.3% did not indicate gender. This Corporation is more likely to have a higher ratio of female to male employees due to the nature of more females employed within social services.

When the collection of employee gender data is combined with the data collected within the age cohort this type of information proves to be invaluable. From the data we were able to see that the majority of the Corporation's employees accessing EIP/STD are within the 50-59 years old age cohort.

The age of employees are separated into five different cohorts in Figure 1 below. The largest age cohort that accessed disability benefits was between the ages of 50-59 years of age.

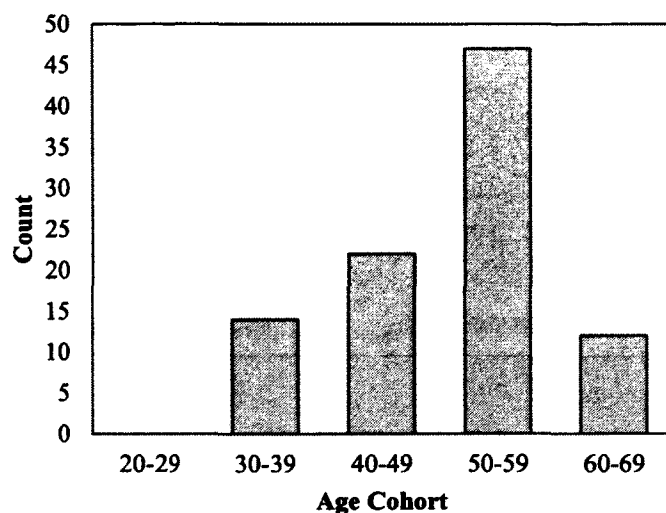


Figure 1. Histogram of the age cohort.

This figure illustrates the highest and lowest age cohort within the sample. The total number of employees in each age cohort for the entire Corporation was not available for comparison purposes at the time of this analysis therefore there is potential for a non-response bias to occur when analyzing this data. It is important to reiterate that without knowing the percentage of employees within this age cohort for the whole organization this conclusion maybe misleading without further data to confirm. The reason it is misleading is that the numbers did not include the total number of employees for the Corporation. It only identified the gender and age of the 95 employees within the sample that accessed disability benefits post-EIP. The information does indicate the need to further review the organization's EIP to ensure early intervention strategies are gender and age sensitive to enhance the overall benefit. It also indicates the importance of gathering future data on gender and age of employees for the whole organization to determine and compare if disability intervention strategies need to be more concentrated to a specific age cohort. The fact that the age cohort and the gender cohort had

limited missing data indicates that there was not a challenge on collecting this data compared to the other variables.

The EIP for this crown corporation is voluntary for employees. The process by which the employees accept or decline EIP is through the contact of the HR consultant receiving a doctor's note after an employee has been off sick for more than 6 consecutive days and determining whether EIP referral is appropriate. The employee is then contacted via phone by the HR consultant. The histogram in Figure 2 shows a negatively skewed distribution in the referral to the EIP data.

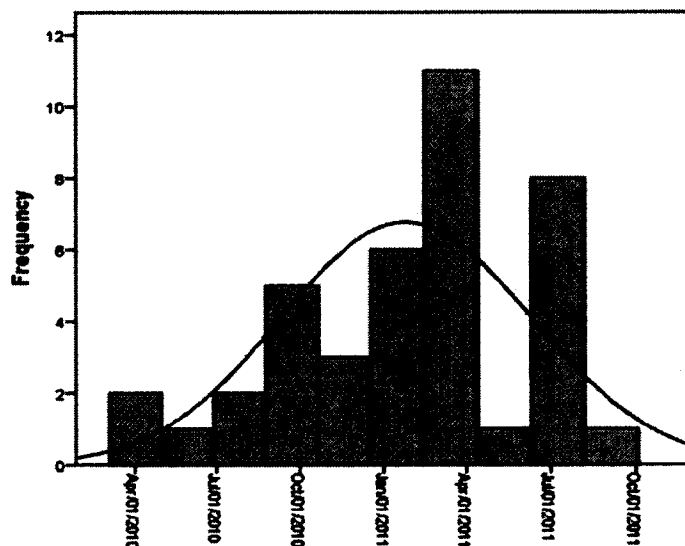


Figure 2. Histogram of referrals post-EIP.

