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Increasing Operating Room Efficiency Through Decreased Turnover Times

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Increasing Operating Room Efficiency Through Decreased Turnover Times

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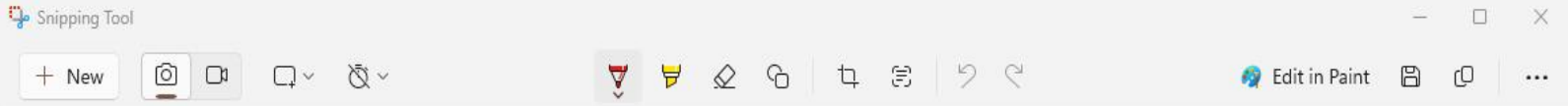
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This Manuscript Partially Fulfills the Requirements for the
Doctor of Nursing Practice Program and is Approved by:

Ginger Hawkins DNP, RN, CPHQ

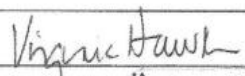

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Abstract

The Operating Room (OR) is the financial engine of the modern hospital or surgical center. Over 40% of the hospital's cost is invested in the OR, but the facility recoups a monetary return of around 60-70%. Turnover time is a crucial factor in reducing costs. Uncontrolled, it can inflate operating costs, but when managed effectively, it can boost surgeon, patient, and staff satisfaction, enhance patient safety, and significantly reduce operational costs. The literature underscores the importance of reducing the time between operating room turnovers to improve OR efficiency. A key strategy that research consistently shows to be effective is the implementation of structured presurgical briefings, such as TeamSTEPPS. These briefings, with their structured approach, play a crucial role in reducing turnover time in an OR, thereby increasing efficiency. The initial investment in developing a standardized preoperative brief through the TeamSTEPPS program as part of the morning brief has the potential to boost OR productivity and revenue significantly. By reducing the time from wheels out to wheels in for each surgery during the operating room's surgical day, this approach can lead to substantial financial gains.

The project information is collected from 308 surgical cases from various services over three weeks during the project to determine whether conducting a formal TeamSTEPPS style preoperative formatted brief would reduce turnover times (TOTS) in the operating room (OR). The data showed a mean average reduction of slightly over six minutes in mean average turnover times during the project. The data showed that 20% of all scheduled cases had a turnover time greater than 25 minutes. Of the 20% of the cases, 7.6% of the increased TOTs were attributed to processes controlled by the OR staff. The remaining 12.6% of turnover time was attributed to issues related to surgeons, SDS/ APU, and different services in the hospital. The data shows that the effects of a daily organized and standardized presurgical briefing will improve turnover times better than a presurgical briefing without structure or organization.

Increasing Operating Room Efficiency Through Decreased Turnover Times

In any medical facility with surgical capabilities, the operating room (OR) is the highest revenue-generating department in an acute care facility, increasing its financial bottom line when run correctly. Therefore, sound business practice would dictate that if the OR were a facility's largest revenue maker, not utilizing the OR efficiently would be financially detrimental to any healthcare organization (Schouten et al., 2023). Fundamental economics dictates that when a facility can perform more surgeries daily, the facility will make more money from the OR. A significant component of added efficiency in any operating room is turnover times. Turnover time is defined as when the operating room patient leaves the room and the next patient enters the room (Kodale et al., 2014). The time it takes to turn over a room between cases can add to the operating cost of an organization and increase surgeon, patient, and staff satisfaction while improving patient safety. Efficiency studies show surgical turnover time can be improved through conducting a well-organized presurgical briefing focused on OR team communication. The research clarifies that OR communication and productivity are improved through a well-developed program. The structure of this program is built using a standardized presurgical brief checklist that relies on team leads, mentors, and the adoption of this practice change. This practice change must be carried out with the training and development of each new employee to ensure they participate in this ongoing team support (Forse, 2011).

Paul M. Schyve, MD, senior vice president of the Joint Commission, has said, "Our challenge ... is not whether we will deliver care in teams but rather how well we will deliver care in teams." (p183). The Defense Health Agency is in control of one of the largest health systems in the world, and the Department of Defense (DOD), their predecessors, developed along with the Agency for Healthcare Research and Quality (AHRQ) developed a training method that increases teamwork and enhances facility performance. This training program is TeamSTEPPS. This training provides an evidence-based approach to team training (Clancy, 2007).

Significance of the Practice Problem

The Operating Room (OR) is the financial money maker in the modern hospital or surgical center. On average, over 40% of the hospital's cost goes into the OR, but the facility gains a financial return of around 60-70% (Macario, 2010). Remember that the business is about patient care and safety; this must stay at the forefront of everyone working towards a more efficient operating room (Weld, 2016). The surgeon and their surgical team must have a complete interface to provide safe, efficient care in the OR, utilizing the OR day as fully as possible. Considering the estimated average cost of operating an OR is \$15-\$50 per minute, comprehensive OR utilization and efficiency are essential (Macario, 2010; Rothstein & Ravalb, 2018). To increase OR utilization, the primary factor that must be implemented is decreasing the time between each case. Turnover time occurs when one patient leaves the OR and the next enters the OR (TOT). This time produces patient and surgical team wait times and loss of productivity. This time, it does not produce revenue but still costs the facility money. The down or lag time when there are no patients in the room is costly to the facility as they still must pay the costs of the surgical team involved in the patient's care and the turnover time.

It is essential to ensure that the complex puzzle of preoperative care, turnover, and setup is accomplished efficiently. Operating room time utilization creates revenue and maintains peak OR efficiency. When the time between patients is minimized, the OR makes money. A study conducted in California hospitals over ten years emphasized the importance of reducing downtime. The study showed that the average operating room cost was around \$36 a minute or \$2160 per hour (Childers & Maggard-Gibbons, 2018). This cost may seem excessive, but in an OR in a New York academic hospital, the average cost per minute is estimated at approximately \$150 per minute. The number is calculated when the total expenses of the surgical staff's pay and expenses are added to the actual cost per minute of the OR day (Cerfolio, 2019). When turnover times are expected to take approximately 25 minutes or less, but this time becomes over 40 to 50 minutes, the cost adds up significantly during each day and becomes cumulative over weeks, months, and years, resulting in a

tremendous cost to the facility lacking efficiency. Significantly, this only considers the expenses for the average workday. These estimated expenses do not consider overtime pay or the cost of rescheduling surgeries due to the surgical day going way over their allotted time. Due to the emergent nature of the surgical case, this cost also does not consider after-hour surgeries and emergency surgeries added to the daily schedule. Patient safety and satisfaction must be continuously prioritized when turnover times in the operating room are improved.

PICOT Question

Operating turnover time efficiency is a daily goal every operating room strives for. Some operating facilities fail miserably, while others have found ways to make this process more efficient. One method of improving efficiency has been initiating team training, eliminating bottlenecks, and how a well-trained, organized OR team can impact OR productivity by minimizing the non-income generating time between patients or the turnover time.

In a six-suite OR of a small military hospital in the Southeast (P), what is the effect of conducting a standardized presurgical brief daily involving the entire surgical team (I) as compared to no presurgical brief (C) on decreasing operating room turnover times(O) over three weeks (T)?

Population: The surgical team and patients will participate in this project. This group works in a six-bed operating room of a military community hospital in the Southeast.

Intervention: The intervention used in this project will be conducting a formatted, standardized presurgical brief using the TeamSTEPPS process and a daily Preoperative Surgical Huddle check sheet for each case before the surgical day begins.

Comparison: The data from Turnover times (TOT) in the operating room (OR) one month prior to the project's implementation and three weeks after the project began were used to track any changes in OR TOT using a T-Test statistical analysis. The implementation of TeamSTEPPS, along with an organized preoperative brief, did decrease TOTs in the OR over a three-week period.

Outcomes: Over one, the project will increase communication, improve patient safety, and decrease turnover times in the OR. OR efficiency will improve through the implementation of this project using the TeamSTEPPS format and an organized presurgical brief. Increased efficiency will lead to fewer late days, less paid overtime, and Soldiers staying late.

