Evaluation of the Workplace Safety Consultation Nursing Home Ergonomics Services Program

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Executive Summary

Introduction

The Workplace Safety Consultation (WSC) unit of the Minnesota Department of Labor and Industry undertook a collaborative project to provide ergonomics assistance to nursing homes to help management and workers reduce ergonomic risk factors and improve the safety of their workplaces. WSC provided ergonomics consultation services as a part of its regular set of consultation services, not as a special intervention or a one-time program.

Work-related injuries and illnesses are very common among nursing home workers. In 2008, private industry nursing homes had an estimated 2,300 recordable injury and illness cases, 3 percent of the state's total number of recordable cases. Private-sector nursing homes had a total OSHA-recordable case (TRC) rate of 7.6 cases per 100 full-time equivalent (FTE) workers in 2008, compared with an overall private sector rate of 4.2 cases per 100 FTE workers.

Methodology

The performance of nursing homes receiving WSC ergonomics services were compared to a set of similar nursing homes that did not receive services from WSC. Facilities chosen for the project were unattached to a hospital, had at least 70 employees and reported at least six workers' compensation indemnity claims for musculoskeletal disorders (MSDs) between January 2001 and June 2003 (measured in February 2004). Of the 105 homes identified through this process, 52 homes were randomly assigned to the control group and 53 were assigned to the intervention group.

The homes assigned to the intervention group were sent a letter inviting them to participate in the WSC ergonomics assistance program because WSC services are only provided upon request of employers. Twenty-six nursing home administrators agreed to participate in the consultation intervention. Home closures and mergers removed some nursing homes from the study, resulting in a final analysis set of 24 intervention group homes and 50 control group homes.

Each facility in the intervention group received a full-service safety and health consultation between March 2004 and April 2005. Each intervention group home also received between one and three ergonomics-specific visits by a WSC ergonomics consultant, which continued through June 2006. These ergonomics-specific visits focused on improving the methods used by the nursing staff to move and transfer residents.

The evaluation of the WSC nursing home ergonomics services program included analysis of each home's OSHA log data, workers' compensation indemnity claims, a facility survey and a symptom survey of employees. Data from the period prior to the provision of consultation services (2003 for OSHA measures, 2002 and 2003 for workers' compensation measures) was compared to data from the period after the services (2007 for OSHA measures and 2006 and 2007 for workers' compensation measures). Of special interest were changes in the injuries to the nursing staff members, which included registered nurses, licensed practical nurses and nursing assistants.

Results

- Management commitment to safety improvements and advice from the WSC ergonomics consultants resulted in a significant increase in the number of electric lifts for safe patient-handling for the intervention homes. The number of electric lifts was not significantly different between the intervention and control groups in 2004, but by 2007 there were significant differences in the number of electric lifts. The intervention homes averaged more than double the number of electric lifts as the control homes.
- The intervention homes reported a mean decrease of 2.1 OSHA-recordable back injury cases per 100 FTE workers (a 27 percent decrease) from 2003 to 2007, compared with a decrease of 1.4 OSHA-

recordable back injury cases per 100 FTE workers (a 12 percent decrease) for the control homes.

- The intervention nursing homes had a mean decrease of 6.0 OSHA-recordable nursing staff cases per 100 FTE workers (a 39 percent decrease), compared with a decrease of 2.9 OSHA-recordable nursing staff cases per 100 FTE workers (a 10 percent decrease) for the control homes.
- The decrease in the OSHA-recordable case rate among all nursing home workers for the intervention homes was 8.3 cases per 100 FTE workers (a 42 percent decrease) compared with a drop of 3.2 cases for the control homes (an 11 percent decrease).
- Comparisons of measures related to workers' compensation claims for MSDs among the nursing staff showed mixed results.
  - Decreases in the workers' compensation indemnity claims rate were similar for both groups of homes, although, when expressed as percentages, the intervention homes' mean percentage decrease was nearly twice the amount of the control homes' decrease.
  - The mean decrease in weeks of temporary total disability was slightly more than 11 weeks per 100 FTE workers for the control homes, compared with a mean decrease of 3 weeks per 100 FTE workers for intervention homes.
  - There was no consistent pattern in the trends for indemnity costs. The control homes had a larger mean decrease and a greater percentage decrease, while the intervention homes showed much less variability in the mean rate.
- The intervention homes' mean indemnity claims rates were higher than the control homes' mean rates in 2002 and were below the control homes' mean rates in 2007, showing a 36 percent mean decrease compared with a 10 percent mean decrease among the control homes.
- The workers' compensation benefit costs in 2007 were compared with the estimated 2007 costs if the homes in each group had the same claims rates as in 2003. The costs per 100 FTE workers in the intervention homes were 42 percent lower than the estimated costs, compared with a 25 percent cost difference for the control homes. If the intervention homes had the same percentage cost difference as the control homes, the cost rate decrease would have been $13,800 less per 100 FTE workers than the decrease computed with the intervention home percentage.
- At the time of the initial symptom survey (2004 or 2005), 63 percent of the nursing staff in the intervention homes reported having pain or discomfort on a weekly or daily basis in at least one body part. Forty-five percent reported frequent lower back pain and 34 percent reported frequent neck and shoulder pain. While 26 percent reported that their pain interfered with their work on a weekly or daily basis, among those with frequent pain, the percentage was 41 percent.
- In the follow-up symptom survey (2007 through 2009), the percentages of nursing workers in the intervention homes reporting pain for the various body regions were generally equal to or a few percentage points lower than the corresponding percentages in the initial survey. Across all body parts, 61 percent of the workers surveyed reported frequent pain. Pain interfered with work for 23 percent of the respondents and for 38 percent of those with frequent pain.
- Regardless of job tenure, approximately six of every 10 nursing assistants experienced pain on a weekly or daily basis. The percentage of nursing assistants with less than one year of job tenure reporting frequent upper or lower back pain is very similar to the percentage among nursing assistants with more than 20 years of job experience.
- Frequent pain is associated with the frequency of patient lifting, and nursing staff members who were more likely to perform frequent lifts without using mechanical lifting devices were more likely to report frequent pain.

Discussion

WSC was successfully able to provide ergonomics consultation services targeted to a specific industry as part of its regular work processes. Among the intervention homes, 65 percent showed a reduction of at least one nursing staff back injury case per 100 FTE workers. In contrast, 51 percent of the control homes showed a decrease of this magnitude.

Management changes and nursing assistant turnover rates also affected the injury and illness outcomes. The nursing homes with no management change averaged a 29 percent decrease in their TRC rate, compared with an 11 percent TRC rate decrease for the nursing homes with management changes. Among the nursing homes with nursing assistant turnover rates of 50 percent or less, 71 percent had nursing staff back injury rate decreases of at least one case per 100 FTE workers, compared with decreases among 48 percent of the nursing homes with nursing assistant turnover rates of greater than 50 percent.

The estimated program costs and employer investment over a four-year period were $980,000 ($93,000 in WSC service costs and $887,000 investment in resident-handling equipment) and the benefits accrued due to reduced injuries and illnesses for just one year (2007) totalled $1 million, plus potential savings from reduced OSHA penalty payments. Savings from injury and illness case reductions in 2006 should be similar to 2007, indicating the benefits would likely be at least double the costs. With benefits expected to continue for additional years, the cost-benefit ratio is very favorable to the program.

Conclusions

The WSC program demonstrates that delivery of ergonomics services to nursing homes as part of its regular safety consultation services can result in very large reductions in incidence rates and significant savings in workers' compensation costs. WSC will need to be flexible to effectively use its resources to meet the needs of nursing homes. Some nursing homes are structured so that they can implement and maintain effective workplace safety processes with minimal help from safety consultation services. Other nursing homes need more intensive services, based on their history of recent management changes, high amounts of employee turnover and high injury and illness rates. For nursing homes trying to improve their safety environment, success depends on management commitment to a long-term process, which for some homes will include a long-term relationship with WSC or a private safety consultation firm.

The results of this program evaluation will be used to improve the WSC nursing home services and ergonomics risk-reduction services for other industries and to provide information about factors the safety consultants need to address to provide even more effective consultations.

Home administrators, nursing directors and their safety committees need to address the underlying problems leading to the pain experienced by their nurses and nursing aides. WSC services can be provided to help homes achieve safer working environments, beyond a reduction in OSHA log rates. This effort was helped by passage of the Safe Patient Handling Act in 2007. This statute requires every licensed health care facility – clinics, nursing homes, hospitals, and outpatient surgical centers – to adopt a written safe-patient-handling policy and establish a safe-patient-handling committee.

As a result of the Safe Patient Handling Act, many more nursing homes have purchased or are planning to purchase mechanical patient lifts and lift systems. Their safe-patien-handling committees are looking for programs to effectively use the new and existing equipment to reduce the injury and illness burden on workers. Having already committed to investments in patient-lifting equipment, nursing homes are readily positioned to make use of the benefits for using the free, professional, WSC ergonomics services to initiate long-term, sustainable improvements to their workplace safety environment.

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Introduction

Workplace injuries and illnesses are particularly disruptive to the services nursing homes provide to their elderly residents. Injuries to nursing staff members may result in short-term staffing problems at nursing homes and in changes in residents' usual caregivers, affecting the health and well-being of the residents. High workers' compensation costs also affect the financial resources of these institutions. Because of the high injury and illness rates at many nursing homes, Minnesota OSHA (MNOSHA) compliance inspectors frequently visit these facilities. The Minnesota Department of Labor and Industry (DLI) wanted to help nursing homes and workplaces in other high-hazard industries make long-term improvements to their workplace safety performance.

The Workplace Safety Consultation (WSC) unit of DLI undertook a collaborative project to provide ergonomics assistance to nursing homes to help management and workers reduce ergonomic risk factors and improve workplaces safety. WSC's ergonomics consultation services were provided as a part of its regular set of consultation services, not as a special intervention or a one-time program. The project evaluation and monitoring of the nursing home outcomes were designed to be integral components of the WSC project, with data collection linked to service delivery. This report presents results from the WSC program, comparing occupational safety and health measurements taken before, during and after the provision of WSC services.

Nursing homes are among the most hazardous workplaces in Minnesota. The privately owned nursing homes had a total recordable case (TRC) rate of 7.6 cases per 100 full-time equivalent (FTE) workers in 2008, compared with an overall private industry rate of 4.2 cases per 100 FTE workers. The TRC rate for nursing homes was also higher than the rate for the manufacturing industry sector, which had 5.5 cases per 100 FTE workers in 2008. There were 465 nursing homes (NAICS code 623110) in Minnesota in 2008, employing 49,640 workers, 1.9 percent of nonfederal employment.[1] State and local governments operated 38 of these homes, with the remainder in private industry, divided into nonprofit and for-profit operations. In 2008, nursing homes had an estimated 2,700 OSHA-recordable injury and illness cases, 3.1 percent of the state's total number of cases.

Reductions to injury rates at nursing homes have the potential to improve the health and safety of both the nursing home workers and the residents. Injuries to workers at nursing homes often occur to nursing staff members[2] while they are providing care for nursing home residents. Residents are also at risk of injury when workers perform difficult lifts and transfers without the proper resident-handling equipment.

Nursing assistants-registered (NARs) are the largest occupational group in nursing homes; their work duties include lifting and transferring residents into and out of beds, wheel chairs and bath tubs. These duties figure prominently in the types of injuries they incur, which are primarily musculoskeletal disorders[3] (MSDs). Among workers' compensation indemnity claims[4] to the nursing staff at nursing homes from 2003 through 2007, 49 percent of the injuries were to the worker's back, 67 percent were MSDs and 67 percent identified nursing home residents as the primary injury source.

