Case Study | Brigham and Women's Hospital

This is CASE STUDY 2 of 4 from HealthLeaders Media Breakthroughs: The Promise of Healthcare Analytics
T
he city of Paul Revere needs little introduction to the
benefits of early intelligence warnings. Boston’s Brigham
and Women’s Hospital preserves the tradition by bringing
business intelligence into the 21st century.

An ever-increasing flow of data affects both the direction of
Brigham and Women’s long-term mission and its ability to execute on
near-term objectives.

Like other large organizations, the 793-licensed-bed Brigham and
Women’s Hospital uses a Balanced Scorecard concept to bring togeth-
er the most relevant data and then make that available all the way from
the executive suite to individual physicians. But even after 10-plus years
of use, the Balanced Scorecard remains a work in progress, even as it
continues to improve the hospital’s quality and efficiency.

Driving the CIO
In part through analysis of key metrics, BWH has been able to reduce
its patient length of stay over time, says Sue Schade, vice president and
chief information officer.

“If you know anything about hospitals and how they operate in
length of stay, you can figure that’s a multi-factorial kind of metric,”
Schade says. “We could really drill down and figure out the different
lengths of stay for the different service lines, do some analysis in terms
of process improvements that we’ve put in place.”

The Balanced Scorecard presents data feeds from approximately
80 sources. Those sources represent a mix of data, some of which can
be brought directly into the Scorecard from other IT systems at BWH,
and others that must be gathered and entered manually.
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The data mix brings together feeds from clinical and financial data sources, an incident reporting database, a nursing quality measurement database, patient satisfaction surveys, and many more. Often these data are rolled up from departmental systems, Schade says.

Just as the data flows up, the analyses flow down, all the way to individual physicians. “In the airline industry, on-time departures are really important,” Schade says. “On-time starts for our surgical cases is very important for us to maintain the schedule. We do probably 100 to 120 surgeries on our busiest days here. Having that [start time information] has led to improvements.”

From simpler beginnings more than a decade ago, business analytics at BWH evolved from performance measurement to performance management to strategic management.

“We continue to evolve what we measure and what our focus is,” Schade says. “Your external environment changes. Your internal environment changes as you are able to hit certain measurements.”

It’s also important to limit the number of measures, which Schade admits is very hard to do. “Every department’s measuring so much, but you have to have some limits,” she says. “Set some reasonable number of measures.”

As the Balanced Scorecard process increased the access to data, BHH also increased the transparency and visibility of different elements of the organization, Schade says.

“We’re very interested in looking at contribution margins from various services that are under the umbrella of spine care and lower back pain. We’ve been easily able to access that information through the Balanced Scorecard.”

Sanjay Pathak, vice president of surgical services, anesthesiology, and radiology, Brigham and Women’s Hospital

Driving surgery and radiology

Surgery services accounts for at least half of Brigham and Women’s operating budget for clinical services of $1.7 billion, says Sanjay Pathak, vice president of surgical services, anesthesiology, and radiology.

“I can go into our Balanced Scorecard and find out and understand important analytical information, whether that’s strategic, operational, or financial in nature,” Pathak says. “It’s presented in a way that’s easy to access, as well as easy to use. So I’m not at the mercy of asking an analyst or a project manager to go out and develop for me a set of reports.”

Financial metrics include cost per case, staffing per adjusted occupied bed, and other traditional metrics such as operating margin, Pathak says. Executives can zoom in on market share in a particular ZIP
BRIGHAM AND WOMEN’S HOSPITAL BALANCED SCORECARD STRATEGY MAP

Strategy Map, With Hospitalwide Goals

- Service Excellence & Growth
  - Patient Satisfaction
  - Recurring MD & Community Satisfaction
  - Network Development

- Quality & Efficiency of Care
  - Quality Outcomes
  - Patient & Staff Safety
  - Clinical Innovation
  - Operational Efficiency

- Commitment to People, Research, & Teaching
  - Staff Satisfaction & Development
  - Science, Discovery, & Translation
  - Teaching Excellence

- Financial Performance
  - Revenue Growth
  - Operating Margin
  - Expense Control

Source: Brigham and Women’s Hospital, 2008
code, then further dissect market share by service line: vascular, cardiac, thoracic, oncology, or neurosurgery, for example.

BWH can scrutinize referrals from a particular region of its primary and secondary service area, Pathak says. The scorecard can report on surgery volume by surgeon.

Month-to-month quality and safety statistics don’t tend to vary much, but executives have to be able to spot trends. The Balanced Scorecard analytics tool “gives us the opportunity to look at trending” around quality and safety performance, Pathak adds.

Brigham and Women’s, like other leading healthcare organizations, is working to deal with the industry’s shift from a fee-for-service to a population health–based payment model. An absolutely critical component is utilizing the Balanced Scorecard to scrutinize margins by case, by major payer source. That mix is shifting. For instance, in orthopedic surgery, a historical base of payments dominated by commercial payers has given way in recent years to government payers. “It’s largely based on the demographic getting older and more Medicare patients coming in for joint revision,” Pathak says.

In fact, Brigham and Women’s can model net revenue “fairly quickly” by payer for a particular DRG or outpatient grouping, Pathak says. At the same time, it can keep an eye on collection rates by payer.

