DEPLOY DATA
AND A CONSISTENT METHODOLOGY
To Drive Improvement And
CHANGE YOUR CULTURE

by John S. Toussaint, MD

Quality performance in healthcare is almost an oxymoron. According to the Institute of Medicine, most healthcare processes, when measured in terms of the number of defects that occur, typically perform in the range of 100,000 defects per million opportunities (dpmo).[1] In contrast, industries like commercial flying and nuclear power production perform at the six sigma level of 3.4 dpmo. For every 1 million times a commercial jet takes off and lands, there are 3.4 crashes, or defects. Similarly, for every 1 million opportunities for a nuclear reactor to malfunction, only 3.4 malfunctions actually occur.

The only healthcare process that has reached the same level of safety is anesthesia delivery. Not coincidentally, it is also among the few that are actually standardized across the industry. All anesthesia machines look similar to each other, so anesthetists don't have to learn new technology every time they walk into a different operating room. Error-proofing techniques like color coding and making it physically impossible to connect the wrong gas to a patient also help reduce the potential for defects. Unfortunately, other examples of standardization and virtually defect-free performance are difficult to find in healthcare delivery.

> **" Driving quality improvement** requires two basic components: **accurate data on performance** delivered in the right environment, and a **consistent methodology for improvement. "**

With the realization that current performance is not acceptable, what is the healthcare leader to do? Administrators don't deliver care, and they may not even be able to confront physicians about the need to improve performance. They fear the doctor will say, "If you question my care I will take my patients to a competitor hospital." Or, the latest trend, the physicians simply build their own competing surgery centers or specialty hospitals.

One Healthcare Organization's Response

At ThedaCare, we are answering the challenge to achieve six sigma performance by focusing on year-over-year improvement to reach dramatic results. Figure 1 shows our performance in reducing defects in heart attack care by about 50% per year over the last three years. The sad news, especially considering the low defect rates other industries enjoy, is that our 2005 performance of 91,476 dpmo placed us near the 90th percentile of performance in the country for heart attack care. Additionally, the year before, we had been named a Solucient 100 Top cardiac care center.[2] The good news is that we reduced our defect rate to 54,000 per million opportunities in 2006, and then to 28,500 in 2007, placing us at 97%.

Industry/Process	Defect	DPMO
ThedaCare heart attack care, 2005 (91% performance)	Not providing all 6 key components of care	91,476
ThedaCare heart attack care, 2006 (94% performance)	Not providing all 6 key components of care	54,000
ThedaCare heart attack care, 2007 (97% performance)	Not providing all 6 key components of care	28,500
Road safety	Death	6,210
Chemical industry	Spill	6,210
Anesthesiology (low-risk patient)	Death	3.4
Nuclear industry	Reactor malfunction	3.4
Commercial large jet travel	Crash	3.4

Figure 1: ThedaCare's progress toward six sigma heart attack care

Producing only 3.4 defects per million opportunities (dpmo) translates to what is widely known as six sigma performance. Although currently anesthesia delivery is the only healthcare process performing at six sigma, ThedaCare is working on driving down defect rates in heart attack care. Specifying six key components of care for heart attack patients helped us standardize the process and also gave us a clear way to measure for defects.

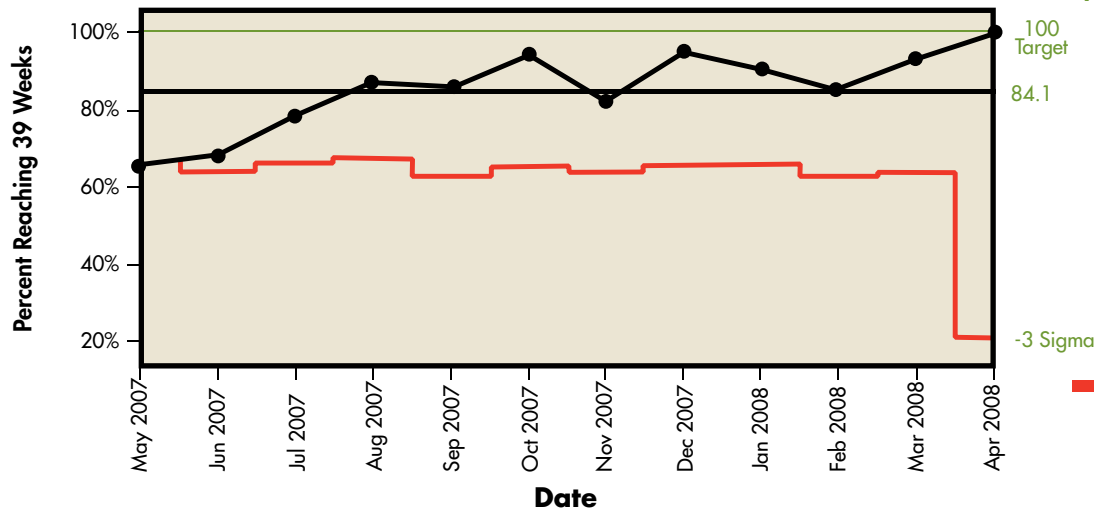## Perinatal GA Over 39 Weeks
Physician = ALL

