Optimizing Robotic Surgery Efficiency Through Intraoperative Team Dynamics

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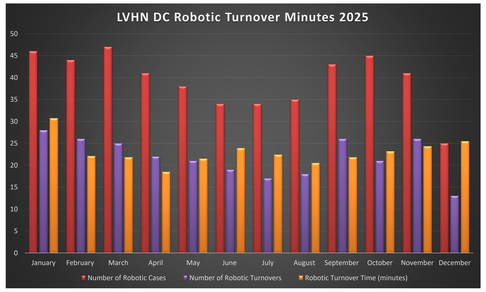
Introduction/Background

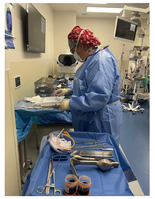
- The robotic operating room team at Lehigh Valley Health Network in Dickson City, Pennsylvania was established in 2022 following the opening of the new hospital.
- Upon the initial inception of the robotics program on site, it was evident that there was room for improvements to be made as the program matured.
- The areas in need of improvement were process efficiency and turnover times. As the team worked through initial growing pains that all programs inevitably face, a precedent was established which has made the team an efficient, well-oiled machine.
- A driver of success was the development of an interdepartmental robotics committee. Having a team that had full buy-in to the success of the robotic program was critical for driving the program forward. The development of this committee functions as a catalyst to making process improvements and troubleshooting barriers to success within the program. Using these key areas of success to drive the daily flow of the team, the efficiency and effectiveness of the robotic team has been unsurpassed.
- Measurable metrics of success are turnover times. The turnover times of the robotic team consistently meet and surpass the system-wide goal of thirty minutes for turnovers. The culture of the team and team satisfaction, while not a numerical metric is used as an indicator of success.
- This team takes great pride in its functioning. Every member of the team is committed to delivering excellent care and doing it in a climate that is respectful, accountable, collaborative, and supportive.
- The team performs briefings and debriefings throughout the day as a way to check in with each other and stay on the same page for case needs and patient specific concerns. The implementations that the team has put into place enhance patient safety and infection risks, improve communication and situational monitoring, and drive educational opportunities.

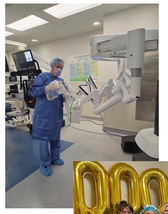
Design & Methods

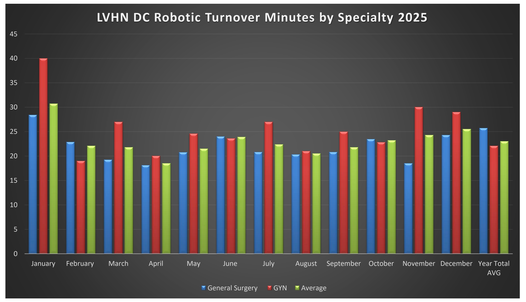
- Evaluation of data to identify key indicators for areas that have already showed success, areas of opportunity for improvement, and current barriers of success were used in the design of this project.
- Quantitative data for robotic surgery turnovers was formally tracked starting in 2025 to evaluate the efficacy of changes being made and identifying barriers to success as the arose.
- Quantitative data for robotic turnovers in 2024 year was also used as a reference for the framework of this project to evaluate long term progress and trends.
- Identifying drivers of success and barriers to success through qualitative feedback were also obtained by using daily running narratives of encountered obstacles.
- The team utilized their unique backgrounds in cardiothoracic surgery, trauma surgery, and ambulatory surgery as model when forming turnover procedures.
- Reference of Lean principles were used in framing the structure of process improvements that were implemented.

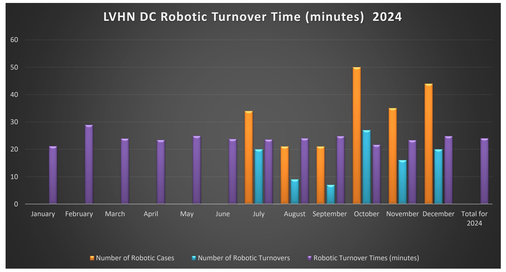
Performance Data











Implementation Plan

- Identifying strong points of the program served as a jumping off point for the framework of this project.
  - **Culture , Process, Training, and Case Coordination**
- Establishing a unit-based robotics committee to focus on key performance indicators. A formal charter was submitted.
- An emphasis on accomplishing tasks in a manner that maximizes result and minimizes waste, while maintaining a safe, patient centered environment that is effective in all aspects of high-quality care.
- Regular evaluation of preference cards to reduce product waste.
- Optimizing scheduling to allow for maximum utilization of robotic operating room block time.
- Monthly committee meetings discussing areas of opportunity, pain points, and team wins. Having continuous improvement enhancing team performance.
- Establishing a team culture that embraces flexibility and accountability. Everyone works together in their roles to give one hundred percent.
- Use of education opportunities to improve practice.
- Designated team member roles throughout the turnover process.
- Briefings and debriefings for each case to have an efficient flow to the day.
- Troubleshooting barriers to success in real time.
- Development of an educational resource manual for every robotic surgeon containing fast facts for each procedure they perform.

"Efficiency is doing things right; effectiveness is doing the right things." -Peter Drucker

Conclusion

Since the implementation of the project, robotic turnover times have been consistently under the system wide standard of 30 minutes. The team itself holds itself to a goal of at or around 20 minutes per turnover. Of course, there have been situations outside of the team's control causing unexpected delays. These delays are addressed in real time to prevent reoccurrence moving forward. Team culture has been a key driver of success for this project. To date, this performance improvement project is continuously evolving as new surgeons and case types are added to the matrix.

References

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