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Aim High, Win Big: Optimizing the OR Nurse's Skills to Improve Surgical Outcomes

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Abstract

Operating room nurses are constantly challenged with new surgical procedures and technology that affect the delivery of safe patient care. A deficiency in skill sets was identified among 50% of OR nurses in this microsystem. A structured scrub training program will improve the performance of novice and advanced beginner nurses to prevent the occurrence of adverse events. This program includes 320 hours of exposure to scrub the top ten procedures of two specialty services after the nurse learns how to circulate. The ability to circulate and scrub is an indication of high performance. It is expected that the OR nurse will independently circulate and scrub 60-80% of surgical procedures. An educational support team will guide the progress of the learners to ensure a successful transition. This evidence-based program will also apply non-technical skills using principles of AORN practice, TEAMSSTEPS, and SPLINTS that are effective in the recognition and prevention of surgical errors. High performance, teamwork, and collaboration must be integrated into the OR culture to sustain excellent work at all levels. Exemplary professional practice through transformational leadership is supported by the Magnet program at this facility to ensure that change is driven from the frontlines and best outcomes are delivered.

Clinical Leadership Theme

The title of this prospectus is "Aim High, Win Big: Optimizing the OR Nurse's Skills to Improve Surgical Outcomes." Staff development through transformational leadership is the theme. It aims to increase the skill sets of novice and advanced beginner nurses who can only circulate by learning the scrub role. The task of developing staff into highly skilled professionals is a CNL's commitment to nursing excellence and aligns with the department's goal to improve operational efficiency and patient care outcomes. OR nurses who can circulate and scrub demonstrate excellence because their performance can strongly influence the work environment by improving the quality of patient care as well as maximize efficiency and productivity.

The training is based on the Association of Perioperative Nurses' (AORN) recommended guidelines and practices, principles of Team Strategies and Tools to Enhance Performance and Patient Safety (TEAMSSTEPS), and Scrub Practitioner List of Intraoperative Non-Technical Skills (SPLINTS). The scrub training includes 320 hours of guided clinical immersion for approximately 8 weeks. This approach will foster a collaborative relationship between the clinical nurse leader (CNL), preceptor, unit educator, and manager, who will support the learner complete a successful orientation. The projected outcome will be transformed nurses who are competent and skilled to circulate and scrub 60-80% of procedures from two chosen specialties. It is imperative to work on this now because there is a need to sustain a strong team of highly skilled nurses who are committed to improve the quality of care and outcomes for patients in the OR.

Statement of the Problem

A microsystem needs assessment was performed and found a deficiency of skill sets among OR nurses who provide surgical care for patients in a Level I trauma center. The PICO (Patient Intervention Comparison Outcome) question to consider is "will a mandatory standardized scrub training program optimize the skills of a circulating nurse to improve surgical outcomes?" A data analytic tool used by this microsystem revealed that at least 40% of the nurses lack the skill sets to perform 60% of the total procedures in the OR. A mix of novice, advanced beginner, and competent RNs do not scrub. Scrubbing is not mandatory before and after orientation.

Staff nurses must be competent to circulate and scrub about 60% to 80% of the total procedures in the OR. Due to lack of skill sets, nurses are repeatedly assigned to surgical cases that they are most familiar with, neglecting the need to pursue learning to avoid exposure to more challenging procedures. This deprives the nurses of the opportunity to extend learning more complex and high risk procedures that are often performed in a Level I Trauma center. When exposed to more complicated procedures, surgical errors, adverse events, and surgeon dissatisfaction occurred which reflected the nurse's poor performance and lack of competency. Workloads increased and burnout began to surge for the more experienced nurses. Staff attrition resulted in "brain drain" because of decreased job satisfaction and burnout. The OR is a highly specialized environment that provides surgical care for patients with complex and debilitating diseases. It is necessary for OR nurses to become highly skilled and effective because patient outcomes are affected by individual and team performance (Sykes, Gillespie, Chaboyer, & Kang, 2015).

The nationwide shortage for perioperative nurses has forced hospitals and health care systems to fill staffing gaps by utilizing agency nurses for temporary work assignments. Surgical technicians whose primary role is to scrub and whose average pay is less than a senior nurse's salary have filled the need for scrub roles. Surgical techs have limitations in practice that require the supervision of a RN to perform other tasks. They are not licensed practitioners and are unable to administer prescribed medications. Surgical techs possess a wealth of knowledge about surgical instrumentation and procedures that enable nurses and surgeons to build a partnership that enhance team dynamics and performance. Nurses who are less experienced in the OR are often assigned with highly skilled ST to balance the knowledge and skills needed for a procedure. This resulted in a widened gap in skill sets among RNs that became evident on all shifts. Nurses who have more experience were assigned to cover evening and night on-call shifts. This became a very expensive solution that resulted in $8 million worth of overtime pay in 2016.

The Ishikawa diagram (see figure 1) illustrates the causative factors for the deficient skill sets of OR nurses. One of the major sources of this deficiency is the absence of a perioperative curriculum that could provide structure and support system to coach and mentor OR nurses to improve their skill sets. Nurses who are employed in an academic medical center that provides emergency care services to high risk patients are expected to be competent and versatile to perform procedures at any given time. A mandatory scrub training is the best way to optimize a circulating nurse's productivity and efficiency.

Fifty percent of all medical errors occur in the OR, 40% account for diagnosis and treatment-related errors, and 30% are caused by communication failures (Bharathan & Aggarwal, 2012). Surgical errors are more likely to occur when the OR staff becomes

complacent, bored, and distracted (Landers, 2015). Novice and beginner nurses are prone to commit errors in judgment because they lack the ability to manage complex procedures and anticipate potential problems. Nurses who scrub can demonstrate proficiency and respond to different situations with competence and confidence. As the modern OR evolves with complex and advanced technology, nurses will need to build and improve their competencies with the right knowledge and skills to adapt to a fast-paced, changing environment. It is necessary to implement a structured educational program that involves change, provide support for the change, and monitor compliance with new processes (Landers, 2015).

