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Evidence-Informed Improvement Project Final Paper

Beat the Clock:

Improving First Case On-Time Starts (FCOTS) in the Ambulatory Surgery Unit (ASU)

Myrna M. Bernardo

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NURS-670-K13 Internship

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July 18, 2024
Improving First Case On-Time Starts in the Ambulatory Surgery Unit

Abstract

Problem: A local Bay Area hospital Ambulatory Surgery Unit (ASU) strives to maintain the first case on-time starts (FCOTS) at 90%. Optimal FCOTS compliance enhances operating room (OR) efficiency, resource utilization, and patient outcomes. Data from January 2022 to December 2023 shows that ASU’s FCOTS remains at a monthly average rate of 67%. This project focuses on closing the 23% gap by achieving 73% FCOTS compliance in the first quarter to progressively achieve the unit 90% goal or higher.

Context: The five ASU ORs handle a daily volume of 25-35 cases. An interdisciplinary team conducted a root cause analysis to determine the causes of delays and explore potential solutions to promote punctuality.

Interventions: The main barriers identified were effective communication, interprofessional accountability, and unclear shift workflow. These findings drove the implementation of daily morning and afternoon huddles to streamline communication, identify interdisciplinary champions to co-lead this project and revisit the staff roles and responsibilities within the process.

Measures: Success was measured by the percentage of surgeries starting at 0745. Delays in minutes were calculated, and the causes of delay were documented.

Results: FCOTS gradually increased from 67% to 73% over a four-month period, reducing delays by an average of 11.3 to 9 minutes each month.

Conclusions: Effective team communication, streamlined workflows, clearly defined staff roles and responsibilities, and behavioral accountability prove to be effective in achieving operational
efficiency in the OR. These interventions foster a culture of safety, process ownership, and interprofessional teamwork.

*Keywords*: operating room, delays, first case on-time start (FCOTS), improvement, efficiency
Personal Leadership Statement

As the project leader, the Clinical Nurse Leader (CNL) understands the importance of fostering transparent and effective communication, seamless collaboration, and strategic, well-informed decisions. This author’s leadership style involves creating a work environment where every team member is empowered to embrace accountability and initiative as core principles and developing pathways to integrate continuous learning and improvement into the microsystem. By aligning the Ambulatory Surgery Unit (ASU) team’s objectives with the organization’s overarching goals and using proven evidence-based methods, this leader’s vision is to drive meaningful change to substantially improve patient care outcomes.

The selected focus on a quality improvement topic to improve the first case on-time start (FCOTS) in the operating room (OR) is critical as it directly affects patient safety, surgical access for patients, staff efficiency, and cost-effectiveness. As a CNL in an OR microsystem, early start and timely commencement of surgical procedures are prioritized to show commitment to patient-centered care, operational efficiency, and service excellence. By reducing delays and optimizing OR efficiency, the team can improve patient safety, streamline care coordination, and enhance the overall perioperative experience for patients and their families, as well as the perioperative team. (Pashankar et al., 2023).

This quality improvement project reflects this author’s values, such as compassion, integrity, diversity, and excellence. As a leader of the micro-system team, demonstrating behaviors guided by compassion is critical to patient safety and reducing dissatisfaction about increased wait times and risks of procedural delays. Integrity drives the team’s commitment to transparency, accountability, and ethical conduct in addressing the root causes of delayed starts.
and implementing evidence-based interventions to improve OR efficiency. This collaborative approach embraces diversity and inclusion in the workplace, which is comprised of multidisciplinary teams of surgeons, anesthesiologists, perioperative staff members, and administrative personnel. The diversity of perspectives fosters innovations and creativity and leads to holistic and empathetic solutions. Last, the multidisciplinary team members pursue excellence by dedicating themselves to continuous learning and quality improvement to achieve and sustain higher OR performance standards, operational efficiency, and patient care outcomes.

**Problem Description**

The COVID-19 pandemic, caused by the SARS-CoV-2 coronavirus, has profoundly affected global health, social welfare, the economy, and surgical services, as Soreide et al. (2020) noted. A local Bay Area ASU within the community hospital operates five ORs, facilitating a diverse range of surgical procedures, including specialized interventions with a daily volume of 25 to 35 cases. The hospital encountered significant challenges, such as backlogs and staff dissatisfaction. Ensuring timely first-case starts was imperative for enhancing operational efficiency, patient care, and staff well-being.

ORs are crucial for hospitals because they generate revenue and represent a significant expense. The OR time cost varies depending on procedure complexity, labor hours, equipment, supply costs, and overhead expenses. One minute of OR time can cost between $21 and $133 (Pashankar et al., 2020). Therefore, hospitals strive to optimize OR efficiency to manage their institution’s financial profit and loss. The pursuit of efficiency becomes paramount as hospitals seek to strike a delicate balance between maximizing resource utilization and minimizing
inefficiencies that could compromise the overall effectiveness of surgical services (Pashankar et al., 2020).

According to Morel et al. (2021), OR performance is evaluated using key performance indicators. The ASU’s FCOTS average performance of 67% falls short of the 90% benchmark from January 2022 to December 2023, indicating significant room for improvement. (see Appendix A for Gap Analysis). EPIC's electronic health record system (https://www.epic.com/) has a section that captures surgery events and reasons for delays. Several factors contribute to delays in surgeries. These include the surgeon being late, incomplete surgical site marking, incomplete history and physical notes, delayed availability of anesthesia provider, delayed anesthesia preparation and setup, and the need for various equipment setups because of the different surgical cases offered. Patient-related factors, such as the need to void, also contribute to these delays. (see Appendix B for Causes of Delays). This project aims to implement interventions targeting identified delays, thereby improving FCOTS to enhance patient care, staff satisfaction, and operational efficiency by progressively closing the 23% gap. The ASU endeavors to achieve sustainable improvements in FCOTS compliance and optimize resource utilization across its surgical services.

**Project Aim**

**Specific Aim:** To increase the rate of surgical patients' first case on-time start from 67% to 73% by June 2024 in the ASU operating room (OR).

**Available Knowledge**

A PICOT (population, intervention, comparison, outcome, and time frame) question will guide effective literature searches (Dang et al., 2022). The PICOT question for this literature
search was: In patients undergoing surgical procedures, how does starting the first case on time compared to not starting the first case on time affect the efficiency of all cases starting on time or earlier in the OR four months after the implementation?

