Occupational Rehabilitation

# Studies and Research Projects

REPORT **R-810**


## Evaluation of the Implementation and Impact of the PRÉVICAP Program

*Michèle Rivard*
*Jean-Louis Denis*
*André-Pierre Contandriopoulos*
*Michel Rossignol*
*Henriette Bilodeau*
*Geneviève Ste-Marie*
*Valérie Lederer*

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IRSST – Communications and Knowledge Transfer Division
505 De Maisonneuve Blvd. West
Montréal, Québec
H3A 3C2
Phone: 514 288-1551
Fax: 514 288-7636
publications@irsst.qc.ca
www.irsst.qc.ca

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*Michèle Rivard[1], Jean-Louis Denis[1], André-Pierre Contandriopoulos[1], Michel Rossignol[2], Henriette Bilodeau[3], Geneviève Ste-Marie[1], Valérie Lederer[1]*

*[1]Université de Montréal*
*[2]Université McGill*
*[3]Université du Québec à Montréal*

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**PEER REVIEW**

In compliance with IRSST policy, the research results published in this document have been peer-reviewed.

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# SUMMARY

In 2001, the IRSST asked Dr. Rivard's research team to evaluate the PRÉVICAP work rehabilitation program (PREVention of work handICAP) in place in four Québec rehabilitation centres and involving 11 regional offices of the CSST. This pilot project, which was launched in 2000, was the result of an agreement between the CSST, the IRSST, and Québec's occupational rehabilitation network (Réseau en réadaptation au travail du Québec, or RRTQ). It provided for the management, under the PRÉVICAP program, of 571 workers who had sustained an employment injury between 2001 and 2004.

The PRÉVICAP program is based on a series of innovative discussions and projects conducted in the field of occupational rehabilitation in the early 1990s by the Université de Sherbrooke, and is designed to promote workers' return to their pre-injury jobs. Among other things, it consists of the early and interdisciplinary management of workers with musculoskeletal injuries (MSIs) who are at risk of long-term disability, in partnership with all stakeholders impacted by the injury (the worker who sustained the employment injury, the employer, CSST personnel, and health professionals).

The purpose of the evaluation was to provide the CSST with the information needed to make an informed decision as to whether it would be in the CSST's interest to adopt the PRÉVICAP model to deal with the problem of MSI-related occupational disability, taking into account the conditions required for its implementation (***implementation analysis***), its effectiveness (***impact analysis***), and its costs and efficiency (***economic analysis***). Several research methods were used, including a *multiple-case study* to document the level of and variations in program implementation in the four pilot regions, and a *quasi-experimental study* to assess the program's effectiveness and efficiency by comparing the situation for workers enrolled in the PRÉVICAP program (experimental group) to the situation for those who were not (control group) over a period of three years following the employment injury.

The results of the implementation analysis showed that the program was successfully implemented in the rehabilitation centres and the CSST's regional offices involved in the pilot project. The interviews of the OHS professionals at the CSST and the PRÉVICAP centres revealed a similar implementation process in all four regions. Case management usually began late relative to the injury event and was lengthy, starting an average of six months after the event and lasting an average of six months. The same problems were encountered in each region. Both the decision to implement the pilot project and the implementation process per se were perceived as being too centralized; there was no consensus as to the value of the program or the criteria defining the target population; the stakeholders did not clearly understand their roles and communication among them was sometimes arduous, making it difficult to establish a partnership; the program was cumbersome from an administrative standpoint; and the active participation of all stakeholders, particularly the workers and their employers, was sometimes difficult, if not impossible, to obtain.

The impact and economic analyses involved comparing the workers who had benefited from at least one PRÉVICAP intervention (10 hours of services) to workers who had received the usual services. Our evaluation suggests that the PRÉVICAP program produces better results than usual management. The PRÉVICAP workers returned sustainably to their pre-injury job nearly three times faster and in greater numbers (55% versus 29% at two years post-event) than those in the control group. They also stopped receiving income replacement indemnities 1.7 times faster,

which translated into an average savings of five and a half months of income replacement indemnities (IRIs) over three years. Again on average, the cost of the PRÉVICAP program was high, i.e. $19,000 per worker, and the total cost of management over a three-year post-event period was 13% higher for a worker enrolled in the program than for one who received only the usual services ($60,873 versus $53,990). The difference in costs drops to 4% ($53,242 versus $51,003) if the 22 workers whose cases entailed very high costs (over $119,000) are excluded from the comparison. Taking into account the gains in effectiveness in terms of compensation days (income replacement indemnities) saved, the efficiency of the case management process including the PRÉVICAP program was statistically equal to that of management without the program if each compensation day saved is considered to be worth $10; the efficiency is statistically superior, with an average estimated savings of $10,000 per worker, if we accept that each compensation day saved is worth $60. The results suggest particularly high program effectiveness and efficiency in cases where the worker had not been compensated by the CSST in the five years prior to the current compensation episode. Furthermore, the PRÉVICAP workers were very satisfied at having completed the program and more satisfied with the CSST services than were the control-group workers. At three years post-event, pain levels and functional disability levels were still high in both groups. The PRÉVICAP workers with back injuries were more impaired than the control-group workers, whereas the reverse was true for the workers with neck and/or upper limb injuries. Again at three years post-event, the PRÉVICAP and control-group workers made similar and even greater use of the medication, home support services, and/or equipment required as a result of their injury.

Workers with MSIs who have been receiving indemnities for several months represent a vulnerable population in terms of long-term disability, a costly situation for the compensation board. In fact, among workers compensated for an MSI, 20% are compensated for more than three months, yet they account for 75% of the IRI costs [1, 2]. Our evaluation provides the first scientific evidence regarding the value of a PRÉVICAP-type program for such a population, and more specifically, for workers with no compensation history; the latter represent approximately three-quarters of this population.

The PRÉVICAP program involves several stakeholders. In Québec, the large-scale implementation of a program of this nature poses a number of challenges. The results of our evaluation suggest that, as an innovation or new practice, the program would have greater chances of being accepted by CSST regional office heads and case managers if they were to participate in implementation-related decisions and processes right from the outset, if they subscribed to the philosophy underlying the intervention, and if they understood how the program works as well as the various stakeholders' respective roles and the program's target population. Since the program's success is largely contingent upon the worker's, employer's, and attending physician's beliefs and attitudes regarding the program, it may be advisable to develop a clear strategy for promoting the program in their eyes. One component of this strategy would be passing on the scientific evidence available on the program's impact and efficiency. Lastly, it may be worthwhile to think of ways to improve the partnership and communication among the stakeholders and to streamline the administrative procedures associated with the program.

The results of this evaluation may help in decision making about the relevance of implementing the PRÉVICAP program and about the implementation process itself, ultimately to promote the return to work of individuals on long-term disability.

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# 1 INTRODUCTION

## 1.1 The Long-Term Work Disability Problem

Québec, like many industrialized nations, is experiencing a high prevalence of work-related musculoskeletal injuries (MSIs). Non-specific low back pain (LBP) alone affects between 49% and 84% of adults during their lifetime, while its point prevalence and annual prevalence are estimated at 6.8% and 10% respectively among the adult population [3]. These injuries constitute one of the main causes of work disability. Between 2000 and 2009, according to sources at Québec's workers' compensation board (the Commission de la santé et de la sécurité du travail du Québec, or CSST), the proportion of MSIs (-*itis* injuries and spinal conditions) among compensated employment injuries remained virtually unchanged, shifting only slightly from 37.3% to 38.0% [1, 2, 4, 5]. The same applied to the related payouts, which, since 2001, have represented nearly 40% of the CSST's total payouts, or approximately $540 million annually [1, 2, 4-6]. It is important to note that these expenses are concentrated among workers on long-term disability. Between 2003 and 2006, only one worker in five who was compensated for an MSI was off work for more than three months. Yet this group generated approximately three-quarters of the income replacement indemnity (IRI) payouts for this type of injury [1, 2]. Over and above the high economic costs associated with MSIs, they have a major impact on various aspects of life, possibly translating into loss of the employment relationship, a drop in quality of life, and even the onset of psychosocial disorders [7-9].

## 1.2 Interdisciplinary Interventions

The rehabilitation interventions used with workers on disability have emerged from the input of numerous disciplines, including ergonomics, occupational medicine, physiotherapy, and psychology [10]. While some interventions involve acting on a single risk factor or a specific aspect of disability (medical, psychosocial, organizational), today, increasing numbers of authors are underscoring the merits of adopting an integrated interdisciplinary strategy that can address the multi-causal nature of work disability and manage the complex and dynamic sub-systems (work, family, care, compensation) in which a worker who has sustained an employment injury evolves, particularly in cases of long-term absence [10-25]. Several studies indicate that work disability duration is significantly reduced when workers are offered special arrangements regarding tasks or work schedules and when there is contact between healthcare providers and the workplace [26]. Interventions aimed at increasing support from the employer and coworkers [27, 28], an early return to work (RTW) or RTW with modified tasks [29-32], as well as ergonomic and organizational interventions in the workplace [33-41] have reportedly been effective in reducing disability duration, pain, and the recurrence of disability episodes. In these types of interventions, particular emphasis is placed on management, coordination and on collaboration among the various parties involved in rehabilitation (e.g. worker, physiotherapist, psychologist, physician, ergonomist, employer, case manager). The establishment of shared action principles and values is regarded as an important factor in the success of such programs [42-48]. Yet despite these recent research developments, the problem's complexity and the legal, political, administrative, social, and cultural issues involved continue to make it difficult to implement the proposed solutions [10, 11, 49-51].

## 1.3 Evaluation Context

The CSST and Québec's occupational rehabilitation network (Réseau en réadaptation au travail du Québec, or RRTQ) entered into an agreement in 2000 to pilot a project involving the interdisciplinary management of workers with employment injuries using the PRÉVICAP (PREVention of work handICAP) model. Thanks to funding from Québec's health research fund (Fonds de recherche en santé du Québec, or FRSQ), this intervention program was developed by an interdisciplinary, interuniversity team affiliated with the occupational rehabilitation clinical research centre (Centre de recherche clinique en réadaptation au travail) of Hôpital Charles-Lemoyne. Since that time, PRÉVICAP has constituted a clinical intervention unit at the Centre d'action en prévention et réadaptation de l'incapacité au travail (CAPRIT).

In 2001, the research team of Dr. Rivard, a member of Université de Montréal's interdisciplinary health research group (Groupe de recherche interdisciplinaire en santé, or GRIS), was mandated by the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST) to evaluate this pilot interdisciplinary intervention program that had been implemented in four rehabilitation centres in four separate administrative regions of Québec (Montréal, Montérégie, Québec, and Abitibi-Témiscamingue).

## 1.4 Description of the PRÉVICAP Program

The PRÉVICAP program [52-54] is based on a series of innovative discussions and projects conducted in the field of occupational rehabilitation by the Université de Sherbrooke in the early 1990s and leading to the development of the Sherbrooke model [47]. It was put to the test in a randomized trial that demonstrated its effectiveness [55, 56], a trial that was then replicated in the Netherlands [57-60].

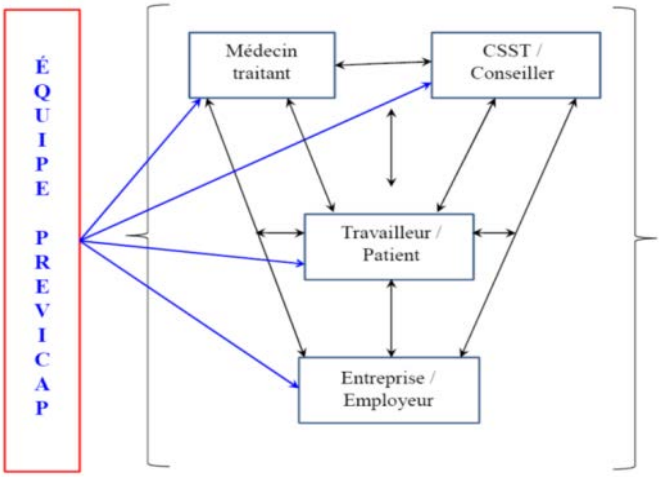


**Figure 1 – Interactions among stakeholders involved in the PRÉVICAP program**

This interdisciplinary intervention program targets workers with work-related MSIs who are at risk for long-term disability but who seek to return to work. Its main objective is to foster the prompt, sustainable, and healthy return to work of workers with MSIs. This objective is

congruent with the CSST's "maintain the employment relationship" policy launched in 1993. To this end, the PRÉVICAP program recommends shifting rehabilitation from the clinical setting to the workers' real work environment, specifically, their workplace. It also recognizes the need for the early management of workers who have sustained employment injuries by interdisciplinary teams comprising various health professionals and new stakeholders (general practitioners, orthopedists, psychologists, occupational therapists, ergonomists and physiotherapists, kinesiologists, and physical educators) and headed by program coordinators. Another essential element in the implementation of the PRÉVICAP program is the quest for coordination and collaboration among the various stakeholders affected by the disability situation (managers, CSST case managers, the worker who has sustained the employment injury, the employer) (Figure 1, adapted from [52]).

The PRÉVICAP program, as prescribed, is operationalized by guiding the worker through ten steps (Figure 2, taken from [52]). The steps in this process are explained in detail in the authors' original article on this intervention [52].

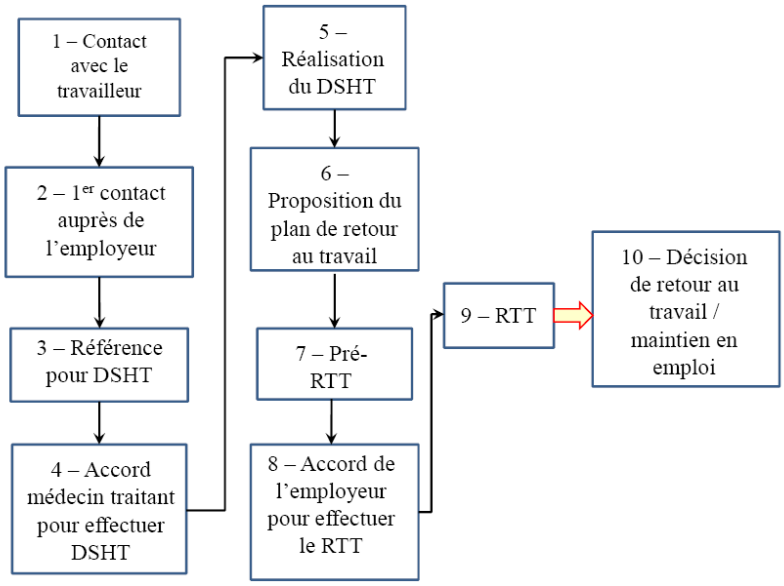


**Figure 2 – Operational model of the PRÉVICAP program**

It is important to emphasize that not all workers necessarily go through all steps in the program and that some steps can be switched around. For example, the attending physician's consent may actually be obtained before or after referral for the WoDDI (work disability diagnostic interview) and a pre-TRW (therapeutic return to work) or a TRW (steps 7 and 9) begun only after obtaining the employer's consent (step 8). These steps must therefore be seen as part of a concerted iterative process.

The theoretical model of the PRÉVICAP program impact [53] explains the program logic, specifically, "the mechanisms whereby it is supposed to produce the expected outcomes if it is implemented as prescribed" [free translation] [61]. It is depicted in Figure 3. This model adopts an ecological perspective of occupational rehabilitation, taking into account the characteristics of workers, their work environment, and the interactions between the two.

The program's ultimate objective is the workers' return to their pre-injury jobs. It is attained by increasing their work capacities (GOAL A) and/or reducing the environmental demands so as to enable workers to adopt the competent work behaviours (GOAL B) that will eventually allow them to meet their work environment's expectations and return to their pre-injury jobs.

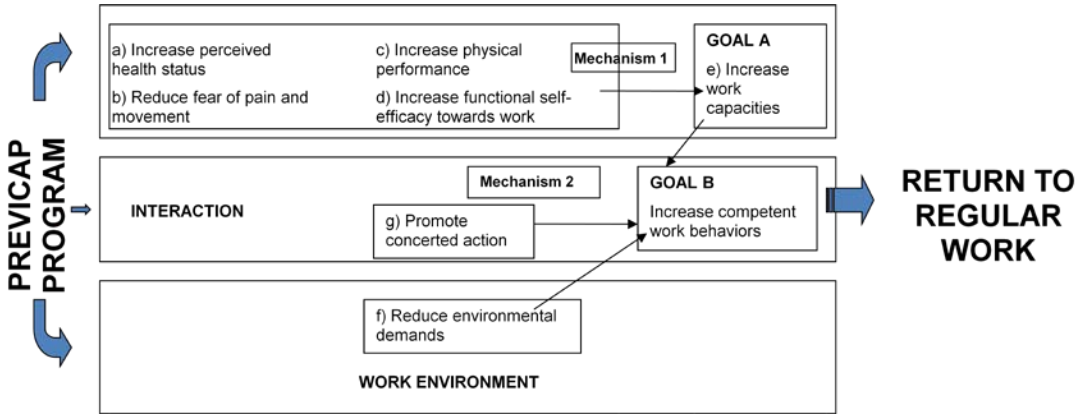


**Figure 3 – Logic model of the PRÉVICAP intervention, taken from Durand et al. [53]**

The authors propose two action mechanisms for the program, based on a theoretical argument and literature detailed in the original article [53]. The first action mechanism is that of increasing the worker's work capacities (GOAL A) by attaining four intermediate objectives: (a) increasing perceived health status, (b) reducing fear and anxiety-based avoidance of pain and movement, (c) increasing physical performance, and (d) increasing functional self-efficacy regarding work. The second action mechanism is very closely related to the first since the adoption and improvement of competent work behaviours (GOAL B) is achieved by means of three intermediate objectives, including application of the first action mechanism: (e) increasing the worker's work capacities (GOAL A), (f) reducing environmental expectations and demands if the worker does not recover all of his[1] pre-injury work capacities, and (g) promoting concerted action among the stakeholder/partners involved in the work disability problem.

[1] The masculine gender is used throughout this document solely to facilitate reading and has no discriminatory intent.

# 2 OBJECTIVES OF THE PRÉVICAP PROGRAM EVALUATION

The purpose of the PRÉVICAP program evaluation was to provide the CSST with the information it needed to make a well-informed decision as to whether it should adopt the PRÉVICAP model to deal with the problem of MSI-related occupational disability, taking into account the conditions required for its implementation (***implementation analysis***), its effectiveness (***impact analysis***), and its costs and efficiency (***economic analysis***).

The ***implementation analysis*** shed light on the conditions needed for implementing the PRÉVICAP intervention and the process whereby it produces results, notably in terms of a return to the pre-injury job. It also brought to the fore the determining factors conducive or detrimental to implementation of the PRÉVICAP model in the worker's environment (workplace, healthcare system, CSST).

The ***impact analysis*** served to assess the program's effectiveness in terms of the RTW, as well as its capacity to meet the needs of workers who have sustained an MSI (state of health, satisfaction, perceptions) and the requirements of their work environment. In particular, it involved assessing whether the PRÉVICAP program contributed to a prompter, more sustainable, and healthier RTW of compensated workers with MSIs than the CSST's usual case management approach, while at the same time ensuring a higher level of satisfaction.

Lastly, the ***economic analysis*** showed the consequences of implementing the PRÉVICAP program in terms of costs, both for the CSST (costs related to compensation and rehabilitation care) and for workers (private costs). In addition, cost-effectiveness and cost-benefit analyses allowed the program's efficiency to be quantified from the CSST's point of view.

## 2.1 General Hypotheses

Two basic hypotheses were formulated:

***Hypothesis 1:*** The development of a new system of interaction among the stakeholders (worker/CSST case managers/attending physician/employer/PRÉVICAP team) based on collaboration, coordination, and negotiation initiated by the PRÉVICAP's interdisciplinary team's intervention, will promote a RTW while reducing environmental demands on workers with MSIs.

***Hypothesis 2:*** The early management of workers at risk for long-term disability, the fact of taking the work environment into account, and the specific nature of the PRÉVICAP team's intervention will lead to an increase in their work capacities (physical, mental, and social), thereby promoting a faster, more sustainable, and healthier return to their regular jobs than if the CSST's usual management approach is used.

## 2.2 Main Objectives

***Objective 1***: Examine the level of and variations in the implementation of the PRÉVICAP program at the four pilot sites.

***Objective 2***: Identify the main contextual elements conducive and detrimental to successful implementation of the PRÉVICAP program.

***Objective 3***: Analyze the effectiveness of the PRÉVICAP program compared to that of the CSST's usual management approach, in terms of return to work and duration of compensation.

***Objective 4***: Analyze the costs and efficiency of the PRÉVICAP program compared to those of the CSST's usual management approach.

***Objective 5***: Explore the variations in the effects and efficiency of the PRÉVICAP program in order to determine the context in which it would deliver the most promising results.

## 2.3 Secondary Objective

***Objective 6***: Analyze the effectiveness of the PRÉVICAP program compared to that of the CSST's usual management approach, in terms of the worker's functional status, pain, state of health, satisfaction with the case management method, and satisfaction with/perception of the RTW context.

# 3 METHODS

## 3.1 Research Designs

As a whole, the evaluation objectives reflect both the complexity of the problem studied and the spectrum of questions and human, social, and economic issues it raises. The fact that the evaluation concerned three components of the PRÉVICAP program—its implementation, impact, and economic merits—did not permit only one methodological approach. For this reason and to ensure a robust methodology, a variety of research designs, observational procedures, and data analysis methods were used.

### *3.1.1 Design of Implementation Analysis*

A ***multiple case study*** approach was the research design used for the implementation analysis. This approach provided an understanding of the complex relationships between the various stakeholders in their respective contexts and served to document the level of and variations in the implementation of the PRÉVICAP program in the four pilot regions.

### *3.1.2 Designs of Impact and Economic Analyses*

The impact analyses, (including economic impact) were performed using two ***quasi-experimental pre-test and post-test research designs with non-equivalent control groups.*** This type of design allowed the situation with the PRÉVICAP program (experimental group) to be compared to that without the PRÉVICAP program (control group). The groups studied were so-called *non-equivalent* because they were not constituted by applying a randomization procedure. This design is optimal for reducing biases likely to alter the internal validity of the results when it is impossible to randomly assign subjects to the group enrolled in a program and to the control group (Contandriopoulos et al., 2005). To ensure its accuracy, our assessment of the PRÉVICAP program impact was based on a strategy that took into account the possibility of the non-comparability of the groups studied (see sections 3.2.2.1 and 3.5.3 specifically). Information allowing for proper documentation of the profile and evolution of each worker's situation was collected on the situations before (pre-test) and after (post-test) the employment injury. The post-event follow-up period lasted three years.

***Research designs I*** and ***II*** differed in two respects: the strategies used to remedy the possible non-comparability of the groups and the scope of the information collected. In Research Design I, the subjects in the control group were matched with the subjects in the PRÉVICAP group on the basis of certain characteristics for which similarity between the groups was deemed essential; in this case, matching constituted an adjustment strategy that was combined with use of appropriate multivariate statistical models in order to maximize group comparability. Moreover, the subjects of Research Design I participated actively in the study by agreeing to answer our questionnaires periodically during follow-up, thus providing very detailed information that was added to the data obtained from the CSST databases. Research Design I constituted our main design for both the impact and economic analyses. Research Design II supported the main design by taking larger populations into account, namely all workers in the pilot regions who were referred or not referred to the PRÉVICAP program in the pilot regions. While Research Design II was less informative because it involved using

CSST data only, we considered that the conclusions of the program impact analysis would have greater validity if the results of both research designs concurred.

### 3.1.3 A Common Research Design: Tracer Cases

The analyses of the PRÉVICAP program implementation, of the worker's trajectory during the period from the event to the RTW, and of the consequences for the workplace of PRÉVICAP case management included a number of interrelationships that did not allow for separate analysis of each evaluation component. An in-depth examination of a handful of program application experiences, called *tracer cases*, was regarded as optimal for grasping the subtleties of this complex reality. We considered that this type of analysis would help us understand the specific contexts and mechanisms whereby the PRÉVICAP program produced or not the anticipated outcomes.

## 3.2 Study Populations

### 3.2.1 Implementation Component

#### 3.2.1.1 Cases Studied

The PRÉVICAP program was implemented and evaluated in four rehabilitation centres in Québec that were selected with the CSST's collaboration. The cases studied corresponded to these four experimental sites. A case comprised the stakeholders and workplaces piloting the PRÉVICAP program (PRÉVICAP centres, CSST, workers, employers, and attending physicians), as well as the system of actions formed by the relationships among these different partners in a given implementation region. The boundaries of each case were defined in terms of the territories covered by the CSST regional offices responsible for targeting and referring workers to the rehabilitation centre offering the PRÉVICAP program. A total of 11 regional offices were involved in the pilot project.

The rehabilitation centres participating in the pilot project differed slightly from each other. The Montérégie site is a rehabilitation clinic within a hospital that has three activity components: training/teaching, clinical services, and research. The participating rehabilitation centre in Montreal offers programs tailored to diverse clienteles as well as programs (such as the PRÉVICAP program) designed for specific clienteles. In Québec City, the rehabilitation institute offers two categories of services: orthopaedic and neurological; the PRÉVICAP program is one of the orthopaedic services offered and serves all clienteles. Lastly, the Abitibi-Témiscamingue site is a rehabilitation centre that focuses on individuals with physical, motor, or sensory deficits, young people with adjustment difficulties, and individuals with autism.

### 3.2.2 Impact and Economic Components

#### 3.2.2.1 Research Design I

Two worker cohorts defined according to the corresponding case management approach (PRÉVICAP or usual) subsequent to an event that occurred between February 2001 and December 2004 were formed from the following pools of workers:

- *PRÉVICAP workers:* workers targeted by the CSST case managers and who took part in the PRÉVICAP program in the four pilot regions;
- *Control-group workers*: workers who satisfied some of the criteria for referral to the PRÉVICAP program but who were managed according to the usual protocol in the four pilot regions.

The criteria for defining these pools of workers and the participant recruitment procedure followed in Research Design I are detailed below. Figure 4 shows the steps involved in forming the pilot and control groups.

### *PRÉVICAP workers*

Workers for the PRÉVICAP program pilot project were targeted by applying the following inclusion and exclusion criteria:

**PRÉVICAP program inclusion criteria:**

- Employment injury involving the musculoskeletal system (including mainly back aches and -ITIS injuries such as tendinitis or bursitis)
- Employment injury that occurred between February 2001 and December 2004
- Event file processed in one of the 11 regional offices involved in the pilot project (Québec, Chaudière-Appalaches, Laval, Longueuil, Abitibi-Témiscamingue/Rouyn-Noranda/Val-d'Or, Yamaska/Ste-Hyacinthe, St-Jean-sur-Richelieu and Montréal-1 to -4)
- Absent from regular work or all work for more than two months but less than one year
- Employment relationship still intact
- Return to work jeopardized by the consequences of the injury

**PRÉVICAP program exclusion criteria:**

- Multiple traumas sustained at work
- Presence of a disease likely to cause a functional deficit that interferes with the capacity to return to the pre-injury job in the year following the event (e.g. cancer)
- Pregnancy

No information was available to verify the actual application of the two criteria: "employment relationship still intact" and "presence of a disease likely to cause a functional deficit…"

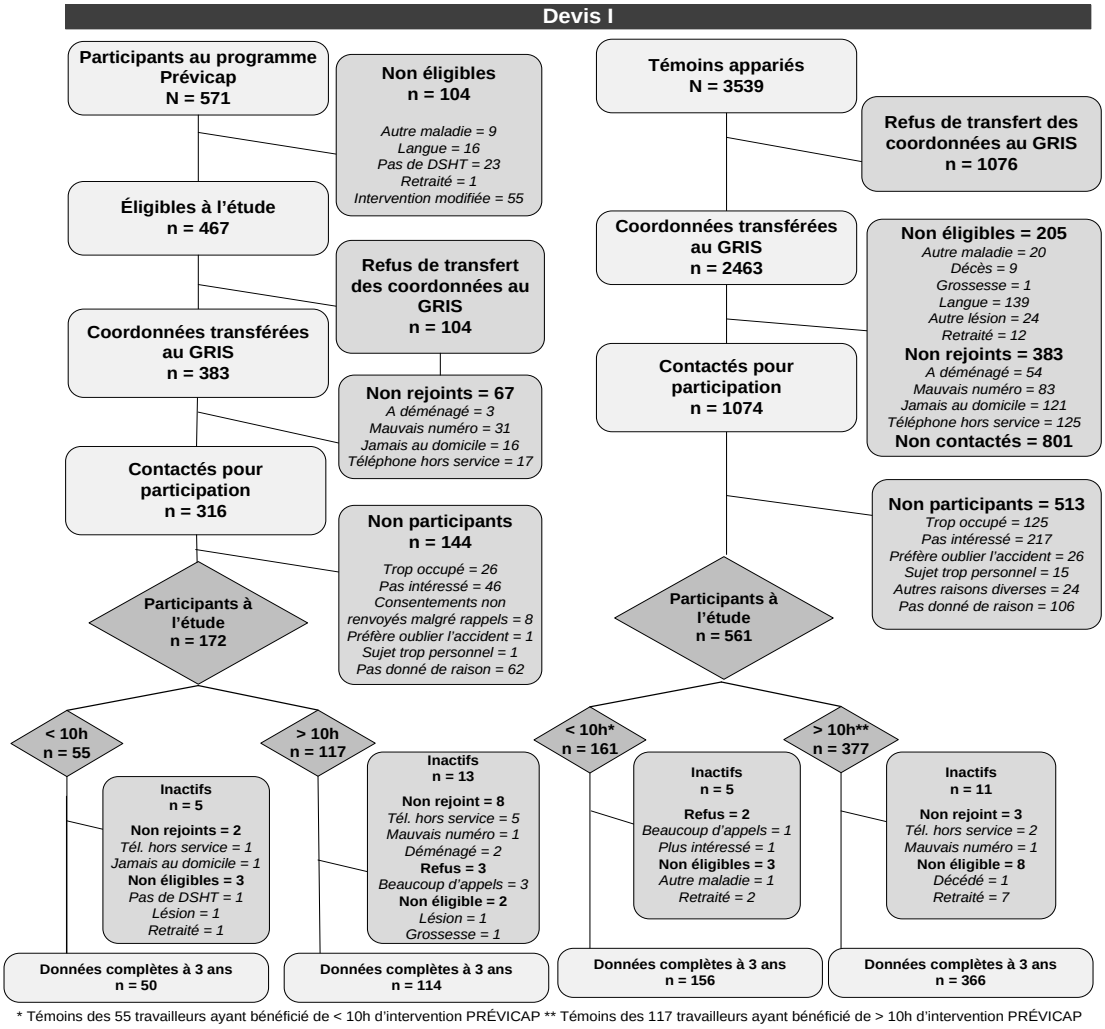


**Figure 4 – Research Design I: Recruitment and follow-up of experimental and control groups**

## Additional study exclusion criteria:

For the purpose of our study, we also excluded workers who had one or more of the following four characteristics:

- Insufficient mastery of French to be able to answer the questionnaires
- Retired before the start or during the course of the study
- A permanent disability
- Did not undergo the work disability diagnostic interview (WoDDI)[2].

[2]Further to discussions with the program developer, it was decided that individuals for whom the associated WoDDI and PRÉVICAP management costs were less than $750 could not be considered as having benefitted from PRÉVICAP services.

The final list of workers referred to the PRÉVICAP centres was sent to us in September 2005 and included 571 names. We excluded 49 workers on the basis of our seven exclusion criteria, as well as 55 workers injured in 2004 and followed at the La Maison or Lucie Bruneau rehabilitation centres, because at that time these centres were no longer applying the PRÉVICAP program as originally prescribed. The invitation to participate in the study therefore targeted 467 potential PRÉVICAP workers.

### *Recruitment of workers for the experimental group*

Research Design I provided for the inclusion of all the PRÉVICAP workers who agreed to participate in our study. The CSST first contacted the workers by letter, asking them if they had any objection to the CSST transferring their names and telephone numbers to the research team in the month following their receipt of the letter. Of the 316 workers who agreed to the file transfer and were then contacted by our team, 172 (54.4%) agreed to take part in the study.

An examination of the data on the number of hours of PRÉVICAP program services delivered revealed that several workers had received only a few hours of services, which led us to define two sub-groups: those individuals who had benefited from *complete* management, i.e. more than ten hours of PRÉVICAP intervention (n = 117) and those who had received fewer than ten hours (n = 55). The program impact was analyzed mainly on the basis of the 117 workers who had received the complete program services, given that with fewer than ten hours of services, only the WoDDI step would have been completed.

### *Control-group workers*

**Study inclusion criteria:**

- Employment injury involving the musculoskeletal system (including mainly back aches and -ITIS injuries such as tendinitis or bursitis)
- Employment injury that occurred between February 2001 and December 2004
- Event file processed in one of the 11 regional offices involved in the pilot project (Québec, Chaudière-Appalaches, Laval, Longueuil, Abitibi-Témiscamingue/Rouyn-Noranda/Val-d'Or, Yamaska/Ste-Hyacinthe, St-Jean-sur-Richelieu and Montreal-1 to -4)
- Absent from regular work or all work for more than two months

**Study exclusion criteria:**

- Multiple traumas sustained at work
- Presence of a disease likely to cause a functional deficit that interferes with the capacity to return to the pre-injury job in the year following the event (e.g. cancer)
- Pregnancy
- Insufficient mastery of French to be able to answer the questionnaires
- Retired before the start or during the course of the study
- A permanent disability

Identifying workers for the control group required a complex process using the CSST databases. The data compiled corresponded to "event files" or employment injuries, as the same worker can be compensated successively for more than one event during any particular period. We sent the CSST a data extraction request for files that satisfied the following criteria:

- event date between October 15, 2000 and December 31, 2004
- injury-site code corresponding to one of those for the group of PRÉVICAP workers

In March 2006, we received the anonymized provincial "event-file" data. From this, we retained the files originating from the same eleven administrative regional offices as the PRÉVICAP cases. We then excluded the files with an event date prior to August 2, 2004 (the event date of the "last" PRÉVICAP case), as well as those files with data missing for the following variables: injury-site code, injury description, sex, age, or regional administrative office code. The files processed in the other regional administrative offices (not involved in the PRÉVICAP project) were kept as a reserve in case the pool of potential control-group workers in the pilot project regions was depleted.

### *Matching and identification of potential control-group workers*

First, the number of control-group workers needed for each of the 172 PRÉVICAP workers having agreed to participate in Research Design I was determined. The objective was to obtain 172 strata with at least three control-group workers for each PRÉVICAP worker at the end of the follow-up period. Our estimation of the number of workers that had to be contacted was based on the participation refusal rate observed in the experimental group and on the loss-to-follow-up rates observed in a previous study in which we had used the same telephone follow-up procedures. According to our projections, the number of control-group workers initially required for each PRÉVICAP case was estimated at 18, giving a total of just over 3,000 potential control-group workers.

Control-group workers were matched with each PRÉVICAP worker by applying four criteria:

- under the same regional office of the CSST
- same compensation history during the year prior to the event under study (yes/no)
- event occurring during the same period (date of the PRÉVICAP case ± 6 months)
- same minimum duration of usual management approach (number of IRI days greater than or equal to the number of IRI days up to the WoDDI).

For each PRÉVICAP case, we identified the pool of all control-group workers who met the matching criteria. The random selection algorithm for the control-group workers was defined in such a way as to give priority to the PRÉVICAP cases having the fewest potentially matchable control-group workers. We then drew up a first list of potential control-group workers. After monitoring the recruitment rates by stratum, we conducted a second round of random selection of control-group workers for certain strata, thus generating a second list of

potential control-group candidates. In total, we constituted a random sample of 3,539 control-group workers matched with the 172 PRÉVICAP workers.

