Developing a Safety Climate: Shared Assumptions and Interventions

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Main Project Findings

- Research Question: How can we enhance the safety climate among nurses in order to create a safer and therefore more efficient workplace? This research tested a workgroup intervention to enhance the safety climate among nurses.
- Pre and post-intervention surveys indicated that respondents found unpredictable hazards (slippery surfaces, patients, lifting) cause the greatest amount of risk
- Pre and post-intervention surveys indicated that respondents had a moderate concern for safety. Respondents rated themselves and co-workers as generally, but not consistently, compliant with safety procedures. They also did not see safety as a significant concern from either top management or their direct supervisor
- Pre-intervention surveys indicated that respondents had below average scores for fairness, values, and community. Post-intervention scores only indicated a significant increase in fairness and energy levels; however, this change was due to different participants in the Time 2 survey and not to changes in individual attitudes among those participating in both surveys.
- The Creating a Safety Climate (CSC) intervention produced limited results due, in part, to a lack of participation. The only significant difference between the intervention groups and control groups was the intervention groups indicated significantly higher scores on training. Intervention participants felt discussions within the intervention had enhanced their safety training at work. The intervention was framed as an external research project rather than a core priority of hospital management. Participation was entirely voluntary with only modest encouragement from management for the program.
- Direct benefits of the research:
    - Based on the survey results, South Shore Health has an assessment of the workplace health and safety risks of survey respondents. The organization now has feedback (survey data and intervention action plans) to use going forward.
    - The survey participants who took part in the intervention showed significantly higher scores on training compared to the control group.
    - Based on anecdotal information from the facilitator, the staff who attended the meetings appeared to have a strong awareness of the safety issues on their unit, as well as possible solutions to these issues. The creation of a common understanding of a problem, a common action plan and a cohesive team to solve the issue, is the beginning of an improved safety climate.
- Workplace health and safety recommendations:
    - Interventions primarily influence the attitudes and behaviours of direct participants. Encouraging broad participation by employees in a safety climate intervention will strengthen its impact.
    - A safety climate reflects the core values of the hospital, as demonstrated through actions of leaders at the executive and unit level. Support from management (in terms of funding and time) is crucial to improve a unit's safety climate. An organizational intervention to address safety as a core value requires active and enthusiastic support from hospital leaders.

- Increasing the intervention period from 3 months to 6-8 months may increase the likelihood of success.
- A strong level of participation from hospital employees is a critical success factor for both assessment and intervention impact. A project has much greater chances of success if framed as a job responsibility than as a voluntary activity.
- This intervention would be more beneficial to units where employees themselves acknowledge they have a problem in safety and are actively looking for a solution.

Executive Summary

The project identified safety climate as an important issue in an organization's functioning and in its ability to build and maintain a safe workplace. It was implemented at South Shore Health in Nova Scotia from April 2009 to March 2010. The project was a partnership between South Shore Health and the Centre for Organizational Research and Development, Acadia University. It was funded by WorkSafe BC, Innovation at Work.

The goal of the project was to assess how a workplace intervention could enhance the workgroup safety climate and nurses' safety behavior. This involved increasing the value placed on safety in organizations and on the alignment of workplace safety practices with organizational policies and procedures. In doing so, the research aimed to decrease the number of injuries for staff, create a better functioning workplace, and ultimately provide better care to patients.

This study was implemented in three phases. The first phase included the completion of a survey by nursing staff which looked at safety climate on nursing units. Surveys were sent to 346 nurses from three participating hospitals in Nova Scotia: South Shore Regional Hospital (SSRH), Fishermen's Memorial Hospital (FMH), and Queen's General Hospital (QGH).

The second phase was the intervention. Four units selected from SSRH and FMH participated in the Creating a Safety Climate (CSC) intervention; the remaining units were used as control groups. The CSC intervention included a series of meetings in which employees discussed ways to enhance the safety climate on their units. Work groups identified issues, set goals for improving the safety climate on their unit, and enhanced progress towards these

goals. The groups were led by a facilitator who received training and materials to help groups with their work.

The third phase repeated the initial survey, evaluating the impact the intervention had on the organization's safety climate. Overall, of the 346 surveys distributed, 125 respondents completed the first survey (pre-intervention) and 96 completed the second survey (post-intervention).

The results of the pre-intervention study indicated that respondents believed *unpredictable hazards (slippery surfaces, patients, lifting)* were associated with the greatest amount of risk. The survey also indicated a moderate concern with safety. Respondents indicated the environment to be *a little riskier* or the *same* over the past five years. Individuals rated themselves and co-workers as generally, but not consistently, compliant with *safety procedures*. Respondents indicated they and their co-workers *followed safe working procedures* most of the time, even if doing so meant it would slow them down. From the respondents' perspective, management did not view safety as a significant concern. Respondents showed an overall tendency toward a lack of work engagement and sense of community. Time 2 results did not significantly differ from Time 1 results on the majority of factors.

The significant changes from Time 1 and Time 2 survey results occurred on the measures of: *energy* and *fairness*. Although energy scores increased after the intervention, this change was only due to a difference in the sample and not a result of the intervention. Similarly, scores of fairness increased after the intervention, however, this change was also due to a change in participants from Time 1 and Time 2 and not the intervention. Low participation rates limited the results that could be drawn from the current study.

The survey participants who took part in the intervention showed significantly higher scores on training compared to the control group. This suggests participants appreciated the discussions and felt that they enhanced their safety training at work. As a result, the organization benefited from this increased training. There were no other significant differences among intervention and control units. The organization now has feedback (survey data and intervention action plans) to use going forward.

A final conference was held in March 2010 to share project findings with health care professionals from South Shore Health and the surrounding areas.

A safety climate reflects the core values of the hospital, as demonstrated through actions of leaders at the executive and unit level. Consistent action, clearly linked to placing a higher priority on safety, reflects a strong safety climate. Interventions primarily influence the attitudes and behaviours of direct participants. Encouraging broad participation by employees in a safety climate intervention will strengthen its impact. After an intervention has improved attitudes, ongoing policies and processes are needed to ensure sustainability.

Research Problem and Context

The recruitment and retention of high quality health care personnel defines the capacity of Nova Scotia's health care system to meet the needs of its population. Currently, however, the health care process inflicts excessive injury on providers, moving them from giving treatment to receiving it (Robert Wood Johnson Foundation, 2006). The healthcare setting is particularly at risk of occupational injury and illness due to an abundance of factors. These factors include the complexity of the work environment, diverse activities, personnel with a range of experience and training, and lack of in-depth accident reports to learn from and improve the factors causing accidents (Government of Alberta, 2009). Additional concerns include diversity in operations and equipment, frequency of emergencies, degree of uncertainties, vulnerability of patients and the reliance on employees to follow safety procedures and precautions. Unlike other industries where safety is often moderated by automatic safety controls within machinery or technology, health care professionals don't have this comfort (Reason, 2004).

As a result of their high-risk environment, nurses often incur work related musculoskeletal injuries while performing their job. Sprains and strains are the most common cause of time-loss injuries (WCBNS Annual Report, 2008). In addition, nurses experience more serious back injuries and occupational back pain than most other professions (Karahan & Bayrakter, 2004; Smedley, Egger, Cooper, & Coggan, 1997). Repetitive tasks such as bending, lifting, and transporting contribute considerably to back strain (Karahan & Bayrakter, 2004). As a result of these tasks, nurses experience 30% more absences due to back pain than average

(Pheasant & Stubbs, 1992), and many direct care workers leave the field either temporarily or permanently after injury (Helmlinger, 1997).

In addition to physiological costs, nurses also experience psychological costs due to their environment. Burnout in nurses can have detrimental consequences on employee mental health and patient safety. Providers who experience burnout have more negative attitudes toward their patients, making them less likely to invest extra resources in patient relationships (Baker, Schaufeli, Sixma, Bosveld, & van Direndonck, 2000). This can lead to a higher risk of medical errors. Burnout is an important factor in predicting and understanding safety practices, including safety climate, within the health care system.

Another important factor influencing workplace injuries and safety is employee age. In particular, workplace injuries increase as general health declines with age. The National Survey of the Work and Health of Nurses (2005) indicated that nurses are on average, older than the general working population at 44.4 years (3.4 years older than employed women in general). Over a one-year period, 66% of Nova Scotia nurses reported sickness absences, which translated directly into increased costs and decreased quality of patient care (Shields & Wilkins, 2005). Nearly 20% of South Shore Health's nurses reported a new workplace injury in the 2006/07 budget year, with a majority of these incidents leading to a Worker's Compensation Board (WCB) claim.

Nova Scotia nurses are especially at risk. Among the South Shore Health's 450 nurses, there were 80 reports of new workplace injuries in the 2006/07-budget year. 52 of these incidences lead to WCB claims (SSHA Institutional Data). The direct cost of new and ongoing injuries during that year was $195,208. These are Nova Scotians whose health is harmed by

their work. This study's goal was to address these issues, with an intervention aimed at changing workplace safety climate.

Employers have a moral and practical responsibility to make all reasonable efforts to provide the safest working environment. One way to increase nurses' safety behaviour is to enhance the workplace safety climate. According to Zohar (2002, p.76), safety climate perceptions refer to "those attributes of supervisory action which indicate the priority of safety in a subunit, or the importance of acting safely while performing a job." These perceptions focus on the relationships between safety policies, procedures, and practices.