Time: The project will take place and be monitored over a total time of three weeks.

Evidence-Based Practice Framework & Change Theory

The John Hopkins Evidence-Based Practice Model uses a three-step process called PET: practice query, evidence, and translation. The practice query involves the process. The TeamSTEPPS concept and a standardized presurgical daily briefing process for each surgical team will decrease TOT, patient safety OR efficiency will increase, and satisfaction will improve. Communication is the key to OR efficiency, patient satisfaction, and safety (Bhatt et al., 2014). Using a standardized presurgical daily briefing process and TeamSTEPPS system will improve TOT and OR efficiency (Forse et al., 2011). Evaluating MHS Genesis EMR system data before the project begins provides the best data and will be compared to data post-project implementation. This data collection will prevent cross-influences in the project. Examining the data before the project's implementation, comparing it to the data during and after the project, and calculating the before and after values through a t-value calculator will provide the statistical analysis to evaluate the project's success. The translation will be multi-focal. The bottom line is, did turnover times in the OR improve?

Each OR team conducts a patient briefing at the start of the OR day. The circulating nurse has a checklist to document what is required for each case and what deviation from the standard case may occur (Appendix I). Through the standardization process of this morning brief, there is improved communication, availability of needed equipment at the time of surgery, and increased patient safety. When late OR days occur consistently, this results in staff burnout, decreased morale, increased overtime, and job fatigue and can lead to patient safety issues.

Using the information from the standardized presurgical daily briefing process at the start of the OR day and debriefs, the circulating nurse rapidly promotes team engagement and identifies sources of delay bottlenecks and how best to eliminate them and minimize their effects on turnover times throughout the day (Port et al.,2013).

Theory of Constraint

The Theory of Constraints states that the processes of any organization can be improved by identifying the bottlenecks. The first part of TOC is identifying the issue causing the bottleneck. Eliminate these bottlenecks or, at the minimum, streamline the process so these bottlenecks do not decrease efficiency (Bauer et al., 2019; Port et al.,2013). The project aims to decrease the turnover times in the OR. Increased turnover times are responsible for reduced OR efficiency and higher operating costs. The second part is to exploit. Exploit is to make immediate improvements to the problems and issues causing the decrease in productivity or, for this project, the increase of turnover times in the OR. The third part is subordinate. The Subordinate is to remove all issues that may interfere with implementing the initiatives to decrease turnover times. The fourth part is to elevate. Elevate is the continuation of removing all constraints that may inhibit reaching the goal. Developing new training or buying new equipment may be part of this investment. The fifth and last part of the TOC is repeated. These steps must continue after eliminating constraints, assets, and training (Grida & Zeid 2019).

Put in place a strategy using the information from the presurgical morning briefing and debriefs, the circulating nurse can rapidly promote team engagement and identify sources of delay bottlenecks. (Port et al.,2013). This model aligns with evidence-based practice, which aims to implement changes to reduce turnover times in the OR using TeamSTEPPS and an organized preoperational brief to improve preoperative and post-operative effectiveness. The impact in the OR if turnover times are not within 25 minutes, the OR day is extended. The theory of Constraint (TOC) has five main ideas that repeat until the process is efficient. These processes should constantly be in motion to maintain efficiency. The

change theory framework focuses on addressing clinical problems. Then, the most appropriate course of action must be decided as a guide to make changes at individual and group levels (Schaffer et al., 2012).

Productivity Improvement

Healthcare Managers are encouraged to improve their productivity, save costs, and increase productivity. Sometimes, these improvements are expected even with decreased resources and personnel, making increased efficiency even more essential in promptly supplying quality care to patients (Groop et al., 2010). Hospitals work extremely hard to optimize patient satisfaction scores and improve patient experience and care. This patient improvement occurs while hospitals try to reduce their overhead costs and increase efficiency (Ahmed, 2019).

Increasing the efficiency of turnover times in the OR correlates to the OR performing more surgeries during the day, weeks, and months. With the increasingly long wait lists for surgery, which results in patient discomfort and possibly exacerbates patient issues, developing methods to increase proficiency is essential (Grida & Zeid, 2018). In the pursuit of efficiency, administrators and managers must ensure that there is no compromise of patient satisfaction in search of faster turnover times, a decrease in overhead costs, and an increase in the facility's profit margin (Poksinska, 2016).

Advantage of the Theory of Constraint

The concepts of process improvements are becoming even more prevalent as healthcare costs increase and resources decrease. Improving patient flow and enhancing processes of effective patient care are increasingly becoming commonplace in many healthcare institutions (Bhattacharjee & Ray, 2014). Using theories such as TOC to improve the processes has proven consistent results among multiple institutions and is not conclusive to healthcare alone. With continued process improvement and the implementation of the TOC processes, money is saved, time is spent more productively, and OR efficiency is improved.

Evidence Search Strategy

When performing searches to support the PICO results and using PubMed as the first search engine, using the term, *improving the operating room efficiency*, with the parameters of 2004-2023, 1,524 articles were recommended. By adding the phrase, *during changeovers*, the number fell to only 10. By using the words, *improving the efficiency of the operating room*, and adding using *TeamSTEPPS*, the result went down to six. In filtering the 1547 articles to take place in facilities in the United States and through meta-analyses, clinical trials, or randomized control trials, the number of articles fell to 25. Of the 25 articles, only six were related directly to the PICO. The number of articles is even lower when using CINAHL at 53 and Google Docs at 48 using the same parameters as in the other searches. To discover the actual operating costs of the operating room and *the cost of an operating room*, only four of the 47 articles pulled up related to the PICO or provided information to support *operating room efficiency*. PubMed used the phrase, *cost of care in an operative room*, and gave 536 articles, with four usable in relation to the PICO question. All articles can be found through PubMed alone in the re-evaluation of the articles. CINAHL Complete, Google Scholar, and the AMEDD library offered articles, but these articles were duplicated from the multiple searches made in PubMed. In the end, 16 articles related to the PICO were found, and 12 more support the importance of the PICO in shortening turnover times and increasing operating room efficiency.

Evidence Search Results

Increasing the level of communication among the operation room team will decrease room turnover times and increase operational productivity. According to (Forse et al., 2011; Gillespie et al., 2010; Kodali et al., 2014; Weld et al., 2016), a communication checklist tool such as TeamSTEPPS increases communication in the operating room teams. TeamSTEPPS provides a voice to everyone, which empowers the team to communicate efficiently, which is related to better operating room efficiency. Decreasing turnover times reduces the cost in the OR (Childers et al., 2018). When adequately implemented, increased communication using the TeamSTEPPS model will improve

turnover times and patient satisfaction (Bhat et al., 2014; Forse et al., 2011; Weld et al., 2016). The decreased turnover times and increased operative room efficiency led to higher productivity and the ability to complete cases on time and possibly add more patients during the surgical week (Forse et al., 2011; Weld et al., 2016). The evidence upholds the key components supporting the use of a standardized presurgical daily briefing process, TeamSTEPPS, to decrease turnover times in the OR. Using a tool such as TeamSTEPPS can reduce operative room turnover times and increase the effectiveness and efficiency of the surgical team (Forse et al., 2011; Gillespie et al., 2010; Kodali et al., 2014; Weld et al., 2016). The sustainability of maintaining the productivity of TeamSTEPPS as a tool was discussed by (Forse et al., 2011), which addresses the need for continuous training and how much this training costs when accounting for the time and training. The benefits of increased productivity, though, are emphasized when the cost of OR time is taken into consideration (Childers et al., 2018; Rothstein et al., 2018).

Themes with Practice Recommendations

During the literature review, several themes were presented as essential to the project process. In a literature review, the following themes emerged that impacted the OR's efficiency and decreased TOT.

