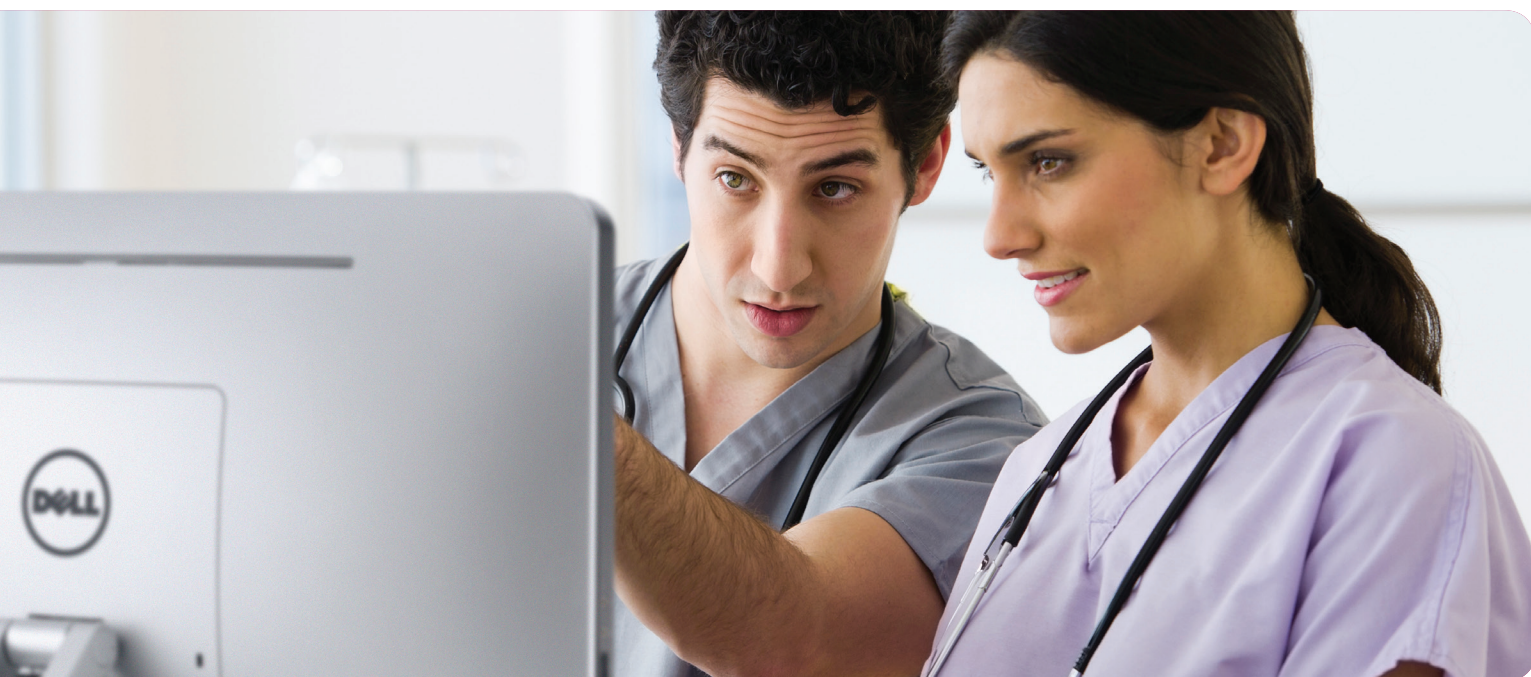




Healthcare Analytics Adoption: Start Small and Start Now

A modular approach that starts with small-scope projects can help mid-sized healthcare enterprises expand their analytics competency while adding immediate value to their organizations.



Analytics is becoming critical to healthcare

The wealth of digital data available to healthcare providers is expanding exponentially. And while data in an electronic medical record is of enormous value to individual patients and physicians, its potential value to the healthcare system is even greater. With aggregation, standardization and analysis, this data can offer insights that will help healthcare providers prevent disease; lower costs; work more efficiently, comply with reporting and regulatory requirements; and interact with patients and consumers more effectively.