An electronic data review search was performed using various databases such as CINAHL, PubMed, and Scopus. The key terms included: “operating room,” “first case,” “on-time start,” “OR efficiency,” and “quality improvement.” Thirteen peer-reviewed journal publications in English from 2018 to the present were identified. The articles were reviewed, and the five best were selected. The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Appraisal tool was used to evaluate the presented evidence critically (Dang et al., 2022).

Chua et al. (2021) conducted a qualitative and economic study using Lean and Six Sigma strategies to improve OR efficiency in a tertiary referral hospital with three campuses. An institutional OR executive committee was formed to lead the process improvement initiatives in collaboration with stakeholders from surgery, anesthesia, nursing, and hospital administration. The study was evaluated using the Johns Hopkins Nursing Evidence-Based Practice Appraisal Tool and received a III, B rating. Within eleven days of implementation, 95% of the first starts were tracked to start on time, and the daily mean of 80% was consistently met or exceeded throughout the observation period from May 2015 to July 2016. The collaborations among various stakeholders facilitated clear communication and understanding for each set of preoperative tasks, resulting in a more streamlined process. (see Appendix C for Evaluation Table).

An integrative literature review was conducted by Morel et al. (2021) to develop a quality improvement (QI) project aimed at improving the timeliness of first surgeries in a 273-
bed hospital in South Florida with six operating rooms. The study aimed to increase the on-time starts of first surgeries by changing the behavior of consistently late surgeons through education, visual reminders, and email notifications. The study comprised three phases: Phase 1 addressed obstacles and support, Phase 2 implemented interventions, and Phase 3 evaluated outcomes. Ensuring proper site marking and getting surgical consent 15 to 30 minutes before surgery increased on-time starts from 55.90% to 66.60%, reducing delays. Visual cues and email reminders contributed to improved compliance. The study received a rating of III, A based on the JHNEBP Appraisal tool, with most of the reviewed literature being level 1 (RCT), level 2 (quasi-experimental) studies, and some level 5 (QI) studies. A limitation identified was the need to understand why surgeons are late to the operating room. (see Appendix C for Evaluation Table).

In 2020, Pashanker et al. conducted a quality improvement study at Yale-New Haven Children's Hospital in Connecticut. An investigation occurred between May 2018 and October 2019 to evaluate and enhance the timeliness of initial surgical procedures using the Six Sigma approach. The study examined 1981 first cases and revealed a noteworthy advancement in punctuality, with the proportion of first-case commencements beginning on schedule increasing from 62% to 77%. The study found that the total number of delayed minutes decreased from 197.9 minutes to 133 per week. This resulted in an estimated weekly cost reduction of $4,023. The study had several strengths, including a well-defined approach that optimized preoperative processes with minimum financial resources. However, the study also had some constraints, such as a greater initial rate of on-time start compared to other trials, a lack of interventions focused on patients, and difficulties in determining the most efficient interventions because of
the deployment of multiple interventions over some time. The inadequate documentation of delays caused by certain nurses further confounded the identification of relevant factors. The study received a Level V A grade based on the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Appraisal Tool. This rating shows that the study was non-experimental and involved statistical analysis of categorical data. (see Appendix C for Evaluation Table).

In a study by Saul et al. (2020), a retrospective quality improvement analysis was performed to identify reasons for late starts in orthopedic surgeries at McLaren Hospital. The study used observation, unstructured employee interviews, and quality improvement tools to determine that surgeons' practices and inefficient pre-operative processes were the primary causes of OR inefficiency. Out of the first 398 cases recorded, 156 cases were delayed. The authors suggested improvements should focus on ensuring surgeons arrive on time and restructuring pre-operative practices to reduce delays. The study was rated V B using the JHNEBP Appraisal Tool, and it emphasized the need for further research to explore all potential factors contributing to delays. The study is non-experimental and has some limitations, including possible bias in data collection and failure to incorporate other potential factors. (see Appendix C for Evaluation Table).

Singh et al. (2023) conducted a non-experimental study using Six Sigma/Lean Six Sigma methodologies to enhance the efficiency of FCOTS in an academic medical facility with three primary operating suites. They recorded initial case start times for three months, from December 2020 to March 2021, documenting 1824 first start times. The study found that the percentage of FCOTS increased from 36.7% to 52.7%. This improvement resulted in an estimated cost savings of $121,834.52. The study's strength lay in its multidisciplinary approach,
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which boosted efficiency and cost savings in healthcare. However, there were limitations, including the potential impact of simultaneous interventions and factors such as variations in attending surgeons and hospital staffing that may have affected the FCOTS outcomes. The study was rated Level V A based on the evaluation conducted using the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Appraisal Tool. (see Appendix C for Evaluation Table).

Efficiency is crucial in the OR to avoid delays while increasing surgeon, staff, and patient satisfaction. Evidence shows that inefficiencies are costly, and several initiatives can be implemented to resolve them. For example, changing the preoperative workflow and reminding surgeons and anesthesia providers to arrive on time can help. Increased OR efficiency can lead to better outcomes, such as improved patient-centered care, greater patient satisfaction, lower costs, and increased revenue and healthcare quality.

Rationale

The efficient utilization of OR time is critical in healthcare settings. Ineffective practices can cause financial burden, reduced efficiency and effectiveness of healthcare teams, and suboptimal patient care. Delays in the OR can have cascading effects, affecting subsequent cases and compromising overall patient safety. Hence, prompt action and a structured approach and framework for change management are essential to prevent these adverse consequences (Mitchel, 2013).

To drive change within the unit, Kotter’s eight-step model for transforming organizations was implemented (Melnyk et al., 2019). This model emphasizes creating a sense of urgency, establishing a solid coalition, and developing a clear vision for change (see Appendix D for Kotter’s framework). Communicating the importance of timely first-case starts and linking them
to positive outcomes can motivate stakeholders and encourage a shared understanding of the necessity for change (Morel et al., 2021).

Fostering a culture of continuous improvement is fundamental to the success of any organization. This involves empowering employees at all levels to actively provide feedback and effectively address obstacles. CNLs are central to this process as they play a pivotal role in promptly identifying areas for improvement by encouraging transparent feedback and meticulously documenting any delays or obstacles that may arise. It is equally important to acknowledge and celebrate even the smallest of victories while recognizing the valuable contributions of the staff. These actions are vital in maintaining high morale and sustaining momentum toward achieving on-time starts and overall operational excellence. To illustrate, providing small incentives that promote staff well-being, such as protein snacks and healthy breakfasts, at the project’s outset can effectively motivate staff participation. With a foundation of accountability and stakeholder support, including staff, surgeons, and anesthesia providers, the team can collaboratively strive to start the first case on time, ensuring and sustaining a positive change in the future.