Morning Briefs

Studies that have directly observed operating room turnover times are rare, and those performed in the United States are even rarer. Operating room function is complex, and each facility has deviations in how they function. Due to this factor, studies observing OR turnover times and efficiency are not prevalent in the literature. A general understanding of the literature is that to improve the efficiency of an OR, reducing the amount of time between wheels out and wheels in is essential. Multiple research studies have proven that to decrease the time of wheels out to wheels in or turnover time (TOT), efficiency methodologies such as TeamSTEPPS and Lean Six Sigma are utilized to improve the efficiency of the OR (Forse et al., 2011). The operating room team conducting detailed

morning briefings on each case at the start of the day is essential in decreasing operating room turnover times (TOT). The format for the detailed morning briefings is TeamSTEPPS through a presurgical checklist (Appendix I). The basis for this training is adapted from military aviation, and this model has been used in many hospitals to improve perioperative communication and minimize errors. A standardized morning presurgical daily briefing process will lower turnover times and increase the efficiency of the operating room. The perioperative is a unique environment and social setting requiring a format that allows all to communicate effectively. TeamSTEPPS and presurgical checklists offer the structure of qualifying for this communication without the hierarchy of the typical OR. TeamSTEPPS allows everyone to have a voice in the OR brief format (Weld et al., 2016; Forse et al., 2011).

TeamSTEPPS is a formal briefing format like a safety checklist where each member introduces themselves and their role. Through TeamSTEPPS, everyone from the surgeon to the Surgical technician has an equal voice; the primary concern is patient safety and operating room efficiency. The end product is patient safety and increased operating room productivity. The initial investment in developing the TeamSTEPPS program and a standardized presurgical briefing process as part of the morning brief will increase OR productivity and revenue by decreasing the time of wheels out to wheels in for each surgery during the operating room's surgical day (Forse et al., 2011; Appendix J).

Data Collection

A classic operating room (OR) efficiency measure is turnover time efficiency. Most studies on increasing operating room efficiency focus on TOT and operational changes in the efficiency of the OR in hopes of creating statistically significant changes in productivity and efficiency. These studies often do not detail the organizational complexities and challenges associated with implementing and sustaining these changes to increase productivity in the long term. In the research study, the same method of tracking TOT is initiated as in this study (Bhavani et al., 2013). Part of TeamSTEPPS is that once the planning, training, and implementation are accomplished, there must be an ability to sustain the progress and momentum gained from the project in the long term.

The project data is collected through the EMR system located in each OR. The Circulating nurse will note the times correlating with wheels out to wheels in. The research did not match their TOT data with anesthesia data in the room, as in this study. Previous studies ensure that adding surgeries and noncontinuous services in a room will not be part of the study as the TOT times will be altered due to the surgeon's change for the room and the service type (Bhavani et al., 2013). A statistical analysis (paired t-test) will determine if the difference in the measurements before and after the project's initiation is significant.

Expectations

The operating room is a complex environment involving the finely planned management of several professions and areas of the health care facility. The staff must function as a unit and be competent and efficient in using the equipment in their designated areas. Without this organization running organized, the OR will not perform optimally, resulting in a loss of time and revenue. With the OR processing being portrayed as a team, improving team performance, communication, and organization is increasingly important to improve the performance and efficiency of the OR and the teams working in it (Forse et al., 2011).

Communication is a focal point of studies to improve OR productivity. Lack of communication in the OR appears to be the primary root cause of the issues with proficiency, effectiveness, and safety. Developing team training in healthcare through a well-developed program and infrastructure that has team coaches, mentors, and ongoing team support such as TeamSTEPPS and a standardized morning presurgical daily briefing process is shown to increase efficiency, patient satisfaction and even patient safety. Working on improving the surgical team through better communication during the morning brief and after each case through the debrief will increase OR productivity and decrease TOT.

TeamSTEPPS is a program developed by the military to provide a resource, evidence-based approach to training healthcare teams, such as surgical teams in the OR (Forse et al., 2011).

TeamSTEPPS is supported by a growing body of findings and evidence showing that developing and using this program can increase team communication, OR staff skills, and efficiency.

Increased communication is not the only advantage of this program; the OR team dynamics, OR efficiency, and patient satisfaction are also improved. Through TeamSTEPPS, the OR's efficiency and decrease in ToT are accomplished (Forse et al., 2013).

Productivity Improvement

Healthcare Managers are encouraged to improve their productivity, save costs, and increase productivity. Sometimes, these improvements are expected even with decreased resources and personnel, making increased efficiency even more essential in promptly supplying quality care to the patients. Hospitals tirelessly work to optimize patient satisfaction scores and improve patient experience and care. Continuous patient improvement occurs while hospitals strive to reduce overhead costs and increase efficiency.

Increasing the efficiency and turnover times in the OR correlates to the OR performing more surgeries during the day, weeks, and months. With increasingly long wait lists for surgery, which results in patient discomfort and possibly exacerbates patient issues, developing methods to increase proficiency is essential. In the pursuit of efficiency, administrators and managers must ensure that patient satisfaction is not compromised in search of faster turnover times, a decrease in overhead costs, and an increase in the facility's profit margin (Poksinska, 2016).

Setting, Stakeholders, and Systems Change

Setting: The project will be conducted in a six-suite OR of a small military hospital in the Southeast. **Participants:** The participants in the EPB project are the entire operating room staff and ancillary workers in the OR. **Stakeholders:** Four stakeholder analysis categories are the subject, players, context setters, and the crowd (Silver et al., 2016; Appendix E). The stakeholders in this project are the hospital command, the OR and ancillary staff, and the patients. The hospital leadership approved this project and supported its implementation in the operating room. Those in this group directly affect policy and procedure in the OR and the presurgical and post-surgical facilities. This group

must approve and support the project. These have an economic impact on the money saved/spent per surgical case and are not accounted for in extended TOT. The Context Setters group has low interest but high power and an increased interest in success but not in the daily implementation of the project. (Appendix E)

The Crowd group has low interest and power, and it consists of all of the other services and areas of the hospital that take patients from the operating room, such as the medical-surgical unit or intensive care unit, to the laboratory: pathology and pharmacy. (Silver et al., 2016: Appendix E).

System Change

This Surgical daily process has several steps that must take place before the patient can be brought back into the operating room and for the case to start on time. A disruption of any of these steps will result in a case delay. (Appendix I, reasons). An on-time start is essential in achieving increased cost-effectiveness and a patient-centered process. There must be continuous adjustment, evaluation, observation, and team buy-in to maintain on-time starts (Rothstein & Raval, 2018). The main issue is the sustainability of the momentum gained using TeamSTEPPS and the assurance that all new employees and providers maintain the same intensity of team communication and interaction as when the programs were initially started (King, 2021). Leadership in the operating room must take ownership of this process.

Strengths, Weaknesses, Opportunities, Threats

The strength of conducting this project at a military facility is that TeamSTEPPS is the basis for this training adapted from military aviation, and this model is used in hospitals to improve perioperative communication and minimize errors. TeamSTEPPS is an acronym for Team Strategies and Tools to Enhance Performance and Patient Safety. When conducted appropriately, studies have indicated that using TeamSTEPPS along with a standardized morning presurgical daily briefing process in the OR

improves first-case start percentages while decreasing turnover times and improving overall OR efficiency (Forse et al., 2011.)

TeamSTEPPS for many civilian organizations must be taught to each employee separately. In contrast, in a military facility, the TeamSTEPPS instruction is introduced to all new employees during hospital orientation. Therefore, implementing TeamSTEPPS as a part of the morning brief report at the start of the operating room day is already a task that is understood but not appropriately utilized. Another advantage is that since it is a military concept, some surgeons already use TeamSTEPPS for morning briefs at the start of the OR day. Also, there is material on properly utilizing TeamSTEPPS, which will be posted in each operating room.

The project's weakness is that it must have continuous staff and surgeon support for success. One threat is surgeons who do not want to change how they brief. Education was vital in gaining support from surgeons and staff for the project. With the hospital leadership's support, surgeon and staff support for the project was encouraged.