But analytics is a big step forward for most hospitals, health systems and physician practices, particularly mid-sized

enterprises with modest resources. That's why starting with smaller scale projects and working toward the bigger questions and answers makes sense. Start now with a small project and you will learn lessons that will guide you toward more sophisticated techniques.

Why a modular approach makes sense

While small-scale projects are great learning tools, they are most valuable in the context of a larger analytics strategy. A broad-based analytics platform with modular components that you can add as you need them will help you build a scalable analytics strategy with long-term value.

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By starting with small projects that answer specific, but important, questions, healthcare organizations can gradually acquire the expertise to engage in sophisticated analytics.

Start with an enterprise-wide assessment of analytics readiness to identify areas that have the data sophistication to make analytics useful. As other departments see the value of analytics and consistent data collection and management, they will seek out the analytics leaders to learn more.

Analytics is becoming an organizational imperative in healthcare. With increasing emphasis on value, not volume, in healthcare reimbursement, the time is quickly approaching in which hospitals will need analytics capabilities to succeed.

But to many healthcare enterprises, analytics looks like an enormous undertaking. As with any large project, success with analytics will require breaking down the overall endeavor into manageable projects. By starting with small projects that answer specific, but important, questions, healthcare organizations can gradually acquire the expertise to engage in sophisticated analytics.

Governance and assessment

The first task is to set up a multidisciplinary team that will provide governance for your analytics projects. Ideally, the CIO should lead the team, and other members should include

leaders from both clinical and financial departments. The first task for this team should be an enterprise-wide assessment. Grade each area, and the enterprise as a whole, on its analytics stage of development.

The Dell Analytics Adoption Model (figure 1) can be used as a guide to assessing analytics readiness. It shows seven stages of adoption, from a basic data management foundation to prescriptive analytics. Within each stage there are a number of capabilities and activities (figure 2).

The first three stages are the data management phase, in which the enterprise creates a governance structure for data collection and management; creates standardized terminology and integrates data sources; and finally, creates an enterprise-wide data warehouse.

