



THEDA  CARE™  
CENTER FOR  
HEALTHCARE VALUE

*Targeting Value, Spreading Change*

**Power of Peer-to-Peer**

*Network members learn, share, connect, and get results*

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## Introduction

Rarely has any industry undergone under such intense and multidimensional change as that which engulfs healthcare today. No entity within the healthcare industry — providers, insurers, drug and device makers, and, most of all, patients — are left untouched. And for an industry that consumes such a high percentage of national GDP (17.9% U.S.<sup>1</sup> and 11.7% Canada<sup>2</sup>), economic fortunes, too, are in balance.

The changes affecting healthcare are many and impactful: A steep technology-learning curve challenges providers and healthcare organizations to modernize their recordkeeping and communication processes. Large-scale and politically charged regulatory changes in the U.S. pose potential seismic shifts for healthcare leadership. Process improvements move haltingly forward at organizations attempting to address quality and cost problems with lean thinking and coordinated-care methods (while still others desperately try to figure out how to begin improvements and others ignore the need for change). And despite lingering high unemployment throughout North America, skills gaps continue to leave organizations understaffed and looking for clinical skills (e.g., nurses), operational skills (e.g., lean practitioners), and technical skills (e.g., electronic health records expertise).

With the matrix of changes and the challenges they pose, healthcare management has become high-risk, high-dollar triage that seeks to head off as many problems as possible, minimizing those that can most impair an organization and its quality of care while keeping other issues temporarily in check. Yet in an industry governed by the scientific method, too many executives repeatedly rely on random trial and error to survive. It doesn't have to be this way. Why not interact with organizations that have faced the same problems that pose risks to your organization, and learn from them and/or along side of them? Imagine instead a peer-to-peer relationship in which you, your colleagues, and the organization as a whole:

- *Learn* alongside like-minded organizations to understand and address challenges and problems.
- *Share* experiences and offer objective insights on technologies, tools, concepts, and ideas affecting healthcare today, truly identifying what worked and what didn't work.
- *Connect* to others with similar objectives and who similarly have a desire to learn and assist — i.e., leap beyond the “not invented here” mentality that too often constrains healthcare innovation.
- *Get results* by moving your organization faster and farther than you can achieve performance improvements alone, by developing ideal behaviors, and by fostering employee engagement, interaction, and ideas.

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<sup>1</sup> *National Health Expenditure Projections 2011-2020*, Centers for Medicare & Medicaid Services

<sup>2</sup> *National Health Expenditure Trends 1975-2011*, 2011 projected, Canadian Institute for Health Information.

The Healthcare Value Network helps healthcare providers learn, share, connect, and get results. In 2008, the non-profit ThedaCare Center for Healthcare Value was formed by John Toussaint, MD, CEO emeritus of ThedaCare in Appleton, WI, to bring employers, insurers, government communities, and providers together to develop new models of care and reimbursement that result in greater efficiency, expertise, and value. In March 2009, the ThedaCare Center partnered with the Lean Enterprise Institute (LEI) to form the Healthcare Value Network (HVN). The mission of HVN is to fundamentally improve healthcare delivery through lean thinking.

“As adults we learn from each other, not by sitting in front of Powerpoint presentations in some conference room,” says Dr. Toussaint, CEO of The Center. “The light bulb goes on when we get to see the real work in the ICU or the Clinic or the ER. If you’ve seen one lean transformation, you have seen *one lean transformation* and that means we can all learn from each other’s journey. As a peer-to-peer learner you are a student going to see and a teacher when others come to see your work. That’s the magic of HVN.”

More than 58 organizations are HVN members (see *Healthcare Value Network Members*), sharing a commitment to providing high-quality, cost-effective care through the application of lean concepts. Each member organization pays \$20,000 annually for participation.

Rachelle Schultz, president/CEO of Winona Health in Winona, MN, leads the lean improvement efforts for the organization and holds the organization accountable for process improvement. Winona includes a 99-bed acute care hospital, physician clinics, 134-bed nursing home, three assisted living residences, home care and hospice programs, retail pharmacies, and a foundation. “We have taken some very purposeful, big approaches to really drive lean, both as a management system and also as a means to change our culture around continuous system improvement, engagement of staff, and so forth,” says Schultz. “We’ve seen some really nice results as a result of that work, and we continue to do it. The more we do it the more we learn what work remains. We’re thinking differently, we’re operating differently.”

In pursuit of lean ideas, Schultz, who has more than 20 years experience in healthcare management, visited ThedaCare and talked with Dr. Toussaint and staff. Following that experience, Winona joined the Network in 2010 in order to connect with other organizations doing similar lean work. She says it is difficult to relate to healthcare organizations that are not pursuing improvements such as those underway at Winona, and so to talk through issues and approaches with like-minded executives and those who understand the lean journey and its experiences is invaluable. “You get to see it, you get to talk to people, it resonates,” she says. “It’s the same kind of issues we’re all dealing with. Our approaches have to be respectful to our own organizations, but we understand what tools and thought processes they’re using. People have been very willing to share tools, policies, and approaches. It’s been a really great resource that way.”

## Healthcare Value Network Members

- Akron Children's Hospital — Akron, OH
- Atrius Health / Harvard Vanguard Medical Associates — Boston, MA
- Beth Israel Deaconess Medical Center — Boston, MA
- BJC Healthcare — St. Louis, MO
- Blood Center of Wisconsin — Milwaukee, WI
- Bronson Healthcare Group — Kalamazoo, MI
- Carolinas Healthcare System — Charlotte, NC
- Carolinas Lean Collaborative — North Carolina
- Christie Clinic — Champaign, IL
- Cleveland Clinic — Cleveland, OH
- Exeter Health Resources — Exeter, NH
- Group Health Cooperative — Seattle, WA
- Gundersen Lutheran Health System — La Crosse, WI
- HealthEast Care System — St. Paul, MN
- Henry Ford West Bloomfield Hospital — West Bloomfield, MI
- Hotel Dieu-Grace Hospital — Windsor, Ontario, Canada
- Inova Health System — Falls Church, VA
- INTEGRIS Health — Oklahoma City, OK
- John C. Lincoln Health Network — Phoenix, AZ
- Johns Hopkins Medicine — Baltimore, MD
- Kaiser Permanente Santa Clara Medical Center — Santa Clara, CA
- Lawrence + Memorial Hospital — New London, CT
- Lee Memorial Health System — Cape Coral, FL
- Lehigh Valley Health Network — Allentown, PA
- Lucile Packard Children's Hospital — Palo Alto, CA
- Martin Health System — Stuart, FL
- Martin's Point Health Care — Portland, ME
- Mayo Clinic Health System-Franciscan Healthcare — La Crosse, WI
- McLeod Health — Florence, SC
- MemorialCare Health System — Fountain Valley, CA
- Mercy Health System — Chesterfield, MO
- Mercy Medical Center — Cedar Rapids, IA
- Mercy Medical Center — North Iowa — Mason City, Iowa
- Nemours — Jacksonville, FL
- New York Health and Hospitals Corporation — New York, NY
- Oregon Health & Science University — Portland, OR
- Palo Alto Medical Foundation — Palo Alto, CA
- Park Nicollet Health Services — Minneapolis, MN
- Parkview Health System — Fort Wayne, IN
- Presbyterian Healthcare Services — Albuquerque, NM
- Regina Qu'Appelle Health Region — Regina, Saskatchewan, Canada
- Rouge Valley Health System — Toronto, Ontario, Canada
- Salem Health — Salem, OR
- Saskatoon Health Region — Saskatoon, Saskatchewan, Canada
- Scottsdale Healthcare Osborn Medical Center — Scottsdale, AZ
- Seattle Children's Hospital — Seattle, WA
- Spectrum Health System — Grand Rapids, MI
- St. Boniface General Hospital — Winnipeg, Manitoba, Canada
- St. Joseph's (California) — Orange, CA
- St. Joseph Regional Health Center — Bryan, TX
- St. Mary's General Hospital — Kitchener, Ontario, Canada
- St. Rita's Medical Center, a member of Catholic Healthcare Partners — Lima, OH
- Stanford Hospital & Clinics — Stanford, CA
- Sutter Gould Medical Foundation — Stockton, CA
- ThedaCare — Appleton, WI
- UCLA Health System — Los Angeles, CA
- UMass Memorial Health Care -- Worcester, MA
- University of Michigan Health System — Ann Arbor, MI
- University of New Mexico Health System — Albuquerque, NM
- Vancouver Coastal Health — Vancouver, British Columbia, Canada
- WellSpan Health — York, PA
- Winona Health — Winona, MN

