

Process evaluation of a participatory organizational change program to reduce musculoskeletal and slip, trip and fall injuries



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ABSTRACT

Background: Long-term care (LTC) workers are at significant risk for occupational-related injuries. Our objective was to evaluate the implementation process of a participatory change program to reduce risk.

Methods: A process evaluation was conducted in three LTC sites using a qualitative approach employing structured interviews, consultant logs and a focus group.

Results: Findings revealed recruitment/reach themes of being “voluntold”, using established methods, and challenges related to work schedules. Additional themes about dose were related to communication, iterative solution development, participation and engagement. For program fidelity and satisfaction, themes emerged around engagement, capacity building and time demands.

Conclusion: Process evaluation revealed idiosyncratic approaches to recruitment and related challenges of reaching staff. Solutions to prioritized hazards were developed and implemented, despite time challenges. The iterative solution development approach was embraced. Program fidelity was considered good despite early program time demands. Post implementation reports revealed sustained hazard identification and solution development.

1. Introduction

Long-term care (LTC) facilities are demanding environments where workers are at significant risk for work-related injuries. Musculoskeletal disorders (MSDs) and slips, trips, and falls (STFs) are major types of occupational injuries for healthcare and LTC workers (Holtermann et al., 2013; Kamioka et al., 2011; Wahlström et al., 2012; WSIB, 2013). Despite the hazardous nature of LTC work environments, there remains little intervention research showing effective approaches to reducing hazards and injuries (Tullar et al., 2010; Van Eerd et al., 2016). Participatory ergonomic (PE) programs are one popular intervention approach to reduce occupational MSD hazards and improve workers' health (Carayon et al., 2006; Pohjonen et al., 1996; Rasmussen et al., 2013, 2014; Rivilis et al., 2008; Van Eerd et al., 2010).

Evidence on PE intervention effectiveness is mixed with some showing an effect while others not showing an effect (Driessen et al., 2010a; Haukka et al., 2008; Pehkonen et al., 2009; Rivilis et al., 2008). The lack of consistent findings is potentially related to the

implementation process (Cole et al., 2009; Driessen et al., 2010b; Wells et al., 2009). To be successful, PE programs must be well implemented, engaging and supported by management, labour and workers (Van Eerd et al., 2010). A process evaluation can help uncover barriers to successful program implementation and aid in developing suitable short-term program success indicators (Baril-Gingras et al., 2006; Linnan and Steckler, 2002).

Linnan and Steckler (2002) proposed a comprehensive process evaluation framework for health promotion program implementation. They highlight seven key process evaluation components: context, reach, dose delivered, dose received, fidelity, implementation and recruitment. While this framework has been used in PE interventions (Driessen et al., 2010b; Rasmussen et al., 2016), challenges persist in collecting data for each component.

Qualitative approaches to evaluate implementation provide an opportunity to understand the process and contextual factors involved (Baril-Gingras et al., 2006; Nielsen et al., 2006, 2007). Baril-Gingras et al. (2006) point out that a qualitative approach provides information

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not usually available in quantitative studies. Nielsen et al. (2007) found participants' appraisal of an intervention mediated the relationship between participation and outcomes, such as job satisfaction and working conditions. Understanding the relationship between participation and outcomes through process evaluation can help with more effective program design.

The current study aims to evaluate a participatory change program implementation process within LTC facilities in Ontario (Canada). To accomplish this with minimal burden on participants working in busy LTC environments, a qualitative process evaluation was conducted during a pilot program implementation.

2. Methods

2.1. Participatory change program description

The Employees Participating in Change (EPIC) program was developed by occupational health and safety (OHS) consultants in a provincial health and safety association, Public Services Health and Safety Association (PSHSA) (Morgan, 2015). EPIC is a MSD and STF hazard reduction program implemented over 12 months. EPIC is designed to create an internal framework for PE that will enable organizations to respond to MSD and STF hazards while enhancing participation and building competency at all organizational levels (OSACH, 2009). EPIC is implemented by OHS consultants with ergonomics knowledge and experience who act as educators and facilitators. The program can be implemented in any sector and functions within the broader framework of an OHS Management System. EPIC requires a relatively mature health and safety infrastructure, including a well-functioning OHS Management System, to ensure that organizations are ready to support a change process. Consequently, a pre-implementation review of the OHS policies and procedures is conducted by program consultants to ensure organizations are ready for implementation.

The EPIC program uses a two-tiered approach to change – a Multidisciplinary Steering Committee (SC) and a Change Team (CT). A minimum of one volunteer Program Champion (PC) at each site is assigned as the key contact person between PSHSA consultants and the LTC facility. The SC includes: senior management, union representatives, human resource staff, Joint Health and Safety Committee (JHSC) members, and specialists within the organization (e.g., physiotherapists), as well as the PC. This leadership committee keeps the CT-directed implementation process on track and addresses any problems that become a risk to program implementation and sustainability (PSHSA, 2013). A consultant assesses the readiness of individuals to participate in the program and guides the SC through a process of selecting the units/departments of focus for implementation activities.

The CT includes frontline staff directly affected by, or exposed to, MSD/STF hazards (from the units/departments of focus). One team member is selected as the CT leader and acts as the liaison between the CT and SC. The primary function of the CT is to “identify and analyze relevant hazards and propose, implement or monitor potential solutions” (PSHSA, 2013). These steps are iterative as new hazards are identified. To identify hazards, the CT conducts hazard inspections on the targeted units. In this study, sites conducted unit/department hazard inspections once a month, during the data collection period (see Fig. 1 for data collection timeline). Once hazards are identified, the CT, with the support of the SC, develops solutions, also referred to as *hazard controls* to manage, prevent or eliminate hazards.

The EPIC program development process included a pilot field assessment of an earlier version of the program in hospital settings (Baumann et al., 2012). Currently, the EPIC program does not address hazards caused by patient handling.

2.2. Sample and setting

The process evaluation was part of a non-randomized field trial

evaluating EPIC program effectiveness. The study was conducted in six LTC facilities, which are part of a large for-profit LTC organization – three were intervention sites and three were control sites. Two participating intervention sites chose to focus on reducing MSDs and the other STFs. One MSD site focused on two nursing units and the dietary department (n = 96); the other MSD site selected the environmental department (n = 26). The STF intervention site focused on four nursing units and the dietary department (n = 269). Department selections were matched at control sites for both MSD sites (n = 207, n = 22) and the STF site (n = 245).

