

**A Value Analysis Approach to Healthcare Revenue
Improvement**

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Abstract: *Value Analysis is an evaluation methodology that has been used to improve projects, products and processes for almost sixty years. Though its primary application has been in the construction industry, it has recently been utilized for several revenue cycle improvement workshops in a major hospital corporation with tremendous results. Implementation of initiatives from these studies have yielded significant additional revenue capture and also have provided important secondary benefits, such as team building among staff, reduced resistance to change, improved employee morale, and continued recognition of revenue improvements by participants. In this article, the author outlines the principles of the Value Analysis methodology, describes how it is applied to analyze healthcare revenue processes and presents actual case study results.*

Delivering Quality Care While Protecting Revenues

In the healthcare industry, the primary goal is to deliver quality care. A close secondary goal is to get paid appropriately for all services rendered. Considering the complexity of the healthcare billing and overall revenue cycle process, combined with the increasing cost to deliver services, a hospital cannot afford to have any inefficiency in their revenue-impacting activities. Any weaknesses in staffing, procedures, IT systems, and infrastructure can have a significant adverse effect on the financial status of the hospital.

Many evaluations have been performed with the goal of improving hospital revenue capture, with varying degrees of success. One method - Value Analysis - has yielded significant revenue gains in several recent workshops for a major metropolitan hospital corporation.

Value Analysis Defined

Value Analysis is defined as *the organized, systematic application of recognized techniques which identify the functions of a product or service, and seek ways to enhance value by providing the required performance at the lowest overall cost.* Value Analysis (VA), also commonly called the Value Methodology (VM) or Value Engineering (VE), has been in existence since 1947 when Larry Miles (at the time an employee of General Electric) formalized the process.¹

The Value Methodology is most commonly applied to construction projects. However, the Methodology can also be applied to analyze processes, such as revenue-impacting activities within a healthcare organization. VA follows a job plan that leads a team through specific methodology designed to investigate current processes or products and compile creative improvement ideas. When applied to revenue processes, VA seeks improvements of the overall revenues collected.

The Value Analysis Job Plan

A Value Analysis workshop follows a six-step job plan as established by SAVE International, the Value Society (www.value-eng.org). The phases and their associated activities within a healthcare revenue cycle workshop are:

1. Information Phase: data regarding current processes is gathered
2. Function Analysis Phase: primary functions/processes are identified and discussed in detail
3. Creative Phase: "brainstorming" session to identify improvement alternatives
4. Evaluation/Analytical Phase: alternatives are ranked for acceptability and impact
5. Development Phase: highest-ranked ideas are developed into formal proposals/initiatives
6. Presentation Phase: formal proposals are presented to decision makers

Applying Value Analysis to Healthcare Revenues

In recent years, a major metropolitan hospital corporation developed a request for proposal for outside consultants to perform a revenue cycle analysis on their hospitals. However, before the contract was awarded, an executive with the corporation, who had previous exposure to the methodology through involvement in value engineering studies on hospital construction projects, suggested the idea of conducting the revenue analysis via the VA process.

The hospital executives felt that many of the issues, and the solutions to those issues, could be identified through involvement of their own hospital staff members in the analysis. The results indicate that VA is a tool especially well-suited for examining each function in the healthcare revenue process as is currently being performed, and using a team approach to develop creative solutions to enhance the processes, resulting in the capture of additional revenue.

Value Analysis Team Participants

A Value Analysis Team must have expert members in all key areas under study. It has been shown through recent studies that the actual staff members within the hospital are by far the most knowledgeable regarding in-place processes and procedures.

Typically, a total of fifteen to twenty hospital personnel in revenue-impacting positions are selected for study participation. Areas represented include registration, admitting, billing, finance, insurance counseling, and IT systems, as well as medical personnel, such as physicians and nurses.

Consultants are then added to round out the VA Team. Typically, three specialists are selected with expertise in the fields of healthcare revenue, managed care revenue and hospital IT systems. Experts in other areas can also be included if a hospital identifies issues in a particular area that they wish to resolve.

