The Business Case for Transforming Care at the Bedside: Lessons Learned

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Presentation Topics

- Background
- Research rationale
- Research objective
- Framework
- Methods
- Results
- Discussion, limitations & lessons learned

Background

- Transforming Care at the Bedside (TCAB) began in the fall of 2003 as a project of RWJF in partnership with the IHI
  - 10 hospitals (13 units) across the U.S. participated in innovative transforms of their medical-surgical units
- Since July 2007 the AONE has partnered with RWJF to bring 68 hospitals into TCAB.

Background

- TCAB is a program that improves processes and outcomes in hospital med-surg units by:
  - changing hospital and unit culture
  - empowering bedside nurses
  - strengthening nursing leadership
  - engaging nurses in innovative change
    - front-line nurses are encouraged to think of better ways to go about their work, and to test and implement those changes.

Background

- Through these process changes, TCAB aims to produce measurable improvement in:
  - work unit vitality
  - patient safety and reliability of care
  - efficiency in the delivery of care
  - patient centeredness of the care

Research rationale

- It is believed that TCAB has improved nursing care and nurses' satisfaction by:
  - increasing the amount of time RNs spend in direct patient care
  - improving patient safety
  - engaging nurses in making these improvements
  - other positive changes.
- Yet the TCAB interventions are not without costs
  - Employee time off
  - New equipment
  - Unit redesign

Research rationale

- TCAB expenditures are best justified by *both*
  - improvements in quality and staff satisfaction
  - a positive financial return.
- Are there financial benefits to TCAB that offset the costs of implementation?

Research rationale

- To produce a financial benefit in hospitals, an investment must
  - decrease the cost of caring for patients and/or
  - increase the number of patients that can be cared for
- TCAB has the potential to do this by
  - lowering labor costs through its positive impacts on nurses, reducing nursing turnover, overtime, absenteeism, and use of agency nurses
  - lowering costs of patient care if there are fewer patient complications, and therefore shorter lengths of stay, or fewer readmissions
  - increas the number of patients if patient satisfaction, quality, and safety are improved

Research objective

- The goal of this study is to assess the "business case" of TCAB in the original "TCAB 10" and discuss lessons learned
- It is based on evaluations of outcomes on the 13 units in the 10 hospitals that undertook TCAB transformations between 2004 and 2007.
- The outcomes used to establish the business case are: RN turnover, RN overtime, and patient falls with harm

Framework: What is a "business case"?

- A **Business Case** is a convincing argument for a course of action planned to achieve business objectives.
  - shows that the recommended action(s) is (are) the best to pursue
  - presents a definite point of view
  - includes both financial and non-financial arguments

Framework: Levels of business case analysis

1. Estimation of benefits
   - Financial
   - non-financial
2. Estimation of net benefits (NB)
3. Economic impact (CBA, ROI, etc)
4. Folding of economic impact into strategic plan

Framework: Estimation of financial benefits

- Cost reductions
  - Use of fewer supplies and machinery
  - Lower patient lengths of stay
  - Productivity/efficiency increases
    - increase in direct care time
    - Less OT, agency, nurse turnover
- Additional revenues
  - Increased market share (increased admissions)

Framework: Estimation of net financial benefits

- Monetized benefits minus costs of the project
  - NB = financial benefits - costs
  - AKA “net revenue” or “profit”
  - > 1 year, consider present value of financials

Framework: Economic Impact

- Cost-benefit analysis (CBA)
  - Comparison between NB of 2 or more projects and choice of best
    - E.g. between status quo and one alternative
- Benefit/cost analysis
  - Net benefits/costs
- Return on Investment (ROI)
  - Profit/amount invested
  - Similar to benefit/cost analysis
- Payback period, break even point, others

Framework: Folding of economic impact into strategic plan

- Organization considers the project in question and weighs the economic impact evidence when developing and revising strategic plan
- Benefits that cannot be monetized should be part of business case argument
  - May include benefits that spill out to others outside the organization

Framework: How can TCAB outcomes translate into financial benefits?

- Track the outcomes over a period of time
- Conceptualize the monetary benefits from the outcome improvements
- Develop financial metrics to transform improvements into monetary benefits
- Plug data from outcomes into financial metrics

Framework: How can TCAB outcomes translate into financial benefits?

TCAB Goal	TCAB Outcome	Conceptual Monetary Benefit
Patient Safety	Fewer falls	--Less costs/admission d/t shorter LOS --Less costs/day d/t reduced cost of tx --Lower malpractice and insurance costs

Framework: How can TCAB outcomes translate into financial benefits?

TCAB Goal	TCAB Outcome	Conceptual Monetary Benefit
Patient Centered	Increased patient satisfaction	Greater revenue d/t increased admissions
Unit Vitality	Reduced turnover, agency, OT, injuries	Lower employee costs

Framework: How can TCAB outcomes translate into financial benefits?

