Implementing a Specialty Nurse Residency Program to Improve Perianesthesia Nurse Confidence and Reduce Errors

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Executive Summary

Of the approximately 4000 surgical errors documented each year in the United States, most occur before or after the surgical procedure (Rodziewicz et al., 2021), thus meticulous pre-operative care is critical to quality care and patient safety. Prior to February 2021, a perianesthesia-specific nurse residency program was not provided to new perianesthesia nurses in a high volume, acute care hospital in Austin, Texas. Because of a lack of specialized training in the preoperative preparation of surgical patients, the Surgical Services Department saw a spike in errors on surgical consent forms and delays caused by incorrect or incomplete preoperative provider orders. The purpose of this quality improvement (QI) project was to increase perianesthesia nurse residents' confidence levels in preparing patients for surgery and to reduce surgical delays related to preoperative nursing care through implementation of a perianesthesia-specific nurse residency. The first aim of the project was to improve nurse residents' baseline score on the Surgical Care Confidence Scale (SCCS) by at least 20-points over the 12-week residency program. The second aim was to reduce the incidence of surgical delays related to preoperative nursing care by 5% from the baseline measurement in January 2021 through October 2021 after the conclusion of the perianesthesia nurse residency program.

Project Implementation

This quality improvement project was implemented in a spring and summer cohort of perianesthesia nurse residents at an acute care hospital in Austin, Texas. Nurse residents completed a baseline, author-created SCCS survey upon hire and were then assigned to a 12-week perianesthesia-focused residency program. Skills taught targeted performing a preoperative focused assessment, fulfilling preoperative surgical orders, correctly completing a surgical

consent form, and learning more about medication administration a surgical procedure, with most of the focus on the preoperative phase and limited time on the postoperative phase.

Nurse residents completed the same SCCS at six weeks and twelve weeks after the start of the residency program, to measure any changes in self-confidence. Upon completion of the 12-week nurse residency, results from the SCCS were analyzed and plotted to reflect the change in perceived comfort level over the course of the perianesthesia nurse residency. The second aim was measured by extracting the total number of preoperative nursing related delays on the monthly, corporate-generated report.

Results

Final analysis of the SCCS data for aim #1 reported a mean increase of 29 points in the nurse residents' comfort levels performing the identified tasks. Data collected for aim #2 reflected a 53% reduction in surgical delays related to preoperative nursing care between the baseline measurement in January 2021 and final measurement in October 2021.

Impact

The impact of this quality improvement project was both an improvement in quality of care provided to patients and financial savings for the facility. On average, operating room time costs $37 per minute (Childers & Maggard-Gibbons, 2018, p. 2), so any delay can equate to a decrease in revenue for the hospital. In this facility, nurse residents emerged from their residency program better prepared and more confident to care for pre- and immediately post-surgical patients, reduced delays and unnecessary costs while providing patients with safe, high-quality care before and immediately following surgery.

Implementing a Specialty Nurse Training Program to Improve Perianesthesia Nurse Confidence and Reduce Errors

Medical errors are the third most common cause of death in the United States (Markary & Daniel, 2016) and cost society approximately $20 billion a year (Rodziewicz et al., 2021). The purpose of this quality improvement (QI) project was to increase new perianesthesia nurse residents' confidence levels in preparing patients for surgery and to decrease surgical delays related to perioperative nursing care, in an acute care hospital in Austin, Texas, through a perianesthesia-specific nurse residency program.

Background

Review of the Literature

New graduate nurses often lack the clinical competence and confidence to provide safe care to patients. An integrative review found that transition to practice programs help to reduce the gap in clinical competencies by providing structured experiential learning and designated mentors (Reebals et al., 2021). A scoping review of the research literature found that while new nurse graduates were generally perceived as able to provide safe care, areas of concern still existed surrounding critical thinking, ability to problem solve, and ability to conduct focused patient assessments (Murray et al., 2020).