These models inform BWH leaderships’ choice of where to invest its resources next. “Equally as important, it gives us a sense of those programs where we know investments are required to support our mission,” Pathak says. “We get a good sense of the investment requirements necessary to support it and then the annual losses in terms of what we have to take into our operating budget. So I think it’s pretty powerful.

“I don’t think there is an existing program or new clinical service that we can’t analyze readily in terms of looking at its financial implications.”

For instance, BWH has been investigating making a commitment to a multidisciplinary spine center. “We’re very interested in looking at contribution margins from various services that are under the umbrella of spine care and lower back pain,” Pathak says. “We’ve been easily able to access that information through the Balanced Scorecard.”

More recently, BWH evaluated whether it should initiate an extracorporeal membrane oxygenation, or ECMO, program. “We were able to effectively use the tool to evaluate what kind of investment we need to make annually in both operating costs and capital necessary to start the program.

“It will require a substantial investment, but more recent clinical data suggests that the outcomes are starting to improve.”

Driving quality
Hospitals investigating advanced procedures such as ECMO still have to keep a close eye on fundamental quality metrics such as mortality. BWH’s associate chief quality officer, Allen Kachalia, MD, JD, is also codirector of Brigham and Women’s Center for Clinical Excellence.

“Our job wouldn’t be possible without analytics,” Kachalia says.

Whether it’s keeping an eye on ongoing mortality reduction efforts, pay-for-performance work with payers, adherence to Joint Commission
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Safety standards and improvement efforts, the Balanced Scorecard’s central data warehouse is the starting point, Kachalia says.

“Our unanticipated data needs are much easier to deal with” because the data is stored in one place, he adds.

These quality measures, updated at least monthly, are helping his team track hospital-acquired infection rates as well as mortality, and detecting trends early, Kachalia says. The measures also help BWH change its practice to avoid such problems from occurring in the first place, he adds.

In a world full of meetings dominated by PowerPoint presentations, another key to the success of the Balanced Scorecard is its ability to easily export data for such displays.

“The data doesn’t necessarily have to be [presented] in the scorecard context,” Kachalia says.

While much of the data the Balanced Scorecard contains speaks to compliance with governmental as well as internal and Joint Commission requirements, Kachalia notes that outside of the Scorecard, BWH uploads a host of clinical and administrative data to the University Health Consortium, a Chicago-based alliance representing about 90% of the nation’s nonprofit academic medical centers. Kachalia also cautions that like any tool, analytics works best when it’s used the right way.

“If you’re evaluating a clinical or utilization measure, it needs to make sense,” he says.

“We continue to evolve what we measure and what our focus is. Your external environment changes. Your internal environment changes as you are able to hit certain measurements.”

Sue Schade, vice president and chief information officer, Brigham and Women’s Hospital

Driving the CMO

Numbers drive more and more executive decisions, but executives still drive implementation. When Stanley W. Ashley, MD, had to pinpoint those units where hand hygiene was unexpectedly high, he turned to the Balanced Scorecard. Ashley, chief medical officer at BWH, uses the Scorecard to figure out where to push for better compliance.

“It can be reported to us both on a unit or an ICU-specific basis, or on a service-specific basis, and we can identify areas where we need to focus our educational efforts,” Ashley says.
Yet, the vitality of a hospital isn’t just the quality measures evident to the outside world. Internal efficiency can be the difference between success and failure. “We have a project around standardizing colectomy right now, and we have been able to provide a scorecard to the chief in that area, and to the individual surgeons,” Ashley says. Those surgeons doing the procedure most efficiently are identified and spotlighted to bring up overall team efficiency, he adds.

A whole range of procedures await similar analysis. “As we move from fee-for-service to where we are accountable, the risk is with our ability to track down to an individual physician level outcomes and cost,” Ashley says.

Driving the future
The next wave of business analytics will help hospitals such as Brigham and Women’s manage trends in a defined population of patients, Pathak says. “We’re still in the early stage beginning to understand what kind of metrics and analytical tools we need to establish in order to determine whether we’re effectively controlling costs of a defined population,” he says. “That hasn’t yet been developed in our Balanced Scorecard. It will start to evolve as payment reform takes over.”

Work still remains to get more of the right data into the Balanced Scorecard, Kachalia says. “We’re trying to find better ways so that when the data gets entered in the EHR, you get it the way you need it, or [can] abstract it much more readily,” he adds.

“Individual docs are getting used to looking at their own data in a variety of areas,” Ashley says. “It’s a slow process, but we’re really beginning to see them change their approaches based on that.”

“As we move from fee-for-service to where we are accountable, the risk is with our ability to track down to an individual physician level outcomes and cost.”
Stanley W. Ashley, MD, chief medical officer, Brigham and Women’s Hospital

BWH’s progress in analytics is also finding its way into its parent organization, the Partners HealthCare nonprofit healthcare system, which includes community and specialty hospitals, a physician network, community health centers, as well as homecare and other health-related entities. “The next phase is going to be what we need to do at the Partners level as an accountable care organization,” Schade says. “We’re going through that process.”
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