**Context**

Hospitals face increasing pressure to optimize the efficiency of their OR because of the high costs involved. One metric to predict OR efficiency is measuring the FCOTS (Saul et al., 2022). Currently, approximately 63% of operating rooms at ASU start on time. Improving the first case on-time start by 73% could significantly benefit the hospital, patients, and staff by optimizing OR time utilization and revenue. This improvement can be achieved by utilizing a collaborative multidisciplinary team approach in modifying staff behavior, streamlining
workflows and processes, holding interactive huddles, and encouraging teamwork (Chua et al., 2021).

The definition of an on-time start in operating rooms may vary across hospital systems. The OR start time was defined as “wheels in the room.” This ASU defines an on-time start as an in-room start at or before the scheduled start time of 0745. The delay in the start time for the first case was determined by subtracting the scheduled start time from the actual start time in the room. Therefore, arriving after 0745 is considered late. Causes of delay are electronically documented, and data on start times and minutes of delay are monitored (Morel et al., 2021).

A detailed microsystem analysis uncovered demographic variations affecting surgery demand and scheduling challenges. Insights from staff assessments highlighted critical roles and responsibilities, uncovering opportunities for role clarity and enhanced collaboration. Identifying barriers in procedural assessments helped recognize factors affecting FCOTS and prompted specific improvements to streamline operations and minimize delays.

Factors influencing FCOTS have been comprehensively analyzed using the Strengths, Weaknesses, Opportunities, and Threats framework (see Appendix E for SWOT Analysis). Internal strengths of the project, such as strong leadership support and effective staff collaboration, are essential for ensuring success. However, potential weaknesses, which include staff resistance to change and inadequate supplies and equipment, could impede progress and must be addressed proactively. Opportunities for the project include increasing efficiency and revenue and reducing surgical backlogs. At the same time, the identified threats are the late arrival of surgeons and anesthesia providers, which pose risks to successful outcomes and surgical safety.
A structured analysis of stakeholder dynamics was crucial for the FCOTS project’s success. Stakeholders involved were the hospital administration, who demonstrated high power and interest due to their influence over resource allocation and strategic decisions, and surgeons and anesthesia providers, who exerted significant power and interest, given their direct impact on surgical workflows and patient care outcomes. The nursing staff were also identified with moderate power but high interest, reflecting their pivotal role in patient preparation and procedural readiness. Their involvement was essential in implementing procedural changes aimed at improving FCOTS. Lastly, while holding low power, the community and public’s moderate interest underscores their concern for healthcare quality and access, influencing service delivery and patient satisfaction (Bernstein et al., 2020).

Ensuring the timely start of the first surgical case is crucial, as delays can cause significant financial losses and operational challenges (Gregory & Gargaro, 2023). Each minute spent in the OR can cost between $21 and $133, including labor hours, equipment, supplies, and overhead. Even slight delays can accumulate substantial costs, leading to dissatisfaction among providers, patients, and families.

**Intervention**

A quality improvement project was started to increase the number of on-time starts in the ASU microsystem. To achieve this goal, an interdisciplinary team was formed. The team consisted of a surgeon, an anesthesiologist, a nurse manager, and two assistant nurse managers. The hospital's senior leadership supported the idea, and no additional funds were needed for the project (Pashankar et al., 2020).
The ASU adopted the best practices to enhance its operations. These practices include changing staff behavior, optimizing workflows and processes, conducting regular huddles, and fostering effective teamwork (Chua et al., 2021). For example, with reinforcement by senior leaders, surgeons and anesthesia providers will be required to arrive on time, while managers will modify the preoperative workflow (Saul et al., 2022). Before starting the project, the staff observed each stage of the preoperative protocol, identified areas for improvement, and subsequently changed the processes. The time taken by the preoperative nurse to complete their tasks has been reevaluated and is now defined as completion by 0715. The preoperative nurse must complete specific documentation objectives, regardless of pending elements such as consent forms, history and physical notes, interval notes, or other medication orders. Suppose the preoperative nurse has yet to perform duties such as clipping, reviewing prior admission medication documentation, providing medication notes, or encountering problems such as difficult intravenous insertion by 0715. In that case, the preoperative nurse readiness is unmet.

In addition, the unit assistant (UA) has already completed an initial review of the patient’s record the day before surgery to confirm that all consents and orders were in place. (see Appendix F for Preop RN Complete form).

The Preoperative Call nurse instructed patients to arrive at the ASU admission registration area by 0545 before their scheduled operation, along with other instructions. Preoperative nurses were required to be in the preoperative area between 0600 and 0615 to have enough time to evaluate the patient, start intravenous lines, and ensure patients were ready by 0715 (Chua et al., 2021).
The OR team attended the morning huddle at 0705 to discuss the agenda for the day, which includes any specific requirements for the initial and succeeding cases. At 0715, the staff started to set up their rooms. The charge nurse and assistant nurse manager helped the staff open their rooms and gather additional equipment or supplies. The circulating nurse interviews the patient and should be ready at the patient’s bedside by 0735 to wheel the patient to the OR at 0745 or earlier.

The anesthesiologists need to be in the operating room by 0715 to set up and go to the preoperative area. During this time, they must evaluate the patient, get consent, and perform necessary spinal or nerve block procedures. Meanwhile, the surgeons must also be at the preoperative area by 0715 or earlier so they have enough time to speak with the patient, obtain or update consent as needed, update the electronic medical record of history and physical (H&P)/interval notes, write and sign any new orders, and mark the surgical site on the patient.

A biweekly interdisciplinary OR scheduled review meeting was reintroduced through Teams. The team comprised the OR charge nurse, supply chain personnel, scheduler, sterile processing department (SPD), OR manager, and assistant nurse manager. The meetings occur on Mondays and Thursdays, during which the teams evaluate the schedule for the week and ensure that any potential issues that could cause a delay or cancellation are communicated. The huddle’s intended outcome is to adjust the following lineup whenever necessary to optimize FCOTS. It includes ensuring that all essential medical clearances are obtained, preadmission testing is done, vendor trays are readily available on-site with sufficient time to sterilize, that special supplies and implants are readily accessible, and addressing any safety
concerns through heightened awareness, effective communication, and prompt resolution (Gregory & Gargaro, 2023).

