

# InnOVATIONS:

## Recognizing Advances in Health Care

An Issue Brief from the St. Louis Area Business Health Coalition

## The Efficiency of Lean Six Sigma Comes to the Primary Care Physician Office

*Waste in health care, of time, supplies and services, is a common problem. Nationally and locally, purchasers are looking to health care organizations to improve care value through innovations in care delivery, such as better care coordination and more efficient use of resources. One strategy is Lean Six Sigma which emphasizes continuous quality improvement and reduces errors and waste. It is mainly associated with manufacturing and the system developed by the Toyota Motor Corporation.*

*Since the 1990s Lean management has been applied in hospitals to improve quality, efficiency and the experience of care, and less so in physician practices. A notable example is Virginia Mason Medical Center in Seattle, Washington that adopted Toyota's (Lean) management system. Yet, ambulatory care and physician practice settings are prime candidates for Lean Six Sigma due to their relatively high patient volume and short encounter times. In 2014, the St. Louis-based Esse Health Office of Dr. Thomas Hastings and Dr. Paul Ganninger redesigned their practice using Lean Six Sigma. While patient experience and the quality and efficiency of care improved, freed up clinical capacity increased access, reducing the potential for emergency department use.*

For more than 15 years, Robert Voegele has been a patient of Dr. Thomas Hastings' primary care practice. Recently, he's seen a few changes at the office. Lab work and electrocardiograms are completed in-house, scheduling is easier and wait times in the office have decreased. He needs regular check-ups and testing to help manage his high blood pressure and heart disease and appreciates the conveniences.

Voegele owns a local training facility for low-income people interested in high tech manufacturing and skilled trades. "It is better," Voegele said. "Overall, my experience has improved. I gave them all "10s" on the patient experience survey."

These improvements have not occurred by chance. A focus on Lean Six Sigma that began in 2014, hit a milestone with the recent unveiling of the St. Louis-based Esse Health Office of Dr. Thomas Hastings and Dr. Paul Ganninger.



Thomas Hastings, MD (Courtesy Esse Health)



Paul Ganninger, MD (Courtesy Esse Health)

### Improving Care, Patient Experience and Physician Satisfaction

Like many leading health care organizations, physicians at Esse Health had been interested in the benefits of Lean since 2002 when Virginia Mason Medical Center implemented the (Lean) Toyota Production System. Virginia Mason was inspired by Boeing's deployment of the Toyota System which had enhanced its ability to build safer aircraft in less time at reduced cost. The Virginia Mason management team realized the Toyota system had a huge application in health care to improve quality, reduce waste, and provide a better care experience.<sup>1</sup>

Wait times are one example. Long wait times may seem like a small part of the patient experience, but they can have a powerful effect on overall satisfaction. A 2013 Software Advice survey of over 5,000 patients found a staggering 97% of respondents were frustrated by wait times at the doctor's office.<sup>2</sup> In Lean Six Sigma, "waiting" is a type of waste just like defects and overproduction.

<sup>1</sup> A Robeznieks, "Prospering by standardizing processes and improving the patient experience," *Modern Healthcare*, January 11, 2014

<sup>2</sup> M McCormack, "How to Treat Patient Wait-Time Woes," <http://www.softwareadvice.com>

The moment a patient walks into the bright and spacious office, the focus on efficiency and care experience is apparent. On the wall to the right of the receptionist is a large, flat screen monitor that shows the office's current scores on three metrics: Average Time to See Provider, Customer Experience and Phone Response Time. The text at the bottom of the screen indicates the averages are in "real time," which are refreshed throughout the day and reset at the start of every new day. Customer experience is updated quarterly.

Esse Health developed software called "Q-FAST" to track the efficiency of patient visits. The "patient flow" metrics include:

- **Door-To-Doctor Time:** Tracks the time when the patient walks into the office until the doctor sees them.
- **Non-Value Added (NVA) Time:** The patient waits without anyone with them. The goal is to keep NVA waste below 25%.
- **Lead Time** tracks the duration of the complete patient visit.

Flow data are displayed on wall monitors in the physician and team work areas and used throughout the day to minimize wait times and identify where staff may need assistance. "Using our QFAST system has been a huge help. We are able to quickly see if there is anyone who needs assistance in the exam rooms or in the lab to keep the staff flowing steadily," said Lynelle Smith, Office Manager. The team has seen steady gains in efficiency (see below). Currently, 94% of patients are seen by the provider within 15 minutes.

