

# Business Case Rationale

## White Paper

Call for a provincial strategy to prevent musculoskeletal injuries among health care workers.



# Acknowledgements

February 2013

This white paper was prepared by the Nova Scotia Soteria Strains Working Group made up of members from Nova Scotia's District Health Authorities and The IWK Health Centre, the Workers Compensation Board of Nova Scotia, and AWARE-NS.

Committee members who contributed to this project include:

Michael Carter  
Leanne Dixon  
Christan Goudge  
Kelly Johnston  
Jason Slaunwhite  
Jillian Ramsay-Stewart  
Matthew Ross  
Jonathan Tyson  
Wendy Walters  
Mark Williams



## Executive Summary

Nova Scotia's health care sector, like publically funded health care across Canada, is currently facing the challenge of maintaining or enhancing services and outcomes while at the same time constraining the rate at which the costs to provide health care increases. A wide range of initiatives are underway to help meet this challenge, one of which is an increased focus on improving the health and safety of Nova Scotia's health care workers. This initiative has the potential to both significantly reduce costs for health care in Nova Scotia while also enhancing patient safety and health outcomes.

The total annual cost of work-related injury in Nova Scotia health care is estimated to be in excess of \$100 Million (CAD). This figure represents both the cost of workers' compensation insurance and all of the uninsured costs associated with work-related injuries, such as additional overtime, recruitment and retraining, lost knowledge and experience, administrative time, related negative patient outcomes, etc. While these dollar figures are significant, they tend to obscure the fact that work-related injuries cause significant pain and suffering for health care workers, forcing some to leave their chosen profession, and leaving others with significantly reduced physical capabilities.

To improve the health and safety of health care workers in Nova Scotia, it is important to understand the nature of the injuries that are experienced by these workers. A review of the data reveals that in 2011, almost 80 percent of all time loss claims reported to the Workers' Compensation Board of Nova Scotia (WCB) by health care workers were musculoskeletal injuries (MSIs) and that more than 50% of these MSI claims were linked to some type of manual lift or transfer task<sup>(1)</sup>. These types of tasks include *patient lifting, transferring and repositioning* which, in the interest of readability, we will reference as *patient handling*.

Patient handling poses significant risks for patient safety, health outcomes, and quality of care (e.g. if patients are dropped, or forced into a posture that results in an injury). Further, it is also known that staff may avoid patient handling tasks due to the demands of these tasks. As such, the health and wellbeing of the patient suffers.

There is overwhelming evidence that well-designed, well-implemented, multi-factorial safe patient handling programs can significantly reduce the number of MSIs reported by health care workers and can improve patient outcomes. Such a program is not only needed here in Nova Scotia, but should also be seen as a priority.

## Introduction

When considered as one industry group, the Health Care and Social Services sector is the largest single employer in Nova Scotia, with a total WCB assessable payroll of around \$1.77 Billion (CAD) in 2011. This represents 19% of the total assessable payroll reported to the WCB<sup>(2)</sup>. This sector is vital to the economy of the Province, employing approximately 25,000 workers in relatively high paying, highly skilled jobs. It is also vital to the health and well-being of all Nova Scotians, especially if one considers our aging population and population trends towards increasing rates of obesity and inactivity.

Health care in Nova Scotia, like health care in other jurisdictions, faces tremendous challenges due to an increased demand for services, and a need to constrain the rate at which the costs of providing these services increases. As a result, the health care system must continue to look for opportunities to reduce costs, reduce wait times, and improve quality and accessibility to services, while at the same time enhancing patient outcomes. A focus on improving the health, safety and well-being of Nova Scotia's health care workers has the potential to both significantly reduce costs and enhance patient outcomes.



In 2011, the Nova Scotia health care and social services sector accounted for more than 26 percent of all time loss work-related injuries registered with the Workers' Compensation Board of Nova Scotia (WCB)<sup>(2)</sup>. This sector also paid the WCB almost \$58 Million (CAD) in 2011<sup>(3)</sup>. As of July 14, 2012 the WCB has paid out more than \$8.25 Million (CAD) in medical aid and wage loss payments for these time loss claims and more than \$9 Million for all claims<sup>(4)</sup>.