#### *Recruitment of workers for the control group*

The two lists of the file numbers of potential control-group workers were transmitted to the CSST in April and May 2006. The CSST then followed the same contact procedure used with the PRÉVICAP workers.

A total of 2,463 control-group candidates consented to having their contact information passed on to the research team. Of the 1,074 individuals contacted, 561 (52.2%) agreed to participate in the study. A substantial number of potential control-group workers (n = 801) were not contacted because they fell into strata for which we had already obtained confirmation of participation from three control-group workers.

The number of control-group workers participating in Research Design I of the study varied across the 172 strata. Nonetheless, the initial objective of obtaining at least three control-group workers for each PRÉVICAP worker was reached for 76% of the strata (Table 1).

**Table 1 – Number of control-group workers per PRÉVICAP worker**

| Control-group workers (n) | PRÉVICAP workers (n) | % |
|---|---|---|
| 1 | 8 | 4.7 |
| 2 | 33 | 19.2 |
| 3 | 77 | 44.8 |
| 4 | 30 | 17.4 |
| 5 | 13 | 7.6 |
| 6 | 7 | 4.1 |
| 7 | 3 | 1.7 |
| 8 | 1 | 0.6 |
| **Total** | **172** | **100.0** |

### 3.2.2.2 Research Design II

The PRÉVICAP and control-group cohorts were defined by excluding from the worker population pools described earlier (see beginning of section 3.2.2.1), those individuals:

- whose event was a relapse;
- whose event occurred in 2004;
- who were older than 60 years of age at the time of the event;
- with incomplete CSST data regarding IRIs;
- with data missing on the number of hours of PRÉVICAP services delivered;
- who did not receive *complete* PRÉVICAP management.

Ultimately, the PRÉVICAP and control-group cohorts included 265 and 8,127 workers respectively.

### 3.2.3 Tracer Cases

The tracer cases were chosen on the basis of a search for heterogeneity in both the workers' individual characteristics and their workplace contexts.

We drew up a list of the PRÉVICAP workers who authorized us to access their detailed PRÉVICAP and CSST files. The tracer cases were chosen in such a way as to obtain a varied spectrum in terms of PRÉVICAP centre, CSST regional office, degree of management (complete/WoDDI), age/sex profile, size of the workplace (small/medium-sized/large), and post-PRÉVICAP employment status (back at work or not). A total of 28 cases were analyzed using the information contained in their files.

We then conducted an analysis regarding workers who came from two pilot regions and had agreed both to be contacted and to contact their physician and employer. No physicians were reached or agreed to participate. Telephone interviews were conducted of nine workers and seven employers. The six cases for which we had data from these two interviews (worker and employer) were analyzed in greater depth.

## 3.3 Data Collection

### 3.3.1 Implementation Component

***Semi-structured interviews*** were conducted of various stakeholders involved in the program implementation (n = 93). The CSST and RRTQ personnel and PRÉVICAP team members involved were interviewed. Other key stakeholders such as the program developers, key CSST administrators, employers, and workers were also interviewed. The plan was to conduct telephone interviews of the attending physicians of the tracer-case workers, but regrettably, none agreed to participate. The data analysis did not, therefore, include the physicians' points of view. To aid in conducting the interviews, two interview guides were prepared for use by the various professionals carrying out this task. The interviews were recorded and then transcribed.

Simultaneously, a ***questionnaire-type workplace survey*** was carried out (n = 55). Of the 184 workers surveyed, 140 gave permission for the research team to contact their employer. The questionnaire was sent to all the workplaces for which we had the name and contact information of the person in charge of human resources and/or occupational safety (n = 103). The questionnaires were mailed out in April 2005 and were followed by three telephone reminders. The workplace participation rate was 56%, given that we received 58 completed questionnaires out of a possible 103. Following the CSST's review of the "final" list of workers referred to a PRÉVICAP centre, three questionnaires had to be rejected. The number of workplaces surveyed was therefore 55. The mail questionnaire was designed first to obtain information on the PRÉVICAP workers' workplaces in terms of structural characteristics (e.g. size of the workplace, type of assessment plan at the CSST, financial health, economic activity sector, ability of the workplace to offer an alternative job or light tasks, presence of a collective agreement with seniority clauses) and occupational health and safety in the workplace (e.g. joint file management, proactive preventive practices, training of personnel to identify occupational risks, presence of an occupational health and safety committee in the

workplace or of an occupational health physician). It also included questions on their participation in and satisfaction with the PRÉVICAP program.

Complementary data were collected during ***non-participatory observation*** of three interdisciplinary meetings of PRÉVICAP teams held at two sites.

The ***documentation*** served to complete the information collected through the interviews. The workers' PRÉVICAP and CSST files were consulted to identify workers having benefitted from complete PRÉVICAP management (n = 18). The documents pertaining to implementation of the RRTQ network and of the PRÉVICAP program (e.g. minutes) were analyzed to understand the context in which the pilot project was implemented.

## *3.3.2 Impact and Economic Components*

### 3.3.2.1 Questionnaires

In the context of Research Design I, several questionnaires were developed to supplement the CSST data and document each worker's compensation history, employment status at the time of the event, rehabilitation experience, and trajectory in the subsequent three years. The original plan was to conduct an ***initial interview*** a few weeks or months after the event and then ***follow-up interviews*** periodically for up to four years post-event**.** However, numerous delays in accessing the workers involved in the study (section 3.6) meant that the initial interview was in fact conducted several months or even years after the accident.

#### *Initial interview*

The aim of the initial interview questionnaire was to derive a comprehensive picture of the worker and his disability.

***Occupational and socio-economic profile.*** The first section concerned information on the job held at the time of the event (e.g. schedules, tasks, type of workplace) and the worker's socio-economic profile (e.g. sociodemographic characteristics, personal and household income, perceived economic status).

***Functional status, pain, psychosocial status.*** The second section looked at the circumstances surrounding the event and at the injury per se (e.g. site, perceived level of pain and severity, impact on daily activities, evolution in state of health). The literature reports on several functional capacity and pain evaluation tools for musculoskeletal disorders. Six indicators were retained on the basis of their metrological properties (reliability, construct validity, and content validity), their international use, and the existence of validated French versions. We used the French versions of the following four measurement instruments: the Roland-Morris Disability Questionnaire (RMDQ); the Neck and Upper Limb Index (NULI); the Dallas Pain Questionnaire (DPQ); and Waddell's Fear-Avoidance Beliefs Questionnaire (FABQ). Perceived pain level was measured on a ten-point rating scale.

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### *Follow-up interviews*

***Return to work.*** The aim of the return-to-work questionnaire was to retrace the worker's work trajectory, attempts (or not) to return to work, and eventual relapses during the follow-up period. If the worker had returned to work, a distinction was made between a return to the same or another employer, to the pre-injury job or another job, and with or without task modifications. The questionnaire also inquired about the worker's experience during the return to work and during his period of inactivity (e.g. feeling of having recovered at the time of return to work, coworkers' and employer's attitudes toward the return to work, arrangements offered, support from family and friends).

***Functional status, pain, and psychosocial status.*** The indicators selected for the follow-up of functional status, pain, and psychosocial status were measured using a visual analog scale (VAS) for pain; the Roland-Morris Disability Questionnaire; the Neck and Upper Limb Index (NULI); and Waddell's Fear-Avoidance Beliefs Questionnaire (FABQ).

***Private costs.*** The questionnaire on private costs borne by the workers with MSIs included questions on the expenses incurred for care and services not reimbursed by a private insurer, the government, or the CSST (e.g. chiropractic, osteopathy, some medications), special purchases (e.g. Obus cushion), or support services for daily activities required due to the injury (e.g. housekeeping help). Also factored in here was the time spent by the worker on appointments with health professionals, time taken out of working hours, time spent on leisure activities, and leave without pay.

***Satisfaction.*** This questionnaire examined the workers' satisfaction with their case management process. It allowed them to give their assessment of the quality of care and information delivered by their attending physician, the services offered by the CSST, and if applicable, the services received under the PRÉVICAP program.

### *Administration of the questionnaires*

All the questionnaires were administered by telephone.

The interviewers had one day of training on the survey objectives, the content of the questionnaires and filters, the procedures to follow in the event of a refusal to participate or failure to return the consent forms, and ways of preventing bias when administering the questionnaires. The field briefing was followed by role-plays and a practice period for becoming familiar with the data collection tools. The interviewers' schedules were planned so as to cover virtually all time slots (mornings, afternoons, and evenings; weekdays and weekends). It took an average of four calls placed at different times of day and on different days to reach the respondents in order to conduct the interviews. The maximum number of calls required for each interview was ten, after which it was considered that the person could not be reached.

In the first telephone conversation, the workers were explained the nature of the study and the implications of their involvement. A time was scheduled for an initial telephone interview with workers who agreed to participate and consent forms were mailed out. For workers who refused to participate, the interviewer noted down the reason given. The initial interview was

only conducted after we had received the signed consent form and took an average of 45 minutes. The follow-up interviews were scheduled at six-month intervals if there was no return to work or yearly if there was a return to work, up to four years post-event; these interviews lasted an average of 25 minutes. A diagram depicting the details of the procedure and of the information collected during the interviews is provided in Appendix I.

Data collection from the workers started on November 3, 2003 for those participating in the PRÉVICAP program and on March 31, 2006 for those in the control group who had been subject to usual case management. The "initial" interviews were conducted from November 2003 to March 2006 (PRÉVICAP group) and from April to October 2006 (control group). The first contact was therefore made very late relative to the time of the event. The explanations for and repercussions of these delays are presented in section 3.6.

#### 3.3.2.2 CSST Data

Several types of information were extracted from the CSST data received in spring 2006. The CSST data contained the following information: the workers' sociodemographic characteristics, a description of the events, information on the workers' trajectory and the services they received from the CSST, the amounts paid out by the CSST in compensation benefits, the amounts of and periods during which indemnities were paid to the workers by the CSST, information on any contestations, i.e. the type of and reason for the contestation, as well as the dates of the different hearings and decisions.

### *3.3.3 Tracer Cases*

The six more complete tracer cases were analyzed taking into account all the information available on these workers, including that on the impact and economic components. In particular, the PRÉVICAP and CSST hard-copy files of these workers were studied in great detail.

## 3.4 Operational Definition of Main Variables of Impact and Economic Components

A list of the variables for which data were collected is found in Appendix 2.

## 3.4.1 Impact Component

### 3.4.1.1 Main Independent Variable

***Case management method:*** This variable served to classify the workers into two groups: those under the PRÉVICAP program and those under usual management. It is important to remember two points here: (1) PRÉVICAP management was considered *complete* when the worker had received at least 10 hours of services and (2) the evaluation concentrated on this sub-group of PRÉVICAP workers.

### 3.4.1.2 Main RTW-Related Dependent Variables

A number of authors have demonstrated the limitations of assessing the impact of MSIs solely in terms of duration of compensation [62-64]. In fact, this measure of duration may underestimate the impact of the MSI if the worker relapses quickly following his return to work or returns to work with diminished capacities or at another employer's. The use of several complementary indicators allows for a more exhaustive accounting of the program impact on the return to work. We found various indicators reported in the literature and defined other indicators. After discussion with the CSST and preliminary analyses, we retained the following:

***RTW to pre-injury job*** (three indicators): The return to the pre-injury job was measured in terms of the time elapsed between the date of the event and the first return to work for at least three days (a), at least four weeks (b), or at least six months (c), and involving a return to the pre-injury job at the same employer's, with or without task modifications. Our analysis of the PRÉVICAP program impact focused on this type of return to work, and more specifically on (b), as we, like other authors, considered that a return to work of at least four weeks can be qualified as "sustainable."

***RTW to any job*** (three indicators): Measuring the RTW to any job consisted of calculating the time elapsed between the date of the event and the first RTW of (a) at least three days, (b) at least four weeks, or (c) at least six months, regardless of job or employer.

***Sustainable RTW to pre-injury job within less than two years post-event*** (one indicator): This indicator, involving a yes/no response, examined whether this type of RTW occurred during this specific two-year period, regardless of the date of the return.

***Termination of compensation*** (one indicator): The duration of compensation was defined as the time elapsed between the dates of the first and last payments of income replacement indemnities (IRIs).

***Cumulative duration of compensation*** (one indicator): The cumulative duration of compensation was calculated as the sum of all days compensated for the same injury, from the date of the event until 18, 24, and 36 months post-event.

***Employment status at two years post-event*** (one indicator): The situation with regard to the return to work (RTW) at two years post-event was described in terms of the following possibilities:

- RTW at the same employer's, to the pre-injury job with no task modifications;
- RTW at the same employer's, to the pre-injury job with task modifications;
- RTW at the same employer's, to another job;
- RTW at another employer's, to a similar job;
- RAT at another employer's, to another job;
- on sick leave.

***Relapse or new event*** (one indicator): The CSST data were used to define the incidence of relapses/new events when the data contained an event code signalling either a relapse (892, 884, 876, 868, 860, 854, 852, 846, and 738) or a new event (900) following the event selected for purposes of our study. Relapse/new event rates were calculated taking into account the variable duration of follow-up (interval between the end of the IRIs and April 2006) among the workers.

#### 3.4.1.3 Satisfaction-Related Dependent Variables

***Social support and job satisfaction***: Certain questions from a modified work APGAR questionnaire (Bigos et al., 1991) were used to investigate social support and job satisfaction.

***Worker satisfaction with their case management***: Various satisfaction indices were created on the basis of the satisfaction questionnaire:

- ***Satisfaction with the attending physician's services*****:** We combined the answers to the satisfaction-related questions concerning all the services delivered by the attending physician, the information received from the physician about the nature of the injury, and the information received about the activities to be undertaken to promote recovery. The respondents had to have at least two valid answers to obtain a score.

- ***Satisfaction with CSST services*****:** We created an index from eight questions inspired by the CSST questionnaire on perceived quality of services delivered by the case managers: the explanations given of the CSST decisions; courtesy; the time that the case manager spent listening; quality of the information given; clarity of the information; feeling of being understood by the case manager; confidence in the case manager; and the case manager's ability to find adapted solutions. The respondents had to have at least six valid responses out of eight to obtain a score. We also included a question on overall satisfaction with services.

- ***Satisfaction with the PRÉVICAP program*****:** We created an index using four satisfaction-related questions concerning the following: all treatments and services received; information received by the PRÉVICAP team members about the nature of the injury; information received about the activities to be undertaken to promote recovery; and the PRÉVICAP team members' intervention in the workplace. The respondents had to have at least three valid answers out of four to obtain a score.

***Worker satisfaction with the RTW context***: This section contained questions concerning the workers' perceptions of their RTW (feeling of being ready or of having recovered, coworkers'

and employer's attitudes), of the modifications made to facilitate their return (task, schedule physical workstation accommodations), and of the follow-up done after their RTW.

#### 3.4.1.4 Dependent Variables Related to Functional Status, Pain, and Psychosocial Status

***Functional status***: Two functional status questionnaires were used: the Roland-Morris Questionnaire (RMQ) on pain and disability for workers with back injuries and the Neck and Upper Limb Index (NULI) for workers with neck and/or upper limb injuries. The workers whose injury site involved both the back and neck or upper limbs completed both questionnaires. The score on the RMQ was calculated on 24 and weighted in light of any missing responses. The same procedure was used to calculate the NULI score on 7.

***Pain***: The perceived pain intensity was estimated using a 10-point rating scale.

***Psychosocial status***: The Dallas Pain Questionnaire was used to assess the pain's impact on four spheres of the worker's life: daily activities (average of 1 to 7 items on 100), work and leisure activities (average of 8 to 10 items on 100), anxiety/depression (average of 11 to 13 items on 100), and social behaviour (average of 14 to 16 items on 100). Waddell's Fear-Avoidance Beliefs Questionnaire, or FABQ, measured the worker's perceptions and fears regarding his injury relative to physical activities (total of items 2, 3, 4 and 5, ranging from 0 to 24) and work (total of items 6, 7, 9, 10, 11, 12 and 15, ranging from 0 to 42). Any questionnaires with missing answers were withdrawn from the analysis. For the work score, item 7, "My work aggravated my pain," was answered only by those workers who had returned to work. The FABQ work score was calculated on 36 using questions 6, 9, 10, 11, 12 and 15.

#### 3.4.1.5 Other Variables

***Sociodemographic profile:*** Sex, age, income, number of dependants, family situation, and main administrative unit code.

***Employment characteristics:*** Nature of the employment contract, method of remuneration, employer's assessment plan, size of the workplace, occupation, workplace's main economic activity sector, number of years of experience at the employer's, number of years of experience in the occupation, and perceived physical effort required by the job.

***Compensation history:*** Presence of a compensation history in the ten years prior to the injury; presence of a compensation history in the five years prior to the injury.

***Characteristics of the event under study:*** Nature and site of the injury, type of event (first event or relapse/recurrence/aggravation, industrial accident, or occupational disease), year of the event, contestation (Bureau d'évaluation médicale, Commission des lésions professionnelles, or Révision administrative, or BÉM, CLP and RA respectively) following the event, worker unionized or not at the time of the event.

***Characteristics of PRÉVICAP case management:*** rehabilitation centre, chronology of steps in the management process, types of activities carried out.

***Risk index***: A long-term disability risk index was created to account for the risk factors that could compromise the return to the pre-injury job (with or without task modifications) which, given their low prevalence, could not be incorporated individually into the multivariate analysis models. These factors were:

- being over 55 years of age;
- having more than 120 days of disability in the five years prior to the injury;
- holding a regular job requiring great physical effort, according to the worker, and regarded as manual work in Statistics Canada's National Occupational Classification;
- not at all satisfied with his job;
- receiving indemnities for a temporary job;
- having less than one year of seniority at the employer's;
- having less than one year of experience in the occupation;
- being fast-tracked by the CSST for rehabilitation, i.e. during the *pre-* period, which is defined for each *PRÉVICAP worker/control-group worker stratum* as the interval between the event and the start of the worker's case management under the PRÉVICAP program;
- having undergone surgery on the same injury site prior to the event;
- not unionized;
- being unaware of an occupational health and safety program in his workplace.

The risk index was calculated by totalling the number of factors present. For the multivariate analysis, we treated the risk index as a continuous variable (0-11), whereas for descriptive purposes, we categorized the variable as follows: "Very low risk" (no factor); "Low risk" (1-2); "High risk" (3-4); or "Very high risk" (5 or more).

### 3.4.2 Economic Component

***Case management costs:*** From the CSST's perspective, case management costs consist of income replacement indemnities (IRIs), lump-sum indemnities (e.g. indemnities paid to workers for permanent bodily injury or disability), medical aid costs (e.g. hospitalization costs, medication), rehabilitation costs (e.g. refresher program or vocational training program, or adaptation of a workstation) and "other" costs (e.g. reimbursement for damage caused to clothing or eyeglasses, travel expenses of a worker who has sustained an employment injury, costs associated with consulting witnesses and experts). Added to this, for PRÉVICAP-managed workers, is the cost of the PRÉVICAP program.

***Cost of PRÉVICAP program:*** Given how the program is funded (on a per diem basis), two different methods were used to estimate the cost for each worker:

Method 1: For 495 of the 571 workers, the cost was determined on the basis of the real time devoted to each worker by the PRÉVICAP team. Using the operating budget of one rehabilitation centre (Hôpital Charles LeMoyne, or HCLM), we determined the portion of this

budget associated with the workers in the pilot project. Taking into account the hours of service spent directly on activities involving contact with these workers, we calculated an hourly cost for 2002-2003 and for 2003-2004. The average hourly cost of the program for these two years, $178.27, was imputed to the workers in the four centres.

Method 2: For the 76 workers for whom data was missing on the hours of service delivered, the costs charged to the CSST by the RRTQ were imputed. We used the CSST data for account 5.3.6.2.1.999 (costs paid to another establishment in the health and social services network) for the period during which the worker participated in the PRÉVICAP program, given the CSST's assurance that only this account was used for the PRÉVICAP costs.

***Private costs:*** We identified the private costs incurred over the four-week period prior to the three-year post-event interview. As mentioned in section 3.3.2.1, these are costs borne by the worker, such as the non-reimbursed costs associated with the use of health services, prescription or over-the-counter medications, specialized equipment, and home support services for care and services related to the injury.

## 3.5 Analyses

### *3.5.1 Description of PRÉVICAP Workers and Their Case Management Process*

First, we drew up a profile of the workers referred to the PRÉVICAP program and detailed various aspects of their case management under this program. The results are presented in section 4.1, mainly in table form and including the p-values of appropriate bivariate statistical tests (ANOVA or Kruskall-Wallis) for the comparison of the four rehabilitation centres.

### *3.5.2 Implementation Component*

The documents pertaining to the setting up of both the RRTQ and the PRÉVICAP program were compiled and used to retrace the history of their creation and implementation. Interviews were conducted to gain an understanding of the stakeholders' perceptions of and position regarding the PRÉVICAP program. A coding frame based on the interview guide was created during a first reading of the interview transcripts. It was then refined to gain a better grasp of the various stakeholders' perceptions. After being coded, the content of each interview was then processed using Nudist software; this revealed major themes. The non-participatory observations of the PRÉVICAP team meetings supplemented the interview material regarding the functioning of the program. The information obtained from the survey participants was summarized using descriptive statistics.

### *3.5.3 Impact Component*

On the basis of Research Design I, we first looked at the "crude" effects of the PRÉVICAP program for several return-to-work indicators (i.e. without adjusting to account for differences between the workers in the two groups) using bivariate tests (logrank tests, Student's t-tests, Pearson's chi-squared tests). The main analysis concerned three result indicators for which we performed multivariate modelling that took into account both the matching and the inter-group

differences that affected the results, i.e. created a confounding bias. The adjusted effects of the PRÉVICAP program were estimated using Cox's models for the *Sustainable RTW to pre-injury job* and *Termination of compensation* indicators, with a logistic model for the *Sustainable RTW to pre-injury job within two years post-event* indicator. From these models, we obtained synthetic measures of effectiveness in the form of a hazard ratio (HR) or an odds ratio (OR).

The robustness of the conclusions of our main analysis was assessed in three different ways: (1) Research Design II: effect estimated using population data with multivariate modelling (Cox) of the *Termination of compensation* indicator; (2) Research Design I: sensitivity analyses with multivariate modelling (Cox) of the *Sustainable RTW to pre-injury job* indicator; and (3) Research Design I: intent-to-treat analyses with multivariate modelling of the three result indicators of the main analysis.

Using Research Design I, the effects of the program in terms of satisfaction, functional status, pain, and psychosocial status were reported using descriptive statistics, while including the results of the bivariate procedures (Pearson's chi-squared test and Student's t-test) where pertinent.

### 3.5.4 Economic Component

The various analyses were performed using the data from Research Design I.

The case management costs and private costs were first compared by means of descriptive statistics. The efficiency of PRÉVICAP case management relative to that of usual case management was estimated through cost-effectiveness and cost-benefit analyses.

***Cost-effectiveness***: We used one non-compensated day as the effectiveness unit, and the total cost of one day of case management as the unit cost. We calculated cost-effectiveness ratios (CERs) at one year and at two and three years post-event, which allowed us to put a figure on the cost of one day of management saved by application of the PRÉVICAP program, and to see the evolution of this efficiency measure over time. The CERs were calculated taking into account only those PRÉVICAP workers who had benefited from *complete* management (strict analysis), and were then recalculated including all PRÉVICAP workers (intent-to-treat analysis).

***Cost-benefit***: For each worker, we estimated the net benefit at three years post-event. This approach is based on the conversion of observed positive effects into costs. In this case, the effectiveness unit was one day of management saved. The monetary value attributed to one day of management saved represented "willingness to pay" (WTP). In this type of economic analysis, the monetization of effects allows for direct contrasting with costs. For each worker, the "net benefit" was the difference (E-C), where E is the monetized effectiveness (number of management days saved X WTP) and C is the total cost (including the costs of income replacement indemnities; medical costs; rehabilitation costs; lump-sum payments; and for a PRÉVICAP worker, the cost of the program). For this analysis, we excluded ten workers in the PRÉVICAP group and 12 workers in the control group for whom the total cost of management was very high (above the 95$^{th}$ percentile of the distribution, i.e. $119,000). We

then calculated the difference between the average net benefits for the two groups. The results corresponding to three WTP values are presented: (1) the zero value, which essentially involves a comparison based strictly on costs; (2) the value that corresponds to the break-even point, i.e. for which the average net benefit was equivalent for the two groups; and (3) the value for which the average net benefit was significantly higher for the PRÉVICAP group.

### 3.5.5 Explanation of Effects

In order to assess the value of the PRÉVICAP program more precisely, we used the data from Research Design I, information from the tracer cases, data from the workplace survey, and results of the interviews with the CSST and PRÉVICAP personnel to answer three questions.

***Question 1: Did the effects vary according to worker or workplace characteristics?*** For the *Sustainable RTW to pre-injury job* indicator, we performed stratified analyses using Cox models. This enabled us to identify a particularly important interaction factor in the program impact, specifically, compensation history in the five years prior to the event. Multivariate logistic models were then adjusted to estimate the chances of a *Sustainable RTW to pre-injury job within two years post-event* according to the case management approach and the presence of a compensation history. We conducted the efficiency analysis only for the stratum of workers for whom the program proved effective. Program efficiency was estimated first by comparing the net benefits, and then by calculating the cost-effectiveness ratios for the worker profiles defined through combinations of other factors that are more predictive of the return to work.

***Question 2: What were the key factors in the effect-production mechanism?*** The PRÉVICAP program logic model (see section 1.4) was used as a tool for analyzing the six "complete" tracer cases. For each case, we tried to understand if and how the program contributed to the return to work. The detailed data on these cases allowed us to document a number of factors, including the functioning of the program as well as the degree to which its final and intermediate objectives were attained. It involved identifying the key conditions, if any, that contributed to the success of the PRÉVICAP program.

***Question 3: Did the effects vary according to the PRÉVICAP and CSST personnel's perceptions of the factors that affected the functioning of the program?*** We studied the effect on the RTW of the factors perceived as possibly influencing the functioning of the program and whose heterogeneity became somewhat apparent in the interviews with the CSST personnel and PRÉVICAP teams. For each factor (e.g. quality of the partnership), the perception of the personnel interviewed was qualified for each workplace (four PRÉVICAP centres and 11 regional offices) on a three-point rating scale: positive, variable, and negative. We analyzed the data for the 117 PRÉVICAP workers involved in Research Design I (*complete* management) to see whether we could detect any variations in terms of rapidity and frequency of a *Sustainable RTW to pre-injury job* according to whether the personnel of the CSST regional office and of the PRÉVICAP centre perceived the application of the program as successful or not.

## 3.6 Challenges Faced During Evaluation

Several challenges were encountered during the project. The main ones are described below, along with the solutions adopted and their consequences for the evaluation.

Initially, the evaluation of the PRÉVICAP program impact was based on a randomized design. However, at the CSST's request, we reformulated the project and instead adopted a quasi-experimental design, Research Design I, as the main research methodology. The research project began in 2002, with its revised version receiving approval in early 2003.

A first strategy for forming a control group was developed using a CSST list of workers targeted for admission to the PRÉVICAP program. The control group consisted of workers who had not in fact been referred to the PRÉVICAP program, i.e. approximately half of the workers targeted. Based on our analyses of the CSST data, we observed stark differences between the referred and non-referred workers, forcing us to develop an alternative strategy for forming an appropriate control group. To do so, the CSST had to give us access to their data on all workers who met our inclusion criteria; we obtained the necessary authorization in August 2004. Our analysis also revealed the referral rates to the program and, in some centres, a lower capacity to absorb the referred workers than anticipated. We therefore decided to readjust the definition of the experimental group as follows: the workers referred in 2002 and 2003 were added to those referred in 2001 and 2004.

The execution of the project, particularly the impact and economic components, was affected by the problems encountered in using the CSST data. We had to reconcile ourselves to long delays in accessing the workers whom we hoped to involve in Research Design I, especially the control-group workers, largely due to lengthy delays in obtaining valid CSST data from which we had to randomly select potential control-group workers to be matched with PRÉVICAP workers. We identified irregularities in the CSST data extraction process, which led us to institute a "project validation" process carried out in collaboration with the CSST and the IRSST. Ultimately a new CSST data extraction process was carried out, leaving us confident that we could use the data transmitted both to identify potential control-group workers and to supplement the data collected through the telephone interviews. The "initial" interviews with the control-group workers began in the spring of 2006. Another CSST data extraction process was carried out in 2008 to obtain, as planned, follow-up data at four years post-event. However, the data transmitted contained aberrations that prevented us from using it.

These long delays had three main consequences. First, it was impossible to collect or use certain information on the workers' situations a few weeks or months after their event (e.g. functional status), as the "initial" interview had been conducted very late. Second, the effectiveness and efficiency of the PRÉVICAP program were studied for up to three years post-event, as opposed to four. Lastly, the workplace survey and the interviews related to the tracer cases did not produce as enlightening results as anticipated. For example, the employer was not always able to remember the worker in question or the details of the workplace's participation in the PRÉVICAP management of the worker.

## 3.7 Ethical Considerations

Beginning in August 2002, the research team submitted requests to the ethics committees of the Université de Montréal and the four rehabilitation centres involved in the study. In July 2003, following revisions to the consent forms, all necessary ethical certificates were issued.

An agreement with the CSST's legal affairs office was signed in March 2002 and amended in August 2004 to allow us to obtain the CSST data needed to carry out Research Designs I and II.

All the workers who participated in Research Design I signed a voluntary and informed consent form concerning participation in the study, contact with the employer, and access to various administrative files (data at the PRÉVICAP centres and CSST data). The form included a description of the study, information on the nature of their participation, the risks and inconveniences involved, and their right to withdraw from the study at any time.

# 4 RESULTS

## 4.1 Overview of All Workers Admitted to the PRÉVICAP Program

This section describes the 571 workers admitted to the PRÉVICAP program, by sociodemographic profile, employment status at the time of the employment injury, compensation history, characteristics of the event, and characteristics of their case management following the event.

**HIGHLIGHTS**

- The PRÉVICAP workers were on long-term disability and their cases came under management very late (on average, six months after the event); program services were delivered for an average of six months.
- The time elapsed between the event and the beginning of case management, as well as the duration of case management, varied greatly within each region.
- More than one-quarter of the PRÉVICAP workers had received CSST indemnities for a musculoskeletal injury in the five years prior to the event.

### *4.1.1 Worker Characteristics*

#### 4.1.1.1 Sociodemographic Profile

The vast majority of the workers admitted to the PRÉVICAP program were between 25 and 44 years of age, and approximately two-thirds of them were men (Table 2). Age and sex distributions were similar to those observed in the general population of workers compensated for a spinal disorder or an *-itis* musculoskeletal injury for the year 2004, with the exception of the "under age 24" category, for whom the frequency of MSIs in the compensated general population was 14% in 2004 [1, 2].

**Table 2 – Sociodemographic profile of workers admitted to the PRÉVICAP program (n = 571)**

| | n | % |
|---|---|---|
| **Sex** | | |
| Female | 208 | 36.4 |
| Male | 363 | 63.6 |
| Total | 571 | 100 |
| **Worker's age on date of event** | | |
| 18 to 24 years | 36 | 6.3 |
| 25 to 34 years | 150 | 26.3 |
| 35 to 44 years | 223 | 39.1 |
| 45 to 49 years | 75 | 13.1 |
| 50 years and + | 87 | 15.2 |
| Total | 571 | 100 |
| **Annual employment income (gross)** | | |
| $15,250 and - | 41 | 7.2 |
| $15,251 to $24,999 | 185 | 32.5 |
| $25,000 to $34,999 | 149 | 26.1 |
| $35,000 to $44,999 | 79 | 13.9 |
| $45,000 and + | 116 | 20.4 |
| Total | 570 | 100 |

| | n | % |
|---|---|---|
| **Number of dependants** | | |
| None | 359 | 63 |
| 1 person | 92 | 16.1 |
| 2 persons | 59 | 10.4 |
| 3 persons or + | 60 | 10.5 |
| Total | 570 | 100 |

### 4.1.1.2 Employment Characteristics

At the time of the event, most of the PRÉVICAP workers had full-time employment status with a fixed salary or wage (Table 3). The most highly represented economic activity sectors were commercial and personal services, construction and public works, wholesale and retail trade, and medical and social services. Only the most highly represented occupations and sectors are reported. The complete distribution is found in Appendix 3.1.

**Table 3 – Employment status at time of event (n = 571)**

| | n | % |
|---|---|---|
| **Nature of employment contract**[a] | | |
| Full-time | 384 | 92.3 |
| Part-time | 17 | 4.1 |
| On call, seasonal, or fixed-term contract | 15 | 3.6 |
| Total | 416 | 100 |
| **Method of remuneration**[a] | | |
| Fixed (hourly, weekly, etc.) | 410 | 98.6 |
| Gratuity, piecework, commission, or lump-sum basis | 6 | 1.4 |
| Total | 416 | 100 |
| **Employer's assessment plan** | | |
| Retrospective | 54 | 10.2 |
| Personalized rate | 355 | 66.9 |
| Unit rate | 122 | 23 |
| Total | 531 | 100 |
| **Occupation by category**[b] | | |
| Service occupations (61) | 88 | 15.4 |
| Product fabricating, assembly, and repair occupations (85) | 69 | 12.1 |
| Construction trades (87) | 62 | 10.9 |
| Material handlers and related occupations (93) | 60 | 10.5 |
| Transport equipment operating occupations (91) | 37 | 6.5 |
| Administrative personnel and related occupations (41) | 35 | 6.1 |
| Medical personnel, health technicians, and related occupations (31) | 29 | 5.1 |
| Sales occupations (51) | 23 | 4 |
| Other occupations | 168 | 29.6 |
| Total | 571 | 100 |
| **Employer's main economic activity sector**[c] | | |
| Other commercial and related services (21) | 95 | 17.9 |
| Construction and public works (01) | 90 | 16.9 |
| Wholesale and retail trade (16) | 89 | 16.8 |
| Medical and social services (30) | 51 | 9.6 |
| Food and beverages industry (12) | 27 | 5.1 |
| Transport and warehousing (15) | 27 | 5.1 |
| Other sectors | 152 | 28.5 |
| Total | 531 | 100 |

[a] More than 15% of data missing. [b] Categorization according to the Canadian Classification and Dictionary of Occupations (CCDO) (1971) used by the CSST for the eight most frequent sub-groups. The figures in parentheses correspond to the two-digit CCDO-1971 codes. [c] Categorization according to the *Classification des activités économiques du Québec de 1984* (CAEQ-1984) used by the CSST for the six most frequent sub-groups. The figures in parentheses correspond to the two-digit CAEQ-1984 codes.

#### 4.1.1.3 Compensation History

One-quarter of all the workers had already been compensated in the five years prior to the event, with 1.6% of these having received benefits for more than two events.

**Table 4 – Compensation history with CSST**

| | | In year prior to event | | In 5 years prior to event | | In 10 years prior to event | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| **Compensation history** | Yes | 47 | 8.2 | 150 | 26.3 | 229 | 40.1 |
| | No | 524 | 91.8 | 421 | 73.7 | 342 | 59.9 |
| | Total | 571 | 100.0 | 571 | 100 | 571 | 100 |
| **Number of events (original and relapses)[a]** | 1 | 47 | 100 | 141 | 94.0 | 205 | 91.5 |
| | 2 or + | - | - | 9 | 6.0 | 24 | 10.5 |
| | Total | 47 | 100 | 150 | 100 | 229 | 100 |
| | | **Mean (standard deviation)** | **Min/max** | **Mean (standard deviation)** | **Min/max** | **Mean (standard deviation)** | **Min/max** |
| **Cumulative duration of compensation (in days)[a]** | | 66.38 (83.21) | 3/365 | 184.23 (317.5) | 2/1826 | 269.23 (552.8) | 1/3652 |

[a] Of those workers with a history.