WSC's nursing home ergonomics services program is based on a conceptual framework of the factors influencing the outcomes of workplace safety initiatives for individual

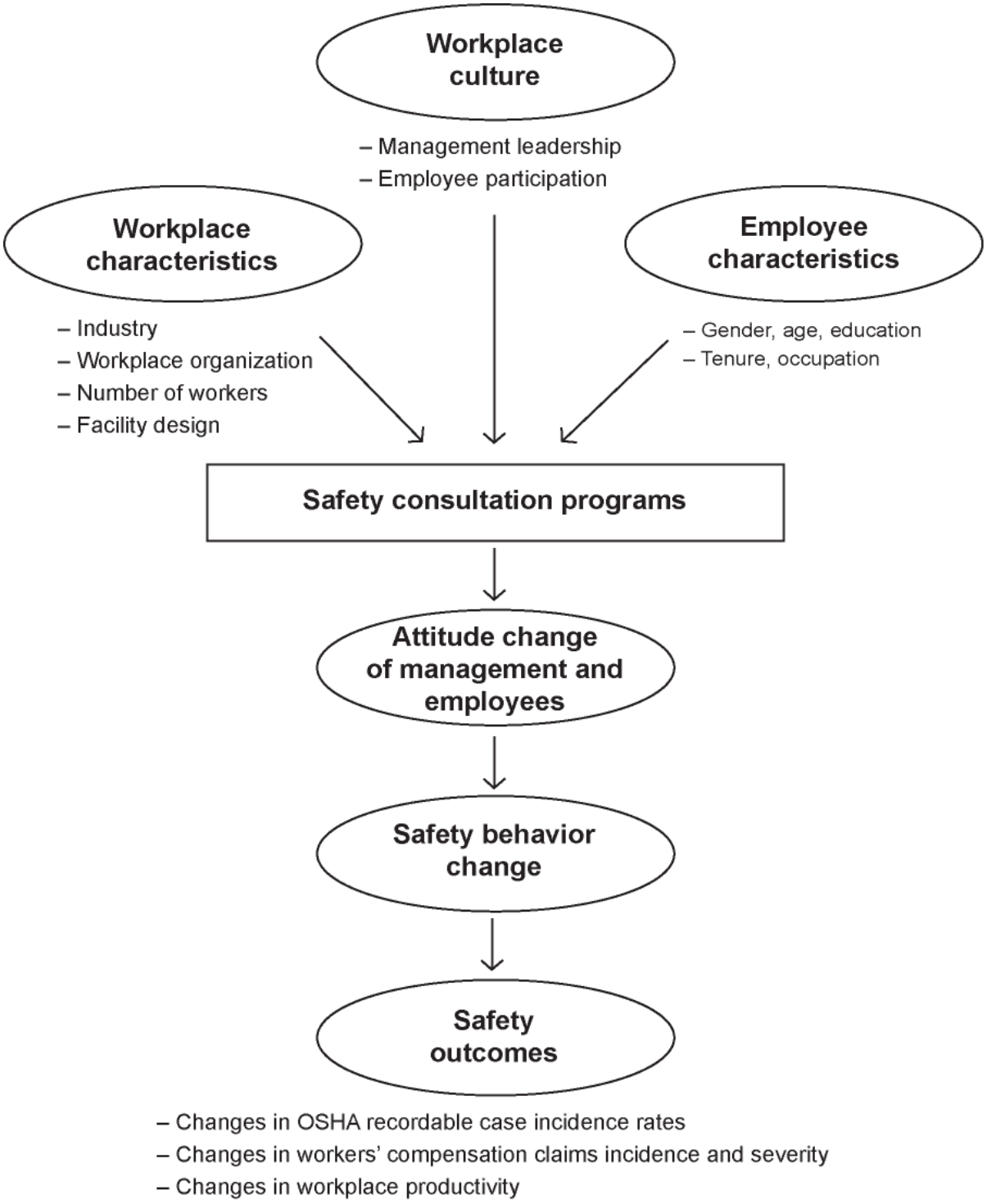
[1] Minnesota Department of Employment and Economic Development, Quarterly Census of Employment and Wages.

[2] For this study, the nursing staff includes registered nurses (RNs), licensed practical nurses (LPNs) and nursing assistants-registered (NARs, including certified nurse assistants).

[3] The U.S. Bureau of Labor Statistics defines musculoskeletal disorders as disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs that are not caused by slips, trips, falls, motor-vehicle accidents or other similar accidents.

[4] Indemnity claims involve a permanent disability or more than three calendar days of temporary disability.

Figure 1
Conceptual framework of the effectiveness of workplace safety consultation programs on workplace safety outcomes



workplaces, as diagrammed in Figure 1. The conceptual framework expresses the hypothesis that the effects of safety consultation programs on workplace safety outcomes (such as OSHA-recordable case incidence rates and workers' compensation costs) depend on the physical and social work environment, which involves factors such as employee characteristics, workplace characteristics and workplace culture. The safety consultations are effective to the extent they affect the attitudes of managers and employees, leading to behavior change (e.g., safer resident-handling) through safety processes that improve the overall workplace safety environment. Long-term safety change takes place from within the organization; this process may take a few years to become established.

This conceptual framework is consistent with the organizational factors model used by Shannon and his colleagues in their research.[5] These researchers looked at the workplace factors that contribute to occupational safety and health performance. Their recently published study (Geldart et al., 2010) showed that managerial policies, practices and attitudes affect workplace safety performance and joint management-labor safety committees play an important role.

It was with the understanding of the central role played by nursing home management that WSC considered the nursing home ergonomics consultation program to be a collaborative project. The WSC nursing home services were designed to provide long-term, non-intensive services. Although the safety consultants identified safety and health hazards requiring immediate attention, more of the responsibility for improving the workplace safety environment in the nursing homes was placed on the homes' administrators to follow through with the ergonomists' recommendations and to integrate safe behaviors into regular job performance. While the primary focus of the services was to improve workplace safety for the resident care staff, especially when lifting or moving residents, improvements in safety for all nursing home staff members were possible if administrators were able to create an improved safety environment.

Following this conceptual model, which places more responsibility on the nursing home administrators, it was not anticipated that there would be noticeable results in the outcome measures immediately following the consultation visits. It was possible the number of reported cases would increase during the period immediately following the consultation. As both workers and administrators became more focused on safety issues, and information about the need for accurate injury reporting to properly manage workplace safety was communicated by the consultants and facility administrators, workers may have become less anxious about reporting injuries.

This evaluation of the WSC nursing home ergonomics services program includes analysis of each home's OSHA log data, workers' compensation indemnity claims, initial and follow-up facility surveys, and initial and follow-up symptom surveys of employees. Data from the period prior to the provision of consultation services was compared to data from the period after the services. The results of the program evaluation will be used to improve the WSC nursing home services and ergonomics risk-reduction services for other industries, and to provide information about factors safety consultants need to address in order to provide even more effective consultations.

[5] Shannon, , H.S., Walters, V., Lewchuk, W., Richardson, J., Verna, D., Haines, T., Moran, L.A., 1992. *Health and Safety Approaches in the Workplace.* McMaster University, Hamilton, Canada; and Geldart, S., Smith, C.A., Shannon, H.S., Lohfeld, L., 2010. Organizational practices and workplace health and safety: A cross-sectional study in manufacturing companies. *Safety Science,* 48, 562-569.

Methodology

Selection and retention of nursing homes

The performance of nursing homes receiving WSC ergonomics services was compared to outcomes from a set of similar nursing homes that did not receive services from WSC. To assess the services, it was necessary to select large nursing homes so that they had enough claims to measure possible decreases in reported claims. Facilities chosen for the project were unattached to a hospital and had at least 70 employees and at least six workers' compensation indemnity claims for MSDs among their nursing staff members between January 2001 and June 2003 (measured in February 2004).

Using the DLI workers' compensation claims database, 105 nursing homes meeting these criteria were identified, accounting for 25 percent of the 421 Minnesota nursing homes in 2004. For this set of nursing homes, there was an annual average of 2.8 MSD claims to nursing staff members. These homes included publicly and privately owned homes, some operating for-profit and some operating as nonprofit.

From this list of 105 qualifying facilities, nursing homes were assigned to the intervention and control groups on the basis of two random assignment procedures. There was a simple random assignment of nonchain nursing homes and a second random assignment of nursing home chains. To avoid having intervention homes that were part of a chain sharing information with affiliated homes in the control group, nursing homes chains were randomly assigned as a whole to one group or the other. From this process, 52 homes were assigned to the control group and 53 were assigned to the intervention group.

The homes assigned to the intervention group were then sent a letter inviting them to participate in the WSC ergonomics assistance program. WSC services are only provided upon request of employers, so those administrators agreeing to participate were assumed to be motivated to undertake a commitment to improving their establishment's safety environment.

Administrators of 26 nursing homes agreed to participate, forming the intervention home study group. These nursing homes were excused from MNOSHA compliance inspections during the period of their participation.

None of the intervention homes dropped out of the WSC program, although two sites were excluded from the analysis. One of the homes in the intervention group was excluded because it moved its facilities in a merger with another home. A second intervention home was excluded from the study because the initial consultation was provided to its smaller "sister" facility, which did not fit inclusion prerequisites, rather than to the facility selected for the intervention group. The remaining 24 intervention homes were included in the analysis.

Two of the control group nursing homes closed at the very beginning of the study period; another home closed at the end of the first year. Data from the homes closed during the study period were not included in the analysis. One home changed ownership in 2007 and did not have access to the former owner's OSHA logs. Another home closed in 2008, following completion of the study, but prior to supplying OSHA logs and survey forms. Workers' compensation claims data for these two homes were included in the study. Of the original 52 control homes, 47 provided OSHA log data and workers' compensation claims data were available for 49 homes.

Figure 2 shows some characteristics of the nursing homes used in the evaluation. Although the homes were assigned to the intervention and control groups through random assignment, the intervention homes participating in the WSC program had higher mean values for employees, full-time equivalent (FTE) workers[6] and residents. This was partly because the two largest nursing homes in the study were both in the intervention group. The study groups had similar mean values of hours worked per employee and nursing staff hours per resident in 2002 and 2003.

[6] A full-time equivalent worker is defined as 2,000 hours of work in a one-year period. This is based on 40 hours of work for 50 weeks.

Figure 2
Nursing home size and staffing

	Intervention homes			Control homes			Significance of difference of
Measure	Mean	Minimum	Maximum	Mean	Minimum	Maximum	means [1]
Number of employees-2003	230	95	625	174	77	474	p<.05
Number of employees-2007	220	66	583	162	70	419	p<.05
Full-time equivalent workers-2003	153	59	443	118	47	315	p<.10
Full-time equivalent workers-2007	151	51	470	115	48	355	p<.10
Hours per employee-2003	1,318	992	1,615	1,360	768	1,813	
Hours per employee-2007	1,371	876	1,672	1,398	962	1,791	
Number of residents-2002/3 [2]	141	58	341	110	52	303	p<.01
Nursing staff hours per resident per day-2002/3[2,3]	3.54	2.74	5.69	3.46	2.44	4.44	

1. This is based on the probability (p) of finding the measured difference between the two groups' mean values if the two groups actually were not different. A p value of less than .05 means that a difference of this size would be expected less than 5 percent of the time if the groups were not different.

2. For Veterans Administration facilities, the number of beds was used for the number of residents; no data is available about staff hours per resident.

3. The source for this measure is the U.S. Department of Health and Human Services' Nursing Home Compare database, accessed in August 2003.
www.medicare.gov/NHCompare/static/tabSI.asp?language=English&activeTab=3&subTab=16&version=default

The mean nursing staff hours for both groups were below the national average of 3.84 nursing staff hours for 2008.[7] The employment decrease from 2003 to 2007 did not result in a similar decrease in the number of FTE workers; the remaining employees worked more hours.

The nursing homes in both study groups were spread across the entire state. Seven of the 24 intervention homes (29 percent) were in the seven-county Twin Cities metropolitan area, as were 16 of the 49 control homes (33 percent).

Provision of services

Each facility in the intervention group received a full-service safety and health consultation between March 2004 and April 2005, with 16 homes receiving the consultations by September 2004. These consultations measured compliance with OSHA standards and assessed each site's safety management system. During these visits the consultants identified 651 safety and health hazards, all of which were corrected on a timely basis. The most common hazards involved electrical safety and possible exposures to bloodborne pathogens. The estimated OSHA penalty savings was about $256,000.

Each of the homes received between one and three ergonomics-specific visits by a WSC ergonomics consultant. The initial ergonomics visits were completed by October 2005. Additional ergonomics visits were scheduled as requested by the homes' administrators. These visits continued through June 2006.

Five half-day seminars were provided about managing ergonomics in the workplace. The seminars were at several locations throughout the state in December 2005 and March 2006. The ergonomics seminars provided additional education about how facilities could establish an effective safety management system to address ergonomics risk-factors. All but two of the intervention group homes attended a session.

All homes in the intervention group were notified by e-mail that WSC was available to provide any additional assistance needed, including assistance about applying for a safety grant.

[7] U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, *Design for Nursing Home Compare Five-Star Quality Rating System: Technical Users' Guide*, January 2010.

MNOSHA compliance inspections

Because of the high injury and illness rates in the nursing home industry, Minnesota OSHA (MNOSHA) placed this industry on its inspection emphasis list during the periods before and during the WSC services program. Establishments in emphasis industries receive extra attention from MNOSHA. Prior to the study inception, during 2002 and 2003, eight (33 percent) of the intervention homes and 16 (33 percent) of the control homes received compliance inspections. Combining the intervention and control homes, the nursing homes receiving pre-study compliance inspections reported significantly higher TRC rates for 2003, and for 2005 and 2006, than the nursing homes that did not receive these inspections (Figure 3). While compliance inspections were delivered to homes with higher TRC rates in 2003, the inspected homes' mean TRC rates remained higher than the non-inspected homes' mean rates throughout the study period.

Although the intervention homes were excused from MNOSHA compliance inspections, one of the intervention homes changed ownership and changed its name and it received a MNOSHA compliance inspection in 2004, five months before its initial consultation visit. Ten control homes received compliance inspections during the extended service delivery period, between 2004 and 2006. Among the control homes, the sites that received compliance inspections and sites that did not receive inspections during this time period had very similar TRC rates for the entire time period, 2003 through 2007.

Following the WSC service period, during 2007 and 2008, two intervention homes and 14 control homes received compliance inspections. Overall, between 2002 and 2008, 73 percent of the control homes and 38 percent of the intervention homes received MNOSHA compliance inspections.