“In the first six or seven years of our work in lean, there were so few organizations doing lean that were outside of manufacturing,” recalls Barb Bouché, director of the continuous performance improvement (CPI) department at Seattle Children's Hospital, which consists of a 250-bed inpatient unit, ambulatory division with over 60,000 visits per year, and extensive research institute. Since 1997, Bouché and Seattle Children's have been pioneers in lean work in the healthcare industry, forming the CPI department in 2004.

Bouché says two things presented challenges to her and the organization as they sought to broaden their thinking and application of lean: “One was trying to find people trained in the concepts and principles who could grow as leaders in the organization. It was challenging to

have folks make the transition from manufacturing to healthcare and be effective as teachers and coaches. [Two], the few organizations that were undertaking lean in healthcare — truly very few — were all in the throes of being early in their learning as well. It was challenging to do any networking or sharing.” Simultaneously running a department, teaching, coaching, and networking on her own, Bouché recognized the opportunity presented by HVN, and Seattle Children’s became a member. “When the Network came into being, it was a fabulous opportunity to automatically have a network of people to connect with.”

Many HVN members signed on because they believe participation will accelerate the improvement processes in their organizations and, in helping make change in their organizations, really begin to make substantive change in healthcare. Network participation often begins with one executive or lean leader engaged with HVN activities, such as gemba visits or attending events, but eventually staff across organizations learn how to access Network programs and share ideas and information. One member executive indicated that engaging staff has two critical outcomes: it helps them to better appreciate their own lean improvements, and they are inspired by their peers to do more with lean principles. The spreading of HVN access and benefits is particularly effective when it reaches medical staff — physicians, chief of staff, nursing executives, surgeons, etc.

With a continually expanding base of members, HVN has developed a range of lean member experiences and depth of lean hands-on expertise, making it possible for member executives and physicians to connect with organizations at a commensurate point of lean learning as their own. For example, recent open queries of HVN members have sought assistance with a gamut of tools, techniques, and concepts:

- Restructuring an annual budgeting process to align with lean principals and methods,
- Developing a knowledge-management system,
- Creating functional visual management for use in a clinic,
- Establishing benchmark metrics for ambulatory practices,
- Applying lean principles in a primary healthcare setting,
- Using a heijunka box (lean tool to level mix and volume) for order processing, and
- Apply lean improvements to child-birth value streams.

HVN members look to develop organization wide strategy that embraces lean principles. For example, Seattle Children’s Hospital and Akron Children’s Hospital are tackling facilities-development projects and examining and sharing concepts such as the production preparation process (3P), a disciplined method for designing lean processes, literally, from the ground up. Bouché has been working with staff, architects, engineers, and construction teams to design and develop new facilities based on lean principles. In August 2012, HVN hosted the webinar, “Lean Principles in Space & Facility Design at Akron Children's Hospital,” which examined lean aspects of that organization’s \$200 million upcoming expansion in Ohio.

Similarly, improvements efforts at Beth Israel Deaconess Medical Center take a strategic approach to lean with recent efforts encompassing extended value streams (to include patients, their families, and suppliers) and focused on activities that will have broad ramifications, such as redesigning perinatal services, says Alice Lee, VP of business transformation. Beth Israel Deaconess is a Boston-based teaching hospital of Harvard Medical School, a HVN member with more than 600 licensed beds and more than 9,000 employees and physicians, including interns and residents. “We focus on the things that will touch many more patients,” says Lee.

Not surprisingly, Lee gravitates toward HVN executives and members similarly taking systems-level perspectives of lean rather than working upward from tools and technique. “My role was the culprit that introduced lean into this organization over seven years ago. HVN has been important to our work as we can connect with others thinking the same way and struggling with the same struggles. We’re one of the organizations that have not used full-time consultants, right or wrong,” says Lee, who will occasionally bring in a sensei for a certain project and for a finite period, but believes that part of their deep learning has been through struggle. “It’s a balance. I find that joining the Network gives you that ability to tap others who know a bit about something that you don’t, and allows you to share also.”

Lee adds that the Network offers access to “great thinkers” and “big names” in lean healthcare, but, in true lean fashion, she also openly examines and critiques the processes of the Network. To that end, she says HVN leadership and its staff are very receptive to feedback from members, responsive to ideas for Network changes, and continually evolving in how they can best serve members. For example, Lee strongly recommended HVN consider a “double-header” gemba visit, whereby two of the Network members in Boston jointly host a gemba visit and provide more value for the Network members’ travel funds. Leaders at HVN accepted that proposed experiment and a double-header is in the planning stages.

## Many HVN Opportunities

HVN members are presented peer-to-peer organizational opportunities that are, ultimately, designed to help them improve their entire organizations and embed a culture of continuous improvement (not merely boost a department or function, although there are myriad opportunities to do that as well). The experiences of members position them to help their peers improve quality and patient care, reduce costs, and enhance their organizations’ financial positions. There are six primary and interrelated ways in which HVN members collaborate:

- Gemba visits,
- Assessments,
- Webinars,
- Education and training,

- Resources, and
- Affinity groups.

### *Gemba Visits*

Seeing really is believing. One powerful way for HVN members to learn, share, and connect is by observing each other's organizations while they work. Lean thinkers refer to the place where work occurs by the Japanese term "gemba." To improve work, you must intimately understand the work, and that understanding only comes by going to the gemba, seeing what is happening there, and gathering facts/data (not speculation or beliefs).

