



PITTSBURGH REGIONAL HEALTH INITIATIVE

Spreading Quality, Containing Costs.

PRHI EXECUTIVE SUMMARY

WINTER 2007

PHYSICIAN CHAMPION PROGRAM

AGH ED eliminates central line infections

When Fred Harchelroad, MD, was selected as a Physician Champion, he thought he would work on preventing hospital-acquired infections starting in his domain, the Emergency Department at Allegheny General Hospital.

which to start. Also, during that time, as the hospital sharpened its focus on CLAB prevention, another Physician Champion, Dr. Jerome Granato, was working to ensure that every physician and nurse would be trained in a standardized way of inserting and maintaining central lines (See *PRHI Executive Summary*, March/April 2007). The hospital had seen a decline in the number of central line infections, with one unit, the Coronary Care Unit, logging well over a year without a single one.

determine how many ED patients had developed CLABs once they moved to another unit, and then see just how close to zero the ED CLAB rate could go.

HEAD START ON CULTURE CHANGE, STANDARDIZATION

“We had a head start on establishing the philosophy,” said Dr. Harchelroad. “A fair number of people in units across the hospital began receiving training in Perfecting Patient CareSM a couple of years ago. The

“BEING SELECTED AS A PHYSICIAN CHAMPION SITE MADE PEOPLE PROUD, AND TOLD THEM THAT THEY’RE GREAT TO BEGIN WITH.”

*—FRED HACHELROAD, MD
ALLEGHENY GENERAL HOSPITAL, EMERGENCY DEPARTMENT*

The scope of the project soon narrowed to a more workable starting point: central line-associated bloodstream infections, or CLABs.

Central lines are tiny catheters placed in major vessels that deliver life-saving medication or nutrition directly into the bloodstreams of critically ill patients. Conversely, when handled improperly, those catheters can efficiently deliver micro organisms that cause systemic bloodstream infections.

Because Allegheny General began tracking CLABs four years ago, Dr. Harchelroad had good control data with

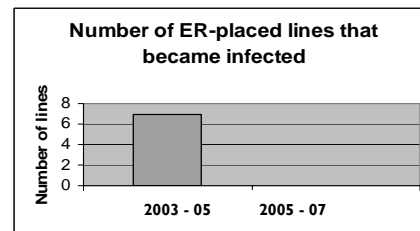
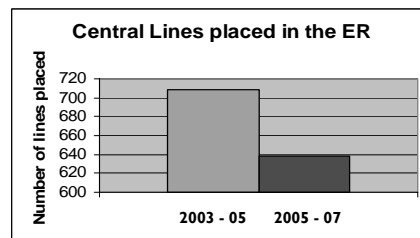
ED PATIENTS MOVE

CLABs among ED patients are difficult to track, and not every hospital does. When a patient is seen emergently, and a central line is inserted in the ED, the patient is then transferred to the appropriate medical unit. ED staff may not know whether that patient ultimately developed an infection, and usually does not know whether their processes played a role.

Now Dr. Harchelroad decided to track years of data,

philosophy had started to spread even before we started collecting data.”

The hospital’s CLAB data from 2003-04 called out the number of



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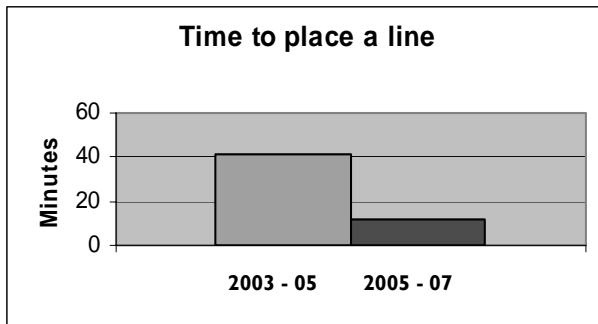
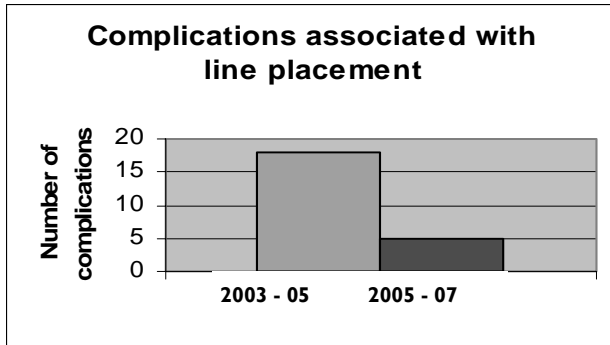
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AGH ED eliminates central line infections

patients whose lines had been inserted in the ED and who went on to develop an infection while they were hospitalized. That number (see table)



became the control.

