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UNDER SECRETARY FOR HEALTH'S INFORMATION LETTER

PATIENT CARE ERGONOMIC PROGRAM

1. This Information Letter identifies key program elements for a facility patient care ergonomic program to promote safer work environments, reduce workers' compensation costs, and facilitate recruitment and retention of direct patient care providers.

2. Musculoskeletal injuries represent a substantial proportion of the preventable injury costs within the Veterans Health Administration (VHA). Approximately 35 percent of all back injuries, among the most expensive and time consuming of all injuries, result from patient transfers. Although the majority of workers' compensation costs are attributable to old cases, health care professional injury rates and costs are far more active and recent, so that a greater proportion of each year's compensation costs are due to new injuries. Presently, overall costs to VA associated with injuries related to patient handling are estimated at over $25 million per year, with substantial additional unmeasured costs. Such injuries represent a major cause for early retirement and long-term disability among health care professionals, contributing substantially to the national shortage of nurses. Importantly, efforts to improve safety and decrease work-related injuries are likely to improve recruitment and retention of qualified nursing staff. Therefore, preventive interventions are necessary to control the hazards and the economic, societal, and personal burdens associated with patient handling tasks.

3. VHA has developed a Patient Care Ergonomics Program to create safer working environments for health care professionals who provide direct patient care. Key program elements include:

a. A Patient Care Ergonomic Assessment Protocol, with examination of the actual injuries to guide program implementation.

b. Patient Handling Assessment Criteria and Decision Algorithms, for ensuring appropriate patient handling work practices.

c. The presence of a local, unit peer leader role, i.e., Back Injury Resource Nurse (BIRN) or Back Injury Resource Nurse Specialist (BIRNS), to provide:

(1) Expertise in patient-handling techniques and equipment,

(2) Ongoing competency assessment for patient-handling equipment,

(3) Unit hazard evaluations,

(4) Assistance in training on program elements and equipment, and

(5) Initial implementation and continual sustenance of the program over time.

d. State-of-the-art patient-handling equipment, selected to address common local problems.

e. After Action Reviews, to identify reasons and solutions for ongoing injuries.

f. A Safe Patient Handling and Movement (No Lift) Policy.

4. This VHA Program has been published as a joint Department of Veterans Affairs (VA) - Department of Defense (DOD) document and is incorporated into VHA's Ergonomic Guidebook (see subpar. 11g). Additionally, Occupational Safety and Health Administration (OSHA) included many aspects of the VHA program in their Ergonomic Guidelines for Nursing Homes (see subpar. 11f) and the American Nurses Association (ANA) used the program as the basis for their "Handle with Care" ergonomic campaign (see subpar. 11a).

5. Veterans Integrated Service Network (VISN) 8 piloted this program in twenty-three units at high-risk for injuries from patient handling tasks (see Att. A). The report summarizes a dramatic reduction in the rate of injuries, in the average number of modified duty days per injury, and lost workdays. In addition, job satisfaction and patient handling practices improved. The annualized cost savings in Year 1 were over $200,000, and are estimated to be $2 million over a 10-year period (see subpar. 11e). Other studies have identified similar benefits (see subpars. 11b and 11d, Att. B, and Att. C). Further analyses of VISN 8 data using the Internal Rate of Return (IRR) measure confirmed the program resulted in a very high return on investment (see subpar. 11e). The National Institute for Occupational Safety and Health implemented a patient care ergonomics program in nursing homes in St. Louis, MO, and demonstrated a break-even point between investment costs in training and equipment with compensation costs at 2 1/2 years (see subpar. 11c). Hospitals have similarly seen significant reductions of lost-time injuries and workers' compensation costs from implementing such technology-based programs (see subpar. 11d).

6. Several individual VHA facilities have implemented the program fully, others partially, but all have included patient handling equipment. All have seen some reductions in compensation costs and injury rates. ***NOTE:*** *Not all facilities benefit equally.*

a. The more facilities have done to implement such safe patient handling programs, the lower the additional benefits from full-program implementation, and the lower the actual costs.

b. Greater savings after program implementation are associated with units that display greater risk for injuries; therefore, facilities which carefully examine own injuries to their employees to identify appropriate interventions and locations.

c. The more program elements that are included, the greater the program effectiveness.

7. VHA faces budget challenges in the delivery of patient care. Long-term reductions in program costs are dependent on careful program design, so that uniform national implementation may not be the most effective strategy. On the other hand, technology-based patient care ergonomic programs have the potential for dramatic cost reduction.

8. In order to be successful, VHA facilities should examine their data and determine the most beneficial locations for implementation, then they can determine the potential cost or benefit. Facilities are likely to need help reviewing data, selecting equipment types, and planning program implementation. Safety managers can provide valuable assistance in reviewing injuries, identifying injury causes, and selecting equipment.

