



THE UNIVERSITY
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THE BUSINESS CASE FOR QUALITY IN MEDICAID MANAGED CARE

Using the Return on Investment Template

Developed in collaboration with:

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Using the Return on Investment Template

The purpose of this instructional manual is to introduce the rationale for establishing a business case for implementing quality enhancing interventions (QEIs) in health care, and to present step by step instructions for using the return on investment template to collect and display the required data. The template is intended to provide a general starting point for retrospectively analyzing the business case; however, no two settings or QEIs are precisely the same. Therefore, users need to be mindful that some customization of methods may be required in any application.

INTRODUCTION

Why Care About the Business Case?

1. Absent a convincing business case it is unlikely that quality interventions will be sustainable over the long run. While commendable, good intentions can only go so far toward convincing providers (and payers) to adopt QEIs.
2. In cases where an organization has determined that the evidence base warrants the adoption of a QEI, having information about the business case provides a more complete picture of the overall consequences of the intervention for the organization.
3. If the ultimate goal is to attempt to align financial incentives to pay for quality, organizations investing in QEIs need to explicitly measure the costs and savings attributable to the interventions.

To recognize the importance of having a strong business case, one has only to look at the fact that deficiencies in the quality of health care remain prevalent despite an increasing body of evidence to guide the implementation of proven quality interventions [1-3]. Policymakers, payers, and employers continue to express their frustration that QEIs of demonstrated effectiveness are not being implemented on a broad basis. Even after decades of careful evidence-based practice research, one of the principal reasons that hospitals, health care delivery systems, and individual providers in the United States give for not implementing promising health care QEIs is that no “business case” for quality can be made. Recent case studies confirmed that, in the absence of a convincing business case, quality interventions have a low probability of widespread adoption and a lower probability of being sustained over time [4].

What is a Business Case?

The general notions encompassed in the development of a business case for quality are mostly drawn from non-health care industry. For health care, the recent interest in the business case was generated by an article in *Health Affairs* by Leatherman, et al.[4]. There the authors define the business case (see box below) and provide an analysis of a series of case studies, which sought to confirm the existence of a business case in a variety of commercial settings.

A *business case* for a health care improvement intervention exists if the entity that invests in the intervention realizes a financial return on its investment in a reasonable time frame, using a reasonable rate of discounting. This may be realized in “bankable dollars” (profit), a reduction in losses for a given program or population, or avoided costs. In addition, a *business case* may exist if the investing entity believes that a positive indirect effect on organizational function and sustainability will accrue within a reasonable time frame.

As the definition suggests, a business case may exist even in the absence of a direct financial return on investment for the organization which implements the intervention. The templates, however, focus on modeling the financial consequences of a QEI. Thus, users need to consider other positive effects on the organization that are not quantified in the templates before concluding that there is no business case for an intervention.

Examples of non-financial benefits include, but are not limited to:

- Improved market recognition for quality
- Enhanced market share
- Improved employee satisfaction/retention
- Improved provider satisfaction
- Enhanced inspection and/or accreditation status
- Fulfillment of mandated requirements, e.g., conditions of participation with state Medicaid program

Note that the definition of the business case is from the perspective of the “entity that invests in the intervention.” If that entity is a primary care practice, group practice, or health clinic, the business case (return on investment) is calculated from that perspective. If cost savings or other benefits accrue to a party (including the patient) other than the one making the investment, the benefits are not included as part of the business case. In this way, business case analysis differs substantially from other types of economic analysis (e.g., cost-benefit, cost-effectiveness, cost-utility) which often measure costs and benefits from a societal perspective.[5] The perspective of business case analysis is purposely narrow since its primary goal is to determine the sustainability of QEIs from the investing organization’s perspective. For QEIs that are cost-effective, business case analysis can help identify financing misalignments that may serve as barriers to adoption.

The Components of the Payer Business Case Analysis

Basically, to compute a financial business case for quality (measure the return on investment) for your intervention, you will need estimates of three things:

1. The costs incurred to develop the intervention.
2. The continuing costs of operating the intervention over time.
3. The effect on paid claims, revenues, and other quantifiable financial benefits or costs that accrue to the organization that implemented the intervention.

Surprisingly, a review of the literature [6] found that organizations frequently were able to report on the savings or other benefits of a quality intervention, but did not report (and perhaps did not know) what the intervention cost to develop and to operate over time. The return on investment template has been developed to assist you in collecting and managing these data.