“It’s good to remember that, by July 1, 2005, every physician who placed central lines, and every nurse who cared for them in the ED, had been trained in

standardized procedures,” said Dr. Harchelroad.

Standardizing of procedures is a basic principle of Perfecting Patient CareSM and other Toyota-based or “lean” healthcare improvement efforts. Standardizing reduces wasted effort and material, and reduces the chances of introducing error. It also makes variations more visible. Learning why a standard procedure had to be modified in a certain instance can lead to new understandings, and provide an opportunity to reinforce or improve the procedure.

RESULTS

Between 2003 and 2005, the control group showed 709 lines placed in the Emergency Department, of which 7 ultimately became infected, and 18 reported complications. The average time for line placement (based on a survey of 15 of the 709 lines) was 41 minutes. Between 2005 and 2007, physicians in the ED placed 638 central lines, with zero infections

and five complications.

The average time for line placement, (based on observation of 27 placements) was just 12 minutes.

“The reduction in time is more than just convenience. It cuts the amount of time patients are exposed to risk. With less air blowing over the area, there’s less overall chance of infection,” said Dr. Harchelroad.

PHYSICIAN CHAMPIONS

Dr. Harchelroad credits the Physician Champion Program with giving the staff a boost of pride and renewed impetus to move forward more aggressively.

“This wasn’t an administrator telling the staff something. Being selected as a Physician Champion site made people proud, and told them that they’re great to begin with,” said Dr. Harchelroad. “The ED can be a tough place, and it can be hard to generate enthusiasm. But being selected for this program really did generate enthusiasm. And so have the results!”

Dr. Harchelroad formally presented his findings at the Fourth Mediterranean Emergency Medicine Congress, an international symposium of Emergency Medicine physicians and researchers, held in September 2007.

RESULTS OF CLAB REDUCTION AT AGH EMERGENCY DEPARTMENT <i>A PHYSICIAN CHAMPION PROJECT</i>				
	Lines placed in ED	Patients developing CLAB	Complications	Minutes to line placement
2003-05	709	7	18	41
2005-07	638	0	5	12

DAVID MUNCH, MD, EXEMPLA HEALTHCARE

Our goal wasn't to "go out and do Lean"

The three-hospital Exempla System of Denver had adequate reason for a quality shake-up. In 2002, despite accolades from Solucient and Healthgrades, their internal patient satisfaction surveys ranked only in the lowest quartile. Only 17% of physicians bothered to return their surveys and at a 62% ranking, the employees were only moderately content.

Through an independent assessment, the executives realized that organizational improvement started with them. They needed to change and become more effective as leaders; to establish quality, safety, patient satisfaction, employee engagement and stewardship as their focused

goals and to become servants to the staff. Exempla leaders committed themselves to full public transparency and top-decile performance nationally using comparatives including NQF*, CMS*, Premier* and Avatar databases.

Performance improved almost immediately and Exempla began their journey to differentiate themselves in their market.

In 2004, the case became more urgent as two major payers locked Exempla Good Samaritan Hospital out of their contracts. CEO Jeff Selberg and the Board responded by publicly raising the bar. Exempla advocated for statewide quality reporting for

all hospital systems and sponsored a public forum with the NQF, inviting business groups, local press and other healthcare systems to present their performance.

Today, Exempla is recognized as Denver's quality leader, and has reached its goal as a national top-decile performer in the majority of CMS indicators. Lockouts have been lifted and, in fact, Exempla is a preferred provider for certain Denver-area employers.

GETTING FROM A TO B

Exempla's Lutheran Medical Center chose to use Toyota Production System methods, "Lean," as its performance improvement platform. A common dilemma for hospitals

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*National Quality Forum; Centers for Medicare and Medicaid Services; Institute for Healthcare Improvement

NEW BOOK HIGHLIGHTS REGION'S HEALTHCARE PROGRESS

December 2007 marks the publication date of an anthology of PRHI improvement stories. The book, entitled, *The Pittsburgh Way to Efficient Healthcare: Improving Patient Care Using Toyota Based Methods*, (ISBN 978-1-56327-367-4), was written by former PRHI Communications Director, Naida Grunden.

