

Developing a Safe Patient-handling Program for Long-term Care – A Case Study

**David W. Bartko, MS, CSP
Aon Global Risk Consultants
Minneapolis, MN**

**Kris Hamann, MBA
Essentia Health
Minneapolis, MN**

**Lori Severson, MS, HEM
Berkley Risk Administrators Company
Minneapolis, MN**

Introduction: The Need for Safe Patient-handling Programs

The European, Australian, and Canadian healthcare systems have led a revolutionary change in the way patients and residents are lifted and transferred within their facilities by successful implementation of a comprehensive patient-handling programs that includes ergonomic assessments, lifting equipment, and administrative controls (Nelson 2006). It has only been in recent years, the U.S. healthcare industry has openly begun to acknowledge that manually lifting, repositioning, and transferring dependent patients and long-term care residents are high-risk activities, both for the caregiver and the patient or resident.

Moving dependant people on a daily basis is identifiably dangerous work - the cumulative weight lifted by a single nurse in one typical eight hour shift has been estimated at 1.8 tons, or 9 tons for a 40-hour work week (Nelson 2006). It is not surprising the nursing occupation has one of the highest incidences of work-related injuries of all occupations. In 2007, there were 8.4 injury and illness cases per 100 full time workers in skilled nursing and personal care facilities compared to 4.4 per 100 for private industry. The lost workday injury and illness rate for skilled nursing and personal care facilities at 5.2 per 100 exceeded some of the traditionally more hazardous occupations such as construction 4.7 per 100 and agriculture 5.0 per 100 (BLS 2007).

Direct and indirect costs associated with back injuries are estimated to over \$100 billion annually, with \$30 billion attributed to the healthcare industry. Over three quarters of a million working days are lost annually as a result of back injuries in nursing, with an estimated 40,000 nurses reporting illnesses from back pain each year (Nelson 2006; BLS 2007).

Caregivers in hospitals and skilled care nursing facilities risk serious injury every time they help transfer, move, or reposition a patient or resident. Most of these injuries are strains and

sprains caused by patient or resident handling care tasks, and 50 percent are related to the back. In a recent study, over 50 percent of nurses reported job related musculoskeletal pain (Nelson 2007).

Traditionally, the response to patient-handling injuries has been to provide training to caregivers on body mechanics and proper lifting techniques, and to identify patients or residents that would require a “two person” transfer or lift, thinking the two caregivers would share the weight equally thereby reducing the risk. These approaches do not reduce the risk of injury to caregivers. Evidence-based studies showed the shear forces on the spine during both one and two-person transfers and lifts measured above tolerance limits and concluded that patient-handling tasks are extremely high risk for injury (Marras 1999).

High risk tasks are defined as duties imposing, significant biomechanical and postural stresses on the care provider. In addition to patient transfers and lifts, other identified high risk tasks in healthcare include repositioning a patient in bed or chair, applying anti-embolism stockings, and transporting a patient in a bed or stretcher (Nelson 2006).

It is estimated by the National Institute for Occupational Safety and Health (NIOSH) that the average person can safely lift 51 lbs. While proper body mechanics and lifting technique are important elements in reducing back stress, no amount of training or technique can make safe a task that is inherently unsafe. Strategic interventions are needed to control the hazards and financial burden associated with patient-handling tasks, and to retain qualified staffing levels to meet the anticipated demand in the next half century.

Recent studies show that safe patient-handling programs can be highly effective in reducing the frequency, severity, and costs of caregiver injuries. And when nursing injuries are reduced and nurse-to-patient time is increased, patient outcomes improve (Collins 2004; Nelson 2006).

The American Nursing Association (ANA) and the Veterans Health Administration (VHA) have been early leaders in promoting safe patient-handling efforts in the United States. The ANA developed its “Handle with Care” program which provides materials and support for safe practices for patient-handling. The VHA was one of the first organizations to implement safe patient-handling programs and formally publish evidenced based results which included nursing injury reductions and improved patient outcomes including higher alertness, lower fall risk, and declines in pain and combativeness (Nelson 2007).