### 4.1.2 Characteristics of Event Studied

Slightly less than 82% of the injuries involved the back, representing a similar proportion to that observed in the general population, in which the rate of spinal injuries was 78.7% in 2004 [1, 2]. A more detailed description of injury types is provided in Appendix 3.

**Table 5 – Description of event**

| | n | % |
|---|---|---|
| **Nature of injury[a, b]** | | |
| Sprain, strain, or tear (2100) | 332 | 63 |
| Tendinitis (17330) | 38 | 7.2 |
| Bruise, contusion (4300) | 29 | 5.5 |
| Épicondylitis, epitrochleitis (17370) | 19 | 3.6 |
| Other | 109 | 21.1 |
| Total | 527 | 100 |
| **Injury site** | | |
| Back | 426 | 81.9 |
| Neck/Upper extremities | 94 | 18.1 |
| Total | 520 | 100 |
| **Injury category[b]** | | |
| Employment injury due to an event | 531 | 95.3 |
| Occupational disease | 26 | 4.7 |
| Total | 557 | 100 |
| **Type of event** | | |
| Initial event | 542 | 94.8 |
| Recurrence/relapse/aggravation | 29 | 5.1 |
| Total | 571 | 100 |
| **Year of the event** | | |
| 2001 | 156 | 27.3 |
| 2002 | 210 | 36.8 |
| 2003 | 165 | 28.9 |
| 2004 | 40 | 7 |
| Total | 571 | 100 |

[a] Categorization according to the OIICS (Occupational Injury and Illness Classification System) adopted at the CSST. [b] CSST code given in parentheses.

### 4.1.3 Characteristics of Case Management

Three hundred and four workers (53.2%) underwent so-called *complete* case management (see section 3.4.1.1). They were distributed among four rehabilitation centres in four different regions (Table 6).

**Table 6 – Worker distribution by PRÉVICAP centre**

| Rehabilitation establishment | Workers n (%) | Workers under complete management n (%) |
|---|---|---|
| Centre de réadaptation de l'Hôpital Charles Lemoyne (HCLM) | 183 (32.1) | 97 (31.9) |
| Institut de réadaptation en déficience physique de Québec (IRDPQ) | 168 (29.4) | 92 (30.3) |
| Centre de réadaptation Lucie-Bruneau (CRLB) | 157 (27.5) | 79 (26.0) |
| Centre de réadaptation La Maison (CRLM) | 63 (11.0) | 36 (11.8) |
| Total | 571 (100.0) | 304 (100.0) |

Several *time elapsed* indicators were created in order to thoroughly understand the chronology of the PRÉVICAP case management process. The indicators retained for this report are presented along a timeline shown in Figure 5. A more exhaustive list of the indicators developed and additional information on the distributions shown in Table 7 can be found in Appendix 3.

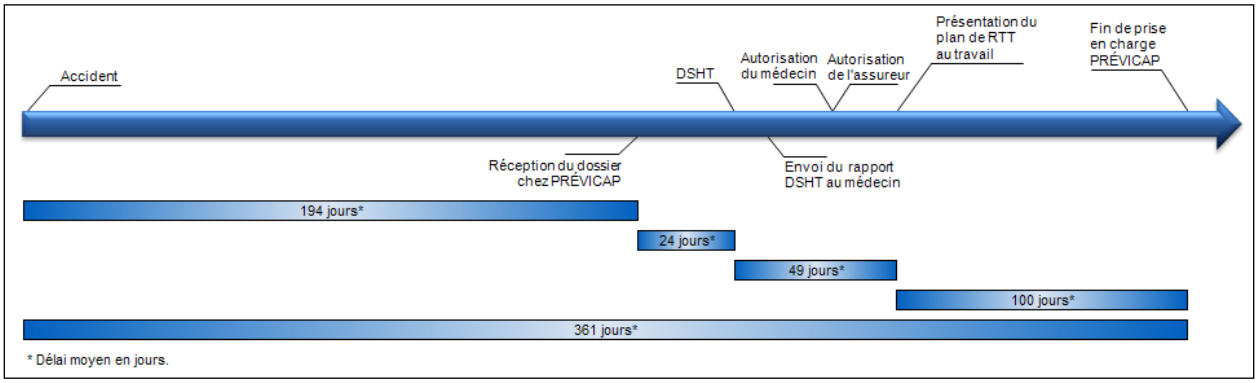



**Figure 5 – Chronology of case management indicators**

Table 7 presents the results for these various *time elapsed* indicators, by centre. The number of observations varies significantly from one indicator to the other for three reasons. First, some workers did not consent to use being made of the data from their rehabilitation centre. Second, some data outliers were discarded following validation analyses. Lastly, several workers did not undergo the entire program and were therefore not included in the calculation of certain *time elapsed* indicators.

PRÉVICAP case management began late. On average, the first intervention with the worker (WoDDI) took place six months after the event; the activities with the worker lasted three months; and the total time elapsed between the event and the end of PRÉVICAP management was one year. However, there were major variations in the times elapsed from one individual to the other within a given centre. While statistically significant inter-centre differences were observed, these differences were of little importance in practice. For example, the average

time elapsed between the event and PRÉVICAP's receipt of the file ranged from 174 days (or 5.8 months) to 210 days (or 7 months) (Table 45 and Figure 13 in Appendix 3).

**Table 7 – Time elapsed before management, by PRÉVICAP centre**

| Indicator | Centre | n | Mean (days) | Median (days) | Coefficient of variation[e] (%) | p |
|---|---|---|---|---|---|---|
| **Number of days between event and PRÉVICAP's receipt of file** | HCLM | | 210.2 | 203.0 | 39.5 | |
| | IRDPQ | | 173.1 | 150.0 | 60.8 | |
| | CRLB | | 205.9 | 192.0 | 43.4 | **<0.0005[a]** |
| | CRLM | | 174.5 | 121.0 | 81.5 | |
| | TOTAL | 521 | 194.0 | 179.0 | 52.2 | |
| **Number of days between PRÉVICAP's receipt of file and WoDDI** | HCLM | | 15.8 | 13.0 | 84.8 | |
| | IRDPQ | | 27.1 | 20.0 | 78.6 | |
| | CRLB | | 27.5 | 20.0 | 116.0 | **<0.0005[a]** |
| | CRLM | | 27.1 | 15.5 | 137.6 | |
| | TOTAL | 515 | 23.7 | 17.0 | 108.4 | |
| **Number of days between WoDDI and presentation of Therapeutic Return-to-Work (TRW) plan at the workplace[c]** | HCLM | | 48.7 | 35.0 | 84.6 | |
| | IRDPQ | | 35.5 | 22.0 | 100.0 | |
| | CRLB | | 60.7 | 47.5 | 72.5 | **0.001[b]** |
| | CRLM | | 54.2 | 46.0 | 88.6 | |
| | TOTAL | 304 | 48.8 | 39.0 | 86.7 | |
| **Number of days between presentation of TRW plan at the workplace and end of PRÉVICAP management[c]** | HCLM | | 89.0 | 85.0 | 47.5 | |
| | IRDPQ | | 97.4 | 95.0 | 41.8 | |
| | CRLB | | 99.3 | 86.5 | 68.6 | 0.300[a,d] |
| | CRLM | | 130.9 | 109.5 | 90.9 | |
| | TOTAL | 262 | 99.9 | 93.0 | 67.1 | |
| **Number of days between event and end of PRÉVICAP management[c]** | HCLM | | 363.3 | 359.0 | 30.3 | |
| | IRDPQ | | 313.2 | 308.0 | 30.4 | |
| | CRLB | | 388.9 | 382.5 | 28.5 | **0.002[a,d]** |
| | CRLM | | 370.5 | 340.0 | 44.5 | |
| | TOTAL | 263 | 360.6 | 349.0 | 33.2 | |

[a] Kruskal-Wallis test. [b] Anova. [c] Of the workers who underwent the complete program (n = 324). [d] More than 15% of data missing. [e] The coefficient of variation $\left(\frac{Standard\ deviation}{Mean} * 100\right)$ is a normalized measure of dispersion that allows for comparisons to be made between the extent of variability for a given factor across different populations or the extent of variability for different variables within a given population.

We gained a clearer understanding of how the PRÉVICAP program was implemented at each site by examining the number of hours of service delivered. The following tables provide information on the type of activities carried out, time allocated to each activity, and variety of professionals involved. The activities were identified and classified by the PRÉVICAP team members into five categories that are detailed in Table 8.

**Table 8 – Definition of PRÉVICAP activities**

| | Description |
|---|---|
| **Activities A** | Activities involving interaction with worker at rehabilitation centre |
| **Activities B** | Activities involving interaction with worker in workplace |
| **Activities C** | Activities without worker at rehabilitation centre or in workplace |
| **Activities D** | Travel activities related to delivering services to workers |
| **Activities E** | Filekeeping activities |

The number of hours of service delivered was analyzed in terms of three distinct phases as defined in Table 9.

**Table 9 – Definition of phases in PRÉVICAP service delivery**

| | Start | End | Remarks |
|---|---|---|---|
| **Phase 1** | Date of first activity entered in the record of hours of service delivered to a given worker | Day prior to first clinical Activity A lasting at least 60 minutes, i.e. the WoDDI | Corresponds to steps 1 to 4 of operational model of PRÉVICAP program |
| **Phase 2** | Date of first Activity A lasting at least 60 minutes | Date of last Activity A, B, C, or D | Corresponds to steps 5 to 10 of operational model of PRÉVICAP program |
| **Phase 3** | Day following date of last Activity A, B, C, or D | Date of last activity entered in the record of hours of service delivered to a given worker. This period should include administrative activities only (E). | Corresponds to closure of the file at PRÉVICAP (only administrative activities involving filekeeping are included here) |

Phase 2, which corresponds to steps 5 to 10 of the operational model of the PRÉVICAP program, constitutes the core of the program. Table 10 shows that the average duration of this phase was similar in three of the four centres. The data for the CRLM centre were not comparable as they concerned only those workers who underwent complete management (see note [b]).

**Table 10 – Duration of phases in PRÉVICAP service delivery**

| Phase | Centre | n | Mean (days) | Median (days) | Coefficient of variation[d] (%) | p |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| | HCLM | | 4.7 | 1 | 261.7 | |
| | IRDPQ | | 5.9 | 4 | 184.7 | |
| | CRLB | | 20.9 | 16 | 89.0 | **<0.0005[a]** |
| | CRLM[b] | | 9.2 | 5 | 148.9 | |
| | TOTAL | 470 | 10.2 | 4 | 154.9 | |
| **Phase 2** | | | | | | |
| | HCLM | | 124.1 | 113.0 | 75.1 | |
| | IRDPQ | | 135.5 | 128.5 | 83.1 | |
| | CRLB | | 149.7 | 128.0 | 71.3 | 0.081 |
| | CRLM[b] | | 359.1 | 301.5 | 62.3 | |
| | TOTAL[c] | 432 | 136.0 | 120.5 | 76.7 | |
| **Phase 3** | | | | | | |
| | HCLM | | 13.5 | 1 | 238.5 | |
| | IRDPQ | | 5.9 | 3 | 578.0 | |
| | CRLB | | 12.1 | 3 | 189.3 | |
| | CRLM[b] | | 17.0 | 1 | 119.4 | **<0.0005[a]** |
| | TOTAL | 470 | 13.8 | 1 | 214.5 | |

[a] Kruskal-Wallis test. [b] This PRÉVICAP centre forwarded data only for workers who underwent complete management, meaning that these data are not comparable to those from the other three centres. [c] The data from the CRLM centre were withdrawn from the total calculations and from the Kruskal-Wallis test. [d] The coefficient of variation $\left(\frac{Standard\ deviation}{Mean} * 100\right)$ is a normalized measure of dispersion that allows for comparisons to be made between the extent of variability for a given factor across different populations or between the extent of variability for different variables within a given population.

Table 11 describes the type of activities carried out, number of workers who benefitted from them, and time allotted to each type of activity during phase 2 of PRÉVICAP service delivery. Overall, variations exist between centres with respect to the average total number of hours of services delivered per managed worker: approximately 99 hours at the HCLM centre,

123 hours at the CRLB centre, and 148 hours at the IRDPQ centre. Some disparity was noted among the PRÉVICAP centres in terms of the percentage of time allotted to each type of activity. At the HCLM centre, the majority of the activities (53%) were carried out in a clinical setting in interaction with the worker (A), whereas the proportion was much smaller at the CRLB (27%) and IRDPQ (36%) centres. Compared to the HCLM centre, the time allotted to activities involving interaction with the worker at the workplace (B) and without the worker at the rehabilitation centre or the workplace (C) was highest at IRDPQ, while at CRLB, there were fewer activities carried out with the worker present (A and C) but more administrative activities (E).

**Table 11 – Activities carried out during phase 2 of PRÉVICAP service delivery**

| Centre | Type of activity | Number of workers involved in this type of activity n (%) | Total time allotted per centre to this type of activity hours:minutes (%) | Average time allotted per worker to this type of activity[a] hours:minutes |
|---|---|---|---|---|
| **HCLM** | A | 156 (100) | 7431:31 (53) | 47:38 |
| | B | 105 (67) | 1445:15 (10) | 13:46 |
| | C | 156 (100) | 2026:25 (14) | 12:59 |
| | D | 104 (67) | 1063:34 (8) | 10:14 |
| | E | 156 (100) | 2186:33 (15) | 14:01 |
| | Total | - | 14153:18 (100) | 98:48 |
| **IRDPQ** | A | 136 (100) | 6617:30 (36) | 48:39 |
| | B | 92 (68) | 2628:00 (14) | 28:34 |
| | C | 135 (99) | 5324:00 (29) | 39:26 |
| | D | 95 (69.9) | 1294:00 (7) | 13:37 |
| | E | 134 (99) | 2350:00 (13) | 17:32 |
| | Total | - | 18213:36 (100) | 147:48 |
| **CRLB** | A | 140 (100) | 4136:00 (27) | 29:33 |
| | B | 76 (54) | 1111:45 (7) | 14:38 |
| | C | 140 (100) | 5503:50 (35) | 39:19 |
| | D | 80 (57) | 918:20 (6) | 11:29 |
| | E | 139 (99) | 3869:25 (25) | 27:50 |
| | Total | - | 15539:20 (100) | 122:49 |
| **CRLM**[b] | A | 38 (100) | 4257:29 (57) | 112:02 |
| | B | 38 (100) | 770:30 (10) | 20:17 |
| | C | 38 (100) | 1491:50 (20) | 39:16 |
| | D | 37 (97) | 867:15 (12) | 23:26 |
| | E | 26 (68) | 124:15 (2) | 4:47 |
| | Total | - | 7511:19 (100) | 199:48 |

[a] Of the workers involved in this activity. [b] This PRÉVICAP centre forwarded data only for workers who underwent complete management, meaning that these data are not comparable to those from the other three centres.

The following table (Table 12) illustrates the interdisciplinary nature of the PRÉVICAP program. Based on the data available for the workers who underwent complete management, we noted that for all centres together, 94.9% of the workers benefitted from the intervention of at least four professionals from different disciplines.

**Table 12 – File distribution by number of different professions involved and PRÉVICAP centre**

| Number of different professions | HCLM % | IRDPQ % | CRLB % | CRLM % | Total[a,b] n (%) |
|---|---|---|---|---|---|
| **3 professions** | 3.9 | - | - | 21.6 | 11 (5.1) |
| **4 professions** | 33.8 | 35.3 | 78.8 | 43.2 | 106 (49.5) |
| **5 professions** | 62.3 | 58.8 | 19.7 | 24.3 | 90 (42.1) |
| **6 professions** | 0.0 | 5.9 | 1.5 | 8.1 | 6 (2.8) |
| **7 professions** | 0.0 | 0.0 | 0.0 | 2.7 | 1 (0.5) |
| **TOTAL** | 100 | 100 | 100 | 100 | 214 (100) |

[a] More than 15% of data missing. [b] Of those workers who underwent complete management.

## 4.2 PRÉVICAP Program Implementation

**HIGHLIGHTS**

- The program was implemented in a consistent manner in terms of resources.
- The workers were targeted differently from one case manager to another and the process changed over time.
- The application of the program was adapted to the specific context of each referred worker.
- Implementation was complicated by:
  - the calling into question of the program's value in terms of effectiveness and cost;
  - disagreement about the program's target clientele;
  - the feeling of having been little involved in decision making about the pilot project implementation;
  - communication gaps between the stakeholders (frequency and content);
  - poor understanding of the program's objectives and the stakeholders' respective roles;
  - the program's cumbersome administrative procedures;
  - the difficulty of inducing all stakeholders, particularly the workers and employers, to participate.

### *4.2.1 Level of Program Implementation*

#### 4.2.1.1 Structure

It was decided to implement and evaluate the program in four pilot rehabilitation centres that operate in interaction with one or more of the CSST's regional offices. Interdisciplinary teams were formed and trained in the four centres in preparation for managing workers over the three-year period from 2001 to 2004.

Very few differences were noted in the composition of the interdisciplinary teams at the sites studied. Generally speaking, the team comprised a coordinator, occupational therapists, ergonomists, physicians, psychologists, and kinesiologists. However, one centre had no physician on site.

#### 4.2.1.2 Clientele

We noted that at all four sites, the targeting process was perceived as problematic by both the CSST personnel and PRÉVICAP team members. It was reported that little use was made of the grid for selecting workers to be referred to the program, and that when it was used, it was understood and interpreted somewhat differently from one case manager to another.

Several PRÉVICAP team members felt that the CSST offices selected the complex cases. For their part, the CSST case managers saw the PRÉVICAP program as a last resort.

#### 4.2.1.3 Process

The PRÉVICAP team members considered that the workers were referred late. This observation was confirmed by the RRTQ data presented in section 4.1.3. The intervention could not therefore have been carried out early as recommended in the program.

The trajectory of the workers under PRÉVICAP management was consistent with the steps set out in the operational model and was relatively homogenous across the centres. The few variations observed reflected the teams' capacity to adapt the typical trajectory represented in the general model to each worker's situation. As reported in section 4.1.3, there was little inter-site variation in the total number of hours of services delivered for the activities carried out with each worker. However, great intra-site heterogeneity was noted in terms of both time elapsed until management began (referral time) and time elapsed between the different steps in the management process.

The CSST personnel indicated that overall, the program functioned consistently between the regional offices but that the latter were free to adapt operations internally.

### *4.2.2 Factors Conducive and Detrimental to Functioning of the Program*

In theory, the smooth functioning of the PRÉVICAP program presupposes, on the one hand, a thorough understanding of the underlying program philosophy and the respective roles of the various stakeholders involved, and on the other, the smooth coordination of the actions needed to attain the ultimate objective, namely the worker's return to work at his employer's.

#### 4.2.2.1 Factors Related to Program Design

Most of the CSST personnel regarded the PRÉVICAP program as an added value for managing complex cases. However, they saw the PRÉVICAP inclusion criteria as too restrictive and the PRÉVICAP team members as tending to accept only the "winning" cases.

Several case managers were reticent to refer workers for a variety of reasons: the high cost of the program, doubts about the program's effectiveness, tensions about having to comply with pre-established referral quotas, and, at one of the sites, the distance between the worker's home and the PRÉVICAP centre. However, it was mentioned that the type of cases targeted for referral changed over time due to a turnover in personnel or relaxation of the referral criteria.

The heterogeneity of the clientele referred to the program may be attributable partly to the variations observed in the intensity, type, and duration of the PRÉVICAP services delivered.

#### 4.2.2.2 Factors Related to CSST Personnel's Perceptions

The CSST personnel stressed some of the program's advantages, such as rehabilitation in the workplace, a facilitated return to work, complete management of the worker, a readily available and competent interdisciplinary team, and an interesting rehabilitation philosophy. According to some of the CSST personnel at site 1, PRÉVICAP impelled the private sector to change its ways of doing things and adopt practices inspired by the program. Lastly, the personnel at sites 3 and 4 said they felt supported by the PRÉVICAP teams. Those at site 4 specified that the program contributed to proper case management by helping prevent the perpetuation of the disability.

The CSST personnel also reported numerous reservations or hesitations about the program implementation process:

- They experienced some frustration about the fact that they had not been consulted regarding the decision to implement the program or how to implement it in their office even though they were directly involved in the implementation.
- The CSST's central office did not provide sufficient information about the program, notably about the targeting criteria and the tools for promoting the PRÉVICAP program to employers.
- The program required introducing different practices within the CSST and setting up another system for evaluating the files of workers with MSIs in the regional offices. Some CSST personnel criticized the lack of guidance from the CSST's central office and from their own offices regarding the reorganization of their work necessitated by the pilot project's implementation.
- The CSST personnel had built meaningful connections and good relations with their external resources. The PRÉVICAP program required them to re-examine these resources and integrate new ones. The CSST personnel in some of the regional offices considered that the resources they were using in the private sector produced as many results as did the PRÉVICAP program, at a lower cost and using simpler procedures. Rumours concerning the program's failures hindered its implementation at the CSST.
- The financial support awarded to the PRÉVICAP program bothered some of the CSST personnel, as they felt obliged to refer cases to the program.

#### 4.2.2.3 Factors Related to PRÉVICAP Team Members' Perceptions

The PRÉVICAP team members cited the following factors as detrimental to the functioning of the program: inadequate targeting and late referral to the program; the long time elapsed before and during the management process and the cumbersomeness of the program's administrative procedures; the rigidity of the healthcare process; the lack of communication among the PRÉVICAP teams; limitations related to the type of employment held by certain

workers; and the cost of the program. One site mentioned having to cope with a shortage of resources and lack of geographic accessibility.

#### 4.2.2.4 Factors Related to CSST-PRÉVICAP Relations

The formation of a partnership between the centre offering the PRÉVICAP program and the CSST's regional office(s) was perceived differently depending on the personnel interviewed. Initially, collaboration was not easy and sometimes conflicts arose. The setting up of meeting places at one site and the clarification of procedures at another helped improve collaboration. The factors cited as having jeopardized the partnership were the poor knowledge of the roles and mandates of each of the partners, the different workplace cultures, the lack of dialogue and communication, and the program's cumbersome administrative procedures.

We observed that the operating rules changed from one centre to the other and that the perceptions held of the functioning of the program created different implementation dynamics that were more or less collaborative, depending on the centre.

#### 4.2.2.5 Factors Related to Workers

We found that the workers' motivation appeared to be a key factor in the program's success. Their hesitations about collaborating in the program were essentially influenced by their feeling of having been pressured to participate, the lack of information about the program requirements, and their employer's attitude.

#### 4.2.2.6 Factors Related to Employers

The employers' attitudes toward the program were mixed. Generally speaking, they were receptive to it, and when they collaborated with it, said they were satisfied with how it functioned. The program worked better when the workplace culture placed value on occupational health and safety, when the employer was open to the idea of rehabilitation in the workplace, and when it favoured maintaining the employment relationship. However, the factors reported as hindering their collaboration were the program's cost and duration, the work reorganization necessitated in terms of workstations or schedules within the workplace, and their doubts as to the program's potential effectiveness.

#### 4.2.2.7 Factors Related to Attending Physicians

The interviews conducted of the CSST personnel and PRÉVICAP team members revealed that the attending physicians were not all in favour of the program. However, at some sites, once they had been contacted by the CSST's consulting physician, they were more willing to collaborate.

A conflict was sometimes noted between the roles and professional responsibilities of the attending physician and the PRÉVICAP team physician. Moreover, problematic situations arose when there was a conflict of interests due to economic issues related to the competition posed by the PRÉVICAP program for certain attending physicians who were shareholders in occupational therapy or physiotherapy clinics.

#### 4.2.2.8 Suggested Modifications

During the interviews, the different personnel involved (CSST and PRÉVICAP) suggested possible improvements that could lead to more successful implementation:

- a better partnership between the CSST's central office, the CSST's regional offices, and the PRÉVICAP teams;
- better communication and circulation of information among all personnel involved;
- early detection of referable cases;
- better mutual understanding of the program;
- better knowledge of each person's role and of each CSST-PRÉVICAP team's mandate;
- a larger number of PRÉVICAP centres in the regions;
- an agreement negotiated with each regional office;
- greater stability within and better information from the CSST team (one site).

## 4.3 Effects of the PRÉVICAP Program

**HIGHLIGHTS**

- Compared to the workers under usual management, the PRÉVICAP workers:
  - effected a sustainable return to their jobs nearly three times faster and in greater numbers (55% versus 29% at two years post-event;
  - stopped receiving indemnities 1.7 times faster, which translates into an average savings of five and a half months of IRIs over three years;
  - reintegrated better into their pre-injury jobs, and when changes were made (e.g. schedules, tasks), they were consulted more and found the changes helpful.
- Our conclusions about the superior effectiveness of the PRÉVICAP program in terms of sustainable RTW to pre-injury job and duration of IRIs were robust, as they were confirmed by population, sensitivity, and intent-to-treat analyses.
- The PRÉVICAP workers were very satisfied with their time in the program and more satisfied with the CSST services received than were the control-group workers.
- At three years post-event, pain and functional disability levels were still high in both the PRÉVICAP and control-group workers. For workers with back injuries, the disability was more severe in the PRÉVICAP group, whereas the reverse was true for workers with neck or upper-extremity injuries.
- The PRÉVICAP workers were less affected than the control-group workers by anxiety and avoidance behaviours regarding physical activity and work.

### *4.3.1 Representativeness of Sample Interviewed*

Close examination of the data collected in the context of Research Design I revealed similarity between the PRÉVICAP workers interviewed and those who were not, in terms of the potential RTW determinants. No major difference was found between these two groups. Only sex and regional office distributions differed slightly. The comparative table on the interviewed and not-interviewed workers is found in Appendix 4.

## 4.3.2 Effects on Return to Work

As explained in the Methods section (section 3), the impact analysis concerned mainly the data from Research Design I, and more specifically, the comparison between the interviewed workers who had undergone complete PRÉVICAP management (n = 117) and the control-group workers matched with them (n = 391). Appendix 5 presents a comparative table on this PRÉVICAP group and the group of 55 workers who did not undergo the WoDDI. The latter were slightly older and had a heavier physical workload than the workers who underwent complete management.

### 4.3.2.1 Comparability of PRÉVICAP and Control-Group Workers

Differences were noted between the PRÉVICAP and control-group workers (Table 13). Based on the literature on RTW predictors, these imbalances would appear to favour the PRÉVICAP workers sometimes and the control-group workers at other times. The last column of Table 13 shows the group potentially favoured by the imbalance. This judgment is based on what is suggested by the current state-of-the-art review.

**Table 13 – Worker distribution, by basic characteristics and group**

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p[d] | Group potentially favoured by imbalance observed[c] |
|---|---|---|---|---|---|---|
| | n | % | n | % | | |
| **Sex** | | | | | | |
| Female | 56 | 47.9 | 150 | 38.4 | 0.066 | |
| Male | 61 | 52.1 | 241 | 61.6 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Worker's age on date of event** | | | | | | |
| 18-24 years | 6 | 5.1 | 6 | 1.5 | **<0.0005** | **P** |
| 25-49 years | 97 | 82.9 | 278 | 71.1 | | |
| 50 years and over | 14 | 12.0 | 107 | 27.4 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Gross annual income** | | | | | | |
| $15,250 or less | 7 | 6.0 | 6 | 1.5 | **0.006** | **C** |
| $15,251-$44,999 | 91 | 77.8 | 287 | 73.4 | | |
| $45,000 or more | 19 | 16.2 | 98 | 25.1 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Family status** | | | | | | |
| Single worker or lone-parent family | 53 | 50.5 | 171 | 48.6 | 0.982 | |
| Worker with dependent spouse | 15 | 14.3 | 55 | 15.6 | | |
| Worker with non-dependent spouse | 37 | 35.2 | 126 | 35.8 | | |
| Total | 105 | 100.0 | 352 | 100.0 | | |
| **Number of dependants** | | | | | | |
| None | 68 | 58.1 | 242 | 61.9 | 0.738 | |
| 1 to 2 people | 39 | 33.3 | 116 | 29.7 | | |
| 3 people or more | 10 | 8.5 | 33 | 8.4 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Code of main administrative unit [a]** | | | | | | |
| Québec (OP1600) | 24 | 20.5 | 105 | 26.9 | 0.956 | |
| Chaudière-Appalaches (OP1700) | 7 | 6.0 | 27 | 6.9 | | |
| Laval (OP2100) | 6 | 5.1 | 14 | 3.6 | | |
| Longueuil (OP2200) | 17 | 14.5 | 53 | 13.6 | | |
| Abitibi-Témiscamingue/Rouyn- Noranda/ Val-d'Or (OP3100) | 19 | 16.2 | 65 | 16.6 | | |
| Yamaska/Ste-Hyacinthe (OP3600) | 10 | 8.5 | 29 | 7.4 | | |
| St-Jean-sur-Richelieu (OP3900) | 10 | 8.5 | 35 | 9.0 | | |

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p[d] | Group potentially favoured by imbalance observed[c] |
|---|---|---|---|---|---|---|
| Montréal 4 (OP2600-OP4200) | 5 | 4.3 | 17 | 4.3 | | |
| Montréal 1 (OP2800-OP4300) | 2 | 1.7 | 4 | 1.0 | | |
| Montréal 2 (OP 2400-OP 4400) | 6 | 5.1 | 15 | 3.8 | | |
| Montréal 3 (OP 2500-OP 4500) | 11 | 9.4 | 27 | 6.9 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Employment status** | | | | | | |
| Permanent full-time | 108 | 92.3 | 324 | 82.9 | **0.025** | **P** |
| Permanent part-time | 5 | 4.3 | 22 | 5.6 | | |
| Temporary fixed term or indeterminate | 4 | 3.4 | 45 | 11.5 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Employer's assessment plan** | | | | | | |
| Retrospective | 14 | 13.1 | 107 | 31.8 | **0.001** | **C** |
| Personalized rate | 68 | 63.6 | 169 | 50.3 | | |
| Unit rate | 25 | 23.4 | 60 | 17.9 | | |
| Total | 107 | 100.0 | 336 | 100.0 | | |
| **Size of the workplace according to worker** | | | | | | |
| 1 to 20 employees | 56 | 49.6 | 173 | 44.9 | 0.366 | |
| 21 to 100 employees | 36 | 31.9 | 122 | 31.7 | | |
| 101 to 500 employees | 18 | 15.9 | 63 | 16.4 | | |
| 501 employees or more | 3 | 2.7 | 27 | 7.0 | | |
| Total | 113 | 100.0 | 385 | 100.0 | | |
| **Number of years of experience at employer's** | | | | | | |
| Less than 1 year | 11 | 9.4 | 83 | 21.2 | **<0.0005** | **P** |
| 1 to 5 years | 51 | 43.6 | 104 | 26.6 | | |
| Over 5 years | 55 | 47.0 | 204 | 52.2 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Number of years of experience in occupation** | | | | | | |
| Less than 1 year | 4 | 3.4 | 32 | 8.2 | 0.126 | |
| 1 to 5 years | 15 | 12.8 | 62 | 15.9 | | |
| Over 5 years | 98 | 83.8 | 297 | 76.0 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Occupations by category[b]** | | | | | | |
| Medical personnel, health technicians, and related occupations (31) | 8 | 6.8 | 30 | 7.7 | 0.245 | |
| Administrative personnel and related occupations (41) | 15 | 12.8 | 36 | 9.2 | | |
| Service occupations (61) | 24 | 20.5 | 60 | 15.3 | | |
| Occupations in food and beverages industry (12) | 6 | 5.1 | 27 | 6.9 | | |
| Product fabricating, assembly, and repair occupations (85) | 15 | 12.8 | 39 | 10.0 | | |
| Construction trades (87) | 18 | 15.4 | 37 | 9.5 | | |
| Transport equipment operating occupations (91) | 5 | 4.3 | 37 | 9.5 | | |
| Other occupations | 26 | 22.2 | 125 | 32.0 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Perceived physical effort required by job** | | | | | | |
| No/little physical effort | 9 | 7.7 | 27 | 6.9 | 0.064 | |
| Moderate physical effort | 52 | 44.4 | 130 | 33.2 | | |
| Big physical effort | 56 | 47.9 | 234 | 59.9 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Worker's job satisfaction** | | | | | | |
| Not at all satisfied/not very satisfied | 6 | 5.1 | 48 | 12.3 | **0.006** | **P** |
| Quite satisfied | 30 | 25.6 | 133 | 34.0 | | |
| Very satisfied | 81 | 69.2 | 210 | 53.7 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Presence of compensation history in year prior to event** | | | | | | |
| No | 109 | 93.2 | 385 | 98.5 | **0.002** | **C** |
| Yes | 8 | 6.8 | 6 | 1.5 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Presence of compensation history in 5 years** | | | | | | |

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p[d] | Group potentially favoured by imbalance observed[c] |
|---|---|---|---|---|---|---|
| **prior to event** | | | | | | |
| No | 92 | 78.6 | 292 | 74.7 | 0.228 | |
| Yes | 25 | 21.4 | 99 | 25.3 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Injury site** | | | | | | |
| Back | 90 | 76.9 | 219 | 56.0 | **<0.0005** | **C** |
| Neck/upper extremities | 27 | 23.1 | 172 | 44.0 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Type of event** | | | | | | |
| Initial event | 109 | 93.2 | 347 | 88.7 | 0.167 | |
| Recurrence/relapse/aggravation | 8 | 6.8 | 44 | 11.3 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Year of event** | | | | | | |
| 2001 | 25 | 21.4 | 59 | 15.1 | 0.241 | |
| 2002 | 42 | 35.9 | 130 | 33.2 | | |
| 2003 | 44 | 37.6 | 170 | 43.5 | | |
| 2004 | 6 | 5.1 | 32 | 8.2 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Unionized at time of event** | | | | | | |
| Yes | 47 | 44.8 | 201 | 51.4 | 0.227 | |
| No | 58 | 55.2 | 190 | 48.6 | | |
| Total | 105 | 100.0 | 391 | 100.0 | | |
| **Contestation before administrative review board (RA) or medical evaluation board (BÉM) prior to PRÉVICAP management (or equivalent period for control-group workers)** | | | | | | |
| No | 65 | 55.6 | 138 | 35.3 | **<0.0005** | **P** |
| Yes | 52 | 44.4 | 253 | 64.7 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |
| **Risk index** | | | | | | |
| Very low | 4 | 3.4 | 51 | 9.1 | **0.004** | **P** |
| Low | 72 | 61.5 | 264 | 47.1 | | |
| High | 39 | 33.3 | 203 | 36.2 | | |
| Very high | 2 | 1.7 | 43 | 7.7 | | |
| Total | 117 | 100.0 | 391 | 100.0 | | |

[a] Matching variable. [b] Categorization according to the Canadian Classification and Dictionary of Occupations (CCDO) (1971) used by the CSST for the eight most frequent sub-groups. The figures in parentheses correspond to the two-digit CCDO-1971 codes. [c] P = PRÉVICAP group, C = control group, I = indeterminate (contradictory evidence). [d] % of data missing still under 10%, with the exception of a few variables imported directly from the CSST databases.

We noted that the PRÉVICAP workers had significantly higher medical costs than the control-group workers and received more physiotherapy treatments during the period when they were all undergoing usual case management.

**Table 14 – Costs incurred and number of treatments received prior to PRÉVICAP management (or equivalent period for control-group workers), by group**

| | PRÉVICAP WORKERS | | | | CONTROL-GROUP WORKERS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | Median | Standard deviation | n | Mean | Median | Standard deviation | p[a] |
| **Medical costs (CAD$)** | 116 | 4034.7 | 3212.9 | 3142.9 | 391 | 3497.2 | 2476.2 | 4763.6 | **0.001** |
| **Rehabilitation costs (CAD$)** | 116 | 41.4 | 0 | 176.9 | 391 | 329.5 | 0 | 1601.4 | 0.226 |
| **Number of occupational therapy treatments** | 116 | 9.5 | 0 | 22.7 | 391 | 8.5 | 0 | 19.7 | 0.851 |
| **Number of physiotherapy treatments** | 116 | 61.0 | 53.0 | 42.4 | 391 | 41.6 | 33.0 | 38.3 | **<0.0005** |

[a] Kruskal-Wallis tests.