Since 2001, the PRHI Executive Summary has carried news of experiments in healthcare improvement using Toyota-based Perfecting Patient CareSM. Under the auspices of PRHI, these experiments were conducted in healthcare institutions throughout Southwestern Pennsylvania.

The newsletter stories, now anthologized in this book, describe the principles, techniques, and results of these programs, as well as the innovative University class that supports the work. PRHI is the only non-profit, community resource of its type in the country offering instruction, on-site coaching, and assistance in implementing these principles.

The publisher, Healthcare Performance Press, is offering a pre-publication discount through www.amazon.com. See the author's website at www.naidagrunden.com.



*FROM PAGE 3***Our goal wasn't to “go out and do Lean”**

introducing Lean is: *where do you start?* David Munch, MD, Chief Clinical and Quality Officer at Exempla Lutheran Medical Center in Denver, wondered the same thing three years ago when their Lean journey began.

“Our goal wasn't to ‘go out and do Lean,’” he said, addressing PRHI leaders in Pittsburgh October 29.

Instead, the goal of the quality work would be to improve the performance of every service line, aligning those improvements with the strategic vision, and earning the staff's enthusiasm along the way by making work easier.

Hospital officials knew that instituting a major new quality program would require resources. Rather than accept the argument that quality would cost too much, the Exempla Lutheran Lean team demonstrated that the *lack* of quality was the costly thing. Saving

people's time, reducing unnecessary inventory and improving reliability in the clinical flow would naturally reduce expenditures as well.

Along the way, the Lean Team discovered an opportunity to introduce Lean thinking in the billing department. “Hospital finances were ‘low hanging fruit,’” said Dr. Munch.

Each day the hospital carries debt, it loses money. Simply getting bills paid on time—making sure they're accurate and timely, for example—could make a huge difference to the hospital's bottom line. It took the Lean Team and the people in the billing department one week to fix a broken laboratory billing process. Resulting improvements saved the hospital approximately \$540,500 in the first year—savings that can be replicated in the system's two other hospitals. Savings like these make it easy to support the investment in quality.

MANAGEMENT CHANGE, BOARD INVOLVEMENT

A hospital starting to change and improve from wall to wall faces discomfort and disruption to the status quo that can be difficult to manage. Certain disciplines, like *Hansei*, a blame-free but painfully honest assessment of weaknesses and reflection upon what to do better next time, are counterintuitive in the American workplace, but vital to improvement. While Toyota awards workers for stopping a problem at the earliest possible stage, American work culture can encourage the hiding of mistakes for fear of embarrassment and blame. However, it is the acknowledgement of problems that creates the good kind of discomfort necessary to spur change, says Dr. Munch.

On making problems visible, John Shook of the Lean Enterprise



This process map, created by people who do the work, shows the current condition: many ways to do a task, and many, many steps until it's done. Every unnecessary step and every “alternative” way of doing something increases the likelihood that error will be introduced. Thoughtful, deliberate standardization and simplification, implemented in disciplined improvement cycles known as Kaizen, creates a better, more reliable process.

Institute, says, “It is all about knowing normal from abnormal and knowing it right now.”

Dr. Munch found challenges in preparing managers to accept a new way of doing things. Gradually the organization has moved from a top-down, command-and-control management to one of collaboration with the frontline workers using system-wide shared governance and Lean methods. According to Dr. Munch, to establish a fair, just and safe environment that allows people to bring mistakes forward, the leaders need to model the behavior and coach others to do the same. Then, and only then, can problems be safely revealed for improvement.

Quality is everyone’s responsibility. System CEO Jeff Selberg, for example, requires the hospital CEOs to give the quality report to the Board of Directors and field questions they might have. Delegation of this is not an option.

The Board is also serious about quality. They shadow the nurses on the floor to get a better appreciation of the struggles and needs in giving patient care. Some Board members have participated on tracer teams. These observations build leverage to continue the work of improvement. “It brings the vision and mission from platitude to reality,” said Dr. Munch.

