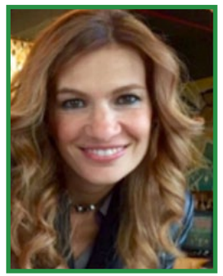
Lean Journey in the Endoscopy Unit



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Some say the glass is half full;
Others say the glass is half empty.
Lean thinkers challenge the size of the glass
Keith Gilpatrick

Introduction

In the new Era, healthcare costs are being examined from every perspective. Rising costs are unsustainable and require intervention to lessen the burden. Leaders in the organization are urged to review their internal processes and options to streamline efficiency, productivity, and work-flow thus contributing to quality patient outcomes and cost savings.

To achieve significant cost reduction by raising labor productivity and eliminating waste, one of the endorsed Quality Improvement tool used was the lean process as "Lean is about having the best processes in place right now."

Lean is "a process improvement strategy comprised of Elements, Rules and Tools. Lean focuses primarily on the elimination of waste from all business processes. A smallest yet not less important portion of lean involves specific concepts that are intended to provide quality products, delivered on time at the lowest cost and only on the specific demand of the customer"3.

As a team, Lean guided us through our journey of excellence in the Endoscopy Unit in a tertiary care center. Lean helped us to focus more on the customer (What does our customer want and how can we provide services that are perceived as high quality compared to cost?), understand how the work is actually accomplished, remove wastes and inefficiencies and seek continuous improvement in value.

First step in the project: The Lean Value stream Mapping

Value stream mapping is a lean enterprise technique used to document, analyze and improve the flow of information or materials required to produce a product or service for a customer. It is different from a typical process map because it includes an expanded range of information such as value and non -value added steps. The value added steps are what you add to your products in order to convince customers to buy them (education, pain control, and appropriate tests). Non-value-added activities add costs (money, time, efforts) to your product without enhancing the value (example: wasted time, wasted movement, wasted inventory due to overproduction, customer delays, waiting for approvals). Some non-value added activities (rework, redundant step) do not contribute to the service and should be eliminated and others are necessary to keep the value added work going (legal or regulatory requirements)[1].

How it started

The first step for this process was initiated by preparing and submitting a proposal including a business case, problem statement, goals and scope. After securing the approval of the leadership, the team started to drill down into the operational process to determine how the work is actually accomplished; based on the findings and observations, a current value stream mapping of one procedure was done from the patient registration till discharge. Value and non -value added factors were charted.

The most significant non- value added steps were inefficient scheduling, the unavailability of medical records and/ or supplies, and waiting time of 30 min to clean the scope.

Several meetings were held with the team, mainly front liners who are directly involved in patient care and all the suggested recommendations were taken into consideration. The process was continuously measured and modifications were done accordingly. Some steps that don't directly create value for the customer were removed.

A new value stream mapping was done. The process was tested continuously by collecting data and acting on the results until a smooth flow of operations was accomplished. Throughout the process change, the kaizen event was led. The kaizen event included training and re-arrangement of the area.

The project comprised 3 major steps:

1. Kaizen event focused on the DNA of the lean process including standard work, limit distance material travel within the process, limit people movement and education. By implementing kaizen, we were able to determine the TAKT time based on customer demand, working time and total down time, reduce the total lead time (duration of the entire process), engage physicians, educate technicians to handle scope properly, do preventive maintenance and prepare a plan including training needs to ensure that all staff have the competencies needed in this area.

2. Just do it now: optimal technology and workplace organization

3. Long term: having a waiting area and additional procedure rooms.

During a short period of time, the improvement in the existing process led to increased productivity, more efficiency and a better workplace. What was really rewarding and impressive is that staffs in the unit embraced the recommended changes and were very enthusiastic as the LEAN continuous improvement principles were applied to existing problems that they may have thought once they were unsolvable.

Moreover, Kaizen principles helped in team building. Everyone had the opportunity to suggest a solution and with each new challenge, an appointed team formulated a solution and designed its implementation. Staffs were supportive of Lean. They owned the process and felt empowered to improve the quality of their work. They were all aware that Kaizen is built on the principle of shared responsibility to reach quality.

Second step in the project: 5 S"es, store organization

5 S describes how to organize a work space for efficiency and effectiveness by identifying and storing the items used, maintaining the area and items, and sustaining the new order. The decision-making process usually comes from standardization, which builds understanding among employees of how they should do the work[2]. The elements of 5 s are: separate, sort, sweep, standardize and sustain (Table I)

Similarly to the Value stream mapping, a business case, a problem statement and goals were set. The goals included removing all expired supplies from shelves, monitoring the frequency of item usage in order to limit misuse in replenishment and avoid financial losses due to expired items on shelves, cleaning and organizing areas such as the Supply closet, linen closet, filing closets, equipment store, patient procedure room closets and supply drawers, creating an electronic system for replenishment, maintenance, and daily counting reports for all the closets listed above and assessing the daily needed equipment and supplies.