The present study looks at safety climate using Zohar's multilevel model of safety climate (Zohar, 2000, 2003). Although organizations explicitly espouse safety, recognizing its legal foundation and practical benefits, work units develop distinctly different climates pertaining to safety (Zohar, 2000). For example, using 40 manufacturing companies, Zohar and Luria (2005) found significant within-group variation between departments regarding safety climate. They also found, however, that the overall average departmental climate was aligned with organizational policies. This suggests that when work teams are studied as a whole, their safety climate resembles the organizational safety policies; however, individual work teams have unique safety climates.

The supervisor and the leader-member exchange heavily influence safety climate. Front-line managers have the important role of translating procedures into practice (Zohar & Luria, 2005). Further, multiple organizational priorities require supervisors to resolve inherent conflicts: speed vs. accuracy, expediency vs. safety. As managers establish ongoing patterns (i.e. encouraging quick patient transfer practices over safer, more cumbersome procedures), the

workgroup may develop a local safety climate. In addition, a closer leader-member relationship contributes to a stronger local safety climate (Zohar & Luria, 2004).

Supervisors, however, do not single-handedly define a workplace climate. An additional dynamic develops among team members as they strive to make sense of their work world. Leiter and colleagues have demonstrated among aircraft technicians (Leiter & Robichaud, 1997) and printers (Leiter, Zanaletti, & Argentero, 2009) that team members share assumptions about fundamental qualities of hazards upon which they base shared perceptions of risk at work. Since an organizational environment is so complex, group members rely on each other in order to interpret policies (Zohar, 2010). In the process of understanding the organizational environment, group members create shared perceptions resulting in a local safety climate.

This project, focusing on nursing safety climate, was implemented at South Shore Health in Nova Scotia from April 2009 to March 2010. The project was a partnership between South Shore Health and the Centre for Organizational Research and Development, Acadia University. It was funded by WorkSafe BC, Innovation at Work. The project identified safety climate as an important issue in the organization's functioning and in its ability to build and maintain a safe workplace.

The goal of the project was to assess the extent to which an intervention could enhance the workgroup safety climate and nurses' safety behavior. Safety climate and safety behavior were targeted through the use of a workplace intervention focused on the alignment of workplace safety practices and organizational policies. The project used a comprehensive model of safety to consider safety technology, workplace design, education, leadership, and workgroup climate to enhance nurses' adoption and promotion of safe working practices. By

targeting workgroups, the intervention strived to alter the shared group perceptions and, in turn, create a better local safety climate. In doing so, the research aimed to decrease the number of injuries for patients and staff, create a better functioning work place, and ultimately provide better care to patients.

Methodology

Participants

South Shore Health provides community and hospital-based services to more than 60,000 residents of Lunenburg and Queens Counties, as well as residents of neighboring communities. There are more than 850 employees and 100 medical staff. The three acute care facilities within South Shore Health that participated in the current study were: South Shore Regional Hospital (SSRH), Fishermen's Memorial Hospital (FMH), and Queen's General Hospital (QGH). Surveys were sent to 346 nurses in 14 units across the three hospitals. Overall, a total of 125 employees participated in the first wave of surveys and 96 employees participated in the second wave of surveys: SSRH (2009: *N*=78; 2010: *N*=52), FMH (2009: *N*=28; 2010: *N*=23), and QGH (2009: *N*=19; 2010: *N*=21). Surveys from Time 1 and Time 2 were not matched due to a lack of sufficient participation.

During the intervention phase, units were selected from South Shore Regional Hospital and Fisherman's Memorial Hospital to participate in the intervention. Eight employees indicated on the Time 2 survey that they participated in the intervention from SSRH, while 44 claimed little or no participation. At FMH, six employees indicated on the Time 2 survey that they participated in the intervention compared to 17 who claimed littler or no participation. Based on facilitator records, each meeting had 3-6 participants in attendance, although the

staff members who participated were different for each meeting. In accordance with ethical procedures, participation in the intervention was voluntary. The control group was composed of 10 other units from SSRH, FMH, and QMH.

Survey Measures

The survey used was based on a survey designed by Leiter and Robichaud (1997) for the purpose of their research on safety and burnout in a military setting. Individual survey measures were modified by the research team in conjunction with a research assistant employed by the hospital and familiar with hospital safety risks. Consultation with hospital staff was sought in order to identify risks that were both relevant and understood by the project participants. Similarly, by modifying the existing measures, the shorter survey was expected to increase participation rates. A copy of the current safety survey can be found in Appendix A.

Leader-Member Exchange (LMX7). The LMX7 (Graen & Uhl-Bien, 1995; Scandura & Graen, 1984) was used to measure the overall quality of leader-member relationships. Although seven items are included in the original measure, four items were chosen for the purpose of the current study. It uses a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) with higher average scores reflecting better relationships. In the current study, internal consistency reliability was .90.

Burnout. The Maslach Burnout Inventory General Survey (MBI-GS; Maslach, Jackson, & Leiter, 1996) is a sixteen-item questionnaire used to measure burnout across a wide range of occupations. A modified version of this measure was used in the current study consisting of six items. Using a 7-point Likert scale, survey items represent two distinct subscales: emotional exhaustion (e.g. 'I feel emotionally drained from my work') and cynicism (e.g. 'I doubt the

significance of my work'). Internal Consistency in the current study was .90 for emotional exhaustion and .92 for cynicism.

Areas of Worklife. This scale is designed to measure the six areas of worklife (workload, control, rewards, community, fairness, and values) using a 29-item Areas of Worklife Scale (AWS; Leiter & Maslach, 2002). For the purpose of the current study, a modified version was used consisting of three items for each of two subscales: fairness and values. Items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5(strongly agree). A high score (>3.00) for each subscale indicates congruence between the workplace and the employee's preferences; a low score (<3.00) signifies a mismatch (Leiter & Maslach, 2004). The fairness (α = .75) and values (α = .77) subscales both had adequate internal reliabilities in the current study.

Safety Climate. This was assessed at two levels: group-level and organization-level. A modified version of the Group-Level Safety Climate Scale (Zohar & Luria, 2004) was used, consisting of three items that concentrated on the workgroup specifically. The average of the scores represents the safety climate intensity (current study α = .79), while the within-group standard deviation of the items represents climate strength by quantifying the variability of climate evaluations among members. The modified Organizational-Level Safety Climate Scale employs a similar set of three items to assess climate across the entire organization (current study α = .83).

Risk Perception. The Risk Perception Scale (Leiter & Robichaud, 1997) was used to assess risk perception. Participants were asked to rate a list of relevant workplace hazards in terms of their prevalence, controllability, and overall riskiness. They also rated the quality of training pertaining to each hazard. These six item scales produced five scores: prevalence, capacity to

harm, controllability, risk, and training. The scale requests self-reports of self-compliance with safety standards (3 items) and estimates of coworkers' compliance (3 items). Self-reports of the frequency of injuries and near misses over the previous year were also included.

Community. Using the Civility Scale (Osatuke, Moore, Ward, Dyrenforth, & Belton, 2009), community was assessed. This scale consists of eight items designed to measure the perceptions of workplace civility within a workgroup and across an organization. Three items pertaining to the workgroup were used in the modified survey to assess workplace community. Items were rated on a 5-point Likert scale ranging from 1(strongly disagree) to 5 (strongly agree). In the current study, the internal reliability was high (α=.87).

Procedure

Phase I: Pre-intervention Survey

The project was implemented in three phases. The first phase was the completion of a survey by nursing staff, specifically those nurses involved in patient handling and transfer tasks at the three South Shore Health sites. The data from this survey were used to create profiles of the safety climate on the nursing units.

Phase II: Intervention

The second phase of the study was the Creating a Safety Climate (CSC) intervention pilot. CSC was a pilot program based on a series of meetings focused on improving issues of safety in the workplace. The meetings were conducted every other week, when possible. From September 2009 to early December 2009, meetings were held on the four intervention units: Veteran's Unit and Alternative Level of Care Unit at Fisherman's Memorial Hospital (FMH), and Medical and Medical/Surgical at South Shore Hospital (SSH). Intervention units were selected

based on survey results, injury rates, and the manager's willingness to participate. Although diary studies were initially distributed to the intervention units, due to an extremely low response rate, the results are not presented in this report.

The Creating a Safety Climate (CSC) intervention is a program similar to Civility, Respect and Engagement in the Workplace (CREW). CREW is an American-based, nationwide initiative used by the Veterans Health Administration (VHA) and has been adapted for Canada by the Centre for Organizational Research and Development, Acadia University. CREW is designed to improve community within a work team. It operates through a series of meetings in which employees strive to enhance the quality of interactions among team members. Work groups identify issues, set goals for improving teamwork and evaluate progress towards these goals. CREW has an operational and financial impact on an organization in the areas of absences, turnover, and patient satisfaction (Osatuke, Moore, Ward, Dyrenforth, & Belton, 2009).

The CREW model was modified for the CSC intervention. Rather than a base of civility, the CSC intervention addressed the unit's safety climate by reflecting on their distinct values on safety and aimed to align organizational safety policies with work group safety practices. Information on existing safety initiatives at South Shore Health is found in Appendix B. The intervention with each unit became customized and flexible: each group chose its specific definitions and areas of focus. The facilitator's role was to help the group clarify their situation and discover their capacity to make choices; the facilitator did not articulate the needs nor devise plans on behalf of the group. A description of the intervention is attached in Appendix C.

