Optimize your BI

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Five reasons healthcare business intelligence differs from other industries.

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Read the news, and healthcare IT is at the heart of it. The HI-TECH Act, meaningful use and other measures have created the perfect storm for investment in healthcare data capture, storage and analytics.

Business intelligence (BI) for healthcare is not new. Payers, especially, have leveraged BI for years, typically for financial reporting efforts. The CFO traditionally drove these projects, and most early healthcare work paralleled BI initiatives in manufacturing, banking and retail.

Yet healthcare BI is fundamentally different than BI in other industries, and a program founded with finance at its core or modeled on the BI templates of other sectors is ill suited to the complex demands of healthcare information management and reporting. This is especially true with the recent uptick in adoption of EHRs, and based on the enormity, complexity and subjectivity of clinical data. Today's organizations need to leverage a new and distinct approach to data, one configured for the ever-changing landscape of healthcare.

Mainstream vs. healthcare BI

Any discussion of healthcare BI begins with a common definition. BI describes an organizational mindset where data drives decision making at all levels. The BI program establishes the platform to collect and standardize the organization's data across multiple sources. It sets the rules and processes that govern the data and develops the applications, reports and dashboards that present the information to business leaders in an insightful, understandable way. In short, BI provides a single worldview into the organization's past, present and future.

Five hallmarks of healthcare BI

Regardless of where it's practiced, BI is all about extracting meaning from data. BI in healthcare, however, differs from other industries in five primary ways:

Regulation: Few, if any, other industries face the same level of regulatory flux as healthcare. From patient privacy and Medicare reimbursement policies to state-by-state mandates and meaningful-use compliance, healthcare leaders in provider, payer and life-science environments must address a dizzying list of requirements – each with its own analytical provisions. Providers, especially, face significant pressures to collect, measure and report on their operations. A recent count by one provider showed more than 1,200 regulatory reporting requirements per year. Another AHIP report tallied 18 agencies that health plans must account to.

Risk: Every industry views its work as "mission critical," but it's hard to debate healthcare's impact. When a data issue occurs in retail, it may delay a product shipment or limit a promotional opportunity. The result in healthcare? Even minor discrepancies in analytics or data misinterpretations have the potential to impact not only an organization's bottom line, but more importantly, real-world, life-or-death decision making.

Relationships: Most businesses operate in a linear workflow, moving goods from manufacturing through distribution to customer. In healthcare, the supply chain involves numerous entities operating at multiple levels. It's a complicated process to replicate these relationships and interactions in the BI data model. What connects a physician, an insurer, a patient, a facility, a provider, an encounter and an event? Even pre-built templates for healthcare need customization.

Non-standard data: Financial data, whether for auto dealerships or telecommunications firms, exists in standard sets and arrives at regular intervals. Even claims data is typically quantitative and repeatable. Turn to the heartbeat of healthcare, however – clinical data – and dramatic differences appear. Self-reported information about how someone "feels" – a physician's interpretation of how someone looks or a nurse's notes on a patient visit – all represent data types that are qualitative and idiosyncratic. Gleaning value requires context, and makes the extract, transfer, load (ETL) process critically important for healthcare *(see sidebar)*.

Perspective: Unlike more established sectors, healthcare lacks a common worldview. Too often, regulatory heavyweights exert undue influence on a standard industry vocabulary, with detrimental effects on those organizations who model their BI programs along the same lines. A borrower is a borrower when it comes to loans and mortgages; an "episode of care" may be defined differently across organizations such as CMS, a hospital, a clinic, a private practice, a health insurer, an HMO or an ACO. How each sees the healthcare landscape will impact vision and use of data.

The ETL of BI: extract, transfer, load

ETL is a widely used process in BI. It involves extracting data from outside sources, transforming it to fit operational needs and loading it into a database

or data warehouse. Without question, ETL can make or break a BI program. References to “garbage in, garbage out,” could refer to ETL.

Good ETL is more complex than a simple “dump and load” of data. Good ETL provides the opportunity to apply business rules (the “T” in ETL) and introduce quality checks into the data. In any data warehouse project, the ETL portion requires 80 percent of the effort and usually introduces the most risk.

Payers are ahead of the game with ETL, based on their dominant use of claims data. Many larger health systems have spent years integrating financial and clinical data. Providers show a more limited focus on ETL; many simply strive to get data out of systems, with little thought to integration or performance efficiency. These organizations usually end up with a kludge of large data silos.

Consider the recent experience of a stand-alone community hospital system, struggling with cumbersome data structures. Each time users requested a new report, IT created another view of the data – until more than 2,000 views, an incredible amount of replication and very few relationships existed. By applying basic data modeling and ETL principles, the organization eventually streamlined its systems – without sacrificing information or insights.

In most hospitals, IT focuses on “mission-critical” systems. Keeping the EHR up and running takes precedence over extracting data from source systems. Yet meaningful use and future mandates will require sophisticated data repositories to track outcomes. Good ETL is foundational to success in these endeavors.

With increasing focus on growing volumes of data, the healthcare industry faces new challenges and opportunities. Financial data remains fundamentally more straightforward than clinical data. Understanding and blending the two in an efficient and meaningful way requires a dynamic and agile approach. The healthcare C-suite should understand the hallmarks of effective BI, and demonstrate both vision and creativity to ensure the organization captures, stores, models and presents healthcare data for optimal results.

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Top 10 ways healthcare organizations can ensure a successful BI program

1. **Convene a cross-functional team.** Include staff with clinical, technical and business expertise for a 360-degree view of the organization. Take a “T” approach that blends input from those with broad knowledge and those with deep, specialized skill sets.

2. **Set a flexible approach to data.** Not all data is created equal, and just because you can afford to store various data sets in your data warehouse doesn’t mean this will be the most effective process. Evaluate how the data will be used and explore different methods for accessing it quickly and efficiently.

3. **Focus on providing value.** Be objective and evaluate all your BI decisions with a critical eye. Everything you do – from creating ETL scripts to visualizing data – should have an end goal of empowering your users to make better decisions.

4. **Document the vision.** Keep your BI program on track with a 12-month roadmap of projects. Leave room for changes, but always have a planning method at hand.

5. **Apply an agile methodology.** Healthcare is nothing if not dynamic. Gone are the days when projects could span up to 10 months. Embrace agile methods that reduce costly rework cycles and drive tangible business value in shorter increments.

6. **Don’t skimp on ETL.** While certainly not the most sexy part of BI, success tends to correlate directly to the amount of effort an organization puts into its ETL development. Hire a professional ETL architect and allow adequate time to complete this critical task.

7. **Establish the foundation.** The right data model fuels query performance, data availability and overall BI results; don’t underestimate its importance. Develop a flexible model that can grow with the organization and adapt to ever-changing market conditions. Avoid “analysis paralysis” by delivering smaller projects that work together toward broader objectives.

8. **Apply data governance.** Data quality drives user engagement. Treat your data like the corporate asset it is. Set up a governance structure that aligns with your organizational structure. Make sure that team members (both clinical and non-clinical) know their roles and decision rights. Be prepared to enforce best practices to keep critical initiatives on track.

9. **Involve users.** Business users are the reason BI exists in the first place. Whether providing analytic sandboxes, reports or mobile dashboards, deliver content that is relevant, in a way that makes users want to consume it. Think beyond static reports, which dominate the regulatory realm, and take advantage of the latest data visualization and mobile capabilities.

10. **Implement operational controls.** The BI program will not run itself. Develop a plan to manage each aspect, from data models to dashboards.

Identify appropriate service levels, and then communicate these expectations to users. A well-run BI program usually translates to a well-funded and strongly supported BI program.

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