Nurse residency programs have been found to create a support system for nurse residents while also increasing self-perceived proficiency, building confidence, and decreasing distress (Perron et al., 2019). Perianethesia (perioperative) nurse residents demonstrate the need for a more specialty-focused residency program providing additional time to adjust to new terminology and technology while learning to apply wise clinical judgement and gaining competence in providing safe, quality-driven care for surgical patients (Mullohan & Morales,

2016) and after reviewing these best practices from an AORN article, we chose to provide a focused perianesthesia residency with dedicated time in each of the four perianesthesia areas.

Description of the Problem

The central Texas hospital undertaking this quality improvement project had experienced an increase in surgical delays related to preoperative nursing care in the six months prior to the implementation of a perianesthesia nurse residency. The problem of increased error rates likely developed because prior to February 2021, there was no perianesthesia-targeted training for nurse residents in the perianesthesia setting. This gap in the hospital's residency program curriculum gave way to an increased risk of surgical errors. Upon examination by administration, the nature of the errors illuminated the need for more specific instruction for new perianesthesia nurses on how to correctly complete a surgical consent form, fulfill preoperative orders, and determine which medications can be administered prior to a surgical procedure.

By implementing a perianesthesia-focused nurse residency, the goal of this project was to reduce the number of surgical delays related to preoperative nursing care while preparing perianesthesia nurse residents to provide safe, quality care to surgical patients prior to and after their surgeries. This Texas hospital held multiple Center of Excellence designations and was building its surgical programs to be the Operating Room of choice for not just Austin residents, but beyond and was part of six hospitals in the Austin division of HCA. Preparing nurses to consistently deliver excellent surgical care with minimal errors and surgical delays would contribute to the hospital's mission and maximize patient outcomes.

Theoretical Framework

The Plan Do Study Act (PDSA) framework, developed by Edward Deming, is an effective model used to help guide health care teams in improving the quality of care by taking

prescribed steps in iterative, ever-improving cycles (Donnelly & Kirk, 2015). During the "Plan" stage for this project, objectives were set based on the needs identified by nurse administrators which were to educate perianesthesia nurse residents to prepare patients for surgical procedures and to create the curriculum for the perianesthesia-focused residency program. The "Do" stage involved implementing the perianesthesia residency and having the nurse residents complete surveys at baseline, 6 weeks, and at the end of the residency (12 weeks) to assess confidence levels as the program progressed. The third stage, "Study", involved analyzing the data and the process itself to determine if the project had the anticipated outcomes and if it worked out as originally planned (Donnelly & Kirk, 2015). In the "Act" phase the facility reviewed the results and intends to expand the study to include the perianesthesia nurse residencies in place at the other hospitals within the Austin division during future cohorts.

Purpose Statement and Project Aims

The purpose of this quality improvement project was to increase new perianesthesia nurses' confidence levels in pre- and post-operative care and to decrease the number of unnecessary surgical delays related to preoperative nursing care, using a perianesthesia-focused nurse residency program in this central Texas acute care hospital. The first aim was for perianesthesia nurse residents to demonstrate at least a 20-point improvement in their overall confidence rating in specific surgical patient care tasks from baseline to residency program completion. The second aim was to see a 5% reduction in surgical delays related to preoperative nursing care, between baseline in January 2021 and October 2021 at the completion of the fall group of the perianesthesia nurse residency program.

Methods

Project Design

This quality improvement project used a before and after design to implement a new nurse residency program aimed to increase nurses' self-confidence and decrease surgical delays in the Surgical Services Department. As the project director and Associate Director of Surgical Services, I chose this method because it allowed us to track changes over time for nurse comfort level and surgical delays during and following the new residency program. To meet the goals of this project, it was beneficial to have new graduates eager to learn and prepared for a semi-structured orientation with classroom training incorporated.

After performing a Strength, Weakness, Opportunity, Threat (SWOT) analysis, I determined that the hospital was a strong facility to implement this program in because it had a robust surgical program with separate perianesthesia units dedicated to performing different steps in the preparation of the surgical patient. Having trained staff dedicated to each area allowed for us to have experts precepting the nurse residents, a definite strength for the project. The separate units with expert preceptors, however, was also a weakness of the project because when these expert preceptors had time off, there were no other designated preceptors who could step in, which hindered progress through the competencies.