9. VISN Directors need to consider planning for funding such programs. A local multidisciplinary group, including a facility champion, could be established to review injuries, identify program implementation locations, identify potential benefits, facilitate equipment selection and purchase, and facilitate program implementation.

10. VHA Central Office has funded a 50 percent position for a Patient Care Ergonomics Consultant from VISN 8, to support this initiative. Questions may be addressed to Mary Willa Matz, MSPH, Patient Care Ergonomics Consultant, at (813) 558-3928 (mary.matz@med.va.gov).

11. **References**

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c. Collins JW, Wolf L, Bell J, and Evanoff B. “An Evaluation of "Best Practices" Musculoskeletal Injury Prevention Program in Nursing Homes,” Injury Prevention. 10, 206-211: 2004. (see Att. C.)

d. Li J, Wolf L, and Evanoff B. “Use of Mechanical Patient Lifts Decreased Musculoskeletal Symptoms and Injuries Among Health Care Workers,” Injury Prevention. Aug;10(4):212-6: 2004. (see Att. B.)

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ATTACHMENT A

EXECUTIVE SUMMARY OF THE ABSTRACT OF THE FINAL REPORT, VISN-WIDE DEPLOYMENT OF A BACK INJURY PREVENTION PROGRAM FOR NURSES: SAFE PATIENT HANDLING AND MOVEMENT

Principal Investigator: Audrey Nelson PhD, RN, FAAN

1. PROBLEM STATEMENT. Nurses have one of the highest incidences of musculoskeletal work-related back injuries of any profession. Over the past 20 years, efforts to reduce work-related musculoskeletal disorders in nurses have been largely unsuccessful.

2. SPECIFIC AIMS. A patient care ergonomics program was developed and evaluated to create safer working environments for nurses who provide direct patient care. Key program elements included:

a. Ergonomic Assessment Protocol;

b. Patient Assessment Criteria and Decision Algorithms;

c. Peer Leader role, Back Injury Resource Nurse (BIRN);

d. State-of-the-art equipment;

e. After Action Reviews; and

f. No Lift Policy.

3. METHODS. Using a pre- and post-design without a control group, 825 nursing staff from 23 high-risk units in VISN 8 were included in the sample. High-risk units included nineteen nursing home care units (NHCU) and four spinal cord injury (SCI) units, where the incidence and severity of nursing injuries was highest. Data were collected prospectively through weekly process logs, injury logs, and cost logs. Surveys were administered pre- and post-intervention and staff focus groups were held pre- and post-intervention. One management focus group was held post-intervention. Key outcome measures included: program acceptance, program adherence, program effectiveness, job satisfaction, musculoskeletal discomfort, incidence and severity of injuries, program cost, and expected cost savings.

4. RESULTS. Implementation of the program elements resulted in a statistically significant decrease in the rate of injuries. There were no significant differences in the change of injury rates by type of high-risk unit (SCI or NHCU).

a. As expected, the incidence of injuries was highest for nursing assistants, since they have greater exposure to direct patient care. There was a significant decrease in the average number of modified duty days per injury; pre-implementation, 1777 modified duty days were used, with

a mean of 24 days per injury, while post-implementation, this decreased to 539 days with a mean of 9 days per injury. While lost workdays taken decreased by 18 percent after the program was implemented, and five of the seven facilities reported a decrease in the average number of lost workdays per injury, this difference was not statistically significant. There were statistically significant increases in two subscales of job satisfaction: professional status and tasks requirements. Self-reports by nursing staff revealed a significant decrease in the number of 'unsafe' patient handling practices performed daily. After accounting for program costs, the annualized cost savings in Year 1 were over $200,000, and are estimated to be $2 million over a 10-year period.

b. The majority of injuries were sprains and/or strains to the lower back followed by the shoulders. The most frequent cause of injuries was due to pushing and pulling. Injuries from reaching while holding patients were nearly eliminated in our study. Cumulative trauma injuries were rarely reported.

c. For this study, we developed a systematic patient care ergonomic process and used it to develop recommendations to decrease the risk for injury in patient care environments. The recommendations from our ergonomic process primarily focused on use of patient care equipment and aids to decrease risk. As was expected, the perceived increase in the effectiveness of use of the equipment was substantial, and reached almost 100 percent as "extremely effective' post-intervention. We noted the greatest and most significant change in patient handling equipment use after program implementation was the increase in use of ceiling-mounted lifts. And, by far, the most common equipment-related request during focus groups was for ceiling lifts in all patient rooms.