HVN members host two-day gatherings for fellow members at their gemba, with events typically planned around a specific theme or learning objective (e.g., strategy deployment, management by standard work, methods to disseminate lean within a hospital).

"It's the whole issue of being able to see it," says Jack Bowhan, network manager, ThedaCare Center for Healthcare Value. "It's one thing to read about it, but actually going in and seeing is what everyone finds most valuable."

Approximately a dozen or more gemba visits are scheduled each year, and members identify the topics and staff to attend that best meet their needs. For example, a typical gemba visit may consist of a member organization with two or three staff attending, making for an overall gathering of 30 to 40 visitors. That's a lot of visitors to be traversing a facility, so gemba visitors break into small teams to facilitate discussion and to minimize their interference with hospital operations. By breaking into teams focused on different healthcare areas or objectives, a member brings multiple learning perspectives.

Witnessing work in action allows HVN members to learn from the host organization, and visitors are encouraged to query their hosts. Host organizations openly share their successes as well as their challenges. In turn, the hosts receive invaluable, constructive criticism and feedback from dozens of outside eyes as well as an opportunity to step back from their work, reflect, and appreciate the journey they've traveled thus far.

Bruce Roe, MD, chief medical officer at St. Boniface General Hospital, Winnipeg, Ontario, has attended six gemba visits. Similarly, Michel Tétrault, MD, president and CEO at St. Boniface has attended multiple gemba visits. St. Boniface is a non-profit 500-bed acute care facility, affiliated to the University of Manitoba and owned by the Catholic Health Corporation of Manitoba. The 4,000-staff hospital offers inpatient, outpatient, and outreach services through eight clinical programs to more than 235,000 people annually.

Dr. Roe also identifies St. Boniface staff to attend gemba visits based on the organization's needs at the time in relation to content knowledge or clinical areas scoped for the gemba visits. For

example, in 2011 he and colleagues went to McCloud Health to examine the member's work on mortality reduction and with medication delivery systems. "That specific content was important: how they knit these systems together into a management system, to see how people integrate this in their work, and to see how it's reflected in executives and how executive work has changed as they continue on their journey." Dr. Roe also visited Christie Clinic recently to examine how that organization turned its lean approach "on its head," shifting from rapid improvement events to using strategy deployment to align overall goals with a bottoms-up, daily-improvement system and leadership standard work. "That was impressive."

St. Boniface also hosted a gemba visit in 2010. "It was very positive for us in terms of us being able to share our story," says Dr. Roe. "It was positive for our staff in terms of them being able to see people from outside who were involved on lean journeys and to get questions and recognition from those outside people. It was a good opportunity to reflect back on where we had been and where we were. We got good feedback, and we also got helpful feedback."

HVN gemba visits have increasingly become more defined and targeted around what members want most to know and what they can expect to see (see *Gemba-Visit Themes* on next page). "We learned a little bit more about what is of value to people, and are trying to specify what people may want to come and see," says Bouché of Seattle Children's Hospital, which sponsored a gemba visit in early 2011 and regularly hosts other guests from in and outside the Network. "Preparing for the visit is always a good experience... you learn to see what you do well and what you don't do well. It can be a mixed bag for people that come on gemba visits, but if we can be clear about what we are going to share with them, then it's really beneficial."

"We share everything we have in terms of material, content, progress, and problems with anybody in the Network that wants to learn," adds Bouché. Many visitors are keen to see the work done in building design as well as witness what has been achieved by an early adopter of lean. Bouché presented "Improvement Kata" at the Lean Healthcare Transformation Summit in June, describing the ritual approach necessary to link leadership, continuous improvement, and sustainability in an organization. Yet Bouché says some guests arrive with extraordinarily high expectations, believing they are about to see the Toyota of healthcare. "We're not unhappy with our progress. When organizations are new to [lean], they want to come see what's possible, and sometimes the expectations are so unrealistic. That's not necessarily our problem, but an issue of where people are in their learning, and we need to help set reasonable expectations."

HVN members recognize the need to get outside of their own facilities, to consider different concepts and ideas, and to get excited about what others in healthcare are doing and achieving. When observing concepts in action, people tackling similar problems, and witnessing experimentation and results (good as well as bad), it is not unusual for visitors to walk away with a greater appreciation of their own lean achievements and what it took to accomplish them. They see and hear how others struggle as well, but also how they're continuously working to overcome obstacles. And many attendees are inspired by some element of their visit and inspired to try new things and do more when they return to their own organizations. Some members have



established report-out presentations after gemba visits, with staff conducting presentations to senior leadership and others about what they learned. In addition, gemba visitors return with ample materials, which can often be modified for their use (preventing them from reinventing the wheel) and help them to share their experiences internally.

## Gemba-Visit Themes

The following are HVN gemba visits and their themes since 2009. HVN has 13 gemba events being planned for 2013, including a “double header,” in which two Network members in the same city will host visitors.

### 2012

Accelerated Lean Transformation, Patient Experience  
— UCLA Health System

An Inch Wide and a Mile Deep: See How Modesto Location Is Creating an Ideal Model to Spread Lean at 24 Locations in the Central Valley Region  
— Sutter Gould Medical Foundation

Application of Lean and Six Sigma Principles at a Pediatric, Acute Care Teaching Hospital  
— Akron Children’s Hospital

Building a Lean Culture by Strategically Integrating and Aligning Lean Principles and Practices Throughout the Care Continuum  
— Lawrence + Memorial Hospital

Cleveland Clinic’s Continuous Improvement Methodology: Repeated Cycles of Use to Manage Performance to Goals  
— Cleveland Clinic

Managing the Transition from Individual Quality Process Improvement (PI) Project to System-Level PI Through Lean  
— Scottsdale Healthcare

MHS Organizational Commitment and Culture Change to Become a Lean Healthcare System as well as Engagement of Key Constituencies to Be Involved in the Process  
— Martin Health System

Physician Engagement: Building and Sustaining a Lean Culture  
— Parkview Health

Rapid Deployment of the Packard Quality Management System (PQMS): Management, Strategy, and Goal Deployment and a Daily Management System (DMS)  
— Lucile Packard Children’s Hospital

The Power of Lean Daily Management  
— BJC HealthCare

Using the Shingo Model to Guide Lean and Systemic Thinking  
— Christie Clinic

### 2011

Aligning and Balancing People Development and Process Improvement Efforts  
—University of Michigan Health System

Develop and Sustain a Program to Meet the Institute of Medicine Six Aims: Safe, Effective, Efficient, Timely, Patient Centered and Equitable Care  
— McLeod Health

Developing a Problem-Solving Culture at the Frontline  
— Iowa Health System

Leadership, Daily Improvement, and Standard Work  
— New York City Health and Hospitals Corporation

One Approach to Designing and Putting in Practice a Lean Management System in a Community Health System  
— Winona Health

Physician Engagement in Lean  
— Seattle Children’s Hospital

The Structure Required for a Problem-Solving Culture: A Team Leader Concept  
— Mercy Medical Center, North Iowa

