



Magee-Womens Hospital

BRANCHES

The Jewish Healthcare Foundation of Pittsburgh



RECOGNIZING

HEALTHCARE TEAM EXCELLENCE

AT THE FRONT LINE

2008 Top 10 Fine Award Finalists

PITTSBURGH REGIONAL HEALTH INITIATIVE
Spending Quality, Containing Costs.
D-A Pittsburgh Healthcare System
Team-Care Model for Outpatient
Pay to the order of
Ten Thousand and

THE FINE FOUNDATION

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TOP TEN FINE AWARD FINALISTS

The Pittsburgh Regional Health Initiative has passed its tenth anniversary. Our concerns about safety, quality and efficiency in the U.S. healthcare system once seemed exceptional; now they are the norm. New attention to our deficiencies, and comparisons of our performance with other industrialized nations, have opened many eyes to the 40% room for improvement in U.S. healthcare delivery.

Payers, regulators, consumers, the media and government leadership—even our President—are calling for reform. Treatment of errors such as falls, hospital-induced infections, and wrong-site surgeries will not be reimbursed. Everywhere groups are endorsing electronic medical records and data interoperability, provider performance measurement and transparency, and evidence-based medicine.

Nevertheless, this harmonic convergence of reform ideals has not yet translated into dramatically improved care across units, sites, regions and states. Ahead is an enormous task requiring a will to change, a culture of excellence, collection and application of data to continuous performance improvement, learning tools and coaching resources. The principles and techniques embedded in PRHI's improvement method, Perfecting Patient CareSM, based on Lean/Toyota principles, work exceptionally well in many circumstances, but they must be taught, studied, and applied properly to be effective.

For this, we rely on champions of process improvement coming forth from the frontline ranks. These are the leaders of change essential to transformation. But it isn't about one champion; it's about the capacity of that champion to elicit support from a qualified team. Where dramatic improvements occur, dedicated teams are present.

Because of this, The Fine Foundation of Pittsburgh and the leadership of its founders, Milton and Sheila Fine have generously supported a new healthcare award in team excellence. The Jewish Healthcare Foundation (JHF) is proud to partner with the Fines to make this new award concept a reality. In our first round, we received many responses, but selected 29 outstanding applications that were then vetted by a team of national experts in quality improvement. The result was three winning teams (gold, silver and bronze) out of ten finalists, which were honored at an event in November 2008.

Together, the stories of these ten teams make a compelling case for the importance of teamwork and methodical intent in quality and safety improvement. Our objective is to develop a national appetite and capacity for dramatic breakthroughs at the frontline: the spread and dissemination of best practices from teamwork with best intent!



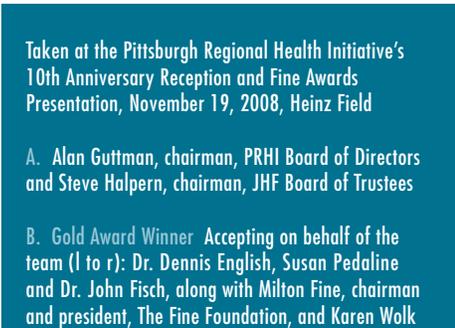
THE FINE FOUNDATION

Because of this, the Fine family of Pittsburgh has generously supported a new healthcare award in team excellence from their family foundation. JHF is proud to partner with the Fines to make this new award concept a reality.



Sheila Fine, Milton Fine (chairman and president of The Fine Foundation), and Karen Wolk Feinstein, PhD (president and CEO of the Jewish Healthcare Foundation and the Pittsburgh Regional Health Initiative)





Taken at the Pittsburgh Regional Health Initiative's 10th Anniversary Reception and Fine Awards Presentation, November 19, 2008, Heinz Field

A. Alan Guttman, chairman, PRHI Board of Directors and Steve Halpern, chairman, JHF Board of Trustees

B. Gold Award Winner Accepting on behalf of the team (l to r): Dr. Dennis English, Susan Pedaline and Dr. John Fisch, along with Milton Fine, chairman and president, The Fine Foundation, and Karen Wolk Feinstein, PhD, president and CEO, JHF and PRHI

C. Keynote speaker James Anderson, president of the Cincinnati Children's Hospital Medical Center and David Brownlee

D. Silver Award Winner Accepting on behalf of the team (l to r): Dr. Jerry Granato, along with Steve Halpern, chairman, JHF Board of Trustees, Karen Wolk Feinstein, PhD and Milton Fine

E. Bronze Award Winner Accepting on behalf of the team (l to r): Dr. Harsha Rao, Jan Beattie, Allison Morell, along with Alan Guttman, chairman, PRHI Board of Directors, Karen Wolk Feinstein, PhD and Milton Fine

TOP 10

GOLD

Magee-Womens Hospital of UPMC
Labor Induction Process Improvement
 > \$25,000 divided equally among team members
 > \$5,000 to Magee-Womens Hospital of UPMC

SILVER

Allegheny General Hospital
Process Standardization and Continuous Improvement Leads to the Elimination of Catheter-Related Bloodstream Infections
 > \$15,000 divided equally among team members

BRONZE

VA Pittsburgh Healthcare System
An Individualized Team-Care Model for Outpatient Diabetes Care Delivery
 > \$10,000 divided equally among team members

RUNNERS-UP (alphabetical order)

Allegheny General Hospital
Door 2 Balloon Program

John J. Kane Regional Center/Ross Township
Pain Management Program

John J. Kane Regional Center/Scott Township
Wound Care Initiative

Magee-Womens Hospital of UPMC
Promoting the Ideal Patient Experience in the Emergency Department

UPMC Passavant
Fall Reduction Program

UPMC St. Margaret
Infection Prevention Initiative

VA Pittsburgh Healthcare System
A MRSA Prevention Initiative



GOLD AWARD WINNER

MAGEE-WOMENS HOSPITAL OF UPMC

Labor Induction Process Improvement

As he reviewed the latest round of data from the obstetrics (OB) department, Dennis English, MD, Vice President of Medical Affairs at Magee-Womens Hospital of UPMC (Magee), noted that patient backlogs in the C-section unit continued to result in low satisfaction levels among both staff and patients. He wondered what was behind the backlog.

Overall, the number of deliveries at Magee had been increasing by several hundred per year for several years, and yet the facility had not expanded. As Susan Pedaline, Program Administrator for Obstetrics and Newborn Services at Magee, put it, “Our walls weren’t moving but our volume was changing, and we had to respond to that.”

A general belief emerged among the staff that bigger facilities and more staff were the only way to handle the backlog. It was seen solely as a capacity problem. Identifying and removing waste in the system was not part of the analysis – yet.

Five “Whys” get to an underlying problem

As part of his Physician Champion Award from the Jewish Healthcare Foundation in 2008, Dr. English had received training at the Toyota-based Perfecting Patient CareSM (PPC) University, and had learned a simple technique to tease out the root cause of problems like these. Toyota teaches practitioners to ask “Why” as many as five times to get to the root cause of a problem. In this case, the thinking went something like this:

1. Why were there backlogs in the C-section unit? Too many cases had been scheduled for available slots.

2. Why had too many cases been scheduled?

Most were elective inductions, scheduled for the convenience of the mother or the physician. Data revealed that when all of the available induction slots were utilized in a 24-hour period, the number of C-section deliveries became difficult to manage.

3. Why were so many elective inductions scheduled? Some of these elective inductions were inappropriate – scheduled before the 39th week of pregnancy outside of recognized guidelines.

Asking “Why” repeatedly helped Dr. English and his team to recast the problem not merely as a “scheduling problem” but also an “elective induction problem.”

It was, as Dr. English said, an “Aha!” moment.

“Scheduling was set up for failure every day,” said Dr. English. “Allowing so many scheduled inductions led to delays in laboring C-sections. We concluded that in order to improve C-section patient flow, we would have to address inappropriate inductions.”

OB Task Force tackles inappropriate inductions

Induction of labor is sometimes medically indicated for complications of pregnancy. Dr. English wanted to limit his investigation to elective inductions, those done in the absence of medical need, often for the convenience of the patient or physician. Studies have shown that elective inductions performed before 39 weeks of pregnancy increase the risk of complications for mother and baby. These early, inappropriate inductions often cause the mother to labor longer – four hours longer on average – and increase the likelihood of C-sections for mothers and admission to the Neonatal Intensive Care Unit (NICU) for the baby.

While the rate of inappropriate inductions at Magee was consistent with national averages – around 10% – Dr. English believed the rate could be lower. He formed the OB Task Force, a multi-disciplinary team of physicians, nurses and data analysts, to find ways to reduce the number of inappropriate inductions. The objectives were to:

- Reduce the C-section rate, thus improving patient safety
- Improve patient flow and efficient use of resources
- Increase patient and staff satisfaction

The OB Task Force reviewed data and literature on best practices that included case reviews and American College of Obstetricians and Gynecologists criteria for inductions. They researched the right size for an induction schedule and evaluated existing hospital policies. The process improvement plan included revamping the induction scheduling process, educating physicians about best

BISHOP SCORING SYSTEM

Score	Dilation (CM)	Effacement (%)	Station*	Cervical Consistency	Position Cervix
0	Closed	0 – 30	-3	Firm	Posterior
1	1 – 2	40 – 50	-2	Medium	Midposition
2	3 – 4	60 – 70	-1, 0	Soft	Anterior
3	5 – 6	80	+1, +2	–	–

Source: Modified from Bishop EH. Pelvic scoring for elective induction *Obstet Gynecol* 1964; 24: 267

* Station reflects a –3 to +3 scale

practice guidelines, and reviewing feedback regarding staff performance. The team proposed an experiment that would decrease scheduled induction time slots, reduce wait times for patients, and increase capacity.