It is clear that work-related injury places a huge burden on health care in Nova Scotia. However, it is important to recognize that the WCB costs associated with work-related injuries represent only a fraction of the total cost of poor health and safety in health care. Studies show that the ratio of indirect costs to direct costs for workplace accidents varies widely, from a high of 20:1 to a low of 1:1, in the construction sector<sup>(5)</sup>. In 2003, Liberty Mutual estimated that for each \$1 spent on the direct costs of accidents, \$3-5 were spent on indirect costs<sup>(6)</sup>. The relationship between direct and indirect costs varies from industry to industry, by severity of the injury, and by jurisdiction. In a 1999 report it was found that the ratio of indirect to direct costs is 4-8:1 for nurses with occupational back injuries<sup>(7)</sup>.

Using a conservative multiplier of 5, it is estimated that the total annual costs for all workplace injuries in Nova Scotia health care are likely to be in excess of \$100 Million (CAD) when one considers uninsured costs, such as overtime, hiring and retraining, lost knowledge and experience, administrative time, related negative patient outcomes, etc. While these dollar figures are significant, they also tend to obscure the fact that work-related injuries cause a significant amount of pain and suffering for health care workers, forcing some to leave their chosen profession, and leaving others with significantly reduced physical capabilities.

There are substantial benefits and savings to be had through improvements to the health and safety of Nova Scotia's health care workers. To accomplish this, it is beneficial to consider the nature of the injuries that are experienced by these workers. A review of the data reveals that sprain/strain or musculoskeletal injuries are, by far, the most commonly reported injury in health care. In 2011, almost 80 percent of all reported time loss claims by health care workers were sprain and strain type injuries, accounting for 71 percent of all lost days and 72 percent of all costs associated with work-related injury claims for health care workers<sup>(1)</sup>. This data provides strong evidence that a more focused and standardized provincial strategy to help prevent musculoskeletal injuries in health care is not only needed, but should be a priority in Nova Scotia.

## Musculoskeletal Injuries in Health Care

Nova Scotia's health care system is not unique in terms of experiencing a high prevalence of musculoskeletal injuries (MSIs). Health care systems in all jurisdictions across Canada and worldwide, whether they are publicly or privately funded, have very similar experiences when it comes to MSIs. For instance, in 1996, MSIs accounted for 71 percent of all workers' compensation claims made by healthcare workers in British Columbia. Of these, 60 percent were experienced by caregiver occupations (practical nurse, aide, orderly, registered nurse, etc.) and more than 50 percent of the claims were associated with overexertion incidents, mostly attributed to manual handling of patients/residents<sup>(8)</sup>.

Other Canadian research indicates that 24 – 60 percent of all healthcare staff report experiencing an upper extremity MSI during the past 12 months, with lower body MSIs being reported at a rate of 33 – 72 percent. The life time prevalence rate of back pain is more than 70 percent for healthcare workers.

Back injury, or work-related low back pain (LBP), is the most common MSI experienced by health care staff. Studies suggest that, at any time, 17 percent of nurses will report some level of low back pain, with 40-50 percent of nurses saying they have experienced LBP in the past year. LBP is a burden to both private and public health care systems. Nurses experiencing LBP may be off work and receiving either workers' compensation or insurance payments (e.g. sick leave, short-term or long-term disability). While at work they may not be able to perform all of the duties expected of them or they may avoid some tasks so that the safety and health outcomes



of the patient or resident are negatively affected. This LBP may also result in staff changing their profession. It is estimated that 12 percent of nurses in the US leave their profession every year as a result of back injuries<sup>(9)(10)</sup>.

