

## The Business Case for Safe Patient Handling Summaries of Three Recent Studies Detailing the Cost Benefits

**Collins, J.W., L. Wolf, J. Bell, B. Evanoff** “An evaluation of a ‘best practices’ musculoskeletal injury prevention program in nursing homes,” *Injury Prevention*, 2004, 10. (This is the original article.)  
**National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention, Department of Health and Human Services, *Safe Lifting and Movement of Nursing Home Residents*, February 2006.** (This NIOSH publication includes some discussion of the study.)

This NIOSH-sponsored study, discussed in both publications listed, found that the initial investment of \$158,556 for lifting equipment and worker training was recovered in less than three years based on savings of \$55,000 annually in workers’ compensation costs.

### Reduction in Injuries

The study evaluated the effectiveness of a safe patient lifting program in six nursing homes, comparing patient handling injury rates for the first three years of the safe patient lifting program with the rates for three years prior to the intervention, with 1,728 staff participating in the study. After adjusting for the effects of age, gender, job tenure, and part-time or full-time job status, the researchers found:

- Workers’ compensation costs declined by 61 percent,
- Lost work day injuries fell by 66 percent,
- Restricted work days dropped 38 percent, and
- The number of nursing staff suffering repeat injuries also declined.

The rate of assaults by residents on staff during lifts and transfers also went down by 50 percent according to the OSHA logs.

### Reduction in Direct Costs

During the three years prior to the introduction of the safe patient handling program, the nursing home company spent \$441,670 on workers’ compensation for 129 employee injuries. Workers’ compensation expenses for 56 employee injuries after the intervention cost \$277,061, a savings of \$164,609.

The company invested \$143,556 in patient handling equipment and an estimated \$15,000 in worker training. Because the company was self-insured (did not use an insurance policy, but paid for workers’ compensation directly), the savings were realized immediately, rather than through later reductions in insurance premiums. Direct costs for the equipment and training were recouped in less than three years.

The calculated return on investment would be shorter if savings from indirect costs were calculated. Indirect costs include the cost of recruitment of new nursing staff, training, and lost wages. The data sources used were workers’ compensation claims, the OSHA logs, and workers’ first reports of injury.

**Nelson, Audrey, Mary Matz, Fangfei Chen, Kris Siddharthan, John Lloyd, Guy Fragala,** “Development and evaluation of a multifaceted ergonomics program to prevent injuries associated with patient handling tasks,” *International Journal of Nursing Studies*, August 2006, 43(6).

This study found that the initial capital investment was recovered in 3.75 years based on \$204,599 annual savings in workers’ compensation and medical treatment, and savings from fewer lost and modified work days.

The sample was 1,133 nursing staff in 23 high risk units (19 nursing home units and four spinal cord units) in seven facilities. Comparing nine month periods before and after implementation of the safe patient handling program, researchers evaluated the impact of a safe patient handling program on injury rates, lost and modified work days, costs, and return on investment, as well as issues related to morale and patient acceptance.

### **Reduction in Injuries**

After the introduction of the safe patient handling program, the injury rate fell by 30 percent. In addition, the median number of modified work days taken per injury declined from 10.2 days to 6.2 days, indicating a reduction in the severity of the injuries. Lost work days decreased by 18 percent, but this was not statistically significant.

### **Reduction in Costs**

Examining the cost of the capital investment:

- Purchase of ceiling-mounted lifts, floor-based full body sling lifts, mechanical lateral transfer aids, powered stand assist lifts, friction-reducing devices, and gait belts with handles cost \$846,476.
- Capital costs for the equipment, its installation, and maintenance totaled \$1,156,266. The annualized cost was estimated at \$115,627 based on a ten-year equipment life expectancy.
- Training for personnel cost \$74,103, estimated at an annualized cost of \$7,410 over ten years.
- The estimated overall program cost was projected at \$123,037 per year.

Comparing costs during the pre-intervention and post-intervention periods:

- The overall cost of medical treatment decreased from \$95,091 to \$49,244, a reduction of 48 percent. This included physicians' services, diagnostic tests, and costs associated with workers' compensation.
- Workers' compensation costs for continuation of payments (COP) benefits (short-term disability for up to 45 lost work days) were reduced from \$134,763 to 35,200, a 74 percent reduction.
- The cost of lost work days decreased from \$55,743 to 49,352, a decrease of 11 percent. The monetary value of lost days was set equal to the wage rate. Personal leave was included in the calculation.
- The cost of modified duty fell from \$136,426 to \$42,500. This cost was estimated using half of the wage rate.
- Savings for reductions in medical treatment, workers' compensation benefits, lost work days, and modified duty days totaled \$245,727.

Projecting the savings over a ten-year period:

- The annualized injury costs savings was calculated to be \$327,636. Subtracting the annualized program costs of \$123,037, the overall savings per year was estimated at \$204,599.
- This results in over two million dollars in savings over ten years, excluding the cost of inflation.
- The investment in equipment, installation, maintenance and training was recovered in 3.75 years, with a desirable rate of return of nearly 19 percent.

The researchers add that they did not include the indirect cost of low morale and high turnover in the analysis. They note that others have estimated that the cost of additional recruitment, training, and lost productivity are as high as five times the direct cost.

**Spiegel, Jerry, Analee Yassi, Lisa Ronald, Robert Tate, Penny Hacking, Teresa Colby, "Implementing a resident lifting system in an extended care hospital: Demonstrating Cost-Benefit," *AAOHN Journal*, March 2002, 50(3).**

This Canadian study demonstrated that a safe patient lifting program reduced injuries by 58 percent and paid for itself in 3.85 years just in terms of reduced workers' compensation claims. When indirect costs (absenteeism, disability insurance payments, and recruitment of new workers) were added to the analysis, the costs were regained in 1.3 years.

The two-year evaluation compared costs of musculoskeletal injuries before and after the installation of 65 ceiling-mounted lifts in the extended care unit of a British Columbia hospital. Analysis was conducted from the perspective of both the insurer and the facility. The insurer only has to consider the cost of the equipment compared to the reduction in workers' compensation claims. The facility must consider the cost of the equipment, its maintenance, training, and the batteries or electricity used compared to the savings from direct and indirect sources.

The insurer purchased the equipment for \$344,323 (CAD) and in one year, saved \$59,282 (CAD) in claims for lift or transferring musculoskeletal injuries only and \$89,378 (CAD) for all musculoskeletal injuries as a result of fewer injuries and shorter recovery times. From this perspective, the payback period is 3.85 years, the benefits outweigh the costs by a factor of 2.53, and the internal rate of return is 8.1 percent.

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

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

**Siddharthan, Kris, Audrey Nelson, Gregory Weisenborn, "A business case for patient care ergonomic interventions," *Nursing Administration Quarterly*, January-March, 2005, 29(1).**

Consult this article for explanation of return on investment indicators which help to demonstrate the economic benefits of safe patient handling equipment to facility administrators. The article includes definitions and instructions for calculating measures including payback period, internal rate of return, and net present value.

Thank you to United American Nurses – AFL, CIO