Measures

Measurement of the injury and illness rates utilized the OSHA recordkeeping logs and log summaries (OSHA 300 and 300A forms) maintained by each nursing home. Establishments are required to maintain their logs for five years after the calendar year recorded on the log. The OSHA logs include a brief description of each injury and illness case; the occupation of the injured worker; categorization of the severity of each entry as a case with one or more days away from work (DAFW), as a case with job restriction or transfer (JTR), or as an other recordable case; and the duration of the days away from work and

Figure 3
Total recordable case rates for nursing homes with and without MNOSHA compliance inspections in 2002 and 2003

	2003	2004	2005	2006	2007
Inspected	17.8	14.1	14.3	12.2	10.2
Not inspected	13.2	11.5	10.8	9.3	9.7
Significance of difference of means [1]	p<.05		p<.05	p<.05	

1. This is based on the probability (p) of finding the measured difference between the two groups' mean values if the two groups actually were not different. A p value of less than .05 means that a difference of this size would be expected less than 5 percent of the time if the groups were not different.

days of job restriction or transfer.[8] The OSHA log summary shows the number of employees and total hours worked during the calendar year covered by the log.

The OSHA logs were reviewed by a member of DLI's Policy Development, Research and Statistics unit according to the standards used to process log data for the Bureau of Labor Statistics annual Survey of Occupational Injuries and Illnesses. Case counts were corrected to ensure they were classified according to their most severe outcome and consistent with their report of days away from work. Cases entered as other recordable cases with descriptions that indicated they were likely not recordable (e.g., twisted ankle, bumped head) were not included in the tabulations. This consistent editing reduced the number of errors due to misunderstandings of OSHA log recordkeeping requirements that would affect the tabulations.

Each year's log was separated into six-month halves and separate tabulations were made of the number of back and nonback injuries by occupation group (nursing and nonnursing) and case type. All the tabulations were then converted into annual rates per 100 FTE workers using the reported annual hours.

It would have been preferable to be able to identify whether each injury and illness case listed on the OSHA logs was related to lifting and transferring residents. However, the injury descriptions provided on the OSHA logs are often very terse, sometimes containing only a body part without describing the nature of the injury or the activity causing the injury. A review of the initial set of log information showed that the body part was almost always identified. A tabulation of injuries into back and nonback categories provided the best estimate of ergonomics-related injuries given the information available.

The incidence rates are based on each nursing home's total FTE workers, regardless of occupation. This means a rate of 5.0 nursing cases per 100 FTE workers should be understood that a nursing home had five injury and illness cases to nurses for every 100 full-time equivalent workers, both nursing and nonnursing. An incidence rate based on 100 FTE workers of a particular occupation is always higher than the rate across all occupations.

Workers' compensation indemnity claims are reported to DLI's Workers' Compensation Division by each nursing home's insurer or by the home itself (or its main office or claims administrator) if self-insured. The first report forms, which include descriptions of the injury and worker characteristics, such as age, gender and occupation, are followed by reports of benefit duration and the amount of benefits paid. This data was aggregated into half-year totals for each nursing home and converted into annual rates per 100 FTE workers in all occupations. All of the claims were closed or had received a final report showing claim costs and duration.[9]

Three measures of the workers' compensation claims were analyzed for the claims originating during each half-year period: the indemnity claims rate, the rate of temporary total disability (TTD) weeks and the amount of indemnity benefits paid to the claims. An additional measure of the estimated total workers' compensation cost rate was computed by summing the indemnity benefits rate and the estimated cost of medical benefits for both the indemnity claims and for medical-only claims, using the medical cost values available in the annual Minnesota Workers' Compensation System Report.[10] The rate of medical-only claims was estimated as the difference between the OSHA log TRC rate and the workers' compensation indemnity claims rate.[11] All cost values were adjusted to 2008 wage levels.

The symptom survey was a tool to measure self-

[8] For more complete definitions of the case types, see the OSHA recordkeeping regulations, 29 CFR 1904.7, General recording criteria. The regulations are available in the *OSHA Recordkeeping Handbook*, www.osha.gov/recordkeeping/handbook/index.html.

[9] Claims may reopen and additional benefits may be paid. Medical benefits may also continue.

[10] The 2008 report is available at www.dli.mn.gov/RS/PDF/wcfact08.pdf. This report provides information about indemnity claims, TTD benefits, and the other components of indemnity benefit costs.

[11] Although not all OSHA recordable cases qualify for workers' compensation benefits, and vice versa, they are close enough to produce an estimate for the purposes of this report.

reports of pain and discomfort of the nursing staff while working. The symptom survey was used because many MSDs, or potential MSDs, do not reach the level of severity that would cause workers to report them to their employers and be reported on the OSHA logs or filed as workers' compensation claims. The survey was a variation of the OSHA-endorsed symptom survey format.[12] The survey included questions about each worker's job, job tenure, lifting activity, and for each body area, the frequency and severity of discomfort or pain, the pain's interference with work activities during the past three months, whether medical attention was sought, and if a workers' compensation claim was filed. (The survey is included in the Appendix.)

The symptom survey was administered at the initial consultation visit and again during the concluding consultation visit to the intervention homes. Administrators distributed these voluntary surveys to as many of the nurses and nursing aides as possible or made the surveys available in staff lunch rooms areas or work areas. Surveys were made available to all nursing shifts. Completed surveys were placed in collection boxes or sealed envelopes and returned to DLI. No attempts were made to re-contact administrators to urge more staff members to complete the surveys.

The nursing home administrators were also given a facility survey and a safety committee responsibilities checklist. (See the Appendix for a copy of the facility survey. Analysis of the safety committee checklist was not included in this report.) The intervention home administrators received these at both the initial and final visits, and the control homes received these by mail. The facility survey collected information about the number of workers in the nursing occupations, the disability status of the residents, the number of resident lifting and transferring devices, changes in the home's managers, and safety programs.

Data collection

During the initial full-service consultations, the consultants collected the intervention home's completed OSHA logs for 2003 and 2004 (depending on the timing of the visit), handed out a facility survey and a safety committee questionnaire for the administrator to complete, and instructed the administrators how to distribute and collect the symptom surveys.

Each of the nursing homes in the intervention group received a final consultation visit between October 2007 and April 2009. Once again, OSHA logs were collected, a facility survey and a safety committee questionnaire were handed out, and the symptom surveys were distributed. The nursing home administrators for 22 of the 24 intervention sites returned the facility survey following the initial service visit and all administrators returned the survey following the final visit. All but one intervention home returned symptom surveys in 2004 or 2005 and all homes returned symptom surveys following the final visit. Among nursing homes with both symptom surveys and employment breakdowns provided on the facility survey, initial symptom surveys were received from 27 percent of the nursing staff members at 20 homes and the follow-up survey was returned by 37 percent of the nursing staff members at 22 homes. The return rate for the follow-up surveys may have been higher because of the homes' experience handing out and collecting the surveys in 2004 and 2005.

In the fall of 2004, each of the homes in the control group received a letter requesting its OSHA logs and requesting completion of the facility survey and safety committee questionnaire. In December 2008, each of the nursing homes in the control group received a letter requesting similar information (see the Appendix for an example of this letter). Follow-up phone calls were made to encourage submission of the OSHA logs for the entire 2003 through 2007 period and completion of the facility and safety committee surveys.

Because of changes in some of the nursing homes' human resources staff members (who are often responsible for maintaining the OSHA logs), mishaps and misplacement of records, some homes were unable to submit an OSHA log for one or two years. One home in the control group was unable to provide any OSHA logs because of the removal of records after a change in ownership.

[12] *Ergonomic Program Management Guidelines for Meatpacking Plants*, OSHA Publication 3123, 1993, pp. 16-17. www.osha.gov/Publications/OSHA3123/3123.html

Results

Equipment purchases

The facility surveys completed at the beginning and close of the study period included information about the number and types of lifts and transfer aid devices used in each home. The nursing home administrators reported the number of electric lifts, hand-operated lifts and sit-to-stand devices operated in their facility. The mean number of lifts in the reporting homes is shown in Figure 4.

While there was a significant increase in the number of electric lifts among the intervention homes by the close of the study period, the number of hand-operated lifts decreased while the number of sit-to-stand devices remained stable. The control homes did not show noticeable changes in the average numbers of lifts, either by type or overall.

Electric lifts were the most common type of lift, especially among the intervention homes. The number of lifts by type and the total number of lifts were slightly different between the two groups in 2004, but by 2007 there were significant differences in the number of electric lifts and the total number of lifts. The intervention homes averaged more than double the number of electric lifts as the control homes.

Among the homes that submitted facility surveys in both time periods, the 18 intervention homes reported adding 148 electric lifts (10 homes showed increases) and the 14 control group homes added eight new electric lifts (five homes showed increases). This does not include lifts purchased to replace older models.

The intervention nursing homes were provided with information about the WSC safety grants program during the consultation visits. These safety grants provide up to $10,000 for safety equipment purchases, with matching employer contributions. Eleven nursing homes in the intervention group were awarded safety grants between July 2004 and June 2007 to assist with the purchase of patient lifts, electric beds, and easy-entry bath tubs. The grants totaled $74,000, with employer contributions of $164,000. Four nursing homes in the control group also received WSC safety grants. The grants totaled $22,000, with employer contributions of $48,000.

OSHA case incidence rates

The changes in OSHA recordable case incidence rates, comparing the mean rates for 2003 and 2007 for the intervention and control homes, are shown in Figure 5a.[13] Changes are shown for both the difference in the rates and for the percent change in rates. The intervention homes showed larger absolute and percentage mean differences for each of the measures, although only 12 of the 36 comparisons were statistically significant at the p<.05 level or lower. Figure 5b provides a graphical presentation of the rate decreases.

Figure 4
Mean number of lifting and transferring devices reported in the facility surveys

	Initial survey (2004-2005)		Follow-up survey (2007-2009)		
	Intervention homes	Control homes	Intervention homes	Control homes	Signif. of mean difference[1]
Number of respondents	20	18	22	41	
Number of electric lifts	7.1	5.2	11.6	5.0	p<.01
Number of hand-operated devices	1.1	0.3	0.3	0.3	
Number of sit-to-stand lifts	5.9	4.4	5.7	4.7	
Total number of lifts	14.1	9.9	17.6	10.1	p<.01

[1]This is based on the probability (p) of finding the measured difference between the two groups' mean values if the two groups actually were not different. A p value of less than .05 means that a difference of this size would be expected less than 5 percent of the time if the groups were not different.

[13] Due to missing OSHA logs, one intervention home and two control homes did not have logs for both 2003 and 2007.

Figure 5a
OSHA log case incidence rate changes between 2003 and 2007

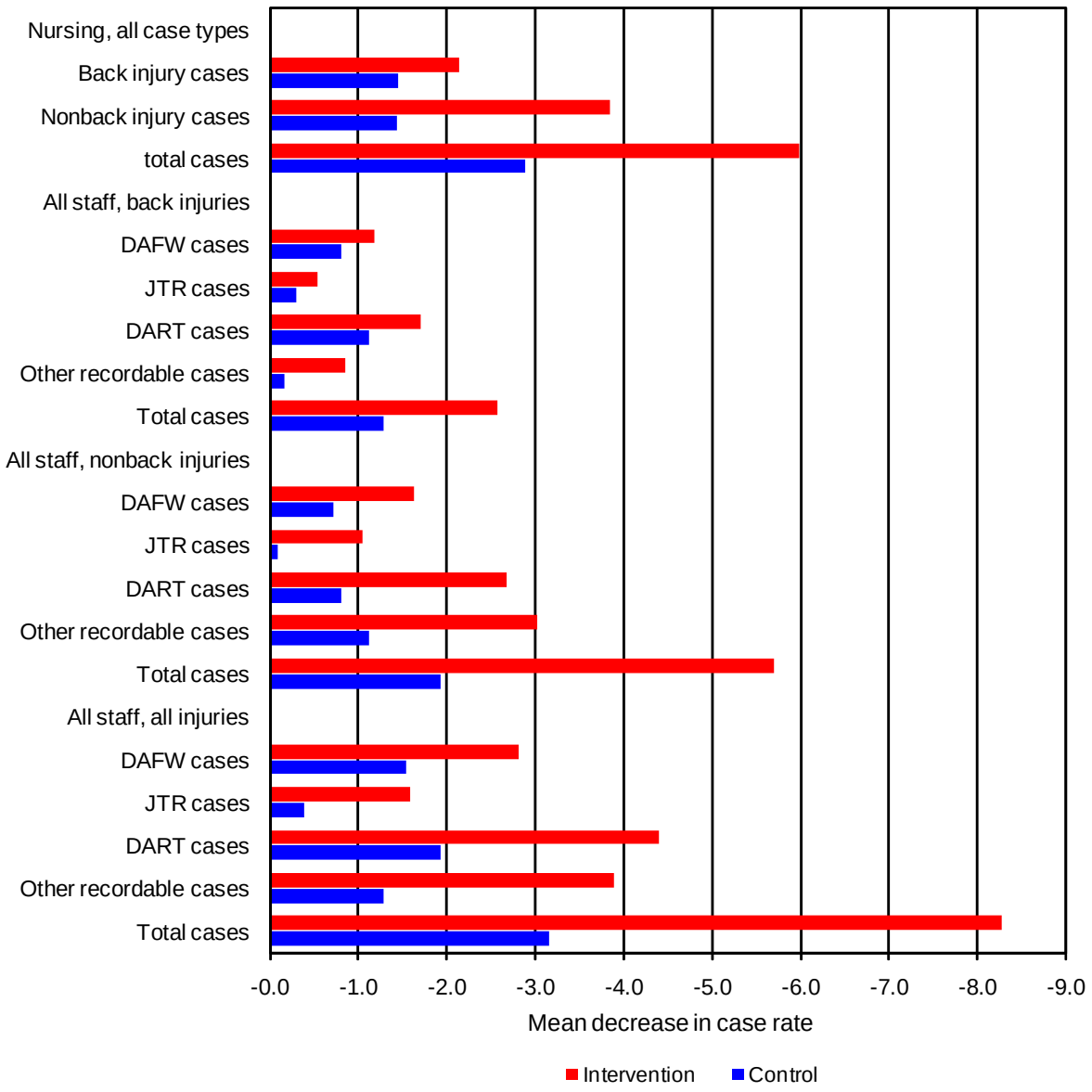
	Mean case rate change per 100 FTE workers			Percent case rate change		
Measure[1]	Intervention (23 homes)	Control (45 homes)	Significance level[2]	Intervention (23 homes)	Control (45 homes)	Significance level[2]
Nursing, all case types						
Back injury cases	-2.1	-1.4		-27%	-12%	
Nonback injury cases	-3.8	-1.4	p<.05	-41%	-10%	p<.05
Total cases	-6.0	-2.9	p<.10	-39%	-10%	p<.05
All staff, back injuries						
DAFW cases	-1.2	-0.8		-20%	-15%	
JTR cases	-0.5	-0.3		-17%	0%	
DART cases	-1.7	-1.1		-18%	- 5%	
Other recordable cases	-0.9	-0.2	p<.01	-57%	-18%	p<.01
Total cases	-2.6	-1.3		-25%	- 7%	
All staff, nonback injuries						
DAFW cases	-1.6	-0.7		-24%	- 5%	
JTR cases	-1.0	-0.1	p<.10	-17%	2%	
DART cases	-2.7	-0.8	p<.05	-27%	- 6%	
Other recordable cases	-3.0	-1.1	p<.01	-57%	-25%	p<.10
Total cases	-5.7	-1.9	p<.01	-46%	-15%	p<.05
All staff, all injuries						
DAFW cases	-2.8	-1.5		-25%	-11%	
JTR cases	-1.6	-0.4		-22%	5%	p<.10
DART cases	-4.4	-1.9		-26%	- 6%	
Other recordable cases	-3.9	-1.3	p<.01	-58%	-26%	p<.10
Total cases	-8.3	-3.2	p<.01	-42%	-11%	p<.01

