

# THE PIVOT PALETTE

A quarterly publication of PIVOT Management Consultants



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## MISSION

**B**e a premier provider of management consulting services to industry in the high technology, manufacturing / design, services, healthcare, education and government fields.

Be the best partner a business leader can have to help accelerate the move along the path of continuous quality improvement and quality system enhancement, rethinking and changing the way our client's business is done internally and for the marketplace and industry our client serves.

Implement operational improvements across all functions and levels of our client's organization to achieve improved strategic and marketplace position, delivering value added measurable results.

Provide a positive, rewarding, collaborative work environment within PIVOT that fosters personal growth, fulfillment and success for our associates, suppliers and clients.

## VISION

**T**ogether we will. . .

Work to fully understand the requirements of our jobs, the requirements of our clients and the systems that support us.

Provide error free services, analysis information, education and skills training on time to our clients.

Practice ethical, honest and fair behavior in our interactions with clients, associates and suppliers. We will not promise anything we cannot honestly deliver.

Inspire trust and respect by our clients, associates and suppliers, through PIVOT's proven commitment to our mutual success.

Have fun!

## SIX SIGMA

### APPLICATION IN HEALTH CARE

**P**resenting at the Annual Quality Congress, Cathy Buck, Executive Vice President, Operations, Froedtert Memorial Lutheran Hospital, Milwaukee, WI, stated that medication administration and laboratory processing are examples of complex systems in healthcare that are known to be error prone. Froedtert Hospital is one of the first in the health care industry to use six sigma methodology to reduce medication and laboratory errors and improve patient safety

Six sigma is an error reduction methodology that has been successfully applied in industry, at organizations like Motorola, General Electric and Citibank, amongst many others. It represents both a management discipline and a standardized approach to problem solving and process optimization. Six Sigma is recognized most often as a metric that technically means having no more than 3.4 defects per million opportunities in any product, process, or service. As a refresher, the improvement process consists of four basic phases:

- measure performance and determine defect levels,
- analyze data and perform root cause analysis,
- improve the number of defects, and
- control the process to insure improvements are sustained.

Medication errors have become an unfortunate fact of life in healthcare delivery systems and represent a substantial source of preventable errors in hospitals. Froedtert Hospital also recognized ordering, transporting, analyzing and reporting clinical laboratory tests as significant additional sources of error.

Working with a consortium consisting of the Medical College of Wisconsin, the American Society for Quality and SecurTrac, Froedtert Memorial Lutheran Hospital evaluated its medication delivery

with the goal of designing an approach to reduce the likelihood of errors. A multidisciplinary team of physicians, nurses, pharmacists and administrators worked together for this purpose.

The team examined 22 medications delivered by continuous IV transfusions, a methodology used in many clinical settings. Using Failure Mode and Effect Analysis, Froedtert Hospital discovered that IV rate calculations and IV pump set ups were the two most error prone steps in the IV infusion process. Initial efforts to reduce errors thus focused on these two steps.

Analysis, using Six Sigma tools, indicated significant variability in the ordering and processing of IV drips. Lack of standardization in many of the process steps posed the greatest risk of system failure. The three areas having the highest levels of variability and the greatest chance of error were addressed to begin with. Standards were created by a multidisciplinary task force to reduce variation. Specific interventions included implementation of standardized physician order sheets, a policy requiring preparation of all IV medications in a standard concentration, and use of color-coded labels when nonstandard concentrations were in use.

Thirty days after implementation, measurable improvements were evident. Though far from achieving six sigma levels, it was apparent that the application of Six Sigma methodology is extremely useful in identifying, quantifying and controlling complex hospital systems.

To learn more details about this case contact the Froedtert Hospital or the American Society for Quality at 800-248-1946.

## SIX SIGMA CERTIFICATION?

**S**ix Sigma certification is a confirmation of an individual's capabilities with respect to specific competencies. Just like any other quality certification, it does not indicate that an individual is capable of performing unlimited process improvement, just that s/he has completed the necessary requirements from the company granting the certification.

Six Sigma certification entails learning the appropriate subject matter, passing a written proficiency test, and displaying competency in a hands-on environment. Bodies of knowledge and durations differ for each Six Sigma level (green belt, black belt, master black belt, sponsor, etc.), the most common being 1-2 weeks for green belt and four weeks (spread over four months) for black belt.