#### 4.3.2.2 Impact of the Program on Return to Work

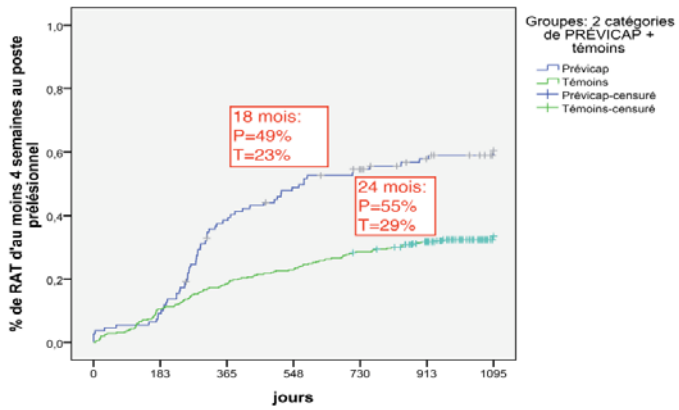
*Effects without adjustment*

PRÉVICAP case management translated into positive effects in terms of both likelihood of returning to work and termination of income replacement indemnities (Table 15). For example, while the overall proportion of workers who returned to work on a sustainable basis (equal to or longer than four weeks) to their pre-injury jobs within two years post-event was quite low, it was higher for the PRÉVICAP workers than for the control-group workers (55% versus 29%).

**Table 15 – Proportion of returns to work and IRI terminations at 18, 24, and 36 months post-event**

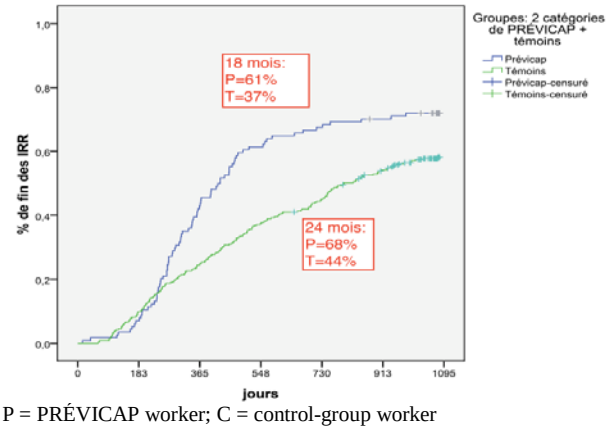
| | 18 months post-event | | 24 months post-event | | 36 months post-event | | p[a] |
|---|---|---|---|---|---|---|---|
| | PRÉVICAP WORKERS | CONTROL-GROUP WORKERS | PRÉVICAP WORKERS | CONTROL-GROUP WORKERS | PRÉVICAP WORKERS | CONTROL-GROUP WORKERS | |
| | % (95% CI) | % (95% CI) | % (95% CI) | % (95% CI) | % (95% CI) | % (95% CI) | |
| **Return to work to pre-injury job** | | | | | | | |
| >= 3 days | 59.1 (49.9-68.3) | 28.5 (23.8-33.2) | 67.3 (58.5-76.1) | 33.3 (28.4-38.2) | 71.7 (63.1-80.3) | 37.5 (32.4-42.6) | **<0.0005** |
| >= 4 weeks | 48.8 (39.4-58.2) | 22.9 (18.6-27.2) | 54.5 (45.1-63.9) | 28.5 (23.8-33.2) | 60.5 (50.9-70.1) | 33.5 (28.6-38.4) | **<0.0005** |
| >= 6 months | 36.9 (27.5-46.3) | 18.5 (14.4;22.6) | 41.9 (32.3-51.5) | 22.5 (18.2-26.8) | 45.3 (35.5-55.1) | 25.2 (20.7-29.7) | **<0.0005** |
| **Return to work to any job** | | | | | | | |
| >= 3 days | 66.4 (57.8-75.0) | 49.7 (44.6-54.8) | 76.1 (68.3-83.9) | 58.1 (53.0-63.2) | 91.0 (85.5-96.5) | 77.4 (72.9-81.9) | **0.001** |
| >= 4 weeks | 57.0 (47.6-66.4) | 43.7 (38.6-48.8) | 67.3 (58.5-76.1) | 52.9 (47.8-58.0) | 84.4 (77.0-91.8) | 73.8 (68.9-78.7) | **0.011** |
| >= 6 months | 44.7 (34.9-54) | 34.9 (30.0-39.8) | 54.0 (44.2-63.8) | 42.3 (37.2-47.4) | 67.6 (57.8-77.4) | 56.9 (51.9-62.4) | **0.045** |
| **Termination of income replacement indemnities (IRIs)** | 61.4 (52.4-70.4) | 37.5 (32.2-42.8) | 67.5 (58.9-76.1) | 44.4 (39.1-49.7) | 72.0 (63.8-80.2) | 58.3 (53.0-63.6) | **<0.0005** |

[a] Logrank test.




P = PRÉVICAP worker; C = control-group worker

**Figure 6 – Proportion of returns to work to pre-injury jobs for at least four weeks, by group**




P = PRÉVICAP worker; C = control-group worker

**Figure 7 – Proportion of IRI terminations, by group**

On average, at two and three years post-event, the PRÉVICAP workers had received three and six fewer months of income replacement indemnities respectively than their control-group counterparts (Table 16).

**Table 16 – Mean duration (in months) of IRIs at 6, 12, 18, 24, and 36 months post-event, by group**

| | PRÉVICAP WORKERS | | | CONTROL-GROUP WORKERS | | | |
|---|---|---|---|---|---|---|---|
| | n | Mean (month) | Standard deviation (months) | n | Mean (months) | Standard deviation (months) | p |
| 6 months post-event | 116 | 4.90 | 1.30 | 384 | 4.49 | 1.66 | **0.006** |
| 12 months post-event | 116 | 9.51 | 2.53 | 383 | 9.17 | 3.13 | 0.232 |
| 18 months post-event | 116 | 12.31 | 4.39 | 383 | 13.29 | 4.88 | 0.053 |
| 24 months post-event | 115 | 14.28 | 6.54 | 380 | 17.09 | 6.99 | **<0.0005** |
| 36 months post-event | 114 | 17.69 | 11.02 | 378 | 23.24 | 11.49 | **<0.0005** |

Concerning a return to work to the pre-injury job, when this return lasted at least three days, there was a strong likelihood that it would become sustainable. In fact, the return to work lasted at least four weeks in 87% of the cases. And 77 % of the workers who returned to work for at least four weeks were still on the job six months later. This situation prevailed among both the PRÉVICAP and control-group workers.

The incidence rate of relapse as coded in the CSST data was quite low and there was no statistically significant difference between the two groups.

**Table 17 – Sustainability of return to work**

| | Duration of follow-up after IRI termination | | | | Relapses | Incidence rate of relapse (per 100 person-years) | p |
|---|---|---|---|---|---|---|---|
| | n | Mean (days) | Standard deviation (days) | Person-years of follow-up | n | | |
| PRÉVICAP WORKERS | 116 | 554.3 | 338.0 | 176.2 | 9 | 5.1 | 0.880 |
| CONTROL-GROUP WORKERS | 392 | 383.8 | 353.1 | 412.2 | 18 | 4.4 | |

We observed that when a return to work occurred, the PRÉVICAP workers reintegrated more often into their pre-injury jobs (Table 18). The frequency of modifications made to tasks, workstations, or schedules was not higher among the PRÉVICAP workers, but when such modifications were made, these workers were consulted more often and appear to have derived greater benefit. Perceived level of support from co-workers during the return to work was similar in both groups, but the PRÉVICAP workers felt more supported by their employers (Table 19).

**Table 18 – Return-to-work status at two years post-event**

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | |
|---|---|---|---|---|
| | **n** | **%** | **n** | **%** |
| **Back at work** | **43** | **51.2** | **125** | **38.3** |
| *At the same employer's, at the same job, without modifications* | *14* | *32.6* | *37* | *29.6* |
| *At the same employer's, at the same job, with modifications* | *14* | *32.6* | *31* | *24.8* |
| *At the same employer's, at another job* | *6* | *14.0* | *25* | *20.0* |
| *At another employer's, at a similar job* | *1* | *2.2* | *6* | *4.8* |
| *At another employer's, at another job* | *8* | *18.6* | *26* | *20.8* |
| **Off work** | **41** | **48.8** | **201** | **61.7** |
| Total | 84 | 100.0 | 326 | 100.0 |

**Table 19 – Return-to-work experience at pre-injury job**

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|
| | **n** | **%** | **n** | **%** | |
| **At the time of your return to work, did you feel ready?** | | | | | |
| Yes | 39 | 67.2 | 49 | 53.3 | 0.063 |
| No | 19 | 32.8 | 43 | 46.7 | |
| **At the time of your return to work, did your attending physician tell you that you had attained the highest level of recovery possible?** | | | | | |
| Yes | 30 | 51.7 | 44 | 47.8 | 0.383 |
| No | 28 | 48.3 | 48 | 52.2 | |
| **When you reintegrated into your job, did you have modified hours/work schedule?** [a] | | | | | |
| Yes | 20 | 71.4 | 37 | 71.2 | 0.596 |
| No | 8 | 28.6 | 15 | 28.8 | |
| **When you reintegrated into your job, did you have modified tasks?** [a] | | | | | |
| Yes | 17 | 60.7 | 37 | 71.2 | 0.241 |
| No | 11 | 39.3 | 15 | 28.8 | |
| **When you reintegrated into your job, were physical changes made to your workstation?** [a] | | | | | |
| Yes | 11 | 39.3 | 18 | 34.6 | 0.430 |
| No | 17 | 60.7 | 34 | 65.4 | |
| **When you reintegrated into your job, if you think of the modifications made, would you say that they facilitated your return to work?** [a] | | | | | |
| A lot | 15 | 53.6 | 22 | 42.3 | **0.016** |
| A little | 12 | 42.9 | 14 | 26.9 | |
| Not at all | 1 | 3.6 | 16 | 30.8 | |
| **Do you think that the modifications made helped you perform your job well?** [a] | | | | | |
| Yes | 27 | 96.4 | 35 | 67.3 | **0.002** |
| No | 1 | 3.6 | 17 | 32.7 | |
| **Were you consulted before these modifications were made?** [a] | | | | | |
| Yes | 25 | 89.3 | 30 | 57.5 | **0.003** |
| No | 3 | 10.7 | 22 | 42.3 | |
| **What was your employer's attitude during your return to work?** | | | | | |
| Very positive | 22 | 37,9 | 26 | 28.3 | **0.017** |
| Quite positive | 27 | 46.6 | 28 | 30.4 | |
| Somewhat negative | 4 | 6.9 | 18 | 19.6 | |
| Very negative | 4 | 6.9 | 10 | 10.9 | |
| No opinion | 1 | 1.7 | 10 | 10.9 | |
| **What was your co-workers' attitude during your return to work?** | | | | | |

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|
| Very positive | 25 | 43.1 | 35 | 38.0 | 0.170 |
| Quite positive | 28 | 48.3 | 36 | 39.1 | |
| Somewhat negative | 1 | 1.7 | 11 | 12.0 | |
| Very negative | 1 | 1.7 | 4 | 4.3 | |
| No opinion | 3 | 5.2 | 6 | 6.5 | |
| **After you were reintegrated into your job, was any follow-up done of your situation to ensure any necessary adjustments or simply to find out how you were feeling?** | | | | | |
| Yes | 35 | 60.3 | 46 | 50.0 | 0.142 |
| No | 23 | 39.7 | 46 | 50.0 | |

[a] Of those workers who returned to work to the same job at the same employer's, but with modifications.

## *Multivariate modelling of the effects*

We continued our analysis of the program impact by taking into account the differences observed between the groups (Table 13). The purpose of the modelling process was to factor in any imbalance between the groups that produced a confounding bias in the estimation of the PRÉVICAP program's effect. All potential confounding variables were incorporated into the models in order to assess whether they in fact created a confounding bias and to identify those that should be retained in each final model. We noted that for the three main effect measures retained (Table 20), the PRÉVICAP program was more effective than usual management in both the analyses without adjustment (crude effects) and the analyses with adjustment for group differences (adjusted effects). For example, the PRÉVICAP workers returned sustainably to their pre-injury jobs 2.9 times faster (adjusted $\widehat{HR} = 2.863$) and stopped receiving income replacement indemnities 1.7 times faster (adjusted $\widehat{HR} = 1.746$) than the control-group workers.

**Table 20 – Main adjusted effects of the program (Research Design I)**

| | n | Crude effect | 95% CI | p | Adjusted effect | 95% CI | p |
|---|---|---|---|---|---|---|---|
| Time elapsed between date of event and date of first return to work to pre-injury job for at least four weeks | 464 | $\widehat{HR}$ = 2.708 | 1.897-3.866 | **<0.0005** | $\widehat{HR}$ = 2.863[a] | 1.990-4.121 | **<0.0005** |
| Return to work to pre-injury job for at least four weeks within two years post-event (yes/no) | 464 | $\widehat{OR}$ = 2.931 | 1.886-4.557 | **<0.0005** | $\widehat{OR}$ = 3.475[b] | 2.138-5.650 | **<0.0005** |
| Time elapsed between dates of first and last IRI payments | 445 | $\widehat{HR}$ = 1.904 | 1.399-2.590 | **<0.0005** | $\widehat{HR}$ = 1.746[c] | 1.271-2.399 | **0.001** |

[a] Adjusted for risk index. [b] Adjusted for risk index and medical costs incurred before admission to PRÉVICAP program, or equivalent period for control-group workers. [c] Adjusted for risk index and worker's gross annual income.

The effect of PRÉVICAP case management was greater in one of the rehabilitation centres and similar between the other three centres (Table 21); it was also greater in 2002 (Table 22).

**Table 21 – Adjusted effect of the program, stratified by centre (Research Design I)**

| | Centre | n | Adjusted effect | 95% CI | p |
|---|---|---|---|---|---|
| Time elapsed between date of event and date of first return to pre-injury job for at least four weeks | Site 1 | 141 | $\widehat{HR}$ = 2.844[a] | 1.345 – 6.012 | **0.006** |
| | Site 2 | 93 | $\widehat{HR}$ = 4.886[a] | 2.054 – 11.619 | **<0.0005** |
| | Site 3 | 156 | $\widehat{HR}$ = 2.481[a] | 1.364 – 4.511 | **0.003** |
| | Site 4 | 74 | $\widehat{HR}$ = 2.180[a] | 0.907 – 5.241 | 0.081 |

[a] Adjusted for risk index.

**Table 22 – Adjusted effect of the program, stratified by year of event (Research Design I)**

| | Year | n | Adjusted effect | 95% CI | p |
|---|---|---|---|---|---|
| Time elapsed between date of event and date of first return to pre-injury job for at least four weeks | 2001 | 92 | $\widehat{HR}$ = 2.883 [a] | 1.083 – 7.673 | **0.034** |
| | 2002 | 170 | $\widehat{HR}$ = 4.003 [a] | 2.176 – 7.364 | **<0.0005** |
| | 2003 | 213 | $\widehat{HR}$ = 2.253 [a] | 1.261 – 4.026 | **0.006** |
| | 2004 | 33 | $\widehat{HR}$ = 1.794 [a] | 0.432 – 7.454 | 0.421 |

[a] Adjusted for risk index.

#### 4.3.2.3 Robustness of Results

Positive program effects were noted consistently in all evaluations of the robustness of the results (Research Design II, sensitivity analyses, intent-to-treat analyses).

##### *Research Design II*

It must be remembered that Research Design II concerned all the PRÉVICAP workers who had undergone complete case management (n = 265) and the control-group workers (n = 8,127) injured between 2001 and 2003, with the exception of workers over 60 years of age and those for whom the initial event studied was a recurrence/relapse/aggravation. A second analysis included the workers injured in 2004.

Whether or not the workers injured in 2004 are factored in, the population data confirm that the program was associated with a faster termination of IRI payments (Table 23). For the control-group workers, the relapse incidence rate was identical to that calculated for Research Design I, whereas for the PRÉVICAP workers, the rate was higher (Table 24). As in Research Design I, the duration of follow-up was shorter for the control-group workers and these are crude rates.

**Table 23 – Adjusted effect of the program on IRI duration (Research Design II)**

| | n | Crude effect | 95% CI | p | Adjusted effect | 95% CI | p |
|---|---|---|---|---|---|---|---|
| Time elapsed between dates of first and last IRI payments (workers injured between 2001 and 2003) | 8,097 | $\widehat{HR}$ = 2.281 | 1.969-2.643 | **<0.0005** | $\widehat{HR}$ = 2.216[a] | 1.908-2.574 | **<0.0005** |
| Time elapsed between dates of first and last IRI payments (workers injured between 2001 and 2004) | 11,707 | $\widehat{HR}$ = 1.650 | 1.433-1.900 | **<0.0005** | $\widehat{HR}$ = 2.177[a] | 1.872-2.531 | **<0.0005** |

[a] Adjusted for regional office, economic activity sector, type of assessment plan, sex, age, income, and presence of a compensation history in the five years prior to the event.

**Table 24 – Sustainability of return to work (Research Design II)**

| | Duration of follow-up after termination of IRIs | | | | Relapses | Incidence rate of relapse (per 100 person-years) | |
|---|---|---|---|---|---|---|---|
| | n | Mean (days) | Standard deviation (days) | Person-years of follow-up | n | $^{0}/_{000}$ | p |
| PRÉVICAP WORKERS | 265 | 618 | 501 | 448.7 | 31 | 6.9 | **<0.0005** |
| CONTROL-GROUP WORKERS | 8,127 | 773 | 596 | 17211.4 | 760 | 4.4 | |

## *Research Design I: Sensitivity analyses*

In the sensitivity analyses, the original model of rapidity of return to work to the pre-injury job for at least four weeks (Research Design I) was applied to different sub-populations to see whether the effect observed in the original model was maintained. The study population was very heterogeneous, and the withdrawal of certain types of workers from the analysis made it possible to assess the impact of these characteristics on the results of the main analysis. The effect of the PRÉVICAP program was still found to be major and statistically significant.

**Table 25 – Adjusted effect of the program on rapidity of return to work to pre-injury job for at least four weeks, for various sub-populations**

| | n | Adjusted effect [a,b] $\widehat{HR}$ | 95% CI | p |
|---|---|---|---|---|
| Original model | 387 | 2.863 | 1.990-4.121 | **< 0.0005** |
| New events only (excluding relapses) | 342 | 2.824 | 1.906-4.182 | **< 0.0005** |
| Workers who did not consult a physician for a problem involving injury site in 12 months prior to event | 293 | 2.957 | 1.846-4.737 | **<0.0005** |
| Workers in main economic activity sectors | 252 | 2.999 | 1.876-4.795 | **<0.0005** |
| Workers who had not had surgery on injury site prior to event | 362 | 2.788 | 1.921-4.047 | **<0.0005** |
| Workers injured prior to 2004 | 350 | 3.003 | 2.044-4.411 | **<0.0005** |
| Workers who were not consolidated before admission to PRÉVICAP, or equivalent period for control-group workers | 358 | 2.909 | 1.994-4.245 | **<0.0005** |
| Workers who received more than 50 hours of PRÉVICAP clinical intervention | 342 | 2.280 | 1.489-3.489 | **<0.0005** |

[a] Adjusted for risk index. [b] Indicator = time elapsed between date of event and date of first return to work to pre-injury job for at least four weeks.

## *Research Design I: Intent-to-treat analyses*

In the intent-to-treat analyses, all the PRÉVICAP workers (WoDDI only and complete management) were compared to all the control-group workers. The PRÉVICAP program's effect was found to be attenuated, but remained statistically significant for the three main RTW indicators.

**Table 26 – Main adjusted effects of the program (intent-to-treat analysis)**

| | n | Adjusted effect | 95% CI | p |
|---|---|---|---|---|
| Time elapsed between date of event and date of first return to work to pre-injury job for at least four weeks | 544 | $\widehat{HR}$ = 1.983[a] | 1.451 – 2.711 | **<0.0005** |
| Return to work to pre-injury job for at least four weeks within two years post-event (yes/no) | 662 | $\widehat{OR}$ = 2.363[b] | 1.580 – 3.533 | **<0.0005** |
| Time elapsed between date of first and last IRI payments | 588 | $\widehat{HR}$ = 1.418[c] | 1.083 – 1.857 | **0.011** |

[a] Adjusted for risk index. [b] Adjusted for risk index and medical costs incurred before admission to PRÉVICAP program, or equivalent period for control-group workers. [c] Adjusted for risk index and worker's gross annual income.

## *4.3.3 Other Effects*

The results in terms of worker satisfaction and functional and psychosocial status were also analyzed using data from Research Design I.

### 4.3.3.1 Satisfaction

#### *Main results concerning worker satisfaction*

Only the main indices retained regarding the workers' satisfaction with their case management (PRÉVICAP and usual) are presented here. The more detailed results can be found in Appendix 6.

The PRÉVICAP workers were as satisfied with their attending physician's services as the control-group workers. However, the PRÉVICAP workers rated the services they received from their CSST case manager higher than did the control-group workers. The same applied to their level of satisfaction with the CSST case managers' services, which was rated higher by the PRÉVICAP workers (Table 27).

**Table 27 – Satisfaction with services of attending physician and CSST**

| | PRÉVICAP WORKERS | | | | CONTROL-GROUP WORKERS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | Median | Standard deviation | n | Mean | Median | Standard deviation | p |
| **Satisfaction with services of attending physician[a]** | 90 | 7.58 | 6.67 | 2.17 | 377 | 7.80 | 8.89 | 2.27 | 0.404 |
| **Evaluation of quality of CSST services[a]** | 90 | 8.22 | 9.38 | 1.93 | 371 | 6.98 | 7.08 | 2.08 | **<0.0005** |
| **Satisfaction with services of CSST case managers** | **n** | | | **%** | **n** | | | **%** | **p** |
| Not very/not at all satisfied | 12 | | | 13.3 | 114 | | | 30.3 | **0.003** |
| Quite satisfied | 37 | | | 41.1 | 141 | | | 37.5 | |
| Very satisfied | 41 | | | 45.6 | 121 | | | 32.2 | |
| Total | 90 | | | 100.0 | 376 | | | 100.0 | |

[a] Scale of 1 to 10. A higher score means a higher level of satisfaction.

With a median score of 10 on 10, the PRÉVICAP workers were found to be very satisfied with their time in the program (Table 28). The aspects of the PRÉVICAP program most frequently cited as being appreciated were the following: (1) the professionalism and calibre of the

personnel; (2) the quality of the exercises and the physical support; (3) the PRÉVICAP experience in general; and (4) the psychological assistance and moral support. The following aspects were most frequently cited as being less appreciated: (1) the feeling of insufficient listening, support, communication, and comprehension on the part of the team; (2) the pressure placed upon the worker; (3) pain; and (4) the feeling of being judged by the team and of moral or psychological discomfort regarding the team. The complete list of comments collected on the program appears in Appendix 6.

**Table 28 – Satisfaction with services delivered in the PRÉVICAP program**

| | | n | Mean | Median | Standard deviation |
|---|---|---|---|---|---|
| **Satisfaction with services delivered in PRÉVICAP program[a]** | PRÉVICAP | 104 | 8.12 | 10.00 | 2.29 |

[a] Scale of 1 to 10. A higher score means a higher level of satisfaction.

### *Main results concerning employer satisfaction*

Generally speaking, the respondents were management staff or personnel of the human resources department. The majority (63.4%) had more than five years' seniority in their jobs. They were therefore informed about the employment injuries and case management of the workers under their responsibility. A detailed portrait of the characteristics of the workplaces that participated in the postal survey is provided in Appendix 7.

Of the 55 questionnaires returned by the employers, 41 were retained because they concerned PRÉVICAP workers under complete management. The relatively low response rate (41/117 = 35%) was partly attributable to the lengthy time elapsed between the event and the access to the employers. The difficulties raised by the employers were the amounts of time elapsed before accessing the program and in program delivery, which were perceived as relatively long; the need to devote additional resources; and, to a lesser extent, the disruptions caused in workplace operations. However, the majority of the employers said they were satisfied with the intervention, and the majority of those who felt they could compare the program to usual case management regarded the PRÉVICAP program as more efficient (Table 29).

**Table 29 – Perception of the PRÉVICAP program at participating employers**

| | n | % |
|---|---|---|
| **Are you familiar with the PRÉVICAP program?** | | |
| Yes | 28 | 68.3 |
| No | 13 | 31.7 |
| Total | 41 | 100.0 |
| **Who told you about the PRÉVICAP program?** | | |
| A CSST case manager | 21 | 75.0 |
| A member of the PRÉVICAP team | 3 | 10.7 |
| A physician | 4 | 14.3 |
| Other | 1 | 3.6 |
| Total | 28 | 100.0 |
| **Have any of your workers ever participated in the PRÉVICAP program?** | | |
| Yes | 27 | 96.4 |
| No | 1 | 3.6 |
| Total | 28 | 100.0 |
| **If yes, did he/she/they return to work?** | | |
| Yes | 16 | 64.0 |

| | n | % |
|---|---|---|
| No | 9 | 36.0 |
| Total | 25 | 100.0 |
| **Was PRÉVICAP case management different other employment injury cases in your workplace?** | | |
| Yes | 17 | 60.7 |
| No | 4 | 14.3 |
| I don't know | 7 | 25.0 |
| Total | 28 | 100.0 |
| **Would you say that the time elapsed between the event and the start of the PRÉVICAP program was…** | | |
| Very long | 4 | 14.8 |
| Long | 11 | 40.7 |
| A reasonable length | 7 | 25.9 |
| Short | 1 | 3.8 |
| Very short | 4 | 14.8 |
| Total | 27 | 100.0 |
| **Would you say that the PRÉVICAP program was…** | | |
| Very long | 5 | 17.9 |
| Long | 7 | 25.0 |
| A reasonable length | 13 | 46.4 |
| Short | 3 | 10.7 |
| Total | 28 | 100.0 |
| **How satisfied were you with the information you received about the progression in your worker's situation during the PRÉVICAP program?** | | |
| Not at all satisfied | 3 | 10.7 |
| Not very satisfied | 6 | 21.4 |
| Quite satisfied | 12 | 42.9 |
| Very satisfied | 7 | 25.0 |
| Total | 28 | 100.0 |
| **Did the PRÉVICAP management of your worker require more time or resources of your workplace than usual CSST case management?** | | |
| Yes | 11 | 42.3 |
| No | 15 | 57.7 |
| Total | 26 | 100.0 |
| **Did the PRÉVICAP team's intervention disrupt your workplace operations?** | | |
| Yes | 8 | 29.6 |
| No | 18 | 66.7 |
| The PRÉVICAP team did not carry out an intervention in my workplace. | 1 | 3.7 |
| Total | 27 | 100.0 |
| **Based on your experience, compared to the usual CSST case management of a worker who has sustained an employment injury, would you say that the PRÉVICAP program was...** | | |
| Less effective | 2 | 7.7 |
| As effective | 4 | 15.4 |
| More effective | 10 | 38.5 |
| I cannot compare them | 10 | 38.5 |
| Total | 26 | 100.0 |

#### 4.3.3.2 Functional Status, Pain, and Psychosocial Status

To simplify reading, only the overall scores are reported in this section. A higher score means a bigger disability, pain, or fear.

Several years after the event, both the PRÉVICAP and control-group workers still reported high pain levels (on average, nearly 5 out of 10 on the pain rating scale) and major functional limitations (Table 30). The level of disability was slightly less high in the PRÉVICAP workers with neck or upper extremity than in their control-group counterparts, but higher among those whose injury site was their back. There does not appear to have been any significant difference between the PRÉVICAP and control-group workers in terms of pain level and its repercussion on daily activities, work, leisure, anxiety, or depression. It must be noted that the timing of the data collection varied from one individual to the other (between two and three years post-event), but the data did not suggest that the timing of the measurement had any impact on functional status level.

Taking all injuries together, the PRÉVICAP workers were less affected than the control-group workers by anxious and avoidance behaviours regarding physical activity and work. There was also significantly less repercussion of pain on social behaviour in the PRÉVICAP workers. Again here, the timing of the measurement process varied (between one and three years post-event), but had no impact on the value of the psychosocial status indicators.

It must be recalled that, as pointed out in section 3.5.3, these results correspond to comparisons of the crude (or unadjusted) means observed in the two groups; the results must therefore be interpreted with caution because no adjustments have been made for potential confounding variables.

**Table 30 – Functional status, pain, and psychosocial status**

| | PRÉVICAP WORKERS | | | | CONTROL-GROUP WORKERS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | n | Mean | Standard deviation | Median | n | Mean | Standard deviation | Median | p[a] |
| **Roland-Morris score (on 24)[b]** | 77 | 15.42 | 6.86 | 16.00 | 179 | 11.15 | 6.71 | 10.00 | **<0.0005** |
| **NULI score (on 7)[b]** | 37 | 3.12 | 1.40 | 3.10 | 230 | 3.86 | 1.43 | 3.95 | **0.009** |
| **Score on Dallas Pain Questionnaire, impact of pain on daily activities (on 100)[c]** | 106 | 33.02 | 25.72 | 30.71 | 389 | 36.57 | 25.49 | 32.86 | 0.205 |
| **Score on Dallas Pain Questionnaire, impact of pain on work and leisure activities[c]** | 106 | 42.78 | 29.87 | 43.33 | 389 | 45.67 | 29.57 | 45.00 | 0.373 |
| **Score on Dallas Pain Questionnaire, impact of pain on anxiety/depression (on 100)[c]** | 106 | 28.40 | 25.48 | 30.00 | 389 | 32.95 | 30.46 | 25.00 | 0.120 |
| **Score on Dallas Pain Questionnaire, impact of pain on social interest (on 100)[c]** | 106 | 18.55 | 20.88 | 12.50 | 389 | 24.60 | 25.25 | 16.67 | **0.012** |
| **Score on Visual Analog Scale of Pain Intensity (on 10)[c]** | 106 | 5.00 | 2.38 | 5.00 | 387 | 4.89 | 2.59 | 5.00 | 0.691 |
| **Score on Fear-Avoidance Beliefs Questionnaire – physical activities (on 24)[c]** | 111 | 11.50 | 7.16 | 12.00 | 368 | 18.26 | 6.37 | 20.00 | **<0.0005** |
| **Score on Fear-Avoidance Beliefs Questionnaire – work (on 42)[c]** | 107 | 22.07 | 10.19 | 24.00 | 328 | 25.84 | 10.00 | 28.00 | **0.001** |

[a] Student's t-test. [b] Measurement at last follow-up (at least two years post-event). [c] Measurement at varying times (between one and three years post-event).

## 4.4 Efficiency of the PRÉVICAP Program

The cost and efficiency analyses are based on the data from Research Design I unless otherwise indicated.

**HIGHLIGHTS**

- Over a three-year period, compared to usual case management, management under the PRÉVICAP program:
  - is more costly for the compensating organization: the average cost of the program is $19,000 and the total cost of case management is 13% higher ($60,873 versus $53,990);
  - nonetheless yields efficiency that is at least equal if not superior to usual management, given its greater effectiveness if is agreed that a monetary value can be placed on the

positive effects: the difference in average net benefits is $10,000 per worker if each management day saved is valued at $60.

- At three years post-event, the workers in the two groups made similar and still-significant use of medication, home support services, and/or equipment needed due to their injury.

### 4.4.1 Case Management Costs

Taking all costs over the three years into account, the total cost of case management for the PRÉVICAP workers was found to be $6,883 higher per worker ($60,873 versus $53,990 ), or 13% higher than for the control-group workers. However, excluding those workers with extreme data (10 PRÉVICAP and 12 control-group workers, with values higher than the 95$^{th}$ percentile = $119,000), the total cost was similar ($53,242 versus $51,003).

Closer analysis of the cost structure revealed first that the average cost of the PRÉVICAP program was approximately $19,000 (Table 31) and that one source of the variability of this cost pertains to employment status (Table 32).

We then noted that the proportion of workers generating costs was systematically higher among the control-group workers than the PRÉVICAP workers. When costs were covered by the CSST, they varied greatly from person to person; here we present the costs in which great variability was observed, i.e. with a coefficient of variation greater than 100%.

**Table 31 – Average costs per worker, by year post-event, group, and type of cost**

| | Year 1 Average cost in $[a] (%)[b] | | Year 2 Average cost in $[a] (%)[b] | | Year 3 Average cost in $[a] (%)[b] | |
|---|---|---|---|---|---|---|
| | **PRÉVICAP WORKERS** | **CONTROL-GROUP WORKERS** | **PRÉVICAP WORKERS** | **CONTROL-GROUP WORKERS** | **PRÉVICAP WORKERS** | **CONTROL-GROUP WORKERS** |
| | n = 116 | n = 390 | n = 116 | n = 390 | n = 116 | n = 390 |
| **Income replacement indemnities (IRIs)** | 16,604 (100.0) | 16,611 (91.6) | 12,904 (64.7) | 17,279 (79.3) | 17,851 (32.8) | 16,182 (62.9) |
| **Lump-sum amounts** | 9,361 (5.2) | 4,368[c] (15.6) | 2,005 (28.4) | 3,424[c] (38.4) | 4,455[c] (12.9) | 4,749[c] (24.0) |
| **Medical costs** | 5,405 (100.0) | 5,296[c] (98.0) | 2,719[c] (90.5) | 2,408[c] (92.3) | 1,673[c] (48.3) | 1,368[c] (64.7) |
| **Rehabilitation costs** | 1,129[c] (29.3) | 2,900[c] (21.2) | 2,252[c] (29.3) | 4,798[c] (38.1) | 3,080[c] (14.7) | 3,223[c] (30.7) |
| **Other** | 803 (89.7) | 629[c] (76.0) | 877[c] (58.6) | 534[c] (65.0) | 977[c] (17.2) | 474[c] (31.2) |
| **PRÉVICAP program[d]** | 18,934 (100.0) | | | | | |

[a] Of those workers with amounts greater than zero. [b] Percentage of workers with amounts greater than zero. [c] Coefficient of variation greater than 100%. [d] All the costs of the PRÉVICAP program were imputed to Year 1.

**Table 32 – Costs of the PRÉVICAP program, by employment status at time of event**

| | n | Mean ($) | Standard deviation ($) |
|---|---|---|---|
| **Permanent full-time** | 87 | 17,159.31 | 7,944.8 |
| **Permanent part-time** | 5 | 12,193.67 | 7,381.9 |
| **Temporary fixed or indeterminate term** | 4 | 28,814.37 | 15,976.1 |

## *4.4.2 Private Costs*

The private costs presented were established over a four-week period and measured at the three-year post-event interview. They involve the costs borne by the workers themselves (for example, non-reimbursed costs associated with use of health services, prescription or over-the-counter drugs, specialized equipment, and home support services).

We did not make annual estimates as we wanted to be sure that both use and the related costs were not overevaluated. However, although several amounts may be deemed marginal, their recurrence over time may constitute a financial burden for a worker. Approximately 52% of the workers were not covered by a private or group insurance plan. More details are provided in the tables found in Appendix 8.

### 4.4.2.1 Non-Reimbursed Services and Medications

The PRÉVICAP workers had a similar profile to the control-group workers with respect to use of health services and medications.