Figure 2:   Elective inductions at 39 weeks in the ThedaCare Obstetrics Unit

In our experience with heart attack care and other processes, we have learned that driving quality improvement requires two basic components: The first is accurate data on performance delivered in the right environment, and the second is a consistent methodology for improvement. Taken together, these components contribute to an overall shift in organizational culture, establishing a mindset of continuous improvement.

Create an Environment for the Productive Use of Data

Physicians are trained to react to data, whether the source is a double-blinded placebo-controlled research study or the laboratory results for their own patients. Data are part of their language.

Data are even more powerful when they can be personalized, such as enabling physicians to see their own performance compared to that of their peers. Most powerful of all are unblinded data, which allow physicians to compare their individual performance levels to other doctors' performance, and vice versa. Unblinded data are only of use, however, when unveiled in a nonblaming environment where physicians can openly discuss, explore, and change. A blaming environment that allows an insurance company to use performance data to terminate a physician's contract leads to mistrust, frustration, and lack of reporting important complications. Achieving the improvements necessary for quality to go up and costs to go down then becomes more difficult.

Creating a nonblame environment is no small task. For years doctors and nurses have feared talking about mistakes. They fear being fired or sued if their mistakes are reported. The challenge is to focus all efforts on seeing a mistake as a "golden nugget," a chance to fix a problem and prevent it from recurring and affecting other patients. The way to create this culture is to make it clear that reporting mistakes will not lead to staff terminations. In fact, the organization must celebrate reporting mistakes.

A group of ThedaCare nurses illustrated the importance of a non-blaming culture when they invited me to a meeting to kick off an improvement activity regarding medication errors. I had reviewed their data ahead of the meeting and found they were performing with an error rate much lower than the average. When asked to explain why the data indicated so few errors, a nurse at the back of the room raised her hand and said, "We don't report them."

After a minute of silence, I said, "Thank you for telling the truth." That nurse, and everyone else in the room at that moment, understood that talking about mistakes was not only acceptable and encouraged, but management thanked them for it. The discussion that followed used the "five whys" to uncover the reasons errors weren't being reported. Developed at Toyota, this quality tool prompts improvement teams to ask "why" five times to get to the root cause of a problem. We learned that reporting an error in an electronic health record required more than three minutes, time most nurses did not have. In addition, the nurses felt a lot of fear related to reporting: fear of job loss and ostracization, and fear for the patient's well being.

Other factors that are important to the successful release and productive use of unblinded data include thorough communication and the commitment of a physician champion. Well ahead of any data release, the performance goal and the rationale for choosing a certain clinical indicator for study and improvement should be communicated. A physician champion, someone who is passionate about the clinical issue and believes strongly in the goal, can also mean the difference between data that are ignored and data that lead to change.

In May 2007, ThedaCare's obstetrics department discovered that 35% of patients who were artificially induced for labor had not reached 39 weeks of gestation. One of ThedaCare's obstetricians saw these data and was appalled. Early induced labor leads to poor outcomes for babies; they are not ready to come into the world until 39 weeks. The obstetrician led a set of improvement activities, including an Institute for Healthcare Improvement (IHI) collaborative. She believed that if all of the obstetricians were aware of the results, they would be willing to work on improvements, so she presented the performance data to the department. To her surprise, nothing changed. She continued to speak about the issue at her department meetings, as did the clinical nurse practitioner on the unit. The performance did improve, but not nearly enough in the minds of these clinicians. The next step was to retrieve each physician's performance on inductions and post it by name in the obstetrician doctors' lounge. Needless to say, this created quite a stir, but it worked.

As Figure 2 shows, compliance to the standard of 39 weeks reached 100% in April 2008 and has been maintained. The learning, of course, is that doctors respond to data, becoming truly engaged when those data are unblended and when the environment encourages data sharing for the sake of improvement.

