

Cost of musculoskeletal injuries: Outcome-based cost benefit analysis¹

Worksheet Instructions

The cost of improper patient transfers is varied and often difficult to measure. However, measures can be determined in many instances, and benchmarks may be used in areas where the data cannot be determined onsite. The benefits of using real life data from your organization cannot be overemphasized, however; the efforts expended to extract this information will provide positive dividends. Other factors that do not translate as readily into a direct cost benefit are nonetheless very beneficial. These factors are listed in sections III. and IV.

I. Patient care cost

- 1. Skin tears:** Skin tears, with an estimated cost of \$150.00 each (determined by averaging the cost of treatment and care), are very often the result of a patient's skin coming in contact with a surface during manual transferring.
- 2. Continence:** When toileting becomes a simple and less strenuous procedure, patients are more likely to be toileted more often, and continence levels, especially in long term care situations, tend to take longer to decline. The length of time continence occurs can then be tracked from when a patient enters the organization. Costs of continence pads, disposable adult briefs, and other pericare products needed for incontinent patients can also be calculated. Secondly, when lifts are used, patients are more likely to notify caregivers earlier when they need to use the bathroom, partly because they no longer feel badly that they need to be lifted. In one case, for example, this situation was rectified when a resident in a long term care organization donated \$5,000 to purchase a lift.
- 3. Skin integrity (bedsores):** For bedridden patients, common accepted practice is frequent turning and repositioning to promote skin integrity. Use of improved turning measures - such as is possible with certain overhead ceiling lifts - take the strain out of turning and repositioning, promoting better adherence to turning schedules and thereby reducing bed sore potential. The number of bedsores and cost of care, while highly variable on an individual basis, can be averaged and a subsequent cost may be determined.
- 4. Lift/transfer-related patient injuries:** Patients can also incur injuries as a result of *manual* transferring and repositioning, including (but not limited to) dislocation or subluxation of the shoulder. These types of injuries are not seen when lift/assist/transfer equipment is properly used. Patient injury cost data can be generally be obtained through the accounting department.
- 5. Administrative costs:** Each patient injury that occurs requires follow-up documentation and tracking. The time needed completing the paperwork times the salary of the person completing the paperwork can be averaged and tracked. Average time required is estimated at two hours per occurrence.

¹ Source: Patient Safety Center of Inquiry (Tampa, FL) , Veterans Health Administration.

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II. Employee cost

- 1. Musculoskeletal injuries related to patient care:** The cost of employee injuries may be obtained through accounting if the organization is self-insured. If the organization is a member of a fund or participates in a group insurance program, the actual cost of the injury is not paid directly; rather, the overall cost of insurance increases with an increase in the number and cost of injuries. However, the direct cost to the organization, i.e., the effects on premium costs, can be determined by asking the carrier to calculate what the premium would have been when patient-related musculoskeletal injuries are removed.
- 2. Overtime and temporary help:** The number of employees needed as temporary help from temporary service agencies plus overtime paid to cover shifts, times the paid wages may be calculated. Additionally, when employee's wages are calculated, the cost of the benefits provided, or "benefits burden" must be factored in. The amount paid in benefits varies by organization, but is generally between 20% to 40% of the hourly wage.
- 3. Cost of turnover:** The cost to hire & train replacement employees may be determined directly, or may be estimated as one year's salary for nurses.
- 4. Days away from work:** The number of days away from work and related costs (employee wages including the value of benefits, times the number of hours off) due to a patient transfer musculoskeletal injuries may be tallied for a given time period.
- 5. Transitional duty days:** The number of days of restricted work due to a patient transfer musculoskeletal injury may be tallied for a given time period. Calculation will vary depending on the restriction. For example, if the employee can only work three hours per day, the amount calculated would include the employee's wages paid for five hours not worked, including the value of benefits, times the number of days off.
- 6. Sick days used:** The number of days of sick time and corresponding wages reported by patient care staff. This is not a direct indicator, but as back and other musculoskeletal injuries are generally underreported, when back injuries decrease and morale increases, the number of sick days used may decrease.
- 7. Administrative costs:** Each employee injury that occurs requires follow-up documentation and tracking via incident reports, OSHA 300 logs, safety committee review, solution implementation, and solution follow-through. The time needed completing the paperwork times the salary of the person completing the paperwork can be averaged and tracked. Average time required is estimated at two hours per occurrence.