Phase III: Post-intervention Survey and Final Conference

Following the intervention, participants completed a second survey. The survey data were compared to pre-intervention findings to determine the intervention's impact on safety climate. A follow-up evaluation question was added to the second survey to garner opinions on the intervention.

In February 2010, a conference was held in Bridgewater, NS (close to the hospital sites). The PowerPoint presentation from the conference can be found in Appendix E. The project results were provided to key stakeholders and sustainability issues were raised.

Results

Data from the pre-intervention survey were analyzed in order to determine the safety climate prior to the intervention. The post-intervention surveys were then collected and compared with pre-intervention results in order to determine if the intervention influenced workgroup safety climate and safety behavior.

Time 1: Pre-Intervention

Workplace Hazards

Figure 1 provides the pre-intervention overall ratings for each of the eight identified hazards based on **frequency, severity, control, risk,** and **training**. At the time of pre-intervention, the hazards that were rated with the most amount of risk were *slippery surfaces*, *clients unable to bear weight*, and *clients that are uncooperative or aggressive. Clutter* and *equipment in poor working condition* were the hazards with the smallest risk ratings. This is likely because respondents are accustomed to dealing with these hazards and thus they are not viewed as threats. As indicated in Figure 1, none of the hazards showed an exceptionally high

score for risk, suggesting that while the respondents do perceive risks in their environment, they do not feel that they are constantly in great danger.

Accidents involving *aggressive or resistant clients*, *clients unable to bear weight*, and *multiple transfers* were reported as experienced most frequently by respondents. Accidents involving *lack of equipment* and *poor equipment* were reported as the lowest frequency. Accidents involving *slippery surfaces, clients unable to bear weight,* and *not seeking assistance* were rated as the most severe, whereas those involving *clutter* were rated as the least severe.

Respondents reported they had the most control over accidents involving *not seeking assistance* and the least control over *poor equipment* and *slippery surfaces.*

Lastly, respondents also reported receiving the most training for *multiple transfers/lifts, clients unable to bear weight*, and the least training for *slippery surfaces* and *poor equipment.*

Figure 1: Perceptions of risk from workplace hazards at pre-intervention

Hazards	Mean	St. Dev
Clutter: Frequency	1.77	0.94
Clutter: Severity	1.73	0.88
Clutter: Control	1.91	1.22
Clutter: Risk	1.51	1.02
Clutter: Training	1.05	1.03
Slippery Surfaces: Frequency	2.02	0.85
Slippery Surfaces: Severity	2.71	0.87
Slippery Surfaces: Control	1.38	1.08
Slippery Surfaces: Risk	2.20	1.04
Slippery Surfaces: Training	1.02	1.01
Client Unable to Bear Weight: Frequency	2.48	1.07
Client Unable to Bear Weight: Severity	2.77	0.93
Client Unable to Bear Weight: Control	2.17	1.05
Client Unable to Bear Weight: Risk	2.30	1.15
Client Unable to Bear Weight: Training	2.10	1.01
Uncooperative/Aggressive/Resistant Client: Frequency	2.49	1.05
Uncooperative/Aggressive/Resistant Client: Severity	2.50	1.00
Uncooperative/Aggressive/Resistant Client: Control	2.09	0.85
Uncooperative/Aggressive/Resistant Client: Risk	2.23	1.11
Uncooperative/Aggressive/Resistant Client: Training	1.78	1.05
Multiple Transfers/Lifts/Repositions: Frequency	2.15	1.16
Multiple Transfers/Lifts/Repositions: Severity	2.56	1.01
Multiple Transfers/Lifts/Repositions: Control	2.27	0.92
Multiple Transfers/Lifts/Repositions: Risk	2.05	1.16
Multiple Transfers/Lifts/Repositions: Training	2.11	1.06
Lack of Equipment: Frequency	1.50	1.04
Lack of Equipment: Severity	2.46	1.17
Lack of Equipment: Control	2.12	1.05
Lack of Equipment: Risk	1.61	1.15
Lack of Equipment: Training	1.74	1.04
Poor Equipment: Frequency	1.31	0.98
Poor Equipment: Severity	2.30	1.20
Poor Equipment: Control	1.60	1.03
Poor Equipment: Risk	1.46	1.13
Poor Equipment: Training	1.22	1.05
Not Seeking Assistance: Frequency	1.83	1.08
Not Seeking Assistance: Severity	2.72	0.98
Not Seeking Assistance: Control	2.53	1.01
Not Seeking Assistance: Risk	1.74	1.21
Not Seeking Assistance: Training	2.04	1.14

Elements of Risk Model

Control, severity, and prevalence were all found to have significant correlations with perceived risk. Control and perceived risk were significantly and negatively correlated ($r(117) = -.16$, $p<.05$). The more control employees' felt they had over their environment, the less risk they perceived. In contrast, both severity ($r(117) = .61$, $p<.001$) and frequency ($r(117) = .70$, $p<.001$) were significantly positively correlated with perceived risk. The more prevalent and severe the risk, the greater employees perceived the risk to be. Further, a significant positive correlation was found between control and training ($r(117) = .64$, $p<.001$), showing that training was related to greater perceptions of control.

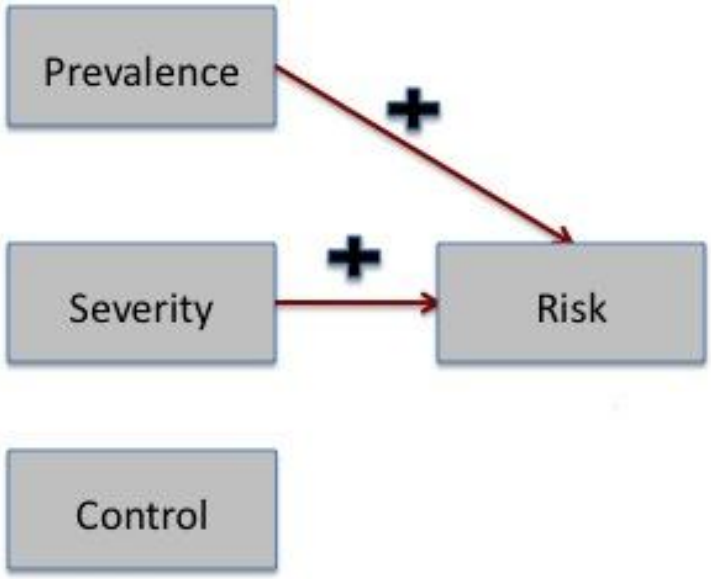


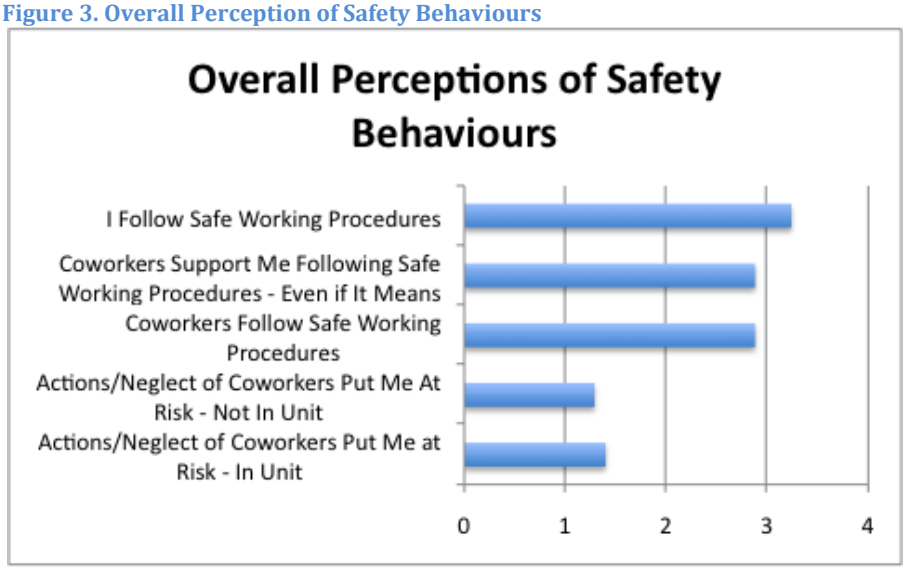
Figure 2. Regression Analysis among Predictors of Risk

As shown in Figure 2, a regression analysis was conducted in order to see how prevalence, severity, and control were able to predict the perception of risk. Both prevalence ($\beta = .51$, $p<.001$) and severity ($\beta = .36$, $p<.001$) contributed a unique amount of variance to perceived risk ($R^2 = .58$, $F(3,113)=52.83$, $p<.001$); however, the variable of control fell short of significance ($\beta = -.05$, $p=.45$). Thus, although control and perceived risk are correlated, control does not predict level of perceived risk above and beyond the predictions based on severity and frequency.

Safety Behaviours

Respondents were asked to rate the extent to which both themselves and coworkers follow safe working procedures. Responses ranged from 0(never) to 4(always). As indicated in Figure 3, respondents indicated they and their coworkers followed safe working procedures most of the time, even if doing so would slow them down. At the same time, respondents felt that a few times the actions or neglect of their co-workers, whether on or outside the unit, put them at risk. It appeared that for the limited times respondents felt at risk, they did not assume responsibility for being in that position. Instead, respondents assigned blame to their co-workers.