Successful integration of this process into the daily OR briefing and culture created the ability to streamline operating room processes and provide the ability to finish the OR day on time, preventing late rooms and even having the option of scheduling additional. Increasing productivity provides the numbers to sustain the current staff, and when numbers are increased, the ability to request additional slots and staffing is obtainable.

Multiple threats can contribute to the project's lack of success. A primary threat was staff not wanting to change what they were doing. Change is challenging, and encouraging the OR team to conduct TeamSTEPPS and a standardized morning presurgical briefing every morning did take work. Educating staff to see the big picture of OR efficiency encouraged participation. When TeamSTEPPS and a standardized morning presurgical daily briefing process are appropriately undertaken with all staff

contributing, the surgical day becomes more efficient, fewer issues arise, and patient safety is improved (SWOT Analysis Appendix D).

Risks

The most significant risk for the project was that not all of the surgeons and staff wanted to conduct TeamSTEPPS with a standardized presurgical morning briefing. With the hospital command's support for the project, surgeons and staff were on board with implementation of the project, which was essential to the project's success. The short time frame of this project was a risk in not collecting enough significant data to show change, but this was not the case as the time frame allowed for adequate training and data collection.

Implementation Plan with Timeline and Budget

Plan

The project compared TOTS in every working OR room. TOTs are evaluated through data analyses before the start of the project and then equated to comparable room days and surgical teams. This data was differentiated to the room TOTS after TeamSTEPPS, and a standardized morning presurgical daily briefing process was utilized each day. Training the OR teams took place in two phases, with TeamSTEPPS training and using the Standardized Daily Preoperative Surgical Huddle sheet and wheels-in-wheels-out log sheet for each room, which took place before the three-week start time. Phase I was for everyone on the surgical team to become efficient with the TeamSTEPPS process in using the presurgical check sheet during morning presurgical briefs and post-case debriefs. Only refresher training was needed in this area. Once training and room implementation were completed, each team member knew their role and the role of the others in the room, and each member was held accountable for upholding their part in performing TeamSTEPPS and presurgical briefs properly.

The tools used were chart audits and data analysis. The Charge Nurse and Project Manager audited the OR teams as they conducted their morning briefs and provided one-on-one instruction on using the tools provided to improve TOTS. Two subject matter experts sat in during the initial three weeks of briefing and provided feedback on improving morning briefs. The project was successful in showing that using TeamSTEPPS and a formatted presurgical brief at the beginning of the OR day, along with an organized presurgical briefing sheet, enhances communication, decreasing TOT and OR efficiency (Forse, 2011). The OR team's ability to communicate effectively in the perioperative environment is essential to ensure optimal patient safety while decreasing the time between wheels out to wheels in, and through the effective use of a structured TeamSTEPPS pre-operation brief sheet, and thi was accomplished in each room.

Communication is elemental to high-efficiency team performance. This communication is elevated through proper presurgical discussions, briefings, and situational assessments for each case. The initial TeamSTEPPS process eliminates many distractions from appropriate room setup and needed equipment, which increases patient satisfaction and decreases TOT (Osborne-Smith & Hodgen, 2017). Presurgical brief sheets were made available to all surgical staff at the start of the project and were used as part of the morning brief (Appendix J & K).

Objective

The desired outcomes from the project are that surgical TOTS are decreased and fall within the *25-minute* timeframe, increasing operating room proficiency and efficiency. A developed structured morning presurgical brief process eliminated the roadblocks that prevent OR efficiency and quick TOT.

Each room had laminated signage depicting the TeamSTEPPS structured format and what each group was responsible for knowing. Each circulating nurse had hard copies of the presurgical brief sheet, the TOT log sheet, and electronic copies sent to them as a backup.

Timing

Phase II is the implementation of the project. Results were noticed within two weeks of implementation. After three weeks of developing a rhythm for morning reports using TeamSTEPPS and a formatted presurgical brief during the formal morning briefs, the format became more routine. The objective of TeamSTEPPS is better team communication. Everyone on the team has a role and an obligation to the team. The team members must ask the correct questions to obtain the details needed for each case. Once the use of TeamSTEPPS is established, there will be a trackable difference in OR efficiency, including decreased TOT during and after the project's implementation. Significant changes were seen using TeamSTEPPS and a formatted presurgical brief. (Forse 2011). This project looked at three weeks of data after implementation to see if there is a trend towards better OR utilization and decreased TOT.

Data Analysis

Phase III: Assessing success. Time spent in room turnover was assessed accurately by auditing in-the-room times and out-of-room time. The nurse and anesthesiologist document these elements in their charting in the military electronic records system Military Health System (MHS) Genesis. Reports from the MHS Genesis data tracking system were used to obtain and verify past OR time data. Auditing charts verified the data, ensuring it matched the collection sheets. Data analysis determined why TOTS were not in the 25 minutes and what reason the room was delayed.

Goal

The goal was to increase operating room efficiency through increased OR proficiency. When ORs are not utilized, they cost money. Any tool that can decrease the time an active OR is not providing patient care increases the organization's revenue and efficiency (Childers et al.,2018).

Budget

This project is taking place in a Defense Health Agency (DHA) facility, and costs are absorbed as part of the organization's desire to improve efficiency and productivity in the operating room. Hospital

Command (Senior Leadership) approved the implementation of the project, and the posters and training materials are already available and owned by the military healthcare system.

Results

Data collected from the military electronic records system Military Health System (MHS) Genesis prior to the initiation of the EBP project was used to evaluate the success of the project. The data from before the training for the EBP project began was compared directly with the data collected during the project. (Appendix F through I)

The data of 308 surgical cases from various services was collected over three weeks during the project to determine whether a formal preoperative brief would reduce turnover times (TOTS) in the operating room (OR). The use of the preoperative brief impacted the OR, especially in rooms that tend to be bounced from one OR to another and may have another team running that room. The use of the preoperative brief increased communication for both teams, as they knew what they would need for each surgery and thus had the room ready when the surgeon was available. Furthermore, the sheet keeping track of TOTS for each case presented a more accurate input of data into the DHA debrief system, creating an overall more precise accountability of what issues each room had during the day, what caused each turnover delay in the room, and how long that delay was. The project did have an impact on TOT in the OR and how the data was input into the debriefing system accurately.

The room-circulating nurses were the individuals responsible for conducting the preoperational brief and collecting the TOT data for each case. They were responsible for writing down start times, out-

of-room times, and patient in-room times. If the time was over 25 minutes, they documented the reason there was a delay and what the cause of the delay was. The board runner-charge nurse was responsible for collecting the data for the project manager (DNP student) at the end of each shift so the data could be entered into an Excel spreadsheet. This data was then verified through the military electronic records system (MHS) Genesis so that the in-the-room times and out-of-room times were accurate and correlated with those that were written down. The (MHS) Genesis system was also used to collect the data that had not been turned in so all OR data would be accounted for during the collection time.

The data collected for this project did not contain any PHI. The data observed is in the patient's records, but this data is only for each case's in and out times. No other part of the record was accessed. MHS Genesis Case times are a category of their own; therefore, no other part of the patient's records.

The data was stored in a secure file. The collected datasheets were stored in a secure area that only the board runner and the project manager had access to during the project. The reliability of the collected data was verified by double-checking it with the EMR system, and any missing data was accounted for using the EMR system and surgical scheduler.

The data showed that 20% of cases had a turnover time greater than 25 minutes of the 20%, 7.6% were attributed to processes controlled by the OR staff. The remaining 12.6% of turnover time was attributed to issues related to surgeons, SDS/ APU, and different services in the hospital. (Appendix I) The turnover rate greater than 25 minutes before the project's implementation was 39.63% percent (Appendix F). However, it is not definitively possible to determine the percentage that was attributed directly to those processes controlled by the OR staff. The change in OR TOT through the implementation of this project was more significant than 3%, which directly relates to greater OR efficiency and fewer rooms running after the 1530 time for room utilization accountability. Through the staff utilizing TeamSTEPPS and the OR preoperational brief format, communication was increased

among all staff members, enabling staff to assist the staff in each room and effectively turnover cases between rooms.