Long-term Care Industry

Skilled nursing facilities (nursing homes) are one of the fastest growing industries in the US. It is estimated there are over 1.6 million nursing home workers in more than 21,000 facilities (Rhodes 2001).

A skilled nursing facility is defined as an establishment which is primarily engaged in providing skilled nursing care and related services for residents who require medical or nursing care, or rehabilitation services. Skilled nursing facilities offer the highest level of long-term care and are characterized primarily by the patient or resident need for 24-hour nursing care.

Unlike hospitals (acute care) settings where physicians direct most care, paraprofessional caregivers (RNs, LPNs, CNAs, NAs) are the dominant caregiver in long-term care settings. It is estimated that over 90 percent of the care and handling of physically dependant patients is performed by women (Nelson 2007).

The risk of worker injury has been consistently higher in long-term care facilities than in hospitals, primarily because long-term care residents require a higher burden of daily care—such as getting in and out of beds or chairs, dressing, bathing, and toileting. In addition, there is usually fewer staff per residents in a long-term care which consequently increases the patient-handling exposure for individual workers (Nelson 2006).

Staffing is an issue that needs to be considered. There will be an unprecedented increase in the size of the elderly population as the "baby boom" generation (those born from 1943-1963) ages. By 2050, it is estimated that between 5.7 and 6.5 million long-term care workers will be needed to meet the healthcare needs of the 27 million baby boomers - a 250 percent increase from the 2000 level (Stone 2000; DHHS 2003).

Another factor affecting the future availability of long-term care (frontline) workers is that post baby-boom generations are considerably smaller. As the baby boomers reach retirement age over the next two decades, the number of available employees, between the ages of 25 to 54 years of age, (who traditionally provide care) will be substantially smaller. There is concern the ratio of direct care workers to the dependant population will be higher than it's ever been. There will be fewer employees available to take care of more people (Stone 2001; DHHS 2003).

Safe working conditions will play a key role in retaining and attracting new workers. While Federal and State government will have a role to play, the bulk of responsibility will fall on industry shoulders. Employers will need to alter the healthcare market by improving patient-handling methods and shaping new solutions using available technologies. For their part, employees at all levels will need to embrace the new technologies and change. Already, strong evidence supports the effectiveness of four interventions: safe patient-handling policies, mechanical equipment, ergonomic assessments, and lift teams (Nelson 2006).

Safe Patient-handling (SPH) Legislation

While Federal legislation has been introduced, States have taken the lead in passing legislation regarding patient or resident handling requirements. Below is a brief overview of state, federal, and Minnesota-specific legislative actions to date.

State Legislation

Texas passed the first state law requiring hospitals and nursing homes to implement safe patient-handling and movement programs as of January 1, 2006. Currently, nine states have passed legislation pertaining in some way to safe patient and/or resident handling. Six states directly require development of safe patient-handling programs and/or demand the use of mechanical patient lifting equipment. Three other states support and encourage efforts for safe patient and/or resident handling.

Texas (January 2006), Washington (March 2006), Rhode Island (July 2006), Maryland (April 2007), Minnesota (May 2007), and New Jersey (January 2008), have all passed legislation requiring safe patient and /or resident handling policies, and/or programs, and/or lifting equipment, with much variation in scope and strength among the different state laws.

Ohio, New York, and Hawaii, have passed legislation which does not directly require, but is supportive of, safe patient and/or resident handling.