Use of medical services at three years post-event was marginal, and only 6% of the PRÉVICAP workers saw a medical practitioner in the four weeks prior to the interview. Five percent of the workers used rehabilitation services, while 6% used the services of alternative medical practitioners.

However, at three years post-event, the use of medication, special equipment, and home support services remained high in both groups. Thirty-five to forty percent of the workers still took at least one prescription drug for health problems related directly to their injury. Approximately 35% of the workers had had help in their daily activities in the four weeks prior to the interview. This help was mainly required for housework (16%) and shopping (12%).

Over half of the workers (53% of the PRÉVICAP workers and 45% of the control-group workers) used at least one piece of special equipment necessitated by their injury (e.g. Obus cushion, support brace).

The fact of still being compensated by the CSST at three years post-event did not appear to influence the use of services or medications.

### 4.4.2.2 Non-Reimbursed Expenses

Only 40% of the workers had incurred no expenses related to their injury in the four weeks prior to the interview conducted at three years post-event. The PRÉVICAP workers' and control-group workers' expenses were similar in nature. Significant proportions of workers,

namely 11% in the PRÉVICAP group and 18% in the control group, spent more than $100 during the month in question, suggesting that these workers spend large amounts over the course of a year.

The fact of still receiving CSST indemnities at three years post-event did not appear to influence the amount of the expenses borne by the workers.

**Table 33 – Private costs borne by PRÉVICAP and control-group workers in four weeks prior to three-year post-event interview**

| Private costs | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | |
|---|---|---|---|---|---|---|
| | | n | % | n | % | p |
| Health services | None | 79 | 95.2 | 293 | 88.8 | |
| | $0-20 | 1 | 1.2 | 12 | 3.6 | |
| | >$20-50 | 1 | 1.2 | 10 | 3.0 | ---- |
| | Over $50 | 2 | 2.4 | 15 | 4.5 | |
| Prescription drugs | None | 72 | 87.8 | 271 | 82.9 | |
| | $0-20 | 5 | 6.1 | 42 | 12.8 | 0.197 |
| | >$20 | 5 | 6.1 | 14 | 4.3 | |
| Over-the-counter drugs | None | 42 | 50.6 | 184 | 55.9 | 0.155 |
| | $0-20 | 40 | 48.2 | 123 | 37.4 | |
| | >$20 | 1 | 1.2 | 22 | 6.7 | |
| Equipment | None | 68 | 81.9 | 260 | 78.5 | |
| | $0-20 | 6 | 7.2 | 28 | 8.5 | 0.927 |
| | >$20-50 | 4 | 4.8 | 19 | 5.7 | |
| | Over $50 | 5 | 6.0 | 24 | 7.3 | |
| Home support services | None | 75 | 90.4 | 273 | 82.5 | |
| | $0-20 | 0 | 0.0 | 0 | 0.0 | ---- |
| | >$20-100 | 2 | 2.4 | 14 | 4.2 | |
| | Over $100 | 6 | 7.2 | 44 | 13.3 | |
| Total private costs[a] | None | 33 | 39.8 | 129 | 39.6 | |
| | $0-20 | 34 | 41.0 | 93 | 28.5 | |
| | >$20-50 | 3 | 3.6 | 35 | 10.7 | 0.085 |
| | >$50-100 | 4 | 4.8 | 11 | 3.4 | |
| | >$100-200 | 4 | 4.8 | 18 | 5.5 | |
| | >$200 | 5 | 6.0 | 40 | 12.3 | |

[a] Excluding equipment costs.

## 4.4.3 Cost-Effectiveness and Cost-Benefit Analyses

### *Cost-effectiveness analysis*

Cost-effectiveness ratios (CERs) were calculated at different points in time (12 months, 24 months, and 36 months post-event). Through analysis, we were able to estimate the incremental cost of PRÉVICAP management for each day of management saved as a result of the intervention.

Over the short term, i.e. at 12 months post-event, PRÉVICAP management did not appear advantageous. However, over the long term, the program was profitable. In fact, at 36 months, the program cost an average of $6,883 more, for a five-and-a-half month gain in effectiveness. This translates into a CER of $37 per management day saved.

Similar results were obtained in the estimates made for all the workers in the intent-to-treat analyses (Table 34 and Figure 8).

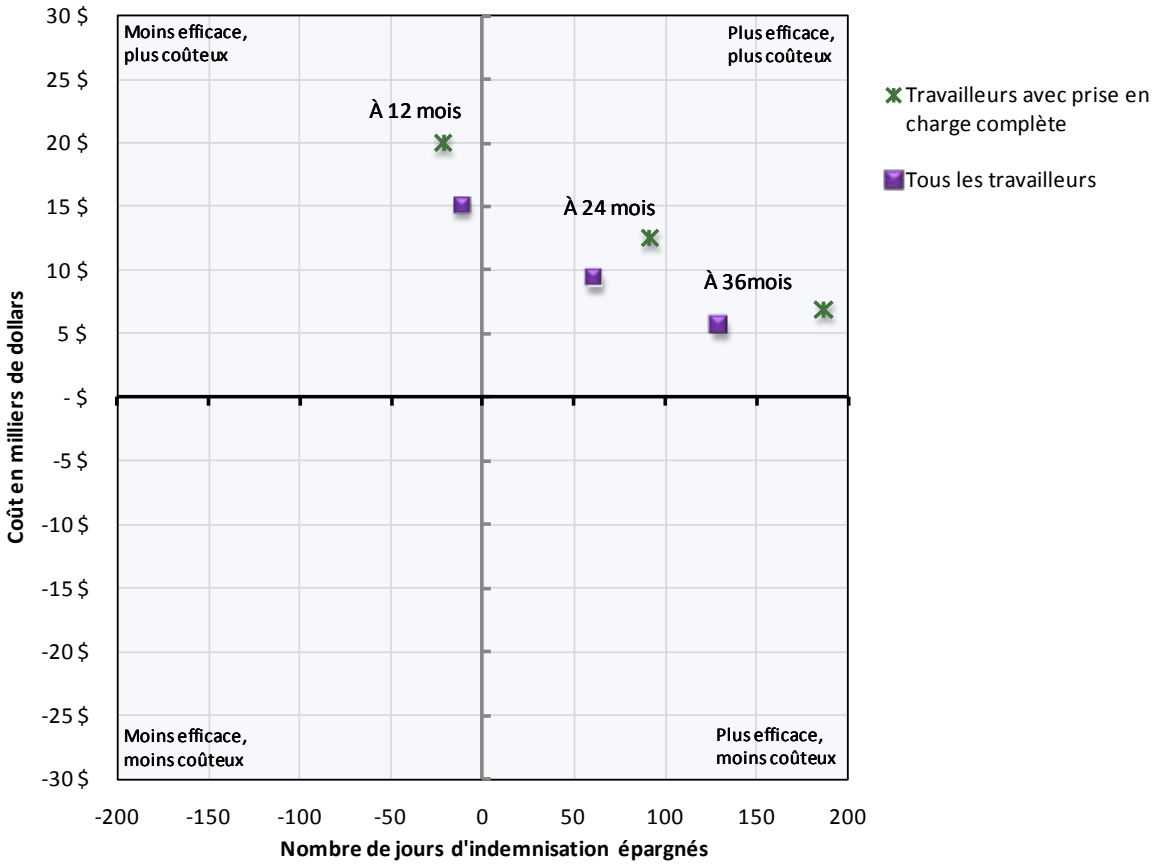



**Figure 8 – Cost-effectiveness ratios of the PRÉVICAP program at 12, 24, and 36 months post-event**

**Table 34 – Cost-effectiveness ratios of the PRÉVICAP program at 12, 24, and 36 months post-event**

| | At 12 months | | | At 24 months | | | At 36 months | | |
|---|---|---|---|---|---|---|---|---|---|
| | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) |
| Workers under complete management *vs* control-group workers (n = 483) | 19,984 | -21 | -952 | 12,506 | 92 | 136 | 6,883 | 187 | 37 |
| All workers *vs* control-group workers (n = 523) | 15,101 | -11 | -1373 | 9,320 | 61 | 153 | 5,741 | 129 | 45 |

[a] Difference in average cost of PRÉVICAP and usual management. [b] Difference in effectiveness, in terms of number of management days saved. [c] ΔC / ΔE.

### *Cost-benefit analysis*

We also applied an alternative method of economic analysis, which consisted of estimating the net benefit of each worker's case management by attributing a monetary value to the effects observed (E) and by subtracting the costs paid out to manage the worker's case (C) from the monetized effects. As specified in section 3.5.4, 22 individuals with extreme total-cost values, i.e. values higher than $119,000 (95th percentile), were excluded from the cost-benefit analysis. In both groups, the mean of the net benefits was negative for the three values retained for "willingness-to-pay" (WTP), confirming the high cost of managing the workers in this study. With no attribution of monetary value for effectiveness, i.e. for WTP = $0, the net average benefit of the PRÉVICAP program was slightly lower, but the difference was statistically not significant. We also noted extreme variability in the net benefits within each group as a result of variations in both costs and effects. The breakeven point was around $10 per management day saved; PRÉVICAP program efficiency was found to be equivalent to that of usual management if the program's superior effectiveness (total number of days saved) is taken to be worth $10 per day saved. A WTP value of $60 per day saved corresponded to a positive difference in favour of the PRÉVICAP group, which was statistically significant; PRÉVICAP program efficiency was therefore superior if the gain in effectiveness is valued at around $60 per day saved (Table 35).

**Table 35 – Net benefits by group, at 36 months post-event**

| | WTP[b] | PRÉVICAP workers (n = 96) | | CONTROL-GROUP workers (n = 365) | | Difference PREV-CONTROL | p[c] |
|---|---|---|---|---|---|---|---|
| | | Mean | Standard deviation | Mean | Standard deviation | | |
| **Net benefits of program at 36 months post-event** [a] | $0 | -$53,242 | $22,476 | -$51,003 | $28,260 | -$2,239 | **0.41** |
| | $10 | -$47,074 | $25,007 | -$46,925 | $30,853 | -$149 | **0.96** |
| | $60 | -$16,652 | $38,261 | -$27,117 | $30,055 | +$10,465 | **0.024** |

[a] Excludes 10 PRÉVICAP and 12 control-group workers with extreme total-cost data; also excludes workers with missing cost and effect data. [b] WTP = willingness-to-pay. [c] Student's t-test.

## 4.5 Explanation of Effects

**HIGHLIGHTS**

- Our results suggest that the program would only be effective with individuals who have had no compensation history within the previous five years (i.e. approximately three-quarters of the workers studied). For these workers, the difference in average net benefits was $10,000 per worker, if each management day saved is considered to be worth $50.
- The program appeared to have greater effect when the management process began later.
- The probability of a return to work varied considerably depending on the number of years of experience at the employer's, perceived physical effort required by the job, and full- or part-time employment status. However, regardless of how these characteristics are combined, the PRÉVICAP program was systematically more effective.
- Each of the six tracer cases clearly showed the importance of cooperation from the employer and the workplace and of the worker's active participation and involvement in the attainment of the program's intermediate objectives, which ultimately lead to a return to work.

### 4.5.1 Variation in Effects by Type of Worker

***Did the effects vary according to worker or workplace characteristics?***

The results of Research Design I presented above indicate that the PRÉVICAP program had a significant positive impact in terms of a return to work to the pre-injury job for at least four weeks (Table 20), that the overall cost-effectiveness ratio at 36 months was $37 per management day saved (Table 34) and that the difference in net benefits was significant and in favour of the PRÉVICAP program (Table 35).

In this section, certain result indicators are re-analyzed in order to identify the characteristics or profiles of the workers for whom the program might prove particularly effective and cost-beneficial. These analyses were performed from an exploratory standpoint to shed additional light on the value of the PRÉVICAP program.

The stratified analyses presented in Table 36 show an interaction effect of various variables on the rapidity of the sustainable return to work. In general, the program impact was maintained, although it was more pronounced among certain sub-groups. However, the program impact was seen as equivalent to that of usual management for the sub-group of workers with a compensation history within the five years prior to the event. Furthermore, our evaluation concerned workers referred to the PRÉVICAP program several months after their event, and interestingly, the later the initiation of the management process, the more effective the PRÉVICAP program was found to be.

**Table 36 – Adjusted effect of the program in terms of rapidity of return to work to pre-injury job for at least four weeks within three years post-event, stratified by various characteristics**

| | n | $\widehat{HR}$[a] | 95% CI | p |
|---|---|---|---|---|
| ***Unstratified original model*** | ***387*** | *2.863* | *1.990-4.121* | ***< 0.0005*** |
| ***Stratified models, by:*** | | | | |
| **Injury-to-IRI period ≥ 20 days before management (PRÉVICAP or equivalent period for control-group workers)[b]** | | | | |
| **Yes** | **104** | 3.110 | 0.758-12.761 | 0.115 |
| **No** | **324** | 2.355 | 1.458-3.802 | **<0.0005** |
| **Minimum duration of usual management** | | | | |
| **Less than 6 months** | **211** | 1.919 | 1.177-3.286 | **0.012** |
| **6 to 9 months** | **140** | 4.176 | 1.778-7.393 | **<0.0005** |
| **More than 9 months** | **113** | 6.323 | 2.449-13.858 | **<0.0005** |
| **Permanent impairment[c]** | **319** | | | |
| **Yes** | **319** | 3.181 | 1.513-5.382 | **0.001** |
| **No** | **145** | 1.935 | 0.935-4.002 | 0.075 |
| **Compensation history within 5 years preceding event** | | | | |
| **Yes** | **114** | 0.963 | 0.220-4.212 | 0.960 |
| **No** | **350** | 3.922 | 2.472-6.222 | **<0.0005** |
| **Size of workplace** | | | | |
| **< 20 employees** | **214** | 2.514 | 1.249-5.061 | **0.010** |
| **20 to 100 employees** | **143** | 4.678 | 1.548-14.133 | **0.006** |
| **Workplace's assessment plan** | | | | |
| **Personalized** | **216** | 2.079 | 1.067-4.049 | **0.031** |
| **Unit** | **81** | 6.645 | 0.757-58.329 | 0.087 |

[a] Adjusted for risk index. [b] The injury-to-IRI period (*délai d'abandon)* is the time elapsed between the accidental event and the start of income replacement indemnity (IRI) payments. [c] Rate of permanent physical or mental impairment (PPMI) greater than zero after medical consolidation.

Similarly, with respect to another effect measure, namely the return to work to the pre-injury job for at least four weeks within two years post-event (Table 37), we noted that the PRÉVICAP program had a significant effect only on workers with no compensation history.

The results of these stratified models yielded a predicted RTW probability for each worker according to his particular profile (variables included in the model). With or without a compensation history, the PRÉVICAP workers were found to have higher chances of returning to work than the control-group workers (Figure 9). However, the difference was clearly more pronounced for workers with no compensation history: the average predicted RTW probability was approximately 27% for the control-group workers compared to 56% for the PRÉVICAP workers (Table 40).

**Table 37 – Adjusted effect of the program in terms of frequency of return to work to pre-injury job for at least four weeks within two years post-event, stratified by presence of compensation history**

| | n | $\widehat{OR}$ | 95% CI | p |
|---|---|---|---|---|
| ***Unstratified original model*** | *464* | *3.475* [a] | *2.138 – 5.650* | ***< 0.0005*** |
| ***Stratified model, by:*** | | | | |
| **Compensation history within 5 years prior to event** | | | | |
| **Yes** | 161 | 1.403 [b] | 0.525 – 3.749 | 0.500 |
| **No** | 517 | 3.395 [b] | 1.968 – 5.855 | **< 0.0005** |

[a] Adjusted for risk index and medical costs incurred prior to admission to PRÉVICAP program, or an equivalent period for the control-group workers. [b] Adjusted for employment status, number of years of experience at the employer's, perceived physical effort required by the job, job satisfaction, and regional office.

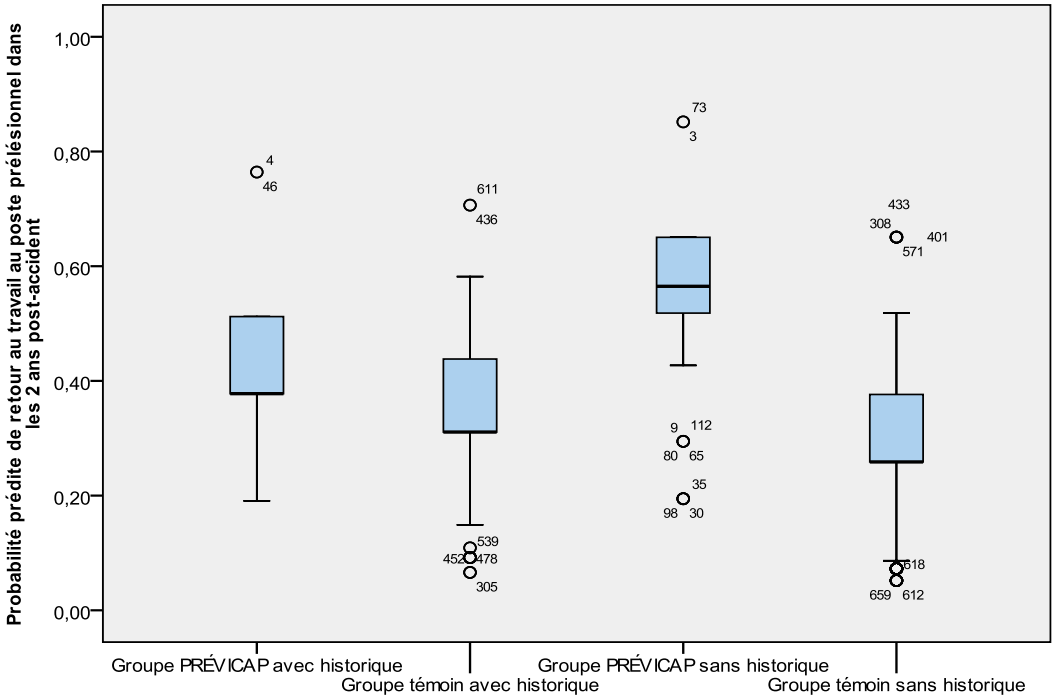



**Figure 9 – Box plot of predicted probabilities of return to work to pre-injury job for at least four weeks within two years post-event, by presence of compensation history**

A cost-benefit analysis was performed for the subgroup of workers for whom the PRÉVICAP program appeared particularly effective, namely those workers with no compensation history. The total cost of case management was similar for both groups ($51,476 for the PRÉVICAP workers versus $50,051 for the control-group workers), which indicates similar efficiency if "willingness-to-pay" is taken to be $0 per day saved. However, PRÉVICAP program efficiency becomes significantly superior (difference between the average net benefits = $10,515) if one assumes a WTP value of $50 per day saved (Table 38).

**Table 38 – Net benefits by group at 36 months post-event, among workers with no compensation history**

| | WTP[b] | PRÉVICAP WORKERS | | | CONTROL-GROUP WORKERS | | | Difference PREV-CONTROL | p[c] |
|---|---|---|---|---|---|---|---|---|---|
| | | n | Mean | Standard deviation | n | Mean | Standard deviation | | |
| **Net benefits of program at 36 months post-event** [a] | $0 | 80 | -$51,476 | $21,815 | 281 | -$50,051 | $27,812 | -$1,425 | **0.63** |
| | $50 | 78 | -$19,516 | $33,924 | 275 | -$30,031 | $42,605 | +$10,515 | **0.024** |

[a] Excludes eight control-group workers with extreme total-cost data. [b] WTP = willingness-to-pay. [c] Student's t-test.

For exploratory purposes, we then performed a more in-depth analysis of effectiveness for five worker profiles encompassing 88% of the workers with no compensation history in the previous five years (Table 39). These profiles were built using the three characteristics most predictive of a return to work among those factors taken into account in the modelling of the effect of the program (see Table 37). The estimated chances of a return to work were found to be systematically higher for the PRÉVICAP workers. They were particularly high for workers who had more than one year's experience at their employer's (profiles A, B, and E), ranging from 52% to 77% among the PRÉVICAP workers and from 26% to 52% among the control-group workers. The chances of reintegrating into the pre-injury job were poorer among workers with less seniority at the employer's (profiles C and D) (Table 40).

**Table 39 – Description of most frequent profiles, among workers with no compensation history**

| Profile | Frequency[a] (%) | Experience at employer's | Perceived physical effort required by job | Employment status |
|---|---|---|---|---|
| A | 31.0 | ≥ 1 year | None to moderate | Full-time |
| B | 40.0 | ≥ 1 year | Big | Full-time |
| C | 5.3 | < 1 year | None to moderate | Full-time |
| D | 8.6 | < 1 year | Big | Full-time |
| E | 3.4 | ≥ 1 year | Big | Part-time |

[a] Percentage of all PRÉVICAP and control-group workers. Profiles A to E represent 88.3% of this total.

**Table 40 – Predicted average probabilities of return to work to pre-injury job for at least four weeks within two years post-event, by profile of workers with no compensation history**

| Profile | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | |
|---|---|---|---|---|
| | Predicted average probability (%) | 95% CI (%) | Predicted average probability (%) | 95% CI (%) |
| ALL | 55.90 | **(53.18; 58.61)** | 27.06 | **(25.89; 28.24)** |
| A | 65.04 | **(53.91; 74.75)** | 37.64 | **(30.67; 45.15)** |
| B | 51.82 | **(39.96; 63.49)** | 25.86 | **(20.60; 31.93)** |
| C | 29.46 | (16.68; 46.57) | 11.93 | (6.69; 20.39) |
| D | 19.45 | (10.24; 33.83) | 7.26 | (3.98; 12.88) |
| E | 76.85 | (59.77; 88.12) | 51.85 | (35.51; 67.80) |

The cost-effectiveness ratio appears particularly favourable for Profile A, which is distinguished from Profile B by a perception of less physical effort required by the job.

**Table 41 – Cost-effectiveness ratios of the PRÉVICAP program at 12, 24, and 36 months post-event, by profile of workers with no compensation history**

| | At 12 months | | | At 24 months | | | At 36 months | | |
|---|---|---|---|---|---|---|---|---|---|
| | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) | Δ C[a] ($) | Δ E[b] (days) | Δ CER[c] ($/days) |
| Workers under complete management (n = 483) | 19,984 | -21 | -952 | 12,506 | 92 | 136 | 6,883 | 187 | 37 |
| Profile A (n = 93) | 16,227 | -13 | -1,248 | 8,862 | 84 | 106 | 1,870 | 170 | 11 |
| Profile B (n = 139) | 24,696 | -13 | -1,900 | 17,007 | 106 | 160 | 11,369 | 207 | 55 |

[a] Difference in average cost between PRÉVICAP management and usual management. [b] Difference in effectiveness, in terms of number of management days saved. [c] ΔC / ΔE.

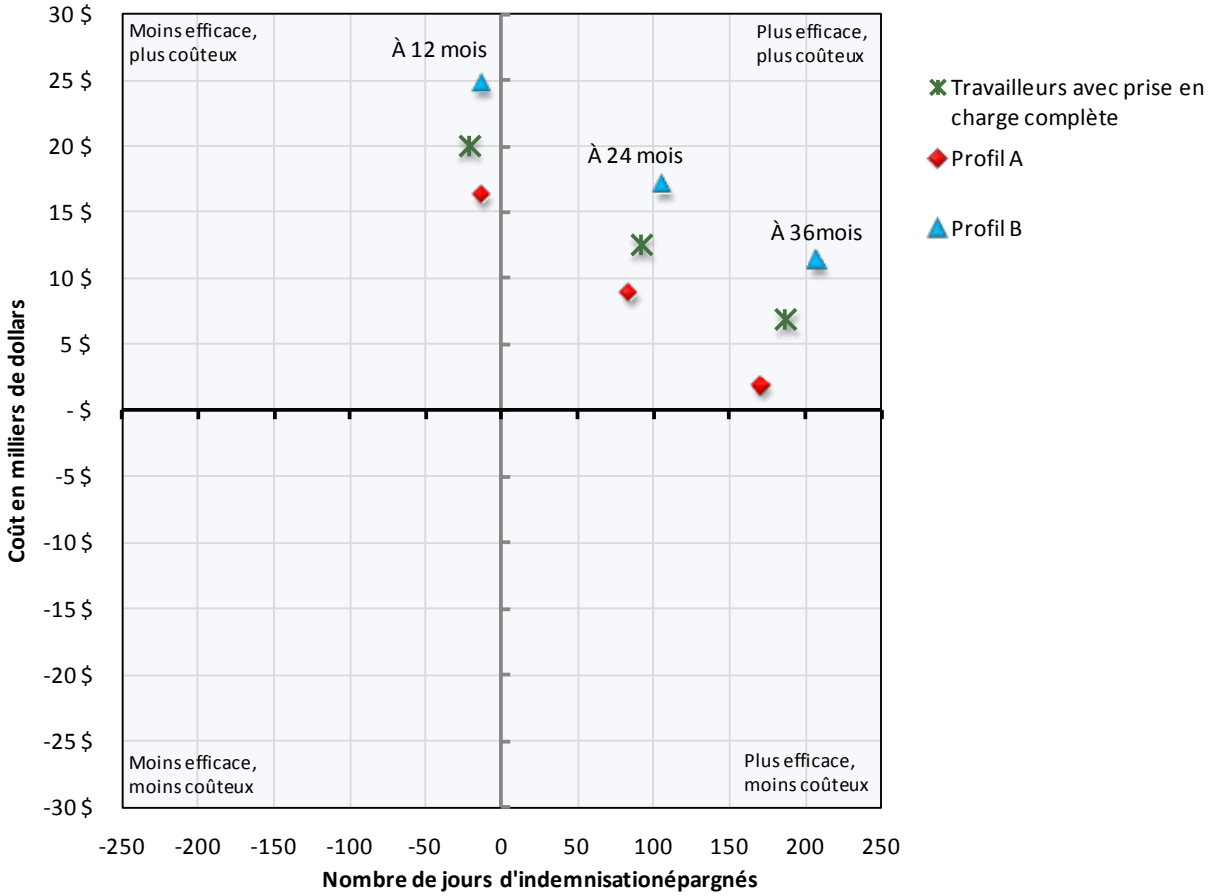



**Figure 10 – Cost-effectiveness ratios of the PRÉVICAP program at 12, 24, and 36 months post-event, for different profiles of workers with no compensation history**

### 4.5.2 Production of Effects

***What were the key factors in the effect-production mechanism?***

Six tracer cases were analyzed in greater depth with respect to the objectives and action mechanisms presented in the logic model of the PRÉVICAP intervention (Figure 3, page 4). A detailed description of these cases can be found in Appendix 10.

Overall, the activities proposed by the PRÉVICAP team to attain the intermediate objectives of goals A (improve work capacities) and B (improve competent work behaviours) appear to have been administered homogeneously in the tracer cases. However, the degree to which these intermediate objectives were attained varied significantly from worker to worker.

Two conditions appear essential to attainment of the final objective of a return to work at the same employer's: the employer's cooperation and the worker's active involvement. However, when a PRÉVICAP worker succeeds in overcoming or changing behaviours or attitudes that are initially unfavourable with regard to the program, success then becomes possible.

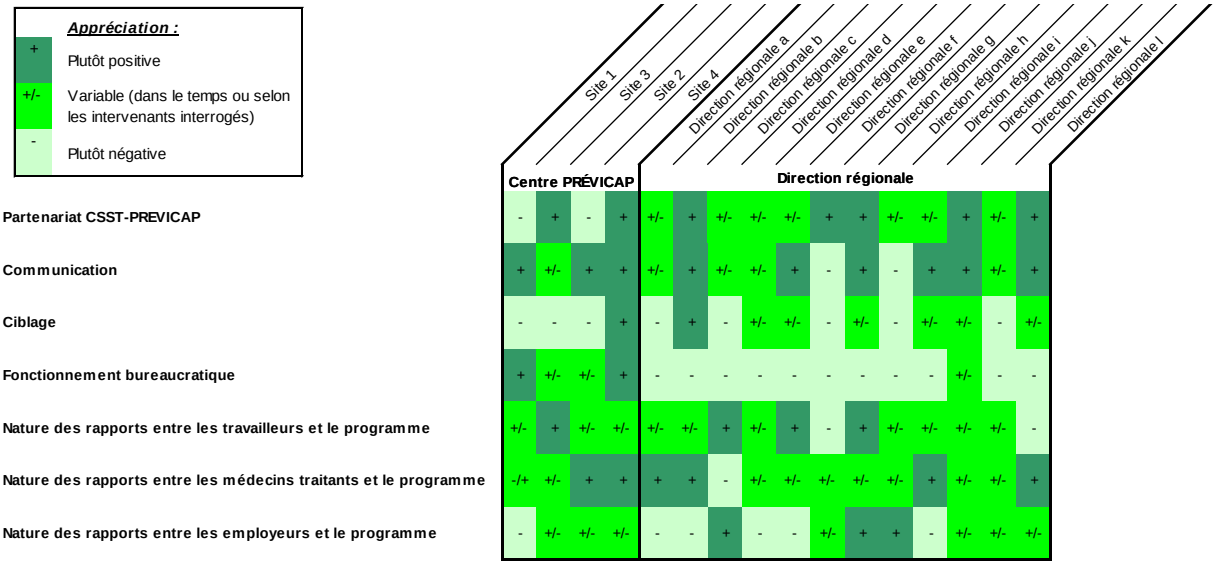
Lastly, the poor fit between certain unalterable characteristics of the work environment and the worker's residual physical or psychological impairments appears, in some cases, to prevent a return to work at the original employer's regardless of implementation of the PRÉVICAP intervention or the commitment of the parties involved.

### 4.5.3 Variation in Effects According to Perceived Quality of Functioning of Program

***Did the effects vary according to the PRÉVICAP and CSST personnel's perceptions of the factors that affected the functioning of the program?***

Based on our findings and the results of the implementation analyses, we attempted to develop a graphic overview of the various parties' assessments of the quality of the functioning of the program, according to the seven factors perceived as being important (Table 42). These markers of smooth functioning are defined in Appendix 11.

**Table 42 – Graphic overview of stakeholders' assessment of key factors affecting program implementation**




Based on this matrix and through statistical modelling, we then sought to verify whether these factors could have an effect on the return-to-work results observed. The variables tested were those illustrating the CSST's view of the partnership, communication, and the targeting process; those illustrating the PRÉVICAP team members' view of these same factors; and the variables reflecting the shared view held by these two types of key stakeholders. These variables were found to have no significant effect on the rapidity of the return to work to the pre-injury job for at least four weeks or on the return to the pre-injury job (yes/no) within two years post-event.

The variables used were probably too distal to produce a discernible effect at the individual level on any given worker. However, the more pronounced effect evident at one particular site (Table 21) suggests possibly different practices or targeting processes at this centre. These activities were not sufficiently documented by the PRÉVICAP team members and CSST personnel to allow a direct relationship to be established *a posteriori*. Other factors noted in the tracer case analysis appeared to have greater weight.

# 5 DISCUSSION

The PRÉVICAP program was evaluated as part of a complex problem involving major human, social, and economic issues, and involving many stakeholders not necessarily having the same interests or perceptions of the disability problem associated with occupational musculoskeletal injuries. We used rigorous methods to analyze the program's implementation, effectiveness, and efficiency in order to obtain specific and valid information on the functioning and value of the program.

***What did we learn about the PRÉVICAP program's effectiveness and efficiency?***

The program's efficacy was previously evidenced in Québec in the randomized trial conducted by Loisel [55], while the randomized trial carried out more recently in the Netherlands produced similar results [60]. Our study concerned the real effectiveness of the program in a non-controlled situation. The pilot project was implemented in a "real environment" in the sense that the implementation context was not always optimal and the study population was very heterogeneous. However, what differentiates these workers from those in previous studies is mainly the fact that the majority of them were already in a long-term disability situation at the time when they were referred to or taken in charge under the PRÉVICAP program. Whereas the early initiation of case management is at the crux of the program's philosophy, the workers in the study in fact were admitted to the program very late. To our knowledge, the program's potential to produce positive results in workers at risk of *very* long-term disability had never previously been examined. Our study shows that at two years post-event, the proportion of workers who had reintegrated into their pre-injury jobs was low among the control-group workers (29%) but considerably higher among the PRÉVICAP workers (55%). The greater effectiveness of the program would appear to apply to workers who have no compensation history in the five years prior to the event.

Again in our study, the workers were not randomly assigned to one or the other of the two groups (PRÉVICAP or control), meaning that the comparability of the groups may have been compromised. We therefore had to adopt an evaluation process that took this factor into account. We had data on a host of RTW predictive factors that might have had different distributions in the PRÉVICAP workers and control-group workers, which could create a bias. The differences between the groups were minimized through matching and statistical modelling, which gave us so-called *adjusted* program effects for the relatively few factors that finally proved to warrant consideration. In addition, the convergence of the results of the main effectiveness analysis and of the robustness analyses reinforced the validity of our conclusions.

Our results showed that over a period of three years post-event, the PRÉVICAP program was as *cost-beneficial* as usual management, if not more. On average, the program cost is high, namely $19,000 per worker, and the total management cost, including PRÉVICAP, is higher than for usual management. However, given the major gain in terms of management days saved (five and a half months on average), the use of the PRÉVICAP management approach translates into a net average savings over three years in the order of $10,000 per worker, assuming a gain in effectiveness of around $60 per management day saved. The program can therefore be seen as an investment from a broader perspective if the various savings produced by these management days saved are taken into account (e.g. salary of CSST case manager,

cost of replacing compensated worker, and productivity gains for the employer). Our results are similar to those reported previously, although the economic analysis conducted in the Loisel study concerned a period of six years post-event and a population taken under PRÉVICAP management soon after the event [56].

***How did the program implementation go?***

The planning of the implementation was adequate in terms of structure and resources, but more problematic when it came to the target clientele and the actual implementation process. The decisions made regarding the development and roll-out of the pilot project were perceived as being too centralized. The criteria for targeting workers appear not to have been clearly enough defined, creating dissatisfaction among both the CSST personnel involved and the staff involved at two of the PRÉVICAP centres. Resistance to change and conflicting interests may have affected the quality of some parties' participation in the project or the establishment of effective partnerships. Lastly, a positive perception of, and active involvement in, the program on the part of the worker and the employer emerge as conditions essential to the program's success.

***For whom and how should this type of program be implemented in the Québec context?***

Workers with MSIs who have been compensated for many months represent a vulnerable population in terms of long-term disability, a situation that is costly for the compensating organization. In fact, 20% of the workers compensated for an MSI receive these indemnities for more than three months, yet they account for 75% of IRI costs [1, 2]. Our evaluation provides the first scientific evidence concerning the value of a PRÉVICAP-type program for such a population, particularly for workers with no compensation history in the previous five years, in other words, roughly three-quarters of this population. According to our results, the following factors are associated with superior program efficiency: the absence of a compensation history in the five years prior to the current compensation episode, seniority of at least one year at the employer's, and physical demands of the job perceived as non-existent or moderate. Conceivably, an adapted form of the program intervention logic might eventually be transposable to other target populations. The program also appears more advantageous when PRÉVICAP case management begins later, a result that is somewhat surprising and that warrants investigation.

The PRÉVICAP program involves numerous stakeholders. In Québec, the large-scale implementation of this type of program poses many challenges. As an innovation or "new practice," the program would have greater chances of being accepted by the CSST's regional office heads and case managers if they were to participate in the decisions and processes related to implementation right from the outset, if they subscribed to the intervention's philosophy, and if they understood how the program worked, the various stakeholders' respective roles, and the population targeted by the program. Since the program's success hinges largely on the worker's, employer's, and attending physician's beliefs and attitudes toward the program, it may be advisable to develop a clear program-promotion strategy aimed at these stakeholders. One component of this strategy would be the communication of scientific evidence on the program's impact and efficiency. It may also be worthwhile to devise ways to improve the partnership and communication among stakeholders and to streamline the program's administrative procedures.