All tools for data collection are owned or under licensure by DHA and do not require additional permission requests. The conformational data was collected from MHS Genesis using the system's statistical analysis for each room, from daily start times to the time out of the room to the time the next patient was in the room. The qualitative, nominal data collected is broken down by services and summarized in Appendix I &H, which has the mean average turnover time for each service and the standard deviation of the turnover times for the service. The data collected prior to project implementation showed a more significant number of cases with greater than a 25-minute TOT. (Appendix F & G) As expected, Orthopedics had the most substantial number of late rooms and the highest percentage of room TOT running over 25 minutes, but what was unexpected was that out of the 8% of their rooms that had late TOT, only 4% were due to the OR staff. Orthopedics' average room TOT was 26 minutes, one minute more than the required 25 minutes. Gynecology's mean TOT was 26.67 with an SD of 13.8 minutes and only four incidences showing late into the room; the data corresponds to when their rooms run late. When the gynecology rooms ran late, they were significantly delayed, but again, only 7.6% of these rooms' turnover times going over 25 minutes were the fault of the OR staff. One of the significant issues in the gynecology service is that surgeons are pulling double duty and being in L&D for a delivery at the same time they are supposed to start surgery. A breakdown of all data can be seen in Appendix F Through Appendix I. The t-analysis resulted in a 6.8 min difference in the mean time variable from before the project was implemented to after the project was completed. (Appendix M)

Impact

The project was successful in decreasing TOTs through the use of a standardized morning presurgical daily briefing process and the TeamSTEPPS format each morning. Another aspect of this project is that by documenting each case and why the rooms were late, the data input into the

DHA debrief system accurately states the TOTs and why each room was delayed. This system is in place, but narrowing how much of the delays were attributed to the OR staff was not able to be put into percentages. Furthermore, the project showed improvements of a 6.4-minute difference average spread over five days, resulting in a 32-minute difference a week. Over a month (20 OR days), 128.4 min; this is over 2 hours. Considering operating rooms cost money during downtime, at minimum, it is \$15-\$50 a minute, this averages to a savings of \$1,926-\$6,420 a month in OR operating costs from downtime alone. This could save as much as \$23,112-\$77,040 a year over a year, which is a substantial amount of cost savings for any organization using TeamSTEPPS and an organized preoperational brief each day.

Through the use of a standardized morning presurgical daily briefing process and TeamSTEPPS, communication was increased between the surgeon and the surgical team. Delays between surgeries and the time while surgery was conducted were used more efficiently due to the nurse having an organized brief of what they needed for each case and the ability to have axillary float nurse staff and surgical core technician staff obtain and set up these items before they were required in the surgical procedure. The project increased the OR's efficiency by more than just decreasing TOTs; the OR team was better prepared for what they needed to perform each procedure successfully in their OR. Through the use of a standardized preoperative brief, core technician staff and float nurse staff were able to successfully set up case carts and accessories for the following cases. Furthermore, the preoperative brief enabled effective communication as to what specifics the surgeon needed when cases were bounced from one OR to another to increase OR efficiency and room utilization.

A few challenges identified during the project were discovered upon implementation. The primary problem is that staff who work in the same service areas with the same surgeons do not feel a need to use the standardized preoperative brief since they know what their surgeon wants. These individuals were educated on the importance of using the preoperative brief for supporting staff and for the circulating nurse who may end up with one of their cases in another room due to "bouncing cases"

from one room to another to increase efficiency. The nurses in these areas were compliant with using preoperative briefs once the project started, but once the project was completed, they only used them if they thought their rooms were going to bounce from one to another. Another issue is that a staff member did not want to fill out the TOT brief, and most of the data had to be obtained from the Genesis EMR system. The issue was corrected when they were educated that when a room was late, the default for the project was that any late room not documented was the OR's fault, even though, as the data shows, this is generally not the issue. Due to not wanting their room to be at fault for all late TOTs, the nurse did comply, adding to the validity of the collected data.

Another result on top of decreasing TOTs with the project is that the nurses used the TOT sheet to note all issues with the case, leading to accurate data input to the DHA's debrief system, providing leadership a precise picture of what is going on in the OR and each supporting services and how specific issues in these areas impact OR operations and times.

The project is sustainable as the OR staff enjoys the use of a standardized OR preoperative brief that is defined as assisting the circulating nurse in not forgetting essential details in the morning brief. The TOT time sheet is also utilized in that it provides the nurse with accurate TOTs and provides a format to document other issues in the OR that have to be reported in the debrief system note.

Dissemination Plan

The EBP project and results will be presented at the annual EBP presentation in September. The final product for this project will be a PowerPoint presentation to the OR Perioperative Team in August. The Perioperative team will hear about the findings through a PPT presentation, which will also be used in other presentations as required. The presentation will include a poster board with the project proposal, the project results, and how it improved OR efficiency and decreased turnover times in the OR. The projects presented during this forum that contribute to the most significant impact on the facility will then be presented at the Defense Health Agency (DHA) in San Antonio, which will be in

November. The manuscript will be presented to the University of Saint Augustine Health Science students, and staff on poster board and as a PowerPoint presentation through an established account; the manuscript will be submitted and published in USA@SOAR. The manuscript will be further developed for submission to AORN review.

Conclusion

What is the effect of a standardized morning presurgical daily briefing process along with the use of TeamSTEPPS on TOT over three months in the operating room compared to no organized communication?

The research behind this question is significant in showing that increasing communications and streamlining processes can impact efficiency and productivity. Simplifying processes and utilizing TeamSTEPPS as a platform for preoperative briefing is a way to improve communication and decrease TOT in the OR. Evidence states that improving productivity and efficiency through the use of a standardized morning presurgical daily briefing process and TeamSTEPPS system and creating a culture change resulting in permanent change can be accomplished.

The data shows that the effects of a daily standardized morning presurgical briefing process, along with the use of TeamSTEPPS, will improve turnover times better than a presurgical briefing without structure or organization.

The organization may have to utilize a multifaceted approach to maintain long-term results. Increased productivity, efficiency, and patient satisfaction are achievable using a daily standardized morning presurgical briefing process, along with the use of TeamSTEPPS at the beginning of the debriefing process. Team buy-in is essential to success and longevity; each new employee must be integrated into the system as part of the OR culture.

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Wolfskill R. Keith (May 2023), *Turnover Times Protocol in the OR*, SOP #65 BACH OR, Blanchfield Army Community Hospital, FT Campbell, KY

Table 1

Implementation EBP Project Budget

Expenses	est. \$	Revenue	
Indirect- Included in regular operating costs		Billing	\$0
Salary and benefits x 1 hour for training, variable staff.	\$280 x 1	Supplies/ patient	\$0
Supplies x 1 patient/ day, variable patient count	0\$	Grants	0
Overhead	\$0		
Supplies – office	\$<100		
Estimate Total Expenses	\$380	Estimate Total Revenue	0
Net Balance			\$NA

Note: All budget entries are estimates. Expenses are based on means. Revenue estimates do not include potential cost avoidance due to realized outcomes. All costs associated with salary and benefits, patient care supplies, and overhead are fixed indirect expenses unrelated to this project. Project costs are nominal for printing and laminating, under \$100.

Appendix A

Summary of Primary Research Evidence.