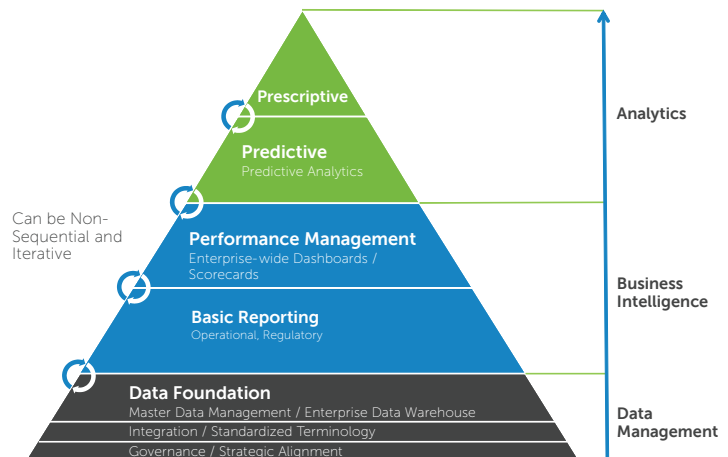


Figure 1. Dell Analytics Adoption Model



	Dell Healthcare	Analytics Adoption	Model
Level	Categorization	Capabilities	
7	Prescriptive	<ul style="list-style-type: none"> • High performance computing and cloud solutions • Visualization software and large storage capacity • Concurrent modeling with clinical decision support • Genomic/"omic" sequencing capabilities • Capability to manipulate / visualize genomic data remotely • Real-time population health management with registries, alerts, and reminder cues 	Analytics
6	Predictive	<ul style="list-style-type: none"> • Readmissions management analytics • Statistical modeling services, Early detection modeling (e.g., sepsis, CAD etc.) • Risk stratification modeling • Patient attribution systems • Health risk assessment tools 	
5	Performance Management	<ul style="list-style-type: none"> • Quality/compliance/regulatory reporting systems automated MU, Core Measures, HEDIS, PQRS, VBP, ACO reporting tools • Gaps in care tools • Care variance management systems • Care coordination (integration of inpatient and outpatient data into a unified data center) • Chronic condition management systems and program development • Wellness management system • Preventative care management systems • Design and development of enterprise and department level dashboards and scorecards • Provider profiling • Resource utilization 	Business Intelligence
4	Basic Reporting	<ul style="list-style-type: none"> • Clinical, financial and operational reporting/intelligence • System agnostic Report design and build services • KPI Repository • Decision support repository design and implementation • Healthcare SME consulting 	
3	Data Foundation	<ul style="list-style-type: none"> • Data integration implementation (Use of interface engines such as Boomi) • Data warehousing (vendor agnostic) • Disaster recovery, data security, data audit, big data solutions (Kitenga, Toad, Cloudera, SAP, Apixio) 	Data Management
2	Data Foundation	<ul style="list-style-type: none"> • Healthcare data model selection/implementation (HL7 RIM, 3M, Oracle, etc.) • Data integrity, data quality, data cleaning, data correction/feedback loops services • Data validation services • Normalization • Enterprise Master Person Index solutions/services • HIE 	
1	Data Foundation	<ul style="list-style-type: none"> • Data governance • Data /metadata definitions • Data dictionary • Master data management implementation • Rules for data access • Semantic interoperability/standardized terminology implementation (ICD 10, SNOMED CT, LOINC etc.) 	

Figure 2. Specific capabilities and activities associated with the 7 stages of analytics adoption.



These three stages are, for most healthcare organizations, the most difficult and time consuming. But the entire organization does not have to reach Stage 3 before engaging in meaningful analytics.

In most healthcare enterprises there are departments and business units that have adopted a culture of measurement and are familiar with metrics-driven decision-making. These may include nursing units, clinical departments, financial departments or free standing outpatient units that are accustomed to collecting, managing and reporting data for performance improvement or to improve scores on core measures. The range of projects might include tracking patients' outcomes or readmission rates, reducing infections and complications, reducing wait times or improving claims processing to reduce accounts receivable days.

Within these areas, consistent, high quality data is available, and these areas could be assessed at Stage 4 or Stage 5 because they are using data for performance management and engaging in basic reporting functions. While their data may not be ready for integration with an enterprise data warehouse, it is ready for use in applications that automate regulatory compliance reporting and provide more sophisticated performance analytics.

Depending on the quality and availability of the data and the in-house expertise in analytics, statistics and data management available, these areas may be ready for predictive and prescriptive analytics. They have reached a stage of maturity that makes them a good candidate for early efforts in the use of analytic tools. This is especially true if you have at least some analytics expertise in-house.

Within the same organization you will likely find other areas that have yet to adopt a culture of measurement

and have little experience with data-driven decision-making. They have not created a system for data gathering and management. In those areas, the focus should be on creating a culture of measurement and aligning data with the larger organization.

Mine data from your EMR

Once you identify the analytics-ready areas, you can work with the internal stakeholders to identify questions that are appropriate for analytic analysis. Every EMR contains a wealth of data that can be used to answer questions on patient safety, operational efficiency, rate of adoption of EMR tools, return on investment, etc.

For example, you could analyze data on medication errors to determine what kind of errors are being made and factors that contribute to the errors, such as time of day, prescribing physician, nursing unit, type of medication, administration etc. This can help you pinpoint root causes for errors and adjust workflows to prevent future mistakes.

A basic business intelligence project might be creating an hourly patient census dashboard that is updated daily to help get a better picture of daily and hourly trends in patient census. This kind of data is usually readily available and can help predict staffing needs and avoid reactive scrambles to fill shifts. A more complex project might involve identifying bottlenecks in patient flow. For example, daily tracking of patients who are waiting for discharge pending lab tests might help you adjust lab schedules or workflows to expedite these results, discharge patients earlier and increase bed availability.

"Best of breed" EMRs, often used in specialty departments such as the surgery and emergency departments, often have a wealth of analytics-ready data that can be paired with other financial and clinical data to answer



questions specific to that department. An example might be a true-cost analysis of specific surgeries to identify how each affects your bottom line. This could be used in making decisions about allocation of surgical suite slots and other resources.

These insights are useful and might not be obvious without the use of analytic tools. Also, the data you need is probably readily available in clinical and financial records.