### 2010

Results of Park Nicollet’s 3P Method and Tools in the Design of Innovative Care Models and Facilities. Supply Management in Multiple Settings  
— Park Nicollet Health Services

See How St. Boniface Has Worked through the Challenges and Successes of Spreading and Sustaining Improvement Over Time  
— St. Boniface Hospital

See Patient Pull Systems in Place at Two Emergency Departments  
— St. Joseph Health System

### 2009

Leadership in Action  
— Group Health Cooperative

Understand the Basic Tenets of Hoshin Planning and How ThedaCare Has Applied Hoshin Planning as a Method to Align People and Resources to Improvement  
— ThedaCare

Network gemba visits also encourage members to explore lean concepts as they are applied in non-healthcare environments. HVN leadership believes it is important that healthcare organizations learn, share, and connect with organizations from other industries that are using lean principles because seeing the tools and techniques in a foreign setting can open visitors' eyes and minds to their applicability and effectiveness in healthcare — often more so than a healthcare setting can. Organizations that have partnered with HVN in this regard include:

- *Autoliv*: This company is a worldwide leader in automotive safety, a pioneer in both seatbelts and airbags, and a technology leader with an expansive product offering for automotive safety. All the leading automobile manufacturers in the world are Autoliv customers. With the Autoliv Production System (APS), Autoliv is engaged in a process of continuous improvement and breakthrough with the aim of being the leader in the industry and progressing each day in satisfying their customer, employee, shareholder, and society expectations. Its system is mature but always evolving, and it serves as a model for all industries, including healthcare.
- *Ford River Rouge Plant*: This lean site is part of a complex that, when launched in the 1920s housed the world's largest integrated manufacturing plant and pioneered lean concepts developed by Henry Ford. Today, it is home of a highly modern, flexible manufacturing facility with cutting-edge environmental approaches.

### ***Assessments***

HVN members are unique organizations on individual lean journeys of improvement, each having traveled different distances and routes on that journey. Yet as they progress, they are all attempting to better understand where they are on the journey, where they want to be, the gap that exists between the present and the better state, and how to close that gap. A behavior-based, rigorous assessment of their organization can accelerate that learning process and accelerate improvements. The HVN assessment process brings external eyes into member organizations to identify strengths and opportunities for improvement. It also develops the skills of individuals (“assessors”) who conduct the assessment, giving them the training necessary to look at other organizations with lean eyes as well as view their own organizations and processes as they've never seen them before.

Unlike the many audits in healthcare that carry a punitive stigma, an HVN assessment is an objective review intended solely to help Network members improve. “The idea was that this assessment process was going to fill a need to help organizations understand where they were on a lean journey, given that everyone had different definitions of what that meant, and it also was intended to be education-focused,” says Michael Stoecklein, director, Healthcare Value Network, and manager of the assessment program. “I think we have been true to that. This model does provide organizations with an outside framework and perspective of where they are on the journey.”

Stoecklein says the organizations that have availed themselves of the assessment process develop a more accurate picture of their organization and lean progress. They often recognize that some activities they have pursued are not leading to the cultural transformation necessary to become lean, and they gain a better understanding of where and how to take the next improvement steps.

HVN partnered with the Shingo Prize organization and adopted its assessment process and model of operations excellence, which focuses on transforming the culture of organizations (i.e., changing behaviors) to achieve lean principles. What the Shingo Prize organization has determined through two decades of assessments within various industries, including healthcare, is that:

- Business and management systems drive behavior and must be aligned to the correct principles.
- Operational excellence requires a focus on both behaviors and results.
- There is a relationship between principles, systems, and tools.

HVN holds assessment-training workshops to acquaint members with the Shingo model (see *The Shingo Model*). Member executives learn about the principles-based approach and how to evaluate organizations, including their own, on four dimensions necessary for a lean transformation — cultural enablers, continuous process improvement, enterprise alignment, and results. What is particularly effective about the Shingo assessment process is that, because it is principles-based and focused on how people and an organization act/ behave, it can be applied to any department or function of a healthcare organization no matter how diverse, from admissions to cardiology to imaging to patient discharge.

### The Shingo Model

Lean transformations are guided by the four dimensions of the “Shingo Principles of Operations Excellence.” The dimensions help organizations understand ideal behavior and to assess if systems are producing desired behaviors at all levels of the organization and in all areas of operation and support functions.

Within each of the four Shingo dimensions are guiding and supporting principles. Principles are universal truths that govern consequences or outcomes (e.g., gravity is a principle). The 10 guiding principles for the four dimensions of the Shingo model are:

- *Cultural enablers*
  - Lead with humility
  - Respect every individual
- *Continuous process improvement*
  - Focus on process
  - Embrace scientific thinking
  - Flow and pull value
  - Assure quality at the source
  - Seek perfection
- *Enterprise alignment*
  - Create constancy of purpose
  - Think systemically
- *Results*
  - Create value for the customer.

The Shingo Model also consists of a “Shingo Transformation Process,” which describes how organizations adjust systems to drive ideal behavior. The not-for-profit Shingo Prize organization was named after Japanese industrial engineer Dr. Shigeo Shingo, an expert on the concepts, management systems, and improvement techniques of the Toyota Business System, from which lean thinking evolved.

To learn more about the Shingo Prize organization, go to [www.shingoprize.org](http://www.shingoprize.org).

Since the inception of the HVN assessment process in 2009, the Network has steadily built a team of member assessors, volunteers who are willing to put their learning to work for the benefit of fellow members. Assessors also clearly benefit in that they're taking ideas back to their organizations from their training and from the assessments activities at other organizations, both full assessments as well as "scrimmages" (scoped-down events that allow assessors to practice at a member site).

The full HVN assessment process consists of four principal steps:

1. *Self-assessment*: A member's staff, who have been trained on the Shingo model, diagnose their own organization (in part or in whole) and develop a report on what they find. The self-assessment report describes how the organization's systems and practices drive behaviors (ideally to support lean principles) and offers a profile of the organization (history, mission, scope of services, achievements, processes, etc). The self-assessment report alone is beneficial to a member because it's likely the first dedicated lean review of the organization. The report also provides a condensed understanding of the organization for the external assessors who will conduct the peer assessment. Ten organizations have completed or begun a self-assessment at year-end 2012. Three of these organizations have moved to the next level of undergoing a peer assessment, and have received a feedback report.
2. *Peer assessment*: The peer assessment consists of a team of HVN volunteer assessors, HVN staff, and experienced assessors from the Shingo Prize organization (the latter as necessary to supplement the skills of Network assessors). Working in small groups, peer assessors objectively and dynamically examine behaviors of the host site, comparing what they see and learn against the self-assessment report (i.e., is the organization doing what it believes it's doing) and evaluating the member's progress against the Shingo model of operational excellence. Has it developed and executed management systems to support guiding principles for each of the four dimensions? Are appropriate tools and techniques available to staff that align with management systems? To what extent are behaviors aligned with lean principles (the frequency, duration, intensity, and scope of behaviors)? The peer assessment takes two to three days to complete.
3. *Assessment report*: The peer assessors convene and develop an exhaustive summary of what they've witnessed, packing all of their on-site experiences into a coherent report that highlights major strengths and opportunities relative to the four Shingo dimensions.
4. *Integrate assessment into continuous-improvement plan*: HVN members use their assessment report to inform their continuous-improvement planning, finding ways to expand on strengths and to address the gaps identified. The assessment is not prescriptive — members must take the initiative to convert the perspectives of assessors (their own staff and the peer assessors) into improvement plans and actions unique to their organization and culture.