An additional huddle is held in the afternoon to discuss the remaining cases scheduled for that day and the initial case for the subsequent day. Ultimately, the afternoon team will conclude the day by shutting down the rooms and preparing them for the following day. In addition, they will set up rooms for the initial cases in the morning to ensure that all necessary supplies, instruments, implants (if required), and equipment are fully prepared and available. For complex procedures, the morning circulating nurse or scrub technician will be given time to prepare their rooms for the following day.

Effective communication is essential to driving process improvement and enhancing team effectiveness. Morning huddles with staff and real-time messages helped convey the importance of timeliness to all stakeholders, including surgeons and anesthesia providers. One of the main priorities was setting clear expectations, such as punctual arrival for surgeons and anesthesia providers, the readiness of preoperative nurses by 0715, and preparing the operating room by 0715 for the patient's arrival at 0745 or earlier.

Improving the on-time start of operations can significantly reduce financial losses. In Appendix H, you can find the financial analysis that shows how a 15-minute delay per room per day can cost $570, at a rate of $38 per minute. If three rooms are delayed in a day, it will cost $1710. On average, three out of five rooms experience delays daily, resulting in a weekly cost of $8550 and a monthly cost of $34,200. Delays can also result in staff overtime, which can range
from one to two hours, depending on the staffing situation of the day. This can involve one nurse, one surgical technician, two RNs, and two surgical technicians.

If the room achieves a 73% on-time start rate, the annual cost savings can reach $141,309.16. The total project cost for one year of education is $6,890.84. Implementing this project will improve OR efficiency and increase provider, staff, and patient satisfaction (see Appendix G for Financial Analysis).

**Study of the Interventions**

The project focuses on improving the FCOTS of surgical procedures by addressing critical drivers such as patient readiness, preoperative assessment, and operational preparedness, including the readiness of operating room equipment, supplies, and instruments (Pashankar et al., 2020). Based on these key drivers, interventions were implemented using Plan-Do-Study-Act cycles.

During the planning stage, the reasons for delays are carefully analyzed through collaborative efforts and engaged stakeholders across the surgical team. This phase involved creating a driver diagram (see Appendix H for Driver Diagram) and identifying causes of delay (see Appendix I for Causes of delay) to understand the multifaceted factors contributing to late starts. A project charter (see Appendix J for Project Charter) was developed to define clear goals, scope, and expected outcomes, ensuring alignment with the organizational priorities. Strategic planning during this phase laid the groundwork for subsequent intervention implementation. Through collaborative efforts and stakeholder engagement, interventions were
tailored to streamline preoperative protocols, standardize communication among surgical teams, and improve operational readiness.

In the “do” phase, the identified interventions were implemented. The staff was educated on the significance of punctuality and following standardized protocols, fostering a culture of accountability. Preoperative processes are streamlined to ensure tasks are executed efficiently, and any issues related to the operating room are promptly addressed. Regular communication and feedback mechanisms are established to monitor progress and identify any changes or barriers to implementation.

Throughout the "study" phase, data collection was a cornerstone of the project’s evaluation strategy, focusing on quantitative metrics such as the percentage of on-time starts and the total duration of delays. This phase involved systematic monitoring before and after intervention implementation to assess their impact on process efficiency. Analysis of collected data provided insights into the effectiveness of interventions, guiding subsequent actions and adjustments.

In the "act" phase, interventions are adjusted based on their outcomes. This involves emphasizing successful strategies and eliminating ineffective processes. Careful planning and execution of interventions are necessary to address identified barriers and enhance operational efficiencies. Continuous monitoring and adaptation based on real-time feedback and data analysis are critical to maintaining high rates of on-time starts. Stakeholder engagement and collaboration play a vital role in this phase, advocating for interdisciplinary teamwork to implement and evaluate changes effectively.
The project's measurement strategy focused on capturing daily operational data through the EPIC system, facilitating comparisons between pre-intervention and post-intervention periods. Key metrics, such as the percentage of on-time starts and minutes saved due to reduced delays, provided quantitative evidence of progress, and enabled the estimation of cost savings. This systematic approach to collection and analysis served as a foundation for evidence-based decision-making and supported ongoing efforts to enhance efficiency and patient care outcomes. (Pashankar et al., 2020).

**Ethical Considerations**

This quality improvement initiative aims to enhance punctuality and operational efficiency within the ASU while adhering to Jesuit values such as Magis. Magis, which calls for a continuous pursuit of excellence, is the foundation for this project. This initiative showed a commitment to delivering healthcare services by timely starting surgical cases and optimizing patient care and operational processes (USFCA, n.d.).

The project's focus on patient-centered care aligns with the ethical principle of beneficence promoted by the American Nurses Association (ANA). Starting surgical procedures on time increases patient safety and satisfaction by reducing wait times and the chances of procedural delays or cancellations. This dedication to beneficence highlights the micro system’s moral responsibility to prioritize the well-being and interests of our patients above everything else (American Nurses Association, 2015).

This project emphasizes the importance of teamwork and collaboration, which are integral to Jesuit and ANA's Code of Ethics. To promote a culture of shared responsibility and accountability for patient care outcomes by involving various stakeholders. This collaborative
approach showed a commitment to the values of solidarity and interprofessional collaboration upheld by Jesuit tradition and nursing ethics (American Nurses Association, 2015).

The project's emphasis on continuous quality improvement aligns with the ethical principle of stewardship. By implementing evidence-based interventions to enhance OR efficiency and reduce delays, we act as stewards of healthcare resources to benefit patients, staff, and the healthcare system (American Nurses Association, 2015).

This intervention did not involve patient-specific data or interactions, and the risk of causing social, bodily, or psychological harm to patients was negligible. Faculty using QI review guidelines have approved this project as a quality improvement project, and therefore it is exempt and does not require IRB approval. The Research Determination Committee for the Kaiser Permanente Northern California region has determined the project does not meet the regulatory definition of research involving human subjects per 45 CFR 46.102(d). (see Appendix K for RDO).

**Outcome Measure Results**

The main measures used to evaluate these interventions were the on-time start performance rate and the length of surgical delay in minutes. Data was collected through direct observation and chart auditing to identify areas for improvement before implementing any interventions. Information on preoperative nurse readiness, the time the patient enters the operating room, length of delay, and reasons were all collected. The time of arrival of the surgeon and anesthesia providers was also noted on the audit form. All this data was used to determine the current on-time percentage, the average length of delays, and the reasons for the delay.
The data referenced above was collected both before and after implementing interventions. This was done to compare the pre-intervention data with the post-intervention data and to determine whether the implemented interventions have had any discernible effect on surgical FCOTS performance.