At the intervention sites, individuals were recruited to participate in interviews and/or focus groups. Participants were recruited purposively to include the PC, site administrators, SC members, CT members, supervisors and various frontline staff (i.e., nursing, maintenance, dietary, environmental, housekeeping services) representing different shifts (full-time, part-time, casual). Six interview participants were recruited at one site and seven at the other two sites (n = 20).

In addition, two PSHSA consultants/facilitators provided detailed notes/logs about the intervention and process. The consultants were aware that the notes would be used to examine the implementation process. The two consultants were also the developers of the EPIC program so were well equipped to deliver all aspects of the program.

2.3. Data collection

A qualitative approach was used to examine all implementation process phases at the three intervention sites (based on Baril-Gingras et al., 2006; Driessen et al., 2010b; Linnan and Steckler, 2002). Fig. 1 lists the data collection approaches and timeline. Data were collected in three ways:

1) Consultant Logs

The two program consultants assigned to the intervention sites kept detailed notes in a site-specific log detailing program activities that involved consultant interaction throughout program implementation. The consultants completed the logs using the following categories: strengths, weaknesses, opportunities, and threats as the EPIC program was implemented. Since consultants were more active in the early intervention stages, their notes provide rich details about the pre-program activities and training but cover activities throughout the implementation cycle.

2) Interviews

Semi-structured open-ended interviews were used to gather detailed information about the EPIC implementation process including: barriers and facilitators of implementation and acceptance, attitudes about the program, and unintended outcomes (Baril-Gingras et al., 2006). Participants were interviewed three times over the course of the implementation process. Interviews were conducted by two research team members who were onsite regularly during pre-implementation and program implementation. All interviews were recorded and transcribed verbatim.

Interviews were conducted during months three, six, and nine of program implementation. Interviews were also conducted with PCs (n = 3) five months after the end of program implementation. The 30-min structured interview included questions related to each component of the process evaluation framework (see below) covering overall aspects of implementation, solutions and sustained activity. See Appendix A for the interview questions and prompts.

3) Interactive workshop and focus group

An interactive stakeholder workshop, including a moderated focus group (n = 13), was held six months after program implementation

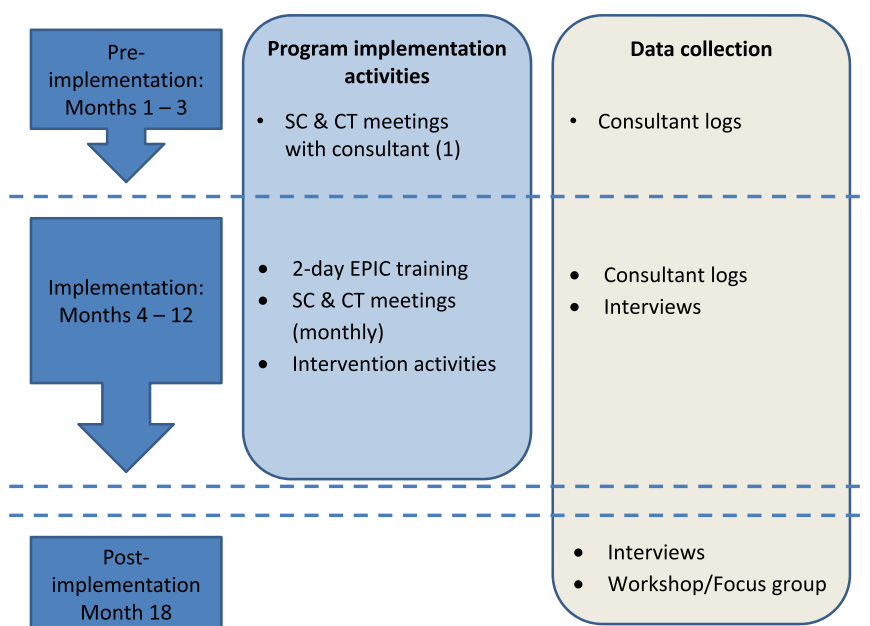


Fig. 1. Program implementation and data collection timeline.

was completed. Data from the PC interviews, along with the Linnan and Steckler framework, informed the development of the interactive workshop and focus group. Key topics for discussion included: program implementation, barriers and facilitators to implementation, and sharing implementation stories and the resulting solutions developed across intervention sites. Two research team members took notes during the workshop and one moderated the focus group. The focus group was recorded and transcribed.

2.3.1. Pre-implementation review

The program consultants conducted a pre-implementation review of OHS policies and procedures for each site. The review considered ‘foundational’ elements, those that should be in-place prior to program initiation and ‘journey’ elements, those that could be developed during program implementation. The elements covered leadership and commitment, health and safety knowledge, engagement through participation, hazard identification and control, workplace inspection and incident investigation. See Appendix B for pre-implementation review details. Consultant logs described the OHS foundational and journey elements important for program implementation.

2.3.2. Implementation process evaluation

The process evaluation was based on the evaluation framework initially described by Linnan and Steckler (2002) and adapted by Driessen et al. (2010b). The operationalization of the six process evaluation components are described below.

2.3.2.1. Recruitment. Recruitment is defined as the procedures used to approach and attract program participants. Recruitment was assessed by asking EPIC participants about the procedures used to approach and attract staff to become SC or CT members. PCs were asked how they were recruited to their role and frontline staff participants how they were approached to participate in program interventions.

2.3.2.2. Reach. Reach is the degree the targeted audience participates in the intervention (Linnan and Steckler, 2002). Reach was assessed by asking EPIC team participants (members of the SC and CT) to describe frontline staff participation in intervention activities. Frontline staff members were also asked about the extent of their participation.

2.3.2.3. Dose delivered. Dose delivered refers to the components of the

intended program actually delivered (Linnan and Steckler, 2002), typically determined by implementer actions. Dose delivered was assessed by asking study participants to describe the SC and CT activities being conducted at the time of the interview. Note that team members or frontline staff could be considered implementers in this participatory intervention.

2.3.2.4. Dose received. Dose received is the extent to which participants engage with, interact with, are receptive to, and/or use materials or recommended resources (Linnan and Steckler, 2002). It is characteristic of the target audience and it assesses the extent of participant engagement. Frontline staff were asked if they received and used EPIC program information provided or participated in any activities about MSD/STF hazard reduction. Consultants’ logs were examined to ascertain changes implemented and ongoing SC and CT activities.

