Utilizing LEAN Methodology to Improve Efficiency in the OR

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VALLEY'S JOURNEY TO HIGH RELIABILITY…

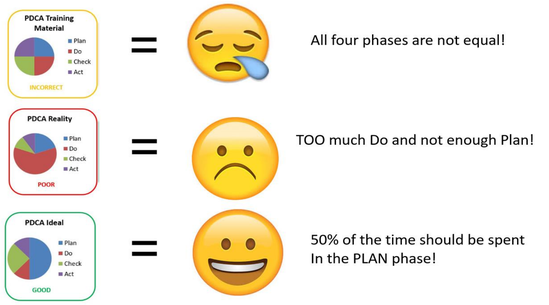
BACKGROUND INFORMATION FOR THE PROJECT AND OUR JOURNEY TOWARDS HIGH RELIABILITY

When talking about high reliability in healthcare, we have to look at the high reliability challenge, and reflect on the following…

- Are we doing the right things?
- Are we doing the right things right?
- How can we be certain that we do the right things for every patient/process every time?

We need to consider LEAN challenges…

- Healthcare is only as good as our ability (system and processes) to deliver it.
- There is a need to optimize reliability through implementation of error prevention strategies + leadership methods + process improvement.
- LEAN stresses elimination of inappropriate variation and process waste, document improvement and standard work.
- At Valley, we are always looking to improve our processes. We reviewed our current process for performance improvement:

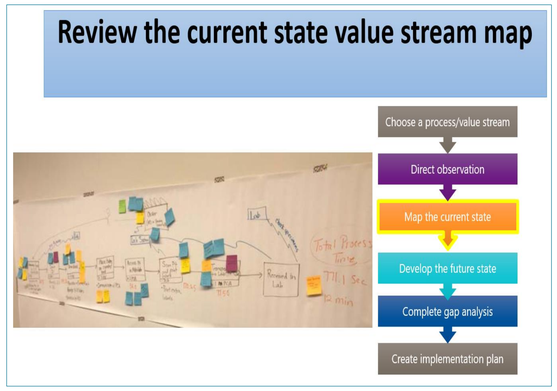


- We developed a plan to include LEAN methodology in our processes, and thus began our journey of project building, with our quality department streaming the process. The utilization of value stream mapping and rapid improvement events helped assist us with valuable wins within the organization.

"A Bad System will Defeat a Good Person Every time"-Demming

VALUE STREAM MAP (VSM)

- A value stream map is a simple diagram that shows every step needed to fulfill a requested service. It is useful for identifying and quantifying waste, providing a simple way to see a process.
- It starts with the customer – so important to always get the customer's input, or there will be no buy-in.
- It includes patient and information flow, capturing value added and non-value added steps, including queue time or delays between steps.



What about the current system/process is NOT ideal?

- Once the current state is mapped out, the team identifies the non-value added activity (waste), and unwarranted variation.
- Next, the team brainstorms pain points/issues/waste, and the pain points are added to the map close to the step where the issue occurs. This is done with post-it notes.
- Where do you want to be? Map out the current state versus the future state – the future state value stream map is a vision of the target condition.
- All pain points and improvement ideas are reviewed, and pain points ranked in order of importance to the customer.. The top issues/ideas are voted on and selected, to include in the implementation plan.
- The future state shows us where the work will be improved and what it might look like.

What is a RAPID IMPROVEMENT EVENT (RIE)?

- A rapid improvement event is a structured approach for making significant changes in current processes and activities within a short time frame.
- Goals are to make improvements during the event, and remove waste/variation from processes to make them more reliable.
- The process involves:
  - ~selection of issues/pain points from the current state VSM
  - ~review of target condition VSM
  - ~problem analysis for primary issue/pain point
  - ~identification of countermeasures
  - ~PDCA testing of countermeasures
  - ~sustainability plan
- Development of standard work is important in the planning stage. It is designed by the people doing the job, and breaks down the work into steps. The goal is to repeat the steps consistently in the same manner.

Standard work is created by those who do the work and based on customer requirements!

THE PROJECT

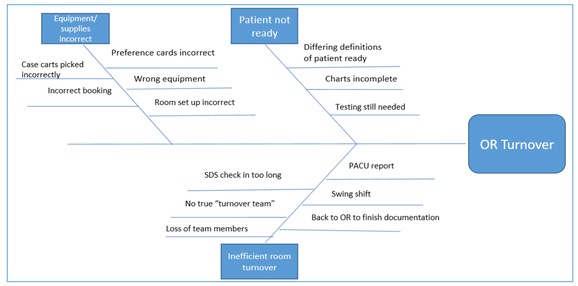
The Director of the OR sought out an opportunity to include our Quality and Performance Improvement department to help us improve our OR Turnover by doing a VSM/RIE project.

Over 15 personnel from the OR, including nurses, surgical techs, anesthesia techs, orderlies, supervisors, pre-op RN's, PACU RN's, and leadership went off-site for 2 days to initiate this project with an RN coordinator from our Quality and Performance Improvement department. This RN has been trained and is certified as a LEAN Six Sigma Black Belt. A VSM was performed over this time period.