ENVIRONMENT

Fast-paced Level I Trauma Center with 21 OR suites

Highly specialized procedures

Too many equipment & instrumentation to learn

Low staff morale

PROCESS

Absence of perioperative curriculum for new grad RNs

RN scrub experience not mandatory

3-month orientation to learn circulating duties ONLY

Lack of standard process for scrub training

Lack of incentive to learn new skills & scrub

Loss of experienced senior staff: burnout & aging

50% RNs can ONLY circulate but not scrub

Staff RNs refusing difficult assignments

More surgical techs to fill scrub roles

Challenges with talent search for experienced nurses

Cross-training & scrubbing is not mandatory

Understaffed

Increase in number of contractual staff

PEOPLE

PATTERNS

OR nurses with deficient skill sets

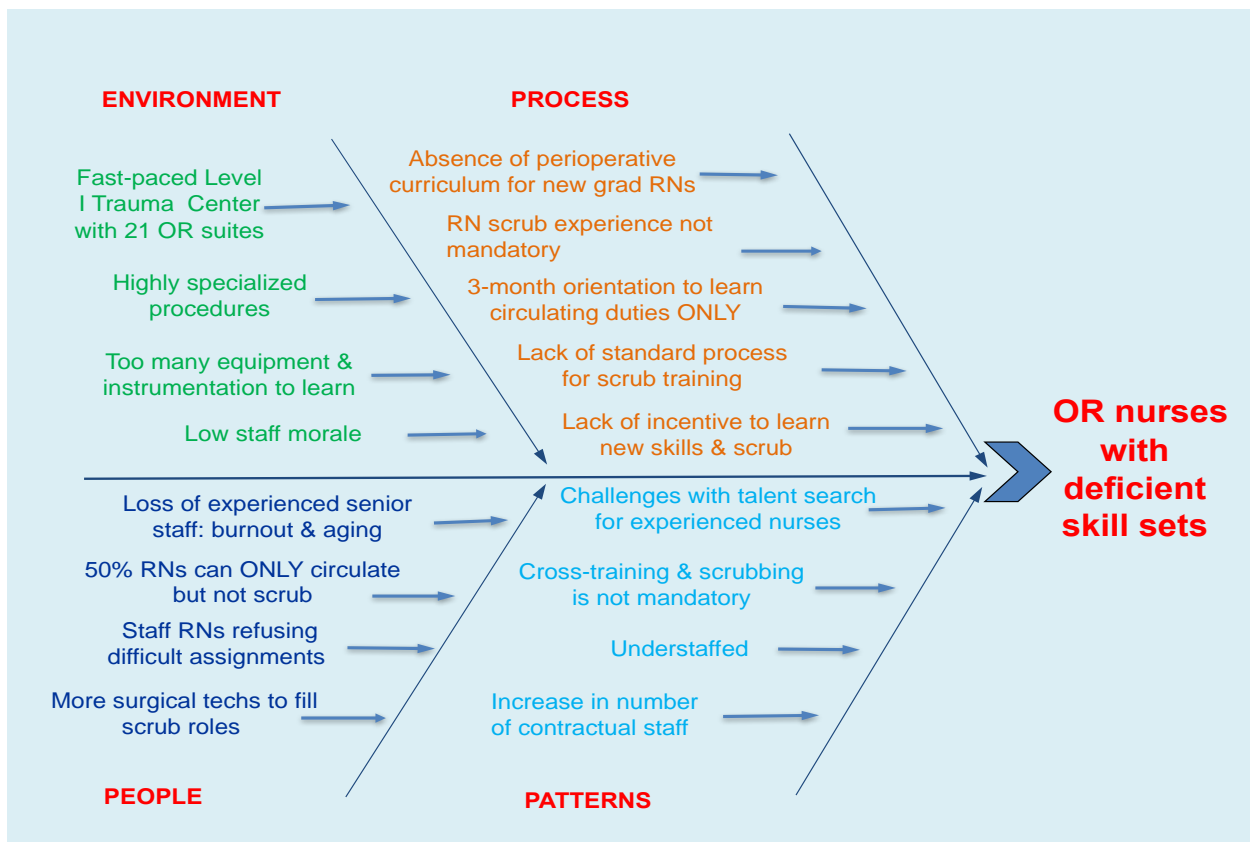*Figure I.* The Ishikawa diagram illustrates the causes of deficient skill sets among OR nurses.

Project Overview

This quality and process improvement aims to implement a standard curriculum that will guide and support the RN in the acquisition of core knowledge and clinical skills to become an efficient scrub in the OR. It begins after a three-month subsequent rotation to learn circulating duties on areas such as general surgery and its subspecialties, vascular, thoracic, otolaryngology, plastics, orthopedics, neurosurgery, and cardiac. The project will benefit the RN with at least two to three years of previous OR experience, or a more senior nurse who wishes to pursue professional growth and development. An experienced surgical technologist or a more experienced RN will teach the learner to scrub the top ten procedures of two combined specialties for a total of 320 hours.

This training will also give OR nurses the opportunity to acquire more skills by immersing in specific procedures that will be carefully selected by the members of the support team: preceptor, CNL, educator, service leaders, or the manager. It is impossible to scrub all the procedures within a short period of time, thus the need to target technical and non-technical skills that can be applied to majority of the procedures. An in-depth knowledge of anatomy and physiology is basic to every OR nurse's clinical competency and is crucial in understanding the human body's physiological response to the surgical procedure. Non-technical skills such as situational awareness, communication, teamwork, and leadership will be applied and evaluated using the principles of TEAMSSTEPS and SPLINTS. A performance and skills checklist will be used as tools to measure the scrub nurse's competencies. A timeline will be established to monitor any learning curves that could impede progress. Bimonthly evaluations will be delivered to support the progress of the scrub nurse.

