HOW TO PUT DATA AND ANALYTICS TO WORK IN THE ERA OF HEALTHCARE REFORM

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Demonstrated by Blue Cross and Blue Shield of North Carolina

TABLE OF CONTENTS

ABSTRACT

With a Teradata enterprise data warehouse (EDW) at its core, Blue Cross and Blue Shield of North Carolina (BCBSNC) has created a data and analytics-driven environment to improve the health of its members and provide a competitive edge in the era of healthcare reform. First, the company recognized the vital strategic role of data and analytics by creating a Center of Excellence for Information and Analytics Services and moving the group under the Chief Strategy and Innovation Officer, from the CIO. Then BCBSNC initiated a Medical Quality Management Assessment program that relied on the data and analytics environment to enable medical expense reductions of $95 million on a $5 million investment. The company also has begun expanding the way it uses its Teradata EDW, extending it into areas that include strategic planning, network management, product design, as well as fraud prevention and remediation.

This whitepaper details how BCBSNC leverages its Teradata environment to achieve key strategic goals.

INTRODUCTION

As the leading health insurer in North Carolina with more than $5 billion in annual revenue, Blue Cross and Blue Shield of North Carolina (BCBSNC) is a proven leader in North Carolina's healthcare industry. Its success is built on its continual and innovative development of healthcare products, services and information that help its members improve their health and well-being.

"Our CEO has been a very motivated and visionary leader for helping improve the healthcare delivery system in North Carolina," says Susan Helm-Murtagh, vice-president of information management and analytic services at BCBSNC.

In pursuing its goals, BCBSNC is particularly focused on the effective use of data and analytics. Helm-Murtagh and her team have been at the forefront of this effort, having successfully made the case that data and analytics are critical to continually improving medical care, marketing more effectively, operating more efficiently, and engaging individuals to better manage their own health and healthcare.

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THE ROLE OF DATA AND ANALYTICS AT BCBSNC

A 17-year veteran at BCBSNC, Helm-Murtagh assumed her current position in 2008 fully aware that one of her biggest challenges would be to successfully convert the massive amounts of data available to health plans and insurers—a volume that is going to grow significantly over the next few years—into faster, more reliable, and more actionable insights that align with the company's strategic goals and vision.

Susan Helm-Murtagh
VP, Information Mgmt and Analytic Services
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She also knew that the healthcare landscape was changing; recent events have only accelerated those changes. Payment reform, new product designs, the ICD-10 transition, EHR implementations, new provider alignments and newly eligible individuals without claim experience entering health insurance exchanges will require a new level of analytics capabilities. In addition, Helm-Murtagh knows that BCBSNC has to be ready to share and exchange data, often through health information exchanges.

BCBSNC believes in this environment, "Data becomes the table stakes," says Todd Norris, senior director of information management at BCBSNC. Norris cut his teeth in the retail industry, where the ability to gather and use data for timely and relevant consumer engagement has evolved to a precise art form.

"What becomes more important is what you do with the data," he says. "How quickly you can get it, how you interpret it—these are the keys to who will do well in this environment…more and more, the job is to go through the haystack and find the needle you didn't know was there to begin with."

To find those needles—those game-changing insights—Helm-Murtagh's group has focused on: 1) creating an organizational culture and structure that reflects the company's commitment to using data and analytics for competitive advantage, and 2) developing a powerful, scalable technology environment.

The organizational change began with the creation of the Center of Excellence for Information and Analytics Services and its move to the strategy side of the house. "Being under the Chief Strategy Officer gives us a much better lens on how we need to position information and analytics to drive competitive advantage," says Helm-Murtagh.

The value she and her group have added is reflected in their growth. In 2008, there were a total of 70 staff members and contractors working for Helm-Murtagh; now there are 270 full-time-equivalent staff members.