## Musculoskeletal Injuries Associated with Patient Handling

When analysing the data related to MSIs in the health care sector, it is clear that a large majority of these claims are associated with tasks that require the care giver to transfer, lift and/or reposition a patient or client. The US Bureau of Labour Statistics indicates that, in 2010, 58 percent of all the MSI claims reported by workers in the health care and social assistance industry had the source of injury as “a health care patient or resident<sup>(11)</sup>.”

In Nova Scotia, in 2011, patient handling activities accounted for 68.6 percent of MSIs report in all of health care; 60 percent of MSIs reported in the DHAs/IWK and more than 75 percent of MSIs reported in home care<sup>(1)</sup>.

It seems obvious that work-related injuries sustained by staff when performing patient handling activities pose a significant risk to the sustainability of Nova Scotia’s health care system. The direct, insured costs (i.e. Workers’ Compensation and other sources of insurance coverage) are huge and directly impact the system’s ability to maintain, let alone enhance, the delivery of health care in the Province. And these costs are just a fraction of the true cost to the system and to the worker’s within it. To understand the true costs of these work-related injuries, we must also consider the costs associated with recruitment and retraining staff after existing staff are forced to leave their chosen occupation due to chronic pain and/or disability. There are many additional costs including: the costs associated with increased overtime, the costs of administering return-to-work programs and supporting workers who are off work as a result of a work-related injury, and the costs of lower levels of service or efficiency when workers are back to work but performing transitional duties.

Patient handling activities also poses significant risks to patient safety, health outcomes, and quality of care. When the staff who are responsible for patient care are required to manually lift, transfer or reposition patients, there is the potential that the patient will be injured if staff experience an injury while performing the task. The patient may be dropped, or forced into a posture that results in an injury. Further, it is also known that in some settings staff will avoid patient handling tasks due to the demands of these tasks. As such, the health and wellbeing of the patient suffers.

## The Benefits of a Multi-factorial Safe Patient Handling Program

There is overwhelming evidence that a well-designed, well-implemented, multi-factorial safe patient handling program can significantly reduce the number of MSIs reported by health care workers. Results from some selected studies are included below.

A 1999 study by National Institute for Occupational Safety and Health (NIOSH) in the United States evaluated “zero-lift programs” that used participatory employee and management advisory teams<sup>(12)</sup>. The “zero-lift programs” were implemented in seven nursing homes and one hospital. These programs were implemented by replacing manual lifting and transferring of patients, with modern, battery operated, portable hoists and other patient transfer assistive devices. Participatory committees, with nearly equal representation from management and employees, selected the equipment and implemented the programs.

After the implementation of the “zero-lift programs” the total number of injuries from patient transfers decreased by 62 percent overall. This was accompanied by an 86 percent reduction in lost workdays and a 64 percent reduction in restricted workdays. These reductions, coupled with the overall reduction in risk, led to a decrease in workers’ compensation costs of 84 percent. Overall, the eight facilities experienced reductions of 32 percent



in all injuries, 62 percent in all lost workdays, 6 percent in all restricted workdays, and 55 percent in total workers' compensation costs.

The implementation of the “zero-lift programs” produced many intangible benefits including improvements in patient comfort and safety during patient handling activities. The nursing personnel perceived their backs were less sore and they were less tired at the end of their shifts. More pregnant and older workers were able to perform their regular duties and stay on the job longer than they had experienced previously.

In Canada, Speigel, et al. compared costs of musculoskeletal injuries before and after the installation of 65 ceiling-mounted lifts in the extended care unit of a British Columbia hospital<sup>(13)</sup>. The study demonstrated that a safe patient lifting program reduced injuries by 58 percent and paid for itself in 3.85 years just in terms of reduced workers' compensation claims. When indirect costs (absenteeism, disability insurance payments, and recruitment of new workers) were added to the analysis, the costs were regained in 1.3 years.

To address the comprehensive economic value of the lifting equipment for the facility, the researchers estimated a 12-year life span for the devices and projected the costs and savings out for 12 years. The cost of the equipment, maintenance, training, and energy was annuitized to \$38,155 (CAD). Looking at the direct cost of workers' compensation claims, the facility would gain a projected \$2.6 Million (CAD) in savings in reductions in workers' compensation claims alone. It would take the facility 3.7 years to pay for the capital costs, resulting in a 2.05 benefit-cost ratio, and a 6.2 percent internal rate of return.