Things to Consider Before Undertaking a Business Case Analysis

1. *The evidence that the QEI improves quality.* If you implemented a QEI that clearly did not achieve your quality goals and would not likely be used again by your organization, then there is little sense in engaging in an analysis of the return on investment for that particular QEI.

2. *The complexity of the intervention.* It is very difficult to analyze the business case for interventions that are not well-defined, do not have a specific starting date, or that are not targeted at a specific population.
3. *The sufficiency of your information systems.* Analyzing the business case for quality requires claims and accounting data that may not be routinely collected or reported by your organization. The data must be available, and your information systems must have the capacity to produce special reports.

A detailed checklist for determining readiness for business case analysis, and a lengthy discussion of the methods in developing a business case for quality can be found elsewhere [7].

INSTRUCTIONS FOR USING THE RETURN ON INVESTMENT TEMPLATE

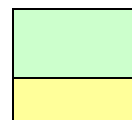
Proposed Use

The return on investment (ROI) template was designed to allow payer organizations to retrospectively analyze the ROI on quality enhancing interventions (QEIs). The ROI model seeks to determine whether utilization of services by the QEI study population (and, therefore claims payments), will decrease sufficiently after the implementation of the QEI to justify the additional expenditures necessary to implement and operate the QEI.

Design of the ROI Template

The ROI template is a Microsoft EXCEL model consisting of three required data entry spreadsheets, one optional data entry spreadsheet, and three output spreadsheets. Each of the output spreadsheets is linked to the data entry spreadsheets so that information flows directly to the ROI calculations. Cells in the spreadsheets are color-coded so that users can identify places where data must be input by the user and places where calculations are automatic. The color coding scheme is described below and in Tab 1 (Instructions) of the EXCEL workbook:

Green shaded cells are input cells which allow direct data input by users



Yellow shaded cells are intermediate calculations

These cells contain formulas and should not be edited

Grey shaded cells are key outputs



These cells contain formulas and should not be edited

The Data Entry Spreadsheets

Tab 2. Initial Investment Cost Data

General information:

The first spreadsheet in the model captures the personnel and non-personnel costs required to develop the QEI and bring it to the point of implementation. **A central principle for determining what costs to include is that the investment cost should reflect any cost that the organization incurred to get the QEI implemented that it would not have incurred in the absence of the QEI.** Thus, in cases where the activities necessary for developing the QEI were also used for other projects or reflect ongoing business practices, then it would only be appropriate to include the portion of the costs that would not have been incurred if the QEI had not been developed. This requirement does not, however, preclude the recognition of opportunity costs. For example, a portion of the Chief Financial Officer's (CFO) time might be devoted to QEI development. The CFO's salary would be paid regardless of whether or not the QEI was developed; yet you may wish to recognize that in the absence of the QEI, the CFO could have devoted time to another project.

Cost categories have been provided as examples of the types of costs that might be incurred in QEI development and implementation. Broad categories include personnel, contracted services, office operations, equipment and construction / renovation. However, individual line items may need to be tailored to reflect the specific circumstances. It is not necessary to input data into every cell. A column for personnel names and / or notes is provided for convenience.

Data requirements and calculations:

Specific instructions for entering data, and descriptions of spreadsheet calculations are provided below.

Line 9. Reporting period: Enter the beginning and ending date for the period over which the data are reported.

Column C. FTE %: Enter the full-time equivalent percent effort devoted to the QEI by each individual involved in QEI development. For dedicated personnel (new hires or existing hires devoted entirely to the QEI) the percent effort will be 100%. For existing personnel that devote a portion of their time to QEI development, a rational allocation system should be used to determine percent effort (for example, the individual could submit timesheets tracking time spent on different projects).

Column D. Salary and fringe: Enter the salary plus fringe benefits for the relevant reporting period for all key personnel. For example, if the pre-implementation period (the investment period) is one year, enter the annual salary plus fringe benefits. If the investment period spans multiple years, enter a weighted average of the relevant annual salaries.

Column E. Cost: The spreadsheet will automatically calculate personnel costs using the formula $[FTE\% \times \text{Salary and fringe}]$. Other costs must be input by the user. For each relevant cost category in lines 43 through 58, enter the direct costs (costs incurred that are directly attributable to the QEI) for the designated reporting period. The organization's general ledger (from the accounting system) should contain detailed transactions (dates & amounts) affecting revenue, expense and capital (property, plant & equipment) accounts; however, note that costs may not be tracked by project in the accounting system and may need to be allocated using source documents (for example, telephone bills, project copy codes) or another rational allocation system.

Line 59. Subtotal, direct costs, initial investment: The spreadsheet will automatically calculate the subtotal by summing all personnel and non-personnel costs.