Citation	Design, Level Quality Grade	Sample Sample size	Intervention Comparison (Definitions should include any specific research tools used along with reliability & validity)	Comparison/Control (IV)	Theoretical Foundation	Outcome Definition	Usefulness Results Key Findings
(Forseet al., 2011)	Level II Grade B	The perioperative staff of a teaching hospital in Setting: Hospital Operating Room Location Omaha Nebraska Turnover Times decrease, and SQUIP scores from 78-97%	TeamSTEPPS training is provided to all perioperative staff. Self-assessment conducted. 1 year, 2 months training before the actual trial started.	Compared to previous OR TT TeamSTEPPS Training 9 months All ORs were part of the study during this time		Decrease in TT, 43 +- 2.4 m to 35.5 min +- 2.1 min No controls, TeamSTEPPS to decrease TT times and increase SQUIP scored, decreased PT mortality to less than 1% at the end of the study. Focus on OR staff and Patient safety	Yes, a study showed that TeamSTEPPS does work if used properly
(Kodialiet al., 2014)	Level II Quality B	Perioperative Staff OR Academic Medical Center general and gastrointestinal surgery (GGI) OR Hospital OR 793 beds 43 ORs Boston MA	Development of daily debriefs, eliminating overlaps in OR, and increasing communication among staff.	They compared data from the year prior. Streamlined OR process GGI subject of study		Decrease in TT from 49 min to 45 mean. CI-99% Focus on Staff in the OR	Yes: Increased communication and each individual knowing their task is essential. TeamSTEPPS assists in giving these tools to the group.
(Bhatt et al., 2014)	Level I Quality A	Perioperative Staff	applying ACMGE core competencies of a	3 Control groups studied over		Using all surgical specialties as	Yes:

		511 beds, 24 OR, academic medical center. Emory University School of Medicine, Atlanta, GA	system-based practice to increase Efficiency	two weeks in Orthopedics and vascular surgery The study was conducted for 16 days using the same technique for timing as the control.		controls (n=237), mean TT (hh:mm: ss) was reduced by 0:20:48 min (95 % CI, 0:10:46–0:30:50), from 0:44:23 to 0:23:25, a 46.9 % reduction. The standard deviation of TT was reduced by 0:10:32 min, from 0:16:24 to 0:05:52 and frequency of TT≥30 min was reduced from 72.5 to 11.7 %. P<0.001 for each. Using Vascular and Orthopedic surgical specialties as controls (n=13), mean TT was reduced by 0:15:16 min (95 % CI, 0:07:18–0:23:14), from 0:38:51 to 0:23:35, a 39.4 % reduction. The standard deviation of TT was reduced by 0:08:47 from 0:14:39 to 0:05:52 and frequency of TT≥30 min reduced from 69.2 to 11.7 % . P<0.001 for each: CI=95%	Though not TeamSTEPPS oriented, it did show how streamlining processes and increasing communication of the team would assist in decreasing TT
(Weld, et al., 2016)	Level II Quality B	Perioperative Staff 450 beds, 16 ORs San Antonio Military Medical Center, Fort	Use of TeanSTEPP communication among staff to increase OR efficiency	A total of 1481 cases with TeamSTEPPS and 1513 cases before TeamSTEPPS were compared.		TeamSTEPPS was 115 minutes compared to 96 minutes the year TeamSTEPPS was implemented (P < .01). This 19-minute improvement on average per orthopedic case was similar to the	Yes, Supports PICO using TeamSTEPPS for improved OR efficiency

		Sam Houston, TX (Brooks Army Medical Center, BAMC)				11-minute improvement realized by the urology service. In terms of on-time first-start rates, the orthopedic rate improved from 63% to 75% of first cases starting on time with TeamSTEPPS implementation (<i>P</i> = .01). By comparison, the urology service experienced an improvement from 49% to 70% of first cases starting on time.	and decreased Turnover times
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Legend:

TT-Turnover Times

OR-Operating Room

TeamSTEPPS- Team Strategies and Tools to Enhance Performance and Patient Safety

AORN- American Operating Room Nurses Association

OSHPD- Office of Statewide Health Planning and Development

ACGME- Accreditation Council Graduate Medical Education

Appendix B

Summary of Systematic Reviews (SR)

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
(Forse et al.,2011)	Level II Grade B	TeamSTEPPS can be used to decrease OR turnover times TT	PUBMED OVID CINAHL 2004-2023	TeamSTEPPS in OR efficiency	The development of TeamSTEPPS and how it will increase efficiency.	A decrease in TT allows for increased surgeries in the OR and decreases labor costs Due to working after-hours.	Increased communication between the perioperative team decreases patient mortality and increases patient satisfaction.
(Kodali., et al.,2014)	Level I Grade B	Streamlining TT process can better staff TT process	PUBMED OVID CINAHL 2004-2023	OR efficiency through decreased turnover times	Developing team dynamics in and out of the room in an OR increases efficiency and decreases TT.	Decreased TT with streamlined processes, increased team dynamics, and improved communication	Beneficial: Research showed that Increased communication among all staff could decrease TT when done at the beginning of the OR day in an organized, precise manner.
(Bhatt et al.,2014).	Level II Grade B	Streamlining the TT process decreases TT times significantly	PUBMED CINAHL 2004-2023	Increased OR efficiency through communication strategies	You are comparing TT before and after training in a facility.	Shows that applying ACMGE core competencies of a system-based practice to increase efficiency	Beneficial: Developing a program focusing on increased communication and team involvement decreases TT.
(Childers, et al.,2018).	Level II Grade B	The cost per minute on an OR can be evaluated	PUBMED OVID CINAHL 2004-2023	The cost per minute of an OR and the costs of when it is not running	Averaging cost over multiple facilities Duration was for FY 2014 Fidelity	It gives a cost for OR use per minute that needs to be adjusted for inflation and increased labor costs. While the OSHPD provides detailed guidelines for cost allocation, differences across facilities may exist.	Partially- does not have anything to do with turnover times; it does, however, justify the reason to decrease downtime in an OR. Useful- yes
(Gillespie, & Murray, 2010)	Level II Grade A	Overwhelmingly suggests that team training is a necessity in the OR	PUBMED CINAHL 2004-2023	Team training can improve the efficiency of an OR and decrease the time from stop to start, increasing efficiency.	Through the use of time management training and communication, efficiency is improved.	The results of this research review overwhelmingly suggest that team training can improve team-based outcomes. All of the studies in which team-based outcomes were measured had post-	Limitation: Research is about communication and how it does increase efficiency but not in decreasing TT. Does emphasize the importance of increased communication

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
						intervention improvements.	
(Weld, et al, 2016)	Level II Grade B	Using Team STEPPS, this goal was accomplished	PUBMED CINAHL 2004-2023	TeamSTEPPS development and how it increases efficiency in healthcare	Compared literature implementing increased communication in the OR	Through the use of TeamSTEPPS, communication was improved, resulting in a more efficient OR	Beneficial: Developing a program of preoperational team communication decreases turnover times and improves on-time, which improves the OR's Efficiency.
(Lee, et al.,2019) Improving operating room efficiency	Level II Grade B	Decreasing wheels out to wheels in time increases efficiency and profitability.	PUBMED OVID CINAHL 2004-2023	Decreasing the time from wheels out to wheels in an OR through better communication	Research of teams who used group communication to increase efficiency	Team dynamics and communications directly affect time from wheels out to wheels in and OR efficiency.	Beneficial: Demonstrates that proper communication is critical to running ORs efficiently.

Legend:

TT-Turnover Times

OR-Operating Room

TeamSTEPPS- Team Strategies and Tools to Enhance Performance and Patient Safety

AORN- American Operating Room Nurses Association

OSHPD- Office of Statewide Health Planning and Development

ACGME- Accreditation Council Graduate Medical Education

Appendix C

Data Collection Tool for Evaluation: MHS Genesis and DHA ORDIT Debrief system. (used in a DHA facility for DHA proficiency)

Signage: 6 signs laminated for each OR.

Auditing: An Excel spreadsheet was developed to track the turnover times of each OR and each surgical service.