Post implementation results

The hard work was rewarding. Approximately 60 sq. feet was re-claimed for equipment storage, all unnecessary and obsolete forms from the secretary/ nurse/ physician station all and surpluses related to supplies from the unit were removed. A total of $2500 in excess inventory was returned to Central Storage for credit to the unit.
Moreover, a remarkable amount of money of unused/ obsolete medical supplies was identified and returned. A list of needed inventory equipment was prepared and sent to the concerned personnel. Patient rooms were equipped with the appropriate supplies and equipment; medication drawers were organized and standardized. All this led to Improvement of the workflow in the Endoscopy Unit by elimination of excess motion and transportation. Finally, linen supply decreased by 50% which resulted in remarkable monthly savings

The proof is in the results

While staff satisfaction was an excellent benefit from the LEAN assessment, it was not the only improvement seen. By using Lean framework and tools (value stream mapping and 5 s's), the improvement was noted in both operating and financial performance:

• The Procedure time was reduced from 70 minutes to 50 minutes which allowed us to accommodate 600 additional patients per year for only one procedure which led to increase in revenue by 20%.
• The Recovery time was reduced from 51 minutes to 30 minutes which helped in accommodating more patients without the need for expansion.
• A 50% decrease in the monthly linen supply was achieved by utilizing disposable linen resulting in remarkable savings.
• Effective Total Preventive Maintenance (TPM) was implemented; routine cleaning and inspection stopped the accelerated deterioration in addition to planned training for the technical Team that improved operation and maintenance skills; this resulted in cost reductions due to extended life of equipment and supplies and also improved efficiency during procedures.
• The quantity of supplies needed was re- organized and managed using Kanban, a critical element from the Pull system and the store was reorganized by using the five "S"es. Results revealed a tremendous saving with zero losses during the first 2 months.
• Kaizen helped build capabilities in addition to developing competencies and skills: three technicians received advanced certification.
• Workflow standardization and organized workplace dramatically improved patient safety and reduced patients' incidents such as falls after discharge from the unit.
• Improved flow, timely access to care and patient satisfaction had the highest return on investment

Conclusion

As we journeyed through the Lean transformations and worked all (Management and Front liners) as one team to achieve the same goal, a success story is born. The endoscopy unit became one of the most organized and equipped unit in our organization; The financial indicator monitored throughout the implementation phase of the lean process yielded a significant profit; in addition, zero loss of supplies has been reported during this period; the payback was real.
It is strongly believed that embracing Lean as a continuous improvement tool will place us ahead of the competition in our quest to transform our healthcare operations and offer values to our customers and major stakeholders. "Changing the culture to lean is a long term endeavor".

Definitions

1. Kaizen: A three to five day project to review and make changes to a process. The cycle followed in performing kaizen is referred to as Plan- Do- Check- Act.
2. Kanban: is a signal for demand of specific product, in specific quantities to be delivered to a specific process. Each Kanban is sized differently to meet the replenishment requirements and capabilities of the upstream suppliers so that the downstream customer will always have adequate supply and can meet fluctuating customer demand
3. 5S: The basic principles of a 5S program are to create an organized and clean work area. It includes: Separate, Sort, Sweep, Standardize and Sustain.
4. Value Stream: the entire series of processes that are used in an organization/company to provide value for the customer
5. TAKT time: the pace at which the production line needs to operate in order to meet the customer demand for product.
6. Lead time: the time from the point when an order for material is sent to a supplier until the materials are received and available for use.

Separate Means Eliminate all	Sort Means Organize all	Sweep Means Clean	Standardize Means Regulate	Sustain Means Maintain the improvement
Expired medical supplies/medications	Supplies related to similar procedure: they were grouped and moved to specific cabinets	Closets and drawers	A list of items (including medications, supplies, medical equipment) for each procedure was prepared. Items were distributed into specific drawers, to be refilled on daily basis at the end of the working day as a daily function of the endoscopy technician functions	Employee involvement: All ideas and suggestions were taken into consideration
Unneeded linen	Medications required for one week: they were ordered and kept under lock	Medical equipment in coordination with Biomedical Engineering department	Visual inventory tagging system was implemented in place for easier identification of needed supplies and replenishment purposes. Replenishment was based on consumption: calculations were performed over 2 months period for the minimum required supplies	Weekly inventory rounds conducted
Duplicates of different stationary forms, old reports, old magazines and catalogues	Linen and scrub suits for staff: they were moved to the central laundry unit for daily replenishment	Hardware in coordination with the information technology department	Maintenance for Medical equipment, physical inventory of the supply store, replenishment cycle of medications and supplies were scheduled	Continuous kaizen events conducted
Obsolete equipment	Supplies needed for each procedure: a list was prepared	Daily and weekly procedure rooms in coordination with housekeeping department		Replenishment on time with zero loss
Accessories used with old equipment	All shelves and closets: labeling and tagging was completed	Disinfection area for optimal clean environment		

References

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