Resistance and reconsideration

Initially, some physicians didn't agree that induction rates were high and were reluctant to adopt the process improvement plan.

Dr. English recalled, "The physicians thought we simply needed to add more staff and expand our facility. These are more short-term options, and we were interested more in long-term improvements. If we continued on the course we were on, we were doomed for failure every day."

The OB Task Force provided data that showed the connection between scheduled inductions and patient flow problems in the C-section unit. With data on one hand, frustration with the existing system on the other, and the promise of process improvements to remove waste and improve work flow, support began to grow.

Improvements rooted in Perfecting Patient CareSM

Toyota, on which PPC is based, centers around respect for people (patients and workers) and the removal of waste from day-to-day work. More discipline than toolbox, PPC enables team members to gain a deep understanding of the actual problem using the five whys. The system then allows the team to construct a more ideal work condition, create steps to stabilize and standardize the work, carry out rapid experiments in process improvement, and measure progress.

Standardization

In most hospital processes, variation is the norm. However, using the tenets of PPC, the OB Task Force sought to institute stable, repeatable processes to predict timing and output and have a baseline for scientific improvement. Standardization of flow through the OR would be easy to justify.

But Dr. English sought to standardize the answer to this clinical question: Which patients are legitimate candidates for

elective induction? He implemented these evidence-based guidelines as a way to standardize the work:

- Documentation of Bishop Scores, an assessment of whether induction is likely to be successful
- Setting 39 weeks of pregnancy as the minimum gestation for elective inductions

Standardization helped medical staff communicate the minimum induction criteria to their patients more effectively, giving physicians a way to deal with patients who tried to pressure them into earlier inductions for convenience.

Push to Pull

Most typical scheduling is done using a "push" system, forecasting the schedule based on demand. Such a system's ability to respond is only as good as its forecast, and so it tends to be inelastic. In a "push" system, patients arrive at a given time, but due to the inevitable bottlenecks with prior patients, delays result. The patient is left waiting in an unfamiliar waiting room or hospital bed, asking, "Is it time yet?"

The OB Task Force decided to use a Toyota-based pull system, where a forecast of bed availability is used to schedule, and the system responds instantly and naturally to change. In a "pull" system, patients are given a window of time where they wait at their homes for a call to come in when the hospital is ready. Waiting comfortably at home for a shorter time, they receive a call saying, "Come on in. It's time."

Leveling

Reducing waiting and frustration means reducing fluctuation in the work load through a process called "leveling." Workload is leveled when the volume (number of scheduled inductions) and timing (time of day for scheduled inductions) are designed around a predefined standard of work. A level workload diminishes inefficiencies and makes demand more predictable. Reducing inappropriate inductions (volume) and distributing the induction patient slots over the week (timing) leveled staff workloads.

Results

The induction rate at Magee has been reduced from 25% to 16%. The C-section rate for elective inductions for first-time mothers declined from 36% to 14%. Inappropriate inductions (before 39 weeks of pregnancy) decreased from 12% to 4%. Magee's elective induction rate of 9% before the process improvements (similar to the national average of 10%) has declined to 6%.

The data continue to support the sustainability of the implemented process improvement initiatives. Dr. English recalls, "We were concerned with getting quality right the first time." By setting out to identify the cause of patient flow problems in the C-section area, the elective induction rate was identified as a root cause. Targeting changes to impact induction rates led to significant and sustained improvement in C-section rates – a process improvement which means better health outcomes for mothers and their babies.



One staff person at Magee has the sole responsibility for scheduling inductions

Labor Induction Process Improvement Team

Andrea Aber

Kerri Brooks, RNC, BSN, MSN

Dennis English, MD, MMM, FACOG

John Fisch, MD, MMM, FACOG

Robert Kaminski, MD

Pamela Kridgen, MD, FACOG

Maribeth McLaughlin, RN, BSN, MPM

Susan Pedaline, RNC, BSN, MS

Hyagriv Simhan, MD, MSCR

Dan Wassilchalk, CPHQ, RHIA



SILVER AWARD WINNER

ALLEGHENY GENERAL HOSPITAL

Process Standardization and Continuous Training Leads to the Elimination of Catheter-Related Bloodstream Infections

Central line catheters, placed in major vessels of critically ill patients while they are hospitalized, can deliver life-saving medication or nutrition directly into the bloodstream. The problem is that when handled improperly, central line catheters are also very effective at delivering microorganisms that cause systemic bloodstream infections. Until recently, when the placement or dressing of a central line catheter resulted in a bloodstream infection in a patient, certain myths popped up to explain it away:

Myth #1. Catheter-related blood stream infections (CR-BSIs) are rarely serious and are easily treated with antibiotics.

Myth #2. CR-BSIs are rare. Our rate is at the national average, which is okay.

Myth #3. These infections are the unfortunate but inevitable by-product of a complex system. Especially in a big city, tertiary care hospital, these things happen.

At Allegheny General Hospital (AGH) in Pittsburgh, Dr. Jerome Granato, Medical Director of the Coronary Care Unit (CCU) disagreed with all three myths. CR-BSIs are very serious: about four in ten patients who get one will die. Although it's true that the incidence of CR-BSIs at AGH was about the national average in both the CCU and Medical Intensive Care Unit (MICU), they still occurred in about 4% of admissions to those units. Dr. Granato challenged the national "norm," asking, "Would you go into the theater or eat at a restaurant if there was a 4% chance of something bad happening? We thought 4% was way too high, and we set about developing a program to bring that number lower, and eventually to zero." Setting the goal at zero was Dr. Granato's way of challenging that third myth, the myth of inevitability.

Hospitals report CR-BSIs with a standard, if obfuscating, measurement – infections per thousand line days. That measures each day any patient has an infection, and it's reported quarterly. In other words, doctors may learn today about infections that happened three months ago. The opportunity for fixing problems, meanwhile, has evaporated.

Measuring infections "per thousand line days" does not say how many people are affected, who they were, or what happened to them. Said Dr. Granato, "Counting infections that way doesn't tell you how many mommies and daddies, how many grandpas, how many husbands and wives were actually infected."

Dr. Granato's team looked at the actual patients affected, as close as possible in time and place to the event. Looking at real patients in real time personalized the

problem for staff, and created a sense of urgency to untangle the processes that led to the infection.

Kimberly Curry, a Coronary Care Unit Facilitator and Educator, confesses, "Every time we had an infection in the unit, we would say, 'Mr. So-and-so got an infection, and we caused it. And Mr. So-and-so has three children, and he's here and now we've extended his hospital stay, and this is his outcome, and it was all preventable.' It really motivated people to start looking at the underlying problems."

A team of physicians, nurses and administrators at AGH investigated how to eliminate CR-BSIs. They learned Lean methods at PPC University, and began to apply what they learned about process improvement.

Observation

Lean methods rely first on observation: no improvement can begin until the team develops a thorough understanding of the way work is currently done. Team members observed numerous line placements and dressing changes, only to discover more variation than they imagined. Clinicians used different vessels, wore differing amounts and types of protective clothing, draped differently, used multiple central line equipment kits and different techniques. The importance of sterile procedure was minimized for placements and dressing changes. Dressings were applied in different ways, with different types of materials.

Five Whys

When the team asked themselves “Why?” five times, to uncover the underlying causes of the variations, they discovered that staff was not well acquainted with CDC guidelines on line placement and dressing. And those guidelines were suggestions as to what should be done, not how to make sure the right steps were followed each time. They were not set forth in easy-to-understand process steps. Furthermore, physicians trained at different institutions had learned different methods, and their skills varied. The question arose: What would be the AGH way of inserting and maintaining a line?

Standardization

Standardizing processes makes science easier. If an infection occurs, it is easier to walk backward through a well-established, step-by-step process to see what went wrong, and perhaps, what needs to be changed. Furthermore, streamlining the process reduces the number of steps, and the number of chances for error or problems.

Agreeing on standardized placement and dressing kits also ensured that clinicians had exactly what they needed, when and where they needed it, and reduced the possibility of delay or error in the process. Time required to place or dress central lines has declined, reducing the amount of time a patient is exposed to risk.

Very soon, the MICU and CCU started posting major reductions in CR-BSI rates. But when new trainees arrived in the units, the rate crept up again. To sustain the gains and continue to improve processes, Dr. Granato would create a major training component.

With money saved from reduction in the CR-BSI rate, the team was able to acquire training mannequins for central lines. Dr. Granato’s team created formal training modules in central line insertion and maintenance for all physicians, and any nurse who cares for patients with central lines. The training consists of a written



Central Line Cart outside of the patient’s room

practicum, computerized portion, and hands-on mannequin simulations. AGH now requires yearly recertification in central line management, like recurrent training for pilots.