There is a negatively skewed data distribution by -0.557 in regards to the referrals to EIP throughout the 15 months. While the distribution of referrals is negatively skewed it indicates that overall the total number of referrals dates captured in the data was 40 (N=40) out of 95 employees. This means that 55 employees were missing referral dates in the data. This helps to

show whether there are certain months in which there were more referrals than others helping the Corporation to see if there is a trend overtime and future analysis required.

A negative distribution indicates that the referral process has been established. The data also showed that the peak times for referrals where in April and July of 2011/2012. When the numbers from 2010 to 2011 are compared, it showed a greater number of referrals overall in 2011. This was expected as the program was not fully implemented until January 2010. A consistent referral process over time will benefit the data in regards to an increase of employees being referred and tracked and can eventually be compared with those that declined EIP.

Due to the referral to EIP data revealing that the total number of statistically relevant referrals was 18 out of 95 employees' leads to further questions to determine whether or not the number of employees accepted or declined EIP was accurate. The large number of entries with no data in the Accepted Referral Cohort indicates the need for further review and assessment of the referral methods and tracking of information for the Corporation. It is possible that this missing information from the raw data within the excel spreadsheet may have had a different meaning in regards to data collection rather than what was determined at time of the analysis research.

The types of primary disability data tracked showed that 57.9% of the disabilities were related to the 'other' category (i.e. chronic illnesses, rheumatoid arthritis, chronic fatigue) supporting similar literature reviewed that chronic illness makes up for 87% of disease in Canada (Centre for Chronic Disease Prevention and Control,2008).

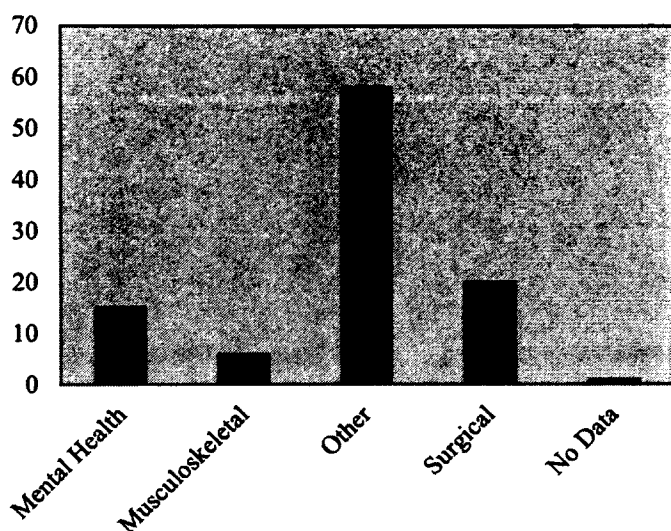


Figure 3. Primary disability types.

This figure illustrates the different types of disabilities for employees that accessed some sort of disability benefit post-EIP. The overall collection of data and breakdown for primary disability type proved to be effective by capturing data for each disability type. Disability type was categorized into 4 different types resulting in the following:

1. 14.7% of the employees had disabilities related to mental health. The Mental Health category included health issues related to depression, anxiety, poor judgment, not sleeping and bi-polar.
2. 6.3 % of the employees had disabilities related to musculoskeletal injuries that included health issue related to strains/sprains to joint, back pain and soft tissue damage.
3. 57.9% of the employees had disabilities within the “other” category that included health issues related to chronic illness such as rheumatoid arthritis, chronic fatigue, sleep apnea. It also included conditions such as stroke, cardiac issues, cold and flu. This category accounts for a variety of disability types in order to protect the identity and privacy of the individuals.

4. 20% of the employees had temporary disabilities related to surgical procedures mainly due to the time required to receive surgery and/or post-surgery recovery.

5. 1.1% of the employees were not listed within any category.

The employees that were captured in these numbers were employees that had been off work for more the 6 consecutive days. The need for this type of data is helpful to determine future prevention needs or accommodation requirements that may be needed. For example, if there was a high number of musculoskeletal injury the organization may want to look at the workstation ergonomics.

Saint-Cyr (2007) indicates that it is estimated that worker disabilities cost Canadian employers a total that ranges from \$10 to \$20 billion dollars per year. In addition, absences due to disability or illness are among the most challenging human resource situations facing employers.

An example of cost benefits of early intervention was a study completed for early intervention on individuals with rheumatoid arthritis (RA). According to the most objective measures of RA progression, very early intervention proves to be cost-effective. The cost-effectiveness of very early intervention was the result of drug treatment that reduced the progression of joint erosions and subsequent functional disability and found that both early intervention strategies increased quality-adjusted life and saved long-term disability costs (Dowd, 2010).