Function-Based Approach

One aspect of Value Analysis that differentiates it from other evaluation methods is its "function-based" approach. All processes under study are broken down into discrete functions, and each function is investigated to fully understand all the current individual activities that make up that function.

The Function Analysis phase asks the following common reporters' questions about each function in the process under study:

- *Who does it?*
- *Where is it performed?*
- *What are the specific actions?*
- *When in the overall process?*
- *How is it performed (electronic? on paper?)?*

Function-based flowcharts, which represent revenue processes, are developed prior to the workshop and are used to facilitate the discussion. The discovery process ensues, with the individual on the VA Team who routinely performs the process describing their current actions. All other team members are free to ask questions to ensure a complete understanding of the existing procedures. However, team members are restricted from interjecting ideas for

improvement at this early phase, or from telling the team member how they should be performing the tasks.

When discussing a current process it is important to have the intended “functions” serve as the baseline for analysis, rather than the “activities” or “processes” which make up that function. The functions serve as the best baseline for evaluation because there are often multiple means of providing the same function, whereas the alternatives for a specific activity or process may be much more limited. For instance, when considering the hospital revenue-impacting function of “Register Patient,” many alternatives could serve the purpose of registering – either electronically or written, by interview or by completing a form, or any combination of these. Thus, “Register Patient” is a proper function to analyze in baseline discussions of the current revenue processes. Conversely, the activity of “Input Patient Information into Software” is very specific, and limits potential alternatives for this portion of the revenue process.

Pareto’s Law (80/20 Rule)

VA Studies are performed in a fairly concise timeframe (eight-ten days) when compared to many other consulting approaches to analyzing healthcare revenue cycles. Because of the abbreviated nature of these studies, it is important to identify the key areas within the processes or hospital where improvements would provide the greatest revenue benefit. One tool used in VA is “Pareto’s Law,” commonly known as the “80/20 Rule”.

In 1897, Italian economist Vilfredo Pareto identified a standard distribution in wealth or income, regardless of the country or time period. Pareto’s idea was not widely known until Joseph Juran, one of the originators of the quality movement in the twentieth century, renamed it the “Rule of the Vital Few.” Juran showed how problems in quality could be eliminated by focusing on the vital few causes of these problems.²

Stated another way, Pareto’s Law signifies that 80 percent of results flow from 20 percent of causes.³ In taking a function-based approach to Pareto’s Law, the VA process seeks to identify the 20% of the revenue functions or hospital departments that account for 80% of the revenue capture. The majority of time in the Creative Idea Session is then focused on improvement alternatives in these key revenue-generating functions or departments. In healthcare, the primary revenue-generating functions include some combination of the following:

- Registration/Patient Insurance Information
- Admissions
- Coding/Charge Capture
- Billing
- Cashier

A similar approach could be taken in identifying the 20% of the hospital’s departments that generate 80% of the revenues. The VA workshop would then ensure focus is placed on generating improvement ideas for processes within these key departments. The primary revenue-generating departments in most hospitals are:

- Inpatient
- Emergency Room
- Surgery
- Top Specialty Areas

What Makes Value Analysis Different?

First and foremost, VA is a facilitated team-based approach that utilizes current manager-level hospital staff members as key participants. The hospital team members are supplemented with a few outside consultants in order to gain their expertise on potential solutions.

Oftentimes, revenue cycle analyses are performed by a team of outside consultants that reviews data and recommend changes. However, participation by current staff members is the key ingredient to understanding the existing procedures being performed in each area of the revenue cycle.

Another aspect that differentiates VA from other methodologies is its focus on a functional analysis of the current processes. Most other approaches hone in on specific activities, which has been shown to restrict the generation of creative ideas for process improvement.

Yet another differentiator with VA is that it intentionally limits the involvement of Executive Management in the workshops. The C-level executives are only involved when key information is to be conveyed or when key decisions are to be made.

The executives brief the team at the initial kick-off meeting by establishing the goals and objectives of the study, and also empowering the team to openly share information and not restrict themselves in suggesting alternative solutions.

