

Business Intelligence And The Revenue Cycle

Part I of IV

by Mike Duke



Mike Duke

Hospital managers and leadership positions face many challenges in today's healthcare environment, ranging from clinical competitiveness and market/patient demands to capital funding and eroding revenues. Maintaining strong margins in this evolving environment is contingent upon making effective decisions in a timely manner. A healthcare organization, like any other business, needs critical information to make the right decisions;

By 2004, business activity monitoring will be pushed center stage, where faster reaction is key to operational effectiveness, making it one of the top-four strategies driving IT investment and strategy.

— Gartner

however, what it generally has available is an enormous amount of data that is difficult to turn into actionable information that will facilitate decision-making.

This is evidenced by the fact that in 2002, a majority of hospitals reported a downward trend in margin performance. To reverse this spiraling trend, almost all hospitals have an opportunity and a responsibility to reduce costs and to increase net revenue.

But How Can Healthcare Organizations Fight Against Shrinking Margins?

Before this question can be answered, it should be noted that most current information systems used in healthcare operations employ online transaction processing (OLTP), which is profoundly different from sophisticated business intelligence (BI) applications.

The uses of an OLTP system are the essential day-to-day functions of an organization. These systems process transactions, such as submitting physician orders, posting payments, registering patients, maintaining bed assignments and creating financial accounts. Users of an OLTP system will almost always work with one account at a time.

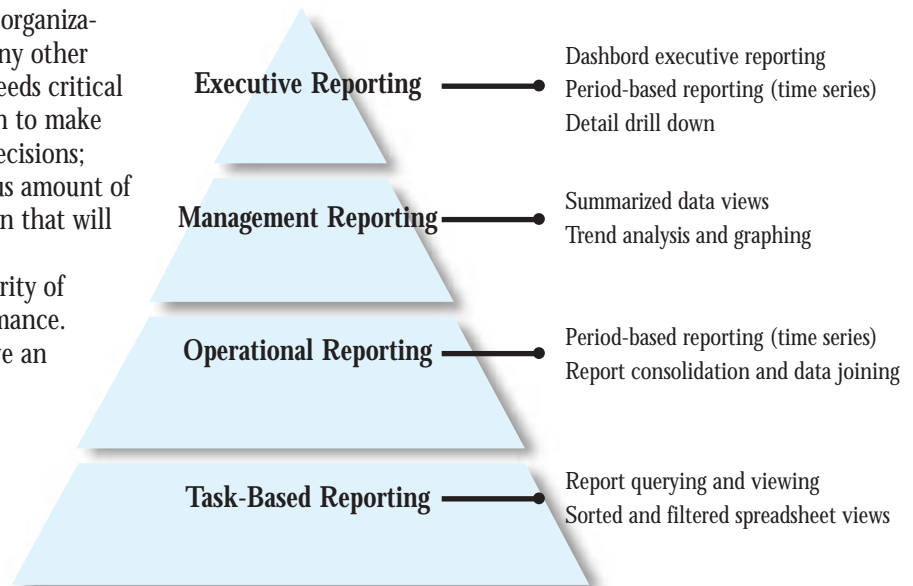
BI systems are quite different. Instead of performing tasks that help the organization *operate*, these systems help users *understand* how an organization is performing in a given area or at a certain point in time. Because of this fundamental difference, BI products not only show users **what** information is important, but also **why** this information is important.

Characteristics of a Business Intelligence System

A BI system benefits an organization when it changes raw data into usable information that supports improved decision-

making and results in effective action. For a BI system to properly enhance decision-making, the application must be pervasive throughout core business processes. Informed decision-making can no longer be left to the executive suite, as shown in Figure 1-0. Decisions are and must be made every day at all organizational levels. If the BI system has not been “operationalized” or, in other words, completely integrated with users’ daily activities, then intelligent, fact-based decisions cannot be made on a routine basis.

Figure 1-0



For a BI system to achieve this “operationalized” status, it must exhibit three fundamental capabilities:

- **Actively monitor performance:** This refers to the ability to capture the history of business transactions and performance. As the bread and butter of decision support, the flow from OLTP systems to the BI system has dominated recent efforts in the industry. This has traditionally been a complex step in building an effective decision support system.
- **Help users comprehend performance:** This simply means the ability to capture the dynamics of the business. By using online analytical processing (OLAP) and data-mining techniques, the critical business dimensions are defined and analyzed.

