

# Challenges and solutions for making data driven decisions for the enterprise

## Fostering alignment and meeting organizational goals with business analytics

Parag Paranjpe, CEO,  
HealthLevel

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### OVERVIEW

Among the most significant CIO and CMO challenges is understanding how to achieve, and sustain business performance improvement across the healthcare enterprise. Understanding, collaborating and improving outcomes, whether clinical, financial or operational, is a daunting task, especially without access to business analytic tools that foster confidence in information discovery and further analysis. In addition, an important factor that governs the success of any improvement initiative, is the inclusion and engagement of physicians & staff in achieving a unified vision and managing the change. The challenge is not only in alignment of objectives but also in systematic communication and trust in the information. Healthy discussions among leadership and staff are often interspersed with lack of trust in the data.

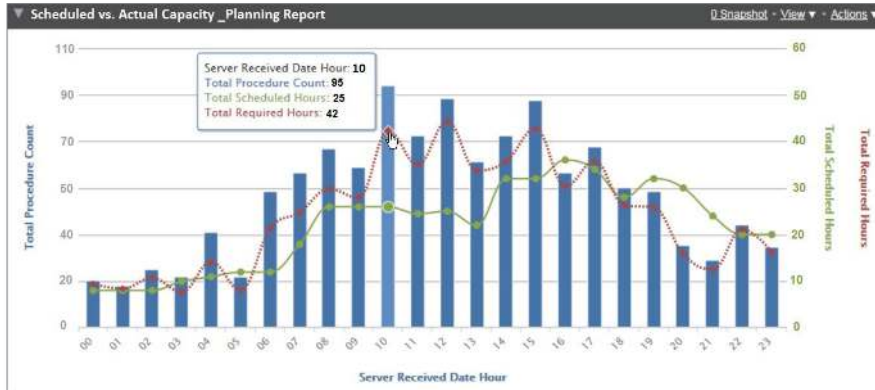
Painting the complete picture of a healthcare facility's 'business health' and prioritizing areas for improvement requires a strategy that allows decisions to be made efficiently, supplementing decision makers' expertise with meaningful and actionable information. Physician and staff engagement can only be achieved through data that is current and complete, but this is difficult to achieve without overwhelming IT data analysts. This is a challenge faced by all healthcare executives today.

### MEANINGFUL DATA

The most meaningful decisions can be achieved by obtaining real-time, context based insight, from data sources throughout the healthcare facility. Often, information required to make informed, and confident decisions, is multi-disciplined requiring a blend of clinical, financial and/or operational information, viewed in the context of the question that is being asked.

For example, an operations manager seeking to schedule optimal staff based on fluctuating patient volumes is likely to make confident decisions with a report that can correlate scheduled staff hours, exam volumes and actual staff hours needed to service them. This requires merging staffing calendars with patient scheduling data, and deriving the needed capacity based on the type of exam scheduled. Observing historical trends in this scenario (see figure 1) can bring forward outliers that may answer pending questions like "how can I avoid overtime hours and over-staffing?"

Adopting technology solutions resolves the issue of insufficient data, however, in today's competitive landscape, solutions that promote information discovery and actionable insight are necessary to enable efficient and confident decision making.



**Figure 1:** A report that correlates scheduled staff hours, exam volumes and actual staff hours needed, enables confident scheduling of optimal staff to handle fluctuating patient volumes, while avoiding overtime hours and over-staffing.

## TECHNOLOGY CHALLENGES

Forward-thinking hospitals used to be defined as those that adopt and implement technological solutions to optimize operations. Today, the healthcare landscape is crowded with technology vendors that promise to solve niche problems in clinical, financial or operational areas. This advent of technology has been positive in many ways, but has also created a new set of challenges for hospital administrators, IT and the end users.

### DATA SILOS

Although the introduction of technology has improved clinical outcomes and provided greater access to information, it has also created new barriers in the form of data silos.

Over the course of patient care, a variety of clinical, financial and operational systems interact, creating and storing valuable information that can be harvested for actionable insight. However, this information is housed in disparate data silos that typically do not communicate with one another, thus adding to the difficulty of aggregating data for reports and analytics.

### LIMITED ACCESS

Adding to the complexity of data silos are vendor proprietary methods for creating and storing data. Often, the specialized skillset of an experienced database administrator is required to write scripts to extract the necessary fields/information to create focused reports. Furthermore, these reports are often only available to a limited number of users, typically department managers and IT administrators.