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III. Patient care issues

- 1.& 2. Patient comfort during repositioning and transferring:** Use of lift/ assistance devices generally result in higher levels of comfort and safety for the patient. Comfort levels can be measured through collecting direct feedback from patients, or referring to the literature.
- 3 & 4. Functional independence and ambulation distance:** The ability of a patient to function independently and to walk greater distances has been greatly enhanced through use of ambulating lift/assist equipment, such as floor and ceiling lifts with walking slings, and other ambulatory aides. In some instances, patient otherwise totally bedridden are able to walk, and others may need little to no assistance.

IV. Employee issues

- 1. & 2. Frequency of lifts being used when indicated, correct postures observed:** Behavioral indicators are often immediate indicators of a working program, and can provide valuable feedback. These factors, using lifts and correct postures, can be measured through periodic onsite spot checks.
- 3. Employee satisfaction surveys:** Studies have shown that there is an almost perfect correlation between hospital employee satisfaction and patient satisfaction. Surveys can be used as a measure to gauge employee satisfaction, both before, during, and implementation of an injury prevention program.

V. The cost of ergonomic improvements

- 1. Ergonomic equipment investments:**

The total cost of equipment purchased or rented, including but not limited to lateral friction reducers, full lifts, standing lifts, ceiling lifts, walking belts, and appropriate slings.
- 2. Employee training and education investments:**

Investments may be estimated at average hourly nursing personnel wages (including the average of the amount paid in benefits) times the amount of time required for both lecture and hands-training, often about two hours.
- 3. Ergonomic/safety committee investment:**

The amount of time that the safety committee invests (research, equipment trials, implementation, extra training, policy & procedure writing and approvals) times the average hourly wage (including the benefits)

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VI. The cost savings

The cost benefit* of the projected program improvements (and subsequent implementation) can be measured using the following calculations:

- A. **Patient care cost savings** = Total of Prior to Implementation costs in **I.** -- Six months or one year costs in **I.**
- B. **The employee cost savings** = Total of Prior to Implementation costs in **II.** -- Six months or one year costs in **II.**
- C. **Cost of ergonomic improvements:** Total of cost of Prior to Implementation costs in **V.** -- Six months or one year costs in **V.**

Total cost savings: A +B - C

*Note: III. And IV. are not included in the cost savings portion of the benefit analysis.

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I. The patient care cost

Outcomes	Prior to Implementation		Six Months after Implementation		One year after Implementation	
	Number	Cost	Number	Cost	Number	Cost
1. Skin tears & bruising						
2. Continence						
3. Skin integrity (bedsores)						
4. Lift/transfer-related patient injuries						
5. Administrative costs						
Total patient care costs						

II. The employee cost

Outcomes	Prior to Implementation		Six Months after Implementation		One year after Implementation	
	Number	Cost	Number	Cost	Number	Cost
1. Musculoskeletal injuries related to patient care						
2. Cost of turnover (cost to hire & train replacement employees)						
3. Overtime and temporary help						
4. Days away from work						
5. Transitional duty days						
6. Sick days used						
7. Administrative costs						
Total employee costs						

III. Patient care issues

Behavioral outcomes	Prior to Implementation	Six Months after Implementation	One year after Implementation
1. Patient comfort during repositioning			
2. Patient comfort during transferring			
3. Functional independence of patient			
4. Ambulation distance			

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IV. Employee issues

Behavioral outcomes	Prior to Implementation	Six Months after Implementation	One year after Implementation
1. Frequency of lifts being used when indicated			
2. Correct postures observed			
3. Employee satisfaction surveys			

V. The cost of ergonomic improvements

Outcomes	Prior to Implementation		Six Months after Implementation		One year after Implementation	
	Number	Cost	Number	Cost	Number	Cost
1. Ergonomic Equipment Investments						
2. Employee training and education investments						
3. Ergonomic/safety committee investment						
Total improvement costs						

VI. the cost savings

Totals	Prior to Implementation		Six Months after Implementation		One year after Implementation	
	Number	Cost	Number	Cost	Number	Cost
A. Patient care cost savings						
B. The employee cost savings						
Total of A & B						
C. Total improvement costs						
Total of A & B - C						