d. Self-reports by nursing staff revealed a significant increase in the use of patient handling equipment and a significant decrease in the number of 'unsafe' patient-handling practices performed daily. The peer leaders on each unit ranked program elements they deemed to be "extremely effective." Equipment was rated highest, with 96 percent of ratings as 'extremely effective', followed by No Lift Policy (68 percent), BIRNs (66 percent), Ergonomic Assessments (59 percent), Assessment Protocol Algorithms (55 percent), and lastly After Action Reviews (41 percent). Acceptance for the program was perceived by BIRNS at a high level for managers and nursing staff and remained very high throughout program implementation. Patient acceptance was perceived at the moderate level when the program started but increased to very high by the end of the program. Focus groups conducted with direct care providers during the early phase of implementation and at the conclusion of the program were an effective tool for assessing the level of acceptance of the program. Nursing staff perceptions of program outcomes and results of this analysis indicated the program was a success. Although the ease and success of program implementation varied between and within the facilities during the initial phase of implementation, it was clear during the final phase focus groups that all participants were aware of, involved in, and supportive of the program.

5. CONCLUSIONS. This multi-faceted program resulted in a decrease in severity and incidence of injuries. It was cost effective and well accepted by patients, nursing staff, and administrators. Given the significant increases in job satisfaction after the program was implemented, it is probable that nurse recruitment and retention can be positively impacted. The

program is applicable outside the VHA, and has now been endorsed by the Occupational Safety and Health Administration (OSHA). Elements of the program were published in the OSHA Ergonomic Guideline for Nursing Homes in 2003.

6. LESSONS LEARNED

a. Patient-handling equipment is the most critical, yet most expensive intervention to decrease injuries from patient-handling activities. But, according to our study, the initial capital investment for equipment can be recovered in 3.75 years. Others report recovery in as little as 2 years. Nurses perceived this as the most beneficial program element.

b. Technology holds much promise as a solution for reducing risks associated with patient handling, but care needs to be taken to include direct care providers in equipment purchase decisions. Also, few facilities have developed equipment maintenance and repair programs. Lack of such programs interferes with safe and optimal use of equipment.

c. By facilitating active participation of direct patient care providers, successful program implementation is certain and higher levels of job satisfaction as well as improvements in patient safety can be achieved.

d. The role of the BIRN offers an opportunity to empower nurses to modify their work environment to promote safety. This peer leader program is much more effective than traditional educational approaches. However, the BIRNs require a point-person such as a nurse educator to assist in implementing staff training, as well as leading and maintaining continuity of the BIRN Program. Additionally, ongoing coaching and feedback to prevent the collateral assignment from being lost with other demands is required. For this reason, the program is most likely to be useful on high-risk units, rather than moderate to low-risk units.

e. Nurses need additional training to fully participate in ergonomic assessments of work environments. However, the unique work environment of nurses, combined with high levels of risk and environmental hazards, warrants closer collaboration between ergonomists and direct patient care providers.

f. The After Action Review (AAR) Process, combined with the BIRN knowledge transfer technique, promotes provider acceptance of the program, as well as facilitates knowledge transfer within and between nursing teams. While AARs give staff the opportunity to identify solutions and innovations, delays in administrative follow up can be frustrating. Further, time constraints related to direct patient care may lessen participation. For success, management must support this by allotting brief periods of time for completion of AARs.

g. Patients are less likely than nursing staff and administrators to embrace new patient-handling technologies and practices at the onset of the program, however, over time, patients and their family members grow to accept these innovations.

7. RECOMMENDATIONS

a. Our program focused interventions on high-risk units, where there is significant exposure to “at risk” tasks, such as patient lifts and transfers. This target group offered the most opportunity for improvement.

b. Further research and development is needed in the following areas:

(1) Currently there are no evidence-based practices or technology for one high-risk, high-volume patient-handling task, that of repositioning a patient in bed or in a chair.

(2) Evidence-based practices and technological solutions need to examine injuries and musculoskeletal pain beyond the low back. Trends in injuries to knees, wrists, and shoulders have emerged.

(3) While this study focused on high-risk units, similar studies are needed targeting moderate-risk units and areas with acute nursing shortages, such as critical care.

(4) Underreporting of injuries is a major obstacle to studying nursing injuries. More information is needed on factors that influence underreporting, including the nature of cumulative trauma injuries, reporting procedures, and the ‘culture’ of injury reporting.

(5) Data substantiating benefit to patients, using patient outcome measures such as falls, skin integrity, sprains, and/or strains, and others, would help substantiate program alignment with operational goals.

c. A paradigm change is needed in the way nurses are taught safe patient handling and movement. Efforts to design a new curriculum for schools of nursing are needed. Further, new education models are needed for assuring competency in the use of patient-handling technology and new practices on an ongoing basis in settings where nurses are employed.