The limited involvement of the executives is very much intentional. It has been proven that when executives are involved in all sessions, the hospital staff is not as open in sharing the known deficiencies affecting revenues. The staff's overall participation in suggesting alternatives is also more inhibited when their superiors are present.

Parameters for a Successful VA Study

Based on recent successful workshops, several parameters have been identified as being key for their success. First and foremost, the executive-level managers must make a commitment to allow Department Managers to take time away from their hospital duties to participate in the study, and the administration must agree upfront to implement the acceptable ideas. The commitment of designating manager-level personnel to abandon their posts for eight to ten days of VA Study participation is a major statement by the administration that they are committed to identifying revenue cycle improvements. The VA Team staff members must be briefed prior to the study of the importance of their dedicated participation in the sessions. If key VA participants get the message that their participation is optional, and they feel they can attend only the sessions that do not interfere with their day-to-day responsibilities, then some opportunities will be missed and results will be less than optimal.

The administration must also agree to implement the acceptable ideas resulting from the study. Organizations in many industries have a track record of convening committees to develop ideas for improvement and then not acting on their recommendations. Many hospitals seem to fall into this category. This has been witnessed in recent studies by the hospital staff's stated desire for assurance that good ideas will be acted upon. The skepticism can be quelled somewhat by having the executives personally state their commitment to implement all acceptable ideas. Stating this commitment has shown to empower the team to fully participate in the sessions with the goal of identifying solutions to improve both the financial performance of the hospital as well as their day-to-day work environment.

Optimal VA results can only be achieved when open discussion among staff member participants ensues. The limited participation of the executives helps to ensure more open discussion among staff. Another technique to better ensure full and open participation is to request that all participants take a vow of confidentiality. This vow should signify that all information shared during the VA sessions is kept confidential among workshop participants and not disseminated among the hospital staff. Participants must feel free to share any areas of weakness without any fear of negative repercussions.

Another technique instrumental in a successful VA study is ensuring that judgment is withheld until the appropriate time. During the sessions prior to the Evaluation/Analytical Phase, it is important that the facilitator not allow commentary from other team members that is judgmental in nature toward a statement made by another participant. This is especially key during the creative idea brainstorming session. Allowing negative remarks or gestures during the creative idea generation sessions will greatly inhibit the staff members desire to offer input on improvement solutions and will result in a reduced pool of options from which to select.

The true success of a VA workshop is not known until proposals have been implemented and results have been recorded. Thus, an organized implementation process is key to ensuring real VA results. The best way to ensure this is to assign a person to coordinate the initiatives accepted for implementation. This person helps assemble committees as appropriate for each initiative, ensures these groups are meeting to coordinate efforts, and tracks progress toward implementation. The implementation coordinator also assists in determining how best to track results attributable to each initiative and compiles and reports these results to executive management.

Key Benefits of VA in Healthcare Revenues

- Revenue Improvements
- Team-building Among Staff
- Enhanced Employee Morale
- Change is Easier with Staff Buy-in
- VA Becomes Daily Process

Key Benefits of Value Analysis

Aside from the obvious revenue gains resulting from the developed initiatives, these studies have shown other benefits, which have definite positive impacts. The non-revenue improvements witnessed in recent studies include improved staff morale, enhanced teamwork by study participants, reduced resistance to implementing changes and continued awareness of actions which impact revenues.

The VA sessions often include participants from the hospital staff who know each other by name but do not work closely together on a day-to-day basis, even though their functions within the hospital may be complementary. The eight to ten day period of the VA workshop allows these individuals to work together as a team and identify solutions that benefit the hospital as a whole. It has been witnessed that, after the workshop ends, these staff members work more as a team in their everyday positions. Thus, while team building among staff members is not a stated goal of the study, it is most definitely a welcomed positive side effect.

The managers' morale has also been shown to improve when they realize their ideas from the study made a real difference in revenue collections. And typically, when managers' morale

improves, it can be contagious to the rest of the staff. Improved morale also commonly has the additional benefit of reduced employee turnover.