Deploy a Methodology for Consistency

The second component necessary to drive quality is a consistent methodology for improvement. For the past six years, ThedaCare has been on a journey to implement the Toyota Production System. The two core components of this method are respect for people and continuous improvement.

Of the numerous lessons we have learned, the most important from the standpoint of front-line nurses, doctors, and technicians is that the methodology must help them solve the problems they face in delivering care to their patients. Nurses and physicians are too busy to attend meetings that don't have a direct impact on the quality of their work. If the people who are doing the real work don't see tangible evidence that the activity is connected to their work and enhancing value to the patient, then they won't engage and change will not happen. Management's job, therefore, is to make sure that whatever

improvement activity is in place will support the people who are creating value for the customer/patient. Without a process that effectively helps people fix what's broken in their workdays, we are not fulfilling the basic Toyota principle of respect for people.

The Toyota Production System process starts by mapping the value stream, or the set process of steps that deliver the product to the customer.[3] Figure 3 depicts an example of a ThedaCare value stream on ambulatory patient care.

Mapping the existing state helps reveal areas that can be significantly improved and subsequently leads to creation of the future state. The future state value stream is the new process that the team of nurses, physicians, and supervisors can begin to implement and continuously improve.

After identifying an opportunity, one of the important improvement activities we use is the weeklong kaizen event. Front-line staff leave their routine work for a week to study their existing workflows. The events end on Thursdays with newly created standard work for the given set of processes. Changes are then measured each day on the floor and reported on a visual tracking center, which exists in every unit and in every clinic. "Huddles" occur each day or each shift at
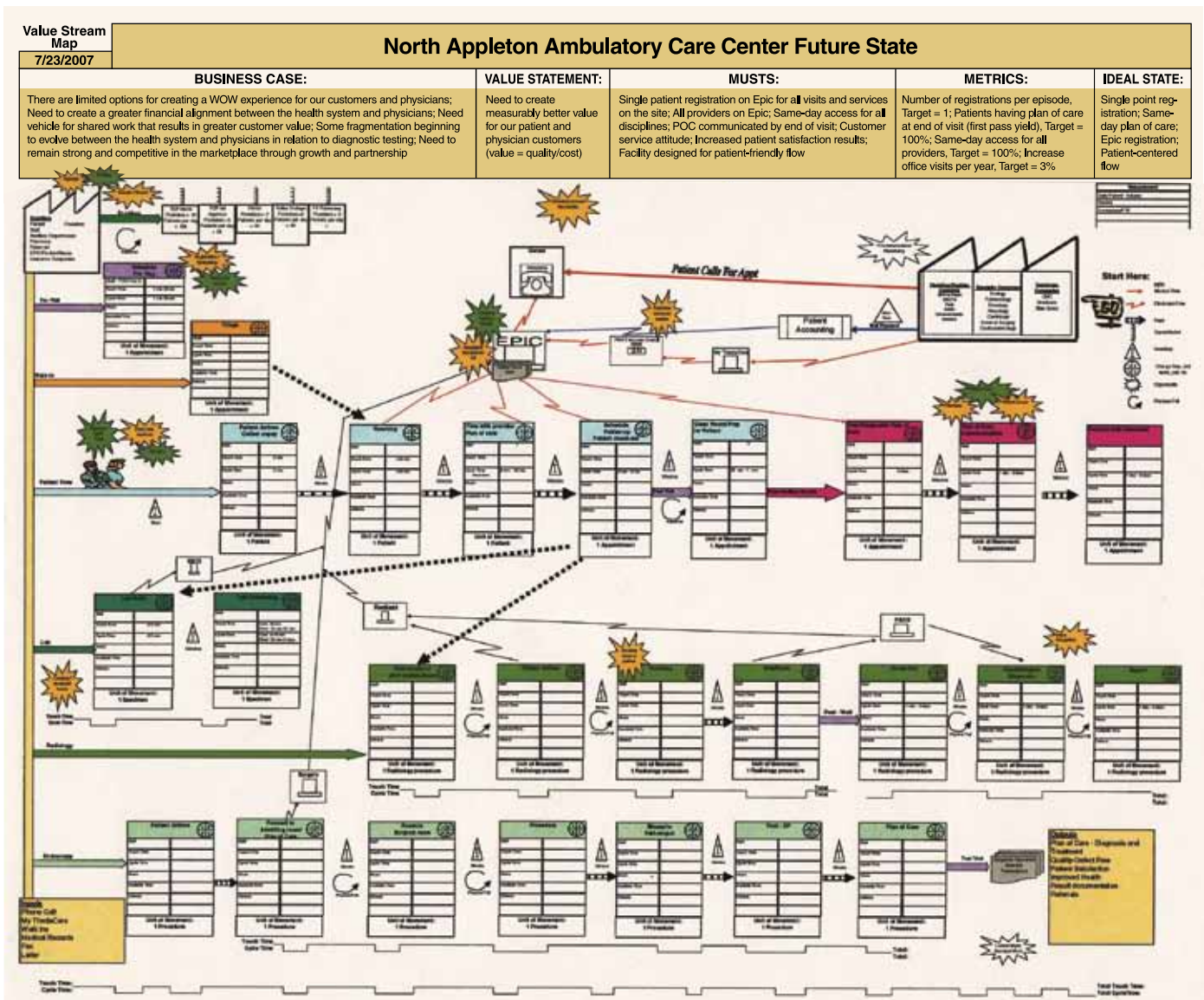