Culturally, says Norris, "The move focused us on the concept of insight IQ," which according to the Corporate Executive Board, "measures an employee's ability to find and analyze relevant information to make better decisions. The three elements of Insight IQ are information attainability, information usefulness, and employee capability."[1]

Subject matter experts throughout the organization must learn how to do rapid discovery on key business questions, something that if left solely in the hands of traditional data analysts would cause unacceptable bottlenecks. Thus, data analysts needed to find a new way to partner with business units that would facilitate widespread access to data and analytical tools while minimizing associated risks.

"We realized this wasn't about how to train people on the tools, but how to think about data—we needed to *legalize* the analytics," says Norris. To do that the team identified the key skills people needed to collect, analyze and

1 http://www.executiveboard.com/exbd/information-technology/insight-deficit/insight-quiz/index.page. Accessed 1/9/13.

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display information for decision making. They are now implementing various training and help programs to disseminate best practices and have created a small set of user-friendly tools that the majority of people could use.

"We're making a fundamental shift toward empowering end users for more basic reporting, which elevates their appetite and knowledge of information they're using—and frees the staff to do more complicated analyses," says Marshall Davis-Henaine, Director of Enterprise Analytics. Through a combination of automation, outsourcing and business user self-service enablement, the company has already reduced by 55% the time required by analysts to produce deliverables in three key areas—membership reporting, group reporting, and the production of regular reports and extracts.

Of course talented people and a strategic organizational structure must be paired with technology that can do the job. This is where Teradata enters the picture, because it is the backbone of an analytics environment unparalleled in its ability to deliver timely and reliable business insights across a business. "With Teradata partnering in the analytics space, they're simplifying how this work gets done," says Norris.

BCBSNC is using a Teradata enterprise data warehouse to collect, integrate and organize a wide range of data that is continually expanding. Core data today includes information about providers, members, member contracts, fee schedules and seven years of claims information. Adjudicated claims are loaded daily.

In addition, for a variety of initiatives BCBSNC turns to best-of-breed analytics such as SAS and the OptumInsight Symmetry Episode Treatment Group (ETG) software, which interact smoothly with the Teradata EDW. BCBSNC is also looking at migrating external processing for point-in-time and geospatial metrics to leverage the relatively new in-database features of Teradata. Finally, BCBSNC sees a nice convergence in the SAS in-database analytics that will boost performance and eliminate unnecessary data movement and persistence.

As the organizational structure and technology environment fell into place, Tom Carleton, now the company's director of strategic development, worked to create a roadmap for the transition to using the Teradata EDW. "With business owners throughout the company, we put together a methodology and framework, gathered

information, scored requests, understood the rationale and then prioritized," says Carleton.

This led to the initial focus on medical quality management assessment (MQMA) in late 2009. Rather than try to compete with other corporate projects, BCBSNC focused on MQMA, because, says Helm-Murtagh, "It has a direct line to medical loss ratio."

In just 2.5 years, the MQMA initiative has enabled $95 million of medical cost saving initiatives on an original investment of $5 million and helped the company comfortably maintain a medical loss ratio within the requirements outlined by the Affordable Care Act (ACA). That's the type of success upon which BCBSNC can continually grow its data and analytics operation.

It also positions the company for further success amidst the disruptive changes on the horizon in the healthcare industry. In fact, partly due to its Teradata EDW and the success of the MQMA, BCBSNC is confidently embarking on its next set of strategic initiatives including a leadership role in the North Carolina HIE, an accountable care organization (ACO), bundled payment experiments and patient-centered medical homes.

Though there is still progress to be made—there always is—BCBSNC has gone a long way toward achieving its initial goals and is already a rich and powerful example for how to put data and analytics to work in the healthcare industry.

THE MQMA PROGRAM

As the company's first and largest data-driven initiative with their new EDW, MQMA is the biggest consumer of Teradata EDW processing and an enormous success to date. Its potential for reducing medical expenses and the support it lends to initiatives such as provider quality, sales and marketing and actuarial give further evidence of why it was an ideal starting point.