### INEFFICIENT REPORTING

Through appropriate resources, leadership can obtain reports (typically spreadsheets) to answer their pending questions, but often at the expense of missed timeframes and shifting needs of an intricate healthcare delivery system.

Decisions must evolve with the changing complexity of day-to-day operations however, without access to ad-hoc reporting, real-time data and the ability to adjust the questions based on the changing context, decision making is drawn out and based on historical data, which is potentially no longer relevant or applicable.

Solutions focused on resolving the challenges of data silos, limited access, and inefficient reporting have succeeded in their own domains – yet only a few have addressed the overall need for integrated analytics.

## **DATA WAREHOUSES**

Every year, more vendors enter the market to solve the data silo problem by aggregating data from the various systems; some only focusing on the ‘systems that matter’ (EMR, RIS, PACS, Billing, etc.). These solutions provide facilities with a way to connect their chosen data sources to a central data warehouse, which can be used as a repository for running reports.

Despite the intent of the data warehouse to provide the continuum of historical information, the aggregated data is often stale and very few facilities have successfully implemented a common information model that allows intelligent access to the data.

In most cases, the ideal data warehouse solution with both real-time and historical reporting capabilities is thwarted by prohibitive costs, and the time and dedicated resources required for implementation.

## **NICHE ANALYTICS**

There are also analytic vendors that promise to eliminate or reduce some of the concerns regarding real-time and historical reporting. However, almost all have opted to take the approach of carving out niche areas in which they can be successful. This approach may be a great solution for industries with very few sources of data but in the complex ecosystem of a hospital, practice has shown that niche analytics solutions only add to the complexity.

Targeted analytics does have its advantages; e.g. providing focused financial and inventory reports within a department, but combining them with reports from other data sources, presents challenges. Aggregating reports from multiple analytics vendors within the facility and making an informed decision becomes a tedious, time-consuming task since each report typically contains a different dataset and presents it in a different manner.

## **TARGETED USER GROUP**

Reporting solutions are still very focused on providing information for IT analysts and system administrators– but what about management, physicians and staff?

Many analytic solutions today fail to provide an intuitive and interactive interface that can be deployed across any user base in the enterprise. Furthermore, many of the decisions made by leadership are focused on achieving operational change. This change requires the buy-in of the physicians and staff that are affected by the initiative. Therefore, it is crucial for any solution to place information in the hands of the users so that they can obtain focused data, in their business terms, and act on it.

# THE IDEAL SOLUTION

Aggregating clinical, financial and operational information from multiple, unrelated, data sources is a challenging task. However, the ideal solution not only integrates data from these disparate sources, but also retains 'data liquidity' so users can compare historical trends with real-time information to discover potential improvements in their business. It must ignite confidence in the users by allowing them to drill into the data to verify integrity and to interactively discover the answers to new questions, using an intuitive interface.

## DATA LIQUIDITY

Obtaining information in the context of the question is a key distinction between analytics and reporting. The most successful vendors have developed solutions that can aggregate information from internal and external data sources and make it available as a set of measures and filters for their users. Bringing data together is key, but demonstrating data liquidity without compromising the value is an important differentiator between vendors who promise analytics, and those who deliver.

## COLLABORATION TOOLS

Within any team, collaboration often happens through emails, meetings and hallway conversations. However, efficiency in the decision making process necessitates a more structured collaborative process which tracks individual contributions to major improvement decisions.

Most analytic vendors overlook the concept of collaboration within their solution, thereby creating an efficiency bottleneck. Sharing reports and actionable insight can foster a team environment in which each team member's contribution and opinions can be tracked towards each major change decision.

**Figure 2:** Collaboration tools such as the two shown here, enables team members to interact efficiently and reach decisions backed by data. This also allows for keeping track of past decisions and their effect on present outcomes.



## PHYSICIAN & STAFF ENGAGEMENT

Engagement of the entire staff is a key contributing factor to the successes of any department or organization. Successful analytic solutions offer department managers tools to engage their clinical and operational staff: that are easy to access, use, and provides data that is relevant and in their business language.

For example, providing personalized analytics to allow for de-identified comparison between themselves and their peers, enables staff to identify areas of improvement. These types of personalized metrics also provide a unique tool for clinicians to assess clinical outcomes for their patients vs. de-identified peers. Visualizing the true data of their individual performance allows the data to be easily assimilated and provides a positive engagement tool for self-improvement, ultimately achieving improved clinical outcomes.

