By mid 2011, most of Wayne Memorial's surgical services supplies and equipment had been literally squeezed out into the hallways for storage and they were literally bursting out at the seams. Plant Operations leaders were rightly concerned about Fire Safety violations, AND more importantly, The Joint Commission was expected in just a few more months! Obviously, something had to be done and quick. There was a need for change in supply management and in culture. As a way to improve management of equipment and supplies and avoid potential negative repercussions from the imminent Joint Commission survey, surgical services staff stepped up to the challenge by adopting the Lean Six Sigma 5 S technique—sorting, setting in order, standardizing, shining, and sustaining.
Before we get into the specifics of our journey, let me give you some background on Wayne. Wayne Memorial is a full-service, 316 license bed general acute care hospital located in Goldsboro, NC. We are a stand-alone mid to large size hospital in a sub-urban area of eastern NC.

Like many organizations of this nature, WMH’s strategic goals includes ‘ensuring that the highest levels of customer satisfaction & staff satisfaction and retention are maintained as well as putting into place the systems and processes necessary to assure that services are delivered in an efficient manner without compromising quality and safety issues.’ Therefore, a few years ago, WMH began using the Lean Methodology for Performance Improvement to make a favorable impact on their bottom line to directly impact performance.
To summarize, there was definitely an impetus for change. Some necessary reconstruction had Wayne Memorial’s Surgical Service division in a bit of a quandary in early 2011. So, Performance Engineering was requested to assist them in using some of these Lean techniques & tools. 5S, a ‘Lean’ five-step performance improvement approach, helped Wayne Memorial to better organize and locate surgical supplies and equipment by removing outdated/unneeded supplies & items all over the entire division, thereby, improving patient safety and reducing supply costs as well as staff time spent searching for needed items.

The hospital immediately realized over $31,000 in sale of surplus items and inventory reduction. WMH’s Surgical Purchasing Manager also attributed a 13.1% decrease in OR inventory volume (over $167,000) from FY11 to FY12 as “…due primarily to our efforts in regards to the Six Sigma project.” WMH was also successful in negotiating for future discounts in more efficient shelving/storage solutions from a new vendor. Furthermore, staff and physician moral was also greatly improved by making it easier and quicker to locate needed supplies and equipment even during this particularly potential volatile experience. Finally, a very successful TJC visit helped hospital administration rest easier knowing the about $90M in revenues from Medicare & Medicaid were still secure. A newly trained, competent, & actively engaged Wayne Memorial surgical services staff team took control over their potentially negative situation and created the tools and culture to turn their ‘problems’ into solutions.
When Performance Engineering (PE) was first called to Surgical Services in mid 2011, it was quickly apparent that every single hallway and open space was crammed full of equipment and supplies. There were rumblings of not everyone knowing where to find items and physicians becoming upset when a case was delayed and staff had to spend precious time searching for needed supplies or equipment.
Due to the reconstruction in early 2011, most of the surgical services supplies and equipment had been squeezed out into the hallways for storage and they were literally busting out at the seams. In addition to this, The Joint Commission (TJC) expected visit by the end of the year had forced WMH’s CNO’s top priority to now become clearing those hallways – all this without surgical services division leadership in place (the Administrative Director had taken a medical leave of absence).
When the remaining surgical services division leadership team reached out to the Performance Engineer for assistance at the direction of the CNO, the PE immediately thought of all the Lean training she had recently been conducting at the hospital and in particular the Lean 5S tool. So..., what they thought was simply help to calculate how much space would be needed for all their existing equipment and supplies quickly became a large scale 5S project for the entire division.
The PE asked the division’s leadership team these questions from one of slides in the Lean 5S training deck, and they readily agreed that a 5S in addition to a few other tools were in order for their current dilemma.
Why the “Team” Approach or LEAN works…?

“It’s the way to identify and remove waste: instituting improvements that truly are owned by the staff members, because these efficiencies were created by the people doing the work, not by consultants, engineers, managers or experts.”