Figure 3. Overall Perception of Safety Behaviours



Note. 0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Most Times, 4 = Always

Organizational-Level and Group-Level Safety Climate

Organizational safety climate is a shared belief of which facets of safety behavior are rewarded by the organization. Respondents were asked to rate the amount of emphasis senior management placed on safety practices. The findings suggest employees perceive that management does not emphasize the importance of safety, as evident by a low average score

on all three questions (*M*=2.72, SD=1.01). Similarly, participants do not view the group-level climate as particularly safety conscious (*M*=2.92, SD=1.14). This reflects a safety climate that does not foster safe working practices. The frequencies for organizational-level climate (Figure 4) and group-level safety climate (Figure 5) are presented below.

Figure 4. Frequencies for Organizational-level Safety Climate Questions

Top Management in this Organization:	SD	D	H	A	SA
Reacts quickly to solve the safety problem	13	**43**	28	29	1
Insists on thorough and regular safety audits	14	32	**43**	22	3
Tries to continually improve safety levels	12	34	**37**	28	2

Note. SD=strongly disagree, D=disagree, H=hard to decide, A=agree, SA=strongly agree.

Figure 5. Frequencies for Group-Level Safety Climate Questions

My Direct Supervisor:	SD	D	H	A	SA
Makes sure we receive the equipment we need to do the job safely	12	21	24	**51**	4
Frequently checks to see if we are obeying safety rules	17	25	**48**	21	2
Discusses how to improve safety with us	14	25	33	**37**	4

Note. SD=strongly disagree, D=disagree, H=hard to decide, A=agree, SA=strongly agree.

Improvements in Safety

Figure 6 illustrates whether respondents perceive the workplace as safer or riskier over the last five years. The average score for respondents was between “a little riskier” and “stayed the same” (*M*=2.87, SD=1.29). These findings coincide with the South Shore Health reports of fairly high rates of injuries (nearly 20% of the nurses in the district reported a new workplace injury in the 2006/07 budget year, with a majority of these incidents leading to a Worker’s Compensation Board claim).

Figure 6. Safety Improvements over the Past 5 Years

Supervisor Relationship

Leader-member exchange was measured based on the supervisor-employee relationship. Figure 7 shows the frequencies of responses concerning how employees feel about their direct supervisor. Respondents appear to be moderately satisfied with their supervisory relationship (*M*=1.60, SD=.78) Many people indicated that they were neither completely dissatisfied nor completely satisfied.

Figure 7. Frequencies of Responses for Leader-Member Exchange

Concerning my Direct Supervisor:	Not at all (0)	Some (1)	Well Enough (2)	Completely (3)
I know where I stand	8	29	**58**	18
I know how satisfied he/she is with what I do	16	31	**48**	18
I feel that he/she understands my needs	17	**47**	37	12
I feel that he/she understands my potential	17	25	**53**	18

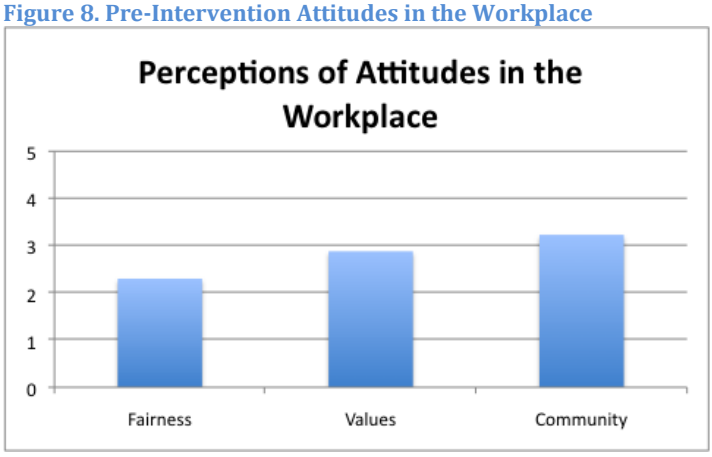
Experience of Worklife

The three areas of worklife variables (community, values, and fairness) were used to determine the congruence between the actual workplace and employee's workplace preferences. **Community** refers to the quality of social interactions at work. **Values** refer to a

person's goals and work beliefs. Values motivate employees because they foster meaningful work. **Fairness** refers to the extent to which an employee feels that decisions are fair and respectful. Figure 8 shows the average score for each of the three subscales.

Community had the most positive outcome (*M*=3.23, SD=1.05), however it is still statistically significantly lower than the normative value based on work by Osatuke et al. (2009), *t*(114)=-5.80, *p*<.001. The low score on values in the current sample is also significantly lower than the normative value (Leiter & Maslach, 2006), *t*(114)=-5.74, *p*<.001. Lastly, the average score for fairness was significantly lower than the normative mean (Leiter & Maslach, 2006), *t*(114)=-8.14, *p*<.001. The particularly low score on fairness shows a discrepancy between what respondents believe is fair and what the organization stipulates as fair. This can be problematic to the safety climate because if an employee does not believe certain safety related management decisions are fair, he or she may not be willing to implement them.

Figure 8. Pre-Intervention Attitudes in the Workplace



Burnout

Two dimensions of burnout were measured in this study: cynicism and emotional exhaustion; however, in order to understand the positive climate of the workplace, their direct counterparts, involvement and energy, were also examined. These scores were created by

reverse coding the burnout dimensions (cynicism and emotional exhaustion). **Energy** refers to the extent an employee feels energized by his or her work. **Involvement** refers to the person's attitude towards his or her work. Using a scale ranging from 0 to 6 on the energy dimension, participants reported scores significantly more negative than the normative level for hospital workers (Maslach, Jackson & Leiter, 1996)(M=3.18, SD=1.63; t(115)= 2.58, p<.05). Similarly, on the cynicism-involvement dimension, respondents indicated they experience more cynicism than involvement (M=3.95, SD=1.69), although this not significantly differ from the normative level, t(115)=1.77, p=.08 (Maslach et al., 1996). Although these scores do not indicate employees are experiencing severe burnout, they also do not indicate employees are fully engaged in their workplace.

Time 2 Post-Intervention

Workplace Hazards

Respondents rated several workplace hazards based on: frequency, severity, amount of control, potential of risk, and amount of training received. At the post-intervention time, the most risky hazards were *clients unable to bear their own weight, clients who are uncooperative or aggressive,* and *slippery surfaces.* These top three risks were the same top three from the pre-intervention survey.

Uncooperative or aggressive clients, clients unable to bear their own weight, and *multiple transfers* were rated as the hazards that happen most frequently. The least frequent hazards were having a *lack of equipment* or *poor equipment*. These findings are not significantly different from responses in the pre-intervention survey.

Respondents indicated they had the most control over *not seeking assistance* and the least amount of control over *poor equipment* and *slippery surfaces*. Similarly in the pre-intervention survey, respondents indicated the most control over *not seeking assistance* and the least amount of control over *slippery surfaces*.

Similar to the pre-intervention survey, *clients unable to bear their own weight* and *not seeking assistance* were seen as the most severe hazards in the post-intervention survey. The most training was received for *multiple lifts* and *clients unable to bear their own weight.* The least amount of training was received for *clutter.* These findings were not significantly different than pre-intervention ratings of severity and training.

Safety Behaviours

Safety behaviors were measured as a reflection of the safety climate. Respondents rated how coworkers adhered to safety practices as well as how they themselves adhered to safety practices. The majority of respondents believed they were adhering to working procedures most times. Similarly, they also believed their coworkers were adhering to procedures most of the time. These findings did not significantly differ from the pre-intervention findings.

Organizational-Level and Group-Level Safety Climate

Organizational-level safety climate was measured based on senior management's emphasis on safety procedures. Respondents indicated that management does not place a high level of importance on safety (*M*=2.83 SD=.92). Group-level safety climate was measured based on how the direct supervisor handles safety practices. Again, respondents indicated that their supervisors were not putting an appropriate amount of time and energy into proper safety practices (*M*=3.08, SD=.94). Neither the organizational-level nor the group-level safety climate

averages in the post-intervention significantly differed from findings in the pre-intervention survey.

Improvements in Safety

Respondents were asked about whether they believed the workplace was becoming safer or riskier over the last five years. The mean score indicated respondents believed their workplace had stayed the same. This score was slightly higher in the post-intervention survey than in the pre-intervention survey (Time 1: M=2.87, SD=1.29; Time 2: M=3.05, SD=1.26); however, this difference is not statistically significant.

Supervisor Relationship

Leader-member exchange was measured based on how employees perceived their direct supervisor. Respondents were moderately satisfied with their employee-supervisor relationship (M=1.61, SD=.75). For example, the majority of participants indicated there is some but not enough understanding from their supervisor about the participant's feelings and needs. This average was not significantly different from the average in the pre-intervention results.

Experience of Worklife

Similar to Time 1, the three areas of worklife (community, values, and fairness) were measured in Time 2. The variable of community (M=3.35, SD=1.09) showed an average statistically lower than the normative value (Osatuke et al., 2009), $t(91)=-3.94$, $p<.001$. Similarly, respondents reported a score for values (M=3.11, SD=.76) which was also lower than the normative mean (Leiter & Maslach, 2006), $t(92)=-3.11$, $p<.05$. The final variable, fairness, also showed an average (M=2.56, SD=.89) which was below the normative value (Leiter & Maslach, 2006), $t(92)=-3.93$, $p<.001$.