2.3.2.5. Fidelity. Fidelity is about implementation quality and integrity (Linnan and Steckler, 2002). This component was assessed by asking team members to describe whether EPIC implementation was going as planned. We asked a general question and suggested respondents consider their individual site evaluation plans when responding. (See Appendix A).

2.3.2.6. Satisfaction. Satisfaction was assessed by asking participants to describe their satisfaction with the program at the time of the interview, including the best and worst parts of the program.

2.4. Data analysis

Details of the pre-implementation assessments were ascertained from consultant logs which were reviewed for foundational assessment elements and consultant views about readiness for implementation. The post-implementation transcripts and notes were reviewed with a focus on sustainability, the main focus of both the workshop and focus groups. All transcripts, notes and logs were de-identified before coding began. Ethics approval for this study was obtained from the University of Toronto Research Ethics Board.

Post-implementation interview transcripts, workshop notes and focus group transcripts were analyzed using the same coding process. We used both deductive and inductive approaches for data analysis.

Prior to conducting the interviews and focus groups, we used the

Linnan and Steckler framework (2002) to build structured interview guides that incorporated the main elements of the process evaluation framework i.e., recruitment, reach, dose delivered, etc. (Miles and Huberman, 1994). We took an iterative and reflective approach to coding. Two researchers coded transcripts independently using Microsoft Word computer software. Transcripts were read for relevant codes and emerging themes. A text highlight colour scheme was used to code and divide excerpts and stratify into key evaluation process concepts from the framework. The software's "comments" box function was used to name and mark excerpts in the page margins.

After the initial coding process, the two researchers met to discuss and organize themes until consensus was reached. Any emerging codes/themes outside of the process evaluation framework were flagged and discussed for relevance to overall findings. Any relevant themes outside of the guiding framework were also incorporated into the analysis. Reviewers met multiple times to finalize and refine the thematic findings and to select salient quotes that participants used to express their experiences (Miles and Huberman, 1994; Saldana, 2016; Windsor et al., 2004).

3. Results

Findings are reported according to the program implementation phase (see Fig. 1) and the process evaluation component.

3.1. Pre-program review

The consultant logs from the pre-implementation review revealed that all three intervention sites had all foundational elements at least partially in place. The decision to proceed with implementation was made by the consultants based on either: i) the sites having some building blocks of the foundational elements in place or, ii) the ability to address the foundation elements in the target departments rather than the entire facility (see Appendix A for a complete list of pre-implementation elements). The consultants, who also were the primary designers of the EPIC program, felt it was reasonable to proceed with implementation and to address the partial foundation elements early during implementation.

3.2. Program implementation

3.2.1. Recruitment

Senior management, managers and supervisors from various departments (i.e., not limited to the target departments) and health and safety representatives were successfully recruited to the SC. CTs were recruited from supervisors and frontline staff, some of which were health and safety representatives. Throughout program implementation, interview participants viewed informal face-to-face discussions as a very effective recruitment method.

Theme: Voluntold. Recruitment approaches varied from a memo requesting volunteers to, as one interviewee described, a "voluntold" approach. However, those recruited by the voluntold approach to participate acknowledged they were willing to be involved. Convenience or interest in health and safety played a part in which staff members were recruited. Several EPIC team members were also JHSC members. As one participant said: "I'm on Health and Safety so I guess I just kind of got picked and ... I don't mind being involved in it to help out."

The voluntold approach contributed to well-balanced teams. The consultant logs acknowledged team diversity, with good representation from senior management, union, and personnel from different departments. In all cases, JHSC members were noted to be part of the teams.

Theme: Importance of face-to-face contact. Once assembled, EPIC teams recruited frontline staff to participate in hazard identification and

solution development. Teams reported using a variety of recruitment methods they had previously used (e.g., flyers, memos on paystubs, newsletters, department meetings, etc.). Several participants noted face-to-face contact was a particularly effective communication method, especially for part-time and casual staff. Interview participants shared that monthly hazard inspections (a component of EPIC that included face to face communication) were an added and unexpected recruitment strategy. According to participants, the monthly inspections provided "teachable" moments. Inspections piqued staff interest, generating impromptu discussions. One participant described her experience:

"... when we walked about the last time we did floor by floor and the staff asked a lot of questions, what are you guys doing, what are you guys looking for. You know, so they asked questions and we tell them what we are about."

Participants across sites believed several recruitment methods were necessary to encourage staff participation. One participant said the following:

"[Recruitment methods must be a] combination of everything. Some [staff] will not read what is in the pay stub, some of them will not read the bulletin board and some of them will not read anything upstairs."

Active recruitment methods included monthly newsletters, monthly hazard inspections and flyers posted on the health and safety board. Despite the number of methods used, participants consistently identified face-to-face discussions as a very effective recruitment method. As one participant shared: "Pamphlets help but don't know if people are reading them." EPIC team members learned that the monthly hazard inspections facilitate face-to-face discussions with frontline staff working at that time.

3.2.2. Reach

Interviews revealed that staff participation during the intervention varied across staff groups. Notes from consultants suggest there was a good level of participation from team members in both training and program meetings. Consultants noted that frontline staff from targeted departments interacted with team members in hazard identification and solution development.

Theme: Program champions drive reach. PCs discussed substantial involvement in reaching staff with much time spent managing and monitoring staff attendance at EPIC meetings. Interviews revealed greater challenges in reaching nursing staff (i.e., registered nurses, registered practical nurses and personal support workers), than other staff. One program champion shared that less than 30% of nursing staff had attended a hazard-prevention in-service. Other sites reported between 60 and 100% of the targeted departments completed the in-service. Throughout program implementation participants described that more full-time and day-shift staff participated in EPIC compared to part-time and evening/night-shift staff.

At one site, the program champion re-distributed a hazard identification survey after determining that participation rates from the first distribution didn't meet their goal. After re-distribution, participation rates increased, which was attributed to their face-to-face distribution method. At the other site, survey participation rates were described as "good". The program champion indicated that she's the type of person who wants 100% participation; therefore, she pre-scheduled times for staff to complete the survey.

Theme: Work schedule challenges. EPIC team members revealed the proportion of staff attending intervention activities varied across staff groups. Participants from all sites discussed challenges reaching part-time and casual staff. One participant said the following:

"The challenge is that we have so [many] casual and part-time workers.

And then ... every day we only have nine staff in the evening, if they are not on schedule ... they will not be able to attend so that is a challenge.”

Several participants discussed possible solutions for reaching staff including: holding team meetings and hazard inspections during evening shifts; educating full-time staff first because they are easier to reach and “catch” part-time and casual staff when possible.