The goal of this project is to develop the proficiency of the OR nurses. Long-term benefits include a more versatile staffing committed to reduce surgical errors, adverse events, and potential lawsuits. The following objectives are identified to ensure the success of the learner at the end of the program:

1. Identify the differences in the roles of the circulator and scrub nurse.

2. Independently scrub the top ten procedures of combined specialty services in general surgery and plastics, orthopedics and neurosurgery, or cardiovascular and thoracic, including emergency procedures with minimal assistance.

3. Communicate any potential risks to patient safety in a timely manner.

4. Maintain surgical asepsis at all times.

5. Transition to independent circulator and scrub roles at the end of the 6-month orientation.

The preceptor must strive to build an open and respectful working relationship with the learner, especially when significant challenges are encountered during the orientation process. The complexity of surgical procedures can be mentally exhausting and the preceptor should be available to provide support at all times. Specific goals for learning should be established and discussed at the beginning of the day and can be mentioned as, "today we are going to learn Dr. N's Whipple procedure, his preferred sutures, instruments, supplies, and the steps performed to complete the anastomosis." At the end of the day, the scrub nurse should be given the opportunity to ask questions and clarify any conflicting situations encountered. Critical thinking is a crucial element for this role and it enables the scrub nurse to follow through every step of the procedure. The nurse must learn to focus on details, anticipate needs at the right time, be

attentive to the surgeon's voice and directions, and avoid disruptions at all cost. Partnership

between the circulator, the surgeon and other members of the surgical team will foster growth

and ensure the learner's transition to a more versatile OR nurse.

The transformation of the OR nurse supports the global aim to build a stronger workforce

that prioritizes patient safety. Proficiency in two roles are better than one. The approach known

as "see one, do one, teach one" is common in the OR, however, transformation happens more

effectively when the right support, time, and resources are provided. An effective support team

must continue to collaborate and communicate to promote learning and follow-up improvements

that are vital to the success of the scrub nurse.

Rationale

The fundamental purpose of this training is to increase the value of the OR nurse by

learning two roles, a circulator and scrub. The Institute of Medicine (IOM) suggests that nurses

should practice to the full extent of their education and training (Battie, 2013). A common

challenge is that nurses do not have the same level of educational preparation upon entering the

OR. Caring for surgical patients with more complex conditions require ongoing education and

training to promote a more effective and safer practice. The technological advances and health

information systems that are part of the OR's care delivery are also challenging the nurses to

become advanced in their skills to provide the best care and outcomes (Battie, 2013). However,

understaffing has affected the nurses and resulted in higher absenteeism rates and the

accelerating rate of staff turnover. This negatively impacted the department's operational

efficiency, financial performance, and clinical outcomes.

A SWOT analysis shows that an academic medical center consisting of several OR suites has many opportunities for teaching novice staff to improve performance, patient safety and clinical outcomes, enhance work efficiency and staff productivity, rebuild staff morale, and

STRENGTHS
- Senior RNs and STs are highy skilled
- Highly specialized OR procedures
- Academic medical center with 21 OR suites
- Magnet hospital
- Opportunities for professional development

WEAKNESSES
- 50% of circulators have no scrub skills
- Fear of complex & high risk procedures
- Preference for more surgical techs
- Lack of coaches and mentors
- Lack of incentives to learn scrub skills

SWOT

OPPORTUNITIES
- Performance improvement
- Improve patient safety and clinical outcomes
- Enhance work efficiency and staff productivity
- Rebuild staff engagement and morale
- Build competency & leadership skills

THREATS
- High turnover rate
- Increased surgical errors and adverse events
- Increase in physician dissatisfaction
- Nationwide shortage of OR nurses

Figure II. SWOT analysis represents the characteristics of the microsystem according to its strengths, weaknesses, threats, and opportunities.

enhance leadership skills. A pool of senior nurses and surgical technicians that are highly skilled to perform specialized procedures is a valuable asset to the department. This is the core group that will disseminate knowledge and skill to the less experienced OR nurses who have no scrub skills. It is not uncommon to be assigned to highly specialized procedures. These situations will provide an opportunity for OR nurses to develop clinical judgment and expertise to promote the

quality of care for surgical patients with complex needs (Bathish, McLaughlin, & Talsma, 2015).

A cost-benefit analysis (Figure III) describes the proposal to train novice and advanced beginner nurses to learn the scrub role. Training new nurses to scrub will improve versatility in staffing and increase productivity. This is a long-term solution that yields a stronger return on investment. One can argue that hiring nurses is costly, but a surgical tech with an average wage that is less than a senior nurse's salary is more cost effective. One RN who performs dual roles is

	# OF RNs	TOTAL HOURS/Staff*	TOTAL HRS/WK	HOURLY SALARY			BENEFITS	TOTAL SALARY 8 WKS
8-WEEK SCRUB ORIENTATION FOR PERIOPERATIVE NURSES								
STAFFING NEEDS:								
RN ORIENTEES (PER YEAR)	5	1600	200	$ 60.00	$	96,000.00	1.4	$ 134,400.00
CNL	1	267	267	$ 80.00	$	21,360.00	1.4	$ 29,904.00
PRECEPTOR (SURG TECH)	5	1600	200	$ 40.00	$	64,000.00	1.4	$ 89,600.00
8-week Orientation * 40 hrs/wk. = 320 hours for 1 RN								$ 253,904.00
SAVINGS:								
COST OF 1 LAWSUIT				$ 2,000,000.00		1		$ 2,000,000.00
Cost Savings								$ 1,746,096.00

Figure III. Cost benefit analysis of the 8-week training for scrub nurses versus the cost of one lawsuit from a surgical error.

more cost effective than hiring two surgical technicians who can only scrub. An agency nurse with a three-month contract that is equivalent to one full time RN's salary for six months is more expensive. An article by Kiel (2012) on staff retention suggests that "any amount that is one times more than a nurse's salary is unquestionably a loss of money for the organization" (p. 305), and "depreciation costs accrue over months instead of years with high turnover rates" (p. 306). When quantifying the ratio of nurses to scrubs, maintaining a high standard of care in the OR must be the number one priority. This ratio must also be realistic to the demands of the

department and highly sustainable even when frequent absences occur.