Although the scores for community and values post-intervention did not significantly differ from their pre-intervention counterparts, the average score for fairness post-intervention was significantly higher than it was pre-intervention ($t(217)=-2.03$, $p<.05$). In order to further examine this change in scores, a separate paired sample t-test was conducted with only matched participants from Time 1 and Time 2 ($N=31$). This was used in order to determine if individual scores changed or if the group who completed surveys in Time 2 merely perceived more fairness than respondents in Time 1. This analysis did not find significant results, suggesting that the respondents who completed the Time 2 survey had a more positive view towards fairness.

Burnout

Energy and Involvement were used to measure the positive end of the burnout spectrum. Employees experiencing high levels of energy and involvement are not experiencing burnout. Respondents indicated a moderate level of energy ($M=3.77$, SD=1.53), which is not significantly higher than the normative average (Maslach, Jackson, & Leiter, 1996). This score, however, had significantly increased from the pre-intervention findings ($t(217)=2.65$, $p<.01$), suggesting the group who completed the survey post-intervention had a more positive view of their energy level than the group who completed the survey pre-intervention. In order to determine whether the same people changed their scores, a paired sample t-test was run only on participants who had matched data from Time 1 and Time 2 ($N=31$). There was no significant difference between these two groups indicating the difference in Time 1 and Time 2 energy scores was simply due to more positive people participating in Time 2.

The average for involvement (M=4.24, SD=1.66) was not significantly different than the normative average (Maslach et al., 1996). This average score was also not significantly different from the average score on the pre-intervention survey.

Intervention Effects

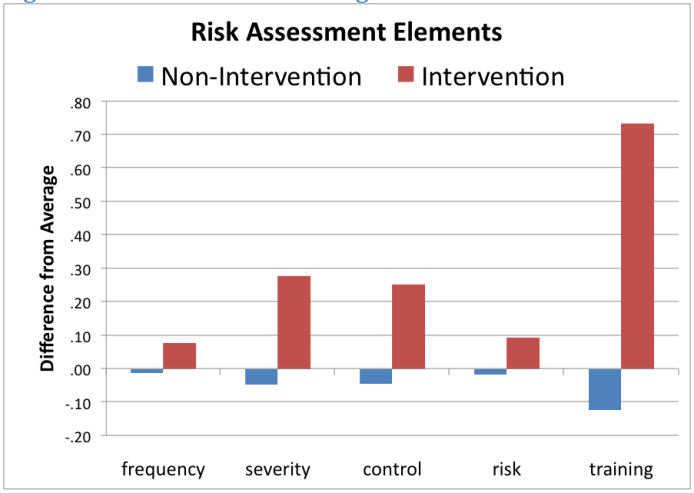
The post-intervention survey asked respondents to identify whether they participated in the intervention. The survey results from these respondents (N=13) were compared to those in the control groups.

Survey respondents who participated in the workplace safety program reported a significantly greater amount of training (M=2.45, t=3.516, p<0.01) than respondents who did not participate in the workplace safety program (N=76, M=1.55). This suggests participating in the intervention is associated with an increase in training received for workplace hazards.

Although Figure 9 indicates participants in the workplace safety program were more likely to report: a) higher frequency of accidents, b) more serious injuries from accidents, c) greater control over risky situations, and d) a greater risk of potential harm, these differences are not statistically significant (p>0.05).

Participants in the intervention groups were not significantly different than non-intervention respondents in any of the three areas of worklife indicators (AWLS measures; p>0.05).

Figure 9. Risk Assessment among Intervention vs. Control Participants



Intervention Limitations

The lack of change from pre-intervention to post-intervention was likely due to several factors. First, the small number of participants in the CSC intervention made it difficult to implement safety climate change. Since safety climate depends on shared group perceptions, in order to enact change the group needs to actively participate in changing those perceptions. A few group members cannot change the unit climate on their own. This is an important consideration when implementing future interventions.

Secondly, there were several factors that influenced the time participants were able to commit to the intervention during the three months of the intervention phase. For example, the H^1N^1 pandemic was a priority for the hospitals during this time, and contingency planning for a possible Canadian Union of Public Employees (CUPE) strike also took up a significant amount of time.

Thirdly, the length of the intervention phase played a role. The current project's intervention period was only three months long. A longer timeframe of six to eight months may have resulted in greater change. Staff would have had more time to meet and discuss the safety

issues affecting their unit. In addition, having fewer meetings per month may be an effective change to the intervention in order to increase participation. Fewer weekly meetings may increase participation at each meeting, which may increase the effectiveness of the intervention.

Lastly, the intervention may be more successful with workgroups who are experiencing moderate but not extreme problems with their safety climate. Several of the intervention units had very low scores on the Time 1 survey. Starting a new intervention protocol with these units might explain some of the lack of success. Beginning a new program with units who are experiencing moderate issues with their safety climate will allow facilitators to 'work out the bugs' of the program before implementing it on units experiencing more severe issues.

Implications for Future Research on Workplace Health and Safety

For future research projects, the following recommendations are presented:

Participation in the Intervention

Future intervention research projects require strong participation by staff. For this project, participation was entirely voluntary. However, survey respondents reported problems with excessive workload, making it difficult to fully participate in the intervention. The CSC facilitator was present in the hospitals, encouraging managers and nurses to participate; however, she was met with some resistance due to the high workload demands on staff/participants. Management can communicate the value of the intervention by providing time for staff to attend meetings and supporting any efforts staff make to improve the unit's safety climate.

One possible way to increase participation would be to decrease the number of intervention meetings required by staff. Fewer meetings could allow employees to become engaged in the intervention because it would be less of a time commitment. Having fewer meetings but more participants at each meeting may allow for a more effective intervention.

Within future intervention studies, facilitators and managers should also spend more time determining if there are other reasons for low participation rates. Facilitators and managers may decide to choose champions from among the unit who will participate fully in the meetings and encourage other staff to attend.

Full Support by Leadership

Future research projects on improving the safety climate must include strong support from all levels of management. Commitment from top management should transfer into such concrete resources as time and money. An intervention project requires funding to support the program, as well as FTE hours dedicated to implementing the intervention. It requires an extensive amount of startup time to train facilitators adequately and to educate staff about the upcoming program. The more time spent preparing the facilitators and staff before the formal intervention program begins the greater the likelihood that the program will succeed.

As well, the organization's mission/vision and its' strategic direction need to be in line with a focus on safety within the organization. When there is a lack of infrastructure within the organization to support the development of a safety climate (e.g. clearly stated plans for injury prevention, dedicated resources, accountability processes), attempts to change the safety climate are less likely to be effective.

Longer Intervention Period

Future research utilizing an intervention model for improving safety climate should consider using a longer intervention period. Although some gains were made during the 3 month period, a longer 6-8 month period would ensure that more time is spent on awareness and discussions of safety climate. It would also allow for increased time spent educating the staff about the program, to ensure increased participation rates and greater staff involvement.

Enthusiasm from Employees

Future similar interventions should be geared toward units where employees themselves acknowledge they have difficulties with their safety climate. A unit that is able to recognize this problem will be more likely to become engaged in the solution. Similarly, employees who are aware of safety problems can focus on their specific issues in the intervention meetings. By targeting specific identifiable problems, the safety intervention would likely be more effective.

Identification of Immediate and Long-Term Benefits of the Project Results

Direct benefits from the intervention include:

1. Based on the survey results, South Shore Health has a reliable assessment of the workplace health and safety risks of survey respondents. The organization now has feedback (survey data and intervention action plans) to use going forward.
2. The survey participants who took part in the intervention showed significantly higher scores on training compared to the control group. This suggests that participants appreciated the discussions and felt they enhanced their safety training at work. As a result, the organization benefited from this increased training.

3. Based on anecdotal information from the facilitator, the staff who attended the meetings appeared to have a strong awareness of the safety issues on their unit, as well as possible solutions to these issues. The creation of a common understanding of a problem, a common action plan and a cohesive team to solve the issue, is the beginning of an improved safety climate.

There are several policy implications based on the current research project that may be considered by South Shore Health. Management may consider administering the survey every two years to assess their staff's rating of safety issues. The study confirmed the survey as a practical method for assessing employees' evaluations of workplace hazards. Management may also consider using a CSC intervention on units that have higher than average injury rates, to improve the safety climate on the unit. The current research project has not resulted in any policy change on the part of the South Shore Health. The organization did not apply the survey or intervention to units other than those originally involved in the project.

Identification of Relevant User Groups for the Project Results

The survey used for this project is a practical method for assessing employees' evaluations of workplace hazards. It is adaptable to a variety of situations, through its foundation on the hazards identified through consultation with the employees and opinion leaders. The survey can be used by other organizations interested in reducing workplace hazards, such as factories, construction, forestry, mining, oil refineries and any industry with a large staff using equipment necessary for their work.

The original focus of the CSC program was nurses. The format is transferrable to all staff in an organization - anywhere there is an interest in increasing safety climate within a

workgroup. Specifically, organizations with safety challenges and high injury rates such as factories, construction, forestry, mining, oil refineries, could benefit. The flexibility and generalizability of the program allows for adoption specific to the issues of each workgroup.