- Ohio - offers interest-free loans to nursing homes wishing to implement lift equipment.
- New York - commissioned a study on SPH with a goal to create "best practices"

- Hawaii - adopted a resolution supporting ANA “Handle With Care” program

Federal Legislation

A Federal bill, H.R. 378: Nurse and Patient Safety & Protection Act of 2007, was introduced by a Rep. John Conyers from Michigan in January 2007. If approved into legislation this bill would direct the Secretary of Labor to issue an occupational safety and health standard to reduce injuries to patients, direct-care registered nurses, and other health care providers by establishing a safe patient-handling standard (Govtrack 2007)

If HR 378 is successful, the Federal Safe Patient-handling Standard will require “all health care facilities” to comply with requirements “to prevent musculoskeletal disorders for direct-care registered nurses and other health care providers working in health care facilities. The standard requires the elimination of manual lifting of patients by direct-care registered nurses and other health care providers, through the use of mechanical devices, except during a declared state of emergency.” In May 2007, the bill was referred to the Subcommittee on Workforce Protections.

Minnesota Legislation

On May 25, 2007, legislation was enacted in Minnesota requiring all licensed health care facilities in the state to implement safe patient-handling program. The program requires adopting a written safe patient-handling policy and establishing a safe patient-handling committee by July 1, 2008. The policy must also establish a plan to minimize manual lifting of patients and residents by January 1, 2011, through the use of safe patient-handling equipment (MN DOLI 2007).

The SPH program must also address:

- Assessment of hazards with regard to patient-handling;
- The acquisition of an adequate supply of appropriate safe patient-handling equipment;
- Initial and ongoing training of nurses and other direct patient care workers on the proper use of this equipment;
- Procedures to ensure physical plant modifications and major construction projects are consistent with program goals; and
- Periodic evaluations of the safe patient-handling program.

A unique aspect of the MN SPH Legislation is that it applies to all “licensed healthcare facilities,” which by definition includes all acute and long-term care facilities in the state. Another unique aspect to Minnesota’s SPH legislation was a one time available grant sum of \$500,000 which was divided among 68 acute and long-term care facilities in Minnesota. Grants were awarded based on quality of the written grant application. Of the initial 68 grants, eight were awarded to Essentia Health facilities totaling \$62,000.

Case Study – Essentia Health/Benedictine Health System

Background

Essentia Health, an affiliation of St. Mary’s Duluth Clinics (SMDC) Health System, Innovis Health, Benedictine Health System (BHS) and Essentia Community Hospitals & Clinics (ECHC), is a multi-state, not-for-profit health care system headquartered in Minnesota. The mission of Essentia Health is to support their communities in the development and delivery of the highest quality health care for life.

The core values of Essentia Health are Hospitality, Stewardship, Respect, Justice, Quality and Teamwork. Essentia Health employs approximately 12,000 staff members, and has net operating revenue of approximately \$1 billion a year.

In April 2004, 26 Benedictine Health System (BHS) facilities became self insured under a captive insurance program named the Benedictine Groups Self Insurance Association (BGSIA). Cost containment was imperative as skilled nursing facilities experience, at best, a 1-3 percent profit margin. The BGSIA incurred \$5.3 million in workers' compensation claim costs (undeveloped) from April 2004–August 2008. Approximately 75 percent of claims and \$4 million of total incurred dollars were related to patient-handling. Nursing, strains/sprains, and patient-handling tasks were identified as top workers' compensation loss trends.

In September 2004, BHS established a Safety & Workers Compensation Steering Committee. Committee members were comprised of facility representatives and outside consultants. The committee's purpose was to provide oversight to the Loss Prevention, Claims Management, and Safe Patient-handling programs. As a result, a five year strategic plan was put in place to reach the targeted objectives below:

- Reduce direct care staff Safe Patient-handling (SPH) related injuries and associated workers' compensation costs.
- Educate Steering Committee members by attending the Safe Patient-handling & Movement (SPHM) Conference
- Establish a pilot project: Steering Committee directed a CEO and Regional Physical Therapy Director to implement an SPH program in 2 facilities and
- Develop and deploy a comprehensive SPH implementation process to all BHS skilled nursing facilities.