The effectiveness of this program can result in the elimination of agency staff along with reduced overtime by at least 30% each year. A lawsuit can be prevented when nurses are highly skilled to recognize errors before they occur. If the average cost of one lawsuit is $2 million, allocating $253,900 for an additional 8 weeks will yield a cost savings of $1.7 million. Utilizing ST preceptors to train the scrub nurses would cost less than a more senior RN. The average cost for a ST with at least 3 years of experience is $40, while a RN preceptor with more seniority and scrub experience will cost an average of $70 per hour. Six months of orientation for nurses to learn circulator and scrub roles will prove to be a successful move in building a team of nurses who are highly skilled and competent. There are many opportunities in the OR to grow and develop the skills of individual nurses. Without an effective education process, the OR's most important resources will be underutilized. Internal structures will fail because nurses lack the applied skills to sustain a dynamic environment. In addition, productivity is maximized when more nurses can circulate and scrub. Patient volumes can be increased to generate more revenue. Overtime and on-call hours will be reduced which will yield additional cost savings for the department. Secondary benefits to well-trained OR nurses include an increase in staff engagement and morale, high quality of patient care and outcomes, and a pool of future nurse leaders for succession planning.

The recommended resource that will be utilized to train new nurses to scrub with technical skills will be the Association of Operating Room Nurse's (AORN) recommended guidelines and Perioperative 101 core course. A collaborative approach following the AORN guidelines will occur among the managers, preceptors, educators, and the CNL. To ensure a successful

implementation of this program, the following key stakeholders are identified. Each position has

a significant role to fulfill in every phase of the proposed program:

1. The Nursing Director and OR manager will approve the budget for scrub training.

2. The Assistant Patient Care Manager (APCMs) will use the competency tools to
   monitor and evaluate staff progress.

3. Service Leaders will identify daily assignments.

4. The Nurse Educators will develop competency checklists to monitor progress.

5. RN and ST preceptors will guide each new nurse in learning scrub roles, adhere to
   policies and procedures and master new skills.

6. The OR Staff to support the new nurses in learning new skills and provide feedback.

7. The Clinical Nurse Leader (CNL) will be responsible in monitoring progress of the
   new nurses ensuring that all expectations, goals, and objectives are met.

Managers who recruit OR nurses should require previous scrub and circulating experience.

If the nurse is not skilled to scrub, a formal letter of agreement should be signed that includes the

expectation to learn the scrub role at a later date. This program has short and long-term

investments. Short term investments will be evidenced by increased staffing on all shifts with

multiple skills sets. Long term return of investment will include nurses who are highly skilled

and will utilize their experience to influence better workflows, systems, and quality of care. This

will drive the organization's vision to continue to provide the best care for patients in the years to

come. This will also give the department the capacity to utilize its resources for maximum

productivity while raising the best OR teams any department could ask for.

Methodology

Optimizing the nurse's skills is critical to improving teamwork, communication, and risk reduction in the operating room. Surgical errors are human errors caused by breakdowns in communication (Sexton et al., 2006), which account for more than two thirds of adverse events that occur in the OR (Weaver, Rosen, & Diaz-Granados, 2010). There is evidence that harm is also caused by failure to execute effective non-technical skills during a procedure (McClelland, 2015). TEAMSSTEPS is as an evidence-based approach that will be used to improve outcomes by applying principles of team structure, communication, leadership, situation monitoring, and mutual support (Agency for Healthcare Research and Quality [AHRQ], 2013; Tibbs & Moss, 2010) to achieve the best clinical outcomes for patients. Training methods, checklists, and metrics that are based on TEAMSSTEPS are endorsed by the Joint Commission and AORN (Association of Perioperative Nurses) to assess and improve the quality and efficiency of performance among clinicians.

SPLINTS will be used to assess the effectiveness of behaviors that result from applying themes from TEAMSSTEPS. A performance criteria and guidelines will be developed by the educational support team to assist in the description of effective and ineffective performance based on behavioral recognition. For example, waiting on the surgeon to request which instrument is needed if the scrub cannot anticipate the right instrument for the procedure; using respectful language between the surgeon and scrub when miscommunication arises; validating the correct implants to the surgeon before the circulating nurse opens the package; and anticipating critical events with the circulating nurse to prevent adverse outcomes. This assessment will be performed by the scrub preceptor and the circulating nurse who are directly

involved in the surgical procedure. The surgeon may also input some feedback although this assessment includes an observation of behaviors between the scrub practitioner and the surgeon. The nurse manager and educator can perform a second round of assessment if more evidence is needed to investigate the ineffective or effective behaviors assessed.

Non-technical skills will be observed and assessed at different stages of the procedure: during instrument setup, surgical counts, draping, surgical timeout, intraoperative events, incision closure, or debriefing (see Appendix E). It is recommended to begin the assessment on procedures that are less complex in nature to provide a baseline. This process can later be expanded to other procedures with increasing complexity as the skills improve. The criteria will enable the assessor or support team to provide an accurate description of the observed skills and behaviors, and identify action plans to improve ineffective performance and promote good performance.