[1]Case types acronyms are: DAFW, days away from work; JTR, job training or restriction; DART, the combination of DAFW and JTR.

[2]This is based on the probability (p) of finding the measured difference between the two groups' mean values if the two groups actually were not different. A p value of less than .05 means that a difference of this size would be expected less than 5 percent of the time if the groups were not different.

Source: Nursing home OSHA logs.

Figure 5b
Mean decreases in the number of cases[1] per 100 FTE workers



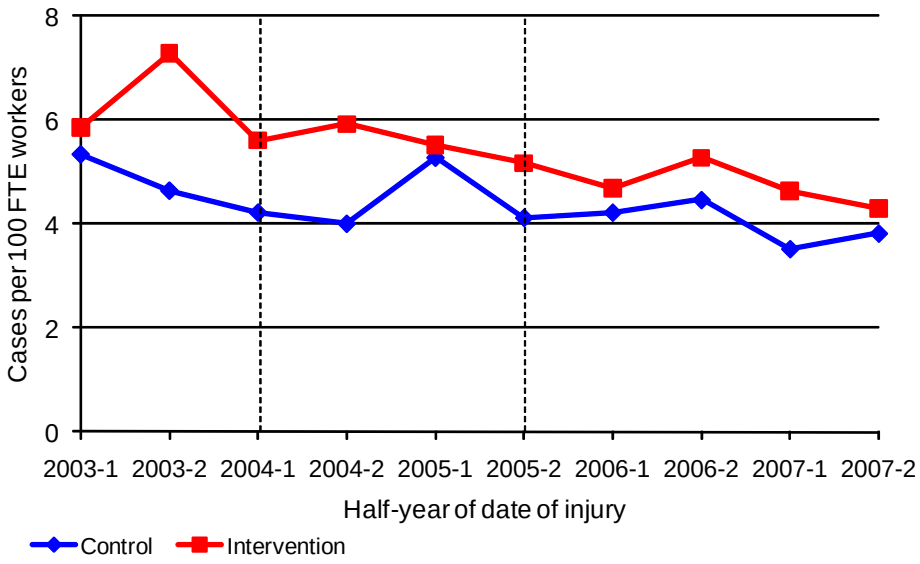
[1]Case types acronyms are: DAFW, days away from work; JTR, job training or restriction; DART, the combination of DAFW and JTR.

Source: Nursing home OSHA logs.

The comparison of OSHA log case incidence rates for the nursing staff members are of primary interest. Figure 6 shows the total recordable case (TRC) incidence rate for each half-year for back injuries reported by the nursing staff members. Although the rates were very close at both the beginning and end of the period, the mean TRC rate for the control homes was lower than the mean TRC rate for the intervention homes throughout the period.

The mean TRC rate for the intervention homes decreased for five of the six measurement periods after 2004, compared with just two decreases in the mean TRC rate for the control homes. The mean difference for the intervention homes was a decrease of 2.1 recordable back cases per 100 FTE workers (a 27 percent decrease), compared to a decrease of 1.4 recordable back cases per 100 FTE workers for the control homes (a 12 percent decrease).

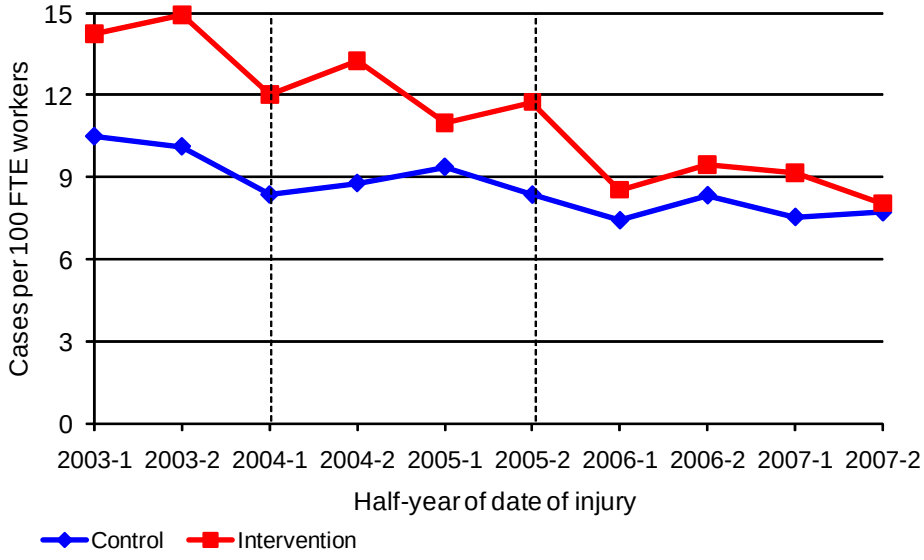
Figure 6
Total case incidence rates for back injuries, nursing staff, 2003-2007



Source: Nursing home OSHA logs.

The TRC rate for all injury and illness cases reported by the nursing staff (Figure 7) shows the mean value for the intervention group nursing homes decreased from being 30 percent to 40 percent higher than the control group at the start of the period, to almost the same value as the control group at the end of the period. The intervention nursing homes had a mean decrease of 6.0 recordable nursing staff cases per 100 FTE workers (a 39 percent decrease), compared with a decrease of 2.9 recordable nursing staff cases per 100 FTE workers (a 10 percent decrease) for the control homes. The percent change comparison was statistically significant at the $p<.05$ level.

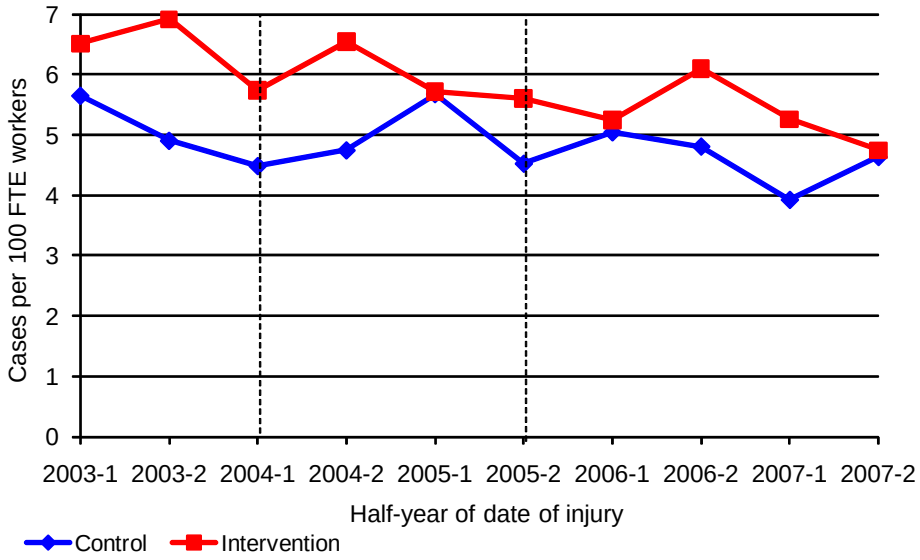
Figure 7
Total case incidence rates for all injuries and illnesses, nursing staff, 2003-2007



Source: Nursing home OSHA logs.

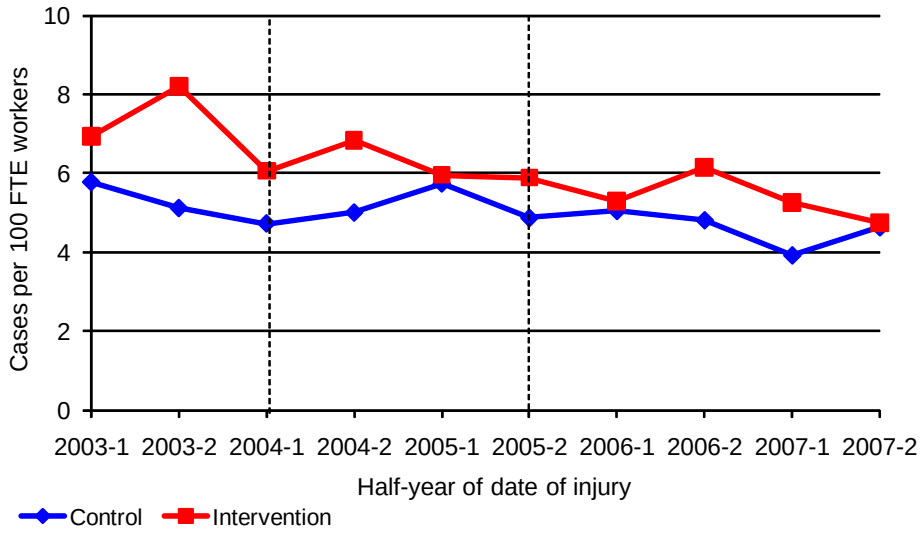
The trends in incidence rates for all workers' back injuries classified as DART cases (cases with days away from work and cases with work restriction or job transfer) are presented in Figure 8 and the trends for all back injury cases are presented in Figure 9. The patterns for both home groups are very similar for both trends; the control homes had lower rates, but the intervention homes' mean rates decreased a greater amount, approaching the levels of the control homes in 2005, 2006 and 2007. The intervention homes showed a greater decrease, dropping by 1.7 DART back injury cases (an 18 percent decrease) and 2.6 total back injury cases (a 25 percent decrease), compared with the control homes' decrease of 1.1 DART back injury cases (a 5 percent decrease) and decrease of 1.3 total back injury cases (a 7 percent decrease).

Figure 8
DART incidence rates for back injuries, all occupations, 2003-2007



Source: Nursing home OSHA logs.

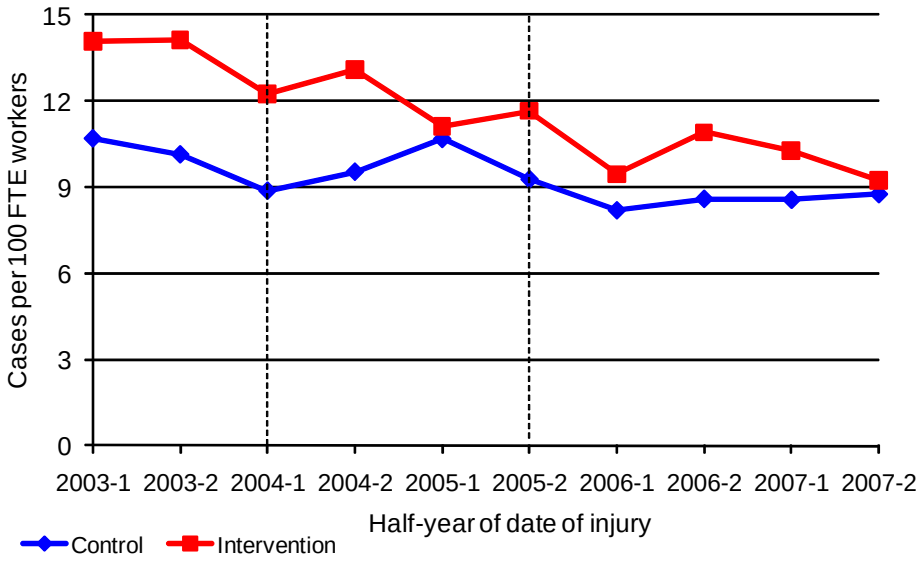
Figure 9
Total case incidence rates for back injuries, all occupations, 2003-2007



Source: Nursing home OSHA logs.