Notetaking sheets for TeamSTEPPS: designed by R. Keith Wolfskill (Public Domain)

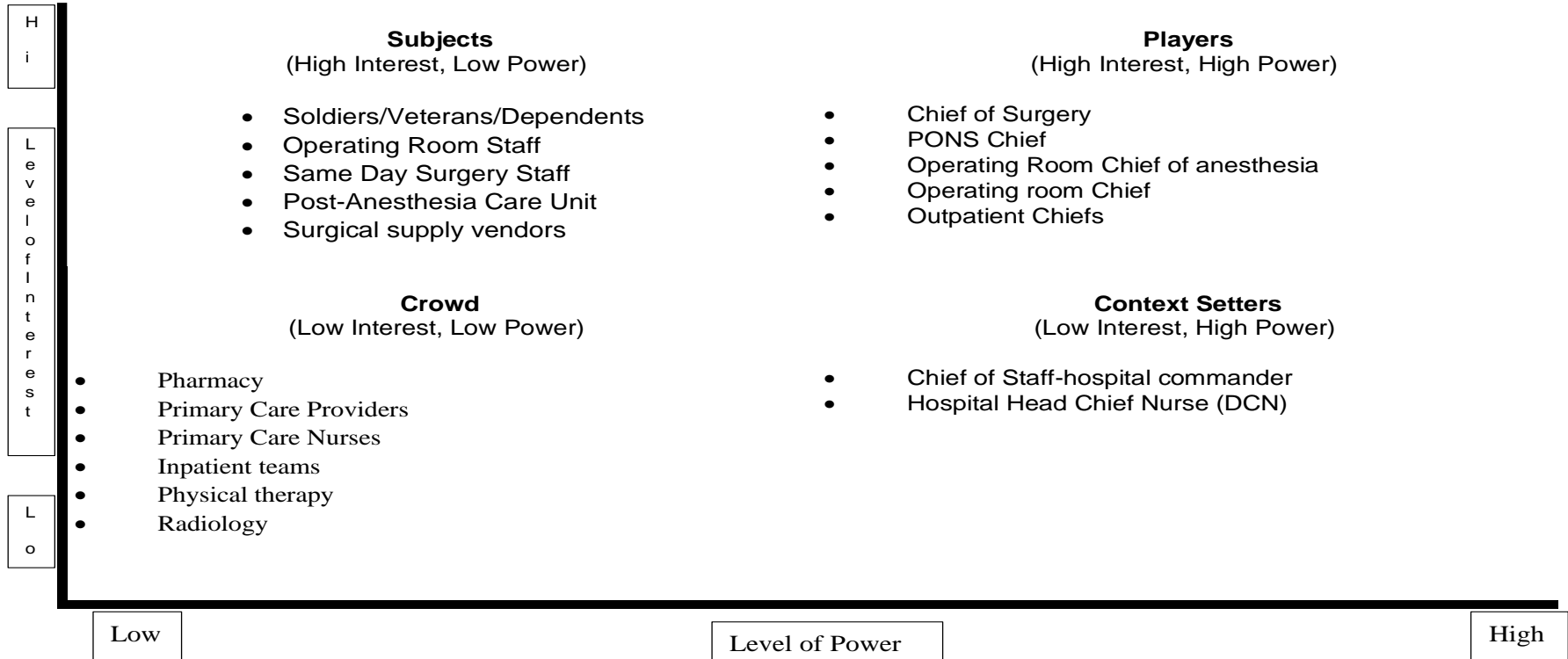
Appendix D

SWOT ANALYSIS

<p>STRENGTH</p> <p>The project is conducted at a military facility TeamSTEPPS part of orientation training Do not have to teach the TeamSTEPPS concept at the beginning Some surgeons use the TeamSTEPPS Process Command Support</p>	<p>WEAKNESSES</p> <p>Surgeon Support Staff Support Change is difficult</p>
<p>OPPORTUNITY</p> <p>Successful integration of TeamSTEPPS process Increasing OR productivity Developing Team Concept in the OR Streamlining OR day Ability to schedule additional cases Decreasing late rooms</p>	<p>THREATS</p> <p>Culture of change Surgeons do not want to change or adapt Staff not wishing to make process change Sustainability Complacency</p>

Appendix E

Stakeholder Analysis



Power versus interest grid Optimization of turnover times at ***** Community Hospital. The y axis is the stakeholder's political interest in the quality of the care problem and the X axis is the stakeholder's organizational power or control over the system.

Adapted from: **How to Begin a Quality Improvement Project**
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 Adam V. Weizman,§ Alison Thomas,* Glenn M. Chertow,|| Jihad
 Nesrallah,†¶ Chaim M. Bell,**†† and Christopher T. Chan‡

Appendix F

Mean Turnover Time by Service Type

Pre-project implementation

All values are rounded to the nearest whole number except for total OR values.

SERVICE	MEAN Turnover Time	Standard of Deviation
General Surgery	31 min	24.37 min
Gynecology	30 min	20.83 min
Ophthalmology	23 min	5.31 min
Oral Maxillofacial Surgery	26 min	3.53 min
Orthopedics	36 min	48.25 min
Otolaryngology	24 min	49.84 min
Podiatry	14 min	4.46 min
Urology	31 min	13.04 min
Total for OR	26.62	18.78 min

Wolfskill, 2024

Appendix G

Frequencies and Percentages of Turnover Times > 25 Minutes and Percentage due to OR
Pre-project implementation

SERVICE	COUNT	PERCENTAGE OF ALL CASES
General Surgery	26	42.62
Gynecology	10	38.46
Ophthalmology	3	30
Oral Maxillofacial Surgery	3	42.85
Orthopedics	22	37.92
Otolaryngology	14	41.17
Podiatry	2	20
Urology	8	53.33
All Services	88	39.64

Wolfskill 2024

Appendix H

Mean Turnover Time by Service Type

Post project implementation

SERVICE	MEAN Turnover Time	Standard of Deviation
General Surgery	22. min	8.45 min
Gynecology	26 min	13.8 min
Ophthalmology	16 min	8.12 min
Oral Maxillofacial Surgery	24 min	3.41 min
Orthopedics	26 min	6.7 min
Otolaryngology	17 min	4.56 min
Podiatry	13 min	4.46 min
Urology	20 min	4.16 min
Total for OR	20.2	9.32 min

All values are rounded to the nearest whole number except for total OR values.

Wolfskill, 2024

Appendix I

Frequencies and Percentages of Turnover Times > 25 Minutes and Percentage due to OR

Post project implementation

SERVICE	COUNT	PERCENTAGE OF ALL CASES	PERCENTAGE DUE TO OR
General Surgery	13	4.71	1.0
Gynecology	4	1.45	0.72
Ophthalmology	6	2.17	0
Oral Maxillofacial Surgery	2	0.72	0
Orthopedics	22	7.97	3.98
Otolaryngology	7	2.54	1.81
Podiatry	0	0	0
Urology	2	0.72	0.14
All Services	56	20.28	7.65

Wolfskill 2024

Appendix J

OR ____ Service: _____ Surgical TOT Checklist DATE: _____

<u>Case#</u>	<u>In room</u>	<u>Out of room</u>	<u>If >25 min? Reason:</u>
1	_____	_____	_____
2.	_____	_____	_____
3	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____
11.	_____	_____	_____

Reasons:

SDS: Pt not ready, Pt arrived late, PT has to use the bathroom, consent issues

Anesthesia: Paperwork not done, difficult IV,

Surgeon: Consent issues, H&P not done, paperwork not signed, Late, unavailable, orders.

SPD: Contaminated sets, sets unavailable, missing sets, broken sets, wrong case pulled.