The Bug Meetings

If an infection is detected, the lab immediately notifies the team, which rushes to the bedside. They methodically review every step taken to see what broke down, what went wrong. Since the team is constantly learning, they are open to further refining the process steps to create and disseminate their latest “best practice.”

Initially, the unit held weekly “Bug Meetings” to discuss each and every central line infection that had occurred in the past seven days. This kind of real-time investigation is unusual, as is the amount of attention focused on the problem. Over time, staff noticed that they had fewer and fewer cases to discuss, leaving more time in the “Bug Meetings” for discussion of other hospital-acquired infections, like ventilator-associated pneumonias, urinary tract infections, antibiotic-resistant MRSA, and the intestinal bug, *C. difficile*.

Results

CR-BSIs are now rare occurrences at AGH. The coronary care unit went without a single one. The rate is so low now that, measured traditionally, it would be in the area of .01 infections per thousand line days. Most important, deaths from these infections are holding at zero.

Dr. Granato said, “This success story has involved hundreds of people working 24/7, 365 days a year. It saves lives, it makes people better and it delivers a higher service of care.”

By challenging the myth of inevitability, and failing to accept “average” as okay, Dr. Granato and his team at AGH have created a new normal for CR-BSIs. They have proven that, by focusing immediately on the way care is delivered and enlisting everyone in the solution, it is possible to close in on the ultimate goal: zero.



A physician at AGH uses the mannequin to demonstrate central line insertion with Dr. Granato as his proctor

Process Standardization and Continuous Improvement Leads to the Elimination of Catheter-Related Bloodstream Infections Team

Veronica Andrews, RN
Kimberly Curry, RN, BSN
Julie Gerstbrein, RN, MSN, CCRN
Jerome Granato, MD, MBA
Cheryl Herbert, RN, CIC
Joy Peters, RN, MSN, MBA



BRONZE AWARD WINNER

VA PITTSBURGH HEALTHCARE SYSTEM

An Individualized Team-Care Model for Outpatient Diabetes Care Delivery



Diabetes in the United States affects more than 23 million people—a staggering number that cries out for efficient medical care. Yet fewer than a third of diabetic patients in this country have their blood pressures checked regularly or are prescribed the recommended daily dose of aspirin, and only half get their cholesterol tested as recommended. Because it is poorly reimbursed, few patients receive formal diabetes education.

Every system is perfectly designed to achieve exactly the results it gets. So not surprisingly, the current “system” of diabetes treatment results in only about a third of diabetics having their condition under control. The rates of preventable, end-stage complications like heart and kidney disease, blindness, and limb amputation, continue to climb.

One island in the healthcare system exists within the Veterans Administration. There, Dr. Harsha Rao, an endocrinologist at the VA Pittsburgh Healthcare System (VAPHS), decided to try an experiment that had improved diabetes care in England, a more all-encompassing appointment for each patient. He would design this new system, which he had studied for 25 years, using the Lean principles taught through Perfecting Patient CareSM.

Dr. Rao said, “We found that we didn’t have the skill sets necessary to break down process. That’s what Perfecting Patient CareSM gave us. As a team, we learned how to make the process work in an efficient, non-stressful way.”

Defining the ideal

PPC encourages team members to think in terms of the ideal: if everything were perfect, how would this care be delivered? The corollary question is: if we can’t deliver perfect care today, how close could we get?

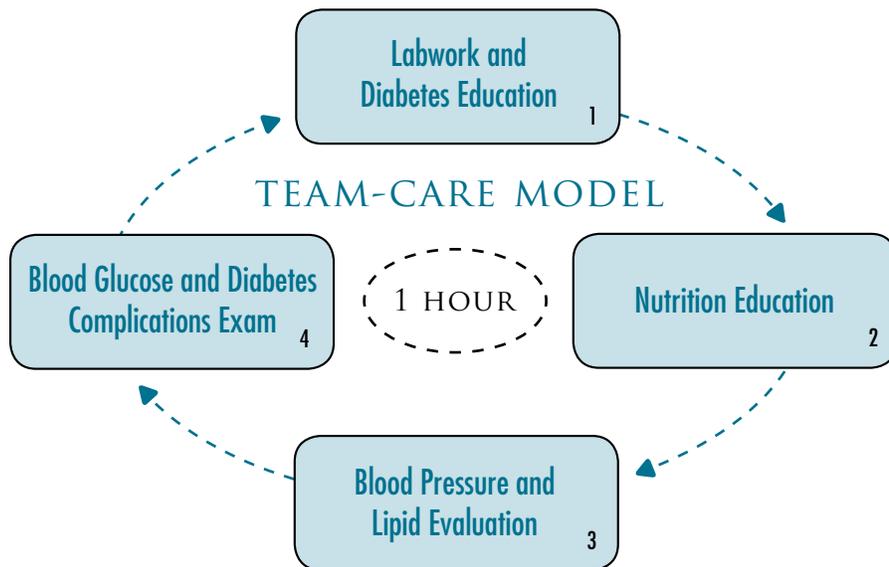
In the case of diabetes care, the elements of care are numerous: from glucose and blood pressure readings, to blood tests measuring hemoglobin A1C and lipid levels, to foot and eye exams. Physicians alone cannot provide everything in a single visit, but patients cannot be expected to attend appointment after appointment. Any new design would need to place the convenience of the patient before the convenience of the caregiver. Fortunately, Dr. Rao’s model addressed both.

Combining intensity, volume, and personalized care

Dr. Rao’s team approach blends the best of the group model gaining acceptance in the U.S., with the individual patient visits that have long been the norm.

The group model “gives you volume without personalized care and intensity,” Dr. Rao said, while the typical individual patient visit in the U.S. “gives you the intensity of one-on-one attention without the volume.” His intent was to give all three—intensity, volume, and personalized care—and give nutrition and diabetes education, which physicians are not trained to do.





Right people, right jobs

One tenet of PPC is the relentless reduction of waste. Having a highly skilled nurse looking for supplies, for example, is wasteful. Having a physician doing nutrition training would be wasteful. To make sure the patient receives every piece in the diabetes care puzzle, delivered by the appropriate person, the team at the VAPHS consists of a nurse educator, a pharmacist, a nutritionist and a nurse practitioner. Ophthalmic care is also included as required. Because the work of each team member is standardized, nothing is skipped.

In a single, hour-long appointment, the patient spends roughly 15 minutes at four “stations.” Dr. Rao “floats” between all stations, observing and fulfilling the medical role, monitoring glucose, blood pressure and cholesterol.

Each patient’s encounter is now comprehensive, resulting in improved care and satisfaction. As a result of the relentless elimination of waste and streamlining of care, clinicians deliver better care and are also far more satisfied.

Setting up a system in which different clinicians each do different tasks associated with a patient’s care is somewhat akin to setting up a production line, Dr. Rao said. He said PRHI’s coaching in PPC principles helped with the implementation of his model.

“We are giving more individual attention, we are talking to the patient at each station and getting their input – that is very empowering,” said Dr. Rao.

Problems spreading the model

“The difficulty of implementing such a model in the private sector is that insurance companies don’t reimburse for more than one professional visit for the same diagnosis on the same day,” Dr. Rao said. In fact, some proven services, such as nutrition counseling and diabetes education, often are not reimbursed under private health plans at all.

The VA Healthcare System’s federal funding and salaried staff make the team approach financially feasible. The challenge is to restructure financial reimbursement from public and private health plans.

Results

Providers now see 20% more patients per hour, and are logging 100% documentation and attention to blood pressure, foot and eye exams, blood glucose tests, cholesterol, and urine tests. In the year since the model was initiated, 57 patients have been seen at least three times, and have sustained a mean decline in these key areas: blood sugar levels from 8 to 7.4; LDL cholesterol from 94 to 73, with 90% at less than 100; and blood pressure from 137 to 127, with three out of five achieving the standard. Compliance with American Diabetes Association care guidelines now stands at 100%. Nationally, aspirin use is at 30%, compared with the VAPHS, which began with 80% and is now near 100%.

Dr. Rao envisions scaling up this model from a demonstration project to broader-based research to learn how it might be more widely adopted and supported with payment system changes.

An Individualized Team-Care Model for Outpatient Diabetes Care Delivery Team

- Jan Beattie, RN
- Allison Morell, MBA, RD, LDN
- Harsha Rao, MD, FRCP
- Mary Stosic, CRNP

UPMC PASSAVANT

Provide a Patient Safe Environment through a Fall Reduction Program and an Organizational Culture Change

When a patient falls, whether or not it results in injury, the results can be devastating. Not only must the patient and family deal with potential harm, fear and loss of confidence, but caregivers can also be deeply affected. Falls also lengthen hospital stays, adding risk and cost. At UPMC Passavant, the problem expressed itself as a fall rate that sometimes exceeded the national average of four falls per thousand patient days.

“We were prompted to action by a series of falls that were deemed serious,” said Steve Bicehouse, Manager of Environmental Health and Safety.

“One particular event made us think, ‘We’ve got to look at this and do something about it to protect our patients and keep them safe,’” added Jill Larkin, Clinical Director of Professional Practice.

Using fresh data

To change the perception that falls were a “nursing problem,” leaders assembled a transdisciplinary fall team, which included hospital Board members, physicians, nurses, pharmacists, physical therapists, risk and safety officers, nursing leaders and ad hoc members as needed.

