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Organizing for analytics in health care

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The growing thirst for information – reliably accurate information, is dramatically changing the health care industry in many ways. Externally, the government, industry groups, payers, employers and patients are demanding more insightful information, accountability and transparency. Internally, there is increasing demand for clinicians and leaders to improve service quality, patient satisfaction and clinical outcomes. At the same time, health care providers are being constantly challenged to provide better results with fewer resources and at a lower cost. These external and internal forces can induce greater performance risk and are driving health care organizations to develop a better understanding of their clinical and financial outcomes. The table stakes have changed in the "New Normal" - the ability to build enterprise information management and analytics capabilities that can provide new insights about patient populations that may be essential for organizations to thrive and ultimately, survive.

A key to promoting sustainable enterprise excellence can lie in the organization's ability to harness the potential of clinical systems that can drive insights that enable informed decision making. Organizations that have excelled at building information management and analytical capabilities (herein referred together as "Analytics") have realized tangible benefits such as: improving clinical outcomes, reducing insurance denials, reducing avoidable readmissions, and increasing the use of resources to help meet the growing demand for patient services – just to name a few.

What is analytics?

Business analytics typically focuses on areas such as financial performance, reimbursement, productivity and utilization. Clinical analytics focuses on areas that help providers deliver more effective and efficient clinical care (mortality and morbidity measures), increase patient safety (signal detection), and/or improve population care (public health programs, immunizations, market needs). Due to the complexity of health care, it can be challenging to find the desirable mix of business and clinical measures that convey a clear linkage between business or operational decisions and clinical outcomes. However with an effective approach, an understanding of this linkage can often yield powerful insights. As a result, the growing importance of business and clinical analytics-driven process measures are becoming more prevalent as accountable care, shifting reimbursement models, and service line strategies may demand a holistic view that combines clinical outcomes, financial and satisfaction measures.

Regardless of the terminology used, the objective should be to develop and implement a sustainable, adaptive analytics capability that handles the growing volume of data in a consistently reliable way and can yield insights to improve both patient care and business performance. To help achieve this, it is important to first recognize the potential barriers and roadblocks that cause many provider organizations to falter when tackling the complex opportunity that is analytics. Armed with this understanding, the path to implementing an effective analytics function can become clearer, more attainable, and a source of a new competitive advantage.

What are common pitfalls health care organizations face today?

Several challenges should be addressed in order to effectively deploy and embed analytics in the organization's culture, decision making processes, and operations. Aside from technical, data and skill considerations, there are political, cultural and organizational pitfalls that can slow or stall the implementation of the program. By anticipating and planning for these pitfalls, executives can be better prepared to build support and maintain momentum.

Organizational barriers

There are several reasons why executives may struggle with the question of where to place an analytics function in the organization. First, the fact that the IT function often holds responsibility for the enterprise data warehouse (EDW) and reporting causes some organizations to view IT as a natural owner of analytics. Second, in many organizations the Finance department has historically been one of the largest users of analytics. Not only do they need information to support business decisions, they also can have a high need for risk management and compliance data. Third, clinical leadership requires clinical analytics insights and capabilities to compete in today's market. Finally, the emergence of genomics and translational research are closely aligned with care delivery and involve new complex data sets that hold the potential for clinical breakthroughs and new sources of revenue.

Territorial disputes over data

Many executives have learned how to work around fragmented data and inefficient processes to get the information they need to be effective. As a result, control and ownership of data can often be a very personal and highly political issue. Executives frequently make decisions within their own area of responsibility based on personal intuition and consensus, often because they lack access to good information or because it's easier to rely on what has worked in the past in other organizations. Overcoming the status quo to implement an enterprise analytics program should require a combination of strong leadership and a willingness to drive behavioral change in the organization.

Unclear roles and responsibilities

As organizations struggle with implementing an analytics program, they realize priorities and roles should be defined: what projects will be undertaken, how will project requests be prioritized, where will the skilled resources come from, what data is needed, how will that data be maintained, and how will results be measured? Addressing such questions frequently involves several departments, data sources, staff, and conflicting priorities (e.g., when analytics are wanted fast, high quality, and at a low cost by multiple departments at the same time). In the absence of formal decision making protocols, such situations can often lead to stalled projects, substandard results, and unsatisfied analytics customers. In other situations, departments who are frustrated with the inability to get things done at the enterprise level, launch their own independent analytics efforts.

