

How to develop a business case for quality

KRISTIN L. REITER¹, KERRY E. KILPATRICK¹, SANDRA B. GREENE^{1,2}, KATHLEEN N. LOHR^{1,3}
AND SHEILA LEATHERMAN¹

¹Department of Health Policy and Administration, ²Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, and ³RTI International, Research Triangle Park, NC, USA

Abstract

Objective. To describe the steps in developing a business case for quality-enhancing interventions (QEIs) in health care.

Analysis. The development of a business case for QEIs in health care involves 11 steps. These steps include (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, and (11) determining organizational readiness for business case development. A checklist offers guidance on assessing readiness for the business case.

Conclusion. The absence of a 'business case' for quality is frequently cited as the reason health care organizations do not implement QEIs, despite decades of careful research demonstrating their effectiveness. Our continuing commitment to advancing the discipline of business case analysis is based on a belief that delineating the cost and economic implications of investments in QEIs is a critical threshold issue to widespread adoption of evidence-based quality improvements. We believe it is appropriate and timely to consider how best to standardize approaches and move the field of business case analysis forward.

Keywords: business case for quality, business case methods, return on investment, quality improvement

How to develop a business case for quality

This article offers guidance on analyzing the business case for quality-enhancing interventions (QEIs) in health care. The considerations we outline draw on our recent experience in conducting several business-case-for-quality studies in both the private and the public health care sectors. Because this is a relatively new field based largely in the United States but gaining in visibility internationally, we do not presume to suggest definitive guidelines here. However, we do believe it is appropriate and timely to consider how best to standardize approaches and move the field of business case analysis forward.

The absence of a 'business case' for quality is frequently cited as the reason health care organizations do not implement QEIs, despite decades of careful research demonstrating their effectiveness [1]. From the perspectives of both private sector health care delivery organizations and government agencies charged with funding or delivering health care services, operating managers are reluctant to invest scarce resources in QEIs that cannot be shown to pay for themselves within a relatively short time horizon. Even in the

most enlightened organizations, managers charged with maintaining the financial solvency of the entity are concerned with the impact of new programs in the current budget year [2].

Steps in developing a business case for quality

We discuss below 11 steps in developing a business case for quality. The steps are summarized in Table 1. When a choice of method is available, we make recommendations based on previous literature and lessons learned from our experience producing business case for quality studies.

Step 1. Describing the intervention

We consider here only QEIs designed expressly to enhance the quality of health care services provided in a specific delivery setting. The QEI must represent a discrete, identifiable change in the structure or process of care with an identifiable starting point. The selection of a specific intervention should be based on several criteria including an understanding of the

Address reprint requests to Kristin L. Reiter, 1104H McGavran-Greenberg Hall, CB #7411, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7411, USA. E-mail: reiter@email.unc.edu

Table 1 Steps in developing a business case for quality

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| 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 |
| 9. Determining the ‘right’ discount rate |
| 10. Adjusting costs and savings for inflation |
| 11. Determining organizational readiness for business case development |

patient and population needs and evidence that a particular intervention can positively affect health outcomes. The QEI would typically involve a specific segment of the patient population characterized by diagnosis, prior utilization, sex, or age. This criterion rules out generalized public health measures or media campaigns implemented in a broader community setting. It also rules out generalized quality improvement or productivity improvement programs that, although potentially effective, by their nature continuously select process changes from a broad menu and evolve over time so that patients would be affected by substantially different QEIs at successive points in time [3]. The description must specify what the QEI is, what patient population is targeted, when it begins, and where and how it is implemented. The description should also cite the evidence base that persuaded the organization to implement the QEI.

Step 2. Determining perspective

A business case considers only the perspective of the organization investing in the QEI. That is, expenditures required for developing, implementing, and operating the QEI and any associated decreases in costs or increases in revenues resulting from the QEI are scored from the investing entity’s perspective. Thus, if, for example, a physician’s group implements an improved case management program for its patients with asthma, a business case analysis will count only the cost to the physician group of implementing the QEI and the savings or revenue increases directly realized by the group. The business case analysis will not count reductions in emergency department visits or hospitalizations, which may change costs or revenues for other entities, such as a capitated hospital or a payer in the health care system. Neither would it include the monetary value of increases in patients’ quality of life or reductions in lost days of work or school.