Circulator/room: prep set up, turnover set up, other issue (scheduling, staffing)

Housekeeping: late to respond, slow turnover in room

Appendix J

TeamSTEPP Brief

Date: _____

OR# _____

Case #1	Case #2	Case #3	Case #4
Procedure:	Procedure:	Procedure:	Procedure:
Allergies:	Allergies:	Allergies:	Allergies:
Medications:	Medications:	Medications:	Medications:
ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:
Position:	Position:	Position:	Position:
Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both
Additional Surgical Items:	Additional Surgical Items:	Additional Surgical Items:	Additional Surgical Items:
Implants Yes or No	Implants Yes or No	Implants Yes or No	Implants Yes or No
X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:
Dressing:	Dressing:	Dressing:	Dressing:
Specimens:	Specimens:	Specimens:	Specimens:
() Postop Debrief Completed)	() Postop Debrief Completed)	() Postop Debrief Completed)	() Postop Debrief Completed)

Appendix K

TeamSTEPP Brief

Date: _____

OR# _____

Case #5	Case #6	Case #7	Case #8
Procedure:	Procedure:	Procedure:	Procedure:
Allergies:	Allergies:	Allergies:	Allergies:
Medications:	Medications:	Medications:	Medications:
ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:	ABX: Lidocaine % with epi Marcaine % with epi Experal Surgical Tisseal Flosseal Heparin Epi Other:
Position:	Position:	Position:	Position:
Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both	Arms: Out, or Tucked: R, L, Both
Additional Surgical Items:	Additional Surgical Items:	Additional Surgical Items:	Additional Surgical Items:
Implants Yes or No	Implants Yes or No	Implants Yes or No	Implants Yes or No
X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:	X-Ray: Yes or No Foley: Yes or No Closing Sutures:
Dressing:	Dressing:	Dressing:	Dressing:
Specimens:	Specimens:	Specimens:	Specimens:
() Postop Debrief Completed)	() Postop Debrief Completed)	() Postop Debrief Completed)	() Postop Debrief Completed)

Appendix L

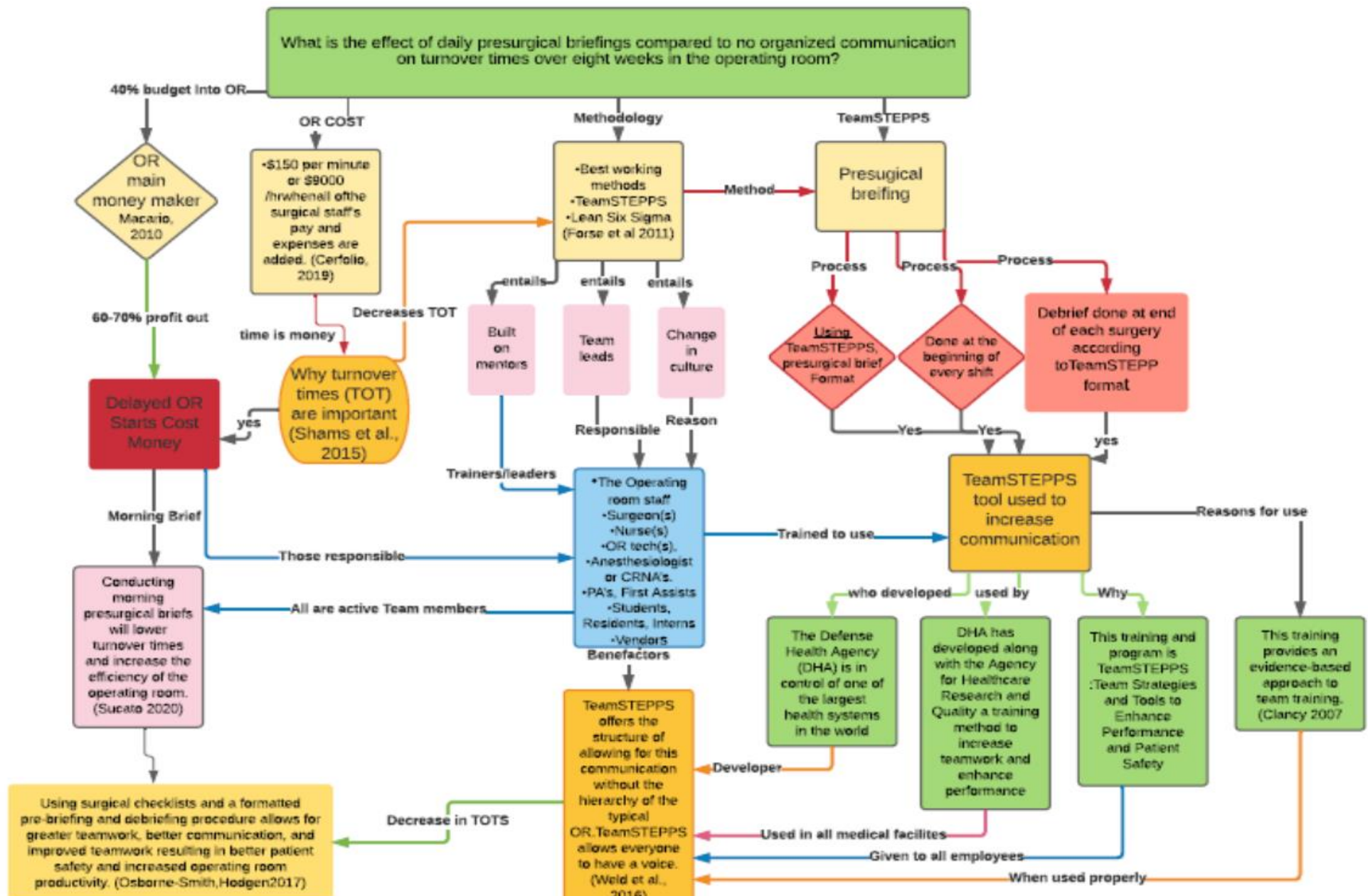
T-Test for 2 Dependent Means
The value of *t* is -4.87216.

Pre-project	Post-project	Diff (T1-T2)	Dev (Diff-M)	Sq. Dev
31,30,23,26 36,24,14,31	22,26,16,24 26,17,13,20	-9 -4 -7 -2 -10 -7 -1 -11	-2.62 2.38 -0.62 4.38 -3.62 -0.62 5.38 -4.62	6.89 5.64 0.39 19.14 13.14 0.39 28.89 21.39
		M: -6.38		S: 95.88
<u>Difference Scores Calculations</u>			<u>T-value Calculation</u>	
Mean: -6.38 $\mu = 0$ $S^2 = SS/df = 95.88/(8-1) = 13.7$ $S^2_M = S^2/N = 13.7/8 = 1.71$ $S_M = \sqrt{S^2_M} = \sqrt{1.71} = 1.31$			$t = (M - \mu)/S_M = (-6.38 - 0)/1.31 = -4.87$	
<p>The value of <i>t</i> is -4.87216. The value of <i>p</i> is .00181. The result is significant at <i>p</i> < .01.</p>				

T-test calculator for 2 dependent means. Social Science Statistics. (n.d.).

Appendix M

Increasing Operating Room Efficiency Through Decreased Turnover Times



Appendix N

Teaching Plan:

Initial Information: All employees of this facility are provided TeamSTEPPS training, both an online portion and face-to-face training, as part of their hospital and nursing orientation.

Step One: Each month, the second Thursday morning is set aside for training in each section of the hospital. This training day will be the time that the project manager (DNP student) will go to each surgical department and discuss the project's implementation and how the success of the project will provide each of the surgeons and departments a more efficient OR day with fewer complications and issues throughout the surgical day. T

Step Two: A) During the same training time, initial training will be done on OR presurgical briefing, steps for proper briefing, and how all parties can obtain the most out of this brief to increase OR efficiency and decrease TOTS.

B) Subject matter experts will be provided with additional training on TeamSTEPPS and the presurgical briefing process. These individuals will be the Charge Nurse, Head nurse, and all other nurses who fill in as Board Runners.

Step Three: Training will start in the OR using TeamSTEPPS format using the presurgical brief sheet. Subject matter experts and project managers will monitor ORS to ensure that they are conducted properly.

Step Four: Once TeamSTEPPS and the presurgical process are trained and implemented, data will be collected to determine if the conduction of an organized presurgical brief using the TeamSTEPPS process will decrease turnover times, decrease late rooms, and prevent excess overtime and Soldiers staying late to cover late rooms.

Step Five: Data will be collected, tabulated, and used using a paired T-test statistical analysis. The data will be tabulated and evaluated, and information will be documented and presented.