The assessment process was trialed at Hotel-Dieu Grace Hospital in 2009, with full assessments at Christie Clinic in 2010, Parkview Health in 2011, and St. Mary's Medical Center in 2012. (Their assessment reports are available to HVN members.) Each organization has moved forward and leveraged their assessments in different ways and at different levels. For example, Christie Clinic's CEO Alan Gleghorn was the recipient of the feedback report and, because of that, says Stoecklein, the organization has been able to more rapidly implement measures to address the findings in their assessment report.

Gleghorn says the Shingo model is applicable to healthcare professionals because it is “about behaviors, systems, and alignment. That is what healthcare people talk about. A doctor does an assessment on a patient. The Shingo model is nothing different than that. You ask questions. You make observations.” He adds that organizations then need to take that information and explore and experiment with their own ways of addressing the problems that are unique to their situations and to the behaviors of their employees.<sup>3</sup>

“You see different receptivity to the assessment feedback,” says Stoecklein. “What we have to do is get more CEOs, like Alan Gleghorn, seeing that this can be valuable.”

HVN and Stoecklein continue to refine the assessment process and assessor training, but the core of the program — emulating the Shingo model and the four-step process — essentially remain unchanged. The manner in which reports are developed has changed based on how Parkview Health took the Shingo feedback approach and reformatted it to make it more accessible to the entire organization, not just those involved in or aware of the assessment process and Shingo model.

The assessment teams also will continue to evolve. “[Peer assessment teams] are always going to be people who have experience and people who are getting experiences as assessors,” says Stoecklein, who manages the HVN assessment process and training, and is responsible for compiling the assessment teams. By year-end 2012, he could draw from the following:

- 180 individuals have gone through two-day assessor training; 26 of 56 member organizations have sent at least one person for assessor training.
- 72 member individuals are on the HVN assessor team.
- Nine member organizations have hosted assessor training, offering their areas and departments as real-world opportunities to develop lean eyes, which gives the host an advantage of getting many individuals trained on the Shingo model.
- One organization has hosted an assessor scrimmage (practice assessment).
- Approximately 50 individuals have worked on a self-assessment of their organization.
- Nine individuals have performed three peer assessments.

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<sup>3</sup> *Assessing and Accelerating Your Lean Transformation*, Healthcare Value Network, December 2011.

Education and training about the Shingo model has been made possible through the partnership with the Shingo Prize Organization and the Cardinal Health Foundation (which has provided grant money to offset some of the costs of education, training, and assessment work).

Stoecklein is pleased with the growth of the assessment program, touching approximately half of HVN members, and says the program has developed as expected. Growth will continue as “the half who are involved talk to the other half about the benefit they are getting,” he adds. “Word of mouth from peer-to-peer is what’s going to work, especially the higher in the organization you get that peer-to-peer action going.”

### ***Webinars***

Although the primary method for peer-to-peer learning is in person (preferably at gemba where the work is done), travel-budget limitations, cost pressures, and time constraints require supplemental methods to facilitate learning, sharing, and connecting between Network members. Webinars are becoming an increasingly important adjunct offering to the HVN support systems. HVN webinars offered to date fall into four categories:

- *Webinars to support working groups*, like the monthly meetings of the Acceleration and Assessment Team, affinity groups, and the HVN advisory council.
- *Bi-annual update webinars for all Network members* provide another way to keep everyone informed about opportunities for learning, sharing, and connecting, and help to facilitate two-way communication between Network members and ThedaCare Center staff.
- *Gemba visit-related webinars* help to support Network organizations as they plan and host gemba visits. For instance, the webinar “What a Great Gemba Visit Looks Like” provides a standard that the gemba-visit host can use as a target for their gemba visit.
- *Improvement webinars* provide opportunities for Network members to share examples of improvement work with each other, including an opportunity for questions and clarification in a manner that is cost-effective. These have included the previously-mentioned webinar “Lean Principles in Space & Facility Design” and a webinar by Laurie Peck, director of staffing at Beth Israel Deaconess Center, on the organization’s work at “Lean Recruiting — Building a Lean Culture.” She revealed how the teaching hospital, which receives 90,000 applications annually to fill 2,200 positions, experimented with new ways (e.g., pre-employment competency assessments) to find candidates, who are more likely to thrive in a lean culture, and is developing a more standardized and efficient hiring process. Other improvement webinars include “Integrated Medication Management System” and “Reducing Mortality in Intensive Care” from Beth Israel Deaconess Medical Center, and “Lean Daily Management at the

University of Michigan Health System.” A series of webinars from presenters at the Cleveland Clinic will be offered in 2013, as well as a webinar featuring presenters from the Institute of Medicine on the topic of “Engaging Patients in Value.”

All HVN webinars are recorded and available for viewing by any Network member, and can be accessed through the private Network website. Webinars are not a substitute for going to see the real work, but they do provide a useful avenue for continued learning, sharing, and connecting among Network members.

### ***Education and training***

Most HVN activities are designed to put members’ leadership and staff in position to exchange ideas with their peers, often in an atmosphere where and when their work occurs, such as gemba visits and assessments. But more conventional learning environments and exchanges of best practices also play a key role in helping members learn, share, and connect.

Since 2010 the Network has hosted the annual Lean Healthcare Transformation Summit, a collaborative event with the Lean Enterprise Institute. “Our two-day comprehensive conference is a forum to share lean learnings and experiments underway within the Network with the world, and it establishes a community of lean thinkers in healthcare,” says Helen Zak, president and COO of the ThedaCare Center for Healthcare Value. “The event started with 250 people and has grown to 500 attendees in 2012, and we expect 600 in 2013. The number of organizations and countries represented continues to grow; the recent year included more global representation, including Brazil, the Netherlands, Belgium, and Sweden. The Summit provides the energy and enthusiasm for lean thinkers in healthcare for the coming year.”

Zak adds that the Summit promotes lean not only for the care-delivery side of healthcare, but also brings to attendees best practices of those integrating lean experiments to the elements of payment and transparency. “At the ThedaCare Center, we advocate delivery of care focused on the patient, payments based on patient outcomes, and transparency of quality and cost data.” In June 2012 in Minneapolis, keynote presentations at the Summit included:

- Dr. Toussaint discussing healthcare’s unsustainable path and outlined necessary changes in healthcare delivery, transparency, and payment.
- Harold D. Miller, executive director of the Center for Healthcare Quality and Payment Reform, discussing the key roles of multistakeholder Regional Health Improvement Collaboratives in improving healthcare value.
- John Shook, chairman and CEO of the Lean Enterprise Institute, discussing one-piece flow, lean problem-solving, and the need for management that balances the social and technical sides of work.