ATTACHMENT B

THE ABSTRACT OF USE OF MECHANICAL PATIENT LIFTS DECREASED MUSCULOSKELETAL SYMPTOMS AND INJURIES AMONG HEALTH CARE WORKERS

Li J, Wolf L, and Evanoff B. Injury Prevention Aug 10(4):212-6: 2004.
Department of Medicine, Washington University School of Medicine, St Louis, MO 63110.

1. OBJECTIVE: To evaluate the effectiveness of mechanical patient lifts in reducing musculoskeletal symptoms, injuries, lost-workday injuries, and workers' compensation costs in workers at a community hospital.

2. DESIGN: Pre-post intervention study.

3. SETTING: Three nursing units of a small community hospital.

4. PATIENTS OR SUBJECTS: Nursing personnel.

5. INTERVENTIONS: Mechanical patient lifts were made available and nursing staff trained in their use between August 2000 and January 2001.

6. MAIN OUTCOME MEASURES: Workers completed symptom surveys at baseline and 6 months after lift training. Pre-intervention and post-intervention rates of injuries and lost-workday injuries using Occupational Safety and Health Administration logs of the three study units, from the period July 1999 through March 2003 were analyzed. Injuries potentially related to lifting patients were included in the analyses. Using workers' compensation data from the same time period, the compensation paid ($ per full-time equivalent (FTE) employee) due to injuries during the pre-intervention and post-intervention period was calculated.

7. RESULTS: Sixty one staff members were surveyed pre-intervention; 36 (59 percent) completed follow-up surveys. Statistically significant improvements in musculoskeletal comfort ($p<0.05$) were reported for all body parts, including shoulders, lower back, and knees. Injury rates decreased post-intervention, with a relative risk (RR) of 0.37 (95 percent confidence interval (CI) 0.16 to 0.88); decreased injury rates persisted after adjustment for temporal trends in injury rates on non-intervention units of the study hospital (RR = 0.50, 95 percent CI 0.20 to 1.26). Adjusted lost-day injury rates also decreased (RR = 0.35, 95 percent CI 0.10 to 1.16). Annual workers' compensation costs averaged $484 per FTE pre-intervention and $151 per FTE post-intervention.

8. CONCLUSION: Reductions were observed in injury rates, lost-workday injury rates, workers' compensation costs, and musculoskeletal symptoms after deployment of mechanical patient lifts. Strengths of this study include the community hospital setting and the inclusion of a variety of different outcomes. Limitations include the pre-post study design and the small sample size.

ATTACHMENT C

ABSTRACT OF AN EVALUATION OF A "BEST PRACTICES" MUSCULOSKELETAL INJURY PREVENTION PROGRAM IN NURSING HOMES

Collins JW, Wolf L, Bell J, and Evanoff B. Injury Prevention, Aug10(4):206-211. 2004. Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Division of Safety Research, Morgantown, WV

1. OBJECTIVE: To conduct an intervention trial of a "best practices" musculoskeletal injury prevention program designed to safely lift physically dependent nursing home residents.

2. DESIGN: A pre-post intervention trial and cost benefit analysis at six nursing homes from January 1995 through December 2000. The intervention was established in January 1998 and injury rates, injury-related costs and benefits, and severity are compared for 36 months pre-intervention and 36 months post-intervention.

3. PARTICIPANTS: A dynamic cohort of all nursing staff (n = 1728) in six nursing homes during a 6-year study period.

4. INTERVENTION: "Best practices" musculoskeletal injury prevention program consisting of mechanical lifts and repositioning aids, a zero lift policy, and employee training on lift usage.

5. MAIN OUTCOME MEASURES: Injury incidence rates, workers' compensation costs, lost-workday injury rates, restricted-work day rates, and resident-assaults on caregivers, annually from January 1995 through December 2000.

6. RESULTS: There was a significant reduction in resident handling injury incidence, workers' compensation costs, and lost-workday injuries after the intervention. Adjusted rate ratios were 0.39 (95 percent confidence interval (CI) 0.29 to 0.55) for workers' compensation claims, 0.54 (95 percent CI 0.40 to 0.73) for Occupational Safety and Health Administration (OSHA) 200 logs, and 0.65 (95 percent CI 0.50 to 0.86) for first reports of employee injury. The initial investment of $158,556 for lifting equipment and worker training was recovered in less than 3 years based on post-intervention savings of $55,000 annually in workers' compensation costs. The rate of post-intervention assaults on caregivers during resident transfers was down 72 percent, 50 percent, and 30 percent based on workers' compensation, OSHA, and first reports of injury data, respectively.

7. CONCLUSIONS: The "best practices" prevention program significantly reduced injuries for full-time and part-time health care professionals in all age groups, and all lengths of experience in all study sites.