Members realized the need to investigate falls as close as possible to real-time—that is, as close as possible in time and place to their occurrence, focusing on causes and learning, not blame. Using “fresh” data, while the facts were well known, yielded more information about the causes of each fall. The Post Fall Assessment Team (PFAT) would respond immediately to evaluate the patient clinically (including delirium assessment), review contributing factors such as medications, learn the patient’s perception of what happened, and offer prevention strategies and just-in-time learning for staff. The Clinical Director reviews these analyses daily and gives feedback to the team and the unit.

Standardizing equipment

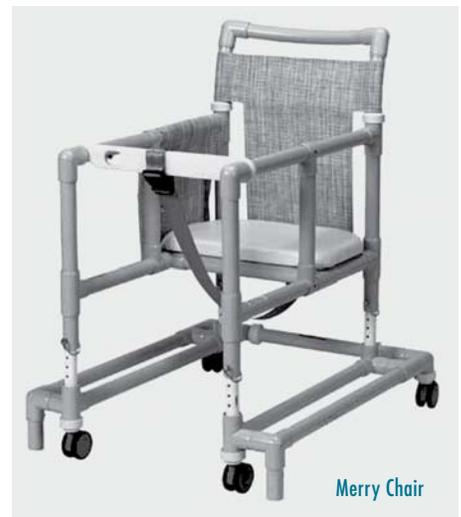
In identifying the root cause of a fall immediately, the PFAT uncovered some opportunities for improvement. Some patients were in beds that were too high, or that lacked bed alarms. The team investigated the “whys” of the problem and discovered that equipment was not standard, and sometimes didn’t work. Now, over 70% of patients benefit from one or more standard pieces of equipment used to reduce falls, from low beds with matching low bedside tables, “merry” chairs that make it easy to sit down while walking, floor mats, bed alarms, and personal tab alarms for seated patients to summon help. To reduce the temptation for patients to lean out of bed, all rooms are set up with a phone and bedside table easily accessible.

Another promising technology is the “scoop” foam mattress, which allows easier egress, reduces strain on caregivers, and has the added benefit of reducing pressure ulcers. Use of these mattresses has spread from the test unit at Passavant to other system hospitals, and the feedback has allowed the manufacturer to make improvements.

Standardizing assessment and communication

All patients receive a fall risk assessment daily, so staff can respond quickly if needs change. The fall risk score is now a standard part of all change-of-shift reports for both licensed and unlicensed staff.

But the existing fall assessment report was not as descriptive as the staff needed it to be. A global comment, stating that the patient’s risk of falling was “25,” for example, did not tell nurses which contributing factors existed for that patient. Staff members—those who actually do the work—worked together to enhance the assessment tool to make it far more individualized and descriptive, and make any changes in the patient’s condition or care requirements immediately visible.



Merry Chair

“Catch a Falling Star” is a visual reminder for staff that honors patient dignity and confidentiality. A star is placed on the door of patients at risk for falling. The star also goes on the clipboard that accompanies a patient during a transfer, to communicate the assessment to the receiving unit.

Fall prevention is also a part of hospital orientation. The education focuses on more than the skills and tools, but emphasizes the role of critical thinking in assessing a patient's condition. Physicians are offered continuing medical education units on fall reduction through the hospital's web-based safety unit.

Every staff member is able to view the falls "dashboard" by department and organization, to see how well their efforts are paying off. The dashboard offers a chance to share best practices, and motivates all units to keep striving toward the goal.

Proactive approach to medications

Falls data quickly revealed that almost a third of all falls were linked to medication. The transdisciplinary team noted which drugs were most often involved, and pharmacists began substituting comparable medications with fewer



disorienting side effects. They activated bed alarms for every patient who received sleeping medications, and eliminated their use after midnight. The proactive approach has paid off with a 30% reduction in medication-related falls.

Celebration

When a department achieves 30 days without a fall—a more and more common event—it is rewarded with a pizza party on all shifts. Success is celebrated each year with a letter from the hospital president and gifts for staff. Reward and recognition allow everyone to celebrate successes, establish friendly competition in patient safety, and keep everyone focused on the goal of zero falls.

Results

From a starting point of over 5 falls per 1,000 bed days, the rate of falls decreased to 3.2, which is below the national average. The transdisciplinary and PEAT teams continue their work to keep moving the rate toward zero.



Bed alarm is attached to the patient's gown and emits a blaring sound when the patient moves too far

Fall Reduction Program Team

Steve Bicehouse, RN, CHSP

Jill Larkin, RN, MSN, MBA

Janet Linder, RPh

Sandy Sheets, RN, OCN

Daniel Sullivan, MD, JD, MBA

Cynthia Tomazich, PT

ALLEGHENY GENERAL HOSPITAL

Door 2 Balloon (D2B)

In the vernacular of the cardiologist, when a patient enters the Emergency Department (ED) with chest pain, “Time is muscle.” During each moment of a heart attack, or myocardial infarction, heart muscle may be dying.

In the case of the ST segment elevation myocardial infarction, or STEMI, an artery is generally blocked so completely that heart muscle will be destroyed. In the U.S., about 500,000 people per year suffer STEMIs. Guidelines call for a tiny catheter to break through the blockage in the blood vessel that’s causing it within 90 minutes of the time the patient arrives at the ED. This procedure, called percutaneous coronary intervention or PCI, is sometimes referred to as “balloon angioplasty.” The 90-minute “door-to-balloon” (D2B) guideline is recommended by several respected medical organizations.¹

Studies have shown that if more than 150 minutes pass from door to balloon, 7 out of 100 patients will die. However, if this time decreases to 60 minutes, the mortality rate declines to 1 in 100 patients. So everyone can agree that the 90-minute guideline is a good idea; the clinical information certainly supports it.

It’s doing it that poses the challenge. The D2B Alliance, a proponent of the 90-minute guideline, seeks to “take the extraordinary performance of a few hospitals and make it the ordinary performance of every hospital.”²

Ordinary performance at Allegheny General Hospital (AGH) before 2006 was typical of most hospitals. A patient from the ED would undergo an electrocardiogram (EKG) and blood tests. The patient’s primary care physician/ cardiologist were paged; test results were faxed; and if the physicians agreed with the diagnosis of STEMI, the hospital would activate the cardiac catheterization lab, a process requiring several more phone calls

and much preparation. Meanwhile, the patient was managed with pain medication while an average of 156 minutes passed.

Medicine exists in the spirit of discovery, and so the bar for “best practice” continues to rise. In the early 1990s, heart attack patients were routinely treated with blood thinning medication only. Cardiac catheterization was saved for extreme cases. According to Fred Harchelroad, MD, Chairman of the Department of Emergency Medicine at AGH, who started there in 1982, 17% of the heart attack patients in the ED died. That number was reduced to 7% by 2006. Could it be reduced further?

Now, a new gauntlet had been thrown. How would AGH reduce its D2B times from 156 minutes to 90 minutes? Having identified the opportunity, Dr. Harchelroad identified a team that included cardiologists, nurses, cardiac catheterization lab staff, ED staff, administration, pharmacy, and emergency medicine services (EMS) coordinators. This D2B Team set the ambitious target of besting that 90-minute goal, using Lean techniques learned in PPC University.

Observations

Using simulation, the D2B Team watched the process a heart attack patient would undergo from arrival at the hospital through surgical intervention. They needed to eliminate a full hour of this process time, and quickly discovered some opportunities to do so. The team noted that the ED, cath lab, cardiologists and primary care physicians operated independently, in “silos” rather than as a team. By improving coordination and communication among all areas, they believed they could eliminate the wastes of time and confusion.



Standardization

Simultaneous and standardized protocols helped reduce the time the patient was waiting for surgical intervention. Michael Hagerty, MD, Director of Cardiology Quality Assurance recalled that before standardization, “We did things in series, which caused a lot of time delay, instead of doing things in parallel.”

The new protocol calls for activities to happen simultaneously, including giving the ED physicians control to activate the cardiac cath lab—with a single phone call—without waiting for the okay from a cardiologist or primary care physician. Simultaneously, the patient is prepped for surgery while in the ED. The cardiac cath lab team streamlined their processes, and can now be ready in just 20-30 minutes.

¹ Organizations recommending this guideline include the American College of Cardiology (ACC) and the American Heart Association (AHA). A door-to-balloon time of 90 minutes is also a core measure of the Joint Commission (formerly JCAHO).

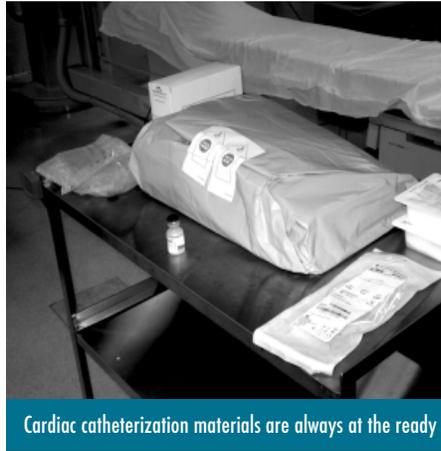
² John Brush, MD, “The D2B Alliance for Quality,” STEMI Systems Issue Two, May 2007.