As the hospital continued to recruit surgeons and perform more high acuity procedures, there was the opportunity to train additional perianesthesia nurses to care for this population of patients. In the midst of a nationwide nursing shortage, it was beneficial to invest in training new graduate nurses in specialty areas. Competing hospitals presented a threat at recruiting both experienced and inexperienced nurses, limiting our selection of nurses to hire. The other area of difficulty was that during the pandemic, many nursing schools suspended clinicals and new

graduates have limited hands-on experience with patients and may have more difficulty adapting to a specialty unit.

Participants and Recruitment

This project was reviewed and approved by the Administrative Director of Surgical Services. There were 5 participants who were perianesthesia nurse residents in the spring and summer hiring cohorts. During the first week of new employee orientation, as the program director (PD), I spoke with the nurse residents and requested their voluntary participation in the project and explained the expectations of survey completion.

To be included in the project, nurse residents needed to have just graduated from nursing school with a bachelor's or associate degree in nursing and be employed by the perianesthesia department during the spring or summer 2021 nurse residency cohort.

Intervention

The intervention in this quality improvement project was a standardized, perianesthesia-focused curriculum for the perianesthesia nurse residents. February marked the start of the pilot group of perianesthesia nurse residents. Initially the plan was for each nurse resident to spend three weeks in the presurgical testing clinic, three weeks in pre-admission performing health histories and medication reconciliations, three weeks in the preoperative area, and three weeks in the phase II recovery area. See Figure 1 for a detailed description of topics covered in each phase of the residency program. Each area had a different designated preceptor assigned to the nurse residents.

Throughout the 12-week program, nurse residents attended 12 division-wide classroom sessions that provided education about the different key aspects in caring for their primary

patient populations. Education was delivered by the centralized education team in place at each hospital in the division to ensure a consistent approach.

Measurement Tools

I utilized a 10-question Likert scale survey, the Surgical Care Confidence Scale, developed by the Administrative Director and myself, based on the department's identified competencies (Appendix A). The survey asked each nurse resident to rate his/her comfort level performing 10 different tasks integral to preparing a patient for surgery. They rated their comfort level on a scale of 1 to 5, the higher the score, the higher the comfort level performing each task. The lowest possible score for the survey was 10, and the highest possible score was 50. Total scores were calculated for each survey, with higher scores indicating greater self-confidence in surgical care skills.

Data Collection

Data was collected from each nurse resident (n=5) at baseline, the 6-week midpoint and at the conclusion of the 12-week nurse residency (Figure 2). To help ensure reliable and confidential data, each nurse resident was assigned a number at the beginning of the residency. They used this number to place on all their surveys throughout the program. Surveys were administered during orientation and then on Mondays following the completion of the sixth and twelfth week of the nurse residency. I rounded with every nurse resident throughout the 12-weeks and administered the surveys.

Data Analysis

After data collection, survey scores were input into an Excel spreadsheet and mean scores were calculated for scores at baseline, at 6 weeks and at 12 weeks. Line and bar graphs were used to show change in self-confidence over time. Data collected for aim #2 was filtered from a

monthly report breaking down each classification of surgical delay and the total number in each category. Preoperative nursing delays were totaled and placed in an Excel spreadsheet and placed in a table to reflect the change from baseline in January 2021 and each month up to the conclusion of data collection in October 2021 (Figure 4).

Results

Implementation

Implementation of this quality improvement project started during the first week of new employee orientation when I introduced myself as the program director to the incoming nurse residents. I explained the surveys and gave each nurse resident the tentative orientation schedule for the perianesthesia department to include: three weeks in the pre-admission testing clinic, three weeks in presurgical testing, three weeks in the preoperative area, and three weeks in the postoperative area.

During the second week of the spring nurse residency program, an ice storm shut down all surgical procedures, apart from emergencies, and nurse residents were told to stay home, delaying their progress by a full week. When returning the next week, damage to the hospital limited our surgical capacity and the perianesthesia nurse residents were placed in areas that did not coincide with their schedule. One of the nurse residents received feedback that he was not grasping many of the medications and the importance of obtaining a complete nurse history so his orientation in presurgical testing was extended by one week. A limited number of qualified preceptors were working the preoperative area, so we had to send one nurse resident to the postoperative area before she worked in the preoperative area.