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- **Assist users in taking action:** This pertains to the ability to aid decision-making by capturing all critical business dynamics and measuring these against the organization's and the industry's best practices. This is one of the most critical factors in an effective BI system. It notifies the user when information is abnormal so appropriate corrective action can be taken in a timely manner.

An effective BI system produces actionable information by using:

- **Actionable reporting:** automatic periodic reporting with highlighted exceptions
- **Actionable analysis:** fluid, "real-time" ad-hoc analysis
- **Actionable alerting:** alerts directed to the right person at the appropriate time based on best practice measurements

Revenue Cycle Implications

Up to this point, the focus of this document has been on an entire organization's decision-making requirements. The following discussion will focus primarily on revenue cycle functions.

As stated, healthcare organizations are facing increasing pressure to manage their financial position. Management ability is severely hindered without actionable and timely information.

Revenue cycle functions and processes, from initial scheduling through final account resolution, have the largest impact on an organization's bottom-line performance. Managers and staff working within the revenue cycle are facing multiple challenges every day.

The following is a small sample of today's challenges:

Decreasing Net Revenue

- Current OLTP systems cannot support constant actionable analyses as it relates to underpayments by third-party insurance companies.
- Denial management techniques are severely limited without a flexible analytical tool that allows for problem identification, impact analysis and performance data trending.
- Understanding the correlation between bad debt write-offs, collection agency placements, agency performance and self-pay collection efforts is nearly impossible without a flexible BI system.
- Monitoring and reducing the bad debt reserve expense is cumbersome without sophisticated analytics.

Stagnant Cash Flow

- The ability to understand cash flow trends and identify daily payer amounts is difficult with an OLTP system except at the highest reporting levels.
- Cash flow bottlenecks, such as accounts discharged but not final-billed, claims held in the electronic billing system and accounts held for upfront compliance errors, are hard to accurately identify and resolve.

Ineffective Workflows

- Analysis related to the appropriate assignment of patient financial services staff work queues and processes is ineffective without a sophisticated BI system.
- Health information management coding and chart management processes cannot usually be evaluated for delays or effectiveness.
- Denial follow-up activities cannot be monitored to determine effectiveness of effort and to identify the source of the error for process improvements or employee education.

Inefficient Employee Activities

- The inability to monitor the effectiveness of employee productivity has plagued the industry.
- Managers have been unable to distinguish top performers from underachievers to determine differences and to take proactive steps to deploy lessons learned among departmental staff.

Improper Alignment of Resources and Organizational Needs

- As a result of not understanding the severity of and correcting the source of electronic billing errors, many organizations are overstaffed in most billing functions.
- Without being able to analyze registration trends and processes, financial counselors are usually not aligned with volume and required activities, resulting in errors and claim denials.
- Patient financial services follow-up staff are most likely misaligned based on the volume of accounts assigned to them. Without the ability to analyze performance versus best practice levels, managers are unable to accurately assess departmental needs.

Without having the tools to monitor and act on challenges like those just mentioned, executives and managers at all levels of the organization cannot form an accurate picture of their operational performance to the degree necessary to make adjustments that will have a beneficial, bottom-line impact.

In lieu of a BI system, a small army of analysts would be required to logically compile organizational data into static reports for management to make decisions. Although this is the course of action that several organizations have taken, it is actually counter-productive to timely, pro-active decision-making. In this scenario, once a request is made for analysis, it is typically several days before summary data is presented to management, and this information is typically static in nature (an Excel spreadsheet, for example). If further details are required, the analyst must rework and/or add to the data to produce the required outcome.

Conclusion

Healthcare organizations are facing a universal problem of shrinking margins. One way to offset this challenge is through sophisticated analysis and distribution of timely and accurate information to help employees make more effective management decisions. An enterprise BI system provides executives, managers, analysts and clerical workers alike with the access to the critical information they need to do their jobs.

Given the ever-present nature of the Internet and the increasing presence of intranets within healthcare organizations, there is not a more cost-effective electronic analysis and distribution channel available. When compared to traditional methods, such as paper, fax and even client/server computing, the use of the Web produces the highest value at the lowest cost.

By combining Internet technologies and sound management practices, a well-designed BI system serves to extend previous investments in hardware and software. It should unify distribution across a variety of application-specific systems by handling a variety of data formats with efficient, low-bandwidth distribution technology. Extended healthcare organizations will find that if a BI system is implemented properly, users will increasingly rely on it to help do their jobs and will want more information to be available as a result.