"MQMA was an effort to build out the Teradata EDW and analytics in a more customer-centric way," says Darryl Wansink, Director of Healthcare and Research Evaluation. By beginning with high volume requests such as disease registries, enrollment in disease- management programs, and changes in benefit design, the company believed it would be able to address the bulk of spending that was ripe for reductions without compromising care quality—and in some cases even improving it.

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■ Supports over $95mm in cost reduction initiatives

MEDICAL EXPENSE INITIATIVE

MEDICAL EXPENSE INITIATIVE	INDIVIDUALIZATION	MQMA AGGREGATES	DISEASE REGISTRY	MEMBER CONTACTS	MEMBER BENEFITS	SYMMETRY	BHI
INCREASE ADHERENCE OF HEPATITIS C DRUGS	■		■		■		
INCREASE ADHERENCE OF PLAVIX	■				■		
TIERED NETWORK CREATION	■				■	■	
IDENTIFY BUSINESS AREAS ROLE BUSINESS RE-ENGINEERING OPPORTUNITIES	■				■		
DOMESTIC MEDICAL TOURISM	■	■					■
BLUE QUALITY PHYSICIAN PROGRAM (PRIMARY CARE)	■	■	■			■	
BLUE QUALITY PHYSICIAN PROGRAM (CARDIOLOGY)	■	■	■			■	
BLUE QUALITY PHYSICIAN PROGRAM (OTHER)	■	■	■			■	
TARGETED PROVIDER NEGOTIATIONS	■	■				■	■
UM STRATEGY	■	■			■		
360 MEMBER, PROVIDER AND EMPLOYER VIEW	■	■	■	■	■	■	
VENDOR OPTIMIZATION	■	■				■	
REDUCE ER UTILIZATION – PHASE 1	■	■	■				
REFINE PPA LIST MEDICAL	■	■					
PROCEDURE-BASED GROUPER	■						
FOCUS REVIEW INITIATIVES – MULTIPLE PHASES		■				■	
COST AND QUALITY TRANSPARENCY – DIM					■		
BUNDLE PAYMENT MODEL	■					■	
SPINE PPA PROGRAM		■					
TOTALS	**16**	**12**	**8**	**3**	**7**	**14**	**2**

Davis-Henaine points to one initiative the company undertook to reduce unnecessary procedures. "By virtue of looking at data in a holistic manner and benchmarking it against regional and national trends, we determined that we were seeing medical expense increases that were pretty dramatically associated with a handful of procedures—lumbar spinal fusion surgery was one—but not seeing a real difference in terms of our outcomes," he says.

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After a communication effort with the provider community, the company instituted a prior authorization program that asks providers to stop and consider before automatically recommending spinal fusions. "Our approach wasn't to try to deny all such procedures, but to make sure the decisions were thoughtful and rational, so from payer's perspective, we're not incurring costs for procedures that don't show greater efficacy, and from the member's perspective they get help making educated and informed decisions." This one effort alone, says Davis-Henaine, contributed to $15 million in savings calculated from a change in trend.

Todd Norris
Director, Strategy for Information Mgmt & Analytic Se
Blue Cross Blue Shield of North Carolina

Click to watch video.

Norris provides another classic example: high-cost imaging. "We did a long analysis and found we could get a 34% lift by having physicians pre-approve high-cost imaging for certain conditions," says Norris. "We probably have 20 ideas like that. But if it takes 12 months to do the analysis, it's not worth it. By doing this sort of analysis in a disease registry in Teradata we can complete the analysis in two days and then the whole dynamic changes. It's an example of how we can now analyze medical trends that can be offset with some change. Before it was just a hunch. Now we can do the analysis very quickly to figure out if the hunch will pay off."

As for the needles they didn't even know they were looking for, Norris tells of an analysis that revealed that even when patients respond well to self-management for one condition, they often lose focus if they get another illness or someone else in their family contracts a serious illness.