With the indirect costs added, the payback period for the facility is only 1.3 years, with the benefits outweighing the costs by a factor of 6.12, and an internal rate of return of 17.9 percent.

A 2006 study by Nelson, et al. found that the initial capital investment in patient handling equipment was recovered in 3.75 years based on \$204,599 (USD) annual savings in workers' compensation and medical treatment, and savings from fewer lost and modified work days<sup>(14)</sup>. The sample was of 1,133 nursing staff in 23 high risk nursing units (19 nursing home units and four spinal cord units) in seven facilities. Comparing nine month periods pre and post-implementation of the safe patient handling program, researchers evaluated the impact of a safe patient handling program on injury rates, lost and modified work days, costs, and return on investment, as well as issues related to morale and patient acceptance.

After the introduction of the safe patient handling program, the injury rate fell by 30 percent. In addition, the median number of modified work days taken per injury declined from 10.2 days to 6.2 days, indicating a reduction in the severity of the injuries. Overall, the total lost work days decreased by 18 percent.

The annualized injury costs saving was calculated to be \$327,636 (USD). Subtracting the annualized program costs of \$123,037 (USD), the overall savings per year was estimated at \$204,599 (USD). The investment in equipment, installation, maintenance and training was recovered in 3.75 years, with a desirable rate of return of nearly 19 percent.

Martin et al. conducted a study reviewing the impacts of a back injury prevention initiative for nursing through the provision of patient handling aids and equipment, education in “No Lifting” principles and techniques, and by encouraging cultural change and ownership by nurses<sup>(15)</sup>.

The study evaluated raising the awareness of nurses, encouraging nurses to be proactive in identifying hazards, educating nurses in patient risk assessment, encouraging patient independence and mobility, and encouraging patients to assist in their own transfers. Additionally, organizational commitment was sought at all levels to facilitate long term cultural change.

After the introduction of the intervention there was a 24 percent reduction in the rate of standard back injury claims and a 41 percent reduction in the rate of working days lost associated with standard back injury claims.



The cost savings from this intervention were estimated to be \$6.4 Million (AUD) per annum.

Finally, in Nova Scotia, the Cape Breton District Health Authority (CBDHA) began to focus on reducing the number of injuries related to patient handling tasks in 2005. Using a multi-factorial Safe Lifts and Transfers (SLATs) program, which included education of employees, provision of lifts and transfer devices, patient mobility assessments, etc. the CBDHA had 38 percent fewer time loss incidents related to patient handling in 2011 as compared to 2005. Also, the CBDHA calculated the cost of paying overtime for workers to replace workers who were off as a result of injuries suffered when performing patient lift and transfer tasks. Between 2005 and 2011 the number of benefit weeks paid due to injuries related to patient handling dropped more than 50%, resulting in an annual reduction in overtime costs of more than \$1.5 Million (CAD)<sup>(16)</sup>.

## A Best-Practice Safe Patient Handling Program for Nova Scotia

Musculoskeletal injuries continue to pose a significant challenge and opportunity for Nova Scotia's health care system. These injuries cost the system, and hence the Province, millions of dollars each year. These dollars are being directed to the care and support of injured workers instead of being used to help maintain and enhance health care services in the Province. The Provincial Government has told the Province's health care system that it needs to identify opportunities to reduce costs, while at the same time, continue to improve service and patient care outcomes.

Taking steps to reduce the number of MSIs reported by staff is a real, tangible, and significant opportunity to reduce costs for Nova Scotia's health care system. By initially focusing on implementing a well-designed, multi-factorial, evidence based safe patient handling program for health care in Nova Scotia, we can reduce the risk for injury for workers and improve patient safety / care outcomes. This will lead to a real reduction in costs for the health care system.