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Business Intelligence And The Revenue Cycle

Part II of IV

by Mike Duke



Mike Duke

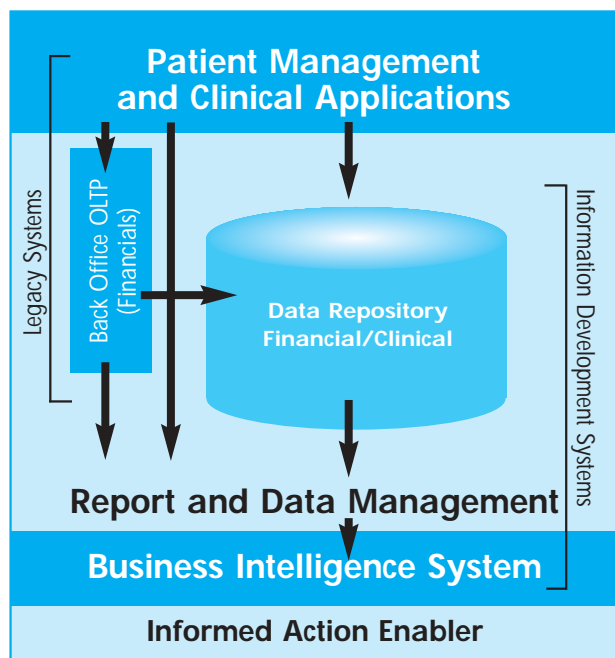
Part I of this series discussed the characteristics of a business intelligence system (BI) and the overall implications that such a system will have on revenue cycle operations. Part II will review the different options available for a BI system and help you better understand the basic characteristics that make BI system implementations successful.

Solutions that Can Help all Levels of Decision Makers

There is a wide range of solutions that can assist organizations with their business intelligence needs. To fully understand these solutions, they must be evaluated in the context of the entire information creation process.

Figure 1-1 illustrates at a very high level how data is passed throughout a healthcare organization and highlights where data begins to become information in the information development systems area.

Figure 1-1



The remainder of this document will focus on the information development systems section of Figure 1-1.

The information development systems can range from small and inexpensive applications to large, expensive data warehouses, both of which can be ineffective. The diagram in Figure 1-2

illustrates three options within the information development footprint and highlights the benefits and drawbacks of each solution.

Each solution offers some benefit to the revenue cycle team regarding analytical challenges previously identified; however, each also has its drawbacks. A better understanding of each option is required to make an informed decision regarding which is a better solution for revenue cycle needs throughout the organization.

Local Databases: Local databases are usually created by one department to solve a small reporting need for that department. These databases are usually limited in the data they capture, and the reports are static in nature. Although the least expensive of all solutions, they are also the least beneficial and are a short-term answer to an organization's business intelligence needs.

Report Mining: This solution is probably the most unique of the three. A report mining tool, such as Datawatch | ES from Datawatch Corporation, utilizes text-based reports from legacy systems for the majority of the data-capture portion of information creation. The application automatically transforms report-based data into live online information for easy analysis and decision support. This information is available in a variety of formats: HTML, PDF, Excel and a multidimensional information cube (OLAP). The interesting part of Datawatch | ES is that instead of interfacing with all existing system data structures, the application leverages those systems by extracting and combining data from the existing or an ad hoc report base. Finally, Datawatch | ES uses a true Web-based user interface so that every user who needs the information can get the information without having software tools installed on their local computer and without exhausting IS resources.

Data Warehousing: This solution provides a common platform for consolidating information stored in heterogeneous business systems. This becomes critical in an environment, such as healthcare, that has a wide variety of disparate systems. The benefit of combining data from several systems and platforms at the actual data level is typically offset by the complexity and high cost of performing these activities in a traditional data warehouse environment. A data warehouse also has the ability to perform Relational OLAP (ROLAP) that enables power users to access large amounts of relational and support complex OLAP processing. Data warehouses typically, but not always use a Web-based user interface. Organizations considering a data warehouse project must proceed with caution. The cost and failure rate of data warehousing projects is high; too often, uploaded data proves to be incomplete or incorrect, or user tools prove too complex, but if an organization can get it right, then the benefits are wonderful.