Collecting information on disability type is what helps to provide the argument and reasoning on how EIP benefit the recovery of injured or ill personnel. It also helps employers assist injured and ill workers to stay at work or return to productive and safe employment as soon as physically possible (Saint-Cyr, 2007).

While STD costs and EIP costs for each disability type were tracked separately it was still difficult to determine using the one sample t-test as to whether the EIP proved to be

economically beneficial to the organization as the statistical results were insignificant. Both STD cost and EIP (Figure 4 & 5) showed positively skewed histograms indicating the data could not be used to determine whether EIP was cost effective or not.

The following histogram is the range in costs for those employees that accessed STD.

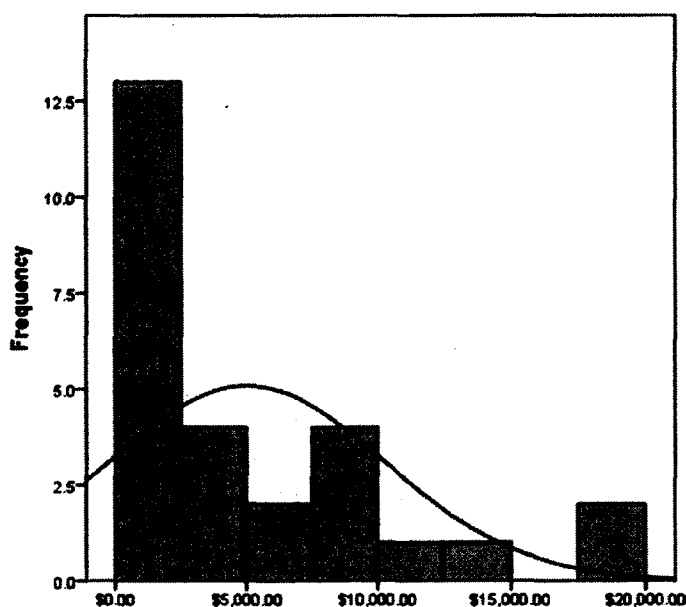


Figure 4. Histogram of STD costs.

This figure demonstrates that out of 27 employees who received STD the mean cost was \$5,008.16 per employee. Within these 27 employees the lowest cost was \$92.06 with the highest cost per employee being \$17,295.11 creating a standard deviation of \$5,293.23. The data indicated that 68 (28.4%) employees had missing variables in regards to the cost of STD. With the distribution being positively skewed this histogram indicates that further analysis through non-parametric testing is required to determine if the mean cost can be used as an appropriate measure of cost.

The next figure is different than Figure 4 as it is showing the costs for each employee that accessed EIP.

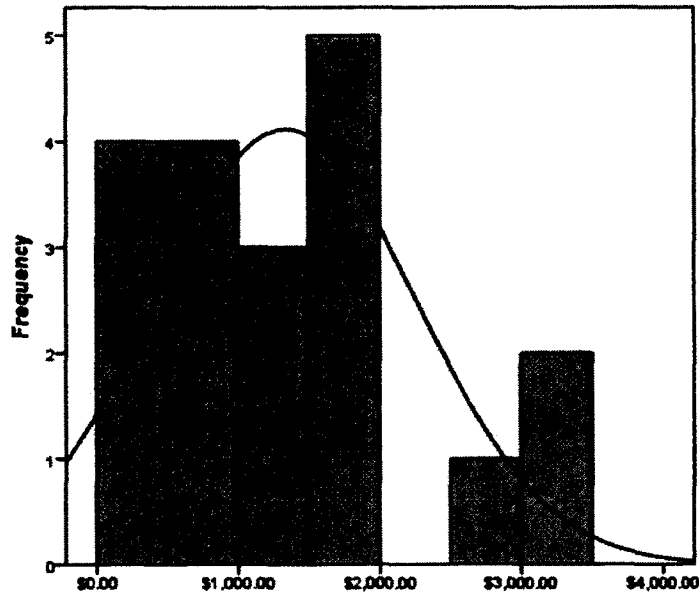


Figure 5. Costs for those that accepted EIP.

Comparatively EIP costs for 19 employees ($N=19$) showed a mean cost of \$1340.40 per employee. The lowest cost was \$75.00 per employee and the highest cost was \$3,178.93 per employee creating a standard deviation of \$921.06. Again the histogram above shows a positively skewed distribution indicating the need to apply further analysis through non-parametric testing to determine if the mean can be used as an appropriate measure of cost.