Through-out program implementation, interview participants described that more full-time and day-shift staff had participated in EPIC compared to part-time and evening- and night-shift staff.

3.2.3. Dose delivered

Consultant logs show that hazard identification assessments were completed at all sites. Discussions with participants over the course of the program revealed that hazard controls targeted changes to the physical environment and work practices. At each site, between five and seven hazards were identified, with controls developed for each.

Theme: Multiple channels of communication. EPIC teams delivered a number of program components intended for frontline staff including written materials about hazards, educational in-services, equipment changes, physical environment changes, or changes to work practices. Several methods were used to communicate to staff about hazards, such as memo distribution with paystubs, and flyers and banners posted throughout the facility. Two sites developed and implemented a 20–30 min educational in-service about hazards. At another site, EPIC teams developed and implemented a weeklong awareness campaign, with help from frontline staff and participation of external vendors.

Theme: Iteration required. EPIC teams typically focused on identifying hazards and developing controls during the first few months of the program. However, participants noted some hazard controls, such as one regarding STF feeding stool hazards, took longer to develop. In this case, a number of potential solutions were tested over time until an appropriate solution was agreed upon and implemented.

Participants shared that some hazard controls inadvertently created other hazards. For instance, a custom-built platform for the kitchen sink was too heavy for staff to insert and remove before and after every dish wash without risk of injury. Therefore, a different control was tested and implemented. Addressing additional hazards often delayed solution implementation. According to interviewees at all sites, hazard control implementation was ongoing. One participant indicated she expected to be further along, which she attributed, in part, to the steep learning curve about the participatory approach. Despite the learning required, she saw value in the participatory approach:

“... the participatory approach is something brand new and it's something that ... can be used for everything in our lives, in the nursing home or any business. It's getting the staff who do the work be the ones to make the decisions or bring the decisions forward or suggestions or areas for improvement ... So I think this whole learning thing of participatory approach is great.”

At each site controls were developed for many identified hazards. Changes included training/awareness, new equipment, changes to materials and the environment, and processes. Specific examples of hazard controls included electronic pill crushers in nursing departments to minimize MSDs caused when crushing pills manually; installation of shorter garbage bins to prevent upper-body MSDs; and work practice change requiring two staff members instead of one to remove garbage.

3.2.4. Dose received

Frontline staff reported participation in a number of program components delivered by the EPIC teams. Consultant logs indicate that solution development was underway in all sites and frontline staff were receptive to changes. *“Overall staff appear to be pleased with progress and ideas generated to date. Much discussion occurs when it comes to possible*

control measures so most of the staff still appear to remain engaged in the process.”

Theme: Communicating to engage. A number of EPIC program components were implemented at each site, including: staff communication methods; hazard education; and solution development to reduce and eliminate hazards. Frontline staff participants mentioned receiving various forms of memos about hazard identification and solution development. As the program progressed, frontline staff participants said they received more information through different approaches: questionnaires, flyers, meetings, in-services, and face-to-face discussions. The degree of involvement in EPIC varied. For instance, some participants indicated they received written information, however admitted to not reading the materials in their entirety or not at all. One participant talked about receiving written information: *“... not everything of it, not the whole thing, I just started and I put it in my locker.”*

Particular groups of staff, such as casual staff, may not have received the same degree of dose as their full-time counterparts. A comment from one participant illustrates this: *“... keep in mind I am casual, so I am not here to hear a lot [about EPIC], like if we have an in-service or something so I don't really have the advantage.”* Other participants (often part-time or casual) also reported hearing about implemented changes from co-workers.

Theme: Changes implemented through engagement. Frontline staff reported on their engagement in solution development. One participant indicated she tested equipment that the EPIC teams provided. During a monthly inspection, another participant shared she volunteered so the EPIC team could conduct a hazard demonstration. A third participant reported engaging with the EPIC team during a hazard inspection: *“The first time I paid attention to it [EPIC] but not the first time I heard about it.”*

Frontline staff participants talked about changes made to the physical work environment (e.g., smaller laundry bags) and work practices (e.g., two people moving laundry carts instead of one). One participant described an increased diligence towards lifting tasks: *“I am being a lot more diligent, I'm trying to not always lift things that I quite frankly shouldn't be lifting or waiting for help ...”*

3.2.5. Fidelity

Early in program implementation participants across sites shared that although they were still learning, program implementation was going as planned. For the most part, EPIC team participants attended the 2-day training program conducted by a PSHSA consultant. EPIC teams reported identifying their target departments/units and were identifying hazards and developing controls.

Consultants noted that overall the program was delivered as planned. They noted some difficulty using some of the hazard identification tools and there were some challenges related to the training (too long, too much jargon).

Theme: Building capacity and ownership. Across sites, program champions indicated the program required a significant amount of their time in addition to their usual job. To lighten the program workload, one program champion was attempting to recruit a frontline staff member to co-chair. Moreover, she believed frontline staff involvement in leadership positions would help build capacity and increase staff ownership of the program:

“I'm trying to encourage the department staff to [be a co-chair] because I want them to take on that ownership ... I am here for support of any sort that they need, but I would like to at the very minimal co-chair with them rather than take the ownership on myself.”

Various challenges related to engaging frontline staff were discussed consistently by participants throughout the program implementation.

One participant described: “... *the challenge you know, is to get staff to really, what should I say, you know, move things or clean up a spill. So you have to constantly remind them.*” Despite the challenges, participants continued to feel the program progressed as planned. Again, some participants articulated the program was a significant amount of work, while others were surprised they were not further along into implementing hazards controls. Many found the monthly team meetings necessary and informative although scheduling meetings at one site was particularly challenging because casual employees were on the team. Across sites, hazards had been identified and teams were developing and implementing solutions. In addition to worksite changes, participants shared there were changes in staff members' attitudes about workplace hazards. One participant said the following: “*I know that the staff now are aware and they are conscious about what's going on around them, unlike before when it seems like nobody cared.*”

At later stages of program implementation, participants shared that hazard controls had been implemented or were in progress. Across sites, meetings were no longer monthly but every other month, as planned. CTs were doing much of the work while keeping the SC up-to-date with their progression and plans.

Participants articulated that EPIC increased the level of knowledge and awareness of hazard prevention and management for all staff. One participant said:

“Well since we had the EPIC program there's a big ... improvement because people focus and paying [sic] attention and that's important. You pay attention you find the hazards right away this is something happening across the hallway. Right away they [staff] go, that can't be happening, somebody will trip over that, so [EPIC] make you more focused and you know, like things you would overlook.... now you are looking at and say that's not right, that's dangerous that there.”