Upon completion of classroom training, candidates must complete one or two quality projects and display competency in applying the concepts learned in the classroom training. Although there is no standard for certification requirements or the body of knowledge, this is the generally followed approach by most certification and training organizations, whether internal or external.

If interested in getting certified, or learning more about Six Sigma, contact us and we can help determine the right path for you.

## POKA-YOKE (MISTAKE PROOFING)

**P**oka-yoke is Japanese for mistake-proofing. These devices or methodologies are used either to prevent the special causes that result in defects, or to inexpensively inspect each item that is produced to determine whether it is acceptable or defective. A poka-yoke device is any mechanism that either prevents a mistake from being made or makes the mistake obvious at a glance.

To help us understand the concept better, let us look at some everyday examples:

1. 3.5 inch diskette cannot be inserted into the diskette slot in the computer unless diskette is oriented correctly. The beveled corner of the diskette pushes a stop in the disk drive out of the way allowing the diskette to be inserted. This fea-

ture, along with the fact that the diskette is not square, prohibits incorrect orientation.

2. As you must be aware, file cabinets can fall over if too many drawers are pulled out. So we find file cabinets where opening one drawer locks all the rest, reducing the chance of the file cabinet tipping.
3. Mistake-proofing devices when filling gas in your car:
  - a. filling pipe insert keeps larger, leaded-fuel nozzle from being inserted (not really valid any more),
  - b. gas cap tether does not allow the motorist to drive off without the cap
  - c. gas cap is fitted with ratchet to signal proper tightness and prevent over-tightening.
4. Ever tried shifting a car out of parking without inserting the key? Automobile controls have a mistake-proofing device to insure that the key is in the on position before allowing the driver to shift out of park. The keys cannot be removed until the car is in park.
5. New lawn mowers are required to have a safety bar on the handle that must be pulled back in order to start the engine. If you let go of the safety bar, the mower blade stops in 3 seconds or less. This is an adaptation of the "dead man switch" from railroad locomotives.
6. Circuit breakers are a common household device. They prevent electrical overloads and the fires that result. When the load becomes too great, the circuit is broken.
7. Ever put a letter or invoice in an envelope addressed for another? Enter the window envelope. The window in the window envelope is not only a labor saving device, it prevents the contents of an envelope intended for one person being inserted in an envelope addressed to another! Another example of mistake proofing.

Look around you and see how many such examples you can find. Then challenge yourself to institute such measures, devices and methodologies at your workplace.

If you have any comments/suggestions, please contact:  
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## DECISIONS, DECISIONS . . .

**M**uch has been written about different problem solving methodologies. Whether they are comprised of four or ten steps, they usually encompass the following types of activities: identification of the problem, background information to understand why the problem even exists or what things have been done in the past to try to solve it, some type of generation of ideas and an associated grouping or discussion surrounding them, a decision, and then implementation. If the group implementing the solution is quality conscious, they'll also include some type of review to ensure the problem was effectively corrected.

When learning about these methodologies, however, not much thought or discussion is given to the decision step of the process. And that is a key in determining whether the proposed fix will be implemented properly and sustain the test of time. There is no clear cut way to do this. Every problem and the respective team responsible for solving it have their own respective idiosyncrasies that require a different set of considerations. When choosing what type of decision making methodology to use, keep in mind the following factors: time constraints, complexity of decision, impact of implementation, competence/knowledge of team, and group support/commitment.

The type of decision making methodology should be determined prior to the meeting where the decision will be made. This will give those affected by the decision a "heads-up" as to what role they will play. It will also prepare the facilitator as to what type of session they will be facilitating.

- Unilateral decisions are made by a Leader without obtaining information from others. This method should be used when the decision must be made immediately, has no direct impact on the group, or is not important to the group
- Consultative decisions are made by a Leader after obtaining the views of the people who are concerned with the issues to be decided. This method should be used when other people have information relative to the decision, and (a) the implementation of the decision requires minimum support or (b) considerations prevent the use of the consensus method.
- Consensus decisions are made by the group that will implement them. The Leader has no more weight in making the

decision than any other group member. Leaders shouldn't control the outcome nor offer their ideas until everyone else has had that opportunity. Issues are discussed until everyone's ideas are understood and there is a general agreement on how to proceed. This method is used when (a) the group has enough knowledge, competence, and experience to make a sound decision, (b) the decision has a large impact on many people. (c) discussion of opposing views is needed to gather essential data and to make a sound decision and (d) group support and commitment are essential to implementing the decision.