Middle managers also have a new set of expectations in the brave, new world of Lean and

collaborative management. They must know the standard work and what is expected of the team, to know how to coach the staff to a decision instead of making it for them, and they must be accountable, organized and supportive.

Magnet hospitals shared governance approach, and improved communication along the work pathway helps to strengthen the new, flattened management model. “Shared governance practice is wonderfully synergistic with Lean methods,” said Dr. Munch.

CREATING PULL

Events on the horizon, like CMS’ impending halt of reimbursement for “never” events (wrong-site surgery, surgical items left behind, etc.), and the enormity of baby boom retirements, have spurred the need for tools to help clinicians always get it right the first time.

Specific, five-year improvement goals align with the hospital’s vision and mission, resulting in a “report card” of expected outcomes. The goals are created after careful analysis of surveys from patients, employees and physicians to determine what’s most urgent. In this way, scarce resources can be aligned with organizational goals in a strategic way.

While the goals have a five-year timeline, progress is checked annually and results are posted. It’s up to the frontline staff to implement improvements and meet those goals.

**One Year In:
Exempla Lutheran Medical Center
Pharmacy**

- 50% reduction in medication delivery time
- 78% reduction in waste/recycling on IVPB
- Saved 11 miles/day pharmacist walking
- Saved 110 hours of ICU nurse time per month
- 54% reduction in stock movement
- \$100,000 reduction in ED inventory
- 72% reduction in work to access EMR data
- Visual management and Kanban system for large volume IVs reduces inventory 75%

**Exempla Hospitals
Premier Mortality National Benchmarks
Jan – Dec 2005**

Hospital	Hospital Mortality Rate	Hospital Expected Mortality Rate
GS	~2.2	~1.1
LMC	~2.3	~1.2
SJ	~2.0	~1.0

Additionally:
Of 410 hospitals in comparative database:

- GS, Good Samaritan = 21st
- LMC, Lutheran Medical Center = 23rd
- SJ, St. Joseph Hospital = 24th

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Our goal wasn't to “go out and do Lean”

This close focus usually means taking some work off the plates of staff members. It also creates “pull” for Lean learning.

“The goals become a burning platform for staff,” said Dr. Munch. “They want Lean resources to help them improve, and they want them now. It becomes a challenge to meet the demand for training.”

TECHNIQUES

Using a series of well planned *Kaizen* (“good change”) events, several units began testing improvements. A typical *Kaizen* will involve one month of preparation and five days of intense, team-based improvement work teaching, analyzing the current condition, planning the rapid round of improvements, coming up with metrics, and communicating to stakeholders. Only then does the lightning round of improvements begin. Implementation of the improvements and sustaining the results also requires vigilance and management over time.

Dr. Munch found the pharmacy a particularly ready place to test improvements, in part because it operates like assembly lines, but in part because frontline staff and managers were open to trying something new. Applying the principles in the course of work every day, and mentoring one another in improvements, the pharmacy successfully improved service and morale, and reduced waste (see sidebar).

RESULTS

The CEO and Board had set an

aggressive goal for Exempla hospitals: score within the top 10% of national hospitals in various measures of safety and quality. Specific dashboards of care measures track improvement in myocardial infarction, pneumonia, heart failure, and surgical infections. Color coded charts map progress, with green signifying the top 10%; yellow below the top 10%, but still meeting or exceeding the national average; and red signifying an area that has slipped below the national average. The visual charts help draw resources to problems, while supporting continued excellence elsewhere.

In the five years of Exempla’s commitment to become the Best in

the nation, Exempla has succeeded in achieving top-decile performance in many of its goals and remains focused on getting there with all of them. And of 410 comparable hospitals nationwide, Exempla hospitals have among the lowest expected mortality rates (see sidebar).

Dr. Munch summarizes the journey this way: “Through its ability to manage and support people, Lean is an effective approach for advancing quality, safety, teamwork, patient satisfaction and financial stewardship through aligning flow, reducing waste and establishing standard work in the healthcare organizations.”