Implementing the changes is much easier through staff participation in the VA study. The solutions resulting from the study are not attributed to any single individual, but become the staff participant's ideas. This greatly improves the acceptance of the proposed changes by the staff, as opposed to attempting to gain staff buy-in to changes recommended by a team of outside consultants.

Lastly, through exposure to the VA process, seeking improvements can become part of what staff members do every day. Many staff members, especially on the front-end processes such as registration, may not be aware of the significant impact they have on the revenue process until their participation in the workshop. Upon returning to work after the study, they have enhanced focus on performing their duties to ensure appropriate revenues can be collected.

Common Issues for Improvement

Once we began conducting revenue improvement VA studies for several hospitals within a single major hospital corporation, we had expected that issues would be fairly consistent across the system. However, it became quickly evident that each hospital has its own unique issues that were opportunities for significant revenue improvement. Typical issues that represent revenue opportunities in hospitals include:

- Inadequate patient information capture
- Inability to verify insurance or collect co-payments
- Perception of free healthcare
- Inadequate staffing levels
- Inaccurate billing or posting of payments
- Untimely billing and/or appeals
- Incomplete physician documentation
- Internal training needs
- Inadequate equipment or technology
- Physicians lack of collaboration on revenue issues
- Accountability of staff performance

While most issues fall somewhere in one of the areas listed above, the specific problem/opportunity and the optimal solution is unique to each hospital.

Case Study

This author has assisted in facilitating multiple Value Analysis studies for hospitals within a major hospital corporation. The following case study outlines some specifics on how the VA process has been applied, sample results from one of the studies, and lessons learned.

VA Planning Meeting:

A meeting was held with the corporation and hospital executives to outline the VA process, establish a schedule for the Orientation sessions and workshop week, identify the appropriate hospital staff to serve on the VA team, and request specific background data.

Stated Goals and Objectives of the Study:

The CFO of the hospital corporation requested that the study focus on developing the 25 highest-ranked revenue improvement ideas. Also, the corporation believed as much as \$15 million in additional revenue could be captured, and established this as the revenue goal for the workshop.

Pre-Study, Study and Post-Study Sessions:

Prior to the VA sessions the non-hospital staff VA team members were provided with basic revenue data and the organizational arrangement of the business office for review prior to convening. The 6-Phase VA job plan was organized within the following sessions:

- 3-Day Pre-Study Orientation Sessions
 - Kick-off and hospital tour (1 day)
 - Current work processes discussed (2 days)
- 5-Day Value Analysis Workshop
 - Areas of opportunity outlined
 - Creative idea phase
 - Evaluation/analysis (of ideas) phase
 - Development (of proposals) phase
 - Presentation (of proposals) phase
- Post-Workshop Implementation Meeting

Make-up of VA Team:

The study included the following participants:

- VA-Experienced facilitators (2)
- Hospital executive management (limited participation)
- Hospital departmental staff (15), covering the following areas:
 - Patient accounts
 - Registration from major departments
 - Admitting
 - Utilization management
 - Investigations
 - Health information management/medical records
 - Billing/accounts receivable
 - IT systems
 - Physicians
- Consultants (3):
 - Healthcare revenue
 - Managed care revenue
 - Healthcare IT systems

Study Results:

The VA workshop resulted in the following:

- 125 creative ideas identified
- 38 proposals/initiatives developed from highest ranking ideas
- 35 proposals accepted with projected revenue capture of \$17,712,000

Sample Proposals/Initiatives Developed:

Some of the accepted revenue-enhancing initiatives included the following:

- Hire additional personnel in training unit, utilization management, coding, billing, and accounts receivable
- Provide additional office equipment in key revenue departments
- Establish and evaluate performance standards for staff positions
- Construct office space for consolidated billing department
- Re-bill all outstanding outpatient claims
- Increase communication with payers to reduce front-end denials
- Incorporate patient information verification tools and conduct training
- Train doctors, nurses and coders on standards for appropriate reimbursement
- Train registration staff on how to query patients and enter information in systems
- Upgrade salary of specific positions to attract and retain qualified personnel

Implementation Results:

The hospital acknowledged that implementing the thirty-five new initiatives concurrently would not be feasible, thus they decided to separate the implementation into three phases. Twelve (12) initiatives were selected for execution in Phase I which required a ten-month implementation period. A total of six (6) inter-departmental committees were established to implement the Phase I initiatives.