Prior to the scrub immersion, the CNL, preceptor and nurse must meet to do a learning needs assessment to determine readiness for change. The nurse who has prior scrub experience will most likely have an understanding of expectations and be able to complete the program at a much faster rate than a nurse without scrub experience. Identifying barriers in learning will enable the CNL and support team to develop strategies for a smooth and effective transition to the new role. Recognizing one's learning style will be useful in matching the right preceptor, resources, structure, and tasks. It is important to communicate the goals and expectations early on with the learner to avoid confusion and delays in learning. Learning opportunities through simulation is also an effective training strategy to enhance technical and non-technical skills in the OR, and is also proven to improve team-based attitudes and behaviors (Paige et al., 2014).

Figure IV. This model describes the non-technical skills that are essential to individual and team performance and practice as recommended by TEAMSSTEPS and SPLINTS.

SPLINTS and TEAMSSTEPS both recommend a framework for achieving competency and outcomes on knowledge, attitudes, and performance. The structure of the patient care team is focused on four teachable skills on communication, decision-making/leadership, situational monitoring, and mutual support. SPLINTS focuses on monitoring behaviors from the use of

these non-technical skills. The scrub nurse will participate and be immersed in the constant

interplay of outcomes and skills required to coordinate the activities of the core team.

Communication techniques such as the SBAR (situation, background, assessment,

recommendation and request), call-out, check-back, and handoff are strategies used for

information exchange during transitions of care. The scrub nurse will be coached to apply and

demonstrate these techniques as needed.

Modeling effective leadership skills and behaviors to the novice nurse is CNL driven.

Frontline OR nurses are team leaders. They empower confidence and excellence by leading or

participating in huddles and debrief sessions. Planning, assigning roles and responsibilities,

establishing clear expectations, reinforcing plans, making adjustments as needed, anticipating

critical events, and reinforcing positive behaviors are examples of team events that highly skilled

nurses consistently demonstrate with confidence. These activities determine the outcomes of

surgery. As the immersion continues, the scrub nurse will gain an understanding of 'what is

going on.' The importance of situation monitoring enables the nurse to be aware of the

surrounding events and be on the same page as the surgeon, the circulator, and anesthesiologist

so that harm reduction strategies can be applied. This becomes a safety net that allows the team

to catch mistakes easily to prevent near-misses and actual harm on patients.

Mutual support among nurses and other team members promotes a culture of safety. It also

helps build a strong team. It centers on providing assistance on tasks, positive feedback,

assertiveness, advocacy, and respect. Sometimes challenges occur among staff members.

TEAMSSTEPS and SPLINTS embrace the two-challenge rule which empowers all team

members to speak up, call-out, or take a stronger course of action whenever a conflict or safety

breach occurs. This is necessary to promote effective team functioning especially when errors

such as wrong-site surgeries, retained sponges, mismatched blood transfusion, and other sentinel

events occur. Teamwork in the OR is like a well-orchestrated symphony. Each individual task

harmonizes with another, creating a partnership that encourages positive behaviors and attitudes

that promote job satisfaction, lower nurse turnover and error reduction (Sexton et al., 2006). It is

expected that this program will change the process of orientation for novice nurses in the OR.

The objective is to produce an eminent workforce that is highly skilled and well-prepared to

provide emergency care 24/7.

Lewin's theory of change model (Harris, Roussel, & Thomas, 2018) involves a three-step

process. The first stage is unfreezing. The novice nurse undergoes a second stage of orientation

which requires a different set of skills to be learned. Learning the scrub role can

become intimidating because surgeons are not often tolerant to new nurses. It is important to

establish rapport with the other members of the surgical team and gain support in this process.

By using the TEAMSSTEPS and SPLINTS models, the learner and preceptor will have the tools

necessary to progress with confidence. Additional support will be provided by the educators,

managers, and service leaders in the event that any problems may occur. The second stage is

change. This occurs when the novice nurse demonstrates a visible mastery of skills on certain

procedures and has maintained a positive attitude and professional behavior throughout the

process. The last stage is refreezing. This occurs when the nurse has completed the program after

two months, demonstrates confidence in scrubbing independently, and participates as a scrub in

emergency procedures with minimal assistance.

Lippitt's theory of change is an extension of Lewin's theory. It is a more detailed process that involves seven steps. Unlike the previous model, the CNL becomes the change agent. It is important to involve the stakeholders in this process to ensure successful outcomes. The seven steps that the CNL will undertake as identified by Harris, Russel, and Thomas (2018) are:

1. Diagnose the problem and include those who will be affected by the change.

2. Assess motivation for the change and engage in small group discussions about the pros and cons of the change.

3. Assess resources and the motivation of those who will need to make the change.

4. Choose elements that need change and develop and plan a time line to address the change.

5. Choose those who will lead the change and manage the team dynamics and any conflicts that arise.

6. Maintain the change and revise policies and procedures.

7. Terminate the helping relationship (p. 33).

The OR is a very complex environment and change often comes with many variables and challenges. Experienced nurses often feel stifled to change because of the routine workflows that are embedded in the work environment. This is why the orientation process is recommended for the novice nurses who are newly hired and are being immersed into OR culture for the first time.