The Summit also included a CEO panel discussion, plenary sessions, breakout learning sessions, and pre-Summit workshops (many offering attendee’s educational credits). Lee of Beth Israel



Deaconess presented the plenary session, “Horizontal Thinking in Action,” about creating an end-to-end perspective for patient and information flow. She says the Summit has dramatically improved in just three years. “The Summit is worlds better than it was in year one. To be fair, it was a new conference with many attendees exploring what is lean healthcare. This year was shocking that it was 500-plus people, many quite sophisticated in their lean thinking... You can tell there was a lot of thought and hard work organizing it.”

Other educational offerings from HVN include topic-specific workshops, such as “ThedaCare Business Performance System Workshop,” and leader-education programs offered by the ThedaCare Center for Healthcare Value. Recognizing that not all leaders in an organization are at the same place in their lean journeys, programs include lean fundamentals for operational managers, lean principles applied to the IT department, and a more advanced overview of the ThedaCare lean management system. The Center also offers transformation experiences through gemba visits to see and reflect on “what good looks like” for senior executives. In the near future these sessions also will be available for physician leaders and the board of directors. All programs are designed to be interactive to maximize networking and sharing with peers and faculty, and they can be customized to be offered at an HVN member’s location. The faculty for educational events include such notable names in lean healthcare as Mike Orzen, coauthor of *Lean IT*;<sup>4</sup> Mark Graban, author of *Lean Hospitals*;<sup>5</sup> and Dr. Toussaint, author of *On the Mend*<sup>6</sup> and *Potent Medicine*.<sup>7</sup>

## **Resources**

Healthcare Value Network members are quick to point out that regardless of how they interact with their peers, they typically come away with a personal contact as well as substantial followup resources that help them better understand best practices and apply new ideas into their organizations.

“The implementation of lean is complex,” notes ThedaCare Center’s Bowhan. “When you’re trying to get an entire organization shifted to a new way of continuously improving their business, there are so many pieces, so many starting points, and it’s relatively new in healthcare.” This is where a peer-to-peer network cuts through complexities and helps members hone in on their needs. The Network points members to peers who have already faced specific lean challenges and helps them locate materials, available at HVN’s member-exclusive website, to support their work.

“One of the most important forms of resources is the person-to-person connections you make through the various Healthcare Value Network events, whether it is a gemba visit or some other event,” says Bowhan. “I am seeing over the last six months to a year the value of the

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<sup>4</sup> Steve Bell and Mike Orzen, *Lean IT*, Productivity Press, 2011.

<sup>5</sup> Mark Graban, *Lean Hospital*, Productivity Press, 2011.

<sup>6</sup> John Toussaint, MD, *On the Mend*, Lean Enterprise Institute, 2010.

<sup>7</sup> John Toussaint, MD, *Potent Medicine*, ThedaCare Center for Healthcare Value, 2012.

interpersonal relationships and [members] feeling comfortable to go back and ask people questions after they've met each other in a face-to-face situation." HVN attempts to build ample networking time into all of its events so that members can make such personal connections.

Members also can find peers through a "key contact" list at the HVN website or with the help of Bowhan, who frequently serves as a point of reference, forwarding requests for information to members whom he knows have expertise and experiences in certain areas. (When annually evaluating the Network, members are encouraged to identify their areas of expertise.) For example, Bowhan recently provided a member with examples of kamishibai boards, visual messaging that helps ensure that standard work is followed. The member's reply: "The information you sent on kamishibai is spreading like wild fire. It was absolutely perfect for our needs. I am so very grateful."

"There is a technical aspect and then there is the real-world experience and learning of it," says Bowhan. "When you read it in a book the concepts might sound simple, but the application of it is much more challenging. And then when you begin to understand all the nuances of the application and how many ways it can go wrong, having someone who's been there can be a tremendous help."

Material available at the HVN website includes forms, templates, photos, videos, and various real-world descriptions of member activities. For example, members can find huddle boards (message boards that organize key objectives and activities for a department around which staff "huddle" for regular, brief meetings), dashboards (message boards to present targets and objectives quickly and visually to show progress toward targets), standard-work forms (by role or function), and lean metrics used for departments or functions. Bowhan says these materials are often aggregated at the HVN website in "consolidated lakes." When an organization hosts a gemba visit, for example, it will produce 15 to 20 products (Powerpoint presentations, videos, documents, etc.) and group them for members.

Winona's Schultz says the Network website is a convenient means for many of her director-level and senior-management staff to access lean improvement information, tapping into ideas presented at the HVN discussion area ("Latest Activity") or various blogs at the website. In addition, Winona's improvement-department staff monitor the site, track subjects, and forward information to Winona executives and employees. "That is, in the broadest sense, how most people here can connect, through the resources out there electronically, to the Network."

### ***Affinity Groups***

As Network membership has continued to grow and broaden — type of healthcare facilities, roles of executives and staff, subject-matter needs — there increasingly has arisen the need among members to regularly connect with peers in similar roles or on similar topics. These "affinity groups" help members to collectively explore ways to solve similar problems affecting their organizations. In 2012 there were two functioning affinity groups:

- *Epic Users Affinity Group*: This is a users group with 33 members that offers knowledge sharing for Epic workflow redesign, role changes, and process governance using lean concepts. It primarily functions as an information-sharing exchange via a discussion group at the collaborative HVN website. Members have posted their go-live and post-go-live structures and processes, and they exchange questions and best practices, such as medication reconciliation upon admission to inpatient units or dealing with add-on laboratory orders.
- *HR Affinity Group*: This group began at the end of 2011, and, says ThedaCare Center's Bowhan, it helps leaders examine ways for HR departments to support the implementation of lean in their organizations. The group, with more than two dozen members, held a workshop at ThedaCare in the fall of 2011, at University of Michigan Health Systems in spring 2012, and plans to offer one or two workshops annually.

Lee says the HR group is focused on human development and selecting and recruiting the right kind of people that will thrive and drive a lean culture. She notes that at Beth Israel Deaconess, where 2,200 staff and residents regularly enter the workforce each year, it's critical to "get the people with the right raw material." Her organization is working on improving its lean-hiring approach, a step that few healthcare organizations have tackled and one that is reminiscent of how Toyota originally staffed its first greenfield facility in Kentucky and then facilities elsewhere around the world. Lee wants to share this process of HR discovery with the Network: "It's like a live case study, almost pre-gemba... I will often say I cannot tell you what to do, but I can tell you what worked here and why. I can share that in way that it makes sense and provides our purpose for our approach."

Other HVN affinity groups in discussion and/or development stages include Supply Chain, Lean Daily Management, and Academic Medical Centers.

## Getting Results

Throughout the Network, member executives are learning how to go beyond engaging with their HVN peers to making the Network an asset that can be leveraged throughout their organizations. This dissemination of learning takes HVN from a collection of healthcare peers to a collection of healthcare peer organizations, in which lean principles become established and spread and lean results are achieved.