In the summer cohort's residency program, several of the veteran preceptors resigned, likely due to COVID-19 related issues, and I worked to rearrange the orientation schedule to

place each nurse resident with the most qualified preceptors. It was also during this cohort's residency that we experienced another COVID-19 surge and elective procedures were rescheduled, reducing surgical operations. Time spent in the pre-admission testing clinic was reduced and more time was allocated to the preoperative area, with a day for each nurse resident dedicated to IV starts.

Despite numerous events that required us to alter the perianesthesia orientation schedule, each nurse resident still completed their SCCS at the designated time during the project. All surveys were completed and turned in to me on time.

Outcomes

The sample for this quality improvement project included 5 perianesthesia nurse residents, with 3 during the spring group and 2 during the summer group. Of the 5, 80% were female and 20% were male. All participants were new graduates of a baccalaureate nursing program and 60% experienced all clinicals in-person, while 40% had their clinicals shifted to simulation labs during the final semester.

Specific aim #1 was met. Mean self-confidence survey scores were 29 points higher at the end of the program when compared to baseline, surpassing the goal to improve self-confidence scores by at least 20 points over the course of 12 weeks. See Figure 3 and Table 1.

After review of the monthly surgical delay reports, aim #2 was met with a 53% reduction in surgical delays related to preoperative nursing care. As seen in Figure 4, there was an increase in surgical delays after baseline before there was ultimately a downward trend that resulted in the successful outcome far exceeding the goal of a 5% reduction.

Discussion

The results of this quality improvement project reflected that a perianesthesia nurse residency decreased the delays in surgical care by equipping nurse residents to provide safe, quality care in the preoperative area of this central Texas hospital. By focusing more attention on teaching nurse residents how to properly complete surgical consents, we achieved a greater awareness throughout the unit and overall, we saw a reduction in surgical consent issues. A concurrent initiative was occurring with improving hospital-wide education on surgical consent completion during the spring nurse residency cohort. Overall, this held nurses throughout the hospital more accountable for how they were obtaining surgical consents.

In relation to existing evidence, an incidental finding of this project found that nurse residents did better when progressed through orientation based on competency ratings versus following the schedule of one specific mentor (Symmerman et al., 2017). Pfander and Breznau (2018) established a more structured program that incorporated perianesthesia classroom content over 16 weeks instead of 12 and made use of mentors in addition to preceptors to provide continued support for nurse residents after program completion.

Limitations

There were several limitations that may have affected our findings in this project. Time constraints and a small sample size may not have provided data that would be reflective of the larger population. The SCCS is not a validated measurement tool so the next PDSA cycle will seek to locate a reliable and validated tool to measure self-confidence to improve the reliability of results. A lack of qualified preceptors in each area did not allow nurse residents to progress through each area as scheduled and required them to learn skills out of a logical order. While there was a planned structure and timeline for the residency program, we were unable to follow

the schedule, due to issues related to the pandemic and extreme weather and had to tailor the experience to each nurse resident's needs, typically on short notice. Moving forward, we will strive to train more preceptors and allow some flexibility in the schedule while still adhering to the main structure.

Interpretation

During the "Study" phase of the PDSA cycle, we found this quality improvement project did meet both aims set forth. Overall, each nurse resident experienced a steady increase in self-confidence in caring for surgical patients and independently provided care for this patient population. Staffing challenges and lack of experienced preceptors presented some obstacles throughout the project that could have impacted the outcomes. Nurse residents verbalized they did not get as much exposure to certain surgical specialties because of the type of patients their preceptor was typically assigned.

Moving forward, the hospital plans to continue to offer the perianesthesia nurse residency with the potential to save $37 per minute of operating room time (Childers & Maggard-Gibbons, 2018, p. 2) saved by proper preparation of surgical patients. The next PDSA cycle will seek to include perianesthesia nurse residents from all hospitals within the division so we can compare similarities and differences in the programs among different sized hospitals with varying surgical volumes.