Incorporating these theories with TEAMSSTEPS aligns with the Magnet Model because it uses four elements to produce empirical outcomes: transformational leadership, new knowledge, innovations, and improvements, structural empowerment, and exemplary professional practice. This model also provides a mechanism for implementing best practices at the frontlines of care.
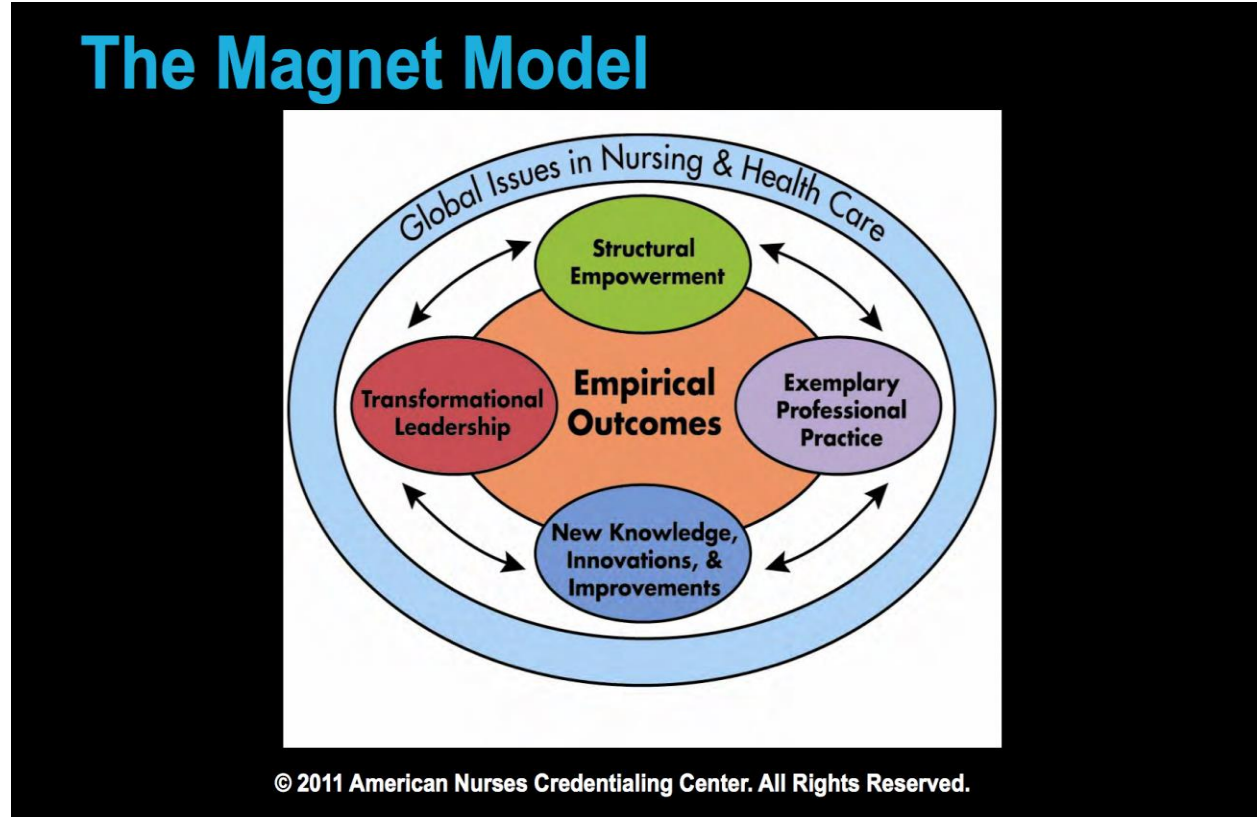
Figure V. The Magnet Model from the American Nurses Credentialing Center.

Due to the rise of high risk and specialized procedures, nurses are challenged to provide skilled care to a population of complex patients. Whether the task is to circulate or scrub a multispecialty procedure, knowing these dual roles will equip the nurse with the skills and tools to see the whole picture of the intended procedure, communicate a plan of action with the team, provide for the right equipment and instruments, anticipate critical events, and coordinate with the other members of the surgical team to ensure the safety of patients throughout the course of surgery.

Literature Review

According to Patricia Benner's novice-to-expert model, nurses need skill and experience to become experts (Benner, 1982). The five levels of nursing experience are: novice, advanced beginner, competent, proficient, and expert. A novice nurse is a beginner with no experience, limited behavior, inflexible, and task oriented. An advanced beginner demonstrates acceptable performance based on prior experience that guides their actions. A competent nurse typically has two to three years of experience and who has the ability to use analytical thinking to plan and achieve efficiency and organization. A proficient nurse has a more holistic understanding that can influence decision-making and modify plans as needed. An expert nurse has an intuitive grasp of clinical situations that guides decision-making to connect situations and determine actions. Performance is more fluid, flexible, and highly proficient.

Experience is key in expanding the learner's skills from novice to a clinical expert. Expertise and clinical leadership contribute to safer nursing practice. OR nurses are faced with complex issues daily and the severity of the situations often impedes the delivery of excellent care (Duffy, 2016). Patient safety is improved when OR nurses who are at the frontlines of care engage in effective communication and collaboration to promote, practice, and implement a just culture. Nurses with less experience may feel intimated to speak up especially if this causes an inconvenience, or the procedure becomes disrupted or canceled. The more experienced nurses have the attributes and competence to collaborate with other clinicians to plan and mitigate risks before they occur. The process of developing expertise begins with little steps. Regardless of age and experience, every OR nurse is capable of making significant improvements over time (Goodman, 2017).

Challenges to proficiency is another constant struggle for the OR staff. The traditional length of time for orientation is 12 months but has been reduced to three to six months in most ORs because of the high cost of orientation and the urgency to fill RN vacancies. There is an expectation for circulators and scrub nurses to learn procedures quickly. Another barrier occurs when learners are often moved around to different rotations too soon before competency is reached. All nurses, whether novices or experts, require time to develop both technical and non-technical skills. Inadequate time for orientation can build anxiety because without adequate instruction and hands-on, failures in communication, incorrect instrumentation, lack of anticipation, or delayed responses, can occur and threaten patient safety. Surgeons have been known to become angry and shout at the nurses, which could potentially compromise patient care and hinder trust with the surgical team. It is important to encourage OR nurses to pursue learning. This can be achieved through repetition and feedback to perform competently in different situations (Pupkiewicz, Kitson, & Perry, 2015). Leadership should invest and maximize resources to promote education and allow the staff extended time to develop proficiency in providing competent care to surgical patients.