***What are the main limitations of this evaluation?***

The PRÉVICAP program produced promising results that must nonetheless be interpreted taking the evaluation context into account.

As explained in section 3.6, it was not possible to conduct a randomized study, and the delays that affected the formulation and realization of the evaluation project prevented us from conducting the evaluation in "real time," i.e. concurrently with implementation of the pilot project. We were unable to obtain all the desired information, particularly in a non-experimental evaluation context, which had repercussions at two levels. First, despite the methodological mechanism used, it is possible that a selection bias was present and that it affected the results obtained regarding the program's impact and efficiency. Better control of potential confounding variables (e.g. maintenance of the employment relationship) might have generated different results. However, the extent of the program impact and the large number of variables taken into account suggest that it is unlikely that the conclusions would have been drastically different even if more exhaustive information had been available. Second, certain components of the study (employer survey, physician survey, tracer cases) did not produce sufficiently enlightening results to provide a thorough understanding of the factors that limit the production dynamic of the effects observed or of the viewpoints of two categories of key stakeholders (employers, physicians).

Moreover, the study population differed from the target population of the PRÉVICAP program, a factor that had to be examined in two respects: (1) the workers were referred to or taken under program management late, which runs counter to one of the fundamental principles of this type of intervention; and (2) the number of workers included in the main impact and efficiency analyses was smaller than planned, given the smaller volume of cases referred or managed under the program. The evaluation therefore concerned a population of workers already in a long-term disability situation, which complicated the comparison of our results with those of previous evaluations but also offered a possible solution for this type of worker. In order to include a sufficient number of PRÉVICAP cases in the evaluation, we included the cases referred during the running-in period (2001) and those referred after the end of the pilot project (2004). Possibly the case-referral and program-delivery processes were different during these periods.

Lastly, we sought to investigate the profile(s) of workers for whom the PRÉVICAP program produced the best outcomes. The characteristics that appear most conducive to greater program effectiveness were presented in section 4.5.1. The exploratory nature of these analyses, as well as the impossibility of taking into account other factors possibly contributing to the program's success (e.g. the worker's and employer's motivation to participate in the program) prevent us from making firm recommendations in terms of the targeting criteria to be used if the PRÉVICAP program were implemented province-wide.

In summary, the evaluation suggests that the PRÉVICAP program is effective and that, despite its relatively high cost, it is at least as profitable as usual case management for workers who have been compensated for MSIs for many weeks if not months.

These results may be useful when making decisions about the pertinence of a PRÉVICAP-type program and the implementation process to be used, ultimately to promote a return to work of workers on long-term disability.

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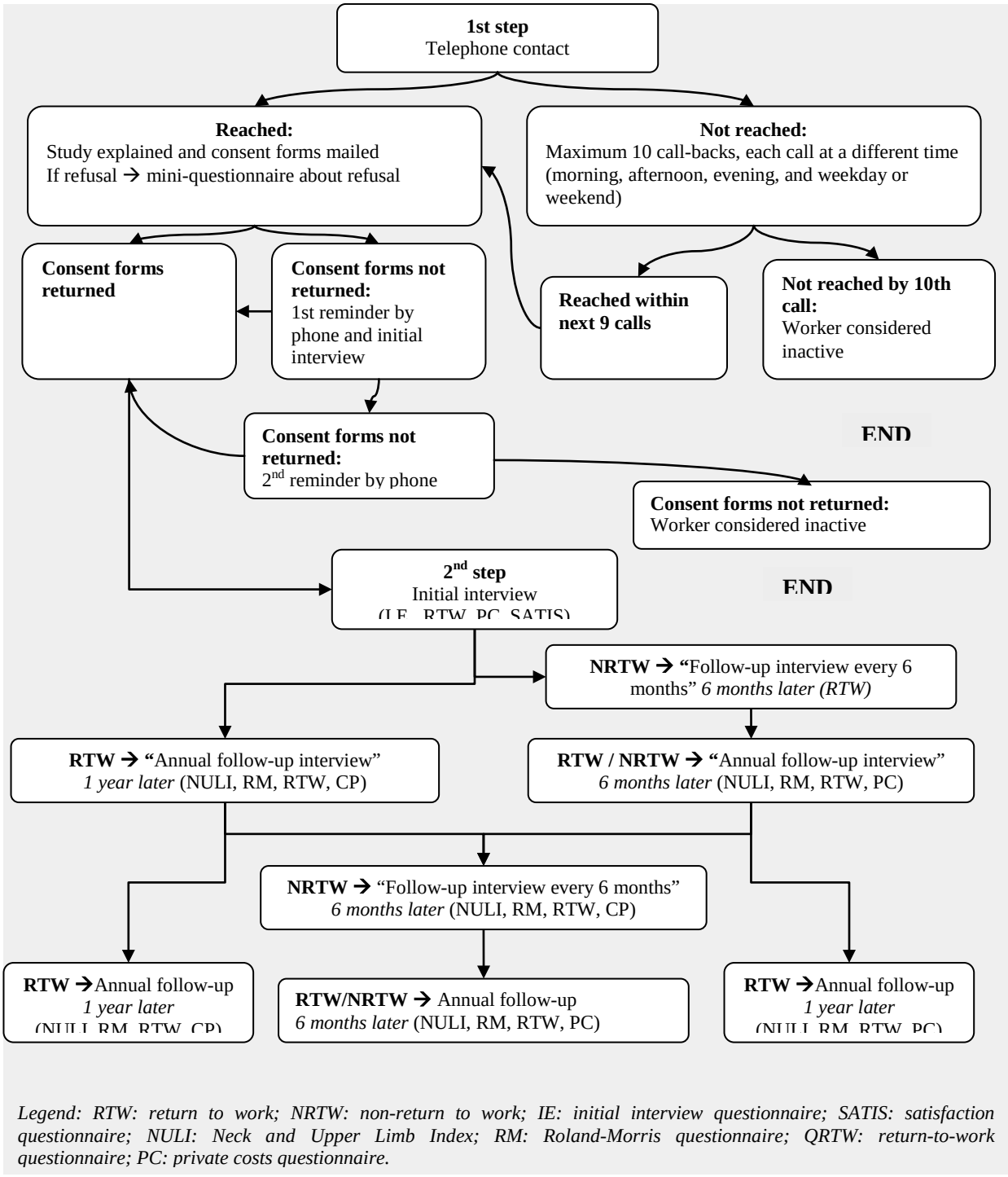
# APPENDICES

## Appendix 1 – Data collection procedure used in interviews




*Legend: RTW: return to work; NRTW: non-return to work; IE: initial interview questionnaire; SATIS: satisfaction questionnaire; NULI: Neck and Upper Limb Index; RM: Roland-Morris questionnaire; QRTW: return-to-work questionnaire; PC: private costs questionnaire.*

**Figure 11 – Questionnaire administration and follow-up**

# Appendix 2 – Variables used in impact and economic analyses

| VARIABLES BY BLOCKS | OPERATIONALIZATION |
|---|---|
| **BLOCK 1: Worker's characteristics** | |
| ▪ Sex | Female / Male |
| ▪ Family status | Single worker or lone-parent family, Worker with dependent spouse, Worker with non-dependent spouse |
| ▪ Worker's age | Calculated at time of event |
| ▪ Number of dependants | Calculated on basis of income tax |
| ▪ Occupation or trade carried out at time of event | According to Statistics Canada's NOC or recoded into broad categories |
| ▪ Economic activity sector | |
| ▪ Gross base salary used to calculate the IRI | Into 5 categories ($15,250 or less, $15,251-24,999, $25,000-34,999 , …) |
| ▪ Gross annual personal income according to worker | Into 9 categories (less than $10,000 , $10,001-20,000 , $20,001-30,000, …) |
| ▪ Gross annual household income according to worker | Into 9 categories (less than $10,000 , $10,001-20,000 , $20,001-30,000 , …) |
| ▪ Perception of his/her economic situation relative to that of other people of same age | Financially comfortable, Sufficient income to meet his/her needs, Poor, Very poor, Does not know |
| ▪ Assessment plan code | Retrospective, Personalized rate, Unit rate |
| ▪ Nature of employment contract at time of event | Full-time, Part-time, On call, Seasonal, Fixed-term contract |
| ▪ Employment status at time of event | Permanent full-time, Permanent part-time, Temporary fixed term, Temporary indeterminate |
| ▪ Method of remuneration | Hourly, Weekly, etc., Tips, Commission, Lump sum |
| ▪ Number of hours worked per week | 0-16 hours, 17-32 hours, 33-40 hours, more than 51 hours |
| ▪ Number of years of experience in the occupation | Less than one year, 1 month-1 year, 1 year-5 years, more than 5 years |
| ▪ Number of years of experience at the employer's | Less than one year, 1 month-1 year, 1 year-5 years, more than 5 years |
| ▪ Size of workplace | 1 to 20, 21 to 100, 101 to 500, over 500 employees |
| ▪ Employment-injury-prevention or reintegration-into-the-company program | Yes / No / Don't know |
| ▪ Unionized at time of event | Yes / No |
| ▪ Perceived physical effort required by job | No, small, moderate, or big physical effort |
| ▪ Level of job satisfaction at time of event | Not at all, little, quite, or very satisfied |
| ▪ Means of transportation used to get to work | Car, truck, or company vehicle, public transit, bicycle, on foot, combined means |
| ▪ Number of kilometres between home and workplace | Into 7 categories (0-4 km, 5-14 km, 15-19 km, other) |
| ▪ Private or group insurance policy, in addition to that guaranteed by CSST | Yes / No |
| ▪ Does private or group insurance policy cover medications? | Yes / No |
| ▪ Does private or group insurance policy cover medical care? | Yes / No |
| ▪ Does private or group insurance policy cover dental care? | Yes / No |
| ▪ Born in Canada | Yes / No |
| ▪ Country of origin if born elsewhere | |
| ▪ Number of years of residency in Canada if born elsewhere | Less than one year, 1-5 years, 6-10 years, more than 10 years |
| **BLOCK 2: Worker's history** | |
| ▪ Surgery on same injury site prior to event | Yes / No |
| ▪ Consultation for problem involving same injury site during 12 months prior to event | Yes / No |
| ▪ Absence from work for problem involving same injury site during 12 months prior to event | Yes / No |

| | |
|---|---|
| ▪ Consultation for bone, arthritis, arthrosis, or wear-and-tear problem during 12 months prior to event | Yes / No |
| ▪ Consultation for lung disease during 12 months prior to event | Yes / No |
| ▪ Consultation for cardiac disease or hypertension during 12 months prior to event | Yes / No |
| ▪ Consultation for diabetes during 12 months prior to event | Yes / No |
| ▪ Consultation for another disease during 12 months prior to event + which disease? | Yes / No and other diseases recoded into categories |
| ▪ Compensation history during year prior to event | Yes / No and average duration of the history |
| ▪ Compensation history during 5 years immediately prior to event | Yes / No and average duration of the history |
| ▪ Compensation history during 10 years immediately prior to event | Yes / No and average duration of the history |
| ▪ Initial event occurred prior to event under study | Yes / No |
| ▪ Number of relapses prior to event under study | |
| ▪ Initial event occurred during year prior to event under study | Yes / No |
| ▪ Number of relapses during year prior to event under study | |
| ▪ Initial event occurred during 5 years immediately prior to event under study | Yes / No |
| ▪ Number of relapses during 5 years immediately prior to event under study | |
| ▪ Initial event occurred during 10 years immediately prior to event under study | Yes / No |
| ▪ Number of relapses during 10 years immediately prior to event under study | |
| **BLOCK 3: Event under study** | |
| ▪ Regional office assigned | Code for main administrative unit |
| ▪ Rehabilitation centre (PRÉVICAP workers) | Hôpital Charles-Lemoyne (Montérégie), Centre de réadaptation Lucie Bruneau (Montréal), Centre de réadaptation La Maison (Abitibi), Institut de réadaptation en déficience physique du Québec (Québec City) |
| ▪ Nature of injury | CSST code |
| ▪ Site of injury | CSST code or category |
| ▪ Side of injury | Left, right, both |
| ▪ Dominance | Left-handed, right-handed, ambidextrous |
| ▪ Intensity of pain 4 weeks after event and at IE | VAS scale from 0 to 100 |
| ▪ Perception of severity of injury 4 weeks after event and at IE | Scale from 0 (not at all serious) to 10 (very serious) |
| ▪ How much time worker thinks he/she will still be off work at 4 weeks post-event | At most 2 more weeks, Between 2 weeks and 3 months, Between 3 and 6 months, More than 6 months, Has no idea |
| ▪ Score on Dallas Pain Questionnaire, impact on daily activities, 4 weeks post-event and at IE | |
| ▪ Score on Dallas Pain Questionnaire, impact on work and leisure activities, 4 weeks post-event and at IE | |
| ▪ Score on Dallas Pain Questionnaire, impact on anxiety/depression 4 weeks post-event at IE | |
| ▪ Score on Dallas Pain Questionnaire, impact on social interest ,4 weeks post-event and at IE | |
| ▪ Roland-Morris score on WoDDI and at IE | |
| ▪ NULI score on WoDDI and at IE | |
| ▪ FABQPA score (Physical Activities) at IE | |
| ▪ FABQW score (Work) at IE | |
| ▪ APGAR score on WoDDI | |
| ▪ Year of event | 2000 to 2004 |
| ▪ Type of event (initial event or relapse) | Initial event (900), recurrence / relapse (892 to 852) |
| ▪ Category of event | Work-related injury due to an event, relapse following a work-related injury due to an event, occupational disease, relapse further to an occupational disease |
| ▪ Occupational disease | Yes / No |
| ▪ Case management approach | Usual or PRÉVICAP |

| | |
|---|---|
| **BLOCK 4: Return to work** | |
| ▪ Return to work to pre-injury job for at least 3 days | Yes / No and time elapsed between event and RTW |
| ▪ Return to work to any job for at least 3 days | Yes / No and time elapsed between event and RTW |
| ▪ Return to work to pre-injury job for at least 4 weeks | Yes / No and time elapsed between event and RTW |
| ▪ Return to work to any job for at least 4 weeks | Yes / No and time elapsed between event and RTW |
| ▪ Return to work to pre-injury job for at least 6 months | Yes / No and time elapsed between event and RTW |
| ▪ Return to work to any job for at least 6 months | Yes / No and time elapsed between event and RTW |
| ▪ Employment status at 6, 12, 18, and 24 months post-event | Same or another employer and same job or not with or without modifications |
| ▪ Number of returns to work at 6, 12, 18, and 24 months post-event | 0 to 4 |
| ▪ Type of RTW at 6, 12, 18, and 24 months post-event taking history into account | Working and involved in 1st RTW, Working and involved in 2nd RTW, Working and involved in 3rd RTW, Absent from work and has made 0 attempts to RTW, Absent from work and has made 1 attempt to RTW, Absent from work and has made 2 attempts to RTW, Absent from work and has made 3 attempts to RTW |
| ▪ Number of days between receipt of file and WoDDI | |
| ▪ Number of days between WoDDI and start of PRÉVICAP management | |
| ▪ Number of days between WoDDI and end of PRÉVICAP management | |
| ▪ Number of days between mailing of WoDDI report to physician and insurer's consent | |
| ▪ Number of days between mailing of WoDDI report to physician and physician's consent | |
| ▪ Number of days between start and end of PRÉVICAP management | |
| ▪ Number of days between event and PRÉVICAP's receipt of file | |
| ▪ Number of days between event and WoDDI | |
| ▪ Number of days between event and start of PRÉVICAP management | |
| ▪ Number of days between event and end of PRÉVICAP management | |
| ▪ Number of days between 1st IRI payment after event and last IRI payment | |
| ▪ Total number of days compensated since event for same injury until end of medical consolidation over a 2-year window | |
| ▪ Total number of days compensated since event for same injury site at 6, 12, 18, and 24 months post-event | |
| **BLOCK 5: Reparation costs managed by CSST** | |
| ▪ Amounts disbursed for medical costs | Per year (1st, 2nd, and 3rd years) and total |
| ▪ Amounts disbursed for lump-sum costs | Per year (1st, 2nd, and 3rd years) and total |
| ▪ Amounts disbursed for rehabilitation costs | Per year (1st, 2nd, and 3rd years) and total |
| ▪ Amounts disbursed for the other costs | Per year (1st, 2nd, and 3rd years) and total |
| **BLOCK 6: PRÉVICAP intervention** | |
| ▪ Hours of service delivered | Description by centre, period, and type of activity |
| ▪ Number of individuals from different professions who took part in a worker's case | By category and PRÉVICAP centre |
| ▪ Number of interventions administered | |
| ▪ Type of interventions and treatments administered | |
| **BLOCK 7: Income replacement indemnities (IRIs)** | |
| ▪ Amounts disbursed by CSST in form of income replacement indemnities | By year (1st, 2nd, and 3rd years) and total |
| **BLOCK 8: Contestations** | |
| ▪ Contestation before Bureau d'évaluation médicale (BÉM) | BEM contestation indicator |
| ▪ Contestation before administrative review board (RA) | RA contestation indicator |
| ▪ Contestation before Commission des lésions professionnelles (CLP) | CLP contestation indicator |

| **BLOCK 9: Satisfaction** | |
|---|---|
| ▪ Satisfaction with services received from attending physician | Not at all, not very, quite, or very satisfied |
| ▪ Satisfaction with information received by attending physician about nature of injury | Not at all, not very, quite, or very satisfied |
| ▪ Satisfaction with information received by attending physician about activities to be carried out to promote recovery | Not at all, not very, quite, or very satisfied |
| ▪ Number of CSST case managers involved in case | One, two, more than 2, several but does not remember how many |
| ▪ Satisfaction with CSST's explanations about its decisions | Not at all, poorly, quite well, or very well explained |
| ▪ Satisfaction with courtesy shown by CSST case managers | Never, rarely, most of the time, always |
| ▪ Satisfaction with CSST case managers' listening skills | Never, rarely, most of the time, always |
| ▪ Satisfaction with information provided by case managers | Never, rarely, most of the time, always |
| ▪ Satisfaction with clarity of information provided | Never, rarely, most of the time, always |
| ▪ Satisfaction with case managers' understanding of situation | Never, rarely, most of the time, always |
| ▪ Confidence worker placed in case managers to obtain what he/she was entitled to | Never, rarely, most of the time, always |
| ▪ Satisfaction with solutions proposed by case managers | Never, rarely, most of the time, always |
| ▪ General satisfaction with services received from case managers | Not at all, not very, quite, or very satisfied |
| ▪ Was aware of processes followed by CSST to help him/her return to work? | Yes / No |
| ▪ Was informed of CSST's processes in this regard? | Yes / No |
| ▪ Felt he/she had been helped | Yes / No |
| ▪ Felt he/she had been understood | Yes / No |
| ▪ Received rehabilitation services | Yes / No |
| ▪ Feeling of having participated in planning of his/her rehabilitation | Yes / No |
| ▪ Satisfaction with rehabilitation services received | Yes / No |
| ▪ At least one meeting at a PRÉVICAP centre for evaluation, treatments, or services | Yes / No |
| ▪ Satisfaction with services and treatments received from PRÉVICAP | Not at all, not very, quite, or very satisfied |
| ▪ Satisfaction with information received from PRÉVICAP about nature of his/her injury | Not at all, not very, quite, or very satisfied |
| ▪ Satisfaction with information received from PRÉVICAP about activities to be carried out to promote recovery | Not at all, not very, quite, or very satisfied |
| ▪ Satisfaction with intervention carried out in workplace by PRÉVICAP | Not at all, not very, quite, or very satisfied |
| ▪ Felt that PRÉVICAP services helped him/her return to work | Yes / No |
| ▪ Aspects of PRÉVICAP program appreciated by worker | Grouped into broad categories |
| ▪ Aspects of PRÉVICAP program less appreciated by worker | Grouped into broad categories |

# Appendix 3 – Detailed profile of all PRÉVICAP workers

## *1. Worker characteristics*

### Table 43 – Job at time of event

| | n | % |
|---|---|---|
| **Occupations by category**[a] | | |
| Service occupations (61) | 88 | 15.4 |
| Product fabricating, assembly, and repair occupations (85) | 69 | 12.1 |
| Construction trades (87) | 62 | 10.9 |
| Material handlers and related occupations (93) | 60 | 10.5 |
| Transport equipment operating occupations (91) | 37 | 6.5 |
| Administrative personnel and related occupations (41) | 35 | 6.1 |
| Medical personnel, health technicians, and related occupations (31) | 29 | 5.1 |
| Sales occupations (51) | 23 | 4 |
| Processing occupations (81/82) | 20 | 3.5 |
| Machining and related occupations (83) | 19 | 3.3 |
| Teaching and related occupations (27) | 16 | 2.8 |
| Other crafts and equipment operating occupations (95) | 11 | 1.9 |
| Farming, agricultural, and animal husbandry occupations (71) | 5 | 0,9 |
| Artistic, literary. and related occupations (33) | 2 | 0.4 |
| Mining, quarrying, drilling, and related occupations (77) | 2 | 0.4 |
| Managerial, administrative, and related occupations (11) | 2 | 0.4 |
| Occupations in natural sciences, engineering, or mathematics (21) | 2 | 0.4 |
| Occupations in social sciences or related fields (23) | 1 | 0.2 |
| Occupations not classified elsewhere (99) | 88 | 15.4 |
| Total | 571 | 100 |
| **Employer's main economic activity sector(s)** [b] | | |
| Other commercial and personal services (21) | 95 | 17.9 |
| Construction and public works (01) | 90 | 16.9 |
| Wholesale and retail trade (16) | 89 | 16.8 |
| Medical and social services (30) | 51 | 9.6 |
| Food and beverages industry (12) | 27 | 5.1 |
| Transportation and warehousing (15) | 27 | 5.1 |
| Metal products manufacturing (05) | 21 | 4 |
| Furniture and fixtures manufacturing industry (13) | 14 | 2.6 |
| Wood industry (excluding sawmills) (06) | 14 | 2.6 |
| Finance, insurance, and real estate (29) | 13 | 2.4 |
| Printing, publishing, and related services (23) | 9 | 1.7 |
| Agriculture (26) | 9 | 1.7 |
| Non-metal mineral products manufacturing (10) | 8 | 1.5 |
| Rubber and plastic products (07) | 7 | 1.3 |
| Public administration (11) | 6 | 1.1 |
| Electrical products manufacturing (25) | 6 | 1.1 |
| Teaching and related services (28) | 6 | 1.1 |
| Communication and energy transportation (22) | 6 | 1.1 |
| Miscellaneous manufacturing industries (32) | 6 | 1.1 |
| Textile industry (20) | 5 | 0.9 |

| | | |
|---|---|---|
| Primary metal processing (09) | 5 | 0.9 |
| Transportation equipment manufacturing (08) | 4 | 0.8 |
| Pulp and paper industry and related activities (14) | 3 | 0.6 |
| Machine (excluding electrical) manufacturing (18) | 3 | 0.6 |
| Mines, quarries, and oil wells (04) | 2 | 0.4 |
| Knitwear and apparel (27) | 2 | 0.4 |
| Chemicals industry (02) | 2 | 0.4 |
| Forestry and sawmills (03) | 1 | 0.2 |
| Total | 531 | 100 |

[a] Categorization according to the Canadian Classification and Dictionary of Occupations (CCDO) (1971) used by the CSST. The figures in parentheses correspond to the two-digit CCDO-1971 codes. [b] Categorization according to the *Classification des activités économiques du Québec de 1984* used by the CSST. The figures in parentheses correspond to the two-digit CAEQ-1984 codes.

## 2. Characteristics of event studied

### Table 44 – Description of event

| | n | % |
|---|---|---|
| **Nature of injury**[a] | | |
| Sprains, strains, tears (2100) | 332 | 63 |
| Tendinitis (17330) | 38 | 7.2 |
| Bruises, contusions (4300) | 29 | 5.5 |
| Epicondylitis, epitrochleitis (17370) | 19 | 3.6 |
| Fracture (including broken tooth) (1200) | 17 | 3.2 |
| Herniated disc (17231) | 14 | 2.7 |
| Low back pain, lumbago (17220) | 13 | 2.5 |
| Multiple traumatic injuries or disorders without fracture (8902) | 13 | 2.5 |
| Sciatica, low back pain/sciatica (17210) | 9 | 1.7 |
| Unspecified back pain (9720) | 4 | 0.8 |
| Pain, except in the back (9739) | 3 | 0.6 |
| Carpal tunnel syndrome (12410) | 3 | 0.6 |
| Bursitis (17310) | 3 | 0.6 |
| Multiple diseases, conditions, disorders (80000) | 3 | 0.6 |
| Tenosynovitis (including De Quervain's) (17340) | 2 | 0.4 |
| Luxation (including dislocation) (1100) | 2 | 0.4 |
| Cuts, lacerations (with loss of substance) (3400) | 2 | 0.4 |
| Other traumatic injuries and disorders (9900) | 2 | 0.4 |
| Avulsions, pulls, tears (3300) | 1 | 0.2 |
| Multiple burns (5800) | 1 | 0.2 |
| Multiple traumatic injuries or disorders with fracture (8901) | 1 | 0.2 |
| Traumatic injury or disorder with non-specific diagnosis (9790) | 1 | 0.2 |
| Cervical (neck) pain (17202) | 1 | 0.2 |
| Osseo-ligamentous impingement (17232) | 1 | 0.2 |
| Minor intervertebral derangement (MID) (17291) | 1 | 0.2 |
| Myositis (17360) | 1 | 0.2 |
| Cannot be classified (99990) | 11 | 2.1 |
| Total | 527 | 100 |
| **Site of injury**[a] | | |
| Lumbar region (23100) | 252 | 44.1 |

| | | |
|---|---|---|
| Multiple sites (80000) | 47 | 8.2 |
| Shoulders (clavicle and shoulder blade) (21000) | 45 | 7.9 |
| Thoracolumbar region (23202) | 28 | 4.9 |
| Thoracic region (23200) | 27 | 4.7 |
| Cervical region and cervical vertebra (11001) | 25 | 4.4 |
| Lumbosacral region (23301) | 23 | 4 |
| Elbow(s) (olecranon, epicondyle) (31200) | 20 | 3.5 |
| Back, including spine, spinal cord, n.e.c. (23900) | 12 | 2.1 |
| Wrist(s) (wrist bones: trapezium, carpal bones) (32000) | 11 | 1.9 |
| Cervicothoracic region (23201) | 9 | 1.6 |
| Arm (from elbow to shoulder) (31100) | 7 | 1.2 |
| Multiple thoracic regions (23800) | 7 | 1.2 |
| Hand(s), excluding finger(s) only (33000) | 5 | 0.9 |
| Back (spine and spinal cord) (23000) | 5 | 0.9 |
| Finger(s), excluding thumb (34002) | 4 | 0.7 |
| Multiple sites, upper extremities (38900) | 4 | 0.7 |
| Forearm (from wrist to elbow) (31300) | 4 | 0.7 |
| Foot/feet, excluding toe(s) only (43000) | 4 | 0.7 |
| Thumb or thumb and other fingers (34001) | 3 | 0.5 |
| Thorax (ribs and internal organs) (22000) | 3 | 0.5 |
| Knee(s) (patella, meniscus, etc.) 41200) | 3 | 0.5 |
| Foot/Feet, n.e.c. (43900) | 2 | 0.4 |
| Sacral region (23300) | 2 | 0.4 |
| Pelvis (25200) | 2 | 0.4 |
| Groin and inguinal region (25400) | 2 | 0.4 |
| Multiple trunk sites (28000) | 2 | 0.4 |
| Cranial region, including skull (1000) | 1 | 0.2 |
| Scalp (1200) | 1 | 0.2 |
| Cranial region, n.e.c.(1900) | 1 | 0.2 |
| Pelvic region, unspecified (25000) | 1 | 0.2 |
| Hip(s) (25100) | 1 | 0.2 |
| Arm(s), unspecified (31000) | 1 | 0.2 |
| Leg(s), unspecified (41000) | 1 | 0.2 |
| Multiple sites on one leg (41800) | 1 | 0.2 |
| Ankle(s) (joint, medial and lateral malleoli) (42000) | 1 | 0.2 |
| Multiple sites, lower extremities, n.e.c. (48900) | 1 | 0.2 |
| Systems, n.e.c. (e.g. fainting) (50009) | 1 | 0.2 |
| Thigh(s) (femur, quadriceps) (41100) | 1 | 0.2 |
| Cannot be classified (99990) | 1 | 0.2 |
| Total | 571 | 100 |

[a] Categorization according to the OIICS (Occupational Injury and Illness Classification System) adapted to the CSST (code between parentheses).

n.e.c.= Not Elsewhere Classified.

## 3. Characteristics of case management process

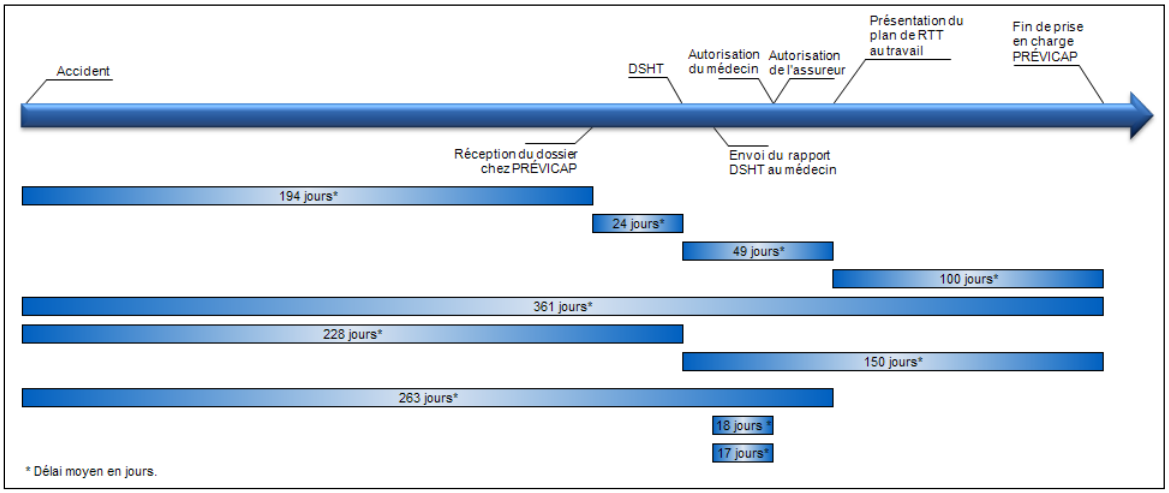



**Figure 12 – Chronology of case management indicators**

**Table 45 – Time elapsed before management, by PRÉVICAP centre**

| Indicator | Centre | n | Mean (days) | Median (days) | Coefficient of variation (%)[c] | p |
|---|---|---|---|---|---|---|
| Number of days between event and PRÉVICAP's receipt of file | HCLM | | 210.2 | 203.0 | 39.5 | **<0.0005[a]** |
| | IRDPQ | | 173.1 | 150.0 | 60.8 | |
| | CRLB | | 205.9 | 192.0 | 43.4 | |
| | CRLM | | 174.5 | 121.0 | 81.5 | |
| | TOTAL | 521 | 194.0 | 179.0 | 52.2 | |
| Number of days between PRÉVICAP's receipt of file and WoDDI | HCLM | | 15.8 | 13.0 | 84.8 | **<0.0005[a]** |
| | IRDPQ | | 27.1 | 20.0 | 78.6 | |
| | CRLB | | 27.5 | 20.0 | 116.0 | |
| | CRLM | | 27.1 | 15.5 | 137.6 | |
| | TOTAL | 515 | 23.7 | 17.0 | 108.4 | |
| Number of days between event and WoDDI | HCLM | | 254.1 | 225.0 | 52.7 | **<0.0005[b]** |
| | IRDPQ | | 204.1 | 192.0 | 53.1 | |
| | CRLB | | 240.4 | 230.0 | 39.2 | |
| | CRLM | | 183.2 | 134.0 | 63.0 | |
| | TOTAL | 562 | 228.2 | 212.5 | 51.3 | |
| Number of days between WoDDI and presentation of TRW plan at workplace[e] | HCLM | | 48.7 | 35.0 | 84.6 | **0.001[b]** |
| | IRDPQ | | 35.5 | 22.0 | 100.0 | |
| | CRLB | | 60.7 | 47.5 | 72.5 | |
| | CRLM | | 54.2 | 46.0 | 88.6 | |
| | TOTAL | 304 | 48.8 | 39.0 | 86.7 | |
| Number of days between presentation of TRW plan at workplace and end of PRÉVICAP management[e] | HCLM | | 89.0 | 85.0 | 47.5 | 0.300[a.d] |
| | IRDPQ | | 97.4 | 95.0 | 41.8 | |
| | CRLB | | 99.3 | 86.5 | 68.6 | |
| | CRLM | | 130.9 | 109.5 | 90.9 | |
| | TOTAL | 262 | 99.9 | 93.0 | 67.1 | |
| Number of days between WoDDI and end of | HCLM | | 137.1 | 121.5 | 46.0 | **0.011[a.d]** |
| | IRDPQ | | 132.9 | 125.0 | 33.1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| PRÉVICAP management[e] | CRLB | | 160.3 | 146.0 | 52.3 | |
| | CRLM | | 183.9 | 157.5 | 64.4 | |
| | TOTAL | 259 | 149.6 | 135.0 | 52.2 | |
| Number of days between event and presentation of TRW plan at workplace[e] | HCLM | | 274.4 | 257.5 | 34.5 | |
| | IRDPQ | | 232.8 | 208.0 | 52.7 | |
| | CRLB | | 288.9 | 286.5 | 32.2 | **<0.0005[a]** |
| | CRLM | | 248.6 | 212.0 | 49.8 | |
| | TOTAL | 308 | 263.3 | 250.0 | 41.2 | |
| Number of days between event and end of PRÉVICAP management[e] | HCLM | | 363.3 | 359.0 | 30.3 | |
| | IRDPQ | | 313.2 | 308.0 | 30.4 | |
| | CRLB | | 388.9 | 382.5 | 28.5 | **0.002[a,d]** |
| | CRLM | | 370.5 | 340.0 | 44.5 | |
| | TOTAL | 263 | 360.6 | 349.0 | 33.2 | |
| Number of days between mailing of WoDDI report to physician and insurer's consent[e] | HCLM | | 15.7 | 7.5 | 168.8 | |
| | IRDPQ | | 8.7 | 4.0 | 212.6 | |
| | CRLB | | 25.3 | 15.0 | 151.0 | 0.066[b,d] |
| | CRLM | | 14.8 | 1.0 | 285.8 | |
| | TOTAL | 199 | 17.5 | 7.0 | 198.9 | |
| Number of days between mailing of WoDDI report to physician and physician's consent[e] | HCLM | | 15.7 | 5.0 | 214.0 | |
| | IRDPQ | | 10.0 | 5.0 | 179.0 | |
| | CRLB | | 19.9 | 9.0 | 158.8 | 0.170[b] |
| | CRLM | | 22.7 | 8.0 | 193.4 | |
| | TOTAL | 323 | 17.3 | 7.0 | 189.6 | |

[a] Kruskal-Wallis test. [b] Anova. [c] The coefficient of variation $\left(\frac{Standard\ deviation}{Mean} * 100\right)$ is a normalized measure of dispersion that allows for comparisons to be made between the extent of variability for a given factor across different populations or the extent of variability for different variables within a given population. [d] More than 15% of data missing. [e] Among those workers who benefited from the complete program (n = 324).