SPH Pilot Site – Saint Anne of Winona

Saint Anne of Winona operates in four distinct divisions; Saint Anne Extended Healthcare (skilled nursing), Callista Court (assisted living apartments), Benedictine Adult Day Center (licensed adult day care programs), and Saint Anne Training Center (Federal and state approved training of Nursing Assistants).

The SPHM pilot program took place at Saint Anne Extended Healthcare which is a four story skilled nursing facility with 109 private rooms. Saint Anne was chosen for the pilot because the Administrator and Physical Therapist were members of the BHS Steering Committee, they were the first to attend the Safe Patient-handling and Movement Conference, and were key supporters of incorporating these programs into the organization. The Saint Anne facility was also a good choice because it had a high frequency and severity rate among the highest workers' compensation costs within the BHS organization.

SPH Pilot Implementation Steps

The following highlights the major steps taken:

- Sent the CEO and Regional PT Director to the SPHM convention in Florida.
- CEO returned and implemented SPH program and began raising funds totaling approximately \$73,782 in 2005 through donations and grants.
- Reviewed SPH Equipment vendors, submitted Requests for Proposals.

- Selected an equipment vendor.
- Initially installed ceiling systems in resident rooms (straight rail from bed to bathrooms) and a therapy ceiling track system on the 4th floor and the therapy department.
- Since 2005 to present they have covered 46 of their 109 beds with ceiling systems in resident rooms- all financed by foundation donations and grants.

SPH Pilot Results

The Saint Anne facility has experienced an 80% reduction in total incurred workers' compensation costs comparing 2004-(SPH related incidents to direct care staff only) to 2008; (\$165,000 in 2004 compared to \$34,155 total incurred in 2008).

- We are optimistic but realize more work is needed.
- There is need for a SPHM culture change education program for staff.
- There is need for development of their SPHM assessment documentation and education on the use of SPH algorithms.
- There is need for further review of low tech devices to assist staff in the many repositioning tasks and turning tasks performed in skilled care facilities.
- Until these items are addressed we do not consider this a complete success story but one well on its way.

SPH Program Approval – Executive Management

The BHS Steering Committee realized nurses were performing high risk tasks and that body mechanics education and gait belts were not stopping work related patient-handling injuries. The initial success and feedback from the Saint Anne pilot project convinced the team to implement SPH across the entire system. This was seen as a critical need and the size and commitment of such an initiative would require Executive Management support.

In 2007, the Steering Committee submitted a SPH implementation proposal to BHS Executive Management Committee (EMC) to obtain endorsement for implementing SPH programs in all BHS facilities. The proposal included data on nursing staff injury rates, injury costs and the impact on revenue, and nursing turnover rates. It also included a video testimonial from an injured Nurse Assistant at the pilot location who, after a SPH related back injury, could no longer do the job she loved--nursing. Executive Management Committee approval was given and the charge was to implement SPH throughout the BHS system. The EMC established SPH as a CEO/Administrator performance expectation. Developing an SPH Implementation Guide, conducting education and training, and helping to attain funding for equipment would be the primary focus of the Steering Committee.

SPH Program Funding

The Saint Anne pilot project financed ceiling lift installs and other SPH equipment purchases through grants, private donations, and BHS Foundation donations.

In 2007, the Steering Committee submitted to the MN Department of Human Services (DHS) a Pay for Performance grant proposal. The goal of the grant was to improve care of residents and help employees by installing safe patient-handling equipment. The DHS Pay for Performance grant program awards employers who can show technology improves healthcare. In April 2008, BHS was awarded a 12 facility collaborative Pay for Performance Award from the MN

Department of Human Services worth \$1.9 million dollars. The proposed project established that 12 skilled nursing facilities working collaboratively could establish base line SPH metrics and after installing ceiling lifts in resident rooms coving 250 resident beds, and that they would as a group see decreases of 20% of lost time incidents and lost time days of OSHA recordable SPH related incidents. There is also a metric on resident satisfaction related to their comfort and the project proposes a 3 % improvement in resident satisfaction in comfort from the baseline after being cared for with ceiling lift technology.