All these options allow for some advanced analyses. A BI system must be able to perform the following in order to solve today's revenue cycle challenges:

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Trend Data Over Time: Users must be able to compare snapshots in time to better understand operational performance. For example, if an organization wanted to monitor denials related to lack of proper authorization, they would need to track denial volumes and dollar amounts over time and by variables such as payer, registering location or shift to properly understand process breakdowns. To quickly react to trends, the system should notify a user or group of users when the denial levels reach an unacceptable level.

Allow the Information to Tell a Story: An effective BI system should be sophisticated enough to uncover hidden patterns in the data. The embedded data visualization tools should be able to display complex data in graphical form to support pattern recognition analysis. For example, by analyzing the data graphically, a user could evaluate the aged accounts on an aged trail balance and realize that a significant amount of the aged accounts are actually Medicaid claims, over 730 days from the discharge date and have received a payment. By understanding that the ability to collect on Medicaid claims typically expires after 730 days, the user can determine if the payment was correct. If so, they accounts can be adjusted off, thereby reducing the bad debt reserve expense.

Move Information to Where it Counts: It is not uncommon for information to reside in one departmental system that could provide valuable insight into another department's performance. For example, most electronic billing systems provide a detailed listing of accounts that failed initial edits. By analyzing these edit failures, a user could determine that several are related to patient access process breakdowns. If the patient access department is never given this information, there is a high probability that the errors will continue and negatively affect cash flow. By including this information in an automated and timely manner using a BI system, patient access can be notified when certain errors reach a pre-determined level, allowing management to take corrective action, thus reducing billing backlogs.

Ensure Accountability at All Levels: By using BI systems that automatically notify multiple users of pre-determined poor performance levels, secondary procedures can be implemented. These operational procedures can help ensure users and managers are accountable for improving financial and operational performance.

Productivity and Performance Analysis: Analysis around the productivity and effectiveness of employees greatly enhances a manager's ability to adequately arrange staffing levels and mentor underperforming employees. By using these tools to actively compare user's performance versus best practice levels, raining opportunities can be identified.

These are just a small sampling of the many ways for a health-care organization to benefit from using an enterprise BI system. To provide effective solutions to common revenue cycle challenges, an organization will need to implement the solution that best fits its needs and budget.