Sustainability

PPC teaches that every breakthrough can prompt another round of improvements. Results are not merely sustained, but continually improved upon.

During its observations, AGH's D2B Team identified an opportunity that would affect care for heart attack patients region-wide. Why can't we, they asked, put EKG equipment in ambulances? Now when EMS personnel run an EKG, they fax the results directly to the ED, where an alarm sounds to make staff aware of its arrival. When the results arrive before the patient does, the cath lab can start preparing immediately, shaving more precious minutes off the process.

Success and sustainability of process improvements occur when the staff buys in—from the front line to the administrative suite. According to Dr. Hagerty, "We have extremely strong administrative support for this effort."



It is 100% absolutely necessary to have several departments interact in a collaborative fashion. The effort was difficult in the beginning, but as we brought more and more people to the table, we did it in a way where this became a learning opportunity. How can we learn from our example and what can we do to make changes?"

Results

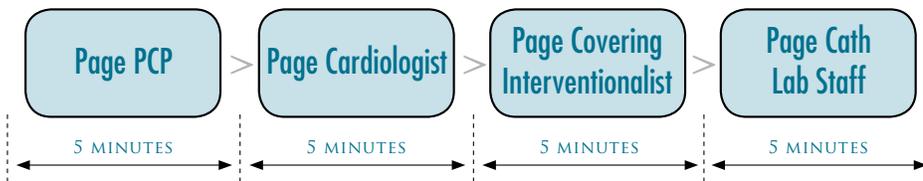
Today, as a result of the streamlining work of the D2B Team, the average time from door to balloon is just 69 minutes—21 minutes faster than the national guidelines.

Dr. Harchelroad said, "We've cut off a good 87 minutes of time. That means that a patient gets their blood vessel opened almost an hour and a half sooner."

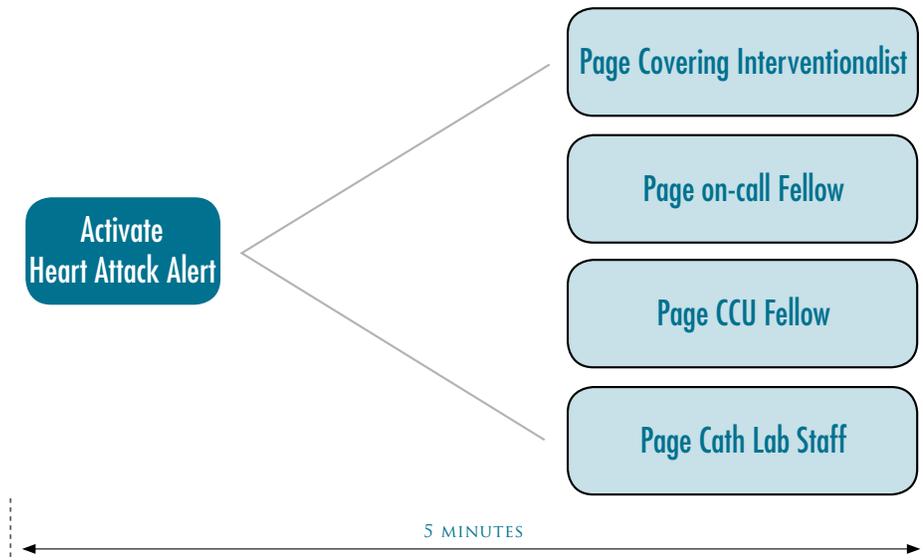
Clearly, the streamlined intervention has saved lives, reducing mortality from 7% to around 1%. On average, 99 out of 100 heart attack patients who come through the hospital doors are saved as a result of receiving surgical intervention within one hour.

Dr. Hagerty said, "That's a profound difference from when I started 25 years ago. We've gone almost, but not quite, to a near perfect outcome. It will never be perfect, but we strive for perfection. We understand that it can't be reached, but we are always going to try to get down to zero percent [mortality]."

OLD METHOD OF ACTIVATION



NEW METHOD OF ACTIVATION



Door 2 Balloon Program Team

- Joseph Carothers, NMTCB, RN, PHRN
- Tony Farah, MD, FACC
- Ed Frasier
- Michael Hagerty, MD, FACC
- Dennis Hanlon, MD, FAAEM
- Fred Harchelroad, MD
- Dave Kish, CCRN
- David Lasorda, DO, FACC
- Jessica Lazar, MPA, PA-C
- James Lightner
- David Lindell
- Lawrence Pantuso, RN, BSN, MBA
- Jim Palafoutas
- Eric Schmidt

JOHN J. KANE REGIONAL CENTER/ROSS TOWNSHIP

Pain Management

Chronic pain is not an inevitable consequence of aging. While certain painful conditions are more common in the elderly (osteoporosis, neuropathy, arthritis, etc.), the presence of pain is always abnormal. Nursing homes are getting serious about treating pain and its underlying causes.

“This is the residents’ home,” said Rose Bonivich, RN, RCC, a pain management nurse at Kane Regional Center in Ross Township (Kane Ross), a skilled nursing care and rehabilitation facility for short- and long-term needs. “You certainly don’t want to live in pain in your own home. Our goal is to make them as comfortable as possible—and that means pain-free.”

How is pain measured? A federal standard for nursing facilities certified by Medicaid or Medicare includes an assessment called the Minimum Data Set (MDS). These data are collected on admission and quarterly throughout the year. The MDS measures several Quality Indicators such as cognitive status, nutritional status, daily activities—and pain. Residents are asked to indicate the level of their own pain. But having patients self-report pain, or having staff recognize when residents are having pain, may not be easy, since not all of the residents are able to communicate verbally.



Formed in 2002, the Pain Management Team at Kane Ross comprises staff from nursing, social services, therapeutic recreation, dietary, housekeeping and pharmacy. They involved residents and their families in assessing how well they were doing on the alleviation of pain. The intervention was not always pharmacological; sometimes a whirlpool bath or lower lighting helped the most. The objective of the team was to individualize pain management, patient by patient.

From benchmarks to personal best

The Kane Ross Pain Management Team quickly discovered the limits of using federal benchmarks as goals. For their residents, quarterly pain assessments were not nearly frequent enough—the team wanted standardized, daily assessments.

The best way to ensure that the daily assessments were accurate was to ensure that they were administered by the same team of caregivers. Having caregivers regularly assigned to the same residents also improved familiarity and continuity, and satisfaction on the part of caregivers, residents and family members.

The help chain

PPC Lean principles call for traditional teamwork, where workers help each other in the interest of providing the best care for the patient. But Lean also calls for the institution of a “help chain,” through which frontline workers can activate a call for help which radiates throughout the organization until the right person is summoned and the problem solved. Rose Bonivich described the way their help chain benefits residents.

“It starts at the front line and works its way to the top,” she said. “We start by consistently assigning the aides, who report to their nurses, who involve social services, recreation, and dietary departments. Even our housekeepers

Wong-Baker FACES Pain Rating Scale



(Provided in the materials from Kane Ross; reprinted with Permission of Donna Wong)

This scale is used with patients who are non-verbal

are in. They see the residents every day, and they are trained to recognize and tell a team member if a resident is acting differently.”

One nurse is designated the “pain captain” for each unit. If a staff member notices a resident showing signs of pain, he or she notifies the pain captain, who activates the help chain to address it right away. The team also meets regularly to discuss treatment plans and review the daily assessment data.

Visual reinforcement

The Pain Management Team posted signs throughout the facility proclaiming, “The Secret to Kane’s ‘Pain Free Facility’ is: We control the pain, the pain doesn’t control us.” The message is aimed at everyone—caregiver, resident and family member.

Furthermore, each admission and information packet for potential residents includes a pamphlet describing the pain management system at Kane Ross, as well as a “mission statement” on pain. These visible reminders help to keep everyone striving toward the goal.

Pain management: a family affair

The Pain Management Team meets regularly with the Resident Council to discuss the program and solicit feedback. Results of the most recent survey showed a 93-100% satisfaction rate among residents and their families with the way pain is handled at Kane Ross.

“My wife Helen has been a resident here for 15 years,” said Robert Fitzgibbon, the spouse of a resident who is nonverbal. “The staff here is enlightened. Because she doesn’t communicate, it’s hard to tell when she is in pain. But Helen may give just a slight external expression, like maybe small tremors or twitching or a movement of her body to indicate pain. Some folks here just cannot express their pain, so what the nurses and the aides do is deduce where the pain is coming from. It’s amazing how they do it. With Helen, the aides or nurse will recognize her signs immediately and act accordingly. Then there’s a little bit more peacefulness over Helen when her pain is under control, and she’s more relaxed. They do nice work.”

Results

Staff quickly exceeded a second benchmark, the 7.3% federal Quality Indicator issued in the January 2006 MDS. In effect, the number meant that in the average American nursing home, 7.3% of patients lived with moderate or severe, unresolved pain.

It might have been easy to paint a federal “average” as “normal,” or “okay,” but the staff at Kane Ross quickly realized they could do better—much better. In January 2006, the facility had already achieved 4.2%. They began to ratchet their goal ever closer to zero. In May 2008, the facility achieved a rate between 1.5% and 1.9%, far exceeding known benchmarks.