This may be due to the fact that even though an employee is referred to EIP there are still both STD and EIP costs associated with an employee. In addition, the fact that STD costs from April 2011 to December 2011 were not completed in time for this analysis and made up for 27 out of the 95 cases that did not have an identified cost also needs to be taken into consideration of this analysis.

While the data separates the EIP cost from STD cost it is impossible to show through this specific measure whether the investment of EIP costs are directly correlated to the reduction of cost per employee without further long-term economic evaluation. Review of existing literature in regards to cost effectiveness of programs such as this showed that the study of economic impacts is underdeveloped and lacking within existing literature (Tompa, 2009).

Tompa (2009) found that challenges in regards to undertaking economic evaluations are due to reasons such as policy and labour legislation, substantial difference in the perception of health risks, burden of costs and consequences for different stakeholders and the lack of one measure to accurately capture the cost of work related disability. Due to the small sample size, data collection challenges and the fact that this EIP program has only been running for 15 months the validity and measure of the cost data in isolation is not strong enough to show that the EIP was due to the reduction in disability related to costs the organization. What this does signify is the importance of tracking the data, improving data collection and identifying a measure to accurately capture the costs and impacts of the EIP.

The RTW histogram (Figure 6) on the next page shows a normal distribution in regards to return to work.

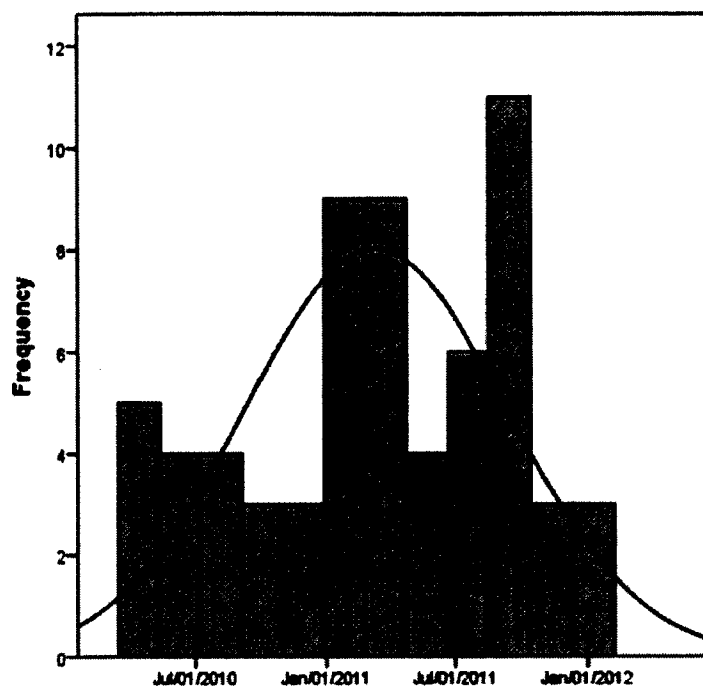


Figure 6. Histogram of employees who returned to work post-EIP.

The return to work dates tracked show a normal distribution in the histogram showing that 64 (N=64) out of 95 employees had return to work dates. The remaining 31 employees did not have return to work dates reflected in the data. The mean of March 10, 2011 indicates the average return to work date for 64 out of the 95 employees with a standard deviation of 184.07 days before or after Mar 10, 2011.

The data confirmed that 64 out of the 95 had returned to work. This showed a 67% return to work rate. The remaining 31 employees did not have return to work dates reflected in the data which indicates they may still be off work or the data was missing. Solid RTW to data is key into measuring the success of EIP overtime. It is necessary as overtime the measurement of RTW and whether an employee returns to work sooner when enrolled in EIP or not will help to determine the benefits of EIP overall.

In conclusion the limitation of data and data entry challenges were primarily due to the manual tracking of the information on a quarterly basis as well as a lack of capacity for an employee to do data entry in real time. In future, the recommendation would be to have one person complete the data entry in real-time utilizing a statistical program that is developed to automatically compute the measurements and statistics required. One suggestion would be to have the contracted OHS nurse complete the data rather than the HR consultant.

Programs such as Microsoft Access or IBM SPSS are pieces of software developed to track such data. Utilizing the CBDMA too would be ideal as the measures and tools have already been developed and found to be effective and statistically significant. While training would be required the CBDMA also has built in help support when difficulties occur.