This constrained perspective (some may call it myopic) contrasts business case analysis from cost-effectiveness analysis, which takes a societal perspective and thus accounts for costs and savings resulting from the QEI regardless of where they accrue (e.g. to the provider organization, the patient, the hospital, other organizations, or society

as a whole). In their seminal article on the business case for quality, Leatherman *et al.* [4] contrast the ‘business’ case with the ‘economic’ case and the ‘social’ case. The economic case takes into account the discounted financial benefits and costs ‘whether they accrue to patients, employers, providers or payers, or some other segment of society.’ The social case extends the perspective to society as a whole and would score benefits such as increased productivity and improved quality of life.

Step 3. Identifying the effects of the intervention on quality

An integral part of a business case analysis should be a summary of the effects on quality of care for the affected population in parallel with the cost and revenue consequences. Although changes in quality are not monetized in business case analysis unless they directly affect the cash flows of the investing organization, there is a presumption that an intervention must positively affect quality to be worthwhile, regardless of the return on investment. Moreover, budget neutral interventions that improve quality of care would likely be of interest to most health care organizations. In contrast to QEI-related costs and revenues, quality measures need not be limited to only the perspective of the investing organization—they should reflect benefits to the patients targeted by the intervention. The only criterion for quality measures is that they reflect care processes or health outcomes that can be directly affected by the intervention. For an organization implementing a QEI that improves patient care but has a negative business case, quality data can provide a solid foundation from which to begin negotiations for realigning reimbursement.

Although quality may be measured in terms of process or outcomes, measures are most likely to reflect care processes such as the percentage of asthma patients receiving follow-up care after an emergency department visit, or intermediate outcomes such as HbA1c levels in diabetic patients. Ultimate outcomes such as death of patients with acute myocardial infarction may be difficult to capture in the constrained framework of a business case analysis because patients may be lost to follow up or the study period may end before such events occur.

Step 4. Designing the study

The ‘gold standard’ for a business case analysis, as with the evaluation of new technologies or drug therapies, is the randomized controlled trial [5]. In practice, few business case studies can achieve this level of rigor. Firstly, the presumption of implementing the QEI is that patients in the intervention are receiving improved care based on available evidence. Thus, in some circumstances, providers may encounter ethical issues when considering randomization of patients to a control group. Secondly, our experience suggests that many QEIs are tested within narrowly defined settings and populations. Therefore, carving out a control group might result in sample sizes so small that statistical power would be compromised, and contamination might be impossible to avoid. Thirdly, the research capacity to conduct randomized controlled trials may not exist in many health care delivery settings.

Organizations can consider two alternatives to randomized controlled trials. If research rigor is the goal, then a population at another practice site or in another geographic region that is sufficiently similar in relevant characteristics might serve as a comparison group. Having a viable comparison group helps alleviate concerns about regression to the mean (e.g. patients with extremely high costs in 1 year whose costs return to the average in subsequent years regardless of any intervention) and about external influences that could affect utilization and outcomes. For many audiences and purposes, however, a pre–post study may be the best that can be done. With sufficient baseline data (before implementation of the QEI) to capture seasonal or other secular effects and trends in the data, a pre–post study can be a sufficient means of assessing effectiveness for management decisions.

To achieve statistical power in many evaluations of QEIs, small cohort sizes will dictate that new patients be introduced in the sample to replace those who drop out, in contrast to tracking a fixed cohort through time. If patients added over time are sufficiently similar to those who leave, this approach does not greatly threaten statistical validity [6]. A more vexing problem is how to deal with the ‘dose effect’—that is, patients who join during the intervention may be affected less than those who were present at the time the intervention began. One way to deal with this is to consider the ‘time in trial’ as an explanatory variable in the analysis.