The ceiling systems were installed in 12 MN skilled nursing facilities in November and December 2008. After the systems were installed, the vendor provided hands on skill training with the equipment and provided SPH culture change and team building education. It was decided that implementing SPH was more than just learning how to use slings and ceiling lifts and much more about changing the culture. Each facility sent five employees to SPH culture change and team building education sessions provided by nurses and physical therapist educators from the vendor. The workshops were a train-the-trainer style sessions. The five team members from each facility were charged with returning to their facility and educating all of their staff.

The facilities began tracking their metrics February 1, 2009 and BHS will complete the study February 1, 2010. If the project does not meet the goals established we risk a 20% return of the \$1.9 million dollar award to the DHS. If the project does not meet the established goal BHS must return 20% (\$380,000) of the \$1.9 million dollar award to the DHS. Below is a pie chart outlining the BHS Safe Patient-handling funding organizations and the amount of the awards.

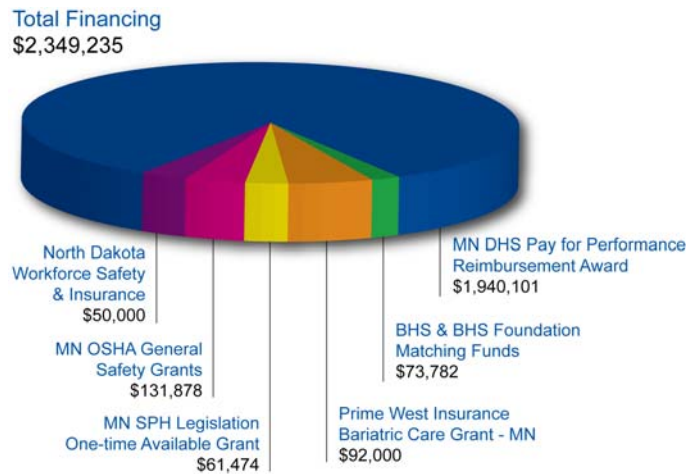


Figure 1. SPH funding organizations and the amount awarded.

SPH Program Implementation Guide

Safe Patient-handling and Movement is an ergonomic approach emphasizing administrative and engineering controls in patient or resident handling activities. A Safe Patient-handling and Movement program will involve changing the traditional way patient or resident handling is performed. The purpose of a Safe Patient-handling and Movement program is to reduce and eliminate injuries to caregivers during patient or resident transfer activities.

The BHS Steering Committee developed a Safe Patient-handling Implementation Guide that was distributed to all of their CEO's at a leadership meeting (40 CEO's). The EMC established the implementation of Safe Patient-handling as a CEO/Administrator performance expectation.

Why and How the SPH Implementation Guide was Created:

- Many facilities did not have a formal approach to SPH and very few employees had formal education on Safe Patient-handling and Movement.
- Various levels of safety committee activity and involvement; many times the facility safety committee focus was on patient or resident safety rather than employee safety.
- Third Party Administration Loss Control Consultant drafted SPH Implementation Guide.
- An internal BHS team consisting of an occupational therapist, a registered nurse consultant, the Essentia Health Safety & Workers' Compensation Administrator, and the director of quality met and customized the SPH Implementation Guide.

A simple three ring binder format was used. The binder included resources for an Administrator, Director of Nursing and Employee Safety Committee to help them to begin to understand this subject and be able to articulate the necessary SPHM program components needed to direct this change in their facilities. The binder was intended to be a resource of education – an administrative control measure, and not a stand alone solution to the SPHM implementation process. Below is an outline of the guide:

Sections of SPH Guide	Contents/Description
Background to Safe Patient-handling	Introduction; Why it is important.
What is Safe Patient-handling	Define SPH risk and controls
A Participatory Approach	Select Leader, Team, Vendor; Develop Policy
Cost Benefit Analysis	Selling Management on need - ROI; Funding
Appendix A	SPH Implementation Checklist
Appendix B	ROI Worksheet
Appendix C	Skills Observation Checklist
Appendix D	SPH Ergonomic Risk Assessment
Appendix E	SPH Equipment Considerations Checklist
Appendix F	Definitions
Appendix G	Additional Resources

Table 1. An outline of the BHS Safe Patient-handling Implementation Guide.

