

Esita Patel, RN, BSN
School of Nursing, PhD Student, Hillman Scholar
AHRQ NRSA Pre-doctoral Fellow, Cecil G. Sheps Center
epatel@email.unc.edu | 704-743-7575
The University of North Carolina at Chapel Hill

BACKGROUND

As the scrutiny on healthcare quality and costs intensifies, the need to align healthcare quality enhancing initiatives (QEIs) with the finances that facilitate these QEIs becomes important to QEI buy-in, uptake, and sustainability from stakeholders. The business case (BC) approach can serve as a strategic tool to this. The absence of a BC for a QEI can derail a QEI.

PURPOSE

This study evaluates published BCs in nursing to synthesize current uses, gaps, and implications of the BC approach in healthcare.

STUDY DESIGN

An integrative review was conducted using Whittemore and Knafli's (2005) methodology¹⁶. E-databases (CINAHL, Pubmed, Business Source Premier, and ProQuest Central) were searched for studies from 2003-2016 using a comprehensive strategy. All data were extracted into a standardized template and results were collectively analyzed for and categorized by common themes and conclusions, based on Reiter et al.'s (2007) 11 steps for developing a BC for quality¹⁷. We used these data to diagram the uses of the BC in healthcare.

REITER ET AL.'S 11 STEPS TO DEVELOPING A BC FOR QUALITY (2007)




- 1 Describing the Intervention
 - 2 Determining Perspective
 - 3 Identifying the Effects of the Intervention on Quality
 - 4 Designing the Study
 - 5 Identifying and Measuring Cash Flows
 - 6 Considering the Effects of Capacity Constraints
 - 7 Selecting a Measure of Return on Investment
 - 8 Determining the Time Horizon for the Analysis
 - 9 Determining the Discount Rate
 - 10 Adjusting Costs and Savings for Inflation
 - 11 Determining Organizational Readiness for BC Development
- 
- 
- 

TABLE 1: DESCRIPTION OF BCs REVIEWED

	DESCRIPTION OF INTERVENTION	PERSPECTIVE	EFFECTS OF THE INTERVENTION ON QUALITY
1. Doloresco et al. (2004)	Achieving magnet designation at a Veterans Health Administration hospital	Hospital's nursing service	Improvements in nurse-sensitive patient outcomes of pressure ulcers and pneumonia and reduced nurse turnover
2. Higdon et al. (2013)	Achieving magnet designation for hospitals with ≤ 100 beds	Hospital's board of directors.	Increased nurse retention, patient safety, and occupational safety
3. Horn, (2008)	Higher RN direct care time per resident per day in long-term care facilities	Cost savings from societal perspective and intuitional perspective are discussed	Fewer adverse outcomes of pressure ulcers, hospitalizations, and urinary tract infections among long-term care residents
4. Jayawardhana et al. (2013)	Attaining magnet status for general hospitals with ≥ 60 beds	*Implies hospital executives	Improved nursing environments and delivering high quality patient care
5. Kale (2012)	Pediatric DSNs will provide 24-hour access to telephone advice service for children with type 1 diabetes.	*Implies hospital executives	Better management and follow-up, reduced morbidity and hospital admissions, improved patient satisfaction, and increased patient engagement in self-care.
6. Lahiri & Faghri (2012)	Workplace-based money incentivized behavioral weight management program	Employer	Increased employee productivity through decreased absenteeism, and improved work efficiency, employees morale, and job satisfaction
7. Li et al. (2011)	Higher RN skill mix and increased RN hours per patient day (HPPD) in medical versus surgical units	*Implies hospital executives	Higher RN skill mix is associated with improved patient outcomes. Increased RN hours per patient day is associated with decreased risk of hospital mortality at the hospital level. There are differences in effect of skill mix and HPPD in medical vs. surgical units.
8. Lindley & Robertson (2013)	Standardized venipuncture/cannulation storage for all wards at a NHS hospital	BC presented to "senior management"	Reduction in time to locate venipuncture/ cannulation equipment, leading to reduction in delays in patient care and improve work flow efficiency
9. Nanda et al. (2011)	Displaying varying visual art on the walls of a small multi-purpose lounge for psychiatric patients	Cost savings presented from patient and hospital perspective	Decrease agitation and anxiety levels of patients, as measured by rate of PRN medication use and RN feedback.
10. Needleman et al. (2006)	Increasing hospital nurse staffing by raising: 1. % of hours provided by RNs to 75 th percentile for hospitals below level 2. number of licensed nursing hours/ day to 75 th percentile –OR- 3. staffing of each of these levels in hospitals where each is below 75 th percentile	Both societal and hospital perspectives are discussed	Reductions in lengths of stay, urinary tract infections, upper gastrointestinal bleeding, hospital acquired pneumonia, shock, cardiac arrest, and failure to rescue rates
11. Noben et al. (2015)	Mental health screening for nurses, followed by a 7-step personalized protocol for improving work wellbeing and functioning delivered by a trained occupational physician (OP)	Employer	Increased productivity from reduced absenteeism and increased presenteeism
12. Sommer et al. (2011)	Children's Hospital Community Asthma Initiative (CAI) provides individualized treatment, community education, policy advocacy, and community partnerships.	Health payers and policy makers	Increased care coordination and management leads to reduced ED visits and hospital admissions
13. Unruh et al. (2011)	Implementing Transforming Care at the Bedside (TCAB) program in hospital medical-surgical units	*Implies hospital executives	Improvements in process and outcomes and has been noted to improve nursing care and satisfaction, increase nursing hours of direct patient care, decrease time spent charting or searching for equipment, and decrease number of patient falls with harm.
14. Waters et al. (2011)	Michigan Keystone ICU Patient Safety Program includes a unit-based patient safety program and interventions to improve compliance with care to reduce hospital acquired infections	Hospital	Reductions in central line associated blood stream infections (CLABSI) and ventilator associated pneumonia (VAP) rates; Study also discusses but does not measure reductions in cases of sepsis and mortality, and improvements in teamwork and turnover
15. Yakusheva et al. (2014)	Increasing the proportion of BSN-educated nurses to 80%	Hospital	Improved patient outcomes, including decreased in-hospital all-cause mortality, same-hospital all-cause 30-day readmission rates, and length of stay.