Additionally, an effective patient handling program will allow for more successful stay-at-work and return to work programs, enabling employees who are injured to return to work earlier in their recovery process as the physical demands of the work are better understood and controls are implemented to reduce risk. Jobs that were formerly considered to be 'too demanding' because they required manual patient handling can now be used as transitional duties and included in an injured workers return to work plan.

The research findings presented above present a strong case for supporting the implementation of a safe patient handling program. Studies consistently show that these programs are cost effective, leading to large reductions in injuries, lost days due to injuries, overtime costs, and other administrative costs. They also have positive impacts on staff well-being and job satisfaction, patient satisfaction, and patient health outcomes, as well as helping to sustain health care in the province.

For far too long, health care workers have accepted that injuring their back or shoulder was just part of the job. For far too long, manual handling of patients has been associated with good patient care. And, for far too long, administrators in the health care system have allowed or expected staff to perform manual patient handling activities. Everyone who plays a part in Nova Scotia's health care system needs to support and be involved in the development and implementation of a provincial safe patient handling program.



## References

1. Workers' Compensation Board of Nova Scotia Business Intelligence Report, Overview of HSS Aggregate Data By NWISP Subsets - New 2011 Claims Only (Accident Date in 2011), as of April 10, 2012
2. Workers' Compensation Board of Nova Scotia 2011 Annual Report
3. Workers' Compensation Board of Nova Scotia Business Intelligence Report, Rate Overview for Healthcare Employers (8600-8699) - Active Accounts as of April 26, 2012
4. Workers' Compensation Board of Nova Scotia Data Warehouse Injury Profile Cube, as of July 14, 2012
5. Occupational Safety & Health Administration (US), Costs of Accidents from: [http://www.osha.gov/SLTC/etools/safetyhealth/mod1\\_costs.html](http://www.osha.gov/SLTC/etools/safetyhealth/mod1_costs.html) accessed July 20, 2012
6. Liberty Mutual Press Releases, Direct Costs of Disabling Workplace Injuries Grow 2.5 Percent, April 07, 2003
7. D. Blackmon, "Back injury prevention," *Surgical Services Management* 5 (July 1999) 43-46
8. Workers' Compensation Board of British Columbia, Focus Report on Occupational Injury and Disease in the Health Care Industry, 2000
9. Stubbs D.A., Buckle P.W., Hudson M.P., Rivers P.M., & Baty D. (1986). Backing out: nurse wastage associated with back pain. *International Journal of Nursing Studies*, 23, 4: 325-336.
10. Nelson, A. State of the science in patient care ergonomics: Lessons learned and gaps in knowledge. Presented at the Third Annual Safe Patient Handling and Movement Conference. March 5, 2003, Clearwater Beach, FL.
11. US Bureau of Labor Statistics - Injuries, Illnesses, and Fatalities Frequently Asked Questions <http://www.bls.gov/iif/oshfaq1.htm#q16> (accessed April 25, 2012)
12. Garg, A. (1999). Long term effectiveness of "zero-lift programs" in seven nursing homes and one hospital. Washington, DC: National Institute for Occupational Safety and Health
13. Spiegel, J., Yassi, A., Ronald, L., Tate, R. B., Hacking, P., & Colby, T. (2002). Implementing a resident lifting system in an extended care hospital. *AAOHN Journal*, 50(3), 128-134.
14. Nelson, A. L., Matz, M., chen, F., Siddharthan, K., Lloyd, J., & Fragala, G. (2006). Development and evaluation of a multifaceted ergonomics program to prevent injuries associated with patient handling tasks. *Journal of International Nursing Studies*, 43, 717-733.
15. Martin, P. J., Harvey, J. T., Culvenor, J. F., & Payne, W. R. (2009). Effect of a nurse back injury intervention on the rate of injury compensation claims. *Journal of Safety Research*. 40(1): 13-9.
16. Cape Breton District Health Authority, internal reports on Patient Handling Statistics 2005 – 2011