Administrative Controls

As part of a comprehensive Safe Patient-handling and Movement program, administrative controls should also be considered. Administrative controls are as essential as engineering controls to a successful Safe Patient-handling and Movement program.

Examples of administrative controls include:

- Familiarizing employees with patient-handling guidelines and enforcing facility rules
- Providing training in proper management techniques for supervisors and administrators

- Assessing care plans and implementing procedures that reduce need to manually lift, reposition or transfer the patient and communicating plans to staff.
- Conducting periodic audits by observing patient-handling techniques
- Providing training in emergency procedures for residents who have fallen, have spasms, are combative or exhibit any unpredictable behavior

Engineering Controls

Engineering controls are a major component of the Safe Patient-handling and Movement program. Engineering controls prevent injuries by reducing the amount of weight being lifted or reducing risk factors for injury. Below are photos of various engineering controls:



Exhibit 1. A room-traversing ceiling lift in operation.



Exhibit 2. A floor-based Full Lift & Sling used to lift non-weight bearing patients and residents from surface to surface or from the floor after falls.



Exhibit 3. A powered Sit-to-Stand Lift and Sling used for weight bearing patients who need assistance during surface to surface transfers.



Exhibit 4. Lateral transfer aides used to transfer dependent patient/resident from surface to surface with less friction and pull force required.



Exhibit 5. Repositioning aids include slide sheets which reduce friction and are used to help the care provider boost, reposition, or roll the patient/resident on the bed surface.

Significant improvements have been made in patient-handling equipment. The awkward, difficult-to-use, chain-style lifts of the past have been replaced by more stable, easier to use,

battery operated lifts. And whereas portable lifts can be cumbersome, the new ceiling lift systems are available and may not require additional ceiling infrastructure for installation.

No set guidelines exist to determine the number of lifts or equipment a facility will need. Site management needs to assess the dependency level of the patients and residents requiring assistance, the building design, future growth and accessibility when determining equipment needs. In addition to patient-handling devices, other engineering controls that can reduce factors that can lead to injury include:

- Provide routine maintenance on all lift equipment, beds carts, wheels and brakes
- Modify wheelchairs and shower chairs with removable arms
- Correct uneven floor surfaces; and
- Slip sheet use

While engineering controls will require an upfront investment, facility management must look beyond the initial costs of power lifts to consider long-term benefits of purchasing assistive equipment. In addition to the direct workers' compensation costs that can be saved, indirect costs such as lost productivity, retraining, sick or administrative leave can be saved.

SPH Program Results & Next Steps

As with any new program development and roll out, there were successes and there were barriers to overcome. Highlighted below are some of those successes and barriers.

Successes:

- Successfully gained executive management support and approval.
- Successfully educated skilled nursing facilities on how to manage workers' compensations claims better-and now we need to focus on prevention of our most common type of injury.
- Developed knowledge on SPHM within the entire organization, but more is needed.
- Successfully financed the purchase and installation of 300 + ceiling systems through donations, grant writing and executive management approval of capital budget planning within the Essentia Health System en total.

Barriers:

- Skilled care facilities are not educated in risk identification of SPHM tasks and simply educating staff on this risk is a huge endeavor.
- The Implementation Guide was lost. We intended the guide to get in the hands of the key players/the correct people to help us educate staff and implement this program and it was often-times lost and never seen by the Director's of Nursing nor ever opened and read.
- The VHA resources are wonderful but we noticed the terminology to be acute care language and the initial review of patient assessment and algorithms was not terminology used in skilled care in Minnesota. The nursing teams and PT teams edited these resources to match skilled care terminology, but more work is needed to actually incorporate it into every day nursing documentation and education.