Before the Leader decides that he/she will make the final decision, the pros and cons of doing this should be weighed. On a positive note, decisions will be made faster, since there will be less pressure to involve many people in the final decision and group conformity will be avoided. On the negative side, the Leader may make a decision based solely on his/her own attitudes and may ignore group opinions. In addition, there is more pressure on one single individual to make a sound decision.

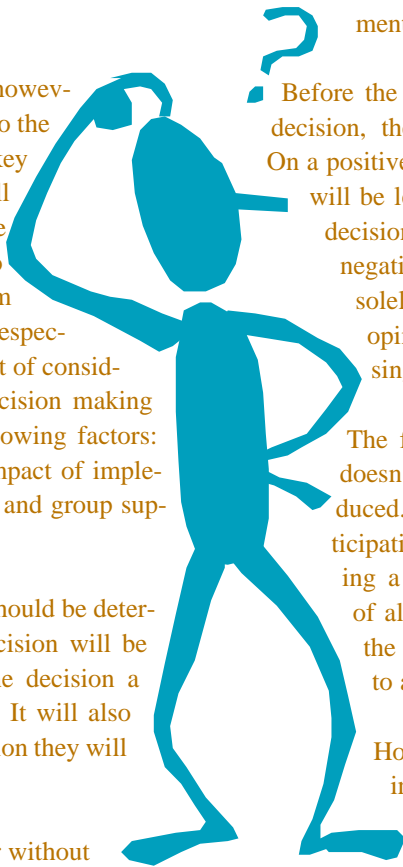
The fact that smart individuals participate in a group doesn't necessarily mean that a smart decision will be produced. Groups need guidance regardless of who is participating. The benefits of a group decision include providing a broader range of knowledge, offering a wider range of alternatives, and enabling a better understanding of the issues. Furthermore, the group will be more likely to accept and effectively implement the decision.

However, the negative aspect of group decision making are those related to most group interactions: one person may dominate, social pressure may hold group members back, competition among team members may develop, or the group may accept the first positive solution and not look at other solutions.

There are many other issues to consider when working within a group. . . . read in the next issue.

*Triche Guenin*

*This article will be continued in the next issue of PIVOT Palette, and will cover various decision making processes: majority rules, consensus, unanimity, optimization and satisficing.*



## Getting "Lean" in Health Care

Singapore Airlines recently placed an order for \$1.5 billion in new aircraft specifying that they wanted GE engines. Note that there are only three aircraft engine manufacturers in the world: GE, Rolls Royce, and Pratt Whitney, making it a very cut-throat business. All three companies have the capability of producing engines with the required features! As the bids came in, GE was able to slash its bid by a whopping 35% - tremendous pressure on the other players in the field!

How do they manage to reduce costs to this extent and still make a profit?

If we look at some of the recent 'fads': lean manufacturing, six sigma practices and ISO 9000 quality system standards come to mind. All these 'fads' improve quality, reduce costs, cut cycle time, and become more flexible in meeting the changing customer requirements. The *Lean* approach focuses specifically on reducing waste - due to waiting, inventory, transportation, etc.!

If aircraft engine manufacturers can adopt such practices to reduce costs and become competitive, why can't the health care industry? The argument often heard is that it is a different industry. Sure. Don't we all feel that way about our companies and our jobs? 'Lean' started out of the *automotive industry* in Japan!

Why is it that the health care industry seems to lag behind in such improvement initiatives? Yes, the industry is different with different processes, from say, the aircraft industry. However, they have processes. Processes that include inputs, transformation, outputs, billing and collections, to name a few. The inputs happen to be unhealthy people who go through the process of being treated to chemicals, transfusions, inspections, subjected to x-rays, cuts and fusion in skin and bones, and the list goes on. They also have administrative and other out-sourced services that support the internal infrastructure of these organizations. Is it really that different?

*Or is it simply that professionals in the health care industry just like to lag behind advances in other industry? Isn't it time they woke up and started doing some benchmarking of industry best practices? Perhaps even copy shamelessly (like the manufacturing industry does)?*

*Although a few health care organizations took the lead in adopting ISO 9000 (American Legion Hospital) or six sigma (Froedert Memorial Lutheran Hospital), it is still a far cry from standard practice. Many people in the industry have not even heard of the standards!*

*I suggest that it may not be in the best interest of the health care industry if it is going to lag as far behind in seeing the benefits of some of these "Lean" techniques!*

### THE PIVOT PALETTE

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