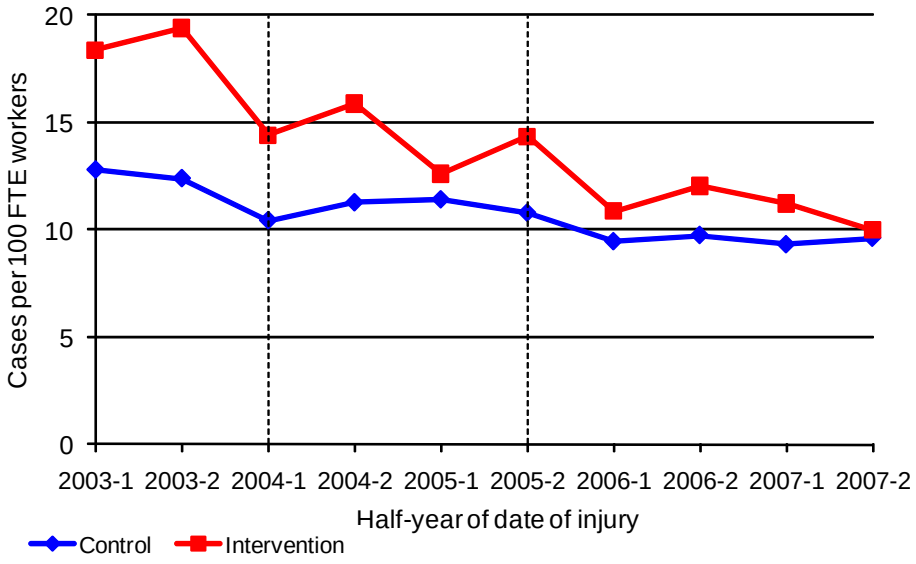
The incidence rate trends for all DART cases and TRC are presented in Figures 10 and 11, respectively. These two trends are very similar, although the TRC rate values are a few cases higher than the DART rate values. Like the other OSHA recordable case rate trends, the intervention homes started with higher rates but decreased during and after the WSC service period, finishing with nearly the same mean rates as the control homes. The intervention homes dropped by 4.4 DART cases per 100 FTE workers (a 26 percent decrease), compared with a decrease of 1.9 DART cases for the control homes (a 6 percent mean decrease). The decrease in the TRC rate for the intervention homes was 8.3 cases per 100 FTE workers (a 42 percent decrease) compared with a drop of 3.2 cases for the control homes (an 11 percent decrease). The changes in TRC rates were significant at the $p<.01$ level.

Figure 10
DART incidence rates for all injuries and illnesses, all occupations, 2003-2007



Source: Nursing home OSHA logs.

Figure 11
Total case incidence rates for all injuries and illnesses, all occupations, 2003-2007



Source: Nursing home OSHA logs.

Workers' compensation measures

The workers' compensation claims data covers the 2002 through 2007 period. This adds another year to the pre-service period, providing additional data values for the workers' compensation measures, which can show much year-to-year variability. This two-year pre-service period (2002 and 2003) was compared to a two-year post-service period (2006 and 2007). Figure 12 shows the rate and percent changes for MSD injuries among the nursing staff. None of the comparisons were statistically significant, although there was a trend for larger indemnity cost decreases for the control homes. There was a split among the intervention homes in regard to the cost change, with 46 percent of the homes reporting cost decreases of 50 percent or more, and 38 percent reporting cost increases of 50 percent or more.

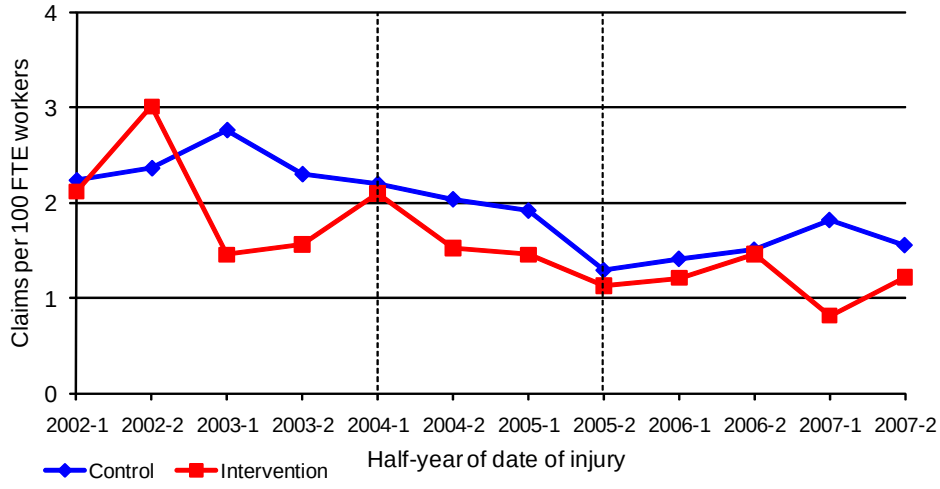
The changes in the indemnity claims rate for MSD injuries among the nursing staff were similar for both nursing home groups, although, when expressed as percentages, the intervention homes' mean percent decrease was nearly twice that of the control homes. Figure 13 shows that the MSD claims rate was lower for the intervention homes than for the control homes for most of the measurement period, although the rates for both groups were very similar for four of the last five half-year periods.

Figure 12
Workers' compensation claims rates per 100 FTE workers musculoskeletal disorders, nursing occupations, 2002-3 vs. 2006-7

	Intervention (n=24)		Control (n=49)	
Measure	Change	Pct. change	Change	Pct. change
Claims	-0.9	-25%	-0.8	-13%
TTD weeks	-3.1	-22%	-11.4	-30%
Costs	-$1,157	-5%	-$10,566	-29%

Source: Minnesota Dept. of Labor and Industry workers' compensation claims database.

Figure 13
Workers' compensation claims rates per 100 FTE workers for musculoskeletal disorders, nursing occupations, 2002-2007

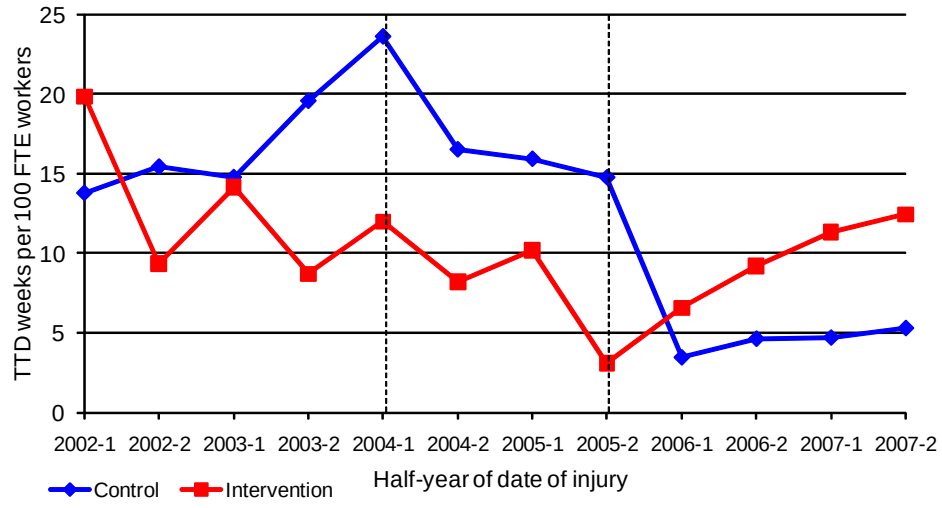


Source: Minnesota Department of Labor and Industry workers' compensation claims database.

The trends for the average number of TTD weeks for the nursing staff's MSD injuries starting during each half-year period are shown in Figure 13. For this measure, the intervention homes had higher rates than the control homes during the post-service period. The mean change in TTD weeks was slightly more than 11 weeks per 100 FTE workers for the control homes, compared with a mean three-week decrease per 100 FTE workers for intervention homes. The mean percentage decrease was also larger for the control homes.

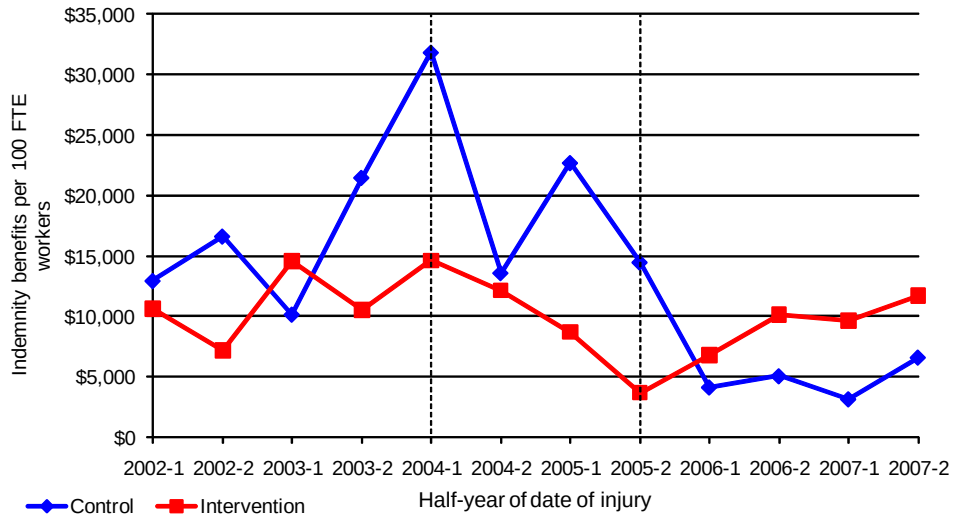
There was no consistent pattern in the trends for indemnity costs for the nursing staff's MSD injuries (Figure 15). The control homes had a larger mean decrease and a greater percent decrease, while the intervention homes showed much less variability in the mean rate.

Figure 14
Weeks of temporary total disability per 100 FTE workers for musculoskeletal disorders, nursing occupations, 2002-2007



Source: Minnesota Department of Labor and Industry workers' compensation claims database.

Figure 15
Workers' compensation indemnity benefits per 100 FTE workers for musculoskeletal disorders, nursing occupations, 2002-2007



Source: Minnesota Department of Labor and Industry workers' compensation claims database.

Figure 16 presents the workers' compensation indemnity claims measures changes among all claims to all workers. Although the percent decreases for indemnity claims and weeks of TTD benefits were larger for the intervention homes, none of the differences were statistically significant.

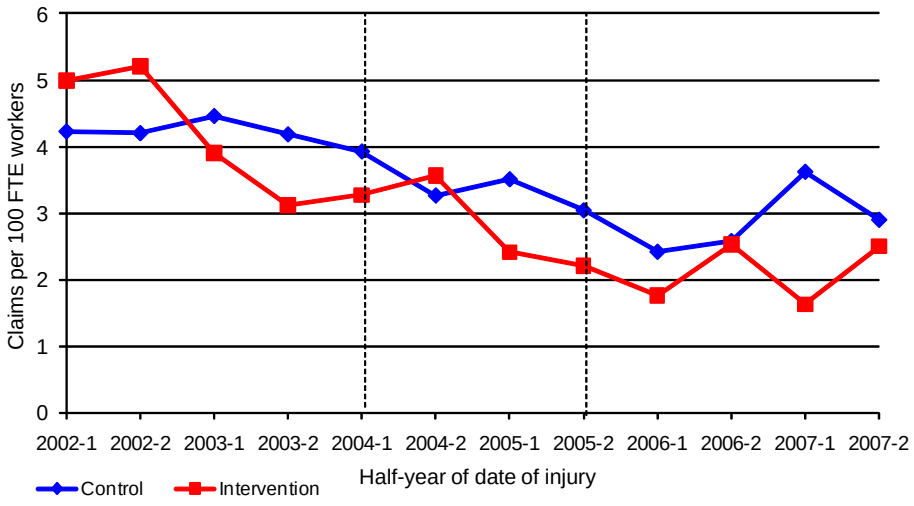
The trends for the indemnity claims rates are shown in Figure 17. The intervention homes' mean rates were higher than the control homes' mean rates in 2002 and were below the control homes' mean rates in 2007, showing a 36 percent mean decrease compared to a 10 percent mean decrease among the control homes.

Figure 16
Workers' compensation claims rates per 100 FTE workers all injuries and illnesses, all occupations, 2002-3 v. 2006-7

	Intervention (n=24)		Control (n=49)	
Measure	Change	Pct. change	Change	Pct. change
Claims	-2.2	-36%	-1.4	-10%
TTD weeks	-15.8	-31%	-21.8	-21%
Costs	-$16,492	-27%	-$21,189	-32%

Source: Minnesota Dept. of Labor and Industry workers' compensation claims database.