During the VA Workshop it was estimated that \$7,679,000 would be achieved through implementation of the twelve Phase I initiatives. The results tracked over the ten-month period identified \$6,210,000 in new revenues generated from these initiatives, or approximately 81% of the VA workshop's estimates. Expenditures of \$1,459,000 were spent on Phase I initiatives, with over half of the costs attributed to construction of new office space for the Outpatient Billing department. The remaining expenses were primarily spent on hiring of personnel in short-staffed revenue-generating positions.

While initiatives in Phases II and III have not been fully implemented, if the actual revenues collected are projected at 80% of workshop estimates the VA study results are projected as follows

Projected VA Workshop Results – All Phases

Phase	*Cost	*Estimated Revenue	*Collections
I – Actual	\$1,459	\$7,679	\$6,210
II – Potential	\$704	\$5,865	\$4,690
III – Potential	\$215	\$4,168	\$3,335
Potential Totals – V.A.	\$2,377	\$17,712	\$14,235

*all amounts are in 1,000,000's

In addition to the revenue improvements tracked in the Phase I implementation period, the following benefits have also been attributed to the VA initiatives:

- Reduced final denials by 41% from prior year
- Reduced initial denial rate from 12% to 2%
- Reduced length of stay
- Much improved accuracy of accounts receivable
- Strengthened ability to negotiate with managed care payers on denials and outstanding payments
- Improved patient satisfaction, less complaints
- Improved employee morale
- Common location of revenue departments will allow for long-term increase in revenue capture
- Reduced return mail by 53% over prior year due to improved patient information capture
- Reduced postage costs by \$105,000/year
- Increased revenue by converting self-pay to other insurance options (+58%)
- More timely and accurate billing
- Improved demographic and financial data collection

ROI for Study:

Once the collections are realized for all three phases of the VA initiatives shown above, the return on investment of the additional revenue compared to the cost of the VA workshop are expected to exceed an ROI of 100:1.

Lessons Learned:

The primary lesson conveyed by the large additional revenue capture resulting from implementation of the VA initiatives is that many times money needs to be spent in order to bring in a much larger amount of money in revenues. When revenues are tight, many organizations, both public and private, implement hiring and spending freezes. However, many VA proposals show that by hiring a few individuals in revenue-producing roles or building office space to allow for efficient operations, the actual dollars collected will greatly exceed the costs incurred.

Another lesson is that ideas are not seriously considered unless a dollar impact is attached to them. Some groups we've worked with have stated that several of the same ideas that came out of the VA study were proposed previously by another internal committee but never acted upon. Most likely, the previous development of the idea did not include an estimate of the potential revenues. Including a calculation of the projected revenue impact with every VA initiative most definitely increases the likelihood of action being taken.

Lastly, once an effective VA workshop has been conducted and initiatives developed with high revenue potential, the most important steps to ensure actual results are optimal include assigning an overall implementation manager and assembling the proper teams or committees. The manager ensures meetings and actions are taking place such that progress is made toward full implementation of each initiative. Also, many initiatives will affect and benefit several departments. Thus, committees must be assembled consisting of members from all appropriate departments and all necessary skill sets must be included for each initiative.

Summary and Conclusions

The application of Value Analysis on healthcare revenue cycle improvement studies has proven to be very effective in identifying significant additional revenue opportunities and also has shown to provide many other benefits among hospital staff members. VA can help in solving many issues in the healthcare revenue process so that the proper emphasis can be placed on the most critical area - providing high quality patient care. It is hopeful that Value Analysis will be used in the future as a tool to discover improvement opportunities and solutions in many areas of the healthcare industry.

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