	2013	2014	2015	2016
<b>Seen Within 15 Minutes of Appointment</b>	<b>71%</b>	<b>85%</b>	<b>91%</b>	<b>94%</b>

Source: Clinician and Group Consumer Assessment of Healthcare Providers and Systems

## Measurement Matters

As illustrated below, when the patient arrives, the receptionist "clicks the patient in" to Q-FAST and then directs them to an exam room, each of which are named for a St. Louis landmark such as Forest Park or Grant's Farm. Patients "self-room" which means they go to an exam room unescorted. The separation of patient areas and staff workspace called "on-stage" and "off-stage," is an important aspect of Lean. Each exam room has a front and back door. The patient enters through the front door from the reception area. The back

door leads out to the physician and staff workstations. The design aims to improve patient experience by ensuring that footsteps are minimized to make movement through the encounter as effortless as possible, therefore maximizing "patient throughput." Data shows patient experience has improved each year.

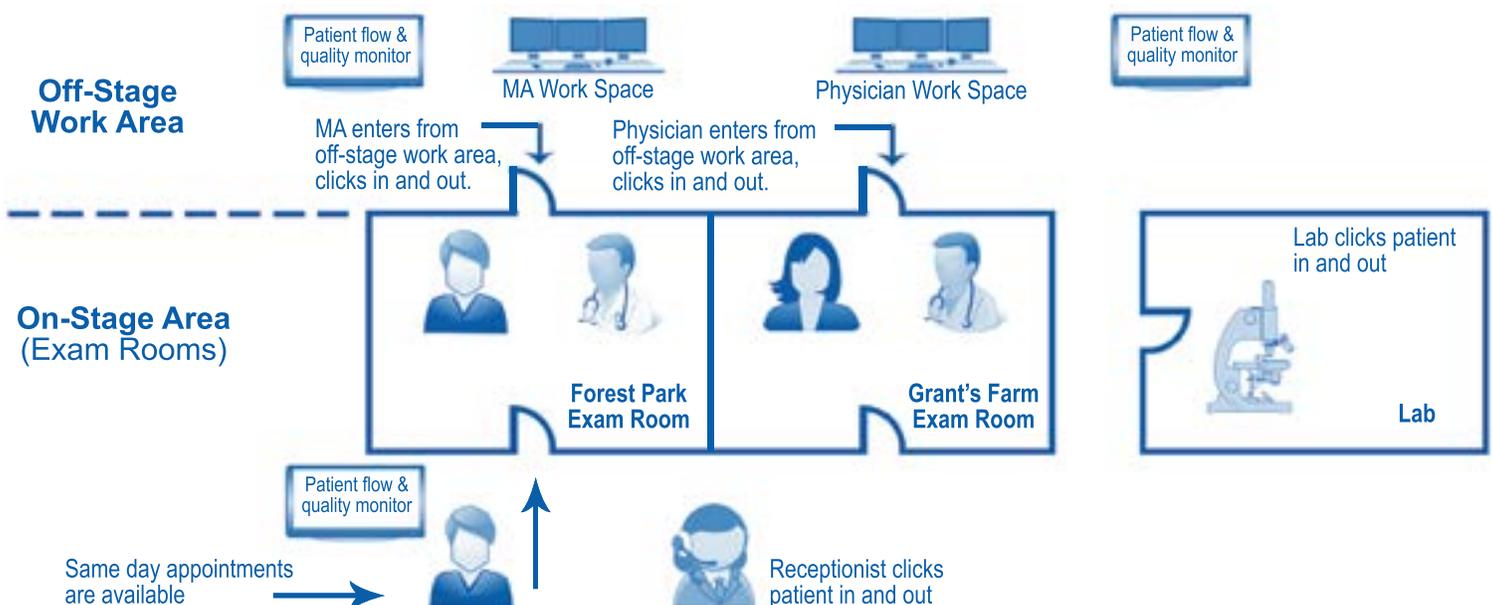
	2013	2014	2015	2016
<b>Overall Patient Experience Score</b>	<b>69%</b>	<b>81%</b>	<b>82%</b>	<b>86%</b>

Source: Clinician and Group Consumer Assessment of Healthcare Providers and Systems

Once the patient is in the exam room, the medical assistant (MA) enters from the off-stage work area to greet the patient. The MA "docks" the "Surface Pro," which is like an iPad. The "dock" accesses the patient's electronic medical record from the server. Then, the MA clicks in to Q-FAST to log the visit start time. The time in between is called WF/MA, "waiting for medical assistant" which is NVA time. Efficiencies gained leave more time for a richer, higher quality clinical experience. When "Rooming a Patient," the MA performs nearly 30 checks such as vital signs, medication reconciliation and preventive screenings. The Vitals IQ system checks vital signs such as blood pressure, pulse, and patient weight. All metrics feed seamlessly into the electronic medical record system to minimize data entry errors. When finished, the MA advises the patient that the doctor will be in and changes the tracking status to "waiting for provider." This change sends an alert to the physician workstation. Improvement on certain quality metrics over time are shown in the table below:

	2013	2014	2015
<b>Colorectal Cancer Screening/Prevention</b>	<b>77%</b>	<b>75%</b>	<b>83%</b>
<b>Control of High Blood Pressure</b>	<b>55%</b>	<b>63%</b>	<b>82%</b>
<b>Diabetes Care—A1c Done</b>	<b>100%</b>	<b>98%</b>	<b>98%</b>

Source: Esse Health





Supply Closet-Lean Inventory System for Medical Supplies (Courtesy of Esse Health)

The 5 Steps (5S) Lean work environment and “just-in-time” inventory system minimizes waste by ensuring there is neither an overabundance nor a lack of supplies in the exam rooms and supply closet.