Step 5. Identifying and measuring cash flows

For a pure business case analysis, all cash flows should be incremental—that is, outflows or inflows that would not have occurred had the QEI not been implemented—and should reflect actual flows of resources rather than accrual accounting data. In practice, however, identifying truly incremental cash flows is extremely difficult. Two methodological issues are likely to arise in various settings across countries:

1. Routinely collected administrative data sets are often the most expedient way to identify utilization changes and related costs. However, using administrative data not originally designed for analytic studies poses multiple challenges that are particular to the specific health care context of any country. For example, in the United States, insurance claim files of private sector companies or public programs such as Medicare for the elderly/disabled or Medicaid for low-income individuals are records of financial transactions, requiring careful collation to re-create the comprehensive non-duplicative record of a health care episode. The billed charges that often appear in insurance claim files also may not accurately reflect cash payments or costs. Reimbursed charges may provide a better estimate of cash flow but may not be available. In settings that use a capitation form of payment, the charge or payment information in administrative systems may be a type of ‘shadow’ pricing used as an indicator of cost. Finally, administrative systems likely will not provide information about rate increases or inflation; these factors can confound analyses based on changes in overall service costs.

2. Identifying and measuring investment and operational costs can be best accomplished through the use of cost accounting information. However, in many health services settings, cost accounting systems are unavailable or unable easily to provide the types of specialized data needed for business case analyses. For example, if a medical director in a health plan or hospital reallocates 50% of his/her time from other responsibilities to the QEI, existing accounting systems likely will not measure the opportunity cost associated with the transfer of hours—that is, the cash flows lost because of the reallocation of effort. Organizations may instead turn to arbitrary estimates based on readily available methods of allocation—for example, 50% of the medical director’s salary is allocated to the QEI. These types of estimates might be the only reasonable alternative from a cost–benefit perspective; however, arbitrary allocations of overhead costs are susceptible to gaming.

Step 6. Considering the effects of capacity constraints

Because a business case study is typically conducted in the context of an existing organization, the physical facility configuration, staffing mix and levels, and existing equipment may significantly influence both the costs and the outcomes of the intervention. An organization with slack capacity may encounter no new costs to accommodate the intervention, whereas an organization with tight capacity constraints may have to add new staff and expand facilities or equipment. Capacity constraints may also dictate whether an intervention is wholly developed and offered within the organization or contracted out to a third party, which will affect the cost analysis by requiring that the analysis include the contract costs. Business case analyses should make clear where the organization is operating with respect to its capacity constraints so that the replicability of the results in another setting can be properly assessed.

Step 7. Selecting a measure of return on investment

Return on investment should be measured in a way that will resonate with finance departments or budget offices. Three standard return on investment measures are available—net present value, benefit–cost ratio, and rate of return. Of the three measures, net present value is superior.

Net present value measures the discounted aggregate effect of cash inflows and outflows accruing to an organization as a result of a QEI. Cash flows are discounted at an organization’s opportunity cost of capital (e.g. the current borrowing rate) and summed to get a single, monetary-denominated indication of the financial consequences of investing in a QEI. Net present value is the best measure of return on investment because it is straightforward and consistent. Regardless of the pattern of cash flows (i.e. inflows versus outflows) or the classification of cash flows as returns versus costs, net present value will provide a single, easily interpretable result. If the net present value is positive, the QEI adds financial value to the

organization. If the net present value is negative, the QEI consumes resources in excess of what are returned. Net present values can also be reliably compared to rank multiple projects available to an organization.

The *benefit-cost ratio* is calculated by dividing returns by costs; thus, it provides a measure of the financial return that can be expected per monetary unit invested in the QEI. If cash flows are discounted, the benefit–cost ratio is simply a variation on net present value. However, when compared with net present value, the benefit–cost ratio has two weaknesses. Firstly, the benefit–cost ratio allows for discretion in the definition of the numerator and denominator. For example, the costs that are included in ‘investment’ costs (the denominator) may vary from one organization to another. In some benefit–cost ratios, investment costs will reflect only those costs to implement a QEI, and operating costs will be subtracted from the savings (in the numerator). In others, investment costs may be defined more comprehensively to include both implementation and operating costs. Because the benefit–cost ratio is a ratio, the final result depends critically on this definition.