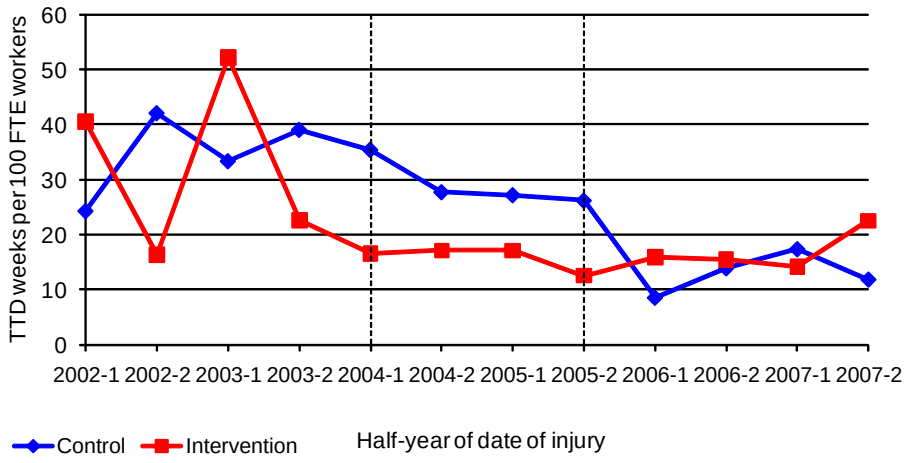
Figure 17
Workers' compensation claims rates per 100 FTE workers for all injuries and illnesses, all occupations, 2002-2007



Source: Minnesota Department of Labor and Industry workers' compensation claims database.

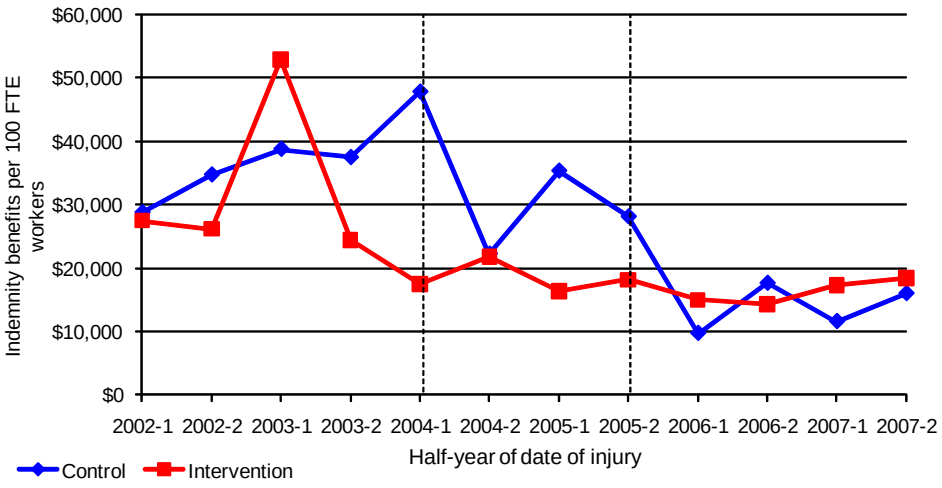
The trends for both TTD weeks and indemnity cost rates (Figures 18 and 19) show that after large differences through 2005, the mean rates during 2006 and 2007 were very similar.

Figure 18
Weeks of temporary total disability per 100 FTE workers for all injuries and illnesses, all occupations, 2002-2007



Source: Minnesota Department of Labor and Industry workers' compensation claims database.

Figure 19
Workers' compensation indemnity benefits per 100 FTE workers for all injuries and illnesses, all occupations, 2002-2007

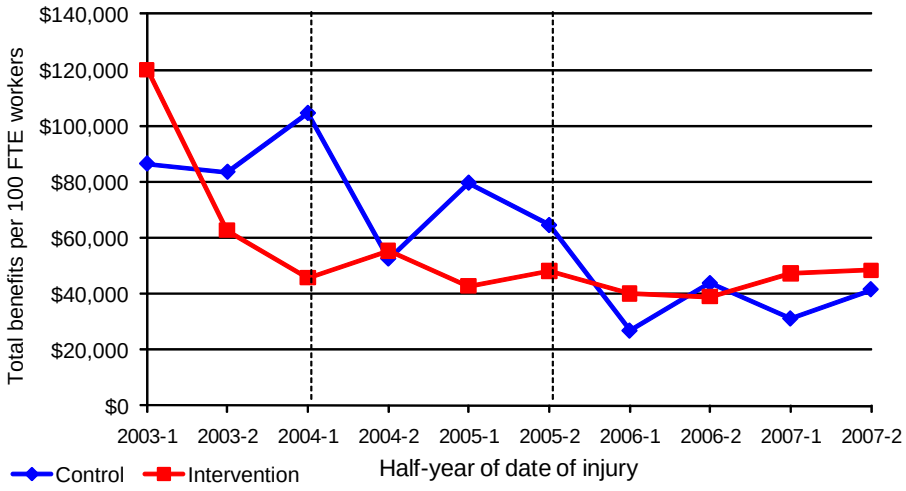


Source: Minnesota Department of Labor and Industry workers' compensation claims database.

The trends for the mean total workers' compensation cost rate, which includes the estimated medical and indemnity benefits for all workers' compensation claims, are presented in Figure 20. The figure shows that after the first half of 2005, the two groups had similar costs, with less variability in the half-year values for the intervention homes.

The workers' compensation costs and claims rates can also be used to estimate the cost savings due to reductions in claims rates. The estimated workers' compensation benefit costs in 2007 were compared with the estimated 2007 costs if the homes in each group had the same claims rates as in 2003. These computations were performed on the group totals because some homes did not have workers' compensation claims in 2007. As shown in Figure 21, the actual costs per 100 FTE workers in the intervention homes was 43 percent lower than the estimated costs, compared with a cost difference of 24 percent for the control homes. If the intervention homes had the same percent cost difference as the control homes, the cost decrease would have been only $19,300, which is $15,800 less than the decrease computed with the intervention home percentage.

Figure 20
Workers' compensation total costs per 100 FTE workers for all injuries and illnesses, all occupations, 2002-2007



Source: Minnesota Department of Labor and Industry workers' compensation claims database.

Figure 21
Comparing total workers' compensation total cost rates in 2007 with total cost rates using 2003 claim rates (rounded to $100) [1]

	Intervention homes	Control homes
Total workers' compensation cost rate, 2007	$46,100	$37,700
Estimated 2007 WC cost rate using 2003 claims rate	$81,200	$49,400
Difference in cost rates	$35,100	$11,700
Percent difference in cost rates	43%	24%
Intervention difference using control home percentage	$19,300	
Additional cost savings in 2007	$15,800	

1. Total cost and claim rates are expressed as units per 100 FTE workers.

Symptom survey

The symptom surveys were conducted only among the employees of the intervention homes. Initial and final symptom surveys were collected from each of the homes. These were presented to the workers as voluntary surveys, and made available to workers from all shifts. There were 715 responses (a 27 percent response rate) to the initial symptom survey from nursing workers in 23 homes and 1,024 nursing worker responses (a 37 percent response rate) to the final symptom survey from 24 homes.

At the time of the initial symptom survey, many of the nursing staff workers reported having pain or discomfort on a weekly or daily basis (Figure 22). Forty-five percent reported frequent lower back pain and 34 percent reported frequent neck and shoulder pain. Among workers reporting frequent pain, 39 percent of the nursing workers with lower back pain reported the pain interfered with their work on a weekly or daily basis, and 85 percent reported the pain, when present, was moderate, severe or unbearable. Pain to the lower back and to the neck and shoulders were the conditions for which the most medical care was sought and led to the filing of the most workers' compensation claims.

Overall, 63 percent of the nursing staff members responding to the initial symptom survey reported weekly or daily pain during the past three months in at least one body region. While 26 percent reported their pain interfered with their work on a weekly or daily basis, among those with frequent pain, the percentage was up to 41 percent. The pain was of moderate to severe intensity for 53 percent of the nursing staff workers, and among workers with frequent pain, 84 percent reported it was of moderate to severe intensity. Almost half (48 percent) of the workers sought medical treatment for a condition affecting a body part within the past three years and almost one-quarter (23 percent) filed a workers' compensation claim. For workers with frequent pain, 60 percent sought medical treatment and 30 percent filed a workers' compensation claim.

Figure 22
Initial symptom survey responses, nursing occupations, intervention nursing homes[1]

		If had pain or discomfort at least weekly during past 3 mos		In past three years	
Body region	Pain or discomfort at least weekly during past 3 mos	Pain or discomfort interfered with work at least weekly	When present, pain or discomfort is moderate to unbearable	Sought medical treatment for this part	Filed a work comp claim for pain or injury to this part
Neck and shoulders	34%	32%	77%	23%	8%
Elbows and lower arms	8%	35%	66%	4%	1%
Wrists and hands	14%	36%	74%	8%	3%
Abdomen and chest	4%	27%	67%	3%	1%
Upper back	25%	37%	80%	15%	5%
Lower back	45%	39%	85%	29%	13%
Hips and thighs	17%	40%	76%	10%	2%
Knees and calves	22%	37%	75%	8%	2%
Ankles and feet	29%	35%	71%	7%	1%
Any body region	63%	41%	84%	48%	23%

[1] Percentages based on 715 or fewer respondents in 23 nursing homes. Not all respondents provided responses for all items.

In the follow-up symptom survey (Figure 23), the percentages of nursing workers reporting pain for the various body regions were generally equal to or a few percentage points lower than the corresponding percentages in the initial survey. Frequent pain to the lower back and to the neck and shoulders was still predominant, although at slightly lower levels than in the initial survey. Figure 23 presents the overall results of the follow-up survey using all 24 intervention nursing homes because they are within 0.5 percent of the results excluding the responses from the nursing home that did not submit initial survey responses.

Across all body parts, 61 percent of workers surveyed reported frequent pain, very similar to the initial survey. Pain interfered with work for 23 percent of all respondents and for 38 percent of those with frequent pain. Both percentages were less than the corresponding values for the initial survey. Discomfort from the pain was moderate to severe for 50 percent of all respondents and for 82 percent of those with frequent pain, similar to the percentages in the initial survey. Forty-four percent of the nursing workers had sought medical treatment for a body region condition during the past three years, increasing to 57 percent among workers with frequent pain. These percentages were slightly below the levels of the initial survey. The percentage of respondents filing a workers' compensation claim in the past three years decreased from 23 percent in the initial symptom survey to 19 percent in the follow-up survey; among workers with frequent pain, the percentage dropped from 30 percent to 26 percent.

Weekly or daily pain is experienced by nursing assistants-registered (NARs) regardless of job tenure (Figure 24). The percentage of NARs reporting pain in the most commonly reported body regions, and the total across all body regions, showed no consistent trend by job tenure for the follow-up survey. Regardless of job tenure, approximately six of every 10 NARs experienced pain on a weekly or daily basis. The percentage of NARs with less than one year of job tenure reporting frequent upper or lower back pain was very similar to the percentage among NARs with more than 20 years of job experience.

Figure 23
Follow-up symptom survey responses, nursing occupations, intervention nursing homes[1]

		If had pain or discomfort at least weekly during past 3 mos		In past three years	
Body region	Pain or discomfort at least weekly	Pain or discomfort interfered with work at least weekly	When present, pain or discomfort is moderate to unbearable	Sought medical treatment for this part	Filed a work comp claim for pain or injury to this part
Neck and shoulders	35%	28%	75%	24%	8%
Elbows and lower arms	8%	28%	59%	4%	1%
Wrists and hands	15%	36%	62%	8%	2%
Abdomen and chest	3%	18%	59%	4%	0%
Upper back	24%	34%	80%	18%	5%
Lower back	42%	33%	85%	30%	11%
Hips and thighs	14%	30%	76%	8%	2%
Knees and calves	17%	37%	69%	8%	2%
Ankles and feet	26%	34%	74%	10%	2%
Any body region	61%	38%	82%	44%	19%

[1] Percentages based on 1,024 or fewer respondents in 24 nursing homes. Not all respondents provided responses for all items.

Frequent pain was associated with the frequency of patient lifting, and nursing staff members who were more likely to perform frequent lifts without using mechanical lifting devices were more likely to report frequent pain. The first set of percentage columns in Figure 25 shows that for all nursing staff members, those who reported lifting or moving residents more frequently were more likely to report frequent (weekly or daily) low back pain. This tendency was stronger among the responses to the follow-up symptom survey than to the initial survey.

The second set of percentage columns in Figure 25 shows the results for nursing staff members who reported using a mechanical device to lift or move residents less frequently than "very often." In the initial symptom survey, this accounted for 55 percent of the respondents, but in the follow-up survey, this included only 26 percent of the respondents. For all three groups of resident lifting and moving frequencies in the initial symptom survey, the percentage of these nursing staff members reporting frequent pain in the low back region was higher than the corresponding percentage all nursing staff members. In the follow-up survey, the percentage of these workers with fewer than 50 lifts or moves a week who reported frequent low back pain was less than or equal to the corresponding percentage for all nursing staff members. However, among nursing staff members who performed more than 50 lifts or moves each week, those who did not use a mechanical device very often had a higher percentage of frequent back pain (68 percent compared with 54 percent for all nursing staff members).