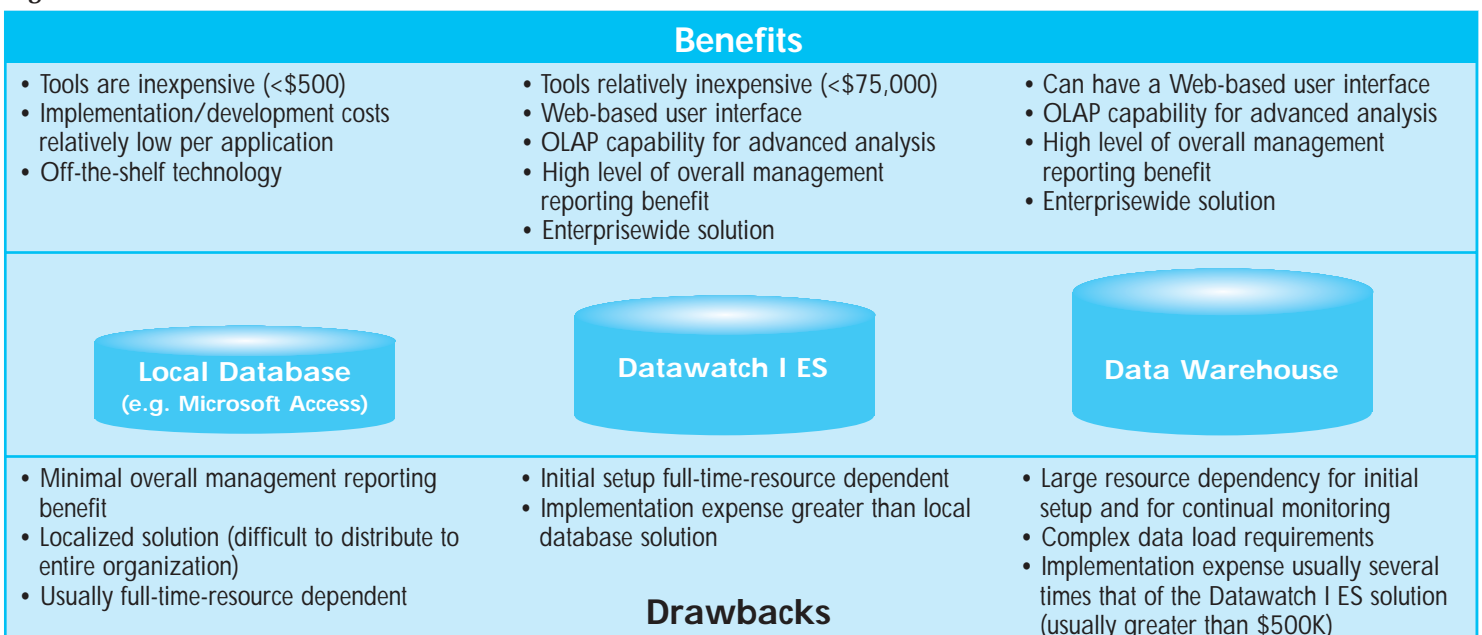
Conclusion

Regardless of which technology solution is the best answer for your business intelligence needs, they must be able to allow employees at all levels of the organization to gain *insight* into the organization's operational roots.

Knowledge of how things work used to be enough to appropriately manage most functional areas of a healthcare organization, but in today's complex and disjointed environment, effective management is founded on a person's ability to fundamentally understand where and why problems are occurring so that immediate and appropriate action can take place. Without an effective and properly aligned BI system, this type of operational insight is almost impossible.

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Figure 1-2



Business Intelligence And The Revenue Cycle

Parts III and IV

by Mike Duke



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Parts I and II of this series discussed the characteristics and available options of a Business Intelligence (BI) system. Part III leaves the classroom language behind and gets a little more personal while discussing the imperative that organizations face regarding the understanding of operational performance monitoring. Parts III and IV have been combined to close out the series.

his final article in the series will focus more on the “how” and “why” you should employ a Business Intelligence (BI) system and less on the “what” or any type of technical discussion. The translation of “how” and “why” is more accurately described as the business imperative. For example, you (or your CFO) might ask, “Why should I spend capital funds on a BI system when we need to spend money on _____?”

This blank could be filled with at least 10 things your organization believes is more important than investing in a BI system that may or may not meet your decision-making needs. Hopefully, after reading this article, you will think differently.

What is So Important About Implementing an Effective BI System?

We will cover two topics important to implementing an effective BI system:

- **Business Imperative:** The real need that exists to improve performance monitoring capabilities within the revenue cycle
- **Ensuring Success:** High-level factors that contribute to implementing and using an effective BI system

Understanding the Business Imperative

To understand the business imperative for implementing and using a BI system, three fundamental concepts must be discussed:

- Reach for New Marks, Not Benchmarks
- Change Your Perspective
- Organizational and Personal Survival Just Might Depend on It

Reach for New Marks, Not Benchmarks: Consultants and research analysts will hate the following statement, but it should be stated nonetheless: Measuring your operational performance in comparison to industry benchmarks is detrimental to long-term improvement.

Do not adjust your glasses; you read it correctly: “detrimental to long-term improvement.” Now before you think I am crazy, let me explain. As a consultant for several years, I have been in many healthcare organizations, and I have witnessed a lot of these organizations measuring their performance against published benchmarks.

You know the ones. They measure AR days or unbilled amounts or length of stay or payment lag times, just to name a few. As a matter of fact, they give measurements for many of the key performance indicators (KPIs) for revenue cycle operations. They also give it to you by region or bed size or payer mix or population age. You can also get the information based on “best performers” and the “not-so-good performers” categories.

The problem with comparing your operational performance to this data set is that your organization is unique. You have different operational dynamics than every other organization in the industry, and although some of your problems might be the same, solutions and measurement techniques almost always vary by organization. Using these types of industry benchmarks can lead management to set goals for the organization that are inconsistent with the real objectives for revenue cycle professionals.

For example, let us say that a best performer benchmark for your organization type has AR days at 50, and your organization is running at 60 days. Well, if your administration is shortsighted, you might be pressured into reducing your AR days to meet the benchmark. We all know ways to move the receivables around to reduce a few days here and there.

The problem is, at least from this simple example, that the goal can be incorrectly set for reducing AR days to best practice levels by any means — whereas the real objective of all revenue cycle practitioners should be to improve AR performance through improved cash flow and legally maximizing net revenue. To accomplish these simply stated, but hard-to-obtain objectives is to measure yourself against your performance looking at KPIs over time.

