



IBM Watson Health™

## Johnston Memorial Hospital

Building organizational capacity  
to navigate change



### The need

MSHA wanted to remain cost efficient, improve on their quality and satisfaction metrics and be nimble enough to adapt to changes related to health reform and reimbursement shifts

### The solution

MSHA engaged Simpler Consulting to guide their organization's Lean transformation

### The benefit

Through the adoption of a Lean culture and tools many clinical and financial improvements were achieved by MSHA and its second largest hospital, Johnston Memorial Hospital (JMH) between 2011 and 2016:

- Reduced sepsis mortality and cost per case
- Reduced inpatient length of stay
- Reduced inpatient cost per stay
- Faster patient flow through ED
- Increased market share

**Simpler® Consulting was acquired by Truven Health Analytics®, an IBM Company in 2014. Truven Health Analytics was acquired by IBM in 2016 to help form a new business, Watson Health.**

Given the recent seismic changes and myriad unknowns in the health care market today, navigating mergers and acquisitions while remaining fiscally viable and delivering high-quality care is a tall order. Senior leaders at Mountain States Health Alliance (MSHA), a large integrated health system primarily serving Eastern Tennessee and Southwestern Virginia, recognized these challenges and in 2011 chose to implement Lean. MSHA engaged Simpler® Consulting to guide their Lean transformation.

MSHA is a not-for-profit health system headquartered in Northeastern Tennessee. It currently comprises 13 hospitals that serve 29 counties in Tennessee, Virginia, Kentucky and North Carolina. All told, the health system employs more than 9,000 staff. In 2014, MSHA became the first accountable care organization in the region.

### The burning platform

The organization has seen significant internal changes over the past several years. To provide services along the full continuum of care, MSHA, which began with seven hospitals in 1998, has merged with or acquired six additional hospitals plus a range of health care-related facilities. The expansion of integrated services has placed MSHA in a strong position for value-based payment plans, but its rapid pace has made remaining profitable quarter after quarter a high priority. Like many other health care organizations, it has experienced senior leadership turnover: six of nine executive level positions changed between 2013 and 2014.

When asked to describe the burning platform that led the organization to adopt Lean, Assistant Vice President and Chief Financial Officer of the Northeast Market at MSHA, John Jeter, CPA, pointed to the need to remain cost efficient and improve on quality and satisfaction metrics.

Tricia Baise, RN, Chief Nursing Officer at MSHA's Franklin Woods Community Hospital, described the difficulty the organization had with sustaining improvements over time, and with being sufficiently nimble as an organization to adapt to changes related to health reform and reimbursement shifts.

In late 2011, several senior leaders of the organization joined a Study Trip to ThedaCare, a seven-hospital health system serving Northeast Wisconsin that has applied Lean philosophy and tools since the early 2000's to transform care delivery. According to Jeter, MSHA leaders returned excited and energized by the approach and the outcomes they had observed. "It was almost intoxicating to hear about the results others had achieved with consistent application of a logical and reasoned approach," said Jeter.

## Solution components

### Software

Simpler Business System (SBS)

Advisory

Operational Excellence

In the fall of 2011, system leaders engaged Simpler to guide their organization's transformation. Todd Middleton, a regional account manager at Simpler, took on the role of sensei, or coach, and, along with other Simpler coaches, has been onsite at the system for several weeks every month for the past five years. According to Middleton, cost concerns and a desire for cultural transformation were both drivers in the health system's adoption of Lean.

## Beginning the Lean journey

In September 2011, MSHA took the first step by creating a transformational plan of care (TPOC), which is a written, executive-level roadmap that guides transformation over a defined time period and is developed in an A3 problem-solving format. A3 problem-solving uses basic steps for clarifying, simplifying and working through a specific problem. According to Jeter, the process of creating the TPOC was itself transformational. "It was like putting on a nice pair of shoes that fit just right. Before Lean, we had a logical thought process, but it wasn't codified. Lean gave us the vocabulary to have meaningful conversations about improvement and to articulate those conversations to others. That in itself was energizing."