Secondly, in comparisons of multiple projects, the benefit–cost ratio may provide an incorrect ranking. For example, business case analyses of two QEIs may result in benefit–cost ratios of 2.0 and 1.5, respectively. However, the net present values of the two projects might be \$15000 and \$500000. The benefit–cost ratio alone would suggest that the first QEI had the best business case, yet the second QEI would create the most value for the investing organization.

Internal rate of return is the rate that yields a net present value of zero for any given QEI project. In contrast to net present value and the benefit–cost ratio, a rate of return provides an intuitive way of looking at the magnitude of returns relative to costs and can be compared with a target rate of return, or ‘hurdle rate’, to determine whether a QEI satisfies an organization’s desired rate of return on its investments. However, calculating an internal rate of return can be challenging. If the pattern of cash flows shows alternating inflows and outflows, there may be multiple solutions for the internal rate of return. Moreover, organizations may find it difficult to identify an appropriate hurdle rate for process innovations.

In light of the weaknesses of the benefit–cost ratio and the internal rate of return, we recommend the use of net present value to measure return on investment. In combination with quality information, net present value will allow organizations to communicate with finance and budget personnel about the financial consequences of a QEI for the organization. In our experience, organizations report that financial officers must be convinced that taking on the risk of investing in a QEI is in the organization’s best interest. Making the case for quality investments requires knowledge of both immediate budgetary impacts and longer term payoffs that consider the opportunity cost of the investment.

Step 8. Determining the time horizon

In industrial practice of return on investment analysis, the time horizon is usually determined by the useful life of the technology being evaluated. If, for example, we wished to

evaluate the return on investment for replacing existing manufacturing equipment, we would choose a time horizon over which we reasonably believed the new equipment would be used. For QEI analyses, the choice of project time horizon is often less clear. Process innovations are much less concrete than investments in equipment. Moreover, there may be a significant time lag between exposure to the QEI and the benefits it creates. Patients affected by QEIs may not remain in the care of the investing organization long enough for the organization to realize the benefits.

Because the returns from process innovations such as patient self-management of chronic disease may occur long after the patient is affected by the QEI, business case analyses based on short time horizons may underestimate return on investment. Often, however, short time horizons are required because patients move in and out of programs of care or in and out of a geographic region where a particular intervention is employed. The simplest solution may be to set the time horizon to the average time that patients might be affected by the intervention. Alternatives include the exposure time for a given patient cohort, a weighted average to account for actual length of time exposed for all patients, or the average time over which exposed patients are affiliated with the investing organization. Everything else being equal, the conservative approach is to select the shortest reasonable time horizon consistent with the technology and the setting of the intervention being evaluated.

Step 9. Determining the ‘right’ discount rate

Choosing a discount rate is a challenge in any setting. In theory, the discount rate should reflect the risk-adjusted opportunity cost of investing funds in a QEI. That is, it indicates the return given up by not investing the funds in another, equally risky project. In practice, however, organizations may not know either the opportunity cost or the project’s risk. For example, one common measure of opportunity cost is the organization’s cost of borrowing; however, organizations that are funded by governmental entities may not engage in their own borrowing. Furthermore, public organizations unaccustomed to thinking in terms of returns to investors may not be aware of expected returns on alternative investment opportunities. Finally, methods for determining health-related project risk are complicated [7], and the cost of engaging in such analyses likely outweighs the benefits for the business case.

If the time horizon for a business case analysis is short, the choice of discount rate is inconsequential. Still, organizations engaging in business case analyses should at a minimum acknowledge that some opportunity cost exists to investing in quality and give some reasonable consideration to what that cost might be. Failing to require a reasonable rate of return on investments over the long term will result in the eventual depletion of the organization’s funds.

Step 10. Adjusting costs and savings for inflation

In the absence of a control group, organizations may choose to look at costs and savings from a QEI in real terms—that is,

in monetary units indexed to a base year to adjust for the effects of inflation. Analyzing cash flows in real terms separates changes in utilization from changes in price. In a market undergoing rapid price increases, if costs and savings are not brought back to a common base year, the analysis runs the risk of significantly underestimating the utilization savings from the intervention.