The observed increase in on-time performance from 67% to 73% was generally expected. Interventions such as streamlining preoperative processes, enhancing communication among team members, and addressing logistical challenges were designed to minimize delays. By focusing on these areas, it was anticipated that more surgical procedures would start on time, leading to a higher percentage of on-time starts. (See Appendix L for On-Time Starts graph).

Similarly, the decrease in average delay from 11.3 to 9 minutes aligns with the anticipated outcomes of the interventions. Improving operational readiness and efficiency aims to reduce unnecessary delays caused by factors like incomplete preoperative preparations or equipment availability issues. The decrease in average delay time indicates that these interventions effectively mitigate such issues. (see Appendix M for Delay in Minutes bar graph).

Although the general trend shows improvement, various factors like construction projects and patient-specific delays affect different cases. Challenges like building renovations and medical complexities can hinder progress despite procedural improvements. These factors highlight the dynamic nature of surgical environments, where operational efficiency efforts must account for unforeseen disruptions. Strategies need to be flexible to maintain and enhance on-time performance.
Summary

The ASU’s quality improvement project aimed to improve FCOTS from 67% to 73% by June 2024. This goal was realized through a collaborative multidisciplinary team approach focused on refining preoperative processes, fostering effective communication, coordinating efforts among surgical staff, and implementing standardized protocols. Key measures included establishing clear expectations and timeliness for staff, surgeons, and anesthesia providers, conducting regular morning and afternoon huddles and biweekly interdisciplinary meetings, streamlining preoperative workflows to ensure timely task completion, and implementing real-time monitoring and feedback mechanisms.

Data collected from EPIC and other sources demonstrated measurable improvements in FCOTS, indicating enhanced operational efficiency and improved patient access to care. The project’s success was supported by dedicated leadership, robust stakeholder collaboration, and a structured assessment process using the Plan-Do-Study-Act cycles. These findings underscore the effectiveness of systematic improvement methodologies in achieving targeted performance outcomes within healthcare settings.

The key lessons learned from this project emphasize the importance of collaborative teamwork and effective interdepartmental communication. Seamless coordination among surgical teams, anesthesia providers, nursing staff, and support services is fundamental in preempting delays and reducing variability in start times. Clear protocols allowed for the standardization of preoperative procedures, and the utilization of technology for real-time updates was pivotal in streamlining workflow and minimizing disruptions.
Conclusions

The improvement in FCOTS performance at ASU, with an increase from 67% to 73% by June 2024, represents a noteworthy accomplishment with implications for operational efficiency, patient experience, and staff morale. This successful project not only achieved its targeted objectives but also exceeded expectations in terms of cost savings and optimal resource allocation. Early identification of critical factors contributing to delays helps proactively plan and implement evidence-based strategies and initiatives to streamline patient flow, reduce wait times, and enhance overall efficiency within the healthcare system. The enhanced FCOTS metric signifies a proactive approach to improving healthcare delivery, fostering heightened levels of patient satisfaction, and boosting staff morale through more effective resource utilization and streamlined processes.

This project's achievement highlights the significance of implementing systematic quality improvement methodologies in healthcare settings. Looking ahead, it is essential to maintain and enhance these improvements through consistent monitoring, continued staff training, and incorporating best practices. It is crucial to engage stakeholders and nurture a culture of accountability to ensure the sustainability of high standards for OR efficiency and patient-centered care at ASU.
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https://myusf.usfca.edu
## Appendix A

### Gap Analysis

Area under consideration: Improving First Case On-Time Start (FCOTS) in the Ambulatory Surgery Unit (ASU)

**AIM:** To increase the rate of surgical patients’ first case on-time start from 67% to 73% by June 2024 in the ASU operating room (OR).

<table>
<thead>
<tr>
<th>Desired State</th>
<th>Current State</th>
<th>Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>The patient will be in the Operating Room (OR) by 0745 or earlier, a rate of 73%</td>
<td>The OR achieves an average on-time start of 67% indicating a shortfall from both the departmental goal of 73% and the hospital goal of 90%.</td>
<td>Conduct a thorough analysis to identify causative factors contributing to delayed on-time starts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop, modify, and implement standardized operating procedures for preoperative processes, including patient admission, anesthesia readiness, surgeon readiness, and surgical set-up. Ensure to incorporate best practices to streamline workflow and minimize potential delays.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Establish clear communication among surgeons, anesthesiologists, nurses, and support staff to improve coordination, understanding of case start times and responsibilities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All necessary documentation completed.</td>
</tr>
<tr>
<td>The equipment and supplies for the operating room have been prepared and checked.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circulating nurses and scrub techs will have dedicated time to prepare for their cases the following day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The afternoon shift ensures all necessary equipment for the next day is readily available.</td>
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</tr>
<tr>
<td>Provide extra staff to rooms with complex procedures.</td>
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</tr>
</tbody>
</table>
Appendix B

Causes of Delay

ASU DELAY REASONS AND MINUTES

- Staff Not Available - Surgeon
- Staff Not Available - Anesthesia
- Anesthesia: Pre-op and Set-Up Delay
- Equipment: Not Available
- Preop: Additional Consult Required
- Patient: Patient Delay - Need To Void
Appendix C

Evaluation Table

**Picot:** In patients undergoing surgical procedures, how does starting the first case on time compared to not starting the first case on time affect the efficiency of all cases starting on time or earlier in the operating room (OR) nine months after the implementation?

<table>
<thead>
<tr>
<th>Evidence Citation</th>
<th>Design</th>
<th>Sample</th>
<th>Outcomes</th>
<th>JHNEBP Appraisal Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chua et al. (2021)</td>
<td>Qualitative study and economic study using Lean and Six Sigma strategy. Quality improvement Initiative. Non-experimental study.</td>
<td><strong>Sample:</strong> A working group of institutional OR executive committees representing surgery, anesthesia, nursing, and hospital administration. <strong>Setting:</strong> Tertiary academic medical center with 3 campuses: East Newton Pavilion, Menino, and Moakley.</td>
<td><strong>Findings:</strong> 95% of first-start OR cases were tracked to start on time within 11 days of implementation. The goal of a daily mean of 80% was met or exceeded throughout the observation period, May 2015 – July 2016. <strong>Strengths:</strong> Collaboration among the various stakeholders facilitated clear communication and understanding of each set of preoperative tasks, resulting in a more streamlined process. <strong>Limitations:</strong> The actual impact of each intervention on the success of improving on-time first-case starts is unknown because several measures were implemented at once.</td>
<td>JHNEBP Level Rating Quality Rating Level Rating: III B</td>
</tr>
</tbody>
</table>
Also, there may have been differences in implementation between the three campuses.