Source: “Hospitals & Health Networks Daily” by Mark Graban and Rob Harding, August 9, 2011

Surgical Services division leadership also agreed that the 5S and solutions needed would best be served by teaching and empowering front line staff to tackle this endeavor themselves for many of the same reasons Mark Graban and Rob Harding discussed in their 2011 article in “Hospitals & Health Networks Daily.”
The team was comprised of cross functional staff (RNs and techs) from various surgical disciplines (Neuro, Ortho, General Surgery, Uro, Central Sterile, Endo, etc.), inventory technicians, and Nursing assistants. Support team included other management and staff from the OR, Plant Operations, EVS, Materials, Radiology, and IT. It is important to note that the team was primary comprised of staff members with very little Management involvement other than to provide direction & dissolve road blocks.
Per WMH custom, a team sanction request was submitted to WMH senior management for approval. A team charter specifying project scope, boundaries, team members, goals & objectives, and deliverables, etc. was also developed to help keep the team focused.
It is safe to say that the team achieved all of the goals and objectives identified in the initial team charter!
After the team was formed & sanctioned and the project charter developed, training team members on Lean, and in particular the 5S tool, followed.

Based on five Japanese words that begin with ‘S’, the 5S Philosophy focuses on effective work place organization and standardized work procedures. 5S simplifies your work environment, reduces waste and non-value activity while improving quality efficiency and safety.

5S involves:
- Sort to get rid of unneeded items
- Straighten to organize and label the location for items that are needed in the area
- Shine to clean the workspace, including equipment cleaned & prepped for use
- Standardize to develop cleaning methods & cleanliness standards to maintain the first 3 S’s
- Sustain to review the workplace regularly and make the improvements habit

Once fully implemented, the 5S process can increase morale, create positive impressions on customers, and increase efficiency and organization. Not only will employees feel better about where they work, the effect on continuous improvement can lead to less waste, better quality and faster lead times. Any of which will make your organization more profitable and competitive in the market place.
It is imperative to note that when working with supply storage units in office or patient care areas, it is important to know what’s in it and when it needs to be replenished. More notably, it is important to include maps so staff can quickly find supplies they need. Maps and communication quickly became key to our success.
Speaking of “knowing where it is and maps & diagrams”… the team learned early on just how important this is! After the initial lean and 5S training, a few of the team members became a little over zealous and decided to go ahead and put into practice what they had learned without a proper plan of action in place. They started to clear out and reorganize items based on what made sense to them without direction or notification & involvement of other staff or physicians in the department. Understandably, this kind of upheaval in an already precarious situation, caused quite a stir. Team members quickly learned that communication and maps in particular were key to success. After this initial uproar, this particular map was quickly developed and shared online as well as posted throughout the division to notify all staff AND physicians exactly where everything was located as the division was reorganized and renovated to accommodate storage requirements.
Other communication tools also proved very useful. Since this particular 5S involved an entire division as well as much more than a normal simple two or three day 5S event, a project tracking tool was also in order. In addition to implementing what they had learned about sorting, straightening, shining, standardizing, and sustaining, the team was also tasked with finding other places within the division or hospital for all the remaining equipment to fit besides the current egress halls it had found itself in. On top of this, the team had to develop a plan for temporarily relocating supplies and Pyxis machines in the sterile instrument room while it was renovated to accommodate new HVAC requirements and new storage/shelving solutions – all in 4-5 months before TJC was expected to visit. Project management, training, and most importantly COMMUNICATION were key.
Although the PE and current division leadership whole-heartedly sought to include front-line staff in decision making as much as possible, loss of “their” space coupled with the loss of old division leadership had moral at an all-time low in the division at the beginning of the project. In order for the team to move past the ‘storming’ and into the ‘performing’ stage of team development, trust had to be established and staff had to move past their initial resentments.
The PE spent a lot of time behind the scenes encouraging senior management to allow staff a little more free reign in testing out ideas and solutions as well as explaining to front-line staff just why some of their suggestions would not work in the big picture environment. Thankfully, senior leadership became a little more flexible and Wayne Memorial’s surgical services front line staff quickly had a plan in place and the motivation to turn things around.
In just 4-5 months (June-Oct), team members:
- Successfully completed the 5S project throughout the division (sort, straighten, shine, standardize, sustain)
- Identified a viable alternative storage location (old Surgical Support offices) which included:
  1. relocating three offices/staff members
  2. working with construction teams to redesign the new area
  3. identifying and installing new more efficient storage solution/shelving for sterile instrument room
  4. temporarily relocating sterile instrument room supplies & Pyxis machines into newly constructed area including ensuring proper air handling / humidity control requirements were met for the sterile instruments
  5. relocating ALL equipment and supplies to new storage area and any other nook and cranny available in the department
  6. and, finally, communicating and providing maps for all the new equipment and supply locations (interim and final)
The sterile instruments and Pyxis machines were temporarily relocated to the newly built equipment and pack storage area during the required HVAC upgrade and installation for the new shelving for the sterile instruments. Note that maps communicating equipment/supply locations were even provided during the interim move to smooth transitions as much as possible.
The team really had to be creative in finding storage solutions for ALL the equipment and supplies. One very good idea included dismantling three Steris sterilization systems that were no longer used that took up quite a bit of valuable real-estate. Here physician buy-in for using a new DSD Edge for high level disinfection vs. sterilization had to be obtained.
This is what the old surgical support offices and conference/training room looked like before it was renovated to serve as the interim sterile instrument & Pyxis machine and final equipment & pack room storage. A 5S was needed just here alone! Much of this was actually thrown out and all of it definitely reorganized into much neater and easier to locate areas.
The newly designed equipment and pack room were able to accommodate most of the equipment and supplies granting a much better organized method for storage. Again, note maps & tape for organizing and communication purposes.
Also, make note of use of color coding to quickly identify surgical specialty storage sections. The provided maps also followed the same color coding scheme.
After: NEW equipment & pack room LABELING…