Conclusions and Implications

As the health care market continues to face challenges with recruiting experienced nurses, other similar hospitals may benefit from the implementation of perianesthesia nurse residency programs, providing specialty-focused education needed to prevent errors. Each of the six hospitals in this Austin division of HCA created a similar residency program within the last

year and had similar success with their nurse residents. The system could benefit from streamlining the process of how perianesthesia nurse residents are trained to allow for flexibility of floating staff during fluctuations in surgical census.

This quality improvement project demonstrated that that nurse residents need stability, structure and specialty-specific content to assist with building confidence in the skills they need to provide care in the perianesthesia area. We also learned that when we had to pivot the direction of the residency program, the nurse residents did not always adapt well and took some time to reacclimate themselves to the changes. Moving forward, giving more notice and asking for more real-time feedback from the nurse residents could better guide their progression through the nurse residency program.

I would recommend this study be completed with a larger sample size and with hospitals that vary in surgical volume. For the facility's project, it was completed at a hospital with over 400 beds that completes more than 850 surgeries per month. In smaller hospitals that see a lower surgical volume, the responsibilities of the perianesthesia nurse may be greater and require designated preceptors that function in all perianesthesia areas to produce a well-rounded nurse.

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Table 1

Survey Responses by Participant

Participant Number	Baseline	6-week Midpoint	12-week Final
1	16	29	46
2	14	23	42
3	14	28	45
4	17	29	44
5	15	24	44
Mean Score	15.2	26.6	44.2