The roles and responsibilities of a scrub nurse centers in on patient safety by providing skilled assistance to the surgeon, ensuring that all sterile instruments and supplies used in the surgical field are available, functional, and accounted for at the beginning and end of the procedure. Non-technical skills recommended by TEAMSSTEPS enable the scrub nurse to perform better and ensure high quality patient care (Quick, 2016). The ability to view a situation as a whole, intuitively grasp the urgency of a situation, have a deeper understanding of anatomy and physiology, anticipate errors before they occur, can all affect the quality of care provided to

surgical patients. It also builds team performance, cohesiveness, and foster a culture of safety (Kang, Gillespie, & Massey, 2014).

During surgery, the scrub works in partnership with the circulator. Oftentimes, the circulator takes the lead in coordinating the needs of the patient and the team members. An integrated review on the non-technical skills used by scrub nurses was made by Kang, Gillespie, and Massey (2014). It was found that "although decision making and leadership are not obvious qualities for the scrub nurses, when used with other skills such as communication, teamwork and situational awareness, patient safety and outcomes are improved" (p. 19). A constant thread of effective teamwork and communication should be maintained throughout the procedure to ensure that near misses and errors are prevented. Surgical teams who consistently generate errors threaten patient safety and increase the potential for lawsuits. Failure to use non-technical skills effectively can cause harm and never-events. Never events are unintentional incidents that frequently occur even when there are guidelines that prevent its occurrence.

Team cohesiveness plays a vital role in maintaining a smooth flow of events and a timely response to critical situations. There are instances when differences in practice between the team members can result in negativity and undesired behaviors in the OR. A literature review by McClelland (2015) suggests that the SPLINTS framework can be used to assess and prevent unsafe behaviors and practices by the surgeon and scrub nurse (p. 12). These practitioners have an interdependent relationship that can increase overall surgical performance when behaviors improve. Developing a criteria that integrates SPLINTS with TEAMSSTEPS can provide a structured assessment and evaluation of the scrub's performance, cognitive skills, and proactive anticipation during surgical procedures. This synergy can drive an inexperienced scrub to

develop intraoperative behaviors that are safe and effective. This will become the gold standard

for team training and yearly performance evaluations that will reinforce work behavior and

promote effective teamwork, patient care, and outcomes (McClelland, 2015). Learners should be

coached to develop abilities that trigger behavioral change and improve patient safety in the OR.

Patient safety is the highest priority in the OR. An investigation and analysis of

malpractice claims was conducted in a federal repository known as the National Practitioner

Data Bank, and was found to contain incidents of retained foreign bodies, wrong-site, wrong-

procedure, wrong-patient surgeries, out-of-court settlements and lawsuits totaling $1.3 billion.

From these numbers, 33% of patients sustained permanent injuries, 59% had short-term injuries,

and 7% died (Mehtsun et al., 2013). These surgical errors also known as never events are found

to be preventable. Studies indicate that human factors such as OR interruptions, staffing issues,

and error-reporting trends are the major causes of surgical complications and errors (Landers,

2015). Preventing these incidences require a collaborative effort between the nurses, the

schedulers, and the entire OR team. Safety issues can be controlled by early recognition and

quick responses before errors are committed, continuous interaction and collaboration,

competency from experienced staff and their level of education, and good management

decisions.

A systematic review based on an international research shows that there is evidence of a

relationship between higher-skill-mix RN staffing and improved patient outcomes (Lankshear,

Sheldon, & Maynard, 2005). Having a competent staff-mix ratio with more qualified and

experienced RNs has been suggested to lower mortality rates and overall hospital cost. This can

be accomplished by increasing the number of RNs daily to 75% (Shamliyan et al., 2009;

Landers, 2015). The researcher suggested that this percentile is feasible for most hospitals.

Increasing the number of RN work hours through overtime can increase the incidence of

complications and surgical errors, patient adverse events, and hospital costs. The cost of

employing more RNs can be offset by reduced complications and errors, hospital stay, adverse

outcomes, and patient mortality.

Timeline

The timeline to launch the scrub training program will begin in January 15, two weeks

after the RN completes the circulator orientation. During this time, the RN will independently

circulate in the OR to reinforce learning and prepare for the next stage of orientation. The

timing will enable the nurse managers to gain an insight into the candidates' skills and progress

early and initiate the conversation about learning the scrub role. This will be followed by a list

of candidates that will be presented to the support team that consists of the CNL, educators,

service leaders, and preceptors. The stipulation is for the candidate nurse to either have

completed the established rotation for circulators or have been employed as a staff nurse for at

least two years. On January 29th, a meeting titled "Door to Success" will be held to discuss

details on the program launch. The agenda will be established by the CNL with the goal to create

a positive learning atmosphere that is focused on training qualified RNs to become highly skilled

scrub practitioners. During this meeting, the team will analyze the skill sets of each candidate

and identify action plans to match a qualified preceptor who will coach and mentor the nurse

using the TEAMSSTEPS and SPLINTS frameworks. The CNL will explain the goal and

objectives of the program using these two models and will open the conversation for any

modifications provided the suggestions will not completely alter the process and will ultimately

achieve the objectives and goals of the program. The service leaders will provide a list of the top

ten procedures of each specialty that the scrub RNs will participate in. The unit educators will be

given the opportunity to critique the process and provide input on competencies that need to be

met and other issues that could hinder the effectiveness of the program. The start dates for each

RN are highly dependent on staffing feasibility and will be determined by the service leaders and

schedulers.

Figure VI. Gantt timeline. The preparation for the scrub RN training begins at the same time as

the circulator training. The educational support team's agenda will include an assessment of the

RN's learning needs, preparation of the necessary materials and checklists, and periodic

evaluations to ensure progress.

After the first part of orientation, it is necessary to allow the nurses to circulate

independently for a month in their chosen specialties before beginning the scrub training (April

2nd to April 30th). This will reinforce learned skills and behavior from the circulator rotation that

was recently completed. The expected start date for the RN scrub training will begin on the first

week of May. On February 28th, the CNL will meet with the nurse managers and service leaders

to prepare the competency checklists and performance evaluation forms. These documents will

be kept in the nurse's file for mandatory compliance after all orientation procedures are

completed. During this time, the candidate RN will have completed two months of orientation.