Competition for resources

It is rare to find a health care organization that has sufficient staffing and skills to pursue all the analytics opportunities. Many providers are struggling to recruit and retain experienced managers and analysts who possess the combination of health care domain specialization, data mining knowledge, and experience with the vast array of analytics tools and methodologies. This resource constraint can apply to business and clinical departments as well as the IT organization where it is important to have access to the data architects, programmers, and analysts who can work effectively with end users. Conversely, functional departments face similar challenges in that the individuals who possess the specific skills and domain knowledge are often busy with their existing responsibilities.

What is the leading way to organize for analytics?

Transforming an organization to embrace an analytics culture can take a significant commitment on the part of executives, management and other stakeholders. The ability to implement an effective analytics program should be more a function of leadership, structure, decision rights, and behavior change than a function of the size and complexity of the infrastructure or the technical platforms involved.

Getting leadership to champion the analytics program

The model analytics strategy should begin with strong executive leadership capable of bringing together talented people with deep experience in applying analytical methods to clinical and business issues. These leaders should take ownership of the deployment of their analyst talent to the best and highest use that supports organization's mission and strategy. This means that jockeying for resources for pet projects, building "shadow" analytics groups, or hiding strong analysts within a specific function should be discouraged. Instead, the team works together to identify and prioritize what particular analytical issues the organization benefits most from addressing.

With the desired executive alignment, the analytics function can serve as the intersection of a company's business strategy, the data behind it, and the technology that delivers it - which in concert helps improve an organization's performance. Once leadership has reached agreement on which areas are of highest priority to the enterprise, they should then engage their staff to become analytics champions and participants. These champions should include management, clinicians, researchers, analysts, technologists, and others. Building support for analytics needs leaders to work across silos to collaborate with each other.

Aligning analytics resources with enterprise priorities

It is important to establish an effective structure to help promote collaborative behaviors. However, this can typically prove challenging as organizations often house analysts within the functions they serve, creating silos that work against the enterprise analytics strategy. For example, financial analysts work on financial concerns while clinical analysts focus on patient care issues. An organization should answer "What is the leading way to align people so they are positioned to support the immediate and long-term needs of the enterprise?" And alignment doesn't mean just putting everyone in the same group as a centralized function, as discussed below.

Structuring analytics in silos can limit analysts' abilities to collaborate on broad, strategic initiatives or complex issues involving multiple areas of the business. By organizing resources so they can work across traditional boundaries new insights can be obtained at the enterprise level that cannot be developed in isolation. The biggest challenge is in balancing the need to keep them working "close to the business" while enabling them to work "closely with each other across the business". By achieving this balance, organizations can realize the synergy of leveraging its combined knowledge, skills, tools and information resources. Figure 1 illustrates three general approaches to structuring an analytics function.

Figure 1 – Analytics delivery models

	Description*	Strengths	Weaknesses
Centralized Enterprise Enterprise Analytics Group / Clinical / Finance Analytics Projects	All analyst groups report to one function at the enterprise level, even if they are assigned to serve different departments or functions based on strategic priorities set at the corporate level. Resources may also be "engaged" by operating units for specific analytics projects	This model enables an enterprise wide view of what is going on. This makes it easier to deploy analysts on strategic projects, reduces confusion, or limits competition for resources on functional initiatives	Reduced responsiveness to departmental needs. Potential to create distance between analysts and business users, especially if analysts are located in a central location. Risk of "shadow" analytics groups arising to address unique business requirements. Model may falter without strong enterprise focus or leadership
Functionally Decentralized Enterprise Clinical / Finance Analytics Group Analytics Projects	Individual analyst groups resides in departments that are strong consumers of analytics. While groups may provide limited reporting to other departments, their primary focus is on the needs of their individual business units	Easier to deploy resources to perform analytics within the department. Highly responsive to individual department needs	Difficult to set enterprise priorities, limited incentive to share best practices or resources, conflicting data. Often results in independent analyst groups , resulting in lack of communication, confusion, data integrity issues, duplication of effort, and unnecessary costs
Community Enterprise Enterprise Analytics Group / Clinical / Finance Analytics Group / Analytics Group Analytics Projects	Analysts groups exist at the health system or enterprise level as well as in departments or business units that utilize analytics capabilities for their specific needs. Some common governance and standards to promote collaboration and knowledge-sharing among the community.	Promotes collaboration, knowledge-sharing while retaining departmental flexibility. Increased communication facilitates an enterprise view of project priorities and status while reducing risk of redundant projects and resources. Best model for bringing domain experts together to enterprise or complex analytics issues.	Requires a strong governance model in order to be effective. May take longer to fully implement. Conflicting priorities and resource issues may arise due to the informal nature or secondary reporting line relationship.