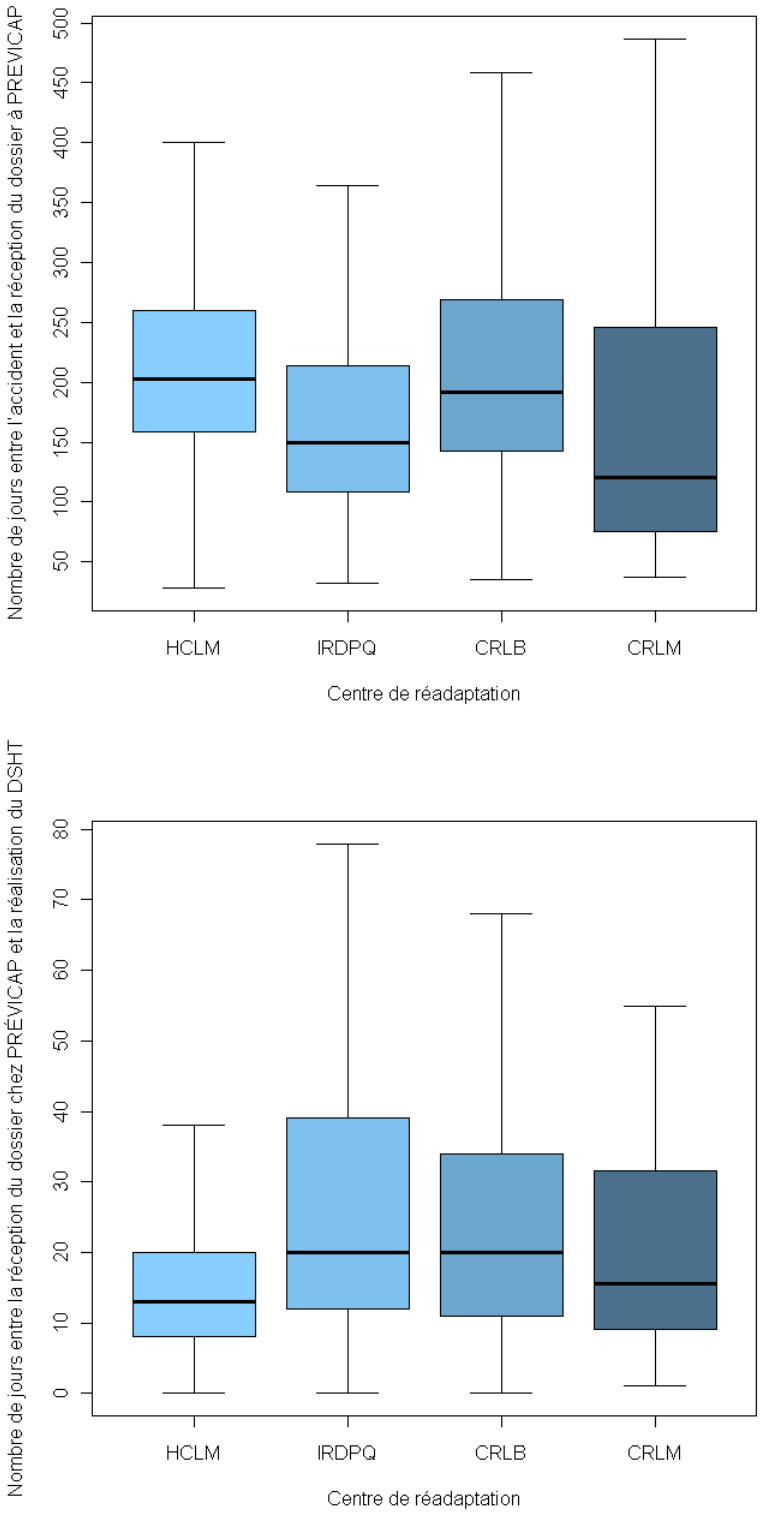
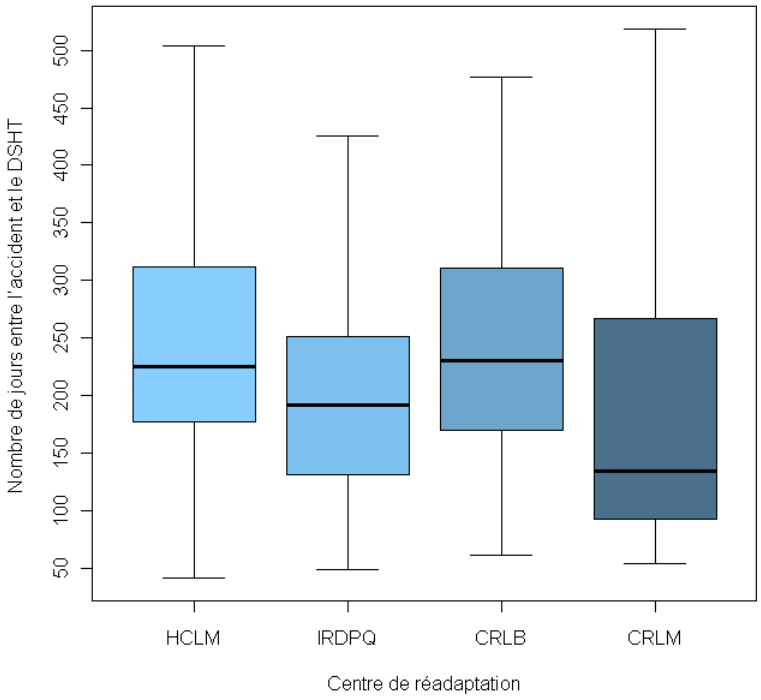



**Figure 13 – Box plots of time elapsed before management, by PRÉVICAP centre**



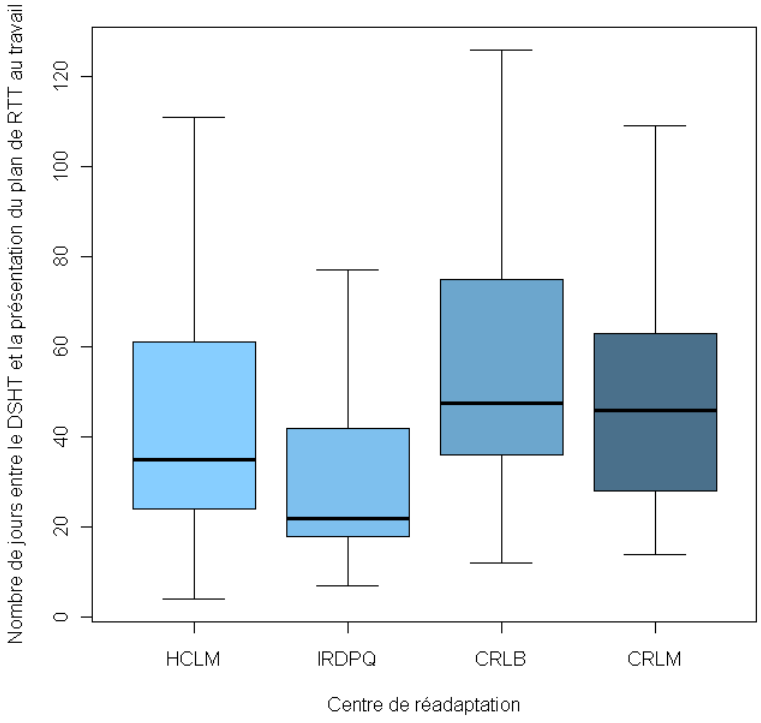




**Figure 13 – Box plots of time elapsed before management, by PRÉVICAP centre**

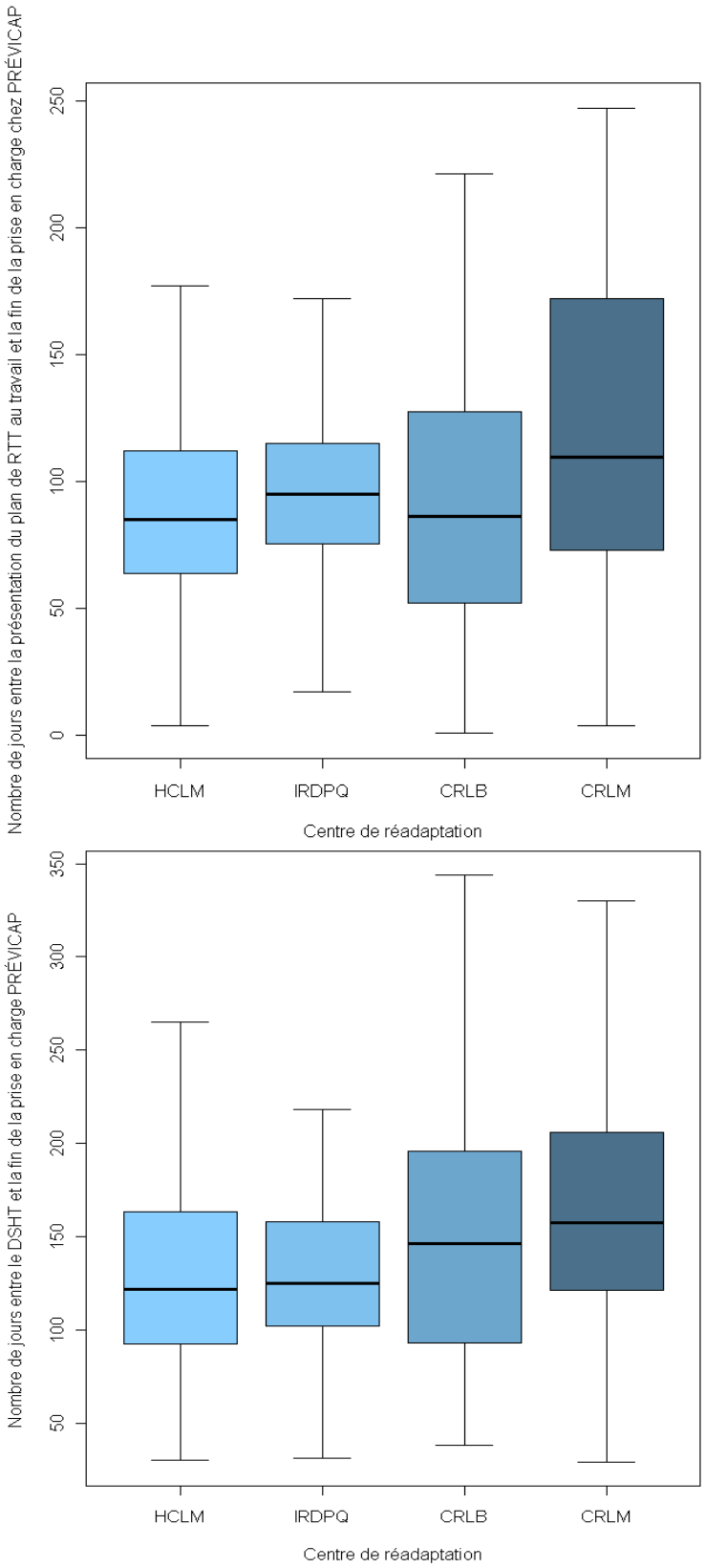



**Figure 13 – Box plots of time elapsed before management, by PRÉVICAP centre**

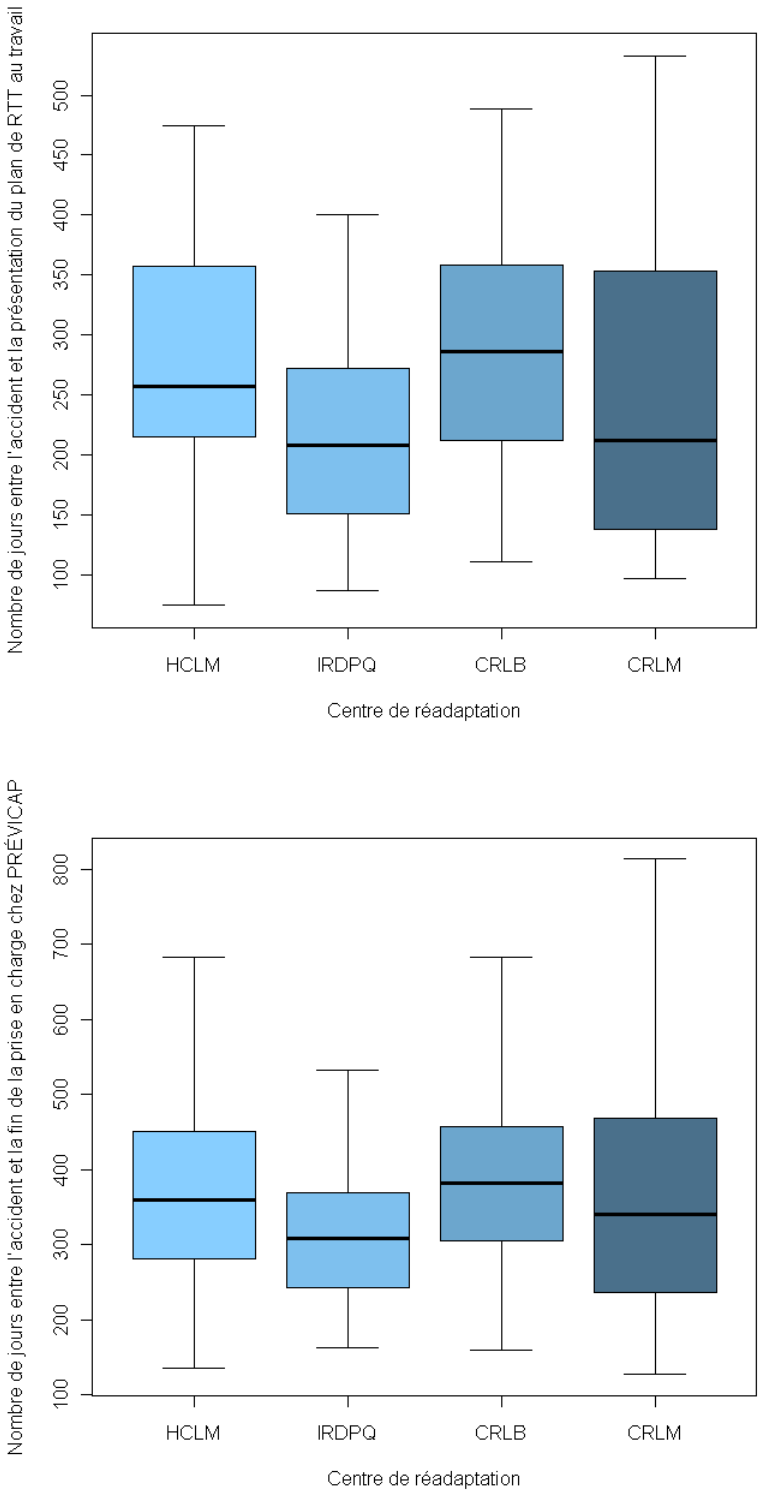



**Figure 13 – Box plots of time elapsed before management, by PRÉVICAP centre**

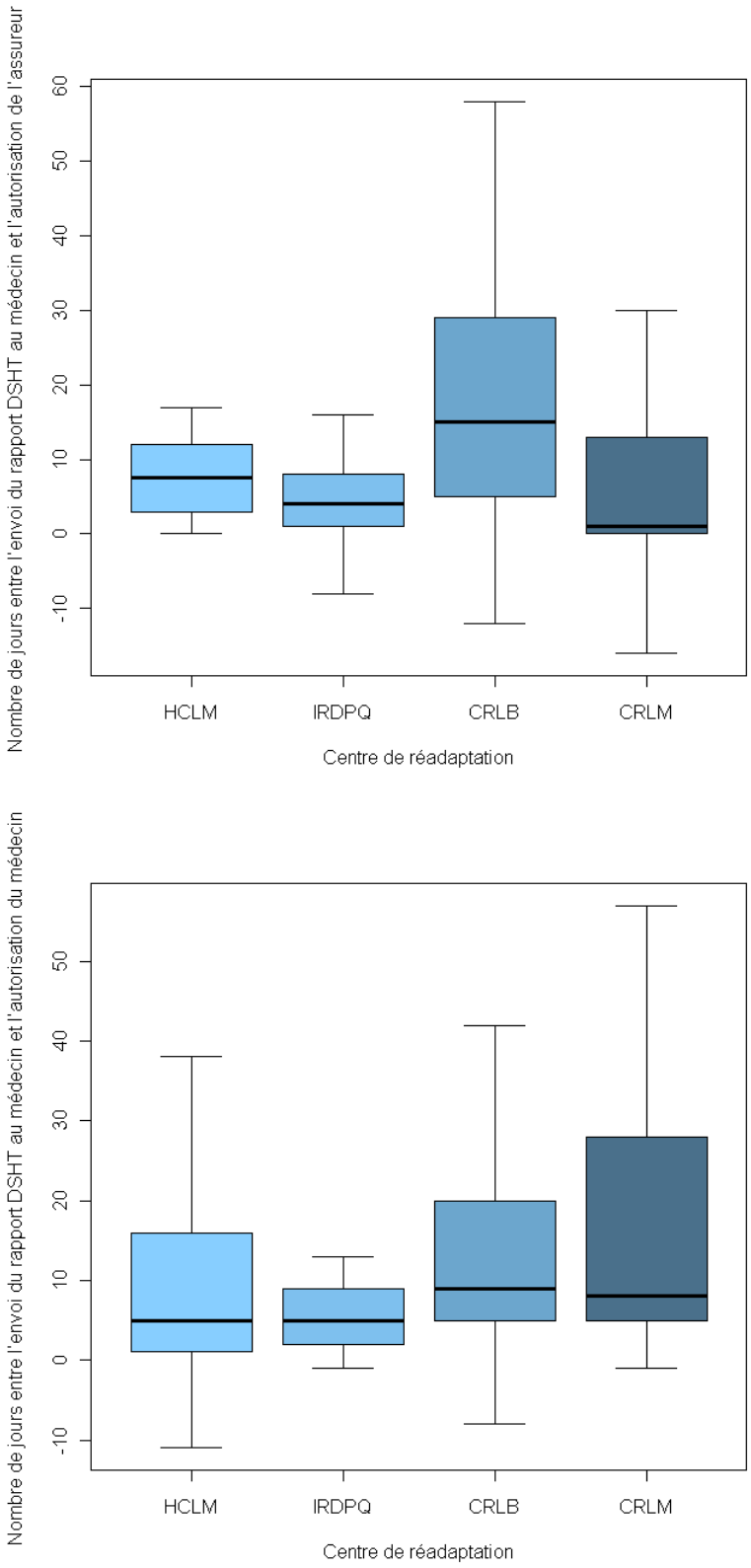



**Figure 13 – Box plots of time elapsed before management, by PRÉVICAP centre**

# Appendix 4 – Comparison of PRÉVICAP workers interviewed and not interviewed

## Table 46 – Comparison of PRÉVICAP workers interviewed and not interviewed (n = 571)

| | Interviewed | | Not interviewed | | p |
|---|---|---|---|---|---|
| | n | % | n | % | |
| **Sex** | | | | | |
| Female | 78 | 45.3 | 130 | 32.6 | **0.004** |
| Male | 94 | 54.7 | 269 | 67.4 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Worker's age on date of event** | | | | | |
| 18 to 24 years | 9 | 5.2 | 27 | 6.8 | 0.294 |
| 25 to 49 years | 131 | 76.2 | 317 | 79.4 | |
| 50 years or over | 32 | 18.6 | 55 | 13.8 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Gross annual income** | | | | | |
| $15,250 or less | 9 | 5.2 | 32 | 8.0 | 0.454 |
| $15,251-$44,999 | 129 | 75.0 | 284 | 71.4 | |
| $45,000 or more | 34 | 19.8 | 82 | 20.6 | |
| Total | 172 | 100.0 | 398 | 100.0 | |
| **Number of dependants** | | | | | |
| None | 101 | 58.7 | 258 | 64.8 | **0.046** |
| 1 or 2 people | 57 | 33.1 | 94 | 33.1 | |
| 3 people or more | 14 | 8.1 | 46 | 8.1 | |
| Total | 172 | 100.0 | 398 | 100.0 | |
| **PRÉVICAP centre** | | | | | |
| HCLM | 57 | 33.1 | 126 | 31.6 | 0.289 |
| CRLB | 44 | 25.6 | 113 | 28.3 | |
| CRLM | 25 | 14.5 | 38 | 9.5 | |
| IRDPQ | 46 | 26.7 | 122 | 30.6 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Code of main administrative unit** | | | | | |
| Québec (OP1600) | 31 | 18.0 | 88 | 22.1 | **0.002** |
| Chaudière-Appalaches (OP1700) | 14 | 8.1 | 27 | 6.8 | |
| Laval (OP2100) | 12 | 7.0 | 36 | 9.0 | |
| Longueuil (OP2200) | 22 | 12.8 | 37 | 9.3 | |
| Abitibi-Témiscamingue/ Rouyn- Noranda/ Val-d'Or (OP3100) | 25 | 14.5 | 38 | 9.5 | |
| Yamaska/Ste-Hyacinthe (OP3600) | 16 | 9.3 | 37 | 9.3 | |
| St-Jean-sur- Richelieu (OP3900) | 12 | 7.0 | 31 | 7.8 | |
| Montréal 4 (OP2600-OP4200) | 15 | 8.7 | 56 | 14.0 | |
| Montréal 1 (OP2800-OP4300) | 6 | 3.5 | 36 | 9.0 | |
| Montréal 2 (OP 2400-OP 4400) | 8 | 4.7 | 7 | 1.8 | |
| Montréal 3 (OP 2500-OP 4500) | 11 | 6.4 | 6 | 1.5 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Employer's assessment plan** | | | | | |
| Retrospective | 20 | 12.6 | 34 | 9.1 | 0.530 |
| Personalized rate | 107 | 67.3 | 248 | 66.7 | |
| Unit rate | 32 | 20.1 | 90 | 24.2 | |
| Total | 159 | 100.0 | 372 | 100.0 | |
| **Occupations by category**[a] | | | | | |
| Medical personnel, health technicians, and related occupations | 9 | 5.2 | 20 | 5.0 | 0.380 |
| Administrative personnel and related occupations | 12 | 7.0 | 23 | 5.8 | |
| Sales occupations | 6 | 3.5 | 17 | 4.3 | |
| Service occupations | 30 | 17.4 | 58 | 14.5 | |
| Processing occupations | 5 | 2.9 | 15 | 3.8 | |
| Machining and related occupations | 8 | 4.7 | 11 | 2.8 | |
| Product fabricating, assembly, and repair occupations | 19 | 11.0 | 50 | 12.5 | |
| Construction trades | 22 | 12.8 | 40 | 10.0 | |
| Transport equipment operating occupations | 8 | 4.7 | 29 | 7.3 | |
| Material handlers and related occupations | 10 | 5.8 | 50 | 12.5 | |

| | | | | | |
|---|---|---|---|---|---|
| Occupations not classified elsewhere | 43 | 25.0 | 86 | 21.55 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Employer's main economic activity sector** | | | | | |
| Construction and public works | 26 | 16.4 | 64 | 17.2 | 0.177 |
| Metal products manufacturing and primary metal processing | 6 | 3.8 | 20 | 5.4 | |
| Food and beverages industry | 9 | 5.7 | 18 | 4.8 | |
| Transportation and warehousing | 6 | 3.8 | 21 | 5.6 | |
| Wholesale and retail trade | 32 | 20.1 | 57 | 15.3 | |
| Other commercial and personal services | 28 | 17.6 | 67 | 18.0 | |
| Medical and social services | 18 | 11.3 | 33 | 8.9 | |
| Other economic activity sectors | 34 | 21.4 | 92 | 24.7 | |
| Total | 159 | 100.0 | 372 | 100.0 | |
| **Presence of compensation history during 5 years prior to event** | | | | | |
| No | 131 | 76.2 | 290 | 72.7 | 0.409 |
| Yes | 41 | 23.8 | 109 | 27.3 | |
| Total | 172 | 100.0 | 389 | 100.0 | |
| **Injury site** | | | | | |
| Back | 130 | 75.6 | 303 | 75.9 | 0.916 |
| Neck/upper extremities | 42 | 24.4 | 96 | 24.1 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **Type of event** | | | | | |
| Initial event | 163 | 94.8 | 379 | 5.0 | 0.913 |
| Recurrence/relapse/aggravation | 9 | 5.2 | 20 | 95.0 | |
| Total | 172 | 100.0 | 399 | 100.0 | |
| **BÉM contestation indicator prior to PRÉVICAP management** | | | | | |
| No | 156 | 92.9 | 357 | 91.8 | 0.735 |
| Yes | 12 | 7.1 | 32 | 8.2 | |
| Total | 168 | 100.0 | 389 | 100.0 | |
| **CLP contestation indicator prior to PRÉVICAP management** | | | | | |
| No | 168 | 100.0 | 386 | 99.2 | - |
| Yes | 0 | 0.0 | 3 | 0.8 | |
| Total | **168** | **100.0** | **389** | **100.0** | |

[a] Categorization according to the *Canadian Classification and Dictionary of Occupations* (CCDO) (1971) used by the CSST.

# Appendix 5 – Comparison of workers according to nature of their PRÉVICAP case management

## Table 47 – Comparison of workers according to nature of their PRÉVICAP case management (n = 172)

| | PRÉVICAP WoDDI only | | PRÉVICAP Complete management | | p |
|---|---|---|---|---|---|
| **Sex** | | | | | |
| Female | 22 | 40.0 | 56 | 47.9 | 0.334 |
| Male | 33 | 60.0 | 61 | 52.1 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Worker's age on date of event** | 54 | 100.0 | 105 | 100.0 | |
| 18-24 years | 3 | 5.5 | 6 | 5.1 | **0.004** |
| 25-49 years | 34 | 61.8 | 97 | 82.9 | |
| 50 years or over | 18 | 32.7 | 14 | 12.0 | |
| Total | 55 | 100.0 | 111 | 100.0 | |
| **Annual gross income** | | | | | |
| $15,250 or less | 2 | 3.6 | 7 | 6.0 | 0.215 |
| $15,251-$44,999 | 38 | 69.1 | 91 | 77.8 | |
| $45,000 or more | 15 | 27.3 | 19 | 16.2 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Family status** | | | | | |
| Single worker or lone-parent family | 33 | 64.7 | 53 | 50.5 | 0.341 |
| Worker with dependent spouse | 6 | 11.8 | 15 | 14.3 | |
| Worker with non-dependent spouse | 12 | 23.5 | 37 | 35.2 | |
| Total | 51 | 100.0 | 105 | 100.0 | |
| **Number of dependents** | | | | | |
| None | 33 | 60.0 | 68 | 58.1 | 0.951 |
| 1 to 2 people | 18 | 32.7 | 39 | 33.3 | |
| 3 people or more | 4 | 7.3 | 10 | 8.5 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **PRÉVICAP Centre** | **n** | | **n** | | |
| HCLM | 19 | 34.5 | 38 | 32.5 | 0.748 |
| CRLB | 16 | 29.1 | 28 | 23.9 | |
| CRLM | 6 | 10.9 | 19 | 16.2 | |
| IRDPQ | 14 | 25.5 | 32 | 27.4 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Employment status at time of event** | | | | | |
| Permanent full-time | 49 | 89.1 | 108 | 92.3 | 0.529 |
| Permanent part-time | 2 | 3.6 | 5 | 4.3 | |
| Temporary fixed term or indeterminate | 4 | 7.3 | 4 | 3.4 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Employer's assessment plan** | | | | | |
| Retrospective | 6 | 11.5 | 14 | 13.1 | 0.393 |
| Personalized rate | 39 | 75.0 | 68 | 63.6 | |
| Unit rate | 7 | 13.5 | 25 | 23.4 | |
| Total | 52 | 100.0 | 117 | 100.0 | |
| **Size of workplace according to worker** | | | | | |
| 1 to 20 employees | 28 | 51.9 | 56 | 49.6 | 0.502 |
| 21 to 100 employees | 20 | 37.0 | 36 | 31.9 | |
| 101 to 500 employees | 6 | 11.1 | 18 | 15.9 | |
| 501 employees or more | 0 | 0.0 | 3 | 2.7 | |
| Total | 54 | 100.0 | 113 | 100.0 | |
| **Number of years of experience at employer's** | | | | | |
| Less than 1 year | 10 | 18.2 | 11 | 9.4 | 0.259 |
| 1 to 5 years | 22 | 40.0 | 51 | 43.6 | |
| Over 5 years | 23 | 41.8 | 55 | 47.0 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Number of years of experience in occupation** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Less than 1 year | 3 | 5.5 | 4 | 3.4 | 0.237 |
| 1 to 5 years | 12 | 21.8 | 15 | 12.8 | |
| More than 5 years | 40 | 72.7 | 98 | 83.8 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Occupations by category[a]** | | | | | |
| Medical personnel, health technicians, and related occupations | 2 | 3.6 | 8 | 6.8 | - |
| Administrative personnel and related occupations | 3 | 5.5 | 15 | 12.8 | |
| Service occupations | 14 | 25.5 | 24 | 20.5 | |
| Occupations in food and beverages industry | 3 | 5.5 | 6 | 5.1 | |
| Product fabricating, assembly, and repair occupations | 6 | 10.9 | 15 | 12.8 | |
| Construction trades | 11 | 20.0 | 18 | 15.4 | |
| Transport equipment operating occupations | 4 | 7.3 | 5 | 4.3 | |
| Occupations not classified elsewhere | 12 | 21.8 | 26 | 22.2 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Perceived physical effort required by job** | | | | | |
| No/little physical effort | 3 | 5.5 | 9 | 7.7 | **0.008** |
| Moderate physical effort | 12 | 21.8 | 52 | 44.4 | |
| Big physical effort | 40 | 72.7 | 56 | 47.9 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Presence of compensation history during 5 years prior to event** | | | | | |
| No | 39 | 70.9 | 92 | 78.6 | 0.268 |
| Yes | 16 | 29.1 | 25 | 21.4 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Injury** | | | | | |
| Back | 40 | 72.7 | 90 | 76.9 | 0.550 |
| Neck/upper extremities | 15 | 27.3 | 27 | 23.1 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Type of event** | | | | | |
| Initial event | 54 | 98.2 | 109 | 94.8 | 0.168 |
| Recurrence/relapse/aggravation | 1 | 1.8 | 8 | 5.2 | |
| Total | 55 | 100.0 | 117 | 100.0 | |
| **Unionized at time of event** | | | | | |
| Yes | 28 | 51.9 | 47 | 44.8 | 0.396 |
| No | 26 | 48.1 | 58 | 55.2 | |
| Total | 54 | 100.0 | 105 | 100.0 | |
| **BEM contestation prior to PRÉVICAP management** | | | | | |
| No | 47 | 90.4 | 109 | 94.0 | 0.405 |
| Yes | 5 | 9.6 | 7 | 6.0 | |
| Total | 52 | 100.0 | 116 | 100.0 | |

[a] Categorization according to the Canadian Classification and Dictionary of Occupations (CCDO) (1971) used by the CSST.

# Appendix 6 – Additional satisfaction analyses

The results below concern all the PRÉVICAP workers interviewed and their control-group counterparts. They therefore constitute the results of intent-to-treat analyses.