Line 60. Indirect cost %: Indirect costs are costs that cannot be traced directly to the QEI, for example, rental expense for space, utility costs, costs of support departments such as payroll, etc. Although these costs would be incurred regardless of whether or not the QEI was developed, a portion of indirect costs may be allocated to the QEI to reflect the opportunity cost (e.g., space devoted to the QEI could be used for something else). Since these costs are not directly traceable to the QEI, they must be allocated in a rational and defensible manner. Many organizations choose to allocate indirect costs as a % of direct costs. If you choose this method, enter a reasonable % of direct costs in this cell.

Line 61. Indirect costs, initial investment: If you entered a percentage in the previous cell, the spreadsheet will automatically calculate indirect costs using the formula $[\text{direct costs} \times \text{indirect cost \%}]$. If you choose to allocate indirect costs in another way, enter the actual indirect costs here and document the method for allocating indirect costs.

Line 63. Total costs, initial investment: This cell reflects the sum of direct and indirect costs. The amount shown in this cell flows to Tab 7. Return on Investment Analysis and Tab 8. Incremental ROI Analysis where it appears as initial investment costs in the pre-implementation period (line 14).

Tab 3. Operating Cost Data

General information:

The second spreadsheet in the model is identical to Tab 2. Investment Cost Data except for the time period covered. The operating cost data worksheet captures personnel and non-personnel costs that are required to operate the QEI over time, after it has been implemented. The same inclusion principle applies – **operating costs should reflect any costs that the organization incurred to operate the QEI that it would not have incurred in the absence of the QEI**. The reporting periods entered on line 11 under the headings, “Year 1”, “Year 2”, and “Year 3” should reflect years of operation for the QEI and should mirror the reporting periods for the paid claims data entered on Tab 4. Paid Claims Data - Intervention. Three years of operating cost data collection are allowed, but not required. The key outputs from this worksheet are found in the grey-shaded cells on Line 63, Total costs, operating. The amounts shown in these cells flow to Tab 7. Return on Investment Analysis and Tab 8. Incremental ROI Analysis where they appear as operating costs in intervention years 1, 2, and 3 (line 15).

Tab 4. Paid Claims Data – Intervention

General information:

The third spreadsheet in the model captures the utilization-related “benefits” to the organization resulting from the investment in the QEI. The worksheet is designed to measure changes in paid claims in intervention years as compared to a baseline period for the group affected by the intervention. **The results produced in this worksheet reflect a simple pre-post analysis. There is no control for inflation effects or regression to the mean.** The term “benefits” is in quotations in recognition of the fact that it is possible for paid claims to increase from the baseline year to the intervention year(s). Claims are broken down into broad categories including: Inpatient care, long-term care, outpatient care, office-based care, emergency department care, ambulance and emergency transportation, home health care, pharmacy and other.

Data requirements and calculations:

Specific instructions for entering data, and descriptions of spreadsheet calculations are provided below.

Column B, lines 12-20. Baseline pmpm: Enter per member per month paid claims, by category, for the period (typically a year) immediately before the implementation of the QEI. These data serve as a baseline against which paid claims in intervention years will be measured.

Columns C – E, lines 12-20. Intervention Yr 1-3: Enter per member per month paid claims, by category, for the years the intervention was operational. The paid claims reporting periods should mirror the reporting periods for operating costs in Tab 3. Operating Cost Data. If desired, paid claims may be adjusted for price increases in each of the categories prior to entering the paid claims data on the worksheet.

Columns C – E, lines 30-38. Intervention Yr 1-3 (shaded yellow): These cells calculate changes in paid claims by category using the data entered in lines 12-20 and the formula [Baseline – Intervention Year]. So, for example, if paid claims decrease in intervention year 2 relative to baseline, the amounts shown in Column D, lines 30-38 will be positive indicating savings. If paid claims increase over baseline, the amounts shown in lines 30-38 will be negative. Paid claims data may be entered for up to three intervention years, but three years of data are not required.

Line 39. Total estimated PMPM savings (increase): The worksheet will automatically calculate this value as the sum of the amounts in lines 30-38.

Line 40. Average monthly membership for QEI: Enter the average monthly membership for the group of members affected by the intervention.

Line 41. Total estimated monthly savings (increase): The worksheet will automatically calculate this value using the formula [Total estimated PMPM savings (increase) x Average monthly membership for QEI].

Line 42. Number of months QEI was operational during year: Enter the number of months the QEI was operating in a given year.