Pain Management Team

Dorothy Beasley
Roseanne Bonivich, RN, RCC
Neil Bowser
Kellie Brock
Karen Davis
Lynn Duddy, RN, RCC
Sarah Frank
Theresa Gnjatovich, RPh
Jennifer Gally
Monique King, RD
Pat Lavsa, RN, RCC
Denise Mangone
Chris Miller, RN
Dana Nicodemus
Peg Wetzel

VA PITTSBURGH HEALTHCARE SYSTEM

A MRSA Prevention Initiative

Each year, about 2 million infections are acquired by patients entering our nation's healthcare facilities, causing 90,000 deaths and costing \$4.5 billion. An estimated 70% of these infections are caused by microorganisms that are resistant to one or more types of antibiotics, with MRSA (methicillin-resistant *Staphylococcus aureus*) leading the pack. In fact, one in five patients infected with MRSA will die.

Yet in the face of this urgent public health threat, traditional “best practices” for MRSA prevention, promoted by the Centers for Disease Control and Prevention (CDC) or the Society for Healthcare Epidemiology of America (SHEA), are slow to catch on.

Spreading the enthusiasm for change—the elusive component of “buy-in”—would prove to be an ongoing challenge.

Said Robert Muder, MD, VA Pittsburgh Healthcare System (VAPHS) Chief of Epidemiology, “Just because you have a policy that people agree with, it doesn't necessarily mean people will change the way they've always done things.”

The goal of zero

The VAPHS already had lower-than-average infection rates, but settling for average was not the plan. Before work could begin, leaders and key clinical champions across the organization had to agree on the goal—not of reducing, but of eliminating MRSA. A goal of zero removes complacency and keeps people striving toward perfection, and is a prerequisite to inquiry using the PPC or Lean philosophy.

“In health care, errors are accepted,” said Dr. Muder. “There is a mentality that says, ‘At least we're better than the hospital down the street.’ An auto factory wouldn't accept a 4% defect rate, why should hospitals? That is why we aim for a defect-free product at the VAPHS.”

Introducing Toyota-based changes

In October 2002, a 36-bed post-surgical unit at the VA was selected as a pilot site for a MRSA reduction program. The VA engaged in the program in conjunction with the CDC and PRHI, which supplied the services of a Perfecting Patient CareSM coach. Together with Nurse Manager Ellesha McCray, MSN, RN, MBA, their team led the deployment of worker-led innovations that included screening 100% of patients for MRSA and isolating those either colonized or infected; dramatically increasing hand hygiene and isolation best practices; and even delivering medications on time. The interventions reduced the MRSA rate on that unit by 85% the first year. Soon the work expanded to an 11-bed surgical intensive care unit.

Making it easy to do the right thing, hard to do the wrong thing

The specifics of the twofold plan were relatively simple.

1. All patients would be tested for MRSA (a nasal swab sent to the lab) on admission, transfer to another unit, and on discharge. This information would reveal whether a patient had MRSA on admission, or whether it resulted from hospital care.
2. All barriers to proper hand hygiene would be removed. Personnel and visitors would know when and with what to sanitize hands, every time; supplies would always be at the ready; and visual cues including painted lines on the floor would guide staff as to when to don gowns, gloves, hats and masks in an isolation room.

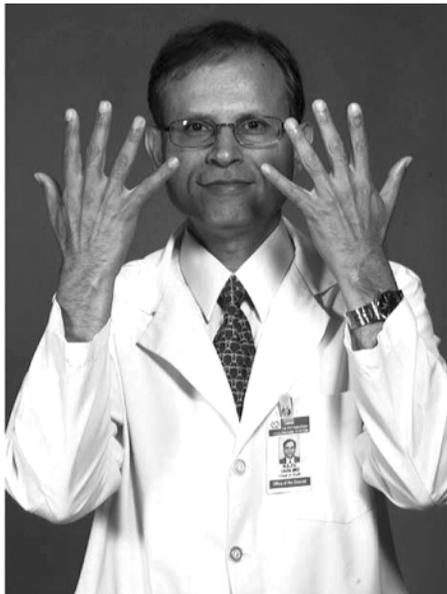
“If you cross the line in a factory, you need a hard hat,” said Dr. Muder. “Here, if you cross the line, you need to gown and glove.”

Establishing a reliable supply chain meant that gloves in proper sizes were always available. Convenient and comfortable gowns, hats and masks were always available in a place where it was convenient to put them on before entering a patient's isolation room. Posters went up showing the superiority of hand gel over soap and water in MRSA cases. And finally, posters with esteemed members of the staff demonstrated that clean hands were now the cultural norm—“the way we do things around here.”

The house-wide MRSA rate began to decline.

The Bug Stops Here!

Wash or sanitize your hands!



Sign for hand hygiene placed around the hospital featuring Dr. Rajiv Jain, Chief of Staff

Culture change

Overcoming skepticism and inertia, achieving the holy grail of culture change, is never easy. Dr. Muder commented that the barriers to 100% hand hygiene included a “160-year history of not doing it.”

But at the VAPHS, a funny thing happened on the way to culture change. Because the approach relies on giving nurses and others on the front line the tools and the authority to change the work to hit the quality target, other indicators also improved. Nurse satisfaction as measured by the National Database of Nursing Quality Indicators (NDNQI) increased. Compared to all other VAPHS acute inpatient units, the PPC pilot site logged the highest rate of satisfaction for shared decision-making. Patient satisfaction, as measured by the Survey of Healthcare Experiences of Patients (SHEP), also soared by 10% for overall inpatient quality, exceeding the national average.

Positive deviance

In taking the MRSA initiative house-wide, the VAPHS factored in “positive deviance,” meaning that when unusually good results were popping up in a unit, the team would go to investigate the cause of the improvement. The technique also calls for focus groups to solve issues that would in the past have been viewed as insurmountable. These techniques assist with staff acceptance of the model.

Costs

The cost of additional equipment purchased for hand hygiene improvement and nasal swabbing in the first year was \$32,442—less than the estimated \$50,000 cost of treating one MRSA infection.

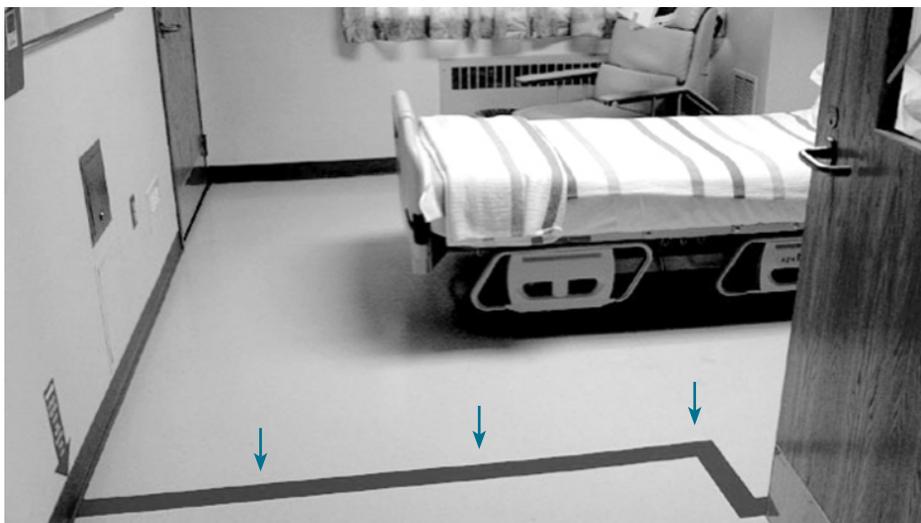
Results

Following the initial 85% decline on the pilot unit, the hospital has kept scoring more victories against MRSA. Using a standard measure of bed days of care (BDOC), MRSA decreased from 0.94 per 1,000 BDOC in 2004 to 0.44 in 2007 in the VAPHS acute care hospital. And in the long-term care facility, the most challenging environment of all, MRSA declined from 0.54 infections per 1,000 BDOC to 0.33 in one year.

As a result of the MRSA work at the VAPHS, the following initiatives have been launched:

- The MRSA initiative as pioneered at VAPHS started rolling out to all 153 VA hospitals in the nation in January 2007
- Following a visit to the VAPHS, Pennsylvania Governor Ed Rendell called on hospitals across the state to strive to eliminate MRSA
- Following testimony by Rajiv Jain, MD, Chief of Staff at VAPHS, three state legislatures passed bills in 2007 requiring hospitals to test high-risk patients routinely
- Eighteen states now require hospitals to publish their infection rates

RED LINE PRECAUTIONS



This red line is a visual cue to anyone entering the patient's room that they must don a gown, gloves, hat and a mask

MRSA Prevention Initiative Team

Alan Bernstein, MSN
Cheryl Creen, MSN
Candace Cunningham, RN
Rajiv Jain, MD
Jon Lloyd, MD
Ellesha McCray, MSN, RN, MBA
Robert Muder, MD
Mary Rudy, MSN
Cheryl Squier, RN, BSN, CIC

MAGEE-WOMENS HOSPITAL OF UPMC

Promoting the Ideal Patient Experience in the Emergency Department

The red flag at the Magee-Womens Hospital Emergency Department (ED) came in the form of a 2006 patient satisfaction survey showing that wait time irritated more than a quarter of ED patients. Patients waited nearly half an hour to get to an exam room. For patients who were ultimately discharged, the average length of stay was 3.5 hours; for patients who required admission, the average length of stay was nearly 6 hours. Too often, patients were leaving without being seen, or before their treatment was complete. Exacerbating the flow problem was a 31% increase in ED visits over the prior four years.