3.2.6. Satisfaction

Overall, participants were satisfied with EPIC throughout program implementation. One participant summarized her experience pointedly: “... *overall, I think the program was great, I think I would say very good improvement compared to before we start [sic] the EPIC program.*” And as described by one participant, since EPIC, “... *we take action ...*”

Theme: Time demands impact on satisfaction. Participants shared they enjoyed the 2-day training, many stating they learned much. On the other hand, several interview participants in managerial or supervisory roles stated the 2-day training was too long and some information was a repeat of previous hazard trainings. One participant explained that training made the EPIC team members more aware of work hazards and their own role in preventing injuries:

“... the training kind of made us more aware ... I think a lot of us have been here for so long that we really don't say anything about it or anything. But now it's made people aware that if something is hurting you ... find a better way to do it. And your supervisor will help you like I don't know that we think that way ... 25 years ago. So maybe it's made us more aware that we can change things.”

PCs noted that while they were satisfied with the program and acknowledged its importance to hazard reduction, the workload was consistently described as heavy. The EPIC workload contributed to one PC's statement on being glad EPIC was wrapping up. Another said the following:

“... there's a lot of work to it [EPIC] and if that was all I had to do then it would be easy but because I have so much on my plate and because we are dealing so much with Health and Safety here, I don't see us doing it again.”

Satisfaction was impacted by the challenges of involving part-time and casual staff in the program. Participants also discussed the effects of department/unit size as a factor in implementing the program as

intended. For example, one site took size into account from program inception, purposefully deciding to target the smallest department. One participant explains:

“... it's good to start small. Because once you get to nursing with 160 employees ... you are going to end up with some you know, more challenges from that department. And so for the first time we are doing it, I think it's great that we are doing it this way.”

In contrast, another site chose to target larger departments. Although participants described that program implementation was progressing as intended, department size was a challenge, particularly affecting workload and stress levels. One participant shared: “... *it's very difficult, it is very difficult for a home like this, it's a big home.*”

Despite the various challenges described by interview participants (e.g., workload, budget, participation from casual and part-time staff), participants across sites felt the program made positive changes particularly around increased hazard awareness among frontline staff.

“... for that department I feel like they are more aware than they have been. So before they used to just go do their everyday routines and, I would never hear any safety talk. But now I feel they are more aware, I see them putting notes when something isn't right, even asking questions to people. I feel like in terms of that, that department, [which] in terms of physical requirements they probably have more than any of the other departments. So I feel it has made them more aware of what the risks are and how to make their own changes without having to wait for [supervisor/manager] to say that's not safe, they can figure that out themselves now.”

3.3. Post-implementation

Post-implementation interviews with site administrators provided rich details about dose received (implemented changes and engagement/response to changes). “*Most of the things that we looked at while we were going through the program have all been taken care of*”. The site administrators reported positive experiences with EPIC implementation and in all cases the program has been incorporated into the existing health and safety procedures/practices.

“... we still have the EPIC program as a standing item on our health and safety committee and ..., we use one of the forms for when we are doing our health and safety inspections.”

Ongoing improvements in communication about safety were noted in all cases. Administrators reflected they were pleased with the process and implementation of EPIC, as well as the resulting changes.

The post-implementation workshop allowed program champions, site administrators and worker representatives to discuss their experiences with EPIC implementation. Their stories consistently featured positive changes but often multiple intervention trials and solutions were tried to achieve success. Focus group results included suggestions to reduce program training and paperwork burden. Time demands were considered challenging mostly due to competing programs and daily workloads. Participants noted that sharing solutions across sites would have been useful earlier. It was clear that frontline staff continued to use EPIC hazard identification tools and practices, as well as communicate about hazards and solutions regularly. The “raised awareness” from EPIC has persisted.

Participants considered the post-implementation workshop/focus group important. They were excited to share the stories about implementation, including successes and challenges. The successful changes covered a range of physical (e.g. shorter garbage bins, electric pill crushers), practice (e.g. procedures for heavy moving and lifting) and educational (e.g. STF awareness) domains. Site administrators were particularly happy to come together to share information about program activities and ongoing change processes.

4. Discussion

We conducted a process evaluation based on a framework described by Linnan and Steckler (2002) for the implementation of an OHS participatory change program in a field trial in long-term care facilities. To better understand the implementation process we used short interviews with all levels of staff involved or impacted by EPIC program implementation. This allowed us to collect detailed process information with minimal burden on busy staff. Our approach builds on a previous EPIC program evaluation in acute care settings (Baumann et al., 2012). Previous evaluation results suggested more attention be placed on pre-implementation. The pre-implementation review was added to EPIC allowing us to focus on the program implementation process.

4.1. Process evaluation

The process evaluation results reveal the EPIC program was successfully implemented and ongoing after the current study ended. A variety of methods were used to recruit and reach staff for participation on teams or for hazard identification and control activities. While target audiences differed across sites, all sites chose familiar and previously successful recruitment strategies. All sites reported reaching the intended target audiences. Participants noted that face-to-face contact, either informal or as part of program activity such as monthly meetings or hazard inspections was an effective recruitment and reach method. The primary challenge was related to work schedules particularly for part-time, casual, evening- and night-shift staff. Program champions were instrumental in reaching staff. They often had experience in communicating with staff based on their previous OHS role.

Process evaluations of OHS interventions often report on the number of participants recruited/reached (Andersen and Zebis, 2014; Driessen et al., 2010b; Murta et al., 2007; Rasmussen et al., 2016; Xie et al., 2015) but not how recruitment and reach was accomplished. Our approach highlights the importance of context (Baril-Gingras et al., 2006; Biron et al., 2010; Biron and Karanika-Murray, 2014; Nielsen and Randall, 2013) and the central role of the program champion.

Regarding dose delivered and received, approximately nine months into program implementation, all sites were involved in delivering program components to staff. At twelve months, many EPIC teams were still in the process of identifying hazard controls that fit their budgetary constraints. It was apparent that identifying hazards and implementing controls in LTC was a lengthy and iterative process (Driessen et al., 2010b; Rasmussen et al., 2016).

Two of the three sites delivered an in-service about hazard identification and solutions. However, many frontline staff interviewed noted they did not participate or know about the in-service activities. Our finding that not all program components were implemented is consistent with other findings (Driessen et al., 2010b; Rasmussen et al., 2016). Consistent with other research, time and resources were the main implementation barriers (Andersen and Zebis, 2014; Driessen et al., 2010b; Murta et al., 2007; Rasmussen et al., 2016; Van Eerd et al., 2010).