Another challenge with the data was the time span in which the study was conducted. Using the first year post EIP data studied over a longer period of time such as 5 years would allow the challenges in data collection to be resolved and refined as well as provide a more valid baseline to compare and determine if the EIP is an effective way of managing disability related cost for the organization.

CHAPTER SEVEN, CONCLUSION AND RECOMMENDATIONS

The three objectives of the study were to determine:

- 1) Whether the information collected supported the hypothesis that the EIP is an effective way to manage disability related costs for the organization.
- 2) To assess data quality and;
- 3) Provide recommendation to the Corporation on how best to measure its return on investment of the EIP.

The costs pre and post-EIP showed a cost saving of \$198.51 per FTE in the first year post-EIP. This is a notable 12.9% drop in cost and therefore cannot be left to the probability of chance. The cost to implementing the EIP was minimal to the organization that invested \$5,000 for job demand analysis and acquired an OHS nurse on a contractual as needed basis. There was no increased cost incurred to the rehabilitation committee. While the EIP and STD costs were positively skewed and cannot be used to prove the cost savings over the last 15 months there are additional costs that may have impacted the data that were not included within the research. For example, inflation and the introduction of HST were not factored into this study. The data collection itself had been defined as rudimentary and challenging. There was no element of coverage error included within the study yet looking at each variable through a univariate strategy identified challenges and successes along with valuable information to formalize further enhancements and improvements to the program. Therefore, combined with the numerous independent key indicators and the overall cost saving at this time the research has shown that EIP is in fact an effective way to manage disability related costs for the organization overall.

The researcher has concluded this because without tracking basic cost data, the Corporation would not be aware that \$564,236.33 year is being spent on almost a quarter of its

employees accessing some type of disability benefit. Overall through measurement of 9 key indicators this research study was able to identify and categorize the information providing the Corporation with areas to address challenges in the future such as gathering age cohort data for the whole organization and possibly shaping the EIP to concentrate and address the disability related needs of a specific group in order to further reduce the costs and improve staff wellness over time.

The strengths of this research was the Corporation's joint work with the union in advance of its development and implementation of the EIP, the tracking and identifying of multiple indicators from the inception of the program, and developing an EIP that is consistent with best practice. Overall the ability to obtain and analyze this type of data even with the challenges of data collection is useful and provides a better understanding of where improvements and enhancements are required from the beginning rather than finding this information years afterwards. It has also provided a solid baseline to evaluate the program over time and assist with identifying trends within each indicator and the variable of cost.

The potential weakness within this research is that limited historical data was available to be used as a baseline to determine disability related cost prior to implementation of the EIP. The data collected prior to the EIP was not detailed and only pertained to average cost per employee. In addition, due to the introduction of the new program, initial costs may have been skewed with the results showing higher costs and limited cost savings. Inflation, introduction of the harmonized sales tax during this time span may also have an indirect affect showing cost savings.

To gain a more holistic analysis of the benefits of the program including the EAP referrals as well as tracking data of employees under the six consecutive day mark would assist

in further managing disability related costs. Having a survey of employees who have participated in the program would also add to the ability to assess the quality of the service and provide more information in regards to the referral process.

This research has shown that while early intervention is an effective way to manage disability related costs for an organization, overall there are challenges that exist with showing and identifying the benefits for organizations. Tracking of information is cumbersome if there is no system in place. Further, the lack of nationally standardized common tools or recommended systems to capture the data easily or efficiently in a cost effective manner add additional challenges.

Dyck (2006) points out that very often, disability management programs and other company programs such as EAP, Occupational Health and Safety (OHS) along with Human Resource departments function independently in “silos” (Dyck, 2006). In regards to the analysis of this Corporation, this may contribute to the challenge in data collection as the programs are not integrated. EAP and OHS are contracted out to third parties. Further, the Human Resource Consultant is responsible for gathering data and monitoring the EIP, but this responsibility is only one of many other human resource responsibilities for the organization.

As Dyck points out (2006), EAP professionals can assist employees by focusing on attendance prior to EIP referral. When EAP, OHS, Human Resources and disability management consultants work together, Dyck (2006) believes that synergies can be realized. For example, knowing and understanding common problems identified within the EAP program may assist in realizing further prevention needs for the Corporation.

The analysis of the EIP showed that 57.9% of the disabilities types accessing STD/EIP were categorized under ‘other’ which is inclusive of chronic illness’s such as cardio vascular

disease, cancer, chronic respiratory disease and diabetes. Breaking chronic illness categories down further may prove helpful to understand and effectively expand resources available under the EIP.