Figure 1

Educational Topics in Perianesthesia Nurse Residency

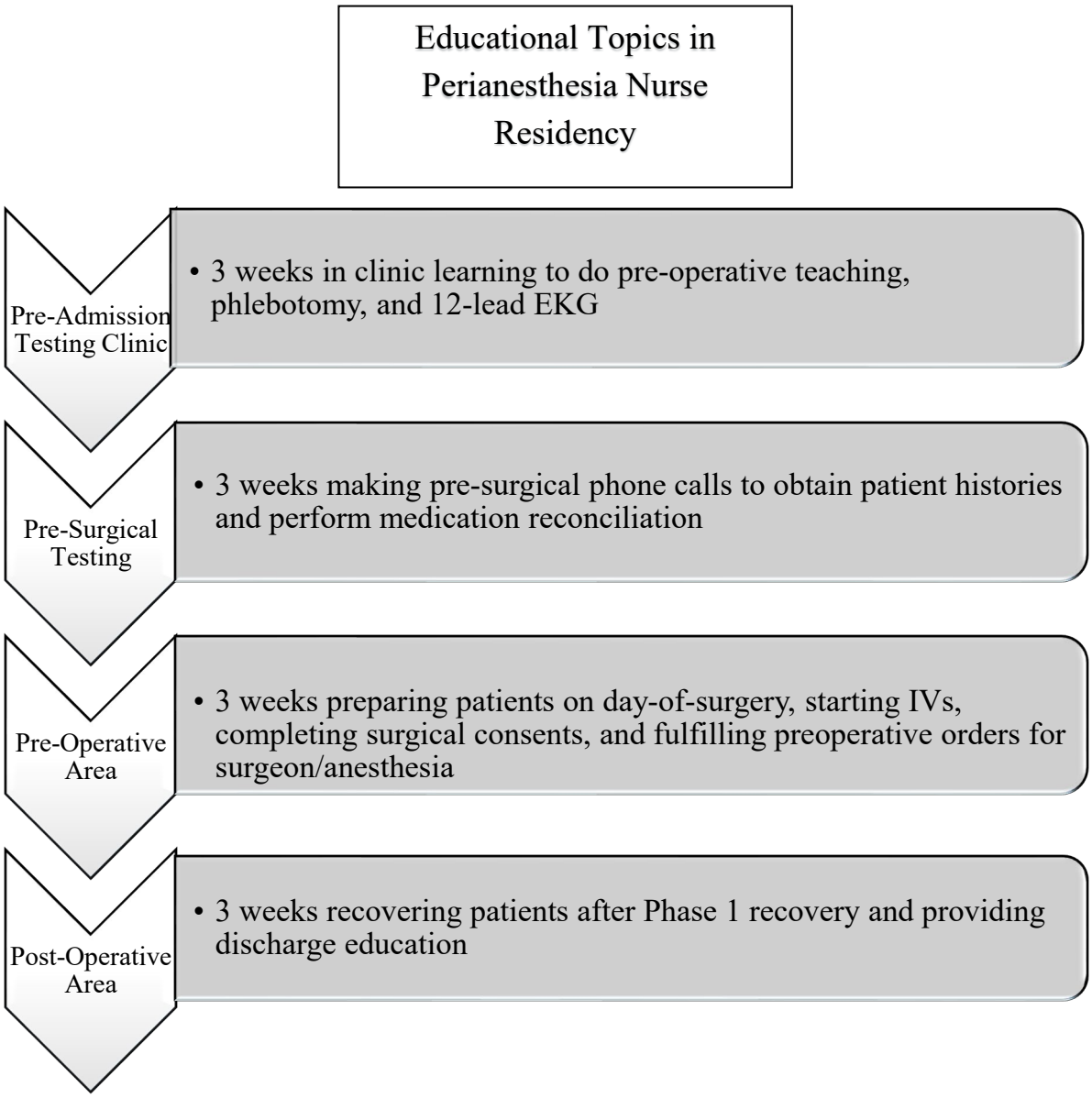


Figure 2

Data Collection Timeline

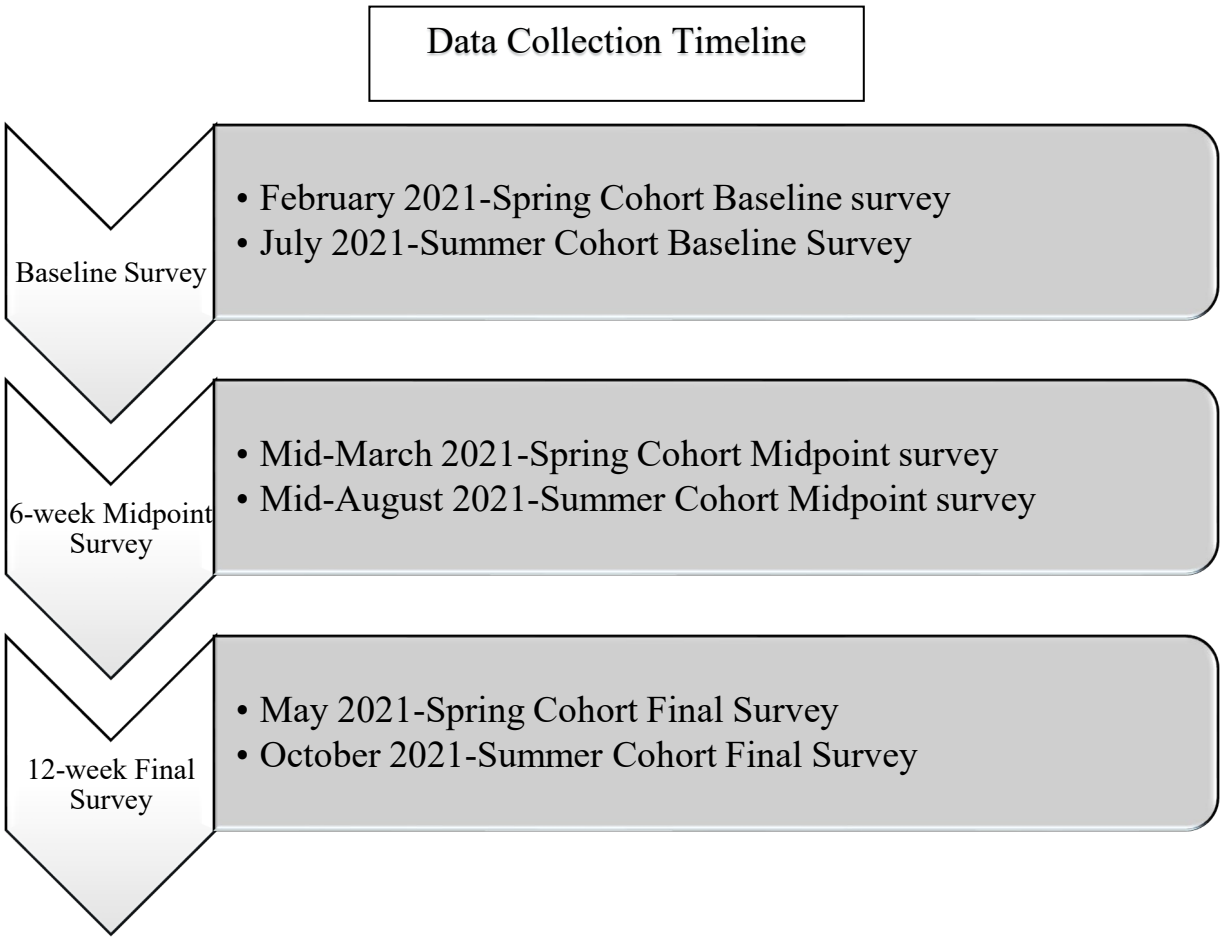


Figure 3

12-Week Survey Progression

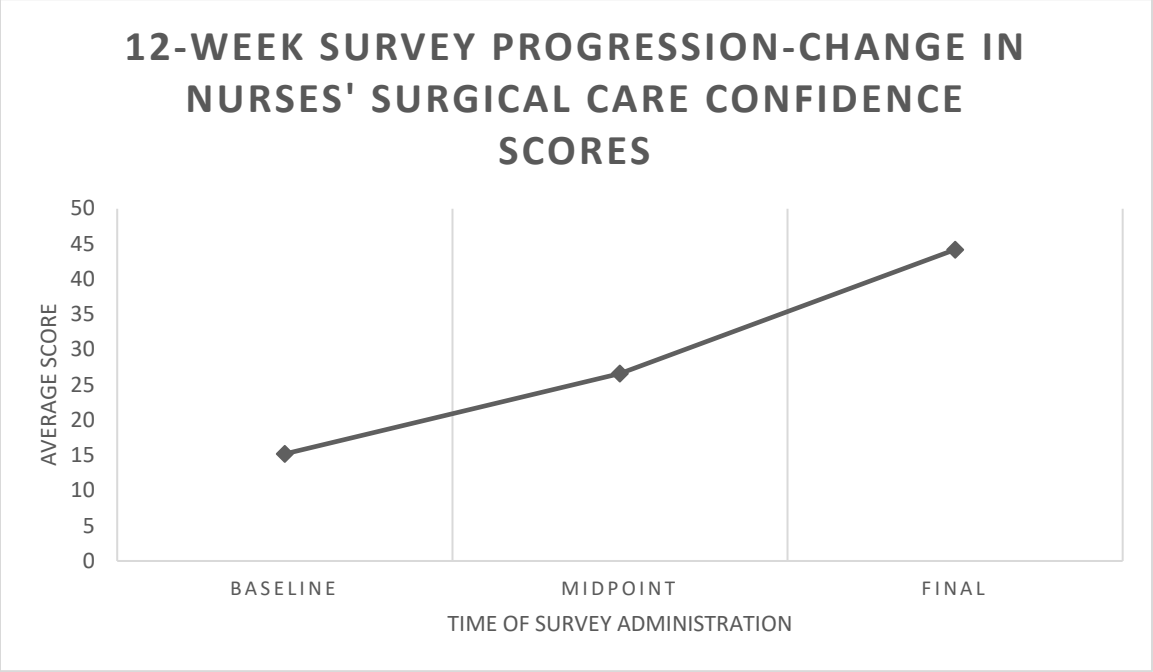
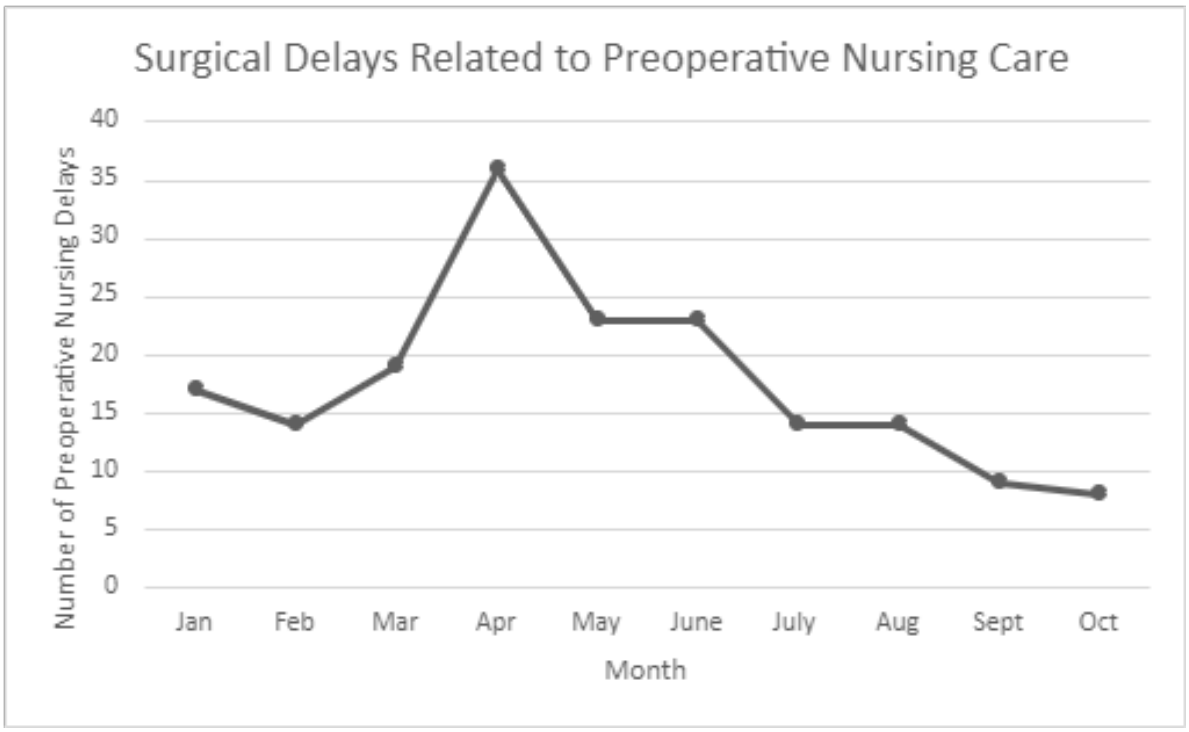


Figure 4

Surgical Delays related to Preoperative Nursing Delays



Appendix A

Surgical Care Confidence Scale

Please respond to the following tasks by selecting your comfort level for each statement: 1-Very uncomfortable, 2-Somewhat uncomfortable, 3-Neither uncomfortable nor comfortable, 4-Somewhat comfortable, 5-Very comfortable

1. Starting an IV/Drawing labs	Very Uncomfortable 1 2 3 4 5 Very Comfortable
2. Checking/Completing MD orders	1 2 3 4 5
3. Performing a 12 lead EKG	1 2 3 4 5
4. Completing a nurse history	1 2 3 4 5
5. Filling out a surgical consent and navigating alternative scenarios (i.e. phone consent, guardian, etc.)	1 2 3 4 5
6. Evaluating critical lab values and when/how to notify anesthesia or surgeon	1 2 3 4 5
7. Completing a medication reconciliation	1 2 3 4 5
8. Determining which medications need to be held prior to surgery and how long to hold	1 2 3 4 5
9. Performing discharge teaching	1 2 3 4 5
10. Fully ensuring that a patient's chart is complete, and they are ready for surgery	1 2 3 4 5

*Respond as honestly as possibly, this will help to make our program the best it can possibly be!