TCAB Goal	TCAB Outcome	Conceptual Monetary Benefit
Efficiency	Increased direct care hours	--Reduced employee costs d/t less turnover, agency, OT, injuries --Higher revenue d/t patient satisfaction, increased admissions

Methods

- Study design
- Data collection
- Review of the literature
- Financial metrics and cost savings calculations: Approaches 1 &2
- Summation of Cost Savings (benefits) from Approach 2
- Calculating the Costs of TCAB
- Calculating the net benefit of TCAB

Study design

- Cost-benefit techniques
  - Estimate the net benefits of implementing TCAB
- Data are from the original 10 TCAB hospitals (13 units)
- Outcomes were tracked from 2004-2008 in three areas
  - RN turnover
  - Patient falls with harm
  - RN overtime

Study design

- Outcomes were assessed to see if TCAB produced cost savings d/t either
  - the events decreased over time in TCAB units
  - their rates were lower in TCAB units than on the average
- If either were the case, the monetary value of these positive outcomes could be estimated as “cost savings” on TCAB units.

Study design

- The costs of implementing and maintaining TCAB were subtracted from the cost savings to produce the net benefit.
- If the cost savings were > the costs of implementing and maintaining TCAB, then there were net benefits on units with TCAB.

Data collection

- RN turnover and patient falls with harm were collected by all TCAB units as part of TCAB participation.
  - Data complete for turnover 2004 -2007
  - Data complete for falls 2005 - 2007
- RN overtime was also requested
  - Data had to be pulled from the staffing systems at each hospital
  - A survey was sent to all TCAB key contacts requesting RN hours of OT and total RN hours.
  - Requests for this data were made several times.
  - Data was returned for 6 units, but only 3 units also submitted total hours (needed to determine rates of overtime).

Review of literature

- Between January and April 2008, we conducted reviews of the literature to determine average rates and costs of
  - RN turnover
  - RN overtime
  - Patient falls, especially falls with harm
- We looked for
  - National and state-level rates of RN turnover and estimated costs.
  - National, state, and facility-level rates of RN overtime and estimated costs
  - Facility or multi-facility rates of patient falls and falls with harm, and estimates of costs.

Financial metrics and cost saving calculations: Approach 1

- Compare the amount of RN turnover, RN overtime, and patient falls in baseline year to the amount of these outcomes several years after implementation of TCAB.
- The amount of fewer turnovers, overtime, and patient falls after implementation of TCAB was used to calculate cost savings.

Financial metrics approach # 1

TCAB Cost Saving from:	Financial Metrics Approach 1
RN turnover	(# TCAB RN turnovers in 2007 – # TCAB RN turnovers in 2004) X average cost of 1 RN turnover
Reduced falls	(# of TCAB patient falls with harm in 2007 – # of TCAB patient falls with harm in 2005) X average cost of a patient fall
RN OT	(# TCAB RN overtime hours in 2007 – # TCAB RN overtime hours in 2005) X hourly overtime amounts

Financial metrics and cost saving calculations: Approach 2

- Compare rates of RN turnover, patient falls, and RN overtime in TCAB units to their averages nationally (obtained from the literature)
- Translate the difference in rates into the difference in numbers.
- Calculate the cost savings from having lower than average numbers of these events.

Financial metrics approach # 2

TCAB Cost Saving from:	Financial Metrics Approach 2
RN turnover	[(ave. # of TCAB RN turnovers – (ave. TCAB #/TCAB rate) X national rate] X average cost of 1 RN turnover
Reduced falls	[(ave. # of TCAB falls – (ave. TCAB #/TCAB rate) X national rate X average cost of 1 fall
RN OT	[(ave. # of TCAB RN OT – (ave. TCAB #/TCAB rate) X national rate] X average cost of 1 RN OT

Summation of cost savings from Approach 2

- The cost savings from lower RN turnover, fewer patient falls with harm, and less RN overtime on TCAB units than on the average were summed.

Calculating the costs of TCAB

- We only obtained data on the costs of TCAB from one TCAB unit.
- Those costs were used to estimate TCAB costs on the other units.

Calculating the net benefits of TCAB

- The net benefit of TCAB was calculated by subtracting TCAB costs from cost savings on a per unit basis and for all TCAB units combined.

Results: Approach 1 (internal changes on TCAB units 2004 -7)

- RN turnover fell in most TCAB units from 2004 to 2006, but increased dramatically in 2007
- There was an average reduction in the number of patient falls with harm on each TCAB unit of 2.66 from 2005 to 2007
- Of the 6 TCAB units that provided data, RN OT did not improve on any unit between 2005 and 2007
- Given the above, approach 1 was not pursued.