Dissemination/Knowledge Transfer

A webpage was designed and updated throughout the project. The webpage provided information on the project as well as key personnel. The webpage can be found at http://cord.acadiau.ca/safety/.

Members of the research team visited each of the study locations. At each location, researchers informed both front-line staff and management about the study, and provided a question and answer period. Posters, which provided details about the study and contact information, were distributed at each of the locations.

Each participating unit received a profile of their responses. These were shared with the staff at each site by the project RA.

An Acadia University student conducted her honor's thesis on a segment of the study, reported in the results section. The thesis will be stored in the library (both online and in hard copy) for access by the university community and public.

A final conference was held on February 10, 2010. This conference was a knowledge sharing event, intended to provide the results of the project and engage key stakeholders in discussions regarding sustainability and future directions. Attendees included researchers, the hospital's Board of Directors, nurse managers, nursing staff, hospital administrators, union officials and other stakeholders from the Workers Compensation Board, Nova Scotia Health Association and AWARE-NS (Nova Scotia Health and Community Services Safety Association).

The conference began with Dr. Michael Leiter, Principle Investigator, presenting the results of the research. Clare Fancy (RN and Research Assistant for the project) shared stories and observations from the intervention period. Attendees discussed the next steps: how to sustain and enhance safety climate at South Shore Health.

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Appendix A - Workplace Safety Questionnaire

Workplace Safety Questionnaire

This survey is part of a project between South Shore Health and Acadia University's Centre for Organizational Research and Development. The purpose of this questionnaire is to find out your feelings towards safety issues in the workplace. Please read every question carefully and answer honestly. All information will remain confidential.

Your PIN is: 1001

For each measure, the response scale runs from a none (0), to a great deal (4).

For example:	**0**	**1**	**2**	**3**	**4**
Frequency					
How often do accidents at work involve this hazard?	**Never**	**Rarely**	**Occasionally**	**Regularly**	**Often**
Potential Harm					
How great an injury would an accident involving this hazard produce?	**None**	**Minor**	**Moderate**	**Serious**	**Major**
Control					
To what extent do you feel your skills and experience give you control over an accident of this kind?	**None**	**Little**	**Moderate**	**Major**	**Great**
Threat					
To what extent do you feel at risk of injury from this hazard?	**None**	**Minor**	**Moderate**	**Major**	**Great**
Training					
How much safety procedures training have you received for dealing with this hazard?	**None**	**Little**	**Some**	**Significant**	**Great**

Please use the scale presented above to rate the following eight hazards for:

1. Clutter (e.g. in rooms, halls)	**0**	**1**	**2**	**3**	**4**
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

2. Slippery Surfaces (wet floors, icy parking lots)	**0**	**1**	**2**	**3**	**4**
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

3. Client becomes unable to bear weight during transfer	**0**	**1**	**2**	**3**	**4**
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

Workplace Safety Questionnaire

4. Clients who are uncooperative, aggressive and/or resistant during care	0	1	2	3	4
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

5. Multiple transfers, lifts, or repositions during shift	0	1	2	3	4
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

6. Lack of equipment (e.g. lifts)	0	1	2	3	4
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

7. Equipment in poor working condition	0	1	2	3	4
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

8. Not seeking assistance when moving a patient	0	1	2	3	4
How often do accidents at work involve this hazard?	○	○	○	○	○
How great an injury would an accident involving this hazard produce?	○	○	○	○	○
To what extent do you feel your skills and experience give you control over an accident of this kind?	○	○	○	○	○
To what extent do you feel at risk of injury from this hazard?	○	○	○	○	○
How much safety procedures training have you received for dealing with this hazard?	○	○	○	○	○

9. Please list other hazards to your safety on your unit or at your workplace, not listed above.

_____

_____

_____

_____

Workplace Safety Questionnaire

10. What percentage of accidents & injuries do you think go unreported on your unit?

Minor ACCIDENTS	☐☐☐ %	**Minor INJURIES**	☐☐☐ %
Major ACCIDENTS	☐☐☐ %	**Major INJURIES**	☐☐☐ %

11. a) How many times have you ACTUALLY been hurt or injured as a result of your work? ☐☐☐

b) How many times have your ALMOST been hurt or injured as a result of your work? ☐☐☐

1	2	3	4	5
Much Riskier	**A Little Riskier**	**Same**	**A Little Safer**	**Much Safer**

Please use the scale provided above to identify changing risk.	1	2	3	4	5
12. OVERALL, do you feel the workplace has become safer/riskier over the last 5 years?	○	○	○	○	○
In each area below, do you feel the workplace has become safer/riskier over the last 5 years?					
b) Changing technology	○	○	○	○	○
c) Quality of available work equipment	○	○	○	○	○
d) Education and training	○	○	○	○	○
e) Knowledge of potential hazards	○	○	○	○	○
f) Safety control procedures	○	○	○	○	○
g) Space and lighting in work areas	○	○	○	○	○
h) The cooperation of your coworkers	○	○	○	○	○
i) Coworkers following safety procedures	○	○	○	○	○
j) Workload	○	○	○	○	○
k) Call back of staff	○	○	○	○	○
l) Length of shifts and number of breaks	○	○	○	○	○
m) Safety policies	○	○	○	○	○
Please add below any additional areas you feel became safer/riskier over the last 5 years.					
n) _____	○	○	○	○	○
o) _____	○	○	○	○	○
p) _____	○	○	○	○	○
q) _____	○	○	○	○	○
r) _____	○	○	○	○	○
s) _____	○	○	○	○	○

Workplace Safety Questionnaire

1	2	3	4	5
Couldn't be Worse	Poor	Adequate	Good	Couldn't be Better

Please use the scale provided above to rate the identified conditions.

13. At your job, how would you rate the following working conditions:	1	2	3	4	5
a) The amount of space you have to work with	○	○	○	○	○
b) The quality of the equipment you work with	○	○	○	○	○
c) The temperature level in your work environment	○	○	○	○	○
d) The amount of lighting in your work environment	○	○	○	○	○

0	1	2	3	4
Never	Rarely	Sometimes	Most times	Always

Please use the scale provided above to rate the frequency of incidents.	0	1	2	3	4
14. Do you feel the actions/neglect of employees in YOUR UNIT ever puts you at risk of an accident?	○	○	○	○	○
15. Do you feel the actions/neglect of employees in OTHER units/departments ever puts you at risk of an accident?	○	○	○	○	○
16. How often do the following factors contribute to accidents at work?					
a) Being rushed and busy	○	○	○	○	○
b) Being frustrated	○	○	○	○	○
c) Being fatigued	○	○	○	○	○
d) Length of shifts/ number of breaks	○	○	○	○	○
e) Diet/ lifestyle choices/ obesity	○	○	○	○	○
f) Not knowing safety procedures/ policies	○	○	○	○	○
g) Not asking for support for unmanageable tasks	○	○	○	○	○
h) Pressure to perform on one's own	○	○	○	○	○
i) Short staffing (no one to ask for support)	○	○	○	○	○
j) Unwilling to wait for support	○	○	○	○	○
l) Not feeling comfortable asking others in workgroup for support	○	○	○	○	○
17. Do you follow safe working procedures when working alone?	○	○	○	○	○
18. Do you feel your co-workers follow safe working procedures?	○	○	○	○	○
19. Do your co-workers support you when you follow safety procedure, even when following procedure slows you down?	○	○	○	○	○

0	1	2	3
Not at all	Some, but not Enough	Well enough	Completely

Please use the scale above to indicate the extent of the understanding that exists in the following cases.

20. Concerning my direct supervisor…	0	1	2	3
a) I know where I stand.	○	○	○	○
b) I know how satisfied he or she is with what I do.	○	○	○	○
c) I feel that he or she understands my problems and needs.	○	○	○	○
d) I feel that he or she understands my potential.	○	○	○	○

Workplace Safety Questionnaire

1	2	3	4	5
Strongly Disagree	Disagree	Hard to Decide	Agree	Strongly Agree

Please use the scale above to indicate the extent of your agreement with the following statements.

		1	2	3	4	5
21.	**Top management in this organization…**					
	a) Reacts quickly to solve the problem when told about safety hazards.	○	○	○	○	○
	b) Insists on thorough and regular safety audits and inspections.	○	○	○	○	○
	c) Tries to continually improve safety levels in each unit/department.	○	○	○	○	○
22.	**My direct supervisor…**					
	a) Makes sure we receive all the equipment we need to do the job safely.	○	○	○	○	○
	b) Frequently checks to see if we are all obeying the safety rules.	○	○	○	○	○
	c) Discusses how to improve safety with us.	○	○	○	○	○
23.	**Resources are allocated fairly here.**	○	○	○	○	○
24.	**Opportunities are decided solely on merit.**	○	○	○	○	○
25.	**Management treats all employees fairly here.**	○	○	○	○	○
26.	**My values and the organization's values are alike.**	○	○	○	○	○
27.	**The organization's goals influence my day to day work activities.**	○	○	○	○	○
28.	**My personal career goals are consistent with the opportunities in the organization.**	○	○	○	○	○
29.	**People treat each other with respect in my unit/department.**	○	○	○	○	○
30.	**A spirit of cooperation and teamwork exists in unit/department.**	○	○	○	○	○
31.	**Disputes or conflicts are resolved fairly in my unit/department.**	○	○	○	○	○

0	1	2	3	4	5	6
Never	Sporadically: A few times a year or less	Now and Then: Once a month or less	Regularly: A few times a month	Often: Once a week	Very Often: A few times a week	Daily

Please indicate how often, if ever, you have experienced these work related feelings.