The health system also used a strategic planning process to identify three core strategies and three supporting strategies to guide the enterprise and created a calendar that identified strategy planning activities for the subsequent fiscal year. MSHA leaders selected statements in the areas of people, quality, financial, service, growth and innovation as a vision for the organization. These six pillar statements were then used to assign leadership accountability, plan for needed resources and select value streams for improvement. A value stream includes all the activities required to deliver a specific service to the end customer. Leaders revised compensation plans for administration to incentivize five focus areas: financial, patient communication, patient safety, emergency department (ED) performance and population health.

In January 2012, MSHA rolled out a Value Optimization System (VOS) designed to spread Lean principals and techniques to all of its member hospitals—at a relatively brisk pace. For example, teams within the revenue cycle, or financial operations component of the health system completed 27 rapid improvement events (RIEs) within the first 18 months of the transformation. Each RIE involves a weeklong process in which a team composed of members from relevant clinical or operational units uses Lean tools to identify waste and inefficiencies and make immediate improvements.

A critical element for MSHA was a change in leadership style and organizational culture. Leaders began spending more time on the work units for which they were responsible, referred to in Lean parlance as going to the gemba, or "the place where value is created."

“I found the transition to a Lean environment to be challenging, but about six months in I saw we had finally made it and that the work was well worth the effort. We had achieved what we set out to achieve, had clear visibility to our goals, a map to get there, and accountability to stay there.”

– Tricia Baise, RN, Chief Nursing Officer at MSHA’s Franklin Woods Community Hospital

Initially, leaders did not prioritize engaging physicians in the improvement work. Three years ago, with an executive leadership change, the organization began a concerted effort to involve physicians more actively by looking to address the issues most important to them. For example, they engaged a physician champion whose area of passion was reducing mortality due to sepsis. By making this the focus of the work, the teams began achieving dramatically better results in clinical and operational metrics.

A critical aspect of fostering engagement and a strong organizational culture at MSHA was the adoption of a no layoff policy. As teams conducted RIEs and found ways to make their work processes more efficient, at times it became evident that fewer personnel were needed. Rather than create a situation in which teams worked to eliminate their own jobs, the organization developed a resource center to help shift staff to new positions within MSHA. However, referral to the resource center was often unnecessary, as many of the units simply eliminated open positions after natural attrition.

### Up close: Transforming a community hospital

A closer look at Johnston Memorial Hospital (JMH) provides a more detailed picture of the implementation and outcomes of Lean transformation. The second-largest hospital in the MSHA system, JMH is a 116-bed community hospital located in Abingdon, Virginia. Soon after the health system began its work with Simpler, JMH found itself in the fortunate yet unsettling experience of moving to a newly built, state-of-the-art, LEED-certified facility that was much larger than its previous physical plant.

According to Jeter, the move resulted in staffing, workload, capacity and management issues. The larger plant allowed for more spacious patient rooms, a larger ED with more exam bays and the addition of new service lines, such as a cardiac catheterization lab. These beneficial changes carried with them some new demands: greater non-value-added time for staff due to longer walking distances, a need for additional staffing of new or larger service lines and the need for development and integration of the new service lines. In addition, in part because patients enjoyed the new, larger, well-equipped rooms, length of stay (LOS) increased in the new facility, which led to capacity issues in both the inpatient units and the ED. According to Jeter, the hospital exceeded maximum bed capacity on a daily basis.

Hospital leaders worked with several Simpler sensei to roll out specific improvement tools to engage front-line teams and empower them to become problem solvers. JMH leaders and staff moved quickly into their first foray into Lean. Within 30 days of the development of the system-wide TPOC, teams that included clinical and operational staff were participating in RIEs focused on improving patient flow in the medical and surgical (med-surg) units of the hospital. Leaders moved towards greater transparency with the data on LOS and spent more time on the clinical floors, addressing barriers that the clinical and operational teams had identified that were hampering streamlined patient flow.

Tools used on the clinical units included the development of standard work, which involves delineation of the team’s best practice by the involved team members and forms the basis for continuous improvement; daily huddles in which multidisciplinary teams identify work plans for the day and any potential barriers; daily improvement boards used by teams to identify gaps that might affect daily work and larger goals and mandatory participation in several RIEs per year.

To adopt a continuous improvement culture, leaders needed to shift from a management mindset that was focused on control and mandates to a leadership approach in which they empowered teams to make decisions. Making the culture shift also required leaders to change from a “putting out fires” leadership style to one centered on A3 problem-solving, which, as previously mentioned, uses basic steps for clarifying, simplifying and working through a specific problem. They began using the “5 Whys” method in which teams continue to ask the question, “Why?” to get to the root causes of a barrier or source of waste.