Line 44. Total Estimated Savings (Increase): The worksheet will automatically calculate this value using the formula [Total estimated monthly savings (increase) x Number of months QEI was operational during year]. The amounts in these cells flow to Tab 7. Return on Investment Analysis where they appear as Estimated Utilization Increases or Estimated Utilization Savings in Intervention Years 1, 2 and 3 (lines 21 and 22).

Tab 5. Paid Claims Data – Control (OPTIONAL)

General information:

The fourth spreadsheet in the model is optional. Tab 5 is identical to Tab 4. Paid Claims Data – Intervention, except that it captures paid claims data for a comparison or control group. These data are used in Tab 6. Paid Claims Data – Incremental to calculate incremental changes in paid claims (intervention group – control group) over the intervention years and may provide some assurance that results are not due solely to regression to the mean.

The Output Spreadsheets

Tab 6. Paid Claims Data – Incremental

General information:

The fifth spreadsheet in the model is an output spreadsheet and requires no data entry. **The information in Tab 6 will be identical to Tab 4 unless you choose to enter data for a comparison or control group.** Lines 30 – 38 on Tab 6 calculate incremental changes in paid claims from the baseline year to each intervention year by subtracting changes in the control group (Tab 5) from changes in the intervention group (Tab 4). This calculation may adjust for: (1) trends (e.g., if paid claims remain flat in the intervention group but increase in the control group, the incremental results will reflect a savings for the intervention group, or (2) regression to the mean (i.e., if paid claims decrease equally for intervention and control groups, the incremental results will reflect zero savings or increases). The amounts in the grey-shaded cells on Line 44. Total Estimated Incremental Savings (Increase), flow to Tab 8. Incremental ROI Analysis where they are shown as Estimated Incremental Utilization Increases or Estimated Incremental Utilization Savings for intervention years 1, 2 and 3 (lines 21 and 22).

Tab 7. Return on Investment Analysis

General information:

The sixth spreadsheet in the model is primarily an output spreadsheet with one optional field for data entry. **This spreadsheet calculates the return on investment based on data for the intervention group only.** Tab 7 displays multiple ROI metrics including a cumulative benefit-cost ratio, net present value, and internal rate of return.

Data requirements and calculations:

Line 9. Discount rate: This field is optional. Enter the organizational opportunity cost of capital. Cash flows may be discounted to reflect the fact that money has different values at different points in time. Since an amount of money in hand can be earning interest (or put to work in other ways), it is not equivalent to the same amount of money received in the future. For example, if you can invest a dollar at 5%, you should be indifferent to having \$1.00 now or \$1.05 a year from today. The model allows for the entry of a discount rate to reflect the opportunity cost associated with waiting for savings to occur over the intervention years.

Lines 14-15 and 21-22: Display a summary of the cash flows calculated in Tabs 2 - 4.

Lines 17 and 24. Present value factors: The spreadsheet automatically calculates present value factors based on the discount rate entered in line 9. Present value factors are calculated using the formula $[1/(1+\text{discount rate})^N]$.

Lines 18 and 25. Total discounted annual investment costs and total discounted annual savings (increases): Discounted annual investment costs and discounted annual savings (increases) are automatically calculated by multiplying lines 16 and 23 by the present value factors. Annual values are presented in Columns B – E. Column F presents the sum over all years (pre-implementation and all intervention years).

Line 28. Undiscounted annual net cash flows: Line 28 sums the undiscounted cash flows in lines 14-15 and 21-22 to provide information about the net cash inflow or outflow to the organization in any given year resulting from the QEI.

Line 29. Cumulative ROI: Calculates a benefit-cost ratio in each intervention year using the formula $[\sum \text{Cash flows in line 25 through the intervention year} / \sum \text{Cash flows in line 18 through the intervention year}]$. The value shown in Column F, line 29 is the overall ROI (benefit-cost ratio) for the QEI. The benefit-cost ratio will be negative if there are increases rather than savings in claims payments over the baseline. The benefit-cost ratio will be positive, but less than one if, for each dollar invested, the QEI returns less than the original dollar. The benefit-cost ratio will be positive and greater than one if, for each dollar invested, the QEI returns the original dollar plus some positive amount.

Line 30. Net present value: Net present value reflects the cash value (loss) to the organization resulting from the QEI, accounting for the opportunity cost of capital if a positive discount rate is entered on Line 9. The net present value is calculated as $[\text{Column F, line 25} - \text{Column F, line 18}]$ and reflects the following formula $[\text{Net present value} = \text{Sum of discounted annual net savings} - \text{Sum of discounted annual investment costs}]$. If the benefit-cost ratio is negative, or positive but less than one, the net present value will be negative. A negative net present value means the organization lost money on the QEI.