		0	1	2	3	4	5	6
32.	**I feel emotionally drained from my work.**	○	○	○	○	○	○	○
33.	**Working all day is really a strain for me.**	○	○	○	○	○	○	○
34.	**I feel burned out from my work.**	○	○	○	○	○	○	○
35.	**I have become less interested in my work since I started this job.**	○	○	○	○	○	○	○
36.	**I have become less enthusiastic about my work.**	○	○	○	○	○	○	○
37.	**I have become more cynical about whether my work contributes anything.**	○	○	○	○	○	○	○

Workplace Safety Questionnaire

38. Please identify the type of nurse you are:

○ **RN** ○ **LPN** ○ **CCA** ○ **Other (please specify)** _____

39. In which unit do you spend the majority of your time?

_____

40. Do you work in a supervisory role? ○ **Yes** ○ **No**

Additional Comments

Is there anything else you'd like to share with us about safety at your organization?

_____

_____

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Thank you **very much** for your participation.

Appendix B - South Shore Health Safety Initiatives

Initiative/Committee	Goals of the Initiative
Patient Safety Initiative	
The Joint Occupational Health and Safety Committee- Developing a Road Map, an Occupational Health and Safety Plan working with WCB	To ensure organization works in compliance with Occupational Health and Safety Regulations.
The District Disaster Committee	
On-line training (through the intranet for Fire Safety, WHIMIS, and Safer Needles, and MSDS Sheets	Make training more accessible to staff.
Clinical Resource Instructors	Safety is part of training
WCB Initiatives; Ergonomics program, Workplace Initiatives Tool Kit	
7 Minutes of Safety	Share safety information with staff during staff meetings and other meetings to increase safety profile. Topic of the month etc.
Organization Health and Safety Committee	Promote staff health, build the sense of culture with all three sights, improve staff health.
The Fish Philosophy	Attend at am session that builds a team approach and recognizes those making a positive contribution to the workplace.
Developing a Safety Climate Plan.	Develop a safety plan for the organization. Partner with other initiatives and explore what Valley Health had done. Communication Strategy.
No Lift Nursing Policy	To prevent injuries to nursing staff
Patient Handling: moving, transferring and repositioning program.	To educate nursing staff the correct way to move patients to avoid injury.

Appendix C - Intervention Description

Creating a Safety Climate (CSC)

Despite the presence of informed policies, training in effective procedures and availability of relevant technology, preventable injuries continue to occur. Anecdotal reports convey that safety practices on hospital units are not consistent with policies and procedures. Many injuries occur when nurses avoid following safety procedures. This research project will test a workgroup intervention to enhance safety citizenship among nurses.

What is CSC?

CSC is a program based on a series of meetings focused on improving issues of safety in the workplace. The success of these group sessions depends on the active participation and personal commitment of all members.

How is CSC Carried out?

Several units will be chosen to participate in the program. Baseline data on injuries and safety behaviours gathered from the project survey (by COR&D) is shared and discussed with the units involved. Groups will be facilitated by Clare Fancy, the Research Assistant on the project as well as a *Champion* on each unit. Facilitators and their groups use the data from the survey to identify focus areas.

CSC will involve three major components:

1. *Formal meetings:* Group meetings last 30 minutes and are to be held bi-weekly. Depending on the availability and desire of the group, meetings may be longer or more frequent. During the course of the intervention, groups decide which solutions/action plans they want to pursue. In this way, each group determines which actions they wish to take to improve their overall safety behaviour, thus developing their own methods for improving their work environment. In addition, the formal meetings may involve education on safety issues including guest speakers. In order to accommodate individuals who are unable to attend the meeting, discussion questions can be posted visibly on the unit for employees to write their comments/ suggestions regarding the safety issue.

2. *Group Huddles:* The facilitator/champion/participants may choose to organize group huddles at the beginning of some shifts. These huddles are a quick way to put safety at the forefront of employee's minds during their shift.
3. *Reinforcement of Safety Behaviour:* Another major component of CSC is reinforcement of safety behaviour. This could include small prizes for recognizing safety behaviour to

be awarded by the champion (for example a chocolate bar), as well as a larger prize for an employee who demonstrates excellent safety behaviour over the span of a week or month. This larger prize could be determined by employees on the unit through a voting procedure.

Outline for Initial Meetings

At the *first meeting*, there will be an introduction of the project which will include rationale for the intervention, the concept of safety citizenship and projected outcomes. Ground rules for group discussion will be decided and finally survey results will be distributed. The facilitator will explain that participants will have a chance to voice their opinion on safety behaviour. Finally, the unit will decide on their approach to increase safety behaviour and safety citizenship on the unit.

At the *second and third meeting*, the facilitator will lead a discussion on survey results and what it means for staff involved. The next step will be a discussion on hospital policies and procedures, examining such topics as perceived effectiveness, suggestions for improvement, etc. The intent is to explore why despite formal policies, the rate of injury remains unacceptable and what can be done to improve it.

Subsequent meetings will be planned based on group members' needs in relation to safety citizenship. This will be done in consultation with the facilitator.

Conclusion

Groups are to meet on a regular basis for a period of 3 months. The expectation is that groups will begin the process of enhancing their safety behaviours. Discussion will bring about awareness of safety issues and some actions may result from these discussions. Staff will then be encouraged, recognized and rewarded for their efforts to improve safety. This will lead to staff taking responsibility for their actions and to become accountable to each other in their work environment. At the end of the 3 months, staff will be encouraged to look at sustainability of this program. This could include a continuation of the group meetings, an introduction to new employees/members in their workgroups, actions that require follow-up, etc.

Appendix D - Summary of Unit Agendas

1. Veteran's Unit

   Unit Goal: To reduce nursing staff's feelings of being rushed first thing in the morning and after supper.

   Unit Strategies

- Need to spread out the morning care more
- Look at what we are doing as staff to contribute to this
- Look at ways to better meet the needs of clients with dementia
- Explore how residents could be given more choices in their daily routine
- Develop strategies to improve the communication between staff of the unit
- Ensure staff follow their assignment so there are 2 nurses working on each end when providing morning care to maximize the safety when lifting and transferring residents as a team.

2. ALC Unit

   Unit Goal: To improve patient transfers to reduce the risk of injury to nurses.

   Unit Strategies:

- Develop a standardized process to assess and communicate to other staff the safest method of transferring each patient. Staff suggested a lift and transfer team made up of full time staff who volunteer to perform this task.
- Ensure there is a process in place to assess changes in patient status
- Ensure staff have current lifting and transfer training
- Build a climate on the unit in which nurses refuse to lift or transfer patients on their own when at all questionable that the second person may be needed for assistance
- Increase available equipment that reduce the risk of injury to nurses such as ceiling lifts, extra low beds, storage space to reduce clutter.

3. Medical/ Surgery Unit

   Unit Goal**:** To improve patient transfers to reduce the risk of injury to nurses.

   Unit Strategies:

- Ensure all staff have current training in patient lifting and transferring procedures and use of safety equipment
- Clarify whether training is mandatory, if they will be reimbursed for their time and expectations

- Explore the safest way for nurses to work when they find themselves working short staffed
- Strengthen staff's knowledge of safety policies.

4. Medical Unit

   Unit Goal**:** Increase the availability of equipment in good working order on the unit.

   Unit Strategies:

- Establish a process to ensure broken equipment is identified and repaired, and that there is enough equipment to meet the needs of the patients and staff to ensure safety. Staff suggested establishing a committee to do this.
- Build a culture on the unit in which nurses refuse to lift or transfer patients on their own when at all questionable that the second person may be needed for assistance
- Explore establishing a hospital wide lift team
- Address safety issues around providing care to bariatric patients
- Evaluate if nursing staff are using equipment properly (e.g. frustration expressed with transfer belts and chair lifts).