HVN member results are as varied as their lean journeys, and tracked by five categories: quality (safety for both patients and for staff); cost and productivity; delivery (throughput and making things flow better); customer satisfaction; and staff engagement (see *HVN Member Results* on next page). "The goal is to make all five move in a better direction," says HVN's Stoecklein.

“The two common categories that are most talked about relate to ‘value’ — quality and cost. But it’s important to remember the other three as well. It would be possible to make quality go up and costs go down, but you might do so at the risk of worsening throughput, unsatisfied customers, and/or poor staff morale.”

Member executives also cite results in the form of peer-to-peer relationships and tangible materials that accelerate their own development and make improvements possible. They expect that spreading HVN connections into their organizations will exponentially grow benefits. Yet many, like Bouché of Seattle Children’s, become frustrated that they cannot devote more time to HVN activities and more actively engage colleagues. Bouché says learning who and what is out there is one thing, but initiative is required to connect with individuals through HVN activities, blogs, or simply reaching out to HVN peers. “The amount of information that is available is pretty remarkable. There is so much learning that can take place if you take advantage of it. If you don’t take advantage of what’s there, then that’s a big mistake. It’s a significant investment to join the Network; you really want to get the value out of it, but you have to make the effort.”

#### Getting the Most from HVN Membership

The threshold for HVN members to get a return on their investment is quite low. Members can tap as few or as many of the Network’s assets as they wish, and their efforts in doing that are commensurate with the successes and returns they achieve. Michael Stoecklein, Healthcare Value Network director, sees a few common characteristics among those organizations that get the most from membership:

- *Work beyond regular work:* HVN recognizes that every leader and key contact from Network member organizations has a day job. Every day member executives attend to the work of their organizations, and that’s the way it should be. Nonetheless, fostering collaboration and networking doesn’t just happen. It, too, can require hard work, discipline, and systems to interact effectively with the Network (standard work for who and how this occurs). This is especially the case among organizations that are not part of a common reporting or ownership structure.
- *Work at sharing and learning:* Most organizations are primarily inward focused — attending to their own goals and objectives — and develop external connections only when business objectives demand it. HVN members learn to reflect on what’s available and possible beyond their walls — outward focused — and build in the time to connect with others. “Our job at The Center is to make it as easy as possible for Network members to connect with each other,” says Stoecklein. “That’s what our systems are designed to do.”
- *Work together:* Staff supporting the Network and that of the ThedaCare Center for Healthcare Value don’t work for Network members — they’re not consultants — but they do work with members. Whether it’s organizing gemba visits, getting affinity groups organized, or simply helping them to identify the means to keep their lean journeys moving forward, HVN staff are an ally in healthcare improvement along with all of the HVN members themselves.

“I think for any membership, regardless of the organization, you become a member but it’s your responsibility to access and use the resources of that membership,” Schultz adds. “If you don’t, it doesn’t really matter who you join or how you do it. There has to be the desire and the drive of the respective organization going in. You can take a lot or you can take a little, depending on what your capacity is for doing that. I think the burden is in some ways really on the organization joining to utilize or access the value pieces that are being offered, and that will probably be different for each organization depending on where they are in their overall journey.”

“It’s a very powerful way to learn from others, to feel connected, to benchmark, and to see from a number of different organizations at very different stages that there are a number of ways to do things,” says Dr. Roe of St. Boniface. “But I think you do have to invest energy into it. It doesn’t flow out. It’s not a valve you turn and suddenly you’re downloaded with all this amazing stuff that you just go and run with.”

### **HVN Member Results**

The following are Network member results displayed within the five categories tracked by HVN. Consider that many of the results have impacted more than one category. For example, a throughput improvement allows patients to more quickly be seen by a physician (patient quality and patient satisfaction) and allows the hospital to see more patients (productivity and cost). More results are available at the HVN website:

#### **Quality of Care**

- Since inception of the Center for Operations Excellence in 2008, eliminated patient wait time of 48,764 days — Akron Children's Hospital
- Within a month of an emergency department and lab workflow redesign, staff reduced hemolysis in ED potassium blood samples by 69% and sustained results for over four years — Beth Israel Deaconess Medical Center
- Created standard work in ED triage to decrease the daily number of unnecessary EKGs performed on patients, which resulted in a 39% decrease in total daily EKGs after six months — Beth Israel Deaconess Medical Center
- Reduction in duplicate laboratory test orders resulted in 8.7% fewer laboratory test orders per patient day on inpatient floors — Cleveland Clinic
- Reduced patient falls with injury by 62% — Mercy Medical Center – North Iowa
- Improved call-light response times by 56% — Mercy Medical Center – North Iowa
- The average length of stay for inpatient psychiatric units decreased from 24.8 days to 14.4 days over a six month period — New York City Health and Hospital Corporation
- Pharmacy/medication dispensing and scanning in perioperative areas decreased undocumented medications from 200 per week to less than 10 per week — Parkview Health
- Improving blood inventory management/reducing inappropriate use enables patients to get blood and plasma products quicker and avoid the risk of inappropriate use — Saskatchewan Ministry of Health
- 87% reduction in pressure ulcers in ICU at Shea Campus — Scottsdale Healthcare
- Anesthesia cart standardization resulted in 80% reduction in medication discrepancies between used and recorded — Scottsdale Healthcare
- Total parenteral nutrition (TPN) medication error rate reduced by 66% over three years — Seattle Children's Hospital
- Blood stream infections in ICU reduced by 50% over three years — Seattle Children's Hospital

- Reduced wait times for new patient visits for ambulatory clinics from an average of 21 days in FY2007 to an average of 13 days in FY2012, even with a significant increase in new patient volumes (38,033 in FY2007 to 90,245 in FY2012) — Seattle Children's Hospital
- Over the past several years, have continued to reduce ED median admit length of stay, from 4.53 hours in FY2009 to 4.17 in FY2012 — Seattle Children's Hospital
- Reduced hospital acquired infection rates significantly through concerted CPI efforts, from 14.2 in FY2008 to 8.02 in FY2012 — Seattle Children's Hospital
- 26% reduction in hospital standardized mortality ratio (baseline of 95% to 70%) — St. Boniface Hospital
- More than a 50% reduction in patient-fall rate — St. Francis Hospital & Medical Center
- Collaborative care resulted in a decrease in defects of admission-medication reconciliation from 1.05 defects per chart to 0 defects per chart — ThedaCare
- Remote STEMI time (six sites) decreased from 212 minutes to 89 minutes — ThedaCare
- Two-day reduction in cardiac surgery length of stay for uncomplicated patients — University of Michigan Health System
- Reduced lead time from 86 to 56 minutes door-to-perfusion time for STEMI patients — University of Michigan Health System
- Development of a decision-tree for fluid resuscitation of burn patients reduced time on ventilator from 16 days to 8 days, and reduced mortality by 15% — University of Michigan Health System