Figure 24

Percentage of nursing aides reporting weekly or daily pain in specified body parts by length of time in current job, follow-up symptom survey

		Body part				
Job tenure	Number of responses	Neck and shoulders	Upper back	Lower back	Ankles and feet	Any body part
Less than 1 year	180	35%	30%	48%	26%	63%
1-2 years	121	31%	28%	47%	35%	64%
2-5 years	135	33%	26%	52%	26%	62%
5-10 years	82	29%	25%	35%	25%	49%
10-20 years	88	38%	21%	33%	32%	64%
More than 20 years	51	51%	29%	55%	36%	65%
Total	657	35%	27%	46%	29%	61%

Figure 25

Percentage of respondents with frequent lower back pain[1] by frequency of lifting and mechanical lift use, nursing occupations

	All nursing respondents		Nursing staff workers who did not use a mechanical device "very often"	
	Initial survey	Follow-up survey	Initial survey	Follow-up survey
Number of responses	621	967	339	250
Usual weekly resident lifts				
20 lifts or fewer	42%	34%	45%	34%
21 to 50 lifts	47%	50%	52%	38%
50 lifts or more	48%	54%	56%	68%

[1] Reported experiencing lower back pain either weekly or daily.

Source: Initial and follow-up symptom surveys.

The frequency of reported pain may be related to higher rates of OSHA recordable injuries. For each intervention home with available data, the percentage of the nursing staff members reporting weekly or daily pain in any body region was correlated with the OSHA log TRC rate for nursing staff members in that home. For the initial survey, the correlation of the percentage of nursing staff members with frequent pain and the nursing staff TRC rates for 2004 and 2005 were not significant (2004, r= -.09, not significant; 2005, r= .04, not significant). For the follow-up survey, the correlation indicated a trend toward a link between reports of frequent pain and higher nursing staff TRC rates in 2007 (r=.36, p<.10).

Discussion

While all of the OSHA log measures and many of the workers' compensation measures indicated that the intervention homes showed a greater improvement than the control homes, many of these results were not statistically significant. One reason is the large variability in the distributions underlying the mean values; the intervention homes did not uniformly decrease in some of the key measures.[14] The purpose of the WSC services was to improve workplace safety, resulting in a reduction in back injuries to nurses and NARs. However, not all the intervention homes were able to transform the WSC services into improved safety conditions.

WSC was successfully able to provide ergonomics consultation services targeted to a specific industry as part of its regular work processes. Among the intervention group of nursing homes, 15 of the 23 homes (65 percent) with pre- and post-service nursing staff back injury rates showed a reduction of at least one nursing staff back injury case per 100 FTE workers. In contrast, only 23 of the 45 control homes (51 percent) with data for both periods showed a decrease of this magnitude. The WSC services resulted in an additional three intervention homes achieving a reduction of at least one nursing staff back injury case per 100 FTE workers.

In many cases, management initiates efforts to improve workplace safety after workplace safety problems become significantly noticeable. This sometimes results in a cyclical trend in injury rates, with rates rising after they fall below the threshold that management considers a priority for action. Because either management does not implement long-term, sustainable workplace safety programs or interest in long-term programs falters, the injury rates gradually creep upward. The nursing homes selected for observation in this study, both the intervention and control homes, had relatively high incidence rates and the ergonomics services were offered as free assistance to help lower incidence rates. Thus, it is not surprising that some of the control homes also implemented safety improvement programs on their own. The MNOSHA compliance inspections may also have prompted some control group homes to make safety improvements.

The conceptual model (Figure 1) provides some hypotheses to help understand why eight of the intervention homes did not achieve a one-case reduction in the nursing staff back injury rates and some homes even had increases. The conceptual model places a business's management as one of the intermediaries in the chain of safety improvement. Changes in management affect a business's ability to implement long-term safety programs. This reasoning applies to both homes in the control and intervention groups, and may play a role in why some of the control homes had decreases in nursing staff back injury rates while others had increases.

The follow-up facility survey completed by the nursing home administrators included questions about the number of administrators and directors of nursing services in the past three years. Four of the 18 intervention homes with survey responses did not have changes in these two types of managers, as did 15 of the 41 control homes with available data. Of these 19 homes with no top management changes, 18 had complete OSHA log records, showing 72 percent had nursing staff back injury rate decreases of at least one case per 100 FTE workers, compared with similar decreases for 45 percent of the 38 homes with complete OSHA log records and at least one management change.[15] The nursing homes with no management change averaged a 29 percent decrease in their TRC rate, compared with an 11 percent TRC rate decrease for the nursing homes with management changes.

An establishment's workers are another intermediary in the safety process. Turnover among the workforce means trained workers are leaving and new workers must be trained about workplace safety. Nursing homes with higher levels of turnover could be expected to have more difficulty reducing their injury rates. Nursing staff turnover may also be a result of a high injury rate,

[14] A second reason for the lack of statistical significance for many measures is the small size of the intervention group.

[15] Chi-square with continuity correction is not significant.

as injured workers leave employment, creating vacancies. These two effects can create a cycle where a nursing home with a high injury rate cannot maintain an experienced staff, trained in safe workplace practices.

The 2007 facility survey included the current count of NARs and the number of NARs hired during the preceding 12 months. Using this information, the ratio of new hires to total NARs was computed as a measure of the nursing staff turnover. The mean NAR turnover rate for the nursing homes with nursing staff back injury rate decreases of at least one case per 100 FTE workers (48 percent) was significantly lower than the turnover rate for nursing homes without the one case rate decrease (62 percent).[16] Among the nursing homes with NAR turnover rates of 50 percent or less, 71 percent had nursing staff back injury rate decreases of at least one case per 100 FTE workers, compared with decreases for 48 percent of the nursing homes with NAR turnover rates of greater than 50 percent.[17]

Management change and staff turnover are related. The nursing homes without management changes had a mean NAR turnover rate of 45 percent, compared with a mean NAR turnover rate of 62 percent for nursing homes with management changes.[18] The reasons for this relationship may be that both management change and staff turnover are driven by the same cause or that changes in one affect the other. For example, a poor safety environment may lead to poor financial performance, leading to management changes and also resulting in high staff turnover due to the injury rate. The high staff turnover adds pressure to train the new staff, which might not be a high priority for the new management. The nursing homes with no management change and a low NAR turnover rate (50 percent or less) had a mean percentage decrease in their total recordable case rate of 30 percent during the study period, compared with a mean percentage decrease of 15 percent for the nursing homes with both management changes and a high NAR turnover rate.

[16] $F(1, 53)=4.15$, $p<.05$.

[17] Chi-square with continuity correction is not significant.

[18] $F(1, 52)=7.27$, $p<.01$.

Cost-benefit analysis

The implementation of ergonomics consultation services for the 24 nursing homes that completed the program involved preparing and conducting full-service consultations, ergonomic consultations and follow-up visits. Ergonomics management and recordkeeping seminars were also provided. All of the WSC services were provided at no cost to the participating nursing homes. The end-of-program visits conducted in 2007 and 2008, to collect a final set of measurements, were not considered part of the ergonomics services program; any benefits from the visit would not be expected during the evaluation period. The WSC services required 2,774 hours of staff time, which amounted to approximately $93,000 in wages and benefits.

The nursing homes participating in the program also experienced costs to implement the safety and health recommendations of the WSC consultants, to purchase resident-handling equipment, to provide training, and to provide other improvements in their workplace safety and health programs. These homes purchased an estimated 190 mechanical resident-handling devices (148 reported on the facility surveys and another 42 estimated for the remainder of the homes), at an estimated cost of $5,000 for each device, totaling $950,000. Some of these costs were offset by WSC safety grants for resident handling equipment, so $74,000 in grant funds can be subtracted from this total.

If they were not participating in the WSC program, the intervention homes would also have been subject to random MNOSHA compliance inspections during the study period. During the initial consultation visits, OSHA regulation violations with penalties totaling $256,000 were found. Twenty percent of the nursing homes in the control group received MNOSHA compliance inspections during the service period; if this rate was applied to the intervention homes, an estimated $51,000 in violations would have been charged to the homes.

The largest part of the benefits accrued through this program can be estimated by the amount of employer costs saved because of the lower incidence of injuries and illnesses. Workplace

injuries and illnesses have both direct and indirect costs. The direct costs are the workers' compensation benefits paid to the injured workers and their service providers. The indirect costs include the administrative time spent on paperwork reporting accidents, the wage costs related to time lost through work stoppage, wages paid to injured workers for absences not covered by workers' compensation, overtime pay and lost productivity related to training new employees or accommodating injured workers' restrictions. The amount of workers' compensation benefits typically account for 25 percent to 90 percent of an employer's total cost of each workplace injury or illness.[19] The indirect costs need to be calculated separately for each claim and are inversely related to the direct costs. For the present analysis, indirect costs were estimated at 50 percent of total costs. This means the direct costs were doubled to estimate total costs.

As presented in the study results, the additional workers' compensation cost savings were $15,800 per 100 FTE workers for 2007. Inspection of the cost trends shows similar savings should result in 2006 and it may be possible to assume some of the claim and cost decreases in 2005 were due to program implementation. Using the 2007 hours of employment for the 24 nursing homes, there were 3,619 FTE workers, which translates to workers' compensation savings of $572,000 for 2007 alone. Including the indirect costs, this totals $1.14 million.

Figure 26 summarizes the cost-benefit analysis. The estimated program costs and employer investments during a four-year period was $969,000, and the benefits accrued from reduced injuries and illnesses for just one year (2007) were more than $1 million, plus savings from reduced MNOSHA penalty payments. It is apparent from the cost trends that 2006 had results very similar to 2007, indicating benefits are already likely to be double the costs. Cost savings in any year beyond 2007 would increase benefits well over the costs.

Figure 26
Nursing home program cost-benefit analysis

Program costs	
WSC services, 2004-2006	$ 93,000
Purchase of resident-handling equipment	$ 950,000
Safety grants provided	$ (74,000)
Net costs	$ 969,000
Program benefits	
MNOSHA penalties averted	$ 51,000
Reduced workers' compensation benefits, 2007	$ 572,000
Reduced indirect costs, 2007	$ 572,000
Total benefits	$ 1,195,000

[19] OSHA's Safety Pays Program. www.osha.gov/dcsp/smallbusiness/safetypays/

Conclusions

The WSC initiated the nursing home ergonomics services program to learn how to provide effective services during an extended time period to nursing homes. Instead of comprising a different model and intensity of services, the program needed to fit into the WSC's overall provision of services and be managed as part of the unit, with the ergonomics consultation component added onto the established safety and health consultation program. Evaluated from this perspective, the program was very successful. Services were provided to 24 nursing homes in the course of providing consultations to 953 establishments in 2004 and to 983 establishments in 2005.

By concentrating their effort in the nursing home industry, the consultants and ergonomists developed familiarity and expertise about the industry, adding to the value of their services. Also, providing industry-intensive services has a better chance of making a measureable impact on that industry's statewide injury and illness rates. Nursing homes (NAICS code 623110) were not measured separately from all other nursing and residential care facilities (NAICS code 623) until the 2008 survey. Nursing homes account for only about half of the employment in NAICS 623. The NAICS 623110 TRC rate for 2008, 7.6 cases per 100 FTE workers, differed substantially from the rate for NAICS 623, 9.9 cases per 100 FTE workers.

The intervention homes made more investments in their safety programs during the ergonomics services program, and generally had greater safety and health improvements. The intervention nursing homes reported a significant increase in the number of electric lifts, while the control homes added very few new resident-handling devices. On each of the 36 measures made from the OSHA logs comparing the pre- and post-service case rates, the intervention homes showed larger absolute and percent decreases in their injury and illness rates. The mean rate of back injuries among the nursing staffs dropped by 2.1 cases per 100 FTE workers for the intervention homes, which was 50 percent higher than the 1.4 case decrease reported by the homes in the control group. Similarly, the intervention homes recorded a mean drop of 6.0 cases per 100 FTE workers for all injury and illness cases for their nursing staffs, compared to a mean decrease of 2.9 cases per 100 FTE workers for the control homes.

The injury and illness rate decreases were not limited to members of the nursing staffs, especially among the intervention homes. Among all nursing home workers, the mean TRC rate decreased by 8.3 cases per 100 FTE workers among the intervention homes and by 3.2 cases in the control homes. Thus, while the WSC ergonomics services were focused on nurses and nursing aids, the heightened focus on workplace safety led to a reduction of 2.3 cases per 100 FTE workers among nonnursing workers in the intervention homes, compared with a reduction of only 0.3 cases per 100 FTE workers in the control homes.

For the workers' compensation indemnity claims measures, the results were inconclusive. The intervention homes had a much larger percent decrease in their MSD injury rates among their nursing staffs, although similar results were not obtained for weeks of total disability payments and the amount of indemnity benefits paid.

The symptom survey results showed the nursing staffs at the intervention homes had nearly the same levels of neck and shoulder and lower back pain at the end of the study period as they had at the start of the study. Working with pain was especially prevalent among nursing aides and it was as common among the newer workers as among workers with many more years of job experience.

The cost-benefit analysis showed costs of implementing ergonomics-based strategies in nursing homes can be recovered within one year, so every additional year maintaining or reducing the incidence of injuries produces a net cost gain for the nursing homes.

Implementing a safety program to reduce the incidence of injuries due to patient handling not only makes good business sense, it is now a state law. The 2007 Minnesota Legislature enacted the Safe Patient Handling Act (Minnesota Statutes 182.6551 through 182.6554), requiring every

licensed health care facility – nursing homes, hospitals and outpatient surgical centers – in the state to adopt a written safe-patient-handling policy and establish a safe-patient-handling committee by July 1, 2008. The written policy must establish a plan to minimize manual lifting of patients by Jan. 1, 2011, through the use of patient-handling equipment. The application of the law was broadened in 2009 to include all clinical settings that involve the movement of patients, which are required to develop a written safe-patient-handling plan by July 1, 2010.