That insight has helped BCBSNC explore ways to support the health of the entire family when an individual is diagnosed with a serious condition, like cancer, or when someone already in a disease management program is diagnosed with a co-morbid condition.

The MQMA team also analyzes how benefit design affects how members consume healthcare. In one case, the company waived or lowered co-pays on select generics and found this had a big positive impact on therapeutic adherence, improving the health of its members.

"We looked at this over time, rather than just one year, and used fact tables to do propensity score matching— to measure the correlation between lower out-of-pocket expenses of the patient and improved health outcomes and/or lower costs," says Wansink. "In this case, even if we lost a little profit, we were willing to pay to improve quality."

COMPANION PROGRAMS

While not technically under the purview of MQMA, other initiatives leverage MQMA data and the Teradata EDW to create a more efficient and clinically effective BCBSNC.

For example, the company analyzes provider performance with the help of OptumInsight Symmetry ETG software. "We use the output of claim grouper logic to do risk-adjusted tiering on five specialties: cardiology, obstetrics, orthopedics, gastroenterology, and general surgery," says Wansink.

Using SAS, the team calculates provider scores and integrates them in the data warehouse for the network management team to use. The methodology and scores also are fully visible to providers to engender trust and the company communicates with providers in a variety of ways to encourage higher quality, more efficient care. BCBSNC also incentivizes its members to use the providers with the best scores.

The actuarial side of the house is another important user of the Teradata EDW. "We're responsible for pricing and managing $5 billion of revenue every year and the way we do that is accurate projection of expenses," says Chief Actuary Patrick Getzen. "We need our data warehouse to get us the right data—clean and detailed—so we can project accurately, 18-24 months out."

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Getzen notes that one of the things they're looking at now is new provider reimbursement arrangements—setting up an ACO, for example—for which they need trustworthy data and robust modeling to understand how to attribute payments.

Similarly, the coming Health Information Exchange (HIE) will pose new data challenges. "I am licking my chops and dreading the day," says Wansink. "It'll be like drinking from a fire hose—an unstructured fire hose—but the timing, collaboration, types and quality of data offer tremendous potential."

He believes the HIE will enable BCBSNC to gain more insight into many areas that impact people's health and the cost of care, including the conditions a person is being treated for, psychosocial factors, prescription drug data, and health behaviors. "If we can successfully integrate the data, we'll be getting a much better picture of the patient and quality of the providers' care," says Wansink.

Another aspect of the HIE affects BCBSNC's bottom line. Today, the company has a large stake in North Carolina's individual market and anticipates significant churn once North Carolina establishes its exchange in 2014 and over a million individuals turn to it to shop for their coverage.

"Since many of these people will be new members for us, we won't know a lot about them. We'll have to quickly gain insights about them so we can better understand how to best attract and engage them," says Helm-Murtagh.

AN EXCITING FUTURE

Finally, Carleton notes BCBSNC is constantly on the lookout for disruptive initiatives that may not even be on the radar screen today—and believes the Teradata EDW plays a critical role in that regard. "Everything we do, we are leveraging the information we have sitting in that

BY THE NUMBERS

~ A Medical Quality Management Assessment initiative that relies on data and analytics played a central role in a $95 million reduction in medical expenses on a $5 million investment

~ Consolidation of information management and a portion of enterprise analytics into a single function and moving it to the strategy side of the house, combined with dramatic increases in demand for information and analytics, caused the center's staff to grow from 70 in 2008 to 270 in 2012.

~ The creation and fostering of a data-driven environment—along with staff training in how to make the most of that environment—led to as much as a 55% reduction in the amount of time full-time analysts spend on work that is now automated, outsourced and enabled by business user self-service. Identification of an area where procedures were being done unnecessarily and putting patients at unnecessary risk led to a prior authorization program that garnered $15 million in savings.

warehouse," says Carleton. For example, the company is looking into the effect of new patient monitoring technologies and telemedicine as exciting prospective areas. "We will not be able to bring disruptions to the market, unless we can get the right information quickly."

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