<table>
<thead>
<tr>
<th>Evidence Citation</th>
<th>Design</th>
<th>Sample</th>
<th>Findings</th>
<th>JHNEBP Appraisal Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morel et al. (2021)</td>
<td>Qualitative study and economic study using Lean and Six Sigma strategy. Quality improvement Initiative. Non-experimental study.</td>
<td><strong>Sample:</strong> The literature review included an independent search of the CINAHL, PubMed, and Medline OVID databases between 2011 and 2020. <strong>Setting:</strong> A 273-bed teaching hospital in South Florida with six operating rooms</td>
<td><strong>Findings:</strong> The literature review included an independent search of the CINAHL, PubMed, and Medline OVID databases between 2011 and 2020. <strong>Strengths:</strong> Most of the articles reviewed were level 1 (RCT) and level 2 (quasi-experimental) studies, and a few level 5 (QI) studies were included. <strong>Limitations:</strong> There’s a lack of clear explanations for why surgeons arrive late in the operating room.</td>
<td>JHNEBP Level rating: III B</td>
</tr>
<tr>
<td>Evidence Citation</td>
<td>Design</td>
<td>Sample</td>
<td>Findings</td>
<td>JHNEBP Appraisal Rating</td>
</tr>
<tr>
<td>-------------------</td>
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</tr>
<tr>
<td>Saul et al. (2020)</td>
<td>Retrospective Quality Improvement non-human subjects. Observation and unstructured employee interviews Statistical analysis on categorical data. Non-experimental study</td>
<td><strong>Sample:</strong> Between April 1 and December 31, 2019, there were 159 days of elective orthopedic surgeries, occurring Monday through Friday. <strong>Setting:</strong> McLaren Macomb Hospital, Orthopedic Surgery Department</td>
<td><strong>Findings:</strong> 156 (39.5%) of the 398 total first cases during the 159 days under review were delayed. The surgeon was determined to be the major contributor to delays in 74 (56.5%) cases, followed by pre-op in 24 (18.3%) and room-related delays in 17 (13.0%). Nine (6.9%) were anesthesia cases, and seven (5.3%) were patients.</td>
<td>JHNEBP Level rating: V B</td>
</tr>
</tbody>
</table>

**Strengths:**
According to Pareto analysis, efforts to enhance strategies to improve factors surrounding the surgeons and pre-op will have the most impact because they will address 75% of the problems.

**Limitations:**
Based on experience and research, broad categories were chosen, thus limiting the ability to include other possible causes of delay.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The existing data collection technique gave the OR nurse or CRNA complete discretion to list the cause of delay, leading to potential bias. It was a retrospective project with manual data collection that could have tainted the outcome.</td>
</tr>
<tr>
<td>Evidence Citation</td>
<td>Design</td>
<td>Sample</td>
</tr>
<tr>
<td>-------------------</td>
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</tr>
</tbody>
</table>
| Pashanker et al.  | Baseline data using Six Sigma methodology of Define, Measure, Analyze, Improve, and Control Quality Improvement Project Non-experimental study | **Sample:** 1981 first case starts cases from May 2018-October 2019  
**Setting:** Yale-New Haven Children’s Hospital In Connecticut | **Findings:** The first case on-time starts improved from 62% to 77%.  
Significant improvement in total minutes delayed from 197.9 minutes to 133 minutes per week.  
Estimated cost savings of $4,023 per week.  
**Strengths:** Clearly defined study design and methodology.  
Streamlining of preoperative processes.  
No significant use of financial resources  
**Limitations:** The on time start rate is 62%, which is higher than the baseline from other studies.  
No patient-focused interventions were used.  
Many interventions were implemented over the study's time, making it difficult to |
<p>|                   |        |        |          | JHNEBP Level Rating Level V A |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>know which interventions were the most effective.</td>
<td>Does not know all the causes of delays in the OR- some nurses did not document the cause of delays.</td>
<td></td>
</tr>
<tr>
<td>Evidence Citation</td>
<td>Design</td>
<td>Sample</td>
</tr>
<tr>
<td>-------------------</td>
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<td>--------</td>
</tr>
<tr>
<td>Singh et al.</td>
<td>Six Sigma/Lean Six-Sigma Approaches</td>
<td><strong>Sample:</strong> 1824 first case start times were recorded from December 1, 2020, to March 31, 2021.</td>
</tr>
<tr>
<td></td>
<td>Process Improvement Strategy</td>
<td><strong>Setting:</strong> Academic Medical Center: Three Main Operating Suites 300 P, 500P, and OR Lane</td>
</tr>
<tr>
<td></td>
<td>Non-experimental</td>
<td></td>
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</tbody>
</table>
Theoretical Framework: Kotter’s Change Model

- Increase urgency: Management discussed the current situation (backlog of the case, decreased patient satisfaction, OR efficiency) with staff to establish a sense of urgency.
- Build the team: Develop a goal towards increasing OR efficiency and patient and staff satisfaction.
- Define the vision: Communicate with staff and the shareholders on the process change.
- Share the vision: Empower action. Encourage staff to document any delay for the day so that barriers can be addressed appropriately.
- Empower action: Provide positive feedback to staff from members; celebrate with pizza or other treats.
- Interim successes: Everyone is responsible for sustaining the difference for the first case on-time start.
- Ongoing persistence: The team evaluates the results to see if the goal is being met.
- Institute change: Adapted from Visual Paradigm
# SWOT Analysis