## *Satisfaction with services of attending physician*

**Table 48 – Satisfaction with services of attending physician, by group**

| | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|---|
| | | n | | n | | |
| **Satisfaction with services received from your attending physician** | Not at all/not every satisfied | 16 | 11.4 | 88 | 16.2 | |
| | Quite satisfied | 63 | 45.0 | 138 | 25.4 | **<0.0005** |
| | Very satisfied | 61 | 43.6 | 318 | 58.5 | |
| | Total | 140 | 100.0 | 544 | 100.0 | |
| **Satisfaction with information received about nature of your injury** | Not at all/not every satisfied | 26 | 18.6 | 109 | 20.0 | |
| | Quite satisfied | 54 | 38.6 | 144 | 26.5 | **0.017** |
| | Very satisfied | 60 | 42.9 | 291 | 53.5 | |
| | Total | 140 | 100.0 | 544 | 100.0 | |
| **Satisfaction with information received about activities to be carried out to promote your recovery** | Not at all/not every satisfied | 16 | 14.4 | 77 | 17.0 | |
| | Quite satisfied | 51 | 45.9 | 145 | 31.9 | **0.020** |
| | Very satisfied | 44 | 39.6 | 232 | 51.1 | |
| | Total | 111 | 100.0 | 454 | 100.0 | |
| | I received no information about this | 29 | 20.7 | 89 | 16.4 | |

## *Satisfaction with services of case managers*

**Table 49 – Satisfaction with quality of services delivered by case managers, by group**

| | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|---|
| | | n | | n | | |
| **Satisfaction with explanations given about CSST decisions** | Not/poorly explained | 39 | 27.9 | 210 | 38.8 | |
| | Quite well explained | 68 | 48.6 | 216 | 39.9 | 0.052 |
| | Very well explained | 33 | 23.6 | 115 | 21.3 | |
| | Total | 140 | 100.0 | 541 | 100.0 | |
| **Satisfaction with courtesy shown by CSST case managers** | Never/rarely | 6 | 4.3 | 33 | 6.1 | |
| | Most of the time | 21 | 15.0 | 132 | 24.3 | **0.033** |
| | Always | 113 | 80.7 | 378 | 69.6 | |
| | Total | 140 | 100.0 | 543 | 100.0 | |
| **Satisfaction with time that CSST case managers spent listening** | Never/rarely | 18 | 12.9 | 98 | 18.2 | |
| | Most of the time | 33 | 23.6 | 177 | 32.9 | **0.008** |
| | Always | 89 | 63.6 | 263 | 48.9 | |
| | Total | 140 | 100.0 | 538 | 100.0 | |
| **Satisfaction with information provided by CSST case managers** | Never/rarely | 21 | 15.0 | 154 | 28.6 | |
| | Most of the time | 38 | 27.1 | 189 | 35.1 | **<0.0005** |
| | Always | 81 | 57.9 | 196 | 36.4 | |
| | Total | 140 | 100.0 | 539 | 100.0 | |
| **Satisfaction with clarity of** | Never/rarely | 23 | 16.4 | 129 | 23.9 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **information provided** | Most of the time | 40 | 28.6 | 204 | 37.8 | **0.002** |
| | Always | 77 | 55.0 | 207 | 38.3 | |
| | Total | 140 | 100.0 | 540 | 100.0 | |
| **Satisfaction with the CSST case managers' understanding** | Never/rarely | 28 | 20.1 | 195 | 36.2 | |
| | Most of the time | 39 | 28.1 | 162 | 30.1 | **<0.0005** |
| | Always | 72 | 51.8 | 182 | 33.8 | |
| | Total | 139 | 100.0 | 539 | 100.0 | |
| **Satisfaction with confidence placed in CSST case managers** | Never/rarely | 28 | 20.0 | 184 | 34.1 | |
| | Most of the time | 41 | 29.3 | 171 | 31.7 | **<0.0005** |
| | Always | 71 | 50.7 | 185 | 34.3 | |
| | Total | 140 | 100.0 | 540 | 100.0 | |
| **Satisfaction with solutions proposed by CSST case managers** | Never/rarely | 29 | 20.7 | 231 | 43.3 | |
| | Most of the time | 44 | 31.4 | 178 | 33.3 | **<0.0005** |
| | Always | 67 | 47.9 | 125 | 23.4 | |
| | Total | 140 | 100.0 | 534 | 100.0 | |
| **Satisfaction with services delivered by CSST case managers** | Not at all/Not very satisfied | 24 | 17.1 | 158 | 29.1 | |
| | Quite satisfied | 61 | 43.6 | 211 | 38.9 | **0.016** |
| | Very satisfied | 55 | 39.3 | 174 | 32.0 | |
| | Total | 140 | 100.0 | 543 | 100.0 | |
| **Number of CSST case managers involved in file** | 1 | 23 | 16.4 | 47 | 8.7 | |
| | 2 | 30 | 21.4 | 123 | 22.7 | **0.026** |
| | More than 2 | 87 | 62.1 | 372 | 68.6 | |
| | Total | 140 | 100.0 | 542 | 100.0 | |

### *Satisfaction with services offered to facilitate return to work*

**Table 50 – Satisfaction with services offered to facilitate return to work, by group**

| | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|---|
| | | n | | n | | |
| **Were you aware of the processes followed by the CSST to help you return to work?** | Yes | 110 | 79.7 | 290 | 54.2 | **<0.0005** |
| | No | 28 | 20.3 | 245 | 45.8 | |
| | Total | 138 | 100.0 | 535 | 100.0 | |
| **Were you informed of the CSST's processes in this regard?** | Yes | 107 | 97.3 | 250 | 86.2 | **0.001** |
| | No | 3 | 2.7 | 40 | 13.8 | |
| | Total | 110 | 100.0 | 290 | 100.0 | |
| **Did you feel that you were helped?** | Yes | 83 | 75.5 | 191 | 65.9 | 0.065 |
| | No | 27 | 24.5 | 99 | 34.1 | |
| | Total | 110 | 100.0 | 290 | 100.0 | |
| **Did you feel that you were understood?** | Yes | 82 | 74.5 | 178 | 61.4 | **0.014** |
| | No | 28 | 25.5 | 112 | 38.6 | |
| | Total | 110 | 100.0 | 290 | 100.0 | |

## *Satisfaction with rehabilitation services*

**Table 51 – Satisfaction with rehabilitation services, by group**

| | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | p |
|---|---|---|---|---|---|---|
| | | n | | n | | |
| **Did you receive rehabilitation services?** | Yes | 125 | 89.3 | 239 | 44.8 | **<0.0005** |
| | No | 15 | 10.7 | 295 | 55.2 | |
| | Total | 140 | 100.0 | 534 | 100.0 | |
| **Do you consider that you participated in the planning of your rehabilitation?** | Yes | 92 | 74.2 | 139 | 58.2 | **0.003** |
| | No | 32 | 25.8 | 100 | 41.8 | |
| | Total | 124 | 100.0 | 239 | 239 | |
| **Were you satisfied with the rehabilitation services you received?** | Not all all/not very satisfied | 14 | 11.3 | 81 | 34.2 | **<0.0005** |
| | Quite satisfied | 66 | 53.2 | 74 | 31.2 | |
| | Very satisfied | 44 | 35.5 | 82 | 34.6 | |
| | Total | 124 | 100.0 | 237 | 100.0 | |

## *Satisfaction with PRÉVICAP management*

**Table 52 – Satisfaction with services received under the PRÉVICAP program**

| | | n | % |
|---|---|---|---|
| **Did you go at least once to a PRÉVICAP centre for an evaluation, treatments, or services?** | Yes | 115 | 83.9 |
| | No | 22 | 16.1 |
| | Total | 137 | 100.0 |
| **Satisfaction with all PRÉVICAP services and treatments received** | Not all all/not very satisfied | 16 | 15.1 |
| | Quite satisfied | 29 | 27.4 |
| | Very satisfied | 61 | 57.5 |
| | Total | 106 | 100.0 |
| **Satisfaction with information received from PRÉVICAP about nature of injury** | Not all all/not very satisfied | 14 | 13.5 |
| | Quite satisfied | 26 | 25.0 |
| | Very satisfied | 64 | 61.5 |
| | Total | 104 | 100.0 |
| **Satisfaction with information received from PRÉVICAP about activities to be carried out to promote recovery** | Not all all/not very satisfied | 13 | 17.8 |
| | Quite satisfied | 31 | 23.3 |
| | Very satisfied | 62 | 58.9 |
| | Total | 106 | 100.0 |
| **Satisfaction with PRÉVICAP intervention in the workplace** | Not all all/not very satisfied | 16 | 17.8 |
| | Quite satisfied | 21 | 23.3 |
| | Very satisfied | 53 | 58.9 |
| | Total | 90 | 100.0 |
| | No intervention in the workplace | 22 | 19.6 |
| **Did the PRÉVICAP services you received help you return to work?** | Yes | 66 | 62.9 |
| | No | 39 | 37.1 |
| | Total | 105 | 100.0 |

## Table 53 – Aspects of the PRÉVICAP program appreciated by workers

| Aspects of PRÉVICAP program appreciated by workers | Number of comments |
|---|---|
| Overall appreciation of team, professionalism, and calibre of personnel | 64 |
| Quality of exercises, management process, physical support, training sessions, and appropriate treatments | 36 |
| Overall appreciation of experience in PRÉVICAP program | 36 |
| Psychological assistance and moral support (active listening, encouragement, adaptability of team members, etc.) | 23 |
| Follow-up and coaching services | 16 |
| Quality and accuracy of explanations, information, and advice | 12 |
| Personal improvements resulting from the program (better physical condition, better pain management, personal growth) | 10 |
| Appreciation of methods and approaches used | 4 |
| Quality of prevention services | 4 |
| Other | 1 |
| Total | 181 |

## Table 54 – Aspects of the PRÉVICAP program less appreciated by workers

| Less appreciated aspects of PRÉVICAP program | Number of comments |
|---|---|
| Lack of active listening, support, communication, and understanding on part of team | 15 |
| Pressure placed on worker | 12 |
| Pain | 12 |
| Feeling of being judged by the personnel, moral or psychological discomfort with team | 11 |
| Inappropriate exercises or inadequate objectives | 10 |
| Difficulties outside PRÉVICAP program (CSST, employer, etc.) | 9 |
| Times elapsed, pace, or schedules not adjusted to worker's situation | 8 |
| Inappropriate or not very effective program | 7 |
| Absence of personalized service | 5 |
| Distance | 4 |
| Wrong medical diagnosis or inadequate treatments | 4 |
| Inability to continue program or treatment | 3 |
| Lack of follow-up of, or support to facilitate, the return to work | 3 |
| Obsolete equipment | 2 |
| Decisions made to worker's disadvantage, feeling that there were biases, power plays | 2 |
| Other | 5 |
| Total | 112 |

# Appendix 7 – Description of workplaces

## *The respondents*

We asked the respondents to identify their position within their workplace. Generally speaking, they were management personnel or part of the Human Resources Department. They were therefore aware of their workers' occupational injuries and case management. The majority of them (63.4%) had more than five years of seniority in their jobs. However, though it was only a small minority, 4.9% of the respondents did not hold their current position at the time of the event involving the worker who took part in the PRÉVICAP program. One of the other respondents had held his current position for one to five years, which suggests that this was why the person was unaware of his worker being under PRÉVICAP management.

**Table 55 – Characteristics of respondents (n = 41)**

| | | n | % |
|---|---|---|---|
| **Respondent's position in the workplace** | | | |
| | Director/Owner/President | 17 | 41.5 |
| | Director of HR or HR Department | 10 | 24.4 |
| | OHS-related position | 3 | 7.3 |
| | Supervisor | 5 | 12.2 |
| | Other | 5 | 12.2 |
| | Total | 40 | 100.0 |
| **Reported years of seniority in position** | | | |
| | Less than 1 year | 2 | 4.9 |
| | 1 year to 5 years | 13 | 31.7 |
| | More than 5 years | 26 | 63.4 |
| | Total | 41 | 100.0 |

## *Structural characteristics of participating workplaces*

With regard to structural characteristics, the workplaces that responded to the survey were found to be quite heterogeneous in terms of number of employees. PRÉVICAP had to target primarily SMEs[3]. Five respondents reported working in a workplace with more than 500 employees.

**Table 56 – Structural characteristics of participating workplaces (n = 41)**

| | | n | % |
|---|---|---|---|
| **Number of employees** | | | |
| | **1 to 20 employees** | 14 | 34.1 |
| | **21 to 100 employees** | 12 | 29.3 |
| | **101 to 500 employees** | 10 | 24.4 |
| | **More than 500 employees** | 5 | 12.2 |
| | **Total** | 41 | 100.0 |
| **PRÉVICAP centre** | | | |
| | **HCLM** | 10 | 24.4 |
| | **IRDPQ** | 10 | 24.4 |
| | **CRLB** | 9 | 22.0 |
| | **CRLM** | 12 | 29.3 |
| | **Total** | 41 | 100.0 |

[3] Small and medium-sized enterprises: generally regarded as workplaces with fewer than 500 employees.

| | | | |
|---|---|---|---|
| **Main economic activity sector** | | | |
| | **Primary** | 11 | 26.8 |
| | **Secondary** | 7 | 17.1 |
| | **Tertiary** | 16 | 39.0 |
| | **Total** | 34 | 100.0 |
| **Employee involved was unionized (presence of a union)[a]** | | | |
| | **Yes** | 17 | 48.6 |
| | **No** | 18 | 51.4 |
| | **Total** | 35 | 100.0 |
| **Workplace`s financial results during the past 5 years** | | | |
| | **Poor** | 1 | 2.5 |
| | **Mediocre** | 6 | 15.0 |
| | **Good** | 26 | 65.0 |
| | **Excellent** | 7 | 17.5 |
| | **Total** | 40 | 100.0 |
| **Layoffs due to lack of work during the past 5 years** | | | |
| | **Yes** | 16 | 39.0 |
| | **No** | 25 | 61.0 |
| | **Total** | 41 | 100.0 |

[a] Information collected from the worker.

## *Occupational health and safety in the participating workplaces*

Number and distribution of employment injuries in the workplaces concerned

**Table 57 – Questions related to occupational health and safety in participating workplaces (n = 41)**

| | | n | % |
|---|---|---|---|
| **How many employment injuries compensated by the CSST have occurred in your workplace within the past 5 years?** | | | |
| | **None** | 0 | 0.0 |
| | **1 to 5** | 15 | 45.5 |
| | **6 to 10** | 4 | 12.1 |
| | **11 to 20** | 7 | 21.2 |
| | **21 to 50** | 3 | 7.3 |
| | **Over 50** | 4 | 12.1 |
| | **Total** | 33 | 100.0 |
| **With regard to occupational health and safety, your workplace is:** | | | |
| | **Proactive** | 24 | 58.5 |
| | **Reactive** | 16 | 39.0 |
| | **Inactive** | 1 | 2.4 |
| | **Total** | 41 | 100.0 |
| **In general, when it comes to an injured worker, would you say that the people in charge of human resources are…** | | | |
| | **Not at all empathetic** | 1 | 2.4 |
| | **Not very empathetic** | 3 | 7.3 |
| | **Empathetic** | 31 | 75.6 |
| | **Very empathetic** | 6 | 14.6 |
| | **Total** | 41 | 100.0 |
| **When it comes time to designate a job for a temporary assignment, would you say that your workplace is...** | | | |
| **…** | | | |

| | | | |
|---|---|---|---|
| | **Very difficult** | 8 | 19.5 |
| | **Difficult** | 11 | 26.8 |
| | **Easy** | 19 | 46.3 |
| | **Very easy** | 3 | 7.3 |
| | **Total** | 41 | 100.0 |
| **When it comes time to modify the tasks of an injured worker or to adapt his/her schedule or the physical arrangement of his/her workstation, would you say that your workplace is… …** | | | |
| | **Very difficult** | 8 | 20.5 |
| | **Difficult** | 18 | 46.2 |
| | **Easy** | 8 | 20.5 |
| | **Very easy** | 5 | 12.8 |
| | **Total** | 39 | 100.0 |
| **In total, how many people in your workplace are specialized in occupational health and safety?** | | | |
| | **0** | 12 | 29.3 |
| | **1** | 10 | 24.4 |
| | **2** | 8 | 19.5 |
| | **3 or more** | 11 | 26.8 |
| | **Total** | 41 | 100.0 |
| **To your knowledge, does your workplace have any first aiders?** | | | |
| | **Yes** | 38 | 92.7 |
| | **No** | 3 | 7.3 |
| | **Total** | 41 | 100.0 |
| **Does your workplace have qualified health professionals or does it employ the services of health professionals on a regular basis?** | | | |
| | **Yes** | 14 | 34.1 |
| | **No** | 26 | 14.3 |
| | **I don't know** | 1 | 2.4 |
| | **Total** | 41 | 100.0 |
| **If yes, what types of professionals?** | | | |
| ***Physician*** | **Yes** | 12 | 29.3 |
| | **No** | 29 | 70.7 |
| | **Total** | 41 | 100.0 |
| ***Nurse*** | **Yes** | 7 | 17.1 |
| | **No** | 34 | 82.9 |
| | **Total** | 41 | 100.0 |
| ***Ergonomist*** | **Yes** | 6 | 14.6 |
| | **No** | 35 | 85.4 |
| | **Total** | 41 | 100.0 |
| ***Physiotherapist*** | **Yes** | 5 | 12.2 |
| | **No** | 36 | 87.8 |
| | **Total** | 41 | 100.0 |
| **Have you personally been given one or more OHS training sessions during the past 5 years?** | | | |
| | **Yes** | 25 | 62.5 |
| | **No** | 15 | 37.5 |
| | **Total** | 40 | 100.0 |
| **Have the other workers in your workplace been given one or more OHS training sessions during the past 5 years?** | | | |
| | **Yes** | 24 | 60.0 |

| | | | |
|---|---|---|---|
| | **No** | 16 | 40.0 |
| | **Total** | 40 | 100.0 |
| **Is there an OHS committee in your workplace?** | | | |
| | **Yes** | 17 | 42.5 |
| | **No** | 23 | 57.5 |
| | **Total** | 40 | 100.0 |
| **How many employer representatives are there on this committee?** | | | |
| | **1** | 2 | 12.5 |
| | **2** | 5 | 31.3 |
| | **3** | 4 | 25.0 |
| | **4** | 3 | 18.8 |
| | **5** | 2 | 12.5 |
| | **Total** | 16 | 100.0 |
| **How many employee representatives are there on this committee?** | | | |
| | **2** | 2 | 18.2 |
| | **3** | 3 | 27.3 |
| | **4** | 2 | 18.2 |
| | **5** | 4 | 36.4 |
| | **Total** | 11 | 100.0 |
| **Who manages the OHS files in your workplace?** | | | |
| | **An OHS committee** | 4 | 9.8 |
| | **HR management** | 21 | 51.2 |
| | **The head of the workplace** | 13 | 31.7 |
| | **Other** | 3 | 7.3 |
| | **Total** | 41 | 100.0 |
| **Is there a prevention representative in your workplace?** | | | |
| | **Yes** | 20 | 48.8 |
| | **No** | 21 | 51.2 |
| | **Total** | 41 | 100.0 |
| **Is this representative…** | | | |
| | **A member of management staff** | 10 | 50.0 |
| | **An employee** | 8 | 40.0 |
| | **A specialist or consultant** | 2 | 10.0 |
| | **Total** | 20 | 100.0 |

# Appendix 8 – Additional analyses of private costs

## *Insurance policy*

### Table 58 – Availability of private insurance

| | | n | | p |
|---|---|---|---|---|
| **Workers with private or group insurance** | PRÉVICAP | 40 | 49.4 | 0.680 |
| | Control group | 155 | 46.8 | |
| ***Insurance: prescription drug*** | PRÉVICAP | 39 | 97.5 | 0.664 |
| | Control group | 146 | 96.1 | |
| ***Insurance: medical care*** | PRÉVICAP | 39 | 97.5 | 0.185 |
| | Control group | 126 | 91.3 | |
| ***Insurance: dental care*** | PRÉVICAP | 33 | 82.5 | 0.468 |
| | Control group | 101 | 77.1 | |

## *Use of prescription drugs and medical services*

### Table 59 – Use of prescription drugs and medical services, irrespective of associated private costs, during past four weeks (at three years post-event)

| | | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | |
|---|---|---|---|---|---|---|
| | | **n** | | **n** | | **p** |
| **Appointments: medical personnel** | None | 78 | 94.0 | 290 | 87.6 | |
| | One appointment | 3 | 3.6 | 26 | 7.9 | 0.255 |
| | More than one appointment | 2 | 2.4 | 15 | 4.5 | |
| **Appointments: alternative medical practitioner** | None | 80 | 96.4 | 311 | 94.0 | |
| | One appointment | 2 | 2.4 | 6 | 1.8 | 0.399 |
| | More than one appointment | 1 | 1.2 | 14 | 4.2 | |
| **Appointments: rehabilitation professional** | None | 79 | 95.2 | 317 | 95.8 | |
| | Between 1 and 4 appointments | 3 | 3.6 | 6 | 1.8 | 0.486 |
| | More than 4 appointments | 1 | 1.2 | 8 | 2.4 | |
| **Prescription drugs taken for injury** | None | 54 | 65.1 | 198 | 59.8 | |
| | 1 drug | 14 | 16.9 | 70 | 21.1 | |
| | 2 drugs | 10 | 12.0 | 25 | 7.6 | 0.353 |
| | 3 drugs | 2 | 2.4 | 17 | 5.1 | |
| | More than 3 drugs | 3 | 3.6 | 21 | 6.3 | |
| **Details about consumption of drugs prescribed[a]:** | | | | | | |
| | Analgesics | 14 | 16.7 | 70 | 21.1 | 0.610 |
| | Anti-inflammatory analgesics | 11 | 13.3 | 58 | 18.1 | 0.492 |
| | Co-analgesic agents | 7 | 8.4 | 30 | 9.1 | 0.863 |
| | Anti-depressants, anxiolytics, and hypnotics | 3 | 3.6 | 21 | 6.3 | 0.772 |
| | Muscle relaxants and anti-spasmodics | 6 | 7.2 | 6 | 6.0 | 0.690 |
| | Drugs for gastro-intestinal disorders | 2 | 2.4 | 12 | 3.6 | 0.111 |
| | Other drugs | 4 | 4.8 | 16 | 4.8 | 0.698 |
| **Non-prescription drugs taken for injury** | | | | | | |
| | None | 38 | 45.8 | 166 | 50.2 | |

| | PRÉVICAP WORKERS | | CONTROL-GROUP WORKERS | | |
|---|---|---|---|---|---|
| | n | | n | | p |
| 1 drug | 41 | 49.4 | 124 | 37.5 | **0.047** |
| More than 2 drugs | 4 | 4.8 | 41 | 12.4 | |
| **Details about consumption of non-prescription drugs[a]:** | | | | | |
| Acetaminophen | 29 | 34.9 | 98 | 29.6 | 0.545 |
| Ibuprofen | 15 | 18.1 | 75 | 22.7 | 0.507 |
| Acetylsalicylic acid | 1 | 1.2 | 3 | 0.9 | ---- |
| Acetaminophen + Methocarbamol | 3 | 3.6 | 8 | 2.4 | ---- |
| Other | 1 | 1.2 | 3 | 0.9 | ---- |
| **Assistance required for daily activities** | | | | | |
| None | 54 | 65.1 | 209 | 63.1 | |
| Assistance for 1 task | 20 | 24.1 | 67 | 20.2 | 0.379 |
| Assistance for 2 or more tasks | 9 | 10.8 | 55 | 16.6 | |
| **Details on type of assistance required[a]** | | | | | |
| Housework | 13 | 15.7 | 80 | 24.2 | 0.097 |
| Meal preparation | 4 | 4.8 | 30 | 9.1 | 0.433 |
| Shopping | 10 | 12.0 | 38 | 11.5 | 0.885 |
| Child minding | 0 | 0.0 | 2 | 94.4 | ---- |
| Other | 18 | 21.7 | 50 | 15.1 | 0.281 |
| **Equipment required** | | | | | |
| None | 39 | 47.0 | 183 | 55.3 | |
| 1 piece of equipment | 23 | 27.7 | 84 | 25.4 | 0.343 |
| 2 or more pieces of equipment | 21 | 25.3 | 64 | 19.3 | |

[a] The categories are not mutually exclusive.

# Appendix 9 – Description of net benefits

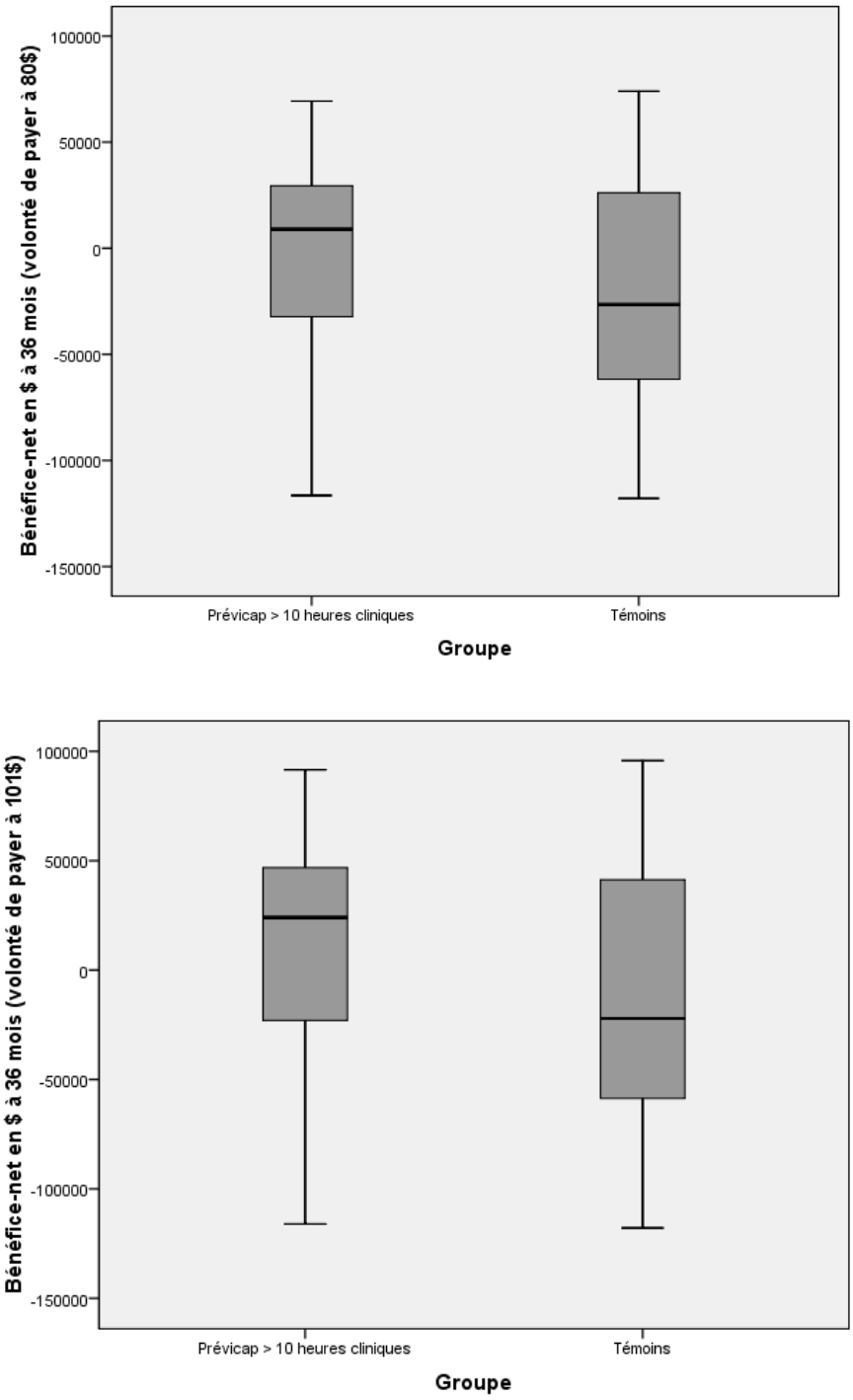



**Figure 14 – Box plots of net benefits, by group at 36 months post-event**

Note: Excludes 6 PRÉVICAP workers and 8 control-group workers with extreme data, i.e. NB > $119,000 (95$^{th}$ percentile).

# Appendix 10 – Detailed description of six tracer cases

Six tracer cases were studied in greater depth in light of the logic model of the PRÉVICAP intervention (Figure 3, page 4).

As a general rule, the activities proposed by the PRÉVICAP team for the purpose of achieving the intervention's intermediate objectives appear to have been implemented in a uniform manner in the six tracer cases. In other words, with regard to Goal A (to increase work capacities), activities were carried out for each of the target objectives, such as improving the perception of health status, reducing fear of pain and movement, increasing physical performance, and improving functional efficacy in work-related tasks. The same applied to Goal B (to increase competent work behaviours), which included promoting concerted action by the partners and reducing the demands imposed by the work environment. In only one case (case no. 2) did there appear to be some additional problems with the implementation of activities aimed at promoting concerted action, and these stemmed mainly from the worker's initial reticence about the program.

However, with regard to attainment of the intermediate objectives, the results varied considerably from one case to another. In the first case, all the objectives related to Goal A were successfully met, contrary to the objectives related to Goal B. The worker involved, who was from the industrial sector and had injuries to his upper extremities, had to perform tasks requiring a relatively big physical effort. The PRÉVICAP program increased his general work capacities, but the employer proved to be uncooperative by withdrawing from the program before it was completed and by refusing to implement the ergonomist's recommendations. According to the PRÉVICAP team, the adoption of the proposed changes to the pre-injury workstation could have considerably reduced the duration of the work disability and given the worker the opportunity to return to his pre-injury job. However, given the employer's withdrawal from the program, these measures could not be implemented. It was therefore impossible to promote concerted actions among the partners, despite the reduction in the demands of the work environment. As a result, Goal B was only partially achieved. That being said, the workplace finally created a new position customized to the worker, but within the three-year post-event timeframe.

In the second case, the worker was employed in the service sector as a word processor operator before injuring both his hands. In his case, all the objectives related to Goal A were attained, apart from that of increasing his functional efficacy in work-related tasks. However, even though he returned to his pre-injury job within less than one year of the event with a modified schedule and physical rearrangement of his workstation, the evidence for Goal B was not entirely conclusive. In fact, because the worker began the program begrudgingly (despite the fact that the program then ran smoothly), collaboration among the partners was not always systematic. Moreover, the demands of the work environment increased implicitly due to the decrease in the number of hours allocated for performing tasks, which thwarted the objective of reducing the demands of the work environment, ultimately making it impossible to conclude that Goal B was achieved.

In the third case, which involved an early childhood educator with back and neck injuries, all the objectives associated with Goal A and Goal B were achieved, except for promotion of concerted action among the partners, which saw more mitigated success. In fact, the presence of communication-related difficulties between the worker and the PRÉVICAP team hindered

attainment of this objective, but overall, this case appears to have been successful. The worker was thus able to return to his pre-injury job at the same employer's less than a year after the event.

The fourth case provides an example of a worker who participated very little in the process and who sometimes even opposed the PRÉVICAP team's or the employer's proposals, which could have enabled him to return to work. The worker's lack of personal commitment, as well as his lack of motivation and his fear of seeing an increase in his pain, greatly limited the progress associated with the process. None of the objectives related to Goal A could therefore be achieved. Regarding Goal B, collaboration among the stakeholders was greatly undermined by the worker's behaviour. However, in terms of the work environment, the objective of reducing its demands was met, and the employer was involved throughout the program, which meant that Goal B was partially achieved. Ultimately though, the case ended with a non-return to work because the worker refused to sign the contract for the suitable employment determined by the employer and the CSST, and the employment relationship then expired.

The fifth tracer case was also particular in that none of the objectives, apart from that of improving the worker's perception of his health status, was achieved. The worker, who had held a database administrator position at the time of the event, was unable to return to his pre-injury employment due to his shoulder injury. Even though the PRÉVICAP team appears to have carried out its mandate regarding all the objectives, the worker's motivation was lacking on numerous occasions, and his many absences and failure to return calls led to a withdrawal response from his employer. Initially receptive to the process, the employer ended up backtracking and abolished the job. The 12 weeks of rehabilitation could not therefore be completed, which signalled the end of the program. The worker now works at another employer's, where he holds a new job different from the one he held at the time of the event.

The sixth and last case provides an example of complete program failure. The absence of any motivation in the worker combined with the employer's lack of cooperation definitely played a key role here. The worker, who was a mechanic at the time of his back injury, was depicted in the PRÉVICAP team's files as having a strong perception of physical disability, a marked fear of aggravation, and a persistent and incapacitating pain syndrome. Moreover, he had very few strategies for managing his pain and had difficulty envisaging an eventual return to work. For its part, the employer saw the experience as involving extra work and costs, and cooperated very little in the process. None of the program objectives could therefore be attained for either Goal A or Goal B, and the process ended in the employee not returning to work.

In light of this information, two conditions would appear to be essential to achievement of the final objective of a return to work to the pre-injury job: cooperation from the employer and the workplace, and the worker's active participation. We found that when one of these conditions was lacking, the program could not bear fruit. This applied in the fourth case, where the worker offered passive resistance to the process and countered the efforts made by the other partners. In the first case, it was the employer who became an obstacle to the smooth running of the program, whereas in the sixth case, both the worker and the employer refused to participate adequately in the PRÉVICAP process, leading to its premature end. This finding illustrates the crucial importance of collaboration among the various stakeholders and of their real involvement throughout the process.

In the fourth case, the worker refused to return to work and to sign the contract for a suitable employment within the workplace, By refusing all the job proposals made and maintaining a negative perception of his condition and capacities, he put a stop to the possibilities of a return to work and at the same time exhausted all his employer's resources. Conversely, in the first case, the return to work was possible, but many obstacles were encountered due to the employer's attitude. The employer's overly high requirements combined with its wish to find the worker in his pre-injury condition, the absence of a gradual return to work or of an adapted workstation, the refusal to apply the ergonomist's recommendations, and an erroneous perception of the program's real costs hindered the program's effectiveness. Lastly, in the sixth case, no return to work was possible. The worker's lack of willingness to return to his job, his perception of his pain as incapacitating, and his poor compliance with the strategies proposed by the program, combined with the fact that the employer saw the program as demanding extra work and expenses while producing few results, led to a failure of the process.

Nonetheless, when the PRÉVICAP program overcame or changed these behaviours, program completion then became possible. This was what happened in the second case, in which the worker, who was initially reticent about participating in the process, managed to see it through to the end thanks to the collaboration of the other partners. He also noted a tangible improvement in his overall work capacities and recognized the quality of the team's management process, as well as the advantages of the ergonomist's recommendations. Thanks to changes made to his work schedule and workstation, and to the fact that he learned various pain management techniques, the worker was able to return to his pre-injury job, and was fit to respond even better to the demands of his work environment.

As for the third case, its success illustrates an important point with respect to communication among the various partners throughout the entire process. In order for the process to be successfully completed, it would appear that the employer/worker link is of paramount importance. The worker must show a real desire to return to his job and become actively involved in achieving that goal, while the employer must support him and believe in his potential in order to approach the program positively and as a long-term investment. In summary, it must regard the time, expenses, and adjustments made to reintegrate the employee as a necessary support and beneficial for the company as a whole. The third case illustrates this postulate. In fact, communication-related difficulties were identified between the PRÉVICAP team and the employer and between the team and the worker, but the latter do not appear to have affected the program's success as they did in the previous cases, where the employer and/or worker refused to adhere to the principles of the process by seeing in them other goals than those targeted by PRÉVICAP. The work environment also appears to play a considerable role in the attainment of the various objectives. A small or medium-sized workplace where there is relatively little staff turnover and where knowledge of certain techniques can be passed on to the other employees is conceivably more likely to want to invest in a program that promotes rehabilitation and the return to work of an injured employee. In the third case, the employer saw the program as not only being able to help the worker, but also the entire work team, by changing work habits and behaviours. In addition, the worker considered that his condition greatly improved thanks to the PRÉVICAP program, thus depicting a situation in which both parties were able to derive benefits from the program, in the short, medium, and long terms.

# Appendix 11 – Lexicon

Below are the definitions of the variables and terms used in this report.

**Administrative functioning of the program:** This means the formal rules and procedures associated with the smooth running of the program on a daily basis. While the requirements (workload, procedures, etc.) vary among the different PRÉVICAP sites and the CSST regional offices, there are a number of formal program elements with which the personnel involved must comply.

**AIAOD:** *Act Respecting Industrial Accidents and Occupational Diseases*.

**Communication:** Action of communicating something to someone and the effort made to perform this action, i.e. the perception that stakeholders have of the adequacy of the information communicated and of the frequency of communication.

**Date of detection:** Date on which the CSST case manager determines that a worker is eligible for the PRÉVICAP program.

**Date of event:** Date of the event under study as recorded in the CSST file.

**Date of referral:** Date on which the CSST case manager passes on an eligible worker's contact information to the PRÉVICAP team to enable this worker to receive services under this program.

**Employment injury: "**An injury or a disease arising out of or in the course of an industrial accident, or an occupational disease, including a recurrence, relapse or aggravation" (AIAOD, s. 2).

**Event under study:** Employment injury that led to detection of the file at the CSST.

**Income replacement indemnities (IRIs):** Allowances paid by the CSST to workers who are off work due to an employment injury.

**Industrial accident:** "A sudden and unforeseen event, attributable to any cause, which happens to a person, arising out of or in the course of his work and resulting in an employment injury to him" (AIAOD, s. 2).

**Initial event:** The first event that caused the injury. Subsequent events related to this first injury are referred to as recurrences, relapses, or aggravations.

**Management:** Method of managing (conventional or PRÉVICAP) a worker who has sustained an employment injury.

**Nature of the relationships between the attending physicians and the program and its impact on the functioning of the program:** This refers to the relationships between the attending physicians and the PRÉVICAP team and CSST case managers, their knowledge of and interest in the program, as well as the impact of these factors on the functioning of the program.

**Nature of the relationships between the employers and the program and its impact on the functioning of the program:** This refers to the employers' motivation to participate, their cooperation during the running of the program.

**Nature of the relationships between workers and the program and its impact on the functioning of the program:** This refers to the relations the workers have with the PRÉVICAP

team and CSST case managers the workers' motivation, their cooperation during the program, as well as the impact of these factors on the functioning of the program.

**Occupational disease:** "A disease contracted out of or in the course of work and characteristic of that work or directly related to the risks peculiar to that work" (AIAOD, s. 2).

**Partnership:** Cooperation in the form of joint concerted actions by different organizations (PRÉVICAP and CSST) that contribute to the carrying out of a given project (i.e. that of making the PRÉVICAP program work) through the pooling of physical, intellectual, human or financial resources.

**PPMI:** Permanent Physical or Mental Impairment. The PPMI rate is calculated using a specific scale for injuries (the *Annotated Scale of Bodily Injuries Regulation)* that is standard throughout Québec.

**Recurrence/relapse/aggravation (RRA)**: [free translations] "Deterioration in [a worker's] state of health in connection with a prior employment injury. No new accidental event must have occurred at work; if one has occurred, then a new employment injury is involved.[4]" "*Relapse:* return or reappearance of the symptoms of an injury because the cause has not gone away; resumption of an injury that was in the process of healing. *Recurrence*: reappearance of an injury after a more or less long healing time. *Aggravation:* worsening of the severity of an injury and its sequelae."[5] The Commission d'appel en matière de lésions professionnelles (CLP) has defined a number of criteria used to establish the relationship between an event and a relapse/recurrence/aggravation: similarity of the injury site; continuity or similarity in the pain and symptoms, similarity in the diagnoses, deterioration in the worker's state of health, proximity of the events, [and the] existence of a permanent physical or mental impairment or functional limitations.[6]

**Targeting:** Process of selecting workers deemed eligible for the PRÉVICAP program using a criteria checklist proposed by the Réseau en réadaptation au travail du Québec (RRTQ) and provided to the CSST personnel involved.

**Time elapsed between the event and detection dates:** Difference (in days) between the date of detection and the date of the event. In cases where the detection date was not available for workers in the PRÉVICAP group, the date of referral to PRÉVICAP has been used.

[4] See CSST website at http://www.csst.qc.ca/publications/200/documents/dc_200_6232_4_web.pdf.

[5] Documentation system of the Commission de la santé et de la sécurité au travail (1993). Recueil des politiques en matière de réadaptation – indemnisation (available in French only).

[6] Cliche B, Gravel M (1997) Les accidents de travail et les maladies professionnelles – Indemnisation et financement. Les éditions Yvon Blais, note 1, pp. 336 to 348 (available in French only).