Results: Approach 2 (comparison of TCAB units to national data)

Table 1: TCAB RN Turnover Compared to National Average

TCAB RN Turnover Rate (Average)	National Average RN Turnover Rate	TCAB Number of RN Turnovers (Average)	National Average Number of RN Turnovers*	Fewer RN Turnovers/ Unit/Year than the Average
5.15%	8%	1.7	2.7*	-1

- *This number is based on applying TCAB turnover number/rate ratio to the national average rate: National average number of RN turnovers = (1.7/5.15%) 8% = 2.7

Results: Approach 2 (comparison of TCAB units to national data)

Table 2: Cost Savings Due to Lower Voluntary RN Turnover in TCAB Units Compared to National Average

Year	Average No. of Fewer TCAB RN Turnovers/ Unit	Average Costs per RN Turnover*	Average Cost Savings/ Unit	TCAB Cost Savings All 13 Units
2004	1	$62,100	$62,100	$807,300
2005	1	$62,100	$62,100	$807,300
2006	1	$82,000	$82,000	$1,066,000
2007	1	$82,000	$82,000	$1,066,000
2004 - 2007			$288,200	$3,746,600

*estimates by Jones (2005, 2008)

Results: Approach 2 (comparison of TCAB units to national data)

Table 3: TCAB Falls Compared to National Average

TCAB Falls with Harm Rate (Average)	National Average Falls with Harm Rate	TCAB Number of Falls with Harm/Unit/ Year	National Average Number of Falls with Harm/ Year*	Fewer Falls with Harm/ Unit/Year than the Average
0.78/1,000 patient days	1/1,000 patient days	8.5 falls/ year/ unit	10.9 falls/year/ unit	-2.4

- *This number is based on applying TCAB falls with harm number/rate ratio to the national average rate: National average number of falls with harm = (8.5/0.78) 1 = 10.9

Results: Approach 2 (comparison of TCAB units to national data)

Table 4: Cost Savings Due to Falls in TCAB Units Compared to National Average

Year	Average Number of Fewer Falls/ Unit	Average Costs/Fall with Harm*	Average TCAB Cost Savings/ Unit	TCAB Cost Savings All units
2005	2.4	$7,000	$16,800	$218,400
2006	2.4	$7,000	$16,800	$218,400
2007	2.4	$7,000	$16,800	$218,400
2005-2007			$50,400	$655,200

* Bates, et al., 1998

Results: Approach 2 (comparison of TCAB units to national data)

Table 5: TCAB RN OT Compared to National Average

TCAB RN OT Rate (Average)	National Average RN OT Rate	TCAB Number of RN OT Hours/ Year/ Unit	National Average Number of RN OT Hours/ Year*	Fewer RN Overtime Hours/ Unit/ Year than the Average
2.65	8.5	1,752	5,620	3,868

* OT rate = # OT hours/(40 hours + # of OT hours)

**This number is based on applying TCAB RN overtime number/rate ratio to the national average rate: Average number of RN overtime hours = (1,752/2.65) 8.5 = 5,620 hours.

Results: Approach 2 (comparison of TCAB units to national data)

Table 6: Cost Savings Due to RN OT in TCAB Units Compared to National Average

Year	TCAB Average Number of Fewer OT hours/ Unit	National Average Cost/OT hour*	Average TCAB Cost Savings/ Unit	TCAB Cost Savings All units
2005	3,868	$41.70	$161,296	$2,096,848
2006	3,868	$43.96	$170,037	$2,210,481
2007	3,868	$46.03	$177,928	$2,313,064
2005-2007			$509,261	$6,620,393

*Ave. RN wages were: $27.80 in 2005, $29.31 in 2006, and $30.69 in 2007 (BLS). Ave. OT costs = ave. RN wage X 1.5.

Results: Approach 2 (comparison of TCAB units to national data)

Table 7. Total Estimated Cost Savings on TCAB Units

	Cost Savings from Lower than Ave. RN Turnover	Cost Savings from Lower than Ave. Falls with Harm	Cost Savings from Lower than Ave. RN Overtime	Total Cost Savings per TCAB Unit	Total Cost Savings All TCAB Units
2004	$62,100	--	--	$62,100	$807,300
2005	$62,100	$16,800	$161,296	$240,196	$2,159,313
2006	$82,000	$16,800	$170,037	$268,837	$2,482,480
2007	$82,000	$16,800	$177,928	$276,728	$2,516,891
2004-2007	$288,200	$50,400	$509,261	$847,861	$7,965,984

Results: Approach 2 (comparison of TCAB units to national data)

Table 8. Estimate of the Costs of TCAB in One TCAB Unit

	2004	2005	2006	2007	2004-7
Travel to TCAB Meetings	$6,000	$12,000	$20,000	$42,858	$80,858
OT to work on TCAB	--	--	$3,000	$16,500	$19,500
Implementation of TCAB Projects	--	--	$18,400	$19,500	$37,900
Join IHI / IMPACT	$13,500	$13,500	$13,500	$13,500	$54,000
Other*	$5,000	$5,000	$10,000	$10,000	$30,000
Total costs:	$24,500	$30,500	$64,900	$102,358	$222,258

*e.g., Liberalized diet, Condition Help, Palm Pilots, Upgrade Palm Pilots, TCAB cabinet, PDA's, Med Card, Flyers, Med Magnets, Pens.