Out of over 100 pain points identified, our team voted on 3 pain points to do rapid improvement events on, that fall into the overhead of "OR turnover":

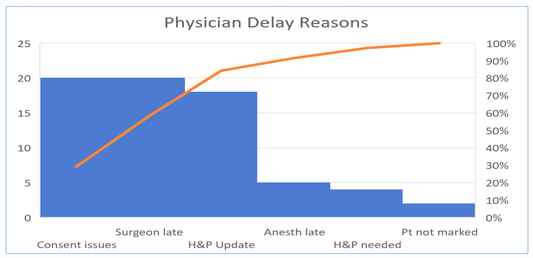
- Patient not ready
- Equipment/supplies incorrect
- Inefficient room turnover

LEAN teaches us to do a root cause analysis of the event; utilizing a fishbone diagram helps with this deep dive:



PATIENT NOT READY

- We discovered there were differences in the definition of "patient ready' between the OR and Same Day (SDS) RN's.
- Team of OR RN's and SDS RN's met to ensure all on the same page.
- Baseline data via one week survey done from the SDS perspective of how many patients were ready. Average showed that 52% of the time, our patients were not ready.
- OR Director, anesthesia and surgeons worked on pre-op order sets to help expedite orders needed when patient arrives day of surgery.
- Deficiency list was placed on our patient tracker, showing charge completeness, what is missing, etc. This was a big win for our team.
- Director and manager presence on SDS as surgeons arrived for first cases.
- Standardized hand-off form to remove variation for higher reliability.
- Previous change in shift of staff to ensure first cases always ready, allowing time for team to check subsequent case carts for efficiency.
- New data collection via survey performed from OR nurse perspective. Findings showed that 53% of the time, the patient was ready. Of the 47% of the time the patient was not ready, 84% of the time it was a physician issue. This data was brought to Surgical Control.

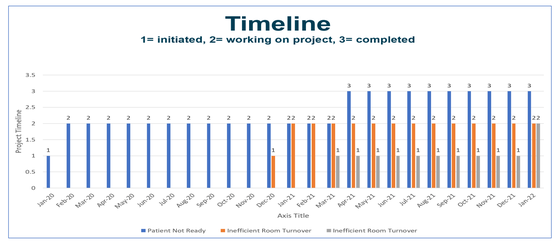


EQUIPMENT/SUPPLIES NOT CORRECT

- A team including the OR Manager, equipment specialist, instrument processing coordinator, anesthesia tech supervisor, orderly, supervisors and coordinators was formed.
- The team decided to start with one service line, improve its process, and move on, until all service lines were touched.
- Robotics was chosen to be first. Over a one month period, the team was asked to look at preference cards and comment pass/fail; if it failed, what was not correct/why did it fail? Data collection ensued.
- Commonalities were looked at in all preference cards to see what the issues were, and address the issues in real time. Cards were updated if needed.
- The team moved on to orthopedic preference cards using the same methodology.
- Multiple supply chain issues and backorders have caused us to have unexpected issues with products.
- This is to be revisited in 2022.

INEFFICIENT ROOM TURNOVER

- A team including the OR Manager, equipment specialist, anesthesia tech supervisor, orderly, RN's, and surgical techs was formed.
- OR RN's were only calling one of our orderlies when needed, causing inefficient workflow. Goal was to attempt to split the orderlies into hallways to ensure a better workflow for all.
- Attempt to remove extra equipment from hallways (space issue for stretchers/beds and case carts).
- A Joint Commission virtual visit gave an opportunity – an attempt was made to walk first patients into the OR when possible, and store stretchers in PACU. A meeting was scheduled between PACU, SDS, and the OR to brainstorm and come up with a sustainable plan.
- Attempt for better use of swing shift personnel to decrease variability and unwanted variation between workers.
- Opportunity for "quiet mode set-up" trial ensued.
- Room turnover is a goal on all perioperative team members report cards.
- We have decreased our turnover from the start of the project by 2 minutes. We want more!
- This project is to be continued in 2022….



NOTES AND REFERENCE

This project was started in January of 2020. We faced several obstacles, first, the Cardinal Recall and issues with supply chain, and then COVID-19 outbreak in March which put a hold on our RIE's. We are still catching up, but on our journey to continuously improve our turnover. Thank you to Donna Lagasi, RN, BSN, MS-HCM, CNOR, Director of Perioperative Services for allowing this presentation.

Key LEAN take-a-ways:

- Value must be from the customer's perspective – front line staff must be involved in the process or it won't work.
- A sustainability plan must be put into affect to continue the elimination of non-value added waste, work-a-rounds, and re-work.

References:

1. https://courses.sixsigmaglobalinstitute.com
2. Cerfolio, R., Ferrar-Light, D., Ren-Fielding, C., et. al. (2019, April). Improving Operating Room Turnover Time in a New York City Academic Hospital via Lean. *The Annals of Thoracic Surgery, 107(4)*, 1011-1016.