The Gallup 12

Gallup Organization, after 80,000 interviews with managers in over 400 companies, created a way to measure the strength of a workplace by asking these dozen questions. The Exempla improvement team routinely uses them:

1. Do I know what is expected of me at work?
2. Do I have the materials and equipment I need to do my work right?
3. At work, do I have the opportunity to do what I do best every day?
4. In the last seven days, have I received recognition or praise for doing good work?
5. Does my supervisor, or someone at work, seem to care about me as a person?
6. Is there someone at work who encourages my development?
7. At work, do my opinions seem to count?
8. Does the mission/purpose of my company make me feel my job is important?
9. Are my co-workers committed to doing quality work?
10. Do I have a best friend at work?
11. In the last six months, has someone at work talked to me about my progress?
12. This last year, have I had opportunities at work to learn and grow?

From *First, Break All the Rules, What the World's Greatest Managers Do Differently* by Marcus Buckingham & Curt Coffman, Simon & Schuster, 1999.

*TOYOTA MOTOR MANUFACTURING WEST VIRGINIA***Healthcare leaders visit Toyota plant**

PRHI has spent the past six years helping local healthcare facilities adapt the principles of the Toyota Production System to health care—a system it calls Perfecting Patient CareSM. On Wednesday, August 1, a contingent of PRHI, JHF and community healthcare leaders visited the Toyota Motor Manufacturing plant in Buffalo, West Virginia, to see the real system in action.

SETTING AUDACIOUS GOALS

One major tenet of this improvement system is reaching for the Audacious Goal. The Buffalo plant, for example, posed the question: “Why can’t we eliminate all waste from this plant to landfill?” It’s an ideal, seemingly unreachable—just the kind of accomplishment Toyota is known for. And for the last three years running, the Buffalo plant has done it—sent zero waste to landfill.

AUTONOMATION

The plant, which is unusually clean and well organized, manufactures engines and transmissions. A great many of the processes are automated, with huge robots lifting and rotating heavy assemblies and delicately placing them in precisely the right position for the next process. Employees patrolled those areas, but in certain assembly areas, there’s still a great reliance on human hands.

Toyota places great importance on the point at which man and machine interact. Machines are there to serve humans, not the other way around. The principle known as “autonomation” imparts some intelligence to machines, so that they serve the worker.

ON THE SHOP FLOOR

Replacing the wood-paneled, sequestered meeting room were white boards lining whole walls on the factory floor. Meetings, often extemporaneous, involve the people confronting a problem, who stand in front of the white board, sketch their problem and possible solutions. Managers are there to lend support. These short meetings usually result in the production of an A-3, the Toyota problem-solving tool that describes:

- the way work is currently done,
- the nature of the problem and its root cause,
- the target or ideal condition to strive for, and
- concrete, specific steps toward implementation of the solutions.

Visitors were taken by the level of detail and deliberation evident on the A-3s that Toyota shared.

The short, frequent, standing meetings reflect an

overarching belief in a “flat” organization, as does the design of the administrative offices. The President works from a cube like everyone else, and he is fully accessible to staff.

In the Control Room a staff of problem-solvers observed the work, acting on what they saw as necessary. They formed, in effect, a permanent process improvement learning team.

Toyota is choosy about whom it hires. Skills must be accompanied by enthusiasm and willingness to accept continuous change as the new norm. The company requires intensive six-week training for new hires. At the end of training, employees are evaluated for their agility, knowledge and trainability.

Perhaps most tellingly, the expectation of improvement is built into the compensation system. Achievements in quality and safety are tied to annual bonuses, which accrue to whole teams, not individuals. To encourage participation in kaizen activities (focused rounds to eliminate waste), the company offers four paid hours per month.

All agreed the tour was too brief and broad, and many hope to return for a more in-depth look.



PRHI CALENDAR

Day	Date	Time	Event	Place	Contact	CMEs	Register?
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Mon- Thurs	January 14-17, 2008	8:30 am- 5:00 pm	Perfcting Patent Care SM University	Courtyard, Monroeville	Barbe Jennion, 412-586-6711 bjennion@prhi.org	Yes	Online www.prhi.org
Mon- Thurs	March 10-13, 2008	8:30 am- 5:00 pm	Perfcting Patent Care SM University	Courtyard, Monroeville	Barbe Jennion, 412-586-6711 bjennion@prhi.org	Yes	Online www.prhi.org

Mon- April	21-22, 2008		3rd Annual Lean Healthcare Conference	Grand Hyatt Denver, CO 1-800-633-7313	Keynote speakers include PRHI's Karen Feinstein, PhD and Exemplar's David Munch, MD For further information www.leanhealthcareperformance.com		
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