Results: Approach 2 (comparison of TCAB units to national data)

Table 9. Net Benefits of TCAB

	Total Cost Savings / TCAB Unit	Total Costs of TCAB/ Unit	Net Benefit/ TCAB Unit	Total Cost Savings All TCAB Units	Total Costs of TCAB All Units	Net Benefit All TCAB Units
2004	$62,100	$24,500	+$37,600	$807,300	$318,500	+$488,800
2005	$240,196	$30,500	+$209,696	$2,159,313	$396,500	+$1,762,813
2006	$268,837	$64,900	+$203,937	$2,482,480	$843,700	+$1,638,780
2007	$276,728	$102,358	+$174,370	$2,516,891	$1,330,654	+$1,186,237
2004-7	$847,861	$222,258	+$625,603	$7,965,984	$2,889,354	+$5,076,630

Summary of results

- Rates of all three outcomes were lower than those on an average U.S. medical-surgical unit.
- The total estimated cost savings per unit 2004-2007 was $847,861.
- Estimated costs of TCAB per unit 2004-2007 were $222,258.
- The net benefit per unit was $625,603.
- The net benefit for all 13 units was $5,076,630

Discussion

- This project demonstrates that from 2004 through 2007 TCAB units had lower RN turnover, fewer patient falls with harm, and less RN overtime than on the average in medical-surgical units in the U.S.
- The lower rates of these outcomes translate into lower costs, which can be considered a cost savings (or a benefit).
- The cost savings were considerably more than the estimated costs of TCAB. Therefore, these units experienced a financial net benefit compared to the average medical-surgical unit.

Discussion

- Although we cannot say for certain (because the study methodology does not allow for a causal statement), it appears that TCAB may have had a positive financial impact

Limitations

- Results do not imply that TCAB "caused" the better-than-average outcomes because the study did not use a matched comparison group.
  - Outcomes in non-TCAB units could have been as good
  - Other processes could have caused the differences
- Nor were the rates or costs of outcomes used for the "average" comparison group necessarily completely accurate estimates of the true average
  - obtained from the literature

Limitations

- Cost savings for patient falls with harm was *overestimated*
  - Due to charge-based reimbursements, hospitals may only capture ~ 60% of the savings.
  - Only 40% of those costs are variable
- Cost savings overall were *underestimated*
  - only three outcomes were included
  - there are many other patient adverse events and labor costs that could have contributed to cost savings.
- Costs were from one unit only

Lessons learned

- Financial evaluation projects require “buy-in” from all participants
  - collect and turn in all data necessary to complete the evaluation
- Rigorous evaluation design should be used
  - Pre-post comparison group at a minimum

Lessons learned

- If the unit/organization is performing at a high level to begin with there may not be improvements in outcomes
  - Difficult to show the “business case”

Lessons learned

- Should take into consideration that not all of the savings from reductions in patient adverse events accrue to the individual hospital.
  - In cases where the payment is per-diem, the hospital will merely be paid less for lower lengths of stay, and the insurance company will capture the savings
  - The cost savings from adverse events reductions must be adjusted downward by the proportion of per diem payment hospitals receive.

Lessons learned

- Many other factors can be included in the cost savings calculations:
  - Reductions in any adverse events that are related to nursing care, e.g.,
    - Decubitus ulcers
    - Pulmonary compromise
    - UTI
  - Other labor cost reductions:
    - Less use of agency nurses
    - Fewer nurse injuries
- The added cost savings from these factors could strengthen the case.

Lessons learned

- Non-monetary factors should be included in the business case
  - Improvements in RN satisfaction
  - Improvements in patient satisfaction
- These will not contribute to the monetary benefits per se, but should be considered

Lessons learned

- Nursing leaders should promote the use of economic evaluation as one criteria in decision-making.
- A “blended value” approach can be used.

Lessons learned: Blended Value Approach

- All organizations (for-profit or not) create value that consists of economic, social, and environmental value components
- All activity creates value that is non-divisible--a blend of these three elements.
  - Combines “doing good” with “doing well”
  - “**Triple bottom line**”—social (people), environmental (planet), economic (profit)

Petrini & Pozzebon, 2009

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