RESULTS

1. **DESCRIBING THE INTERVENTION:** All but one⁸ BC described the QEI and contained rationale for the proposed QEI.
2. **DETERMINING PERSPECTIVE:** Perspectives included entities that would likely be financial investors^{1,2,6,8,11,14,15}. Some studies discussed the BC from multiple perspectives, including the societal, hospital, patient, and payer^{3,9,10,12}. Others did not state a perspective, but implied it would be from an organizations executive leadership^{7,4,5,13}.
3. **IDENTIFYING EFFECTS OF INTERVENTION ON QUALITY:** All studies reviewed discussed effects of the intervention on quality.
4. **DESIGNING THE STUDY:** Most studies used observational designs^{1,2,3,4,5,7,10,14,15}. Designs included RCT¹¹, comparative^{6,12,13}, pre-post-test⁹, and repeated measures⁹.
5. **IDENTIFYING AND MEASURING CASH FLOWS:** Four studies measured cash flows prospectively^{6,8,9,11}. Measurement strategies included cost projection from previous studies², national administrative data sets^{7,4}, cost projection from data from previous years in an organization⁵, and hospital specific accounting systems or claims data^{13,15}.
6. **CONSIDERING EFFECTS OF CAPACITY CONSTRAINTS:** Although only 2 studies did not contain any information on this step^{8,13}, including organizational context on organizational type, sample size, or patient population, all studies require greater description in this step.
7. **SELECTING MEASURE OF RETURN ON INVESTMENT:** Measures of ROI included economic analysis¹, cost-benefit analysis^{2,11,14}, net-savings⁵, net-cost^{3,6}, multivariable mixed effects linear regression⁷, potential efficiency savings⁸, cost savings^{9,12}, cost reduction stimulation¹⁰, benefit-cost ratio¹², net benefit¹³, and economic simulation¹⁵.
8. **DETERMINING TIME HORIZON:** All but one¹⁰ BC described the time frame the BC was conducted over, which ranged from 14 weeks to 4 years.
9. **DETERMINING "RIGHT" DISCOUNT RATE:** Only 3 BCs reviewed acknowledged discounting in their analysis^{3,4,11}.
10. **ADJUSTING FOR INFLATION:** Only 3 BCs reviewed acknowledged inflation as a part of their BC analysis^{1,13,14}.
11. **DETERMINING ORGANIZATIONAL READINESS:** Zero studies explicitly discussed this, but 8 included relevant information, including importance of aligning the project's objective's with the organization's mission², having leadership guidance throughout BC^{7,6,13}, and aligning the QEI with nationwide policy efforts^{14,15} to increase project uptake and long-term sustainability.