Rather than accept the situation as the new “status quo,” Magee assembled a team to begin resolving patient flow. A cross-functional team from the ED attended Perfecting Patient CareSM (PPC) University and learned how to map the current value stream and make improvements that would be self-sustaining.

The team agreed on a starting point for good care, captured in the acronym, “Aim At.” It stands for Acknowledge the patient; Introduce yourself; Meet their expectations; Answer their questions; and Thank them for choosing our hospital for care. They disseminated this vision across the staff and gained support for change through collegial meetings, which included turns playing the board game, “Friday Night in the ER.”



Observation and value stream mapping

The team made careful observations about the patient’s current experience and the way work was currently done, creating a value stream map. This technique maps out which part of the work is value added (something the patient would pay for), and which is non-value added (like waiting, rework or confusion). The team then set about creating ways to remove the non-value added work, or waste, through rapid cycle improvements. The team quickly devised an experiment on a process, tried it out, decided whether it worked or needed adjustment, then rolled it out to a larger sample. This quick, iterative way of introducing improvements means that (1) workers, who design them, are likely to support them; and (2) if they don’t work, it’s not a failure, but helps point to a method that will work.

Part of the elegance of PPC is that it can happen quickly. Meetings are spontaneous, informal and fast, and are held on the floor, close to the work. A value stream map can take just a few minutes or hours and points to the most wasteful part of the process, likely to result in the biggest “win.” Rapid cycle improvements can take minutes or a single shift, and can be constantly improved without meetings.

Do not fix a needless process

The Magee ED team quickly learned a tenet of process improvement: do not fix a needless process. In the current condition, patients arrived in the ED and waited to be taken to the triage area, single file, to give pertinent information.

Rather than “fix” the triage area, the team realized that it would be more efficient to triage patients at the bedside in an exam room. Patients could be taken to an exam room right away, skipping one entire, non-value added step. Several patients can be triaged at the bedside this way, eliminating a queue.

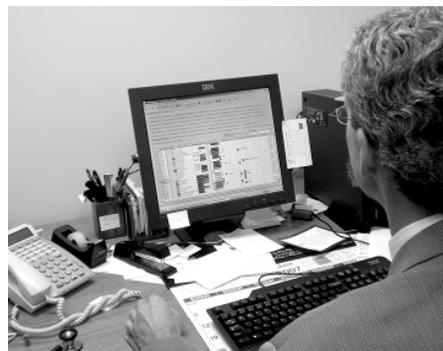
Bed	Age	Name	Sex	Chief Complaint	Attending Physician	LOS	Review
ER, 03	57 y	PR	VR	SOB		0:09	
ER, 05	18 y	NK		L LWR ABD PAIN-NOT PREG	Laure	0:52	<input checked="" type="checkbox"/>
ER, 06	28 y	UI		STOMACH/SIDE PAIN-MVA		0:23	
ER, 07	64 y	KS		PAIN IN BOTH FEET	AMR	2:02	<input checked="" type="checkbox"/>
ER, 08	59 y	DC		INFECTED MIDDLE FINGER	Laure	0:36	

Electronic Bed Board

Incorporating electronics the smart way

PPC and Lean favor untangling system problems the old-fashioned way, one by one, in the course of work, using low-cost, low-tech approaches as much as possible. This does not mean that Lean resists technological improvement; it means that to gain their full advantage, they must be carefully introduced into existing systems that are lucid.

To help visualize where patients were in the flow, real time, Magee introduced an electronic board, First Net. The board gave staff members a clear view of where patients were, who was waiting to be triaged, seen, discharged, or admitted, and what steps needed yet to be done. Staff could see if the waiting room was backing up, open the overflow area sooner, and to use that cue to call for more help to eliminate the backlog. Their work in establishing partnerships with other departments led to more help coming sooner in times of high volume.



Dr. Timothy VanFleet, Medical Director of Emergency Services, is able to keep tabs on the ED flow in real time from his office

The electronic bed board offered additional incentive, in that hospital administrators can view it remotely. Because the staff had embraced Lean principles and a blame-free culture, administrators use the information not to point fingers, but to send additional resources when needed, and offer to see what they could do to make things run better.

Results

The table below shows the results over one year, which include an 89% decrease in the number of patients who left without being seen; a 32% decrease in length of stay for discharged patients; and a 17% increase in patient satisfaction.

“The changes have resulted in a sustained improvement in satisfaction, which is now over 89% – up another 4% in 2008,” said Glenda Davis, Director of Nursing Operations.

Some patients expressed surprise at the speed of service in the ED, and initially questioned whether clinicians would be able to spend enough time with them. Yet the patient satisfaction numbers indicate that the quality of the visits has improved along with the efficiency.

According to Jeff Hodges, Unit Director, “Life in the ED is much calmer now.”

Measure	December 2006	December 2007
Patient Satisfaction	73.5%	85.4%
LOS-discharged patients	210 min	142 min
LOS-admitted patients	351 min	242 min
Left without being seen	47 patients	5 patients
Elopements (left without being treated)	5 patients	1 patient

Promoting the Ideal Patient Experience in the Emergency Department Team

Glenda Davis, RNC, MPM
 Jeffrey Hodges, RN, MHS
 Maribeth McLaughlin, RN, BSN, MPM
 Timothy VanFleet, MD

UPMC ST. MARGARET

Infection Prevention Improvement

Medical literature teems with data about the devastating effects of healthcare-acquired infections (HAIs), which account for about one-half of all deaths from medical mishap in this country. As demonstrated in Pittsburgh over the past 8 years at the VA Pittsburgh Healthcare System and at Allegheny General Hospital, HAIs are not the inevitable by-product of a complex health system. They are preventable.

Nowhere has the uptake of this message been more thorough than at UPMC St. Margaret. The starting point in March 2006 was an infection rate that stood near 4% which, while not far above the national average, was wholly unacceptable to the hospital. In February 2008, the rate stood at 1.3% and, because the improvements have been built into the way work is done, the rate is still declining.

Since then, UPMC St. Margaret has declared war against the three biggest HAI offenders: methicillin-resistant *Staphylococcus aureus* or MRSA, central line-associated bloodstream infections or CLABs, and *Clostridium difficile*, or *C. difficile*, an antibiotic resistant bacteria of the intestinal tract.

“We took a close look and tried to define where the biggest problems were and then systematically went after them,” said Raymond Pontzer, MD, Chief of Infectious Diseases at UPMC St. Margaret.

Dr. Pontzer formed an Infection Prevention Improvement (IPI) Team with members from infection control, quality, surgical services, nursing, pharmacy, environmental services, electronic health records, microbiology and radiology. Together they began to identify infection reduction strategies. Chief among them would be standardization of the processes of care.

Standardized care

MRSA. Patients who are admitted to the hospital without obvious symptoms of infection may still be colonized with this antibiotic-resistant microorganism, able to spread it to others or to become infected. All patients with active MRSA infections or who are colonized must be isolated.

This is a case where knowledge is power: the hospital needs to know which patients need to be isolated with precautions in place.

Guidelines for screening patients most at risk on admission, transfer and discharge are clear: all patients admitted to intensive or intermediate care, stepdown/telemetry and surgical units, and patients coming in from any other healthcare facility need to be screened. Those who are MRSA positive need to be isolated during any future visits to the hospital.

But guidelines are not procedures. At UPMC St. Margaret, the IPI Team sought a way to make it easy for staff to see who needed screening, when, and what the results were, immediately. The electronic health record (EHR) was configured to generate an order for MRSA screening on admission, transfer or discharge as required. The EHR also flagged the patient’s MRSA status, so

that any hospital in the system who admits the patient in the future will know to use isolation precautions.

Adherence to isolation precautions is up. Gloves, gowns, hats, masks, and alcohol-based hand sanitizer are visible and ready upon entry to any isolation room.

The electronic cues are working. The surgical unit, which averages 250 admissions per month, consistently registers 99% compliance with MRSA screening requirements. For all units, the admission and discharge screening rate is 95%.

CLABs. Central lines deliver fluids, nutrition and medication to critically ill patients, but their improper placement and dressing can cause life-threatening bloodstream infections. CLABs are 100% hospital-acquired.

To combat them, the IPI Team developed a “bundle,” which includes a checklist of standardized procedures and pre-packaged equipment kits for inserting and caring for a central line. Clinicians placing lines drape the entire area, wear gowns, gloves, hats and masks, and use a specified disinfectant. Equipment is at the ready when and where needed.

Other procedures were standardized, including:

- Lines not used for 24 hours are no longer left in place “just in case,” but are removed
- Because it may not always be obvious from a cursory glance which patient has a central line, a list is generated daily from the EHR
- All personnel who insert or care for central lines are required to participate in standardized training, both initially and annually thereafter



Old cleaning cart



New cleaning cart

The measures have paid off in a major way: UPMC St. Margaret has posted zero CLABs in the ICU since November 2005; and zero throughout the entire hospital from June 2006 through April 2008.