Overall, the EPIC program implementation progressed as planned by EPIC teams and participants were satisfied with the program. At twelve months, all sites continued with monthly unit inspections, regular CT and SC meetings, program delivery, and implementation of controls. Consultants played a part in ensuring EPIC teams remained on task and on schedule in the first 6–9 months but reduced their role by month 12. Overall the consultants reported that the program was implemented as planned, similar to Driessen et al. (2010b).

High levels of satisfaction were most evident among the change team. The majority of change team members were frontline staff, many of whom are from unregulated occupations, considered to be vulnerable workers with minimal ability to control or alter their work environments (Zhang et al., 2011). EPIC's participatory approach allowed frontline staff to have a hands-on approach to identifying hazards,

brainstorming and implementing the solutions to adequately meet their department's needs. This is an often noted benefit of participatory approaches (Haines and Wilson, 1998; Hignett et al., 2005; Rasmussen et al., 2015; van Beurdan et al., 2012; Van Eerd et al., 2010).

To overcome implementation barriers, it will be important to consider the early program time burdens, particularly related to training. This may be particularly true in health care settings where time demands challenge organizations to commit significant staff resources away from patient/client care to attend a two-day training. It may be possible to break the training into shorter modules and deliver them over time or alternatively, reduce some of the training elements. In addition, implementation of participatory approaches places greater burden on the program champions than other participants. “Co-champions” may be a solution to offset the burden.

4.2. Dominant themes

We found an emphasis on communication in our implementation process evaluation, which is not surprising as it is considered a key element of participatory approaches (Driessen et al., 2010b; Rasmussen et al., 2016; Van Eerd et al., 2010; Haines et al., 2002; Hignett et al., 2005; Wilson and Haines, 1997). However, our qualitative evaluation revealed many different aspects of communication. To recruit program champions and other team members, the type of communication was often referred to as being “voluntold”. It was often the case that people who already had a role in OHS were approached to participate. Therefore, this is not truly voluntary participation, but invariably the people that reported they were willing to participate as determined during the program readiness assessment. Haines et al. (2002) considered participation as binary with compulsory and voluntary whereas this falls somewhere in-between.

Another aspect of communication was the importance of using multiple means throughout implementation. While each site consistently reported using various means of communication, it was clear that in-person was considered most effective. To our knowledge this has not been reported previously in the literature. Improved communication is commonly noted in participatory ergonomics interventions (Cole et al., 2009; Haines et al., 2002; Van Eerd et al., 2010), however the nature of the communication has not been described. We note that program champions and team members often reported using in-person communication which was important in reaching staff and moving through solution development, testing and application. Again, this is not surprising, but it has not been reported previously. Descriptions of participatory ergonomics interventions credit the teams (Change or Steering or both) for implementation progress (Cole et al., 2009; Dixon et al., 2009; Driessen et al., 2010b; Haines et al., 2002; Van Eerd et al., 2010). It is true that the teams are an important part of implementation process, however the program champion may play a larger role than previously reported.

The role of the program champion seems particularly important for the iterative process of solutions (dose delivered and received). At the latter stages of the implementation process when solutions were being considered, the communication was paramount to promote the engagement required to make the changes happen. There was an emphasis placed on communicating with team members and staff about hazard identification as a step towards developing solutions (controls). This theme of communication driving engagement has, to our knowledge, not been reported before.

Our findings revealed how important it was that frontline staff became engaged in the solution development and testing process. Staff participation is a central element of a participatory intervention however what we found is that the engagement required multiple channels of communication, including in-person. As well, the program champion was key in the communication related to reaching staff, getting their buy-in, and encouraging their participation in solution development. Once engaged, the staff contributed to the solutions. However, we note

that the capacity of frontline staff to contribute to solutions increased over time. While this takes time, it speaks to the importance of the hands-on element of PE and the need to go beyond outside (consultant) solution development or training alone.

The time required to build the capacity of teams, champions and frontline staff was a concern noted at all sites and throughout the program implementation process and fidelity. The theme related to time demands is commonly reported in both participatory and non-participatory workplace interventions (Andersen and Zebis, 2014; Arends et al., 2014; Driessen et al., 2010b; Rasmussen et al., 2016). Issues related to work schedules, including shift work and full-time or part-time were noted consistently and forcefully as barriers as was the time required for solution development, testing and application.

We note that the perception of time demands impacted greatly on the level of satisfaction reported by participants. Early in the implementation process there were many comments about the difficulty reaching staff on different shift (nights or part-time). As well, participants consistently reported that the training was too long and taking staff away from their jobs. The comments related to time were often raised when participants were asked about their satisfaction with the implementation process. However, later in the implementation process when solutions were being applied the concerns about time demands were less often raised. In fact, the overall satisfaction levels were quite good and this may be due to “seeing results” which can only occur later in the implementation process.

4.3. Study limitations and strengths

One limitation of our process evaluation was collecting data from relatively few participants (6–7) at each intervention site. However, this was by design as we wished to reduce the participant burden at busy LTC facilities. We noted major challenges in getting participants to complete questionnaires and decided that conducting interviews would alleviate some of the time burden. In addition, we did follow the same persons over time during implementation, which is a novel contribution to the literature. The process evaluation was conducted in only three for-profit LTC sites. While this may not be wholly representative of LTC facilities, we note the sites did vary in size, departments targeted and types of hazards prioritized. Given this mix, we feel that we have a very good indication of the implementation process of the EPIC program in LTC facilities.