- **Sort:** Sort out and separate what is needed and not needed in the area.
- **Straighten:** Arrange items so they are ready and easy to use. Clearly identify locations for all items so that anyone can find them and return them once the task is completed.
- **Shine:** Clean the workplace and equipment on a regular basis in order to maintain standards and identify defects.
- **Standardize:** Using standard procedure, revisit the first three 5S often to confirm the condition of the inventory.
- **Sustain:** Keep to the rules to maintain the standard and continue to improve every day.

“The most important part of the inventory system is the Kanban cards placed strategically within the containers,” said Lynelle Smith, Office Manager. “For example, you may have a container with 40 triple antibiotic packages (see photo to the right). When you have used 30 packages in the container, you will come to a Kanban card indicating how many to re-stock and the total number of items that should be in the container. On the back of the card is a sticker with a barcode. Staff scans the barcode which inputs data into the system. Then I can easily import the data to order the supplies.”

## Integrating Lean Across Esse Health

Derrick O’Connell, Chief Quality Officer for Esse Health since 2012, played a pivotal role in moving Lean forward at Esse. Prior to joining the team, he earned a Master Black Belt in Lean Six Sigma

while building a comprehensive quality improvement program for Washington, Mo.-based Patients First Health Care. “Central to this effort was the National Committee for Quality Assurance (NCQA) Patient-Centered Medical Home (PCMH) model which includes the philosophy of continuous improvement like a Lean organization would have,” O’Connell said.

“When I first came to Esse, there was a vision towards Lean Six Sigma as a toolbox for performance improvement and the development of a culture of continuous improvement. Chairman of the Board Dave Hartenbach, MD and Chief Executive Officer (CEO) Mike Castellano understood the value of the toolbox and strongly supported the initiation of a Lean Six Sigma culture,” O’Connell said.

Since then, CEO Castellano has earned his Black Belt. In 2013, the Chairman and CEO and several of the organization’s physician and organizational leaders attended a customized Lean workshop at Virginia Mason.

Initially, Esse deployed Lean Six Sigma strategies in part to design the processes needed to obtain NCQA PCMH Level 3 recognition, the highest level possible. “Centrally, patient care workflows, processes, and tools were developed using the Lean and Design For Six Sigma (DFSS) methods. Esse deployed these tools for all offices that earned NCQA PCMH Level 3 recognition,” O’Connell said.

Dr. Hastings attended the first training developed by Virginia Mason for primary care physicians. The three-day continuing medical education (CME) course offered instruction in Lean process improvement tools with specific group exercises and physical practice layout.

At Virginia Mason’s primary care training, one of the first team-based exercises was to make a paper airplane. Each person was responsible for one of the folds. With each iteration of the process, the team’s goal was to improve the efficiency of folding the paper airplane. The team identified bottlenecks in the process and worked to resolve the issues.

“While the exercise seemed simple, it illustrated the challenge of team-based efficiency improvement,” Dr. Hastings said.



Lean Inventory System for Medical Supplies (Courtesy of Esse Health)



Derrick O'Connell, RN, MBA, MBB, PCMH-CCE  
(Courtesy Esse Health)

Paul Ganninger, MD is a specialist in Family Medicine who joined Dr. Hastings' primary care practice in 2014. Drs. Hastings and Ganninger asked Derrick O'Connell to lead the effort to redesign their practice given his Lean Six Sigma expertise. Since completion, the office continues to make progress. "To be on the road to improvement is the main goal of the Lean Six Sigma process," O'Connell said.

Drs. Hastings and Ganninger and staff agree and believe it has improved both the efficiency of operations and the experience of patients, physicians, and staff.

"We can see an average of 18-20 patients a day and still walk out the door by 5pm," Dr. Hastings said.

"It has been a breath of fresh air," said Dr. Ganninger.

"We are able to focus more on what the patients' needs are, improve operational cost, improve access to care and still get out of here on time," Smith said.

To date, Esse Health has transformed four physician practice sites with Lean designs. There is a fifth redesign underway which is scheduled to be opened during the Winter/Spring of 2017.

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