PRACTICE & POLICY IMPLICATIONS

Future efforts to standardize how BCs are conducted, presented, and used in healthcare are needed to move the utility of BC analysis forward in healthcare. Federal agencies and policymakers should implement strategies that require the use of a BC approach to more objectively evaluate QEIs, and demonstrate their viability to key stakeholders at various organizational levels. While a BC should be used by researchers, executives, and healthcare personnel to build support for innovations at the, departmental, healthcare system, state- or nationwide levels, failure to use this approach to evaluate these innovations represents a missed opportunity to understand how QEIs impact the bottom line.

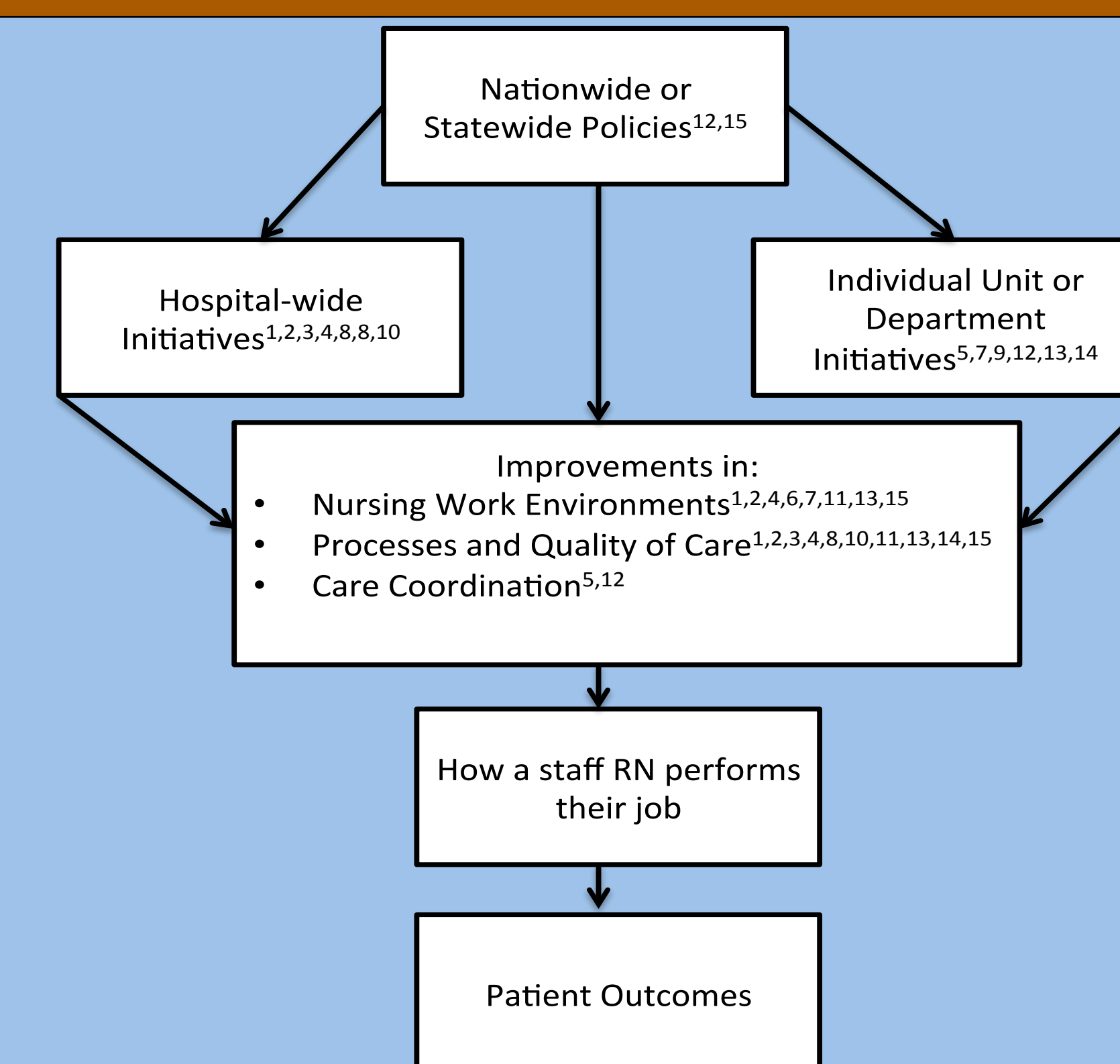
CONCLUSIONS

- Few BC analyses exist in healthcare literature.
- There were inconsistencies in the use of the term "business case" and strategies used to conduct and present them.
- The BC is a powerful but underutilized tool that provides stakeholders systematic evidence to support or reject a QEI in healthcare.