<table>
<thead>
<tr>
<th>Internal (attributes of the organization)</th>
<th>Favorable/Helpful</th>
<th>Unfavorable/Harmful</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Daily morning huddles</td>
<td></td>
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<tr>
<td>• Biweekly schedule huddle</td>
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<td></td>
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<tr>
<td>• Adequate staffing</td>
<td></td>
<td></td>
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<tr>
<td>• Preop done by Preop medicine (POM) clinic.</td>
<td></td>
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</tr>
<tr>
<td>• The anesthesia provider conducts a chart review the day before the surgery.</td>
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<tr>
<td>• A nurse is assigned to call patients the day before surgery to provide them with necessary instructions.</td>
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<tr>
<td>• The assigned circulating nurse or scrub will check their cases for the following day.</td>
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<tr>
<td>• The afternoon staff will gather all necessary surgical instruments and equipment for the next day's cases.</td>
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<tr>
<td><strong>Weaknesses</strong></td>
<td></td>
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</tr>
<tr>
<td>• Resistance to change among the staff.</td>
<td></td>
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<tr>
<td>• Supplies and instruments are not available.</td>
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<tr>
<td>• Surgeons do not include specific case details in the comments or add them late.</td>
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<tr>
<td>• Incomplete documentation.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Adding additional procedures on the day of surgery.</td>
<td></td>
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<tr>
<td>• More equipment is needed.</td>
<td></td>
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<tr>
<td>• New procedures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• New technology.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Complex procedures- double procedures, too many setups.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Training of staff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patients need to void.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Difficulty administering spinal anesthesia.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• No IV access</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Unit renovation/Building construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External (attributes of the organization)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Increased efficiency and decreased backlog of surgical cases.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Potential to improve quality standards and patient care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adopted from: "SWOT en.svg." (2020, November 5). *Wikimedia Commons, the free media repository.*
Appendix F

Preop RN Completion Goal

07:15/08:15
1st Case Tracking: Preop RN Complete Goal

Document COMPLETE by 07:15 even if:
- waiting for consent form
- waiting for H&P or Interval Note
- additional orders for meds (not part of Surgeon/Anesthesia order set - ex: Emend, Scopolamine patch, Abx) needs to be given

Goal not met if:
- clipping not done by 07:15 (if unsure of laterality, clip both sides)
- Review PTA Meds documentation not done by 07:15
- meds not given by 07:15 d/t patient hard IV stick

---

waiting for consent form
waiting for H&P or Interval Note
additional orders for meds (not part of Surgeon/Anesthesia order set - ex: Emend, Scopolamine patch, Abx) needs to be given

clipping not done by 07:15 (if unsure of laterality, clip both sides)
Review PTA Meds documentation not done by 07:15
meds not given by 07:15 d/t patient hard IV stick
Appendix G

Financial Cost Analysis
Improving First Case On-time Start (FCOS) in Kaiser San Jose Ambulatory Surgery Unit (ASU) by 75% daily.

<table>
<thead>
<tr>
<th>Improvement Revenue (Cost Avoidance)</th>
<th>Number of Rooms</th>
<th>Cost of delay per minute/day ($38 cost of OR time per minute X average 15 mins delay)</th>
<th>Monthly Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rooms delayed</td>
<td>3</td>
<td>$1,710</td>
<td>$34,200</td>
</tr>
<tr>
<td>Number of rooms to start on time</td>
<td>4</td>
<td>$570</td>
<td>$2,850</td>
</tr>
</tbody>
</table>

Improvement Cost (Cost Implementation): Education

<table>
<thead>
<tr>
<th>Number</th>
<th>Hourly rate + 0.3 benefit</th>
<th>Cost 1 hour class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asst. Nurse Manager</td>
<td>$131.30</td>
<td>$131.30</td>
</tr>
<tr>
<td>Manager</td>
<td>$143.00</td>
<td>$143.00</td>
</tr>
<tr>
<td>Registered Nurse Preop</td>
<td>$129.578</td>
<td>$1295.78</td>
</tr>
<tr>
<td>UA</td>
<td>$47.372</td>
<td>$94.74</td>
</tr>
<tr>
<td>PCT</td>
<td>$45.968</td>
<td>$91.94</td>
</tr>
<tr>
<td>Registered Nurse OR</td>
<td>$113.279</td>
<td>$2492.138</td>
</tr>
<tr>
<td>Surg Tech</td>
<td>$70.369</td>
<td>$844.43</td>
</tr>
<tr>
<td>Anes Tech</td>
<td>$64.376</td>
<td>$257.50</td>
</tr>
<tr>
<td>Materials/Supplies</td>
<td></td>
<td>$300</td>
</tr>
<tr>
<td>Food</td>
<td></td>
<td>$800</td>
</tr>
<tr>
<td>Total Cost</td>
<td></td>
<td><strong>$6890.84</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Savings/Cost Avoidance</th>
<th>Increase number of rooms on time</th>
<th>Annual Cost Avoidance</th>
<th>Project Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve First case on-time start</td>
<td>4</td>
<td>$148,200.00</td>
<td><strong>$141,309.16</strong></td>
</tr>
</tbody>
</table>
Appendix H

Driver Diagram

**SPECIFIC AIM**

To increase the rate of First Case On-Time Starts of surgical patients from 67% to 73% by July 2024 in the ASU OR

**KEY DRIVERS**

- Patient ready in the preop area
- Surgical assessment done on time.
- Anesthesiology assessment done on time
- All paperwork completed
- OR equipment, supplies and instruments prepared and checked

**INTERVENTIONS**

- Patients called the day before for arrival time, instructions, and venue
- Surgeons arrive 30 minutes before the scheduled time
- The anesthesia provider arrive 30 minutes before the scheduled time
- OR and equipment set up and checked the day before.
- Supplies, implants, and instruments checked the day before

**GLOBAL AIM**

To improve the rate of first case on-time starts in the operating room to optimize patient flow, reduce delays, and enhance overall operational efficiency.
Appendix I

Causes of Delay

CAUSES OF FIRST CASE ON – TIME START (FCOTS) DELAY IN THE AMBULATORY SURGERY UNIT

PATIENT
ARRIVES LATE
GIVEN WRONG ARRIVAL TIME
NPO STATUS
LAST MINUTE CANCELLATION
LAST MINUTE VOIDING
WAITING FOR FAMILY
NEEDS INTERPRETER / TRANSLATOR
NON-COMPLIANCE WITH PRE-OP INSTRUCTIONS

PRE-OP TEAM
PROLONGED DISCUSSION
VITALS, PERSONAL BELONGINGS,
BLOOD DRAW, CLIPPING OF OPERATIVE SITE
CAN NOT FIND VEINS
ABNORMAL VITALS

ANESTHESIA TEAM
ANESHTESIOLOGIST LATE
DIFFICULT SPINAL ADMINISTRATION
DIFFICULT NERVE BLOCK ADMINISTRATION
ADDITIONAL ORDERS
PROBLEM WITH THE ANESTHESIA MACHINE

OR TEAM
STERILE FIELD COMPROMISED
TRAY CONTAMINATED
MISSING EQUIPMENT
MISCOMMUNICATION
COMPLEX CASES
INSTRUCTION UNCLEAR

SURGEON
LATE ARRIVAL
DISCUSS PROCEDURE
SURGICAL SITE MARKING
PROLONGED DISCUSSION
CHANGE OF CONSENT/MODIFICATION

OPERATIVE ROOM
SPECIAL EQUIPMENT UNAVAILABLE
VENDOR UNAVAILABLE
IMPLANTS CONTAMINATED / UNAVAILABLE
ASU BUILDING UNDER CONSTRUCTION

DELAY IN FCOTS
Appendix J

Project Charter

**Project Charter**: Improving First Case On-Time starts in the Ambulatory Surgical Unit (ASU) Operating room (OR)

**Global Aim**: To improve the rate of first case on-time starts in the operating room to optimize patient flow, reduce delays, and enhance overall operational efficiency.