Appendix E – Final Conference PowerPoint Presentation

Developing a Safety Culture

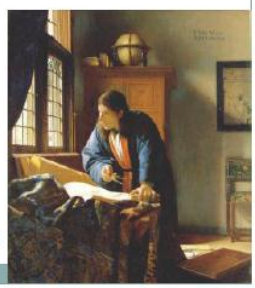
SHARED ASSUMPTIONS AND INTERVENTIONS

Michael P. Leiter, PhD

South Shore Health | WorkSafeBC Working to make a difference | COR&D

COR&D

- To enhance the quality of work life,
- Through collaborative relationships,
- Helping people to fulfill their potential.
- Contact
  - http://cord.acadiau.ca
  - Michael.leiter@acadiau.ca
  - 902-585-1671
  - www.workengagement.com



Objectives for the Day

- Project Overview
- Project Results
- Intervention Process
- Next Steps: How to enhance safety culture at SSH

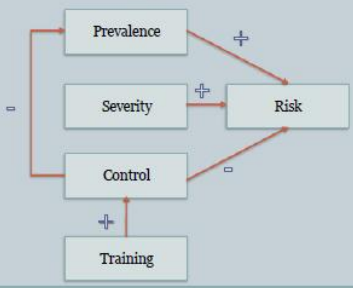
Participants

- South Shore District Health Authority (Total)
  - 2009: N = 129; 2010: N = 92
- South Shore Regional Hospital:
  - 2009: N = 78; 2010: N = 52
- Fisherman's Memorial Hospital:
  - 2009: N = 28; 2010: N = 23
- Queen's General Hospital:
  - 2009: N = 19; 2010: N = 21

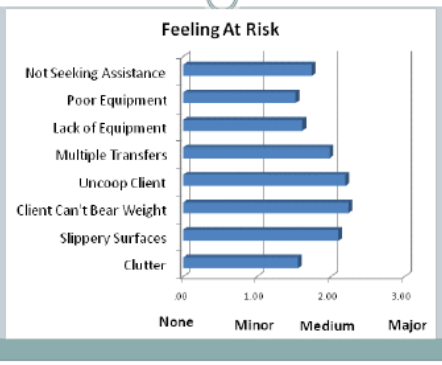
Overview of Project

- *Research Question*
  - To what extent does enhancing workgroup safety climate and nurses' safety behavior reduce injury?
- *Location and Units*
  - *3 Sites:* South Shore Regional Hospital, Fisherman's Memorial Hospital & Queen's General Hospital
  - *4 Intervention Units:* Medical, Medical/ Surgical (SSRH), Veteran's Unit, ALC (FMH)
  - *11 Control Units*

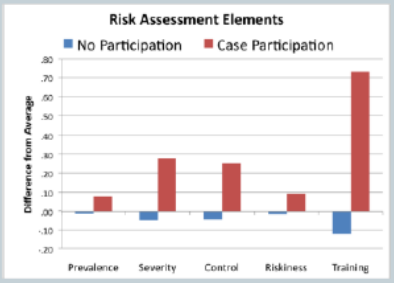
Predicting Risk



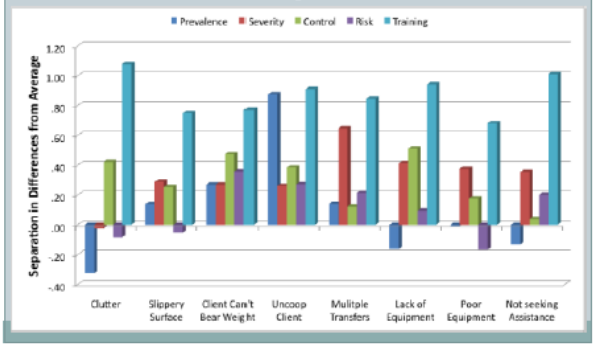
Risk Assessment



Risk Assessment

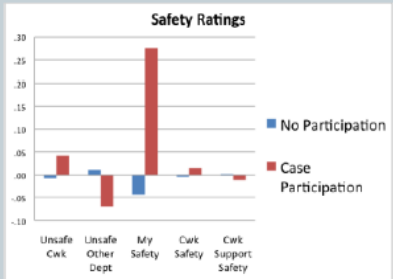


Risk Assessment Item Breakdown



Safety Ratings

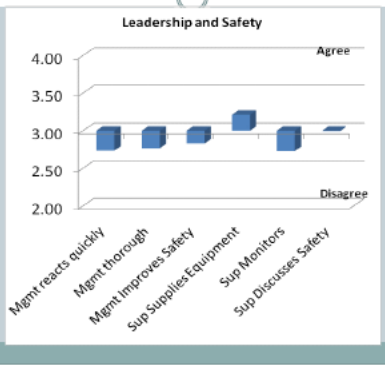
Safety Ratings



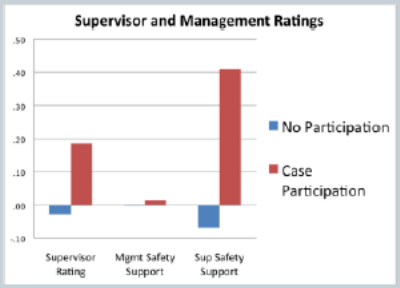
Improvements in Safety

Improvements in Safety

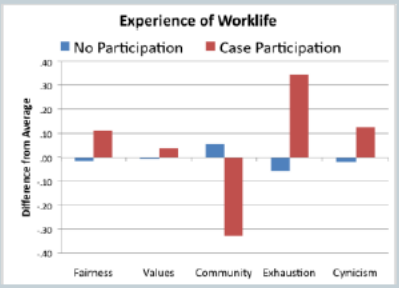
Supervisor and Management Ratings



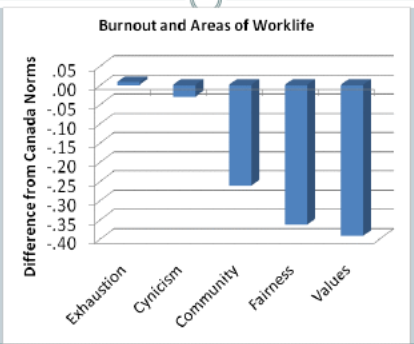
Supervisor and Management Ratings



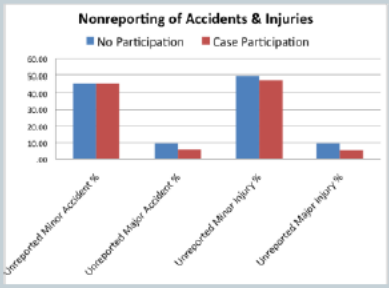
Experience of Worklife



Experience of Worklife



Reluctance in Reporting Accidents



Limitations

- Three month intervention period too short
- ½ hour meetings too short but necessary because staff had to return to work
- Some staff not able to participate due to workload
- H1N1 and CUPE strike planning were time consuming

Quotes from Survey

- *Case Participants*
  - "Very needed, hoping to gain a much safer environment for myself & co-workers by possibly more training & better procedures & policies."
  - "I feel it is essential to have less injuries (thus) less sick on unit (thus) less workload for others i.e. Overtime, working tired, needless injuries due to rushing to get things done (also working short handed)."
  - "It would be wonderful if it could change but I don't think it will, everyone has to learn to work together."

Quotes from Survey

- *Non-participants*
  - "By collective focus on safety - improvements are occurring. Staff are speaking up - and will continue to challenge each other to ensure safety is part of their practice."
  - "Staff at the bedside are gradually becoming more aware of safety for themselves and their patients."
  - "It would be nice for a project to be put in place but unfortunately most of the time these projects take longer to gather their information and in the end very little is done."

Intervention Phase

END OF SEPTEMBER TO EARLY DECEMBER 2009

Intervention Units

- Selected based on
  - Initial survey results
  - Injury rates
  - Willingness of the manager
- Veterans Unit (FMH)
- ALC (FMH)
- Medical (SSRH)
- Medical/Surgery (SSRH)

Bi-weekly Discussion Groups

- 1st Meeting:
  - Explain the project
  - Establish group norms
  - Validate survey results
  - Why do injuries occur?
  - Pick top 3

Bi-weekly Discussion Groups

- 2nd Meeting
  - Reviewed top 3 reasons
  - Agreed on top one
  - Started discussing why this was happening
- 3rd Meeting
  - More detailed discussions re: causes and contributing factors
  - Set a goal
  - Staff began to generate solutions

Bi-weekly Discussion Groups

- 4th Meeting
  - Built on staff's solution ideas
- 5th and 6th Meetings
  - Action

Key Issues Staff Indentified

- Work pressure
- Equipment
- Clutter
- Lack of communication
- Workplace violence
- Bariatric clients
- Lifts and transfers (training)
- Low energy, feelings of helplessness

My Observations

- Even though the group members changed they all knew what the issue was about.
- The nurses have lots of expertise and knowledge. They know their unit and had reasonable ideas around how issues could be resolved.
- It was apparent by 3rd or 4th meeting that manager support was key to moving forward.

My Observations

- Staff did not report strong knowledge of existing safety policies (suggest further evaluation).
- Staff did not report reading the minutes in the communication book between meetings.
- Issues around the "Back to Basics" Training, is it mandatory or not, no one to cover so staff could go, many did not report having recent training.
- Solutions need to be link to what currently exists.

My Observations

- Staff not eager to use incident reports (why?).
- When short staffed nurses reported missing team nursing.
- Three months is a short time.
- South Shore Health is juggling many priorities.

Possible Future Action

- Make safety a priority of the organization, build a culture of safety, designate dedicated and protected resources.
- Use evidence based approaches.
- Build on the organization's strengths (e.g. strong policies, have implementation and evaluation plan).

Future Directions

- Continue to build on partnerships (WCB).
- Capture the nurses' knowledge, involve them in the problem solving process.
- Frame messages carefully so staff do not feel all decisions are budget driven.
- Look at the issues around bariatric patient care and patients with dementia.
- Address the issues of staff fatigue and hopelessness.

Some Quotes

- "No one has ever asked us before. I really appreciate the opportunity to say what I think."

Focus group

- "Harbour View Haven has a lift and transfer team right on the unit, someone assesses everyone for the right way to do the lifts and it's posted right by the bed."

Focus group

More Quotes

- "It seems when you get something good in place they need to take something away."

Focus group

- "It would be nice for a project to be put in place but unfortunately most of the time these projects take longer to gather their information and in the end little is done."

Survey response

Last Quote

"I believe that safety at work should be a very high priority for staff and patients and I am pleased that our district takes it seriously."

Survey response