C. difficile. When 17 patients acquired *C. difficile* in March 2006, the staff at UPMC St. Margaret heard the call to action. The IPI Team looked into the way patient rooms were cleaned. Not only were cleaning procedures standardized throughout the hospital, all high-touch areas were cleaned with a bleach solution known to kill *C. difficile*.

Again, early identification of patients with *C. difficile* became imperative. The medical staff approved a protocol that allowed nurses to send a stool specimen for analysis without delay when certain clinical conditions were present. The patient is placed in presumptive isolation until the result is determined, and remains in isolation if the culture is positive. Again, isolation equipment like gloves, gowns, hats and masks are readily available at the entrance to the room.



For staff and visitors, isolation caddies (gloves, gowns, hats and masks) are placed at the entrance to a patient's room

Although alcohol-based hand gel works best against MRSA, *C. difficile* spores are best removed with soap and water handwashing. A yellow card near the alcohol rub dispensers calls out the difference.

Clinical pharmacists analyzed antibiotic use, since some antibiotics can actually increase the risk of developing *C. difficile*. The pharmacists provided education on antibiotic use with the medical staff, and the heightened awareness has resulted in a steady decline in *C. difficile* cases.

Since the IPI Team began redesigning work to eliminate *C. difficile* in 2006, the number of people discharged with hospital-acquired gastrointestinal infections has declined by over two thirds.

Infection Prevention Improvement Team

Randal Cochenouer, MS, MT, ASCP
 Bonnie Colaianne, RN, BSN
 Susan Dinucci, RN, BSN
 James Engelsiepen, RT(R), CV
 Amy Friez, MSN, RN
 Kevin Garrett, MD
 Jessica Graff, RN, BSN, CMSRN
 Janet Griffiths, RN, BSN
 Marjorie Jacobs, RN, MSN, ACM
 Barbara Jordan, RN, MSN, CCRN, NEA-BC
 Bernadette Kozlowski

Results

The overall infection rate for UPMC St. Margaret decreased from nearly 4% in March 2006 to 1.3% in February 2008. The severity of infections was reduced as well. Designing precautions into the work means that backsliding will be minimal; it has also freed up time for the IPI Team and staff to begin concentrating on eradicating other infections, like surgical-site infections and ventilator-associated pneumonia.

Infections are life-threatening for patients and extremely expensive to treat. The average MRSA infection, for example, can cost over \$50,000 to treat, often much more. As many have pointed out, the cost of one MRSA infection can more than pay for a year's worth of screening exams for at-risk patients. Eliminating one CLAB can more than pay for the most effective new patches for dressing the lines.

Last fall, the Centers for Medicare and Medicaid Services (CMS) began to decline payment to hospitals for certain preventable medical events, which include hospital-acquired infections like MRSA and CLABs. At the time these new regulations went into effect, UPMC St. Margaret had already been working to eradicate them for two years.

"I honestly don't feel the CMS ruling had much of an impact on our team," said Dr. Pontzer. "We'd been very proactive over the past number of years to do this, and we didn't do this for financial reasons. Primarily, we want to improve patient care and prevent patients from getting infected, from getting sick, or dying from infections."

Lisa Lehman, BSN, RN
 John Merkt
 Jacqueline O'Brien, MSN, RN, CIC
 Ronald O'Neill, BS, PharmD
 Raymond Pontzer, MD, FACP
 Sharon Rummel, BS
 Jason Schafer, PharmD
 Marianna Stoneburner, MSN, RN
 Adele Washington, RN, BSN
 Grace Michele Winter, RN, BSN
 Karen Zanin, RN, CNOR

JOHN J. KANE REGIONAL CENTER/SCOTT TOWNSHIP

Wound Care Initiative

For nursing home residents, just getting around can pose a challenge. Age, disease and surgical recovery can limit their mobility, putting them at increased risk for pressure ulcers or bedsores. Between 3 and 5% of nursing home residents already have pressure ulcers, but as many as 60% may be at risk for developing them.

Bedsores are neither easy to treat nor innocuous: healing takes time, during which the open wound invites infection, which can prove devastating. According to a 2006 study on hospitalization, one in 25 patients hospitalized with a primary diagnosis of pressure ulcer will die. Among those who develop them as a complication of another condition, one in eight will die.

And while pressure ulcers triple the length of stay and double treatment costs, the worst part is the toll paid by the patient.

Melissa Barcic, RN, Director of Nursing at the John J. Kane Regional Center, Scott Township (Kane Scott) said, “The main problem is that pressure ulcers degrade the quality of life of the resident. There’s pain. When it comes to wound care, you have to know what you’re doing.”

The staff at Kane Scott became galvanized for change when they learned that some low-risk patients¹ were developing pressure ulcers. Sensing an opportunity, they assembled an interdisciplinary Wound Care Team, which set the goal of preventing pressure ulcers in their residents and effectively treating those who came in with them.

The map from current condition to future state

The philosophy of Perfecting Patient CareSM (PPC) requires a full and unvarnished picture of the way things are actually done, the current condition, and a vision of what the improved method would accomplish, the future state. One method of diagramming the current condition and future state, and mapping out a way to get from one to the next, is accomplished

with an 11x17 piece of paper, folded in half. This tool is called an A3 (named for the size of the paper).

The left side of the A3 analysis includes the business case for change, a map of the current condition including the problems, and five “whys” to delve to the root of each problem. The right side of the A3 starts

with the future state map, assignments about who will do what and how it will be communicated, and metrics.

In looking at the way work was done, Kane Scott’s Wound Care Team defined the gap between current and ideal practice. They decided to focus on the way that skin risk assessments were done, and to find a way to standardize supplies, medications and written protocols for pressure ulcer prevention and treatment.

Removing waste

The Wound Care Team discovered confusion over the numerous medications and products they were storing, each used to treat pressure ulcers. Which one was best? Which one was most cost-effective? Who decided?

According to Melissa Barcic, “Standardization of protocols and supplies was critical to the success of this project. When we looked at what we were using before, we found stockpiles of the same medication or wound care product, made by different manufacturers.”

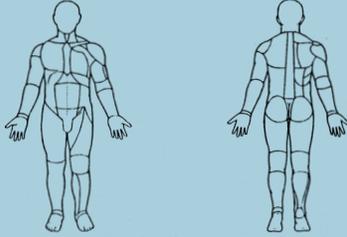
The team began to untangle, categorize and simplify the supplies on hand, according to the Lean technique of 5S (sort, set in order, shine, standardize and sustain). Through 5S, the Wound Care Team came to consensus on one set of supplies from a single manufacturer, and standardized medications from one supplier. Not only do these decisions improve standardized care, they reduce confusion and cost.

¹ Risk was assessed through use of the Minimum Data Set (MDS) which is part of a federal mandate for clinical assessment for Medicaid- or Medicare-certified nursing facilities.

KANE REGIONAL CENTER
WOUND REPORT
Braden and Kane Risk Assessment Score _____

Date of Onset _____ Admitted/HR _____ In-House _____

Type - _____ Pressure Ulcer _____ Vascular _____ Arterial _____ Diabetic
Grade I _____ Grade II _____ Grade III _____ Grade IV _____



s/Devices _____ Overlay _____ APM _____ Clinitron _____ Wedge
_____ Geo _____ Roho _____ Gel _____ Other _____

A portion of the new Wound Report form

Results

Since the improvements were implemented, Kane Scott has not received deficiencies from Medicare/Medicaid certification related to pressure ulcers.

Wound Care Initiative Team

- Melissa Barcic, RN
- Kim Bell, RN, BSN
- Sue Burns, RN, BSN
- Sabina Daroski, MD
- Robin Dean, OT-L, BS
- Rachel Fichtenmeyer, RD, BS
- Debbie Foster, RN, BSN
- Jody Hensberger, RD, BS
- Natalie Lund
- Karen Zagrocki, RN, CRNP, BSN

Standardizing the work

To ensure that each patient received the same high standard of risk assessment and the same treatment, every time, the Wound Care Team looked at standardization and training.

When it came to assessing the risk of a patient developing a pressure ulcer, the existing assessment tool lacked details about medical conditions such as diabetes, which can predispose a person to skin breakdown. If a pressure ulcer existed, the wound was measured. The new assessment prompts more questions about underlying medical conditions. Every caregiver received training on the more in-depth risk assessment, so that patients received consistent attention each time.

The enhanced risk assessment was also accompanied by protocols for preventing pressure ulcers in patients assessed as low risk, and different protocols for those at high risk. The protocols include standard care plans with written treatment guidelines if a pressure ulcer should develop.

Said Barcic, “Your entire interdisciplinary team – from frontline staff to occupational therapist – knows what the written protocols are. And they’re implemented every time.”

Becoming a wound care model of excellence

Melissa Barcic proudly reported that patients from other hospitals and nursing homes are now referred to Kane Scott for wound management and wound care.

“Patients are referred to us because we do such a good job. The word is out: our wound healing time since implementation of the new protocols has drastically declined.”

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Co-Author: *INTERNAL BLEEDING: The Truth Behind America's Terrifying Epidemic of Medical Mistakes* (2005)

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