- Green = Ortho
- Orange = ENT, EYES, Plastics
- Purple = Neuro
- Aqua = General
- Red = Cardio
- Pink = Gyn
After: NEW equipment & pack room LABELING…

- Green = Ortho
- Orange = ENT, EYES, Plastics
- Purple = Neuro
- Aqua = General
- Red = Cardio
- Pink = Gyn

and MORE Labels…
After: NEW equipment & pack room LABELING…

- Green = Ortho
- Orange = ENT, EYES, Plastics
- Purple = Neuro
- Aqua = General
- Red = Cardio
- Pink = Gyn
The next several slides show the newly cleared hallways... Almost eerie in comparison.
Hallways...Before & After
Hallways…Before & After
Hallways...Before & After
It is interesting to note that at any given time this particular hallway could be literally full of stretchers. This was the hallway right outside the main OR suites AND Same Day Surgery prep & recovery rooms. The team had some difficulty in determining the best final location for these stretchers, but ultimately agreed on a nearby storage alcove that best accommodated patient flow. Also, division leadership was able to skim down the number of these stretchers and transfer the assets to Central Transport so they would not need to purchase themselves.
This is the new sterile instrument and Pyxis room. Note the new adjustable shelving which the vendor helped to set up or design to maximize space restrictions (minimize open ‘dead space’). Again, note the color-coded by specialty labeling and item catalogues.
Although the project was ultimately very successful, it was not without its challenges. In the beginning it was difficult to sort out team leadership due to the divisional leadership being in flux. And several team members initially identified for inclusion quickly became non contributors. These folks were ultimately removed by fellow team members themselves. Effective and continual communication was essential from the beginning. It was difficult to keep everyone notified at all times due to the many changes in such a short time frame. The maps and team members taking responsibility for continual communication throughout the process were key to ensure physician and other staff buy-in. As team facilitator, the PE also had to balance key relationships to ensure team staff autonomy while also including necessary limitations from senior management. Efficiently utilizing every bit of space in the division was also crucial. Negotiating with Radiology for final storage of their C-arms became particularly challenging – eventually they were persuaded to store them (or the less utilized ones) in their own department.
Several unexpected challenges also came up during the course of the project. An Endo storage area initially cleared to be renovated into an office did not happen, thus, requiring a Director and one of her supervisors to temporarily share a very small office. An impending HVAC construction change to the sterile instrument room was folded into the project about mid-way through requiring the team to quickly find new shelving solutions (temporary and final) and interim storage locations while not forgetting crucial humidity control regulations for sterile instruments. Severe time crunches were present from the start with the team racing against time to beat TJC surveyors. And, finally, maintaining team consensus was crucial up until the end with determining the final storage location for the stretchers.
Despite the initial road-blocks, set-backs, and confusion along the way, all-in-all, the team accomplished what it set out to do as is evidenced by the benefits and results of the project.

Benefits & results…

- CLEAR HALLWAYS!!!!
- SUCCESSFUL TJC Survey (securing crucial Medicare & Medicaid revenues)!
- $31,000 in immediate savings
- 13.1% decrease in OR inventory volume in FY 12 (over $167,000)
- Discounts on efficient shelving solutions
Other common benefits expected from successful 5S projects were also made possible.
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