SELECT REFERENCES

1. Doloresco, L.G., Bradham, D.D., Dainger, D.L., Seaman, M., Quigley, P., Melio, C. Haley, J.A. (2004). Building a Business Case for Magnet Designation in VHA.
2. Higdon, K., Clickner, D., Gray, F., Woody, G. and Shirey, M., 2013. Business Case for Magnet® in a small hospital. *Journal of Nursing Administration*, 43(2), pp.113-118.
3. Horn, S.D. 2008. "The Business Case for nursing in long-term care", *Policy, politics & nursing practice*, vol. 9, no. 2, pp. 88-93.
4. Jayawardhana, J., Welton, J.M. and Lindrooth, R.C., 2014. Is there a Business Case for Magnet hospitals? Estimates of the cost and revenue implications of becoming a Magnet. *Medical care*, 52(5), pp.400-406.
5. Kale, A. (2012). Out-of-hours telephone advice service by paediatric DSNs: A business case. *Journal of Diabetes Nursing*, 16(1), 25.
6. Lahiri, S. and Faghri, P.D., 2012. Cost-effectiveness of a workplace-based incentivized weight loss program. *Journal of Occupational and Environmental Medicine*, 54(3), pp.371-377.
7. Li, Y.F., Wong, E.S., Sales, A.E., Sharp, N.D., Needleman, J., Maciejewski, M.L., Lowy, E., Ah-White, A.C. and Liu, C.F., 2011. Nurse staffing and patient care costs in acute inpatient nursing units. *Medical care*, 49(8), pp.708-715.
8. Lindley, S. and Robertson, J., 2013. A standardised storage solution for venepuncture/cannulation equipment could save an NHS hospital the equivalent of a whole junior doctor. *BMJ quality improvement reports*, 2(2), pp.u202220-w1207.
9. Nanda, U., Eisen, S., Zadeh, R.S. and Owen, D., 2011. Effect of visual art on patient anxiety and agitation in a mental health facility. *Journal of Psychiatric and Mental Health Nursing*, 18(5), pp.386-393.
10. Needleman, J., Buerhaus, P.J., Stewart, M., Zelenitsky, K. & Matko, S. (2006). Nurse staffing in hospitals: Is there a BC for quality? *Health affairs*, 25(1): 204-211.
11. Noben, C., Evers, S., Nieuwenhuijsen, K., Ketelaar, S., Gärtner, F., Sluiter, J. and Smit, F., 2015. Protecting and promoting mental health of nurses in the hospital. *International journal of occupational medicine and enviro health*, 28(5), pp.891-900.
12. Sommer, S.J., Queenin, L.M., Nethersole, S., Greenberg, J., Bhaumik, U., Stillman, L., Hoppin, P., Chan, E., Wilkinson, R.B. and Woods, E.R., 2011. Children's hospital boston community Asthma initiative: partnerships and outcomes advance policy change. *Progress in community health partnerships: research, education, and action*, 5(3), pp.327-335.
13. Unruh, L., Agrawal, M. and Hassmiller, S., 2011. The Business Case for transforming care at the bedside among the "TCAB 10" and lessons. *Nursing administration quarterly*, 35(2), pp.97-109.
14. Waters, H.R., Korn, R., Calantuoni, E., Berenholtz, S.M., Goeschel, C.A., Needham, D.M., Pham, J.C., Lipitz-Snyderman, A., Watson, S.R., Posa, P. and Pronovost, P.J., 2011. The Business Case for quality economic analysis of the Michigan Keystone Patient Safety Program in ICUs. *American Journal of Medical Quality*, 26(5), pp.333-339.
15. Yakusheva, O., Lindrooth, R. and Weiss, M., 2014. Economic evaluation of the 80% baccalaureate nurse workforce recommendation: a patient-level analysis. *Medical care*, 52(10), pp.864-869.
16. Whittemore, R. & Knafli, K. 2005. "The integrative review: updated methodology", *Journal of advanced nursing*, vol. 52, no. 5, pp. 546-553.
17. Reiter, K.L., Kilpatrick, K.E., Greene, S.B., Lohr, K.N. and Leatherman, S., 2007. How to develop a Business Case for quality. *International Journal for Quality in Health Care*, 19(1), pp.50-55.

FIGURE 1: USES OF THE BC APPROACH FROM REVIEW



ACKNOWLEDGEMENTS I would like to thank the Rita & Alex Hillman Foundation for funding my BSN and PhD through the Hillman Scholars Program in Nursing Innovation, my program director, committee member, and role model Dr. Cheryl Jones for the opportunity to do a research practicum on one of her projects that first inspired this work, and my dissertation chair Dr. Barbara Mark for her guidance through my doctoral journey.