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Dedicated teams to improve operative room efficiency

David Reznick *[,1], Lora Niazov [2], Eric Holizna [2], Allen Keebler [3], Allan Siperstein [3,4]

Cleveland Clinic, 9500 Euclid Ave, F20 Desk, Cleveland, OH 44195, USA

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ABSTRACT

Purpose: The goal of this study was to determine if a dedicated operative room (OR) team would improve OR efficiency.
Methods: A pilot program was initiated at an endocrine surgery service at a tertiary medical center to improve operative room efficiency as part of a comprehensive unit-based safety protocol (CUSP). The service already underwent standardization of pre-operative workup, OR equipment, operative technique, and anesthesia protocol. As a pilot, one surgeon had a dedicated OR team consisting of regular scrub and circulating nurse oriented specifically for endocrine surgeries. The pre - and post- CUSP times were compared to the other surgeons on the service. OR time, turnover time, and first start times were measured.
Results: A total of 25 cases were performed with the new nursing team as compared to the 85 done historically. The overall OR time was decreased form 125.51 minutes to 112.1 minute (p 0.05), whereas the control group did not have any statistical difference during this time, 172.2 minutes compared to 171.3 minutes (p=0.9). Turnover with the team was improved by 9.0% at 26.4 minutes from 29.0 minutes and first start OR times improved to 7:20 AM from 7:22 AM, however neither of these changes reached statistical significance ($p > 0.05$).
Conclusion: This pilot program indicates that a dedicated team in the operative room can reduce operative time. We attributed this to reduction in delays and distractions as well as increased experience with the flow of the operation. We feel this improves patient safety while reducing operative costs.

1. Purpose

The goal of this study was to determine if a dedicated operative room (OR) team would improve OR efficiency.

2. Methods

A pilot program was initiated at an endocrine surgery service at a tertiary medical center to improve operative room efficiency as part of a comprehensive unit-based safety protocol (CUSP). The service already underwent standardization of pre-operative workup, OR equipment, operative technique, and anesthesia protocol. As a pilot, one surgeon had a dedicated OR team consisting of regular scrub and circulating nurse oriented specifically for endocrine surgeries. The pre- and post-CUSP times were compared to the other surgeons on the service. OR time, turnover time, and first start times were measured.

* Corresponding author. Tel.: +1 216 444 5664; fax: +1 216 636 0662.
E-mail address: reznicd@ccf.org (D. Reznick).

[1] Contributions: Collection of data, analysis of data, writing the article.

[2] Contributions: Conception and design, collection of data, critical revision.

[3] Contributions: Conception and design, critical revision.

[4] Was presented at the NSQIP meeting on Monday, July 28 2014 at the Hilton New York, New York.

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3. Results

A total of 25 cases were performed with the new nursing team as compared to the 85 done historically. The overall OR time was decreased form 125.51 min to 112.1 min (p 0.05), whereas the control group did not have any statistical difference during this time, 172.2 min compared to 171.3 min ($p=0.9$). Turnover with the team was improved by 9.0% at 26.4 minutes from 29.0 min and first start OR times improved to 7:20 AM from 7:22 AM, however neither of these changes reached statistical significance ($p > 0.05$).

4. Conclusion

This pilot program indicates that a dedicated team in the operative room can reduce operative time. We attributed this to reduction in delays and distractions as well as increased experience with the flow of the operation. We feel this improves patient safety while reducing operative costs.

5. Background

A major concern facing modern healthcare is how to improve efficiency in medicine without compromising care. Several of these techniques have come from the manufacturing industry and have proven very effective at improving efficiency while maintaining or improving overall quality.[1] Examples include Lean and Six Sigma. These improvement techniques use meticulous qualitative and quantitative analyses to determine the sources of inefficiency and error within the flow of a certain process.

One major source of inefficiencies in the operative room results from having inconsistent team members. This was brought to attention starting in the late 1980s as an increasing number and variety of surgical procedures started appearing across the United States such as laparoscopy and solid organ transplant.[2] The initial concerns came from the difficulty of mastering multiple complex operations.[2] As awareness towards the concept of dedicated operating room teams grew, other potential benefits, such as quality improvement and surgical consistency came to light.[3] The utility of specialty nursing teams has been replicated across several fields including laparoscopic surgery,[4,5] orthopedic surgery,[6,7] and urology.[8,9] These have demonstrated improved efficiency with reduced OR times[8,9] which have resulted not only in cost savings[8] but also improved outcomes due to improved standardization of best practices.[6]

The specific surgical service targeted already had undergone multiple process improvement programs in the past. The service had already streamlined the way patients were processed in clinic, standardized the conduct of the operation, optimized the surgical sets, and revised the standard anesthesia protocol. Because of the relatively recent adoption of process improvement methodologies to medicine, the literature presents results from the initiation of process improvement. As demonstrated in other fields using techniques like Six Sigma or Lean, there are often many areas that would benefit from continued process improvement programs.[10] This service wished to implement a quality improvement project that would demonstrate that even after a successful project, there are areas of further improvement.

As part of a quality improvement project, our hospital implemented a pilot process improvement initiative to address perceived inefficiencies in our operating room. The goal of this study was to determine if a dedicated operating room team would improve OR efficiency.

6. Methods

As part of an initiative to implement a comprehensive unit-based safety protocol (CUSP), a pilot program was initiated at an endocrine surgery service at a tertiary medical center to help improve operative room efficiency. The service had already undergone standardization of preoperative workup for parathyroid disease, operative room equipment, operative technique, and anesthesia protocol. The pilot program consisted of scrub technicians, scrub nurses, and circulating nurses dedicated to this specific endocrine surgeon. These nurses and technicians had specific orientation to not only the surgeries but this specific surgeon and would scrub with him consistently on the days he was in the OR. For every case compared, only a complete team of trained personnel were included into analysis.

We then compared the OR times to historical values. For control, the other five surgeons in the practice were compared during the similar time periods. Only parathyroid cases were examined, which were identified by CPT code. All patients were randomly assigned to attendings, as previously described, based on openings in clinic and OR schedules.[11] All cases were performed in the same fashion involving intraoperative ultrasound, routine four gland exploration, and intraoperative PTH. We compared the overall time in the operating room as well as the entire time in the perioperative area (operating room plus the post-anesthesia recovery area (PACU)). The duration of each aspect of the perioperative period was recorded: wheels in the OR, time of induction, time of incision, time of closing, extubation, and wheels out of the OR. Total time in PACU was also recorded.

First start times and room turnover times were also examined. Because of the limited number of cases, both thyroidectomies and parathyroidectomies were included. For room turnover, only cases that had the entire quality improvement team with a thyroid or parathyroid used. After the collection of data, the specific surgeon was asked about his experience with the new nursing efficiency team.

6.1. Statistical analysis

The results of the study were analyzed using JMP Pro 10.0.0 (SAS Institute Inc. 2012) and Excel 2010 (2010 Microsoft Corporation). Comparisons were done using ANOVA and t-test to determine the relationship of means between groups. For all data analyzed, the 95% confidence