A limited-scope project is a useful first-step, serving as a practical demonstration of the value of data collection and analysis, giving those less-sophisticated departments a reason to adopt a more data-driven culture. Also, you can enlist your more analytics-mature departments to act as mentors to the less data-driven areas, and help them build a foundation for future analytics work. Or, if that isn't possible, you can engage a consultant to work with these departments to help build that culture of measurement that is the starting point for analytics. Either way, limited-scope analytics projects can serve as a means of creating awareness and enthusiasm for analytics.

While a long-term goal should be an enterprise-wide data warehouse and an analytics platform that is capable of the most sophisticated problem solving, this may take many years to develop. In the meantime, a start-small, start-now approach can build a constituency within the organization that believes in the power of analytics and understands the tools and processes needed.

Use as modular approach

For hospitals just starting down the road to analytics adoption, single-point solutions that solve very specific problems in one area may seem attractive. They are less expensive than a comprehensive data analytics package, and they may seem more manageable.

The danger in that approach is a proliferation of analytics silos, not unlike the clinical, financial and administrative silos that have created unnecessary complication in healthcare IT.

An alternative to point solutions that offers better long-term value is a comprehensive analytics platform that has modular components that can be acquired as you are ready to use them. This reduces the complexity and cost at the front end and allows you to grow your analytics capability over time. Moreover, a standard platform that works for the entire enterprise provides a consistent interface that will facilitate user training and provide a common analytics language for cross-departmental analyses in the future.

Another possibility is a cloud-based software-as-a-service platform that allows you access to a comprehensive analytics application without the need for upfront infrastructure investments.

A third option is a possibility for certain retrospective analyses, such as predicting, from historic data, the effects on reimbursement of ICD-10 conversion. This third option is to provide your data to an outside consulting analytics firm which would do the analysis and report back with results and recommendations. This approach is less useful when you are using real-time data and need to track quickly-changing trends. In those instances, you need to have in-house capabilities that can provide immediate results.

Use consultants to fill expertise gaps

Analytics is a specialized area of expertise, and not one that is found in all organizations. Developing that expertise in current staff, or recruiting new staff with the required skills, may take time. This is where a good consulting firm can be valuable,

An alternative to point solutions that offers better long-term value is a comprehensive analytics platform that has modular components that can be acquired as you are ready to use them.





The first step in creating a data warehouse is translating your data to an interoperable format. If you have multiple EMR platforms, focus on either converting all units to the same platform or creating applications that translate multiple formats into a single, interoperable data set.

A knowledgeable consultant can help you assess your organizational readiness for analytics and help you identify projects that are good starting points for analytics adoption. A consultant can help you choose the right analytics package for your situation and should be able to help you implement the application and train staff in its use.

A good consultant can act as a temporary in-house analytics expert until you are able to acquire a long-term resource. The consultant can work with in-house teams to create an enterprise-wide culture of measurement and data-driven decision-making, and can also guide teams through their first projects. In addition, the consultant can advise you on how to build in-house expertise through training and mentoring.

Work concurrently on interoperability

While you are growing your analytics expertise, you should also be working

on a long-term adoption strategy. Focus first on interoperability and creation of an enterprise-wide data warehouse. This will prepare your organization to answer the larger, more complex questions involving population health and treatment effectiveness. Diagnostic images should be archived using a vendor neutral platform, preferably one that enables integration with EMR data and other patient records. This will take time, but it is critical for future success.

You might want to assign two separate teams to the analytics jump-start and the interoperability project, with leadership overlap to ensure consistency and effective communications. Having two separate teams will help prevent either project from stalling, which often happens when one team has competing priorities.

Conclusion



While adoption of an analytics strategy is a large undertaking for any healthcare enterprise, it is a critical requirement for future success. With a “start now, start small” approach, healthcare providers can make valuable progress toward a long-term goal of a data-driven healthcare enterprise. Partnering with a good consultant and implementing a modular analytics platform can facilitate creation of a long-term analytics strategy that is consistent and easy to manage.

As you take on simpler analytics projects that provide high value by using

existing tools and data, you should think about how you want to integrate these projects into a broader enterprise strategy. Concurrently with your analytics projects you should be working on enhancing interoperability; creating a structure for data governance and master data management; and planning an enterprise-wide data warehouse.

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