### **Costs and Productivity**

- Since inception of the Center for Operations Excellence in 2008, total financial impact of \$13,425,939 (direct \$8,060,797 and indirect \$5,365,142) — Akron Children's Hospital
- Since inception of the Center for Operations Excellence in 2008, eliminated staff non-value-add time of 41,369 days — Akron Children's Hospital
- Green Belt project to reduce the defect rate for charged patient supplies resulted in a net revenue of \$1.9 million — Akron Children's Hospital
- Four years' of work to improve efficiency and lower medical expenses at 15 practices increased revenue by \$1.75 million per year, following a first-year gain of \$3.5 million — Atrius Health
- 37% improvement in supply for Cardiac Catheterization Lab resulting in savings of \$3.067 million through incremental improvements made over three years — Beth Israel Deaconess Medical Center
- \$103.9 million in financial savings (2007-2011) with return on investment of 2.55X expense — Cleveland Clinic
- Medical Home Prototype resulted in \$10.30 per patient per month savings after two years (first year break even on spending to create/add roles and second year reduced emergency department costs) — Group Health Cooperative
- Achieved \$10 million in incremental unforecasted ED operating margin; 18 months to drive down length of stay to reap the benefits of increased volume and margin (\$10 million per year) that came via added premium payers — Inova Health System
- Almost \$18.4 million in cumulative savings systemwide since FY2008; savings in FY2012 is almost \$5.8 million — MemorialCare Health System
- Increased market share by 14% — Mercy Medical Center – North Iowa
- Five-year lean journey resulted in \$264.7 million in new revenue and cost savings corporatewide — New York City Health and Hospital Corporation
- Blood-inventory management reduced expenditures for blood and blood products by \$10 million over two years — Saskatchewan Ministry of Health
- Team focused on provincial blood products and plasma achieved a 17% reduction in wasted blood product in Regina Qu'Appelle and Saskatoon Health Regions — Saskatchewan Ministry of Health
- \$6,591,360 estimated annual cost savings in ICU — Scottsdale Healthcare

- \$2.5 million reduction in supply-related costs over three years — Seattle Children's Hospital
- \$280 million in capital-cost avoidance of not building new patient rooms — Seattle Children's Hospital
- Moved from a large-batch process in inpatient pharmacy to a more frequent, two-hour fill; reduced medication wastage by 50%, saving approximately \$83,000 per year
- \$3 million annual savings (representing 1% of annual budget) year over year — St. Boniface Hospital
- \$1.3 million in cost avoidance — St. Francis Hospital & Medical Center
- Through cross-training added 70 telemetry capable nurses without adding a full-time FTE and added eight monitor technicians without adding an FTE — St. Mary Medical Center
- Estimated net patient revenues \$25,347,060, and cost avoidance of \$30 million — St. Mary Medical Center
- Collaborative care decreased average cost per case from \$6,512 to \$5,781 — ThedaCare
- M-ACE appointment, credentialing, and enrollment (onboarding physicians) achieved 43-day reduction (52 to 9 days), and additional \$1.5 million in physician services could be billed — University of Michigan Health System

### **Delivery/Throughput**

- Space redesign project in the NeuroDevelopmental Sciences Center led to an additional 2,000 patient visits and a resulting financial impact of \$750,000 — Akron Children's Hospital
- Over the course of seven months of improvement events, improved patient visit times and access to orthopedics, adding 114 additional appointment slots per week — Beth Israel Deaconess Medical Center
- 43% reduction of patient waiting time for the OB-GYN department over eight months — Christie Clinic
- 42% improvement in average total turnaround time for morning laboratory-collection improvements, supporting faster discharge times — Hotel-Dieu Grace Hospital
- Rapid Assessment Unit in ED waiting room resulted in 52% improvement in average door to provider time, 92% improvement in patient elopements, and 52% decrease in diversion hours per month — Lehigh Valley Health Network
- 75% reduction in Post-Anesthesia Care Unit of "OR Holds" (rooms cannot be turned over and new surgery cases cannot start) — Lehigh Valley Health Network
- 98% improvement in "door to doctor" time in emergency department — MemorialCare Health System
- Eliminated 85 non-regulatory checking steps, 1,114 process steps, 582 queues, and 80 employee handoffs; freed up 12,271 square feet; and reduced staff travel time by 977 steps each day — MemorialCare Health System
- 53% improvement in turnaround time (test results available by 7:00 am increased from 72% to 98%) — Mercy Medical Center, North Iowa
- Percentage of CHF patients readmitted within 30 days decreased from 22.6% to 8.8% over a six month period — New York City Health and Hospital Corporation
- In outpatient clinics, the percentage of physicians without a patient ready to be seen decreased from 40% to 0% within a month of improvement and has been sustained for more than six months — New York City Health and Hospital Corporation
- Pediatrics Hematology/Medical Oncology patient-flow improvements resulted in patient cycle time decrease from 95 minutes to 63 minutes, value-added process time of visit increase from 33% to 51%, and patient wait time after vitals decrease from 42 minutes to 20 minutes — Oregon Health & Science University
- Clinical Research Billing achieved 80% reduction in wait time and 22% reduction in process time — University of Michigan Health System
- Redesign of an amputation clinical pathway and standardization of patient education reduced LOS for this population by almost 10 days — University of Michigan Health System

## Customer/Patient Satisfaction

- Reduced Radiology department patient cancellations by 40% via multiyear improvements — Christie Clinic
- Outpatient cancer treatment improvement teams at Taussig Cancer Institute reduced average patient wait times for chemotherapy treatments from approximately 2 hours to 20 minutes — Cleveland Clinic
- 76% reduction in patients who left ED without being seen (LWBS) — Inova Health System
- 30% increase in ED patient satisfaction — Inova Health System
- OB Ultrasound percent of provider time spent with patient increased from 8% to 28% — Oregon Health & Science University
- Food design and standardization resulted in increased service scores (24% > 75<sup>th</sup> percentile, 41% > 90<sup>th</sup> percentile) — Parkview Health
- Within 90 days, standard work for receptionists resulted in 100% of patients surveyed feeling the receptionist knew them well (up from 30%) — Sutter Gould Medical Foundation
- Collaborative care increased patient satisfaction from 68% to 95% — ThedaCare
- Pediatrics family-centered-care rounding resulted in 100% of patients surveyed felt welcome to participate in rounds and 86% responded that their questions were answered by team — University of Michigan Health System

## Staff Engagement/Satisfaction

- Over the last two years, the Blue Belt program has helped to facilitate daily huddles by 75% of the leaders in the organization — Akron Children's Hospital
- 55% improvement in "red alarm" (alarm fatigue) in the Emergency Department after six months of planning and piloted interventions — Beth Israel Deaconess Medical Center
- Reduced Radiology department overtime by 33% via multiyear improvements — Christie Clinic
- Anesthesia cart standardization reduced staff walking by 50 miles per month — Scottsdale Healthcare
- Nursing-units storage-area standardization reduced nursing search time by one hour per shift per unit, amounting to thousands of hours saved — Scottsdale Healthcare
- Achieved a 90% response rate in 2012 employee engagement survey (4,545 respondents) — Seattle Children's Hospital
- 41% improvement in staff engagement — St. Boniface Hospital



## Lean Leaders

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