## DATA GOVERNANCE & USER SECURITY

Vendors market their products as HIPAA compliant and secure. With restricted small groups of users, this is easy to achieve. However, the success of an analytic solution will be dictated by the set of tools provided to IT and system administrators to easily manage users, data streams and content. The ideal vendor should provide analytics for the masses, so user security is a key component. Providing role based access reduces the burden on IT and system administrators to constantly monitor user activity and change security levels, on request. Providing role based access ensures that all users with identical roles (i.e. nurse, management, etc.) will see data in a context that is relevant to them.

## USE CASE SCENARIO OF THE IDEAL SOLUTION

"What started as a way to understand operations, turned into a fully integrated solution that allowed new information to be obtained from raw data."

### START WITH OPERATIONS

Operational efficiency is key to ensuring that a department functions at optimum capacity. For example, case delays, room idle times and variances in case times play an important role in ensuring smooth operations. However, management continues to struggle to obtain appropriate data to fully understand the impact of each parameter on the overall outcome.

A Regional Heart Center implemented a cardiology analytics solution to tackle the issues mentioned above. By implementing a platform that aggregated information from their clinical systems, the department managers were able to obtain case level workflow details and create ad-hoc reports, using a variety of metrics, to assess their operational efficiency.

With increased use and changes to workflow to limit the number of delayed cases, management and leadership began a quality initiative to improve workflow documentation. Over a six month period, the organization improved their workflow and documentation quality by 90%, leaving only a few outliers that required revisiting.

## **EXTEND TO THE STAFF**

The client had also struggled to understand, and act on clinical complications during cases. To help address this challenge, leadership extended their analytics product to their physicians and staff, providing them with personalized metrics that allowed each individual to compare their operational or clinical performance with a de-identified peer group (based on role). Within the first month, management observed that clinicians and staff began suggesting ways to reduce contrast usage, radiation, improve documentation efficiency and the tracking of clinical complications.

## **UNDERSTAND BILLING & COLLECTIONS**

To understand the full scope and obtain the complete picture under one analytics solution, another organization implemented a financial analytics module to correlate with the already present clinical and operational data. Prior to adopting the analytics platform, each department manager, as well as their leadership, relied solely on email and phone communications to understand, discuss, and communicate collections & charges.

For the simplest questions management had to write emails to the financial staff detailing patient ID, date of service and exam details. In addition, management did not have a complete picture of the types and amount of charges billed and collected for each component of the performed procedures.

The financial module of the integrated analytics solution, added a collaboration capability between management and financial staff at the case level. The resulting centralized solution associated all communication details such as charges, credits, collections and discrepancies with each case so that historical references remain intact and complete.

## **ACHIEVING THE RESULTS**

After six months both organizations reported that they were providing a much higher standard of care for their patients:

- Reduced case delays
- Reduced contrast usage & in-room complications
- More efficient workflows
- Improved documentation quality
- Improved staff engagement
- Decreased room idle times
- Decreased variation in case times
- Increased understanding of active, expiring and used inventory per case
- Improved collaboration between management and financial staff
- Improved collections rate for charges billed

## CONCLUSION

An efficient, user friendly analytics and business management platform that brings together clinical, financial and operational real-time and historical data is important for effective and confident decision making, planning, staff engagement, and operational efficiency.

Prior to adopting any analytics solution there are several things to consider: the solution must demonstrate flexibility in achieving actionable insight from the aggregated datasets, it must provide a user friendly interface for mass adoption across the enterprise, it must enable role-based interaction to have relevance to each user and it must provide the ability to combine metrics and enable drill down reporting so that leadership decisions can be most effectively implemented, in a timely manner.

Throughout the selection process, leadership must include IT administrators, data analysts, as well as management and clinical staff to ensure that the solution provides value to all levels of the organization. The chosen tools must be easy to deploy and maintain so that burden on already time starved administrators is reduced and leadership, management and staff can, in context, equally, and quickly, glean the necessary information from the data that is their business.

An analytic solution that provides a source of truth for a complete picture of a healthcare facility's 'business health,' and reveals areas for improvement, will allow decisions to be made efficiently, supplementing decision makers' expertise with meaningful and actionable information.



### **About HealthLevel, Inc.**

Founded in 2010, HealthLevel, Inc. is a privately held company, headquartered in Mountain View, California. Foundations™ from HealthLevel, Inc. is the industry's first integrated real-time and multi-year correlation platform for clinical, operational and financial data. Foundations provides an intuitive, configurable, analytics solution allowing all hospital personnel to readily monitor and improve their own business practices.

For inquiries, please contact us at:

**[info@healthlevel.com](mailto:info@healthlevel.com)**