The support team will have more insights into the RN's progress and identify learning needs and

styles that need to be addressed. This would be a good time to identify the right preceptors and

begin the discussion for the next step of orientation. On March 30th, the nurse manager or the

service leader will provide the final evaluation. Any needs for extension will be determined after

this meeting. If the RN is successful in completing the goals and objectives of the first

orientation, a congratulatory message should be given. The nurse should be informed about the

expectation to circulate independently in the two chosen specialties and will start the scrub

orientation on May 1st.

The length of the scrub training consists of 320 hours of hands-on with the top ten

procedures of each specialty. The learner is expected to read about the procedures the night

before including a basic knowledge of the anatomical structures involved. A highly qualified and

skilled ST preceptor will remain scrubbed with the learner for the first 5 weeks. The learner must

develop the routine to read and comprehend instructions written on the preference cards for each

procedure. The preceptor must guide the learner in identifying the correct instrumentation,

supplies, and sutures needed for each critical step of surgery. The nurse should be introduced as

an orientee during the surgical timeout and team members are expected to give respect and

support the new staff in this journey. Emphasis must be placed on TEAMSSTEPS and SPLINTS

to enhance progress and build strong skills. Bi-monthly evaluations will aid the support team in monitoring progress and learning deficiencies. Action plans for improvement must be immediately implemented to avoid delays in progress.

The expected date of completion for the scrub orientation is on June 22nd. On the 6th to 8th week, the preceptor will remain in the OR suite as an observer and a guide. The preceptor should be available to help the scrub nurse and be prepared to scrub for support in the event that a crisis occurs. After orientation, the RN should be given the opportunity to scrub or circulate an emergency procedure with minimal assistance. This will serve as a test to determine the RN's ability to perform independently and have the skills and competency to provide care in a Level I Trauma facility.

Expected Results

It is expected that nurses who undergo six full months of circulator and scrub training will be able to perform dual roles in two specialties in the OR. The time and cost invested in this endeavor is in pursuit of highly skilled OR nurses who can provide high quality surgical care in a Level I Trauma academic medical center. These nurses will be able to perform 60-80% of surgical procedures, including the more complex ones that require a ton of coordination and collaboration with the other surgical providers to prevent the occurrence of complications and surgical errors. This is effective in maintaining a culture of safety. It is also an expectation that after two years, these nurses will cross train to other specialties as part of their professional growth and practice.

It is an asset to the organization to employ and retain a strong team of highly skilled nurses who will fill immediate and future vacancies. This adds value to the organization's strategic plan

to provide the most competitive and highest level of care in the community. Patient satisfaction scores will continue to rise and nurse-sensitive indicators will reflect high satisfaction scores in the OR. There will be improvements in staff morale, reduced staff attrition, fewer absences, balanced levels of staffing, increase in staff productivity, and reduced overtime costs.

Nursing Relevance

Nurses are at the frontlines of care and need to protect patients to the full extent of their knowledge, education, and capacity. There is an ongoing expectation to redesign, transform, and expand knowledge through evidence-based research to develop the practices of the next generation of nurses who will ensure the safe, effective, and patient-centered delivery of care. Perioperative nurses should continue to pursue advanced skills in an evolving healthcare environment. This can best be achieved through educational improvements that shape the quality of nurses who will become the future leaders of the OR. Supporting staff development and optimization of skills are highly recommended by AORN because it promotes leadership, safe practice, and collaboration. Nurses provide insight into the safety and effectiveness of their practice to overcome barriers and influence outcomes in the clinical setting. They act as change agents and transformative leaders who have the heart to inspire people towards change.

Optimizing the OR nurse's skill sets among novice nurses not only makes a difference in promoting a culture of safety but it also provides a more balanced staffing to reduce the workload that consumes high performing nurses. It is important to retain qualified personnel to strengthen the nursing workforce, control labor expenses and reduce vacancy rates (Walker, 2017). When OR nurses are skilled to circulate and scrub, it provides the flexibility to switch roles to prevent stress and burnout, reduce overtime, and promote a positive work-life balance.

This can be done effectively without compromising patient safety in the OR.

The skill and integrity of perioperative nurses must be improved, preserved, and developed for succession planning. It is a wise investment for nursing leadership to focus on the quality of education, role-modeling, and resources to prepare the next generation of leaders who will positively impact the work environment, quality of care, and patient outcomes in the OR. Joy Don Baker (2017) is the editor-in-chief of the AORN Journal and a professor of Clinical Nursing at the College of Nursing and Health Innovation at the University of Texas in Arlington. In her article titled, *Succession Planning: A Perioperative Imperative,* she wrote:

"Helping these younger protégés find meaningful value and authenticity in the perioperative setting is a critical element in advancing the strategy of preparing a ready pool of candidates to assume future leadership roles. Present-day leaders can support the development of these new leaders by implementing their recommendations, acknowledging a job well done, recognizing when they exemplify a commitment to a shared unit or corporate values, and then celebrating those contributions. Continual learning for these future leaders is essential for preventing disruption in filling critical positions and to the organization's ability to adjust to rapid changes, such as today's myriad health care reforms" (p. 538).

Summary

It is worth implementing a successful educational program that will build, develop, and sustain a large pool of nurses who are highly skilled and versatile to circulate and scrub surgical procedures in a multispecialty OR that provides Level I trauma services. All of the data used for this project were derived from the CNL's microsystem assessment. This project was presented to

the patient care manager with a poster that reflects the six aims of IOM: safe, effective, patient-centered, timely, efficient, and equitable (Institute for Healthcare Improvement, 2017). The timing is significant because the data shows reduced staffing levels that are unsafe. Conversations were initiated with senior nurses to obtain feedback on what an effective scrub program would entail. Majority are