One additional study limitation relates to how well the Linnan and Steckler (2002) process evaluation framework captures the implementation of a participatory change process that results in team driven changes. When we asked specific questions related to the framework we did not always get the type of answers expected. For example, respondents commented about communication when we asked

Appendix A. Interview questions

Interview Questions – Steering Committee/Change Team

1. Can you tell me about your experiences with the “EPIC program” (since we last spoke)?
2. Can you describe how you were recruited to be on the Steering Committee? (Recruitment)
3. How were Change Team members recruited? (Recruitment)
4. How will the Steering Committee/Change Team recruit staff to the EPIC program? (Reach)
 - How have staff been informed about EPIC?
 - Which staff have been informed about EPIC (e.g., units, floors, shifts, etc.)?
 - Describe what it’s been like informing staff about the EPIC program?
 - Are you using/have you used the same methods to inform different groups of staff about the EPIC program?
5. Can you tell me a little about the communication plan for informing staff about the EPIC program? (Reach)
 - Will there be any different or additional forms of communication used to communicate about EPIC?
 - How will the Steering Committee/Change Team evaluate the communication plan?
6. In general, has the Steering Committee/Change Team set specific goals and evaluation plans (or completed an evaluation) for the EPIC program? (Dose)
 - Are the Recognition, Assessment, Control and Evaluation principles part of the evaluation plan?

about dose received and noted the iterative nature of testing solutions. We were challenged to interpret responses related to dose where training is delivered by a consultant, and remaining implementation steps are planned, tested and carried out by the workplace teams. Driessen et al. (2010b) also reports that participants may have misinterpreted the implementation concepts related to Linnan and Steckler (2002). Rasmussen et al. (2016) considered an alternative process framework, while Xie et al. (2015) adapted Linnan and Steckler (2002) by considering four of six framework components and focusing on the meeting and training aspects of the participatory ergonomics process. We feel that participatory approaches require a different process evaluation framework.

A strength of the study was our approach of asking staff directly about the process of implementation throughout the implementation process. This reduced recall bias, and provided rich detailed descriptions of program implementation.

5. Conclusions

The process evaluation revealed that participatory programs can be implemented in LTC facilities. Organizations reported that the participatory approach resulted in positive staff outcomes such as increased awareness and self-efficacy. Moreover, the richness of the data gathered suggests that interviews are a feasible approach to examine the implementation process of a year-long participatory hazard reduction program in LTC.

Key themes related to communication, engagement and time demands were noted in the process evaluation framework. Challenges related to time demands and shift schedules continue to exist. However, overall participants were satisfied with program implementation and resulting changes.

Future research on process evaluation of participatory approaches should explore alternative evaluation frameworks or adapt the Linnan and Steckler (2002) approach to better capture the participatory elements of program implementation.

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7. Can you tell me about the different components of your EPIC program?
 - Have you implemented any of the components of your program?
8. What materials have staff received about MSD/STF hazard reduction (e.g., flyers, pamphlet's, memos, in-service, etc.) (Dose)
9. If any, what changes have been since you've started implementing your EPIC program? (Dose)
10. Please describe whether or not the EPIC program is going as the Steering Committee/Change Team has planned. (Fidelity)
11. Can you tell me about your level of satisfaction with the 2-day EPIC training program? (Satisfaction)
12. Tell me about your satisfaction with the EPIC program so far? (Satisfaction)
 - Consider your evaluation results (or plan)

Interview Questions – Frontline Staff

1. Have you heard about the EPIC program (or any program about MSD/STF issues)? (Reach)
 - To the best of your knowledge, have other staff members heard about the EPIC program or a program about MSD/STF issues?
2. Has someone contacted you about MSD/STF issues in your work? (Over the last couple of months any health & safety issues at work?) (Recruitment)
3. Have you been approached to be involved in a working group about MSD/STF hazards, or to attend training about MSD/STF hazards? (Dose)
4. What are the different ways that you've learned about MSD/STF hazards in your workplace? (Dose)
5. What, if any information about MSD/STF hazard issues have you received? (Fidelity)
6. If you've participated in any MSD/STF training or received any information or participated in anything about MSD/STF issues are you satisfied with it (them)? (Satisfaction)
7. Have you made any changes to the way you work to reduce MSD/STF hazards? (Dose)

Appendix B. Pre-Implementation Assessment (MSD)

Organizations looking to move beyond traditional health and safety strategies to a culture of health, safety and wellness need to begin with a strong health and safety foundation and effective internal responsibility system. This concept applies to the effective implementation of a participatory approach. PSHSA has developed the following EPIC pre-implementation assessment tool to help determine if an organization is ready to embark on the EPIC journey. Organizations should have at a minimum the elements in the tool indicated as **EPIC Foundation Elements** before embarking on the EPIC program strategy. Any gaps identified in foundation elements' need to be addressed prior to consideration as a candidate for the implementation of the EPIC program. Those elements identified as **EPIC Journey Elements**, with the commitment from the organization, will be developed or further strengthened as part of the action plan in the EPIC journey.

Statement	Recommendation	Response
1.0 Leadership and Commitment		
1.1 The MSD prevention program has senior management commitment e.g. allocation of appropriate resources such as appointment of a program leader, multi-disciplinary steering committee etc.	Obtain senior management commitment for developing and implementing the MSD prevention program. Ensure adequate human and financial resources to sustain the program.	Yes/No/Partial EPIC Foundation Element
1.2 The framework for the organization's occupational health and safety system aligns with existing management systems including client/patient safety, quality improvement and risk management.	Ensure framework for the organization's occupational health and safety system is integrated into operations and aligns with other management systems including quality, risk, patient safety etc.	Yes/No/Partial EPIC Journey Element
1.3 Senior Management recognizes the benefits, supports and demonstrates commitment to a participatory approach, which includes frontline worker and supervisor participation and engagement in health and safety discussions, defining of issues, information gathering, decisions and prevention activities.	Provide information to senior management regarding the human and fiscal requirements, the commitment required and the benefits of the participatory approach in MSD prevention. Obtain commitment to engage in the EPIC program.	Yes/No/Partial EPIC Journey Element
1.4 There is a documented and comprehensive claim management and early and safe return to work program in place.	Develop, document and implement a claims management and early and safe return to work program.	Yes/No/Partial EPIC Foundation Element
2.0 Knowledge of Health and Safety:		
2.1 All supervisors have received competent supervision training that includes legislation, roles and responsibilities and due diligence, etc.	Establish a training program for supervisors to meet the definition of competent supervisor as per the OHS Act with respect to legislation, roles and responsibilities and due diligence.	Yes/No/Partial EPIC Foundation Element
2.2 All supervisors have received competent supervision training that includes hazard awareness and management, and workplace inspections etc.	Establish a training program for supervisors to meet the definition of competent supervisor as per the OHS Act with	Yes/No/Partial EPIC