Note: Whichever model is chosen, the IT function should be the recognized trustee of the organization's enterprise data resources and be responsible for overall data governance, infrastructure and standards.

■ Analytics Group   ■ Clinical   ■ Finance   ■ Analytics Projects

*Adapted from "Analytics at Work", Davenport and Harris, 2010

Achieving this balance in a complex organization with interrelated functions such as care delivery, research, and community services involves recognizing that the needs vary greatly in different parts of the organization. Some analytics applications function better in a centralized environment to serve specialized needs (e.g., research, data management) or infrequent analytics users, while other areas may likely benefit from a more distributed approach that brings together the leading talent and resources from across the organization to achieve a strategic priority (e.g. promoting service line excellence).

An effective way to achieve this balance should combine centralized resources (e.g., skills, people, tools, and information) to help address strategic or commonly-shared needs, with a virtual community of highly skilled domain specialists who reside outside of IT but work closely with data and reporting specialists when needed. In other instances, organizations that have been previously highly decentralized may move to a centralized model to establish a common foundation of analytic specialization that may then be re-deployed in various areas of the organization. Ultimately, the specific model will be the one that better aligns with the organization's overall enterprise strategy and business model.

Establishing clear roles and responsibilities to help enable effectiveness

Effective analytics projects should not begin with data and end with models; rather, they should begin with strategy and end with insights that fuel improved decision making and results. This paradigm shift begins with the tone at the top and is facilitated by the effective organizational model. But to be truly transformational, it should require a new understanding of the "who, what, and how" of decision making. To increase results, once the leaders are aligned and the desirable structure is in place, a decision rights framework should be established to operationalize the new analytics structure. This is the "glue" that holds everything together.

The first act of establishing a decision framework for analytics involves identifying the stakeholders that should be involved in making the key analytics decisions. Typically, this involves the CEO and senior management. But it is also important to build on the strengths of the existing operating model and engage the local or departmental leaders who will be responsible for implementing the decisions that drive results. Then, once the "who" has been decided, the "what" should be identified. This involves agreement on the top decisions that matter in enterprise analytics and the resources that will be allocated.

To establish a framework to achieve such agreement, a commonly used tool is the "RACI" matrix, which outlines who is Responsible, Accountable, Consulted, and Informed for each important analytics decision. Figure 2 illustrates examples of important decisions and the RACI matrix that could support an integrated enterprise analytics function.

Typically, the IT department will remain the custodian on matters of data quality and data standards; the finance and clinical functions - the largest data producers and analytics consumers - can have a major influence on data quality, business and care delivery issues; and other functions such as marketing, quality, regulatory, internal audit and compliance can be important stakeholders.

Figure 2 – Sample decision rights raci framework

Decision	Roles				
	Health System Leadership	Enterprise Analytics Group	Clinical	Finance	Technology
Set health system analytics goals and metrics	A	R	C	C	C
Set and maintain data standards for health system	I	I	R	R	A/R
Determine clinical outcomes to be measured	C	I	A/R	I	C
Determine analytics projects to be resourced	A	R	R	R	R
Allocate analytics resources	I	A/R	C	C	I

Key
R = Responsible for "doing the work" and participating in decision making
A = Accountable for the work product or outcome of the decision and for ensuring the decision is made
C = Consulted by the "responsible" stakeholders to provide input but not directly involved in the work or decision making
I = Informed about the decision after the decision has been made but not involved in the work or decision making

Note: A clear decision rights framework can provide the foundation for an enterprise analytics function by defining what role each party plays in decision making. When all stakeholders share a common understanding of the decision making process, they can have more trust that the projects being deployed are in the enterprise's best interest, and that the data and insights are correct. The sample above shows only five of the many decisions that need to be clarified in the new analytics organization.

The final step in the establishment of the decision framework for analytics should be to focus on the "how" of decision making. This involves an assessment of the existing cross-functional governance committees and a decision on whether to establish a new analytics governing body or to leverage an existing leadership cabinet to manage and monitor analytics decisions and processes going forward. Either way, a clear charter with meeting cadence, voting rights and protocols should be put in place to facilitate the new decision framework for analytics running smoothly over the long-run.