By adopting Lean culture and tools, JMH achieved improvements in both clinical and financial outcomes. Within the first month of beginning the RIEs focused on patient flow, the average inpatient LOS dropped by about one full day and the average observation unit LOS decreased by about 17 hours. Much of the decrease in LOS in the observation unit was the result of increased capacity of the inpatient units to accept admissions. Over the same time period, the annual number of admissions increased from about 7,300 to about 8,400. Cost per stay in both the inpatient and observation units was also reduced, as shown in Table 1. Meanwhile, JMH’s share of its market grew by about 14 percent.

Metric	Initial	Present	Improvement
IP LOS (days)	4.23 Jan 2012	<b>3.45</b> Aug 2016	↓
Obs LOS (hours)	37 Jan 2014	<b>20.4</b> Aug 2016	↓
IP Cost/stay	\$3973 July 2012	<b>\$3350</b> FY16	↓
Obs cost/stay	\$294 June 2014	<b>\$229</b> FY16	↓
ED visits	42,434 FY13	<b>41,030</b> FY16 YTD July	↓
Admissions	7,310 FY13	<b>8,409</b> FY16	↑
# team members	822 FY13	<b>849</b> FY16	↑
Market share	34% Nov 2011	<b>47.7%</b> Q4 2015	↑

Table 1: JMH Performance Metrics, 2011-2016, data provided by MSHA

As an example of clinical improvement in a specific clinical condition, mortality due to sepsis decreased from 17 percent to 6 percent. LOS and the cost per case associated with sepsis were also reduced, as shown in Table 2. The cost savings associated with sepsis care totaled approximately \$1 million.

	Screening for sepsis at triage	Identification of patients with sepsis	Physician sepsis order set utilization
Pre project 2013	0%	20-30 / month	0%
Post project (2016 results)	100%	90-100 / month	97%

	Mortality	LOS (O/E)	Cost/case
Pre project 2013	17%	0.86	\$12K
Post project (2016 results)	6.40%	0.79*	\$8.9K**

\*1.2 day variation / patient      \*\* \$1M savings

Table 2: JMH Sepsis Mortality 2013-2016, data provided by MSHA

Similarly, both clinical and financial outcomes related to joint replacement surgery improved. Postsurgery readmission rates declined from an average of about 8 percent to less than 2 percent and the cost per episode was reduced from about \$8,800 to about \$8,400, as shown in Figure 1.