To help employers minimize the manual handling of patients, the Safe Patient Handling Act authorized an initial grant fund of $500,000 to help health care facilities purchase safe-patient-handling equipment. In 2008, WSC awarded 67 health care facilities grants of nearly $7,700 for the purchase of patient-handling equipment. Five nursing homes in the intervention group and nine homes in the control group received grants through this process.

Grants for the purchase of safe-patient-handling equipment are available through WSC's ongoing grant program, the Safety Hazard Abatement Grant Program, which awards funds with a reimbursable dollar-for-dollar match up to $10,000 to qualifying employers for projects designed to reduce the risk of injury or illness to their employees. Grant applications are accepted continuously and grants are awarded every two months. Employers may qualify every two years for each location.

As a result of the Safe Patient Handling Act, many more nursing homes have made or are planning to make purchases of mechanical patient handling and transferring devices and lift systems. With these equipment purchases already in place, much of the employer investments have already been made, improving the cost-benefit ratio for improvements to the nursing homes' safety environments due to provision of ergonomics-centered consultation services.

Reducing the number of claims does not necessarily lead to large reductions in pain. For many nursing home workers, pain is a weekly or daily occurrence and workers' compensation claims are much rarer events. It is possible for nursing homes to have relatively low rates of serious injuries but still have significant problems with pain among their nursing staff members. Home administrators, nursing directors and their safety committees need to address the underlying problems leading to the pain experienced by their nurses and nursing assistants. WSC services can be provided to help homes achieve safer working environments, beyond reductions in OSHA log rates, by minimizing the manual lifting and transferring of residents.

While providing services to 24 nursing homes was a key feature of this program, it was also a drawback, as customization of services to meet the needs of different nursing homes was not always possible. The WSC ergonomics services program for nursing homes was focused on educating the facility administrators and other managers of the need for comprehensive resident-handling safety programs and providing guidance to help start their initiatives. The WSC ergonomists indicated that with additional time at some of the facilities, they could improve management's commitment to safety initiatives, help set outcome goals for the administrators to meet and make follow-up visits to be sure the safety initiatives are being implemented.

WSC can use the ideas presented in the conceptual model to help identify establishments requiring more intensive services. Some nursing homes are structured so they can implement and maintain effective workplace safety processes with minimal external inputs of safety consultation services. Other nursing homes need much more intensive services, based on their history of recent management changes, high amount of employee turnover, and high injury and illness rates. The success for nursing homes involved in improving their safety environment depends on management commitment to a long-term process, which for many homes will include a long-term relationship with WSC (or another safety consultation service provider).

The WSC program demonstrates delivery of ergonomics services to nursing homes as part of its regular safety consultation services can result in very large reductions in incidence rates and significant savings in workers' compensation costs. WSC needs to be flexible to effectively use

its resources to address the needs of nursing homes.

Appendix

This appendix contains examples of letters used to recruit and contact the nursing homes and survey forms used for data collection.

1. Nursing home intervention group recruitment letter
2. Intervention home final data collection letter
3. Control home data collection letter
4. Nursing home facility survey
5. Employee symptom survey

443 Lafayette Road
St. Paul, Minnesota 55155
(612) 296-6107

Minnesota Department of Labor & Industry

Telecommunication Device
for the Deaf (612) 297-4198

February xx, 2004

[Nursing Home Administrator Name]
[Nursing Home]
[Address]
[City, Minnesota ZIP]

Dear [Administrator]:

The Minnesota Department of Labor and Industry would like your participation in a new program to reduce work-related musculoskeletal disorders in the long-term-care industry. The goal of the program is to work with each participating employer for two or three years, by providing free full-service safety and health assistance in the form of on-site evaluation, training and education. We would like to know about your willingness to participate in this new opportunity to help your worksite recognize and eliminate ergonomic risk-factors that contribute to musculoskeletal disorders.

As a program participant, you will work in cooperation with Workplace Safety Consultation (WSC) ergonomics consultants to establish a work plan that reduces ergonomic injuries, workers' compensation costs and increases staff efficiency. Yet, your participation can have other benefits including:

- free assistance from well-trained and knowledgeable Minnesota OSHA consultants;
- increased opportunity to apply for matching safety grants;
- exemption from Minnesota OSHA Compliance programmed inspections;
- increased understanding of and compliance with Minnesota OSHA standards;
- improved employee morale;
- reduction in absenteeism; and
- reduction in employee turnover.

Because this is a new program, we will collect information to help us evaluate our services and learn how our services affect your injury rates, workers' compensation costs and workplace safety programs. This will involve participating in a symptom survey, completing administrative and safety committee questionnaires, providing injury and illness records, and reviewing workers' compensation claims and costs.

Upon request, WSC helps employers prevent accidents and diseases through several employer-assistance programs. Enclosed is a brochure that gives a brief overview about the many areas where we can provide your worksite with free assistance. WSC is a separate program from Minnesota OSHA Compliance activities.

If you would like to participate in or have questions about this program, please contact James Collins, MNOSHA Management Team Director, at (651) 284-5433 or e-mail him at james.collins@state.mn.us.

Sincerely,

M. Scott Brener
Commissioner

Enclosure

443 Lafayette Road N.
St. Paul, Minnesota 55155
www.doli.state.mn.us

MINNESOTA DEPARTMENT OF LABOR & INDUSTRY

(651) 284-5005
1-800-DIAL-DLI
TTY: (651) 297-4198

January 8, 2009

FACILITY NAME
ADDRESS
CITY, STATE, ZIP
Attn: CONTACT NAME

Dear Ms/r. NAME:

The Workplace Safety Consultation unit is in the process of concluding its Nursing Home Project. This project is a unique effort by the Workplace Safety Consultation unit to generate information about the effectiveness of its consultation services to better serve long-term care facilities and other employers who contend with high levels of musculo-skeletal injuries.

In order to evaluate the Workplace Safety Consultation activities, some additional information is needed from nursing homes that have received consultation services in recent years. Each of the administrators that receive this letter is being asked to complete the "facility" and "safety committee" survey forms (enclosed).

If you have not yet received a closing consultation visit, one will be scheduled shortly. During this visit, you will be asked to distribute an employee symptom survey.

Please return the completed facility and safety committee survey forms by January 26, 2009 by faxing them to Brian Zaidman's attention at 651-284-5726. The facility and safety committee survey forms can also be completed online (see URL at top of forms).

These data will not be used for any purposes other than compiling information for the evaluation of the Workplace Safety Consultation unit's services.

Please contact the evaluation coordinator, Brian Zaidman, 651-284-5568, brian.zaidman@state.mn.us if you have any questions. Thank you very much for providing information to help us improve our services to Minnesota's employers and workers and helping to improve the safety of our workplaces.

Sincerely,
WORKPLACE SAFETY CONSULTATION

James Collins
MNOSHA Management Team Director

443 Lafayette Road N.
St. Paul, Minnesota 55155
www.doli.state.mn.us

MINNESOTA DEPARTMENT OF LABOR & INDUSTRY

(651) 284-5005
1-800-DIAL-DLI
TTY: (651) 297-4198

DATE, 2008

FACILITY NAME
ADDRESS
CITY, STATE, ZIP
Attn: CONTACT NAME

Dear Ms/r. NAME:

The Department of Labor & Industry and Workplace Safety Consultation are in the process of concluding the Nursing Home Project. This project is a unique effort by the Workplace Safety Consultation unit to generate information about the effectiveness of our consultation services to better serve long term care facilities and other employers who contend with high levels of musculo-skeletal injuries.

In order to evaluate the consultation unit activities, information is needed from nursing homes that have and have not received services in recent years. Each of the nursing home administrators and safety directors that receive this letter is being asked to complete the "facility" and "safety committee" survey forms (enclosed) and for their completed OSHA 300 log and 300A forms for 2005, 2006, and 2007. Some homes are also being asked to provide the OSHA log information for 2003 and 2004.

Please send back the completed forms by December 10, 2008 in the enclosed return envelope.

These data cannot be used for any purposes other than compiling information for the evaluation of the Workplace Safety Consultation unit's nursing home project.

Please contact the evaluation coordinator, Brian Zaidman, 651-284-5568, brian.zaidman@state.mn.us if you have any questions. Thank you very much for providing information to help us improve our services to Minnesota's employers.

Sincerely,
WORKPLACE SAFETY CONSULTATION

James Collins
MNOSHA Management Team Director

Nursing Home Facility Report

NHF-5

MINNESOTA DEPARTMENT OF LABOR & INDUSTRY

This form is to be completed by the facility administrator and/or the director of nursing. The Workplace Safety Consultation unit will use the information to evaluate its program effectiveness. Please fax your completed form to 651-284-5726. Your responses are non-public information and will not be shared with the public or any other program. This form may be completed and submitted on the Web at https://secure.doli.state.mn.us/osha/nhfacility.php.

Date: ____/____/_____ Facility name: _____

Your name: _____ Phone number: _____

General Information: Residents

1. How many resident beds are at your facility? _____
2. How many residents are there currently at your facility? _____
3. What percentage of current residents are long-term stay? _____%
4. How many current residents are able to stand and walk independently? _____
5. How many current residents are able to stand and/or walk with some assistance? _____
6. How many current residents cannot stand or walk, even with support? _____

General Information: Staff

7. How many employees providing resident care do you have in each of the following categories?

   RNs _____ LPNs _____ NARs _____ Other _____

   Describe other: _____

8. Roughly what percentage of your NARs are female? _____%
9. Roughly what percentage of your NARs have English as a second language? _____%
10. About how many NARs did you hire in the last 12 months? _____
11. About how many NAR positions are currently vacant? _____
12. In the past 36 months, how many people have held each of these management positions at your facility? Administrator ____ Nursing Director ____ Staff Development Coordinator ____

Equipment for Resident Transfers

13. How many pieces of each type of equipment does your facility operate?

    Electric total lifts _____ Hand-operated total lifts _____ Sit-to-stand devices _____

14. About how often do NARs use transfer belts when recommended by nursing home policies?

    Never _____ Occasionally _____ Sometimes _____ Often _____ Always _____

Safety and Health Program Activities

15. Have you received any safety and health consultation services (public or private) in the past 12 months? Yes ___ No ___
16. What percentage of the resident care staff have received safety and health training in the past 12 months? _____
17. What changes, if any, have been made to your safety and health program in the past 12 months?

18. What changes, if any, have been made in your facility's work procedures in the past 12 months?

Self Rating

19. In your opinion, does your facility have an adequate number of lifts? Yes ___ No ___
20. What proportion of the resident services staff are properly trained to use lifts and are aware of your policies for resident handling? (*check one*)

    75% or less ____ 76%-90% ____ 91%-95% ____ 96%-100% ____

21. In about what percentage of resident transfers are the residents lifted manually? (*check one*)

    0-10% _____ 11-20% _____ 21-30% _____ More than 30% _____

Nursing Home Employee Report

MINNESOTA DEPARTMENT OF LABOR & INDUSTRY

Your responses are confidential. The Workplace Safety Consultation unit will use this information to plan its services and to evaluate its effectiveness. If you have questions or concerns, please contact the Research and Statistics unit at 651-284-5568 or DLI.Research@state.mn.us. Please place your completed form in the envelope provided.

Date: ____/____/_____ Nursing home: _____

Occupation (circle one): RN LPN NAR Other: _____

Age (circle one): 15-24 25-44 45-64 65+ Gender: Male Female

Place an "X" in the box to indicate the length of time you have worked:

	less than 1 year	1 to 2 years	2 to 5 years	5 to 10 years	10 to 20 years	more than 20 years
1. at your current job at this nursing home						
2. at any job at this nursing home						
3. at any job in the health care industry						

4. During the past week, about how many times have you lifted or moved residents, with or without a coworker or a mechanical device?

❑ 10 or less ❑ 11-20 ❑ 21-50 ❑ 51-100 ❑ 101-200 ❑ more than 200

a. Was this amount usual, more than usual or less than usual?

❑ Less than usual ❑ Usual ❑ More than usual

b. If it was more or less than usual, what is an average number of times you lift and move residents in a week? _____

5. When you lifted or moved residents in the past week, how often did a coworker help you, when it was required by the care plan or current work policy?

❑ Very often ❑ Fairly often ❑ Sometimes ❑ Almost never ❑ Never

6. When you lifted or moved residents in the past week, how often did you use a mechanical device, when it was required by the care plan or current work policy?

❑ Very often ❑ Fairly often ❑ Sometimes ❑ Almost never ❑ Never

Please circle one answer for each question about each body area.

	In the past three *months*:			**In the past three *years*:**	
	How ***often*** have you had pain or discomfort in this part?	How often did the pain or discomfort ***interfere with your work***?	How ***severe*** was the pain or discomfort, when you had it?	Have you received ***medical treatment*** for any condition affecting this body part?	Have you filed a ***workers' compensation claim*** for any pain or injury affecting this body part?
Body part	1 = Never, 2 = 1 or 2 days only, 3 = At least monthly, 4 = At least weekly, 5 = Daily		1 = No pain, 2 = Mild, 3 = Moderate, 4 = Severe, 5 = Unbearable		
neck and shoulders	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
elbows and lower arms	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
wrists and hands	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
abdomen and chest	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
upper back	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
lower back	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
hips and thighs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
knees and calves	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO
ankles and feet	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	YES NO	YES NO