However, in practice, adjusting for inflation is a challenging process because a general medical price index is unlikely to apply to all elements of the cash flows. For example, prices paid for specific services such as hospital stays or physician visits may be increasing at rates far different from cost elements such as staff wages. Thus, cost elements must be decomposed and appropriate deflators applied to each element. Furthermore, if cash flows are inflation-adjusted, discount rates reflecting opportunity cost must also be stated in real terms (i.e. inflation-adjusted). Over a short time horizon, organizations may find it easier to consider nominal cash flows.

Step 11. Determining organizational readiness for business case development

In our experience with a variety of interventions in both public and private health care delivery systems, we have found that organizations need to ensure that certain conditions are met to accomplish a useful business case analysis:

1. Organizational leadership must be committed to the project and the evaluation.

2. The intervention must be discrete and definable. Some interventions are likely to have value but yet be so diffuse and idiosyncratic that they have no well-defined starting point and cannot be reasonably replicated.
3. Organizations should establish safeguards to ensure that they conduct the business case analysis with integrity and that biases and conflicts of interest do not influence the results.

Table 2 provides a checklist for an organization to review to assess whether it is ready to conduct a business case analysis. Clearly, these items are just a starting point—the methodological issues cited above must also be addressed before or during the study.

Conclusion

Our continuing commitment to advancing the discipline of business case analysis is based on a belief that delineating the cost and economic implications of investments in QEIs is a critical threshold issue to widespread adoption of evidence-based quality improvements. Carefully conducted business case analyses can identify financing misalignments that may be deterring organizations from making investments in QEIs with proven social value. However, for business case analysis to reach its full potential for advancing quality, standardization in business case methods and measures is needed. This article offers guidance for conducting business case assessments; although, work remains to be

Table 2 Readiness for the business case checklist

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1. Do you have a well-defined, evidence-based project that has a specific starting date? A general goal, such as developing a greater focus on family-centered care, is not a project. A project will consist of identifiable tasks to be completed and will typically require additional resources to accomplish. The care delivered after the project is implemented will differ from the care delivered at baseline in definable, measurable ways.
 2. Can your organization identify the patients—as a cohort—who will be exposed to the intervention? Can you track them over time? Such a cohort could be, for example, children with asthma or adults with diabetes. Knowing when a patient is enrolled in the intervention will help establish the ‘dose effect’ of the intervention on that patient.
 3. Do you have a system in place (or can you create one) that can quantify what it costs the organization to develop the intervention (staff time, materials development, information technology system redesign, etc.)?
 4. Do you have a system in place (or can you create one) that can quantify what the intervention costs to operate over time? Intervention operating costs would be costs attributable to the intervention, over and above the cost of providing usual care.
 5. Can you measure changes in the cost of care resulting from the intervention? Can you measure changes in the use of services resulting from the intervention? Determining the changes will require that you be able to measure or estimate baseline levels of cost and utilization for the relevant patient cohort.
 6. Can you measure changes in the quality of care resulting from the intervention? Are those changes in processes of care? In outcomes of care? Determining the changes will require that you be able to identify and measure specific quality indicators that you expect the intervention to affect.
 7. Do you have a system in place (or can you create one) to capture indirect benefits from the intervention such as improvements in your organization’s sustainability?
 8. Do you have a system in place (or can you create one) to capture revenue increases resulting from the intervention? Revenue increases could include quality bonuses such as those under pay-for-performance contracts, billings for new intervention-related services not previously offered, or increases in billing rates resulting from intervention-related service quality enhancements.
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done in overcoming the methodological challenges inherent in such applied studies.

We recognize that this field is too new to support the kind of guideline development that has occurred for cost-effectiveness analysis [8]. Nonetheless, we are at the point where some standardization would be very beneficial for health care managers, policy makers, and researchers. Similarly to what has been done in other evolving fields, convening an international conference to develop a generally agreed framework for business case analysis might pay enormous dividends. Until standardization is achieved, transparent reporting of business case analyses in published studies will go a long way toward increasing the long-term utility of the results [9].

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