The Centre for Chronic Disease Prevention and Control (CCDPC) estimates that 87% of disabilities in Canada are chronic disease related (2008). Chronic disease is an ongoing condition that affects an individual's health over a long period of time and possibly the entirety of a person's life. Most often there is no cure. However, if taken seriously chronic disease can be managed to obtain the best health outcome as possible (American Academy of Family Physicians, 2008).

The top 6 chronic illnesses in Canada listed in one year by the CCDPC (2008) and number of people that experience these types illnesses in one year are as follows:

Cardiovascular Disease	32,072
Cancer	26,904
Chronic Respiratory Disease	5,285
Diabetes	2,816
Mental Disorders	2,513
Musculoskeletal Diseases	586

Note that mental disorders and musculoskeletal disease are listed as chronic illness and are already separated out in the data collected for the Corporation's EIP. Through combining EAP and OHS stats these programs can assist employees through supporting self-management strategies with employees who suffer from chronic illness prior to and post EIP. This has the potential to further reduce the amount of time required to work with these employees as well as reduce the need for STD/EIP. Improved health outcomes have a direct effect on a successful

RTW of the employee or maintaining the employee at work. However, in order to do this, identifying a pattern of sick time prior to the EIP would have to occur and contact with the employee prior to the consecutive 6 days off would require agreement with the Union and have to be established of what is reasonable and when to approach the employee.

The integration of the OHS, EAP and human resource consultant may prove to be beneficial to this organization. In addition each stakeholder in the process needs to commit and promote employee wellness which is not mentioned in the EIP program roles. Overtime if the existing cost savings continues to be achieved for this organization the savings could be re-invested to an integrated model and into overall wellness that has a potential to create more savings.

Dyck (2006) found that organizations tend to view this focus on preventive resources as energies spent on “failure costs”. Yet research has shown that companies that focus on prevention activities experience lower “failure” costs. A study conducted by AON consulting in 1999 showed that high performance leadership, communication, support of work-life balance help to avoid workplace ‘failures’. Through approaching health as an investment rather than a cost, savings are sure to be realized (Dyck, 2006).

Finally through the integration of the program and multiple systems of tracking data, it can become more efficient and effective through having the ability to develop a single system to collect data. It would provide for the opportunity to undertake for a true economic evaluation methodology and reduce the impractical limitations of data collection. Integration would provide the Union and Employers with a better understanding of the disability related needs of employees resulting in better employee health outcomes. Integration would also enhance a

business positive work culture through the ability to assess the projected impact of future costs, organizational resilience, employee morale and corporate culture (Dyck, 2009).

Nicholson (2006) and Dyck (2006) believe, “that to make smart health investments, a company needs to know the financial impact of both health programs and benefits” (pg.145). The majority of evidence based research on disability programs aside from EIP focuses on the cost effectiveness of the program. Large Government and Non-Government organizations are motivated and more interested in disability management programs due to the potential cost savings of implementing such a program. It is therefore crucial that both disability management professionals and collective bargaining representatives have a knowledge base and understanding of each other’s roles and responsibilities. Once disability management professionals are more informed in regards to collective bargaining they will be in a better position to facilitate a relationship with collective bargaining representatives and utilize their skills to move disability management to the forefront. As a result, collective bargaining representatives will be more aware and understand the effectiveness and cost saving benefits of disability management programs and will be able to communicate this to management during the bargaining process. In addition, it will provide information that could reduce the majority of the attitudinal postures around the issues of “duty to accommodate” and disability management as a whole. Through strengthening these partnerships and creating an understanding of disability management policies and standards, key elements such as “duty to accommodate” have a better chance of being incorporated into collective bargaining agreements. This would result in providing employers and employees with a common understanding and preventing many human rights legislation violations of employers and overall further increase the goal of inclusion of employees with disabilities.

Through collecting data and measuring the outcomes of the Corporation's EIP, this research has shown by example the benefits of having clear measureable benchmarks at the outset of the program and the benefits of having labour, management and union acceptance. The financial value of the program was also determined by showing that early intervention is an effective proactive component to disability management through ensuring early, ongoing case management. The result of investing in EIP is a means to effectively managing the Corporation's disability related costs for its employees over the long term.

Given the current structure of the EIP and the limitation of the data collected, this Corporation continues to be in the infancy stages of advancing its vision to effectively manage the disability related costs of the organization. With continued investment and ongoing assessment for this EIP, the disability management program as a whole for this Corporation will eventually be leading the way for its employees and other like organization.

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