**Specific Aim**: To improve the rate of first case on-time starts of surgical patients in the ASU OR from 67% to 73% by June 2024.

**Background**: The Operating Room (OR) is a vital component of hospital operations, directly impacting revenue. Delays in the OR can lead to higher hospital costs and dissatisfaction among patients and healthcare providers. Initiating the first case on schedule can help prevent any subsequent delays (Pashankar et al., 2020). In 2018, the Institute of Medicine (IOM) published the Crossing the Quality Chasm report, emphasizing the importance of U.S. hospitals improving their efficiency and minimizing preventable operating room delays. With healthcare costs continuing to rise, it is crucial to increase the number of surgeries that start on time to maintain OR efficiency and provide quality surgical care. The OR’s efficiency is determined by the strategic allocation of resources for each task, with the first case of the day being a crucial factor (Morel & Gomez, 2021).

**Sponsors**:

<table>
<thead>
<tr>
<th>ASU Manager</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Perioperative Director</td>
<td></td>
</tr>
<tr>
<td>Chief of Surgery</td>
<td></td>
</tr>
<tr>
<td>Chief of Anesthesia</td>
<td></td>
</tr>
<tr>
<td>Quality Leader</td>
<td></td>
</tr>
</tbody>
</table>

**Goals**: To improve the first case on-time start, the following steps can be taken:

- The patient is ready in the preoperative area by 7:15 AM.
- The surgeons and anesthesia providers are at the bedside 20-30 minutes before the scheduled time, 7:20 AM, for their assessment.
- All paperwork is to be completed by 7:30 AM.
- OR equipment and supplies will be prepared and checked, and the OR circulating nurse will be ready by 0740.
- The patient should be in the OR suite by 0745 or earlier.
### Measures:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Data Source</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of first case on-time start</td>
<td>Chart audit using EPIC Health Connect</td>
<td>73%</td>
</tr>
<tr>
<td>The average length of surgical delay in minutes</td>
<td>Chart audit using EPIC Health Connect</td>
<td>&lt; 10 minutes</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of preoperative checklist completion</td>
<td>Chart audit using EPIC Health Connect</td>
<td>90%</td>
</tr>
<tr>
<td>Percentage of OR room readiness: room set up with equipment, supplies, and instruments readiness</td>
<td>Chart audit for delay codes using EPIC Health Connect</td>
<td>90%</td>
</tr>
<tr>
<td>Percent of patients arriving on time</td>
<td>Chart audit using EPIC Health Connect</td>
<td>90%</td>
</tr>
<tr>
<td>Average length of time for anesthesia – spinal or nerve block administration</td>
<td>Chart audit using EPIC Health Connect</td>
<td>&lt;15 minutes</td>
</tr>
<tr>
<td><strong>Balancing Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent and reasons for delay for first case on-time start</td>
<td>Chart audit using EPIC Health Connect</td>
<td>&lt;50%</td>
</tr>
</tbody>
</table>

### Team:

- MD Co-Lead
- Anesthesia Co-Lead
- RN Co-Lead
- Quality Leader
- Staff Nurse Champions
- Preop Nurse Champions
- Nurse Practitioners
Appendix K
RDO form Approval

Date: April 4, 2024
Subject: RDO KPNC 24 - 079
Title: Improving First Case On-Time Starts in the Ambulatory Surgery Unit (ASU)

Dear Dr. Rowe:

The Research Determination Committee for the Kaiser Permanente Northern California region has reviewed the documents submitted for the above referenced project to be used by Myrna Bernardo for her MSN project. The project does not meet the regulatory definition of research involving human subjects as noted here:

Not Research

The activity does not meet the regulatory definition of research per 45 CFR 46.102(d): Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

This determination is based on the information provided. If the scope or nature of the project changes in a manner that could impact this review, please resubmit for a new determination. The word “research” should not appear in any posters or publications resulting from this project. Further, if publications, presentations or posters are generated from this project the following wording must be used to reference the project research determination outcome:

“The Research Determination Committee for the Kaiser Permanente Northern California region has determined the project does not meet the regulatory definition of research involving human subjects per 45 CFR 46.102(d)”

You are expected, however, to implement your study or project in a manner congruent with accepted professional standards and ethical guidelines as described in the Belmont Report (http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html).

Additionally, you are responsible for keeping a copy of this determination letter in your project files as it may be necessary to demonstrate that your project was properly reviewed. Provide this approval letter to the Physician in Charge (PIC), your Area Manager, and Chief of Service, to determine whether additional approvals are needed.

Finally, all manuscripts/case series/case studies must receive written approval prior to submission to a journal or book. The Principal Investigator (PI) or first author (if different) must request their PIC1, or the Division of Research (DOR) Director2, or the Research & Innovation Academy (RIA)3 or an equivalent level leader4 review and provide written approval for publication submission. The PI is responsible for retaining a copy of the approval.

Sincerely,

The Research Determination Committee
KPNC-RDO@kp.org

1PIC approval is required for all manuscripts/case series/case studies that do not include a DOR employee as an author; including but not limited to medical students, residents, and fellows.
2DOR Director approval is required for all manuscripts/case series/case studies that include DOR employees as authors.
3For all nurse-authored manuscripts/case series/case studies, approval by the Research & Innovation Academy is required.
4If you are not sure who this would be, please contact the Research Determination Office (KPNC-RDO@kp.org)
Appendix L

Performance Rate

2022 Procedure On-Time Start

2023 Procedure On-Time Start

2024 Procedure On-Time Start
Appendix M

Delay in Minutes