Figure 3: A ThedaCare value stream on ambulatory patient care

Problem Solving A4

Title: Department: Owner: Date: A4#

Problem Definition (Current State):

Desired (Future) State:

GOAL:

Problem Statement: (Include What, When, Where, Who, How Many)

Costs (Waiting/Motion/Defects):

5 Why Analysis ☐ Root Causes Identified
(Use back side of sheet for additional tools)
Why 1: _____

Why 2: _____

Why 3: _____

Why 4: _____

Why 5: _____

Root Cause	Action Plan/Experiments	Who	Due Date	Done Date

Figure 4: A4 problem-solving tool

these tracking centers to determine how the redesigned process is working. Staff who actually do the work and their supervisors participate in the "huddles," deciding together if adjustments or further improvements are required. Staff have the opportunity to address issues either at these team meetings or on their own.

The visual tracking center includes an actionable item log that simultaneously allows staff and physicians to document issues they are facing and offer suggestions for resolving them. Management's role is to guarantee a turnaround time of no more than 24 hours for each issue, depending upon where it falls into the priority list. However, the best way for problems to be solved is for the staff and physicians who identify them to address them immediately. Many of these problems are now being solved by staff using a standard tool called an A4, shown in Figure 4.

A problem-solving tool developed at ThedaCare, the A4 helps staff to define problems in concrete and practical terms, ask the five whys, describe the desired future state, and develop action plans for achieving that future state. All staff receive instruction in using the A4, and they can apply this tool at any time. If they can't figure out an issue, management steps in to help.

With complex problems, more sophisticated tools may be required. At ThedaCare a facilitator, a full-time quality improvement expert who has been certified by the Association for Manufacturing Excellence in lean tools, may become involved. Facilitators determine the most appropriate tool for each problem being studied. If these experts can't make progress, the problem is elevated to an external "sensei" (teacher) who has many years of experience working on improvement events. At least one sensei is available every day of every week to support staff and doctors.

Changing the Culture

In creating an environment that values performance data and in providing the methodology, tools, and support that individuals need to improve their results, ThedaCare has demonstrated a commitment to solving problems—real problems that surface in the day-to-day care of patients. With each problem we solve, staff become even more engaged in solving the next one. Work becomes more enjoyable,

which helps us retain high-caliber staff, and this, in turn, attracts other high-caliber staff. In this way, we begin to build a different culture, one that is constantly focused on improvement.

What is the fundamental cultural change necessary? It starts with the idea "No problem is a problem." In other words, people aren't being honest if they do not see problems. We think this attitude is the crux of the cultural change that must occur if we are going to change health-care quality.

In fact, if those in management think there are no problems, they likely have not been to the place of work recently. Experiencing firsthand what work is like on the front lines of care delivery helps clarify whether or not existing management systems are truly focused on making the life of the nurse, and ultimately the patient, better. If management respects people and wants to add value for patients, then we must learn to identify problems and help staff and doctors learn how to solve them.

ThedaCare has begun to understand this, as have a few other service organizations, but we still have a long way to go, and the journey never ends. Driving quality by creating a continuous improvement mindset seems to be working and may be what we all have been looking for in our march to change the way healthcare is delivered.

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About the Author

John S. Toussaint, M.D., is CEO emeritus of ThedaCare and CEO of the newly launched ThedaCare Center for Healthcare Value. He received his bachelor's degree in chemistry from Cornell College and his medical degree from the University of Iowa. Presently chairman of the board of directors of the Wisconsin Health Information Organization, Dr. Toussaint also has served as the founding chairman of the Wisconsin Collaborative for Healthcare Quality, a member of the Institute of Medicine's committee on pay for performance for physicians, and a member of Wisconsin Governor Doyle's e-Health and Patient Safety Board.