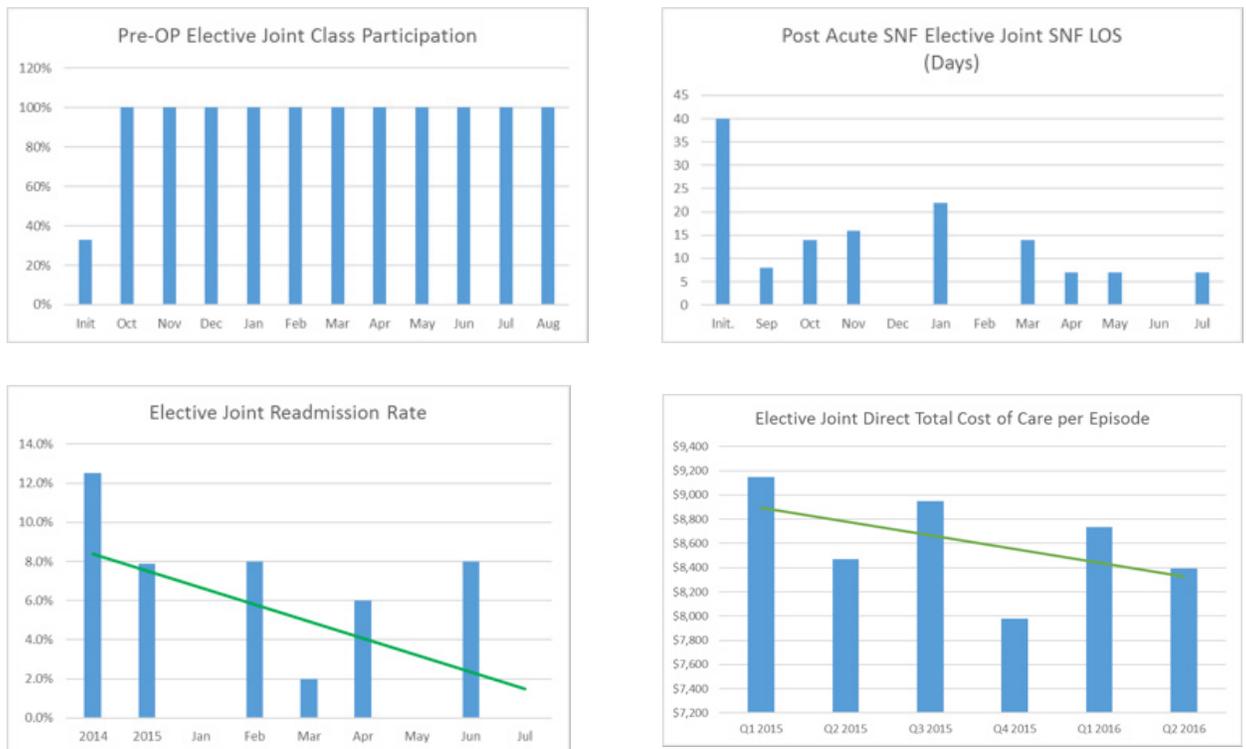


Figure 1: JMH Joint Replacement Bundled Payment Initiative, 2014-2016, data provided by MSHA

Lean adoption was also associated with operational improvements. Streamlining the workflow in the ED translated into reduced wait times for patients needing care. As shown in Figure 2, the door-to-care provider time decreased from approximately 37 minutes to 15 minutes.

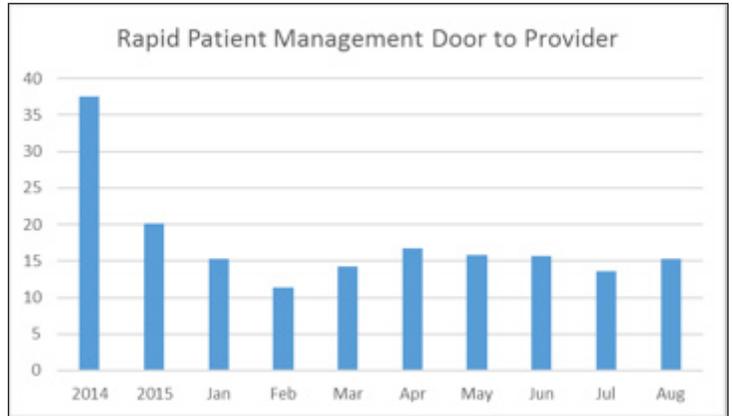


Figure 2: JMH ED Door to Provider Time, in Minutes, 2014-2016, data provided by MSHA

Improvements in processes related to patient flow in the inpatient units were associated with a steep reduction in the percentage of admitted patients who were held in the ED due to a delay in bed availability. As illustrated in Table 3, the proportion of patient holds in the ED was substantially lower in 2016 compared with 2015.

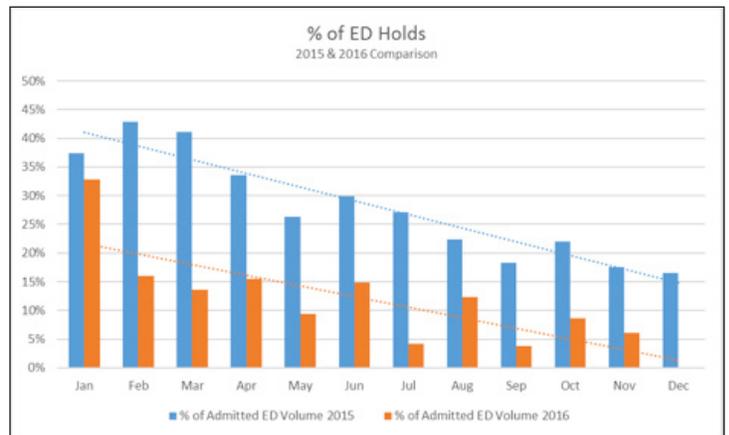


Table 3: JMH Percentage of Admitted Patients Held in ED, 2015-2016, data provided by MSHA

Baise, the CNO at Franklin Woods Community Hospital, described her team's experience with a specific value stream focused on communications about medications throughout an inpatient admission and discharge. Initially the hospital was ranked in the 17th percentile on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) for the question related to this topic. By running several RIEs, starting first in the med-surg units and then spreading to all other units, staff worked to identify the gaps and barriers to improved communication with patients about medication. Leaders ensured that frontline clinicians were involved—and that they were not asked to add any new items to their workload. Nurses used the Teach Back method to test that patients were aware of the name, indications and potential side effects of their medications.