Promoting a culture of analytics

Structuring an effective enterprise analytics function can ultimately provide vital resources that are able to help enhance and accelerate decision making, which in turn can allow the organization to operate as a high-performing and growing integrated enterprise. But just establishing the core components of a good analytics function may not transform the organization alone – a culture shift should also take place in order to fully realize the power of analytics.

One tactic to help support needed behavior change is to develop and execute a change management and communication campaign to help the organization understand the nature of the changes and the benefits that will be achieved. It can be helpful to tailor the campaign to the needs of physicians and other stakeholders to keep them engaged and committed to the program. This can "brand" the analytics effort, illustrate the new behaviors that are needed for results, build momentum, and get people excited about dedicating time and effort to analytics projects. Another tactic to build support for new organizational behaviors is to identify pilot analytics projects and help build effective teams by pulling together resources from multiple areas and achieving a visible "quick win" that they can promote to other parts of the organization.

Analysts working across all the functional areas can become ambassadors for change and begin to educate their peers and leaders on the real benefits and possibilities of analytics. These individuals can be supplemented with others with specialized domain experience, complex problem solving skills, and ability to combine both logical and intuitive thinking to each situation.

So where should you start?

Leaders should first agree on a direction that clearly and directly supports the organization's mission and strategic objectives and links to the analytics program. Once the objectives and priorities have been established by leadership, a structured approach that leverages leading practices can help accelerate the analytics program. Figure 3 illustrates several important actions that have demonstrated results in real-world situations for other health care organizations.

Figure 3 – Steps to help create an analytics program

Action 1: **Define the Strategic Vision** – Promote alignment by beginning with a clear vision of how analytics can help the organization. Suggested approaches to doing this should involve engaging with industry peers, conducting a leadership retreat with subject matter specialists, or reviewing other effective programs. Once foundational awareness has been achieved, leadership can formulate a clear statement of purpose for the strategy development.

Action 2: **Develop a Rallying Cry** – Once the future is defined, then communicate the details that will get everyone on-board and engaged. Create an analytics strategy that helps identify specific stakeholders, use cases, resource requirements (data, skills, experience) and expected benefits. During this process the vision can be translated into an actionable strategy that addresses the staffing, skills, data, technology and other requirements. Finally, a phased roadmap with specific milestones and checkpoints can be helpful to segment the journey.

Action 3: **Nominate Change Champions** – Identify a core group of champions who share the commitment, experience, and passion to launch the program. At this time it is important to promptly identify the governance and decision making protocols that should be needed to help implement, maintain, and refine the analytics program in its inception and as it expands to other areas of the organization.

Action 4: **Create Momentum with Quick Wins** – Select a pilot project to help gain experience and establish momentum – Nothing breeds success like success! Picking a project that offers the opportunity for a quick win allows the organization to begin building a knowledge base of experience, tools, and methods that can be leveraged in future analytics projects. In addition, it can offer a valuable opportunity to develop an experienced core group that can be used to "seed" other analytics "Tiger Teams", groups of technical specialists selected for their experience, energy, and imagination.

Action 5: **Sustain Enterprise Analytics** – Lessons learned and leading practices should be used to formulate a sustainable analytics strategy. This strategy should address integration with other specific functions such as business planning, data governance, clinical outcomes, finance and IT. Finally to continue momentum, the analytics function should include structured processes such as intake, project management, communications, and planning to maintain alignment between the efforts of the group and the priorities of the organization.

It is important to understand that developing an effective analytics program should be an iterative process that can yield new lessons with each project. To expedite this process, the checklist in Figure 4 highlights several important questions that should be addressed.

What can be the benefits of getting it right?

Once the analytics program is implemented, the organization can have a much better capability to analyze, monitor and address the circumstances that impact clinical and business performance. The process of implementing an effective analytics program involves a review of many areas ranging from the quality of data sources to how the information is organized and presented to the decision makers. As a result of this process, many lessons can be learned that can contribute to the organization's mission of delivering high quality, cost-effective care that improves patient and community health.

One thing is for certain in Health Care – significant Industry change is upon us for the foreseeable future. Through capabilities such as predictive modeling, simulation, and data mining - decision makers and analysts can explore various scenarios to determine the likely future impact of their decisions in any of the equally plausible future scenarios. The resulting insights will enhance clinical, business, and process management, regulatory compliance, and overall competitiveness. And quite possibly can even provide the required preparedness for the potential day when reported clinical data may be under the same level of scrutiny and attestation as financial data! Where an analytics program was once considered a luxury involving the domain of statisticians and actuaries, it is rapidly becoming an imperative for doing business and managing the complexity of today's health care environment.

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