Our next steps include overseeing the Pay for Performance Project with oversight of the Metrics in 2009. We want to share the results of this project with others in 2010. A collective improvement of 20% over baseline for all participating facilities in:

1. OSHA 300 Log Recordable SPH related incidents
2. OSHA 300 Log Lost Time Days
3. Collective average improvement of 3% on the 2009 Nursing Facility Quality of Life Resident Satisfaction Survey Score in the Comfort Domain.

Conclusion

Safe patient-handling program implementation is easier said than done. Despite the positive evidence regarding SPH programs, reduced injuries, and improved patient or resident outcomes, healthcare organizations and workers are slow to accept the change when it comes to patient-handling. Nursing professionals are caregivers at heart and want to provide support, help, and assistance to those in need. This care has historically been delivered through very manual, hands on techniques. Using equipment is initially considered impersonal and cold. Implementing SPH programs create change to the organizational and workplace culture and can prove to be a large hurdle - one that takes slow, steady progress.

Getting executive management approval does not mean the organization will immediately embrace the change. It is important to ensure there is a designated SPH program leader/champion internal to the organization, designated SPH leaders at each location, and informal leaders in each unit/wing/floor. It is equally important that SPH program activities become integrated into the program leader's formal job performance goals and annual review process because what gets measured gets managed. It is very important for everyone to understand dedicated work hours (FTE's) need to be carved out of bedside care and management duties to successfully implement and manage a comprehensive SPH program. It takes more than enthusiastic interest, it takes time.

Long-term care safety programs are not as developed as general industry so as you implement this type of program you have to bring employees up a learning curve of safety and there is always some resistance to change. It is very important to get all nursing staff involved from the beginning to open the lines of communication and reduce the resistance to change. Those facilities that conduct equipment reviews and allow employees to "try before they buy" the equipment and provide their input into the final purchasing decision are much more successful than those that purchase blindly through preferred vendor purchasing programs directed by the purchasing department. A complete understanding of the equipment, prior to purchase, is important and will save your organization a lot of money and stress. SPH education and training is more than just the transfer of knowledge on skills on how to turn the equipment on. The organization must develop a culture that demands a new performance standard of care for moving patients/residents and yet encourages open discussion and learning from the mistakes and challenges of implementing such a program.

No safety and health program is complete with out a Continuous Quality Improvement (CQI) follow up process performed on a regular basis. Baseline CQI audits have been performed on all the Essentia Health facilities and will continue to be used to monitor their successes (or lack thereof). The audit findings push Essentia to act and support the Essentia Health Business Units. The Corporate Safety and Workers' Compensation team finds the resources to help locations break down barriers and communicate successes to the highest executive levels as well. The

Essentia Health Corporate oversight is a key component of how Essentia has moved and will continue to move the Essentia Health safety culture to a higher standard, and how they will continue to successfully implement a Safe Patient-handling and Movement program across its healthcare system.

Though the focus of this safety initiative was on employee safety, Essentia Health is seeing a positive impact on the patient and resident safety as well. Anecdotally, they are hearing positive comments from residents being moved in newly acquired ceiling lifts. As part of the Pay for Performance Project in 2009 residents will be formally surveyed using the Minnesota Department of Health's (DOH) Nursing Home Report Card – The Resident Satisfaction Survey Tool. The DOH will focus specifically on the Resident “Comfort Domain” questions to indicate changes from baseline in their perceptions of care after installing the ceiling track systems. Results will be communicated in our 2010 project results. (The survey can be found at: www.health.state.mn.us/nhreportcard/mn_survey_instrument.pdf)

Finally, budgeting will be critical to SPH program management, particularly in the current economy. Finding ways to fund the low to high tech equipment through annual capital budgets or more creatively through state and industry grants should be a key focus for the program leadership.

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