When beginning the initiative, Baise personalized her presentation by sharing a story about her father, who had experienced a significant medication error. She and other leaders also shared with staff some data on communication gaps. As the teams tested and implemented changes in the medication communication process, the hospital's HCAHPS score for this question reached the top decile within 30 days after the first RIE. The hospital has maintained this improvement and is now seen as a best practice site by other hospitals within MSHA.

Baise freely admits that she was not initially on board with Lean. Her full commitment came only after she saw the success the teams had achieved—and the systems that were in place to sustain those hardwon gains. "I found the transition to a Lean environment to be challenging, but about six months in I saw we had finally made it and that the work was well worth the effort. We had achieved what we set out to achieve, had clear visibility to our goals, a map to get there and accountability to stay there."

Nikki Vanburen, RN, MSN, MBA, now CNO at JMH, was immersed in Lean from her first days at MSHA, when she was transferred from the trauma unit at a sister hospital to become director of the emergency department at JMH. At the time, the ED had acceptable turnaround times and, according to Vanburen, "decent but not perfect patient flow." However, overhead was high, in large part because JMH used a staffing model with salaried physicians and, unlike the other hospitals in the system, employed no midlevel providers. In addition, the hospital was looking to improve patient satisfaction and reduce costs through elimination of waste. Through several RIEs the ED teams improved efficiency, removed delay and waste and shifted to a mixed staffing model by adding midlevel providers through a contract service as the number of physicians declined through attrition.

The early focus on the ED brought home to teams across the hospital the interconnectedness of their work, according to Vanburen. One of the earliest RIEs focused on bed placement and involved staff from the ED and the med-surg units, as well as nursing supervisors. "Everyone involved saw that they are part of a single team, that bed placement is not just about the nursing supervisor assigning beds. They saw that what happens in the ED really does affect the inpatient floors and vice versa."

Vanburen asserts that Lean changed not only the ED performance, but also the way she leads. Prior to her experience with Lean, she was "very much a hands on leader, trying to help and do it all." Now she sees her role as supporting her teams by helping them to plan. "When we use tools like the 5 Whys and put our thinking down on paper, the light bulbs start going off. Part of my job is to help prioritize, because we can't follow through on all of the ideas at once." Vanburen believes that Lean also changed her career trajectory to her current position as CNO. "Lean has helped me grow as a leader. I'm convinced that without my Lean experience, I would not be able to do the job I do now."

## Conclusion

Lean, when it involves engaged leadership, culture transformation, respect for workforce and effective process improvement tools, can create a nimble organization that is able to adapt to a variety of new challenges, such as a move to a new facility, expanding service lines and reimbursement changes related to health reform. Key success factors include full engagement at all levels of the organization, widespread leadership commitment, empowerment of frontline teams to become problem-solvers and dedication to using Lean process improvement and management tools, even in times of increased change and leadership turnover. Through Lean, MSHA has become an organization that works in concert toward its performance goals. As Vanburen described it, "Before the Lean transformation, we had a lot of great people doing a lot of great things, but not on the same page, and it was very chaotic. Lean helped fix the chaos."

## About Simpler Consulting, part of the IBM Watson Health business

Simpler<sup>®</sup> Consulting, an IBM Company, is a leading management consulting firm that helps organizations around the globe to improve performance through Lean transformations. Since 1996, Simpler has worked closely with clients to foster an organizational culture that continuously seeks out opportunities to make improvements, and help to stimulate business-impacting results. With its proprietary Simpler Business System<sup>®</sup>, Simpler has helped clients to implement Lean transformations across a wide range of industries.

Simpler Consulting was acquired by Truven Health Analytics<sup>®</sup> in 2014. Truven Health Analytics was acquired by IBM in 2016 to help form a new business, Watson Health. Watson Health aspires to improve lives and give hope by delivering innovation to address the world's most pressing health challenges.

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