

Introduction

Two methodologies can be used to determine a business case for a safe patient handling program. According to Siddharthan and colleagues (2005), cost effectiveness and cost-benefit analysis are favored by economists while administrators prefer return on investment indicators to justify capital expenditures.

Cost-effectiveness analysis is a research method. It is designed to determine which health interventions provide the most effective and affordable medical care. An incremental approach to determining cost effectiveness may be easier, because it assumes that many stable, short-term indirect costs (e.g., facility overhead) do not need to be included in the analysis. The incremental cost effectiveness ratio is defined as:

Total costs of the ergonomic program

Reduction in injury and associated costs

The second method—cost-benefit analysis—places a monetary value on both the costs and effectiveness of the intervention. The purpose of this section is to present and describe an interactive tool to assist you in developing a business case for a safe patient-handling program.

Definitions

Amortization: A debt that is gradually reduced through periodic payments of principal and interest.

Capital expenditures: Monies used to acquire or improve long-term assets such as property or equipment.

Capitalized: Recorded in asset accounts and then depreciated or amortized, as is appropriate, for expenditures for items with useful lives greater than 1 year.

Cost-benefit analysis: A method of project appraisal. The process of weighing the total expected costs against the total expected benefits of one or more actions with the goal of choosing the best or most profitable option. A process involving monetary calculations of initial and ongoing expenses against expected return.

Depreciation: A fall in value of a long-term asset. In real estate, it is the decline in value of a house due to wear and tear, adverse changes in the neighborhood, or any other reason.

Gross income (revenue): Income before expenses.

Marginal income: Revenues minus direct expenses.

Net income: Revenues minus direct and indirect expenses.

Rate of return or return on investment (ROI): The ratio of money gained or lost on an investment relative to the amount of money invested. This amount may be referred to as interest, profit/loss, gain/loss, or net income/loss. The money invested may be referred to as the asset, capital, principal, or the cost basis of the investment.

Payback period: In business and economics this refers to the period of time required for the return on an investment to equal, or payback, the sum of the original investment.

Workers' compensation: Monies paid to employees who are injured in the course of employment.

Estimating Costs: Excel Spreadsheet Components (See Figure 1-1)

Direct Costs

Capital costs

Cost of equipment: Determine types and number of pieces of equipment by visiting the VISN 8 Patient Safety Center of Inquiry, Tampa at www.visn8.med.va.gov/patientsafetycenter. The resource guides on this Web site will help you determine the types and number of pieces of patient-handling equipment required based on your needs. You can contact the equipment manufacturers directly; some are listed in the technical guide on the Web site. Others may be found by doing an Internet search, visiting exhibit halls at conferences, or through local contacts. Once you know the overall cost, place the number in this field.

Lending costs: Calculate the interest and fees associated with financing the equipment or construction costs.

Cost of renovation

Cost of maintenance

Cost of staff training

Medical Care for Injured Employees

Hospital charges

Physician fees

Diagnostic tests

Laboratory work

Rehabilitation

Medical equipment

Medications

Employee counseling

Employee Costs

Workers' compensation

Sick leave

Litigation

Organizational Costs

Case management

OSHA reporting compliance

Indirect Costs

Productivity

Productivity is significant in a business case statement because of its importance in a cost-benefit analysis. Productivity is tangible, as it is a closely monitored expense. A safety product can decrease labor hours through greater efficiency, which results in fewer labor hours to produce the same amount of work. Conversely, the lack of a safety product can increase labor hours due to lost work days. Lost work days represent a significant expense; the facility incurs an expense for the injured employee plus the expense of a replacement. If the replacement employee is on overtime or a contract employee, an even greater expense is generated. For example, for one lost work day, the facility could incur 2.5 times the normal expense (the payroll costs of the injured employee plus time and a half for a replacement employee).

The greatest operational expense in health care is labor. Labor hours are calculated differently for different departments. In nursing, labor is budgeted and analyzed in terms of nursing hours per patient day (HPPD). To calculate HPPD, count the total number of direct care staff

members in a 24-hour schedule, then multiply that number by the hours per shift and divide by the census. It is best to use a 7-day period, as staffing may differ on the weekends. Direct care staff members are defined as those working in direct patient care at least 50% of the time. Use the following formula to calculate the HPPD for 8-hour shifts: $\text{Number of positions} \times 8 \text{ (hours)} \times 7 \text{ (days)} / \text{census days for 1 week}$.

There is no single industry standard to measure productivity in therapy departments. Productivity in therapy departments is calculated by assigning a target expectation for the number of billed units of care a therapist can generate in a specified amount of time. The time allotted is an average, which accounts for documentation and meeting time. One standard used to demonstrate productivity is an efficiency measure. An efficiency indicator of 0.38 means that for each 0.38 of an hour (23 minutes) one billable unit is generated. The following is a formula for therapy productivity: $\text{Productive staff hours} / \text{billed units} = 0.38$.

The bottom line for lost therapy work days equates to lost revenue, which is a more difficult calculation. If the therapist is replaced with an experienced therapist who can perform the same amount of treatments as the regular staff, replacement costs are calculated as indicated in the above paragraph. If therapy is canceled due to a lost therapist day, then all revenue generated by the therapist is lost. The facility still incurs all expenses of providing a treatment, including the direct cost of the therapist and indirect costs associated with the provision of therapy (e.g., the facility, utilities, and business office). This actual cost is facility specific, as charges for therapy and collections vary widely between facilities.

Patient Factors

The most significant negative patient factors are patient injuries, which could occur due to the lack of patient-handling equipment. There are multiple costs with a patient injury, including the following:

- employee time for incident investigation
- increase in length of stay due to injury
- cost of patient procedures secondary to injury (e.g., nursing assessment, medical examination, radiology studies, surgery, medications)
- litigation
- loss of hospital reputation.

The most significant positive patient factors are increase in patient satisfaction and decrease in length of stay by maximizing positive patient outcomes.

Why Length of Stay Is So Important

Rehabilitation stays for Medicare beneficiaries in hospitals, rehabilitation facilities, and skilled nursing facilities are based on prospective reimbursement systems. In these systems, the facility is reimbursed a predetermined amount that is calculated prospectively or at admission and is based on patient characteristics such as impairment and comorbid conditions. The payment is also based on a set cost per patient day for a fixed length of stay. If a patient stay exceeds this fixed length of stay, the facility continues to incur costs for patient care but no longer generates additional revenues—putting the facility in a loss position. If the facility is efficient and discharges the patient before the fixed length of stay, there is a potential for receiving full reimbursement and incurring fewer costs.

Productivity

Costs of employee absence
Sick leave
Overtime
Employee replacement costs
Increase in insurance premiums
Litigation

Employee and Patient Costs

Pain and suffering
Employee morale
Patient care and satisfaction

Lost Opportunities Costs

Proceeds lost by forgoing other investments

Intangible Costs

Negative effects on recruitment
Accreditation issues

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