The level of specificity that is needed to effectively manage in today’s complex environment cannot be achieved by comparing your organization to traditional industry benchmarks. By utilizing a BI system, you can quickly and accurately view performance over multiple dimensions to help identify improvement opportunities. For example, it would be helpful to analyze payer denials over the last six months in just a few clicks of a mouse. Reasons for denials could easily be determined, e.g., 30% of all denials are for “no authorization,” and of these, 70% are for “failure to obtain pre-authorization.” Furthermore, what if you could just as quickly determine that 50% of these pre-authorization failures are related to XYZ Insurance Company? Finally, what if with one more click, you could identify the registration location for those patients?

Do you think if you could quickly evaluate denials in this way that you could make adjustments to the work processes? Finally, after you made what you think are the appropriate process changes, with the right BI system you could continue to monitor these denials to ensure the changes that were implemented were effective.

This might seem over-simplified, but most organizations cannot perform this level of analysis now. If they can, it usually takes a tremendous amount of effort and time to accomplish.

On the other hand, if a BI system is implemented appropriately for revenue cycle monitoring, this level of analysis can be performed in about five mouse clicks. To further simplify the process, an e-mail alert can be set up to automatically notify the right manager or staff when denials reach certain threshold levels.

Change Your Perspective: This is an easy topic to discuss, but difficult to adopt. Changing your perspective simply means developing the understanding that sophisticated operational performance monitoring is everyone's responsibility. If you are a supervisor or department manager, you can no longer depend on business analysts to give you the information you need to manage effectively.

You need to understand trends faster and apply your experience and insight into the analysis phase. No longer can you ask an analyst to download a bunch of data from the mainframe, put it into a spreadsheet and deliver it to you three days after you ask for it. To effectively manage operations to the best of your abilities, you need appropriate and timely information.

Conversely, it is unrealistic and demoralizing to ask an analyst to spend a considerable part of his work week compiling a bunch of mainframe data. What typically happens at this point is the manager looks at it for five minutes, smiles and asks the analyst to add one additional little piece and change it "just so."

If a BI system was in place and implemented correctly, management could view the information easily in different perspectives, leaving the analysts to perform other complex, detailed analyses.

Organizational and Personal Survival Just Might Just Depend on It: Now we are getting to the serious point. There have been several initiatives implemented by healthcare organizations that have focused on reducing operational expense, increasing net revenue through better revenue cycle management or both.

All these initiatives (re-engineering, TQM, Six Sigma, etc.) are valuable, but quite honestly they are simply frameworks to solve operational problems and increase efficiencies. Although they are not as sophisticated as these initiatives, basic problem-solving concepts can still make significant differences in operational performance. The basic tenants of traditional problem solving are simple:

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Analyze: Understanding the cause-and-effect relationship of activities.

Decide: Harness this understanding to make corrective decisions. By implementing a BI system appropriately, you can quickly and easily identify causal factors related to poor operational performance, then you can use the BI system to monitor the impact of your decisions.

Financial stability is so important in this industry with its ever-shrinking margins that if you do not take action to improve revenue cycle performance, your organization will eventually hire someone who will.

High-Level Success Factors

- **Don't Be a Dummy:** This one requires effort. You need to become educated on what BI system options exist that will fit your needs. Operational team input is critical to BI system selection to ensure that too much money is not spent on technology that does not fulfill the needs of the revenue cycle departments.
- **Spend the Money, Guarantee the Return:** Clearly define some of the ways you hope to increase cash flow and net revenue after you have implemented the BI system. Clear objectives on how the system will be used before implementation are important during the design and build stage.

- **Be the Hero:** Any type of technology selection and implementation requires an internal champion. Why not you? You may be sticking your neck out a bit, but if you spend enough time planning for the type of system and the specific things you want to measure, success is likely.

Conclusion

Revenue cycle practitioners need to be the instigators of change and continuously find ways to squeeze more out of constantly shrinking margins. Pro-active process and performance management are critical components of successful revenue cycle operations. Practitioners can no longer rely on old methods to manage. Revenue cycle fundamentals have not changed considerably, but they have become harder to manage. Without an effective toolset to help monitor performance, then your job is harder to perform to the best of your abilities.

About the author: Mike Duke, Principal of The Crito Group, has 13 years' experience in specializing in all areas of revenue cycle management and enterprise reporting consulting solutions for hospitals and physician practices. Mike serves on the Publications Council and can be reached at mduke@critogroup.com.