Line 31. Internal rate of return: The internal rate of return (IRR) is the discount rate at which the net present value would exactly equal zero. In general, a higher IRR is better. The spreadsheet automatically calculates IRR.

Tab 8. Incremental ROI Analysis

General information:

Tab 8 is identical to Tab 7. Return on Investment Analysis, except that the ROI metrics are calculated based on incremental paid claims data (adjusted for the control or comparison group) from Tab 6 instead of intervention group-only data from Tab 4. **The results in Tab 8 will be identical to the results in Tab 7 unless you choose to enter data for a control or comparison group in Tab 5.**

An illustration of the use the ROI template can be found in Appendix A.

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Appendix A Sample Business Case Analysis

Care of Adult Diabetics in a Medical Managed Care Organization

The following example illustrates the use of the ROI template.

Background

The Exemplar Health Plan (EHP) in Gotham, New York (disguised name and data but based on a real organization) is a healthcare management organization serving low-income individuals and the working poor. EHP has a distinguished history of providing innovative quality management programs for populations under its care. Because EHP is a Medicaid Managed Care Organization, the majority of its revenue comes directly from the State of New York in terms of capitated payments. EHP in turn contracts with local provider groups, primary care physician practices, and academic medical centers to provide primary and specialty care to its members.

The National Committee for Quality Assurance (NCQA) has consistently awarded its “excellent” accreditation designation for EHP’s Medicaid managed care program. The New York State Department of Health (NYSDOH) has recognized EHP’s superior level of care by providing a 1% quality bonus – the maximum award – on the Medicaid capitation rate.

In 2001, EHP launched a quality-enhancing intervention (QEI) for adult diabetics aged 19 to 65. The intervention was multi-faceted and included:

- Outreach and care management and coordination of primary care and specialty care services
- Implementing a new reimbursement method for patient self-management support, group visits, and innovative relationships with endocrinologists
- Providing physician practices with individual patient data regarding their care needs and laboratory results
- Implementing a depression screening program for enrollees seen by primary care providers
- Implementing a quality of life instrument for the adult diabetic population
- Reviewing clinical measures to determine the existence of disparities in minority populations to determine opportunities to expand access and to enhance adherence

In addition to the measurement of quality of life and depression, EHP assessed comprehensive diabetic care measures for HbA1C, retinal exam frequency, LDL, and screening for nephropathy. EHC also monitored utilization patterns through hospital admissions, length of stay, emergency department (ED) admissions, total per member per month costs, primary care and specialty costs, inpatient costs and ED costs.

EHC gathered data on the cost to establish the QEI and on the cost to operate the intervention over the first three years. The spreadsheets for these investment and operating costs are shown in Tabs 2 and 3 of the EXCEL model. The principal financial payoff to the health plan was a reduction in the per member per month (pmpm) payments made to hospitals and emergency departments. Drug costs actually increased slightly over the course of the intervention.

Tab 4 displays the changes in pmpm payments over the 3-year period of the study and the decreases relative to the baseline pmpm payments. Because the membership also fluctuated over the course of the study, the pmpm savings are multiplied by the average membership to compute the total savings attributable to the intervention.

Relative to the baseline year pmpm costs of \$2,344.95, pmpm costs declined by \$202.52, \$233.12, and \$201.77 in intervention years 1, 2, and 3 respectively. As shown in Tab 4, these pmpm saving translated into gross annual savings of \$860,305, \$830,840, and \$794,167 respectively in the three intervention years. When the investment costs and operating costs are subtracted from the savings and discounted back to year zero at 3%, the net present value of the savings is \$292,089. The benefit-cost ratio is 1.14, meaning that for every dollar invested the QEI paid back the invested dollar plus 14 cents. The internal rate of return is approximately 121%. This is clearly a worthwhile project from the business case perspective.

From the perspective of the plan's management team, a decision needs to be made whether to continue the program. The past financial performance of the program is not relevant to that decision. Management would need to project future costs and future savings and do a new analysis to determine whether to continue the program.

Another interesting feature of this example is that EHC has consistently garnered the state's highest quality bonus on its capitation rate. This is worth about \$1 million to EHC in increased revenues. Some portion of that increased revenue might reasonably be attributed to the diabetes program. In the example, the revenue increases have not been prorated to offset the pmpm payments for the study cohort; however, that could be done and if done would increase the ROI for the program.

The completed ROI template for Exemplar Health Plan can be found in the file:

BCQ ROI Template_Appendix A.xls