	respect to hazard awareness and management and workplace inspections etc.	Journey Element
2.3 Roles and responsibilities of workplace parties under the Occupational Health and Safety Act have been developed and documented.	Develop and document the health and safety, roles and responsibilities of the board of directors, the employer, supervisors, workers, contractors and visitors.	Yes/No/ Partial EPIC Foundation Element
2.4 Occupational Health and Safety Act roles and responsibilities training has been conducted and understood by all workplace parties.	Coordinate and train workplace parties on their health and safety legislated roles and responsibilities. Ensure the roles and responsibilities are clearly understood.	Yes/No/ Partial EPIC Foundation Element
3.0 Workplace Party Engagement through a Participatory Approach		
3.1 The organization uses a participatory approach to engage management, supervisors and workers, resulting in the effective transfer of MSD hazard knowledge to proactively protect workers from workplace injury.	Develop a participatory approach and methods to engage and empower management, supervisors and workers to participate and take responsibility for specific safety hazard identification, assessment, control and evaluation activities e.g. participatory health and safety education and coaching; and engagement strategies such as focus groups, employee surveys, frontline change teams etc.	Yes/No/ Partial EPIC Journey Element
3.2 The organization identifies and utilizes internal change agents and champions to promote, facilitate and advocate for positive health and safety change.	Identify and recruit committed change agents or champions that demonstrate: <ul style="list-style-type: none"> • strong team skills • willingness to participate; and • motivation to improve workplace safety 	Yes/No/ Partial EPIC Journey Element
4.0 Selected Hazard Identification, Assessment and Prevention Control Programs		
4.1 A program champion and multidisciplinary steering committee oversees the development and implementation of the MSD prevention program.	Senior management to appoint a program champion to coordinate, establish and oversee the MSD prevention program development, and to lead the multi-disciplinary steering committee. Develop a multidisciplinary committee and terms of reference.	Yes/No/ Partial EPIC Journey Element
4.2 MSD risk assessments or reassessments are conducted prior to developing or revising policies and procedures and training.	Conduct MSD specific risk assessment(s) or re-assessment to identify the likelihood and consequence of impact on staff safety, program gaps and develop an action plan.	Yes/No/ Partial EPIC Journey Element
4.3 MSD specific policies and procedures are developed based on the program risk assessment and in consultation with the JHSC or HSR.	Develop MSD specific policies and procedures and other controls utilizing the findings and identified program gaps from the program risk assessment. Ensure consultation with the JHSC or HSR is documented.	Yes/No/ Partial EPIC Journey Element
4.4 Training has been provided to the workforce on MSD specific policies and procedures and MSD hazard awareness.	Provide training to all staff on the MSD specific policies and procedures as well as MSD hazard awareness.	Yes/No/ Partial EPIC Journey Element
4.5 MSD hazard identification, assessment, control and evaluation (RACE) processes include front line supervisor and worker participation.	Create a change team composed of frontline supervisors and workers to engage them in the assessment, brainstorming and evaluation of controls. Develop a terms of reference for the change team. Provide training on RACE to change team members if required.	Yes/No/ Partial EPIC Journey Element
4.6 Safe Work Practices are developed to control MSD risks.	For identified MSD risk, the change team and supervisor develop appropriate safe work practices, and ensure training is provided to relevant workplace parties.	Yes/No/ Partial EPIC Journey Element
4.7 The MSD prevention program and policies are communicated widely as appropriate to management, staff, clients, physicians, contract workers, visitors etc.	Develop a communication and marketing strategy to widely communicate the goals and expectations of the MSD prevention program policies and procedures.	Yes/No/ Partial EPIC Journey Element
4.8 Supervisors audit and enforce the MSD specific policies and procedures.	Educate and hold supervisors accountable for auditing and enforcing MSD specific policies and procedures.	Yes/No/ Partial EPIC Journey Element

4.9 Equipment and other protective devices required for the MSD prevention program are in place and maintained.	Determine and obtain equipment and other protective devices for hazard specific programs.	Yes/No/Partial EPIC Journey Element
4.10 The MSD prevention program is included in the organization's orientation program	Include MSD prevention in the organization's orientation training program for new and transferred employees. Organizations strive to deliver orientation with the first few weeks as WSIB data indicates new worker are at higher risk within the first 4 weeks of hire/transfer.	Yes/No/Partial EPIC Journey Element
4.11 There is ongoing MSD prevention training.	Develop and document ongoing MSD prevention training. Include a schedule for training and maintain records.	Yes/No/Partial EPIC Journey Element
4.12 MSD controls are monitored following implementation by the change team.	The change team monitors the MSD controls following implementation to ensure the control is effective and does not introduce additional hazards.	Yes/No/Partial EPIC Journey Element
4.13 The MSD prevention program (policies, procedures and training) is reviewed annually in consultation with the multidisciplinary steering committee and the JHSC/HSR.	Evaluate the effectiveness of the MSD prevention program (policies, procedures and training) in consultation with the multidisciplinary steering committee JHSC/HSR.	Yes/No/Partial EPIC Journey Element
5.0 Workplace Inspection Program		
5.1 There is a management workplace inspection program in place that includes planned inspections, unplanned inspections, the use of checklists and record keeping. Specific MSD hazards are included on the checklists.	Develop and document a management workplace inspection program including planned inspections, unplanned inspections, checklists and record keeping. Ensure MSD hazards are included.	Yes/No/Partial EPIC Journey Element
5.2 MSD specific hazards are included during JHSC and/or health and safety representative workplace inspections.	Ensure MSD specific hazards are included in checklists used for JHSC and/or health and safety representative workplace inspections. Ensure documentation is maintained.	Yes/No/Partial EPIC Journey Element
5.3 There is an equipment pre-use inspection program in place that includes an inventory of necessary MSD equipment requiring inspection, inspection checklists, and record keeping.	Develop and document an equipment pre-use inspection program that includes an inventory of MSD equipment requiring inspection, inspection checklists, and record keeping.	Yes/No/Partial EPIC Journey Element
6.0 Incident Investigation		
6.1 There is a work related injury and illness reporting and investigation program in place that includes record keeping. There is also training of all workplace parties on program roles and responsibilities.	Develop and document a work related injury and illness reporting and investigation program including record keeping. Ensure all management, supervisor and workers have been trained on their roles and responsibilities as outlined in the program and WSIA.	Yes/No/Partial EPIC Foundation Element
6.2 The hazard/near miss/incident reporting and investigation system promotes a 'blame-free' culture.	Establish a process for hazard/near miss/incident reporting and investigation that encourages open reporting, with a focus on system issues and root cause analysis.	Yes/No/Partial EPIC Journey Element
6.3 Workplace parties have received training on reporting and investigation of work related incidents, illnesses and injuries.	Schedule training on reporting and investigation of work related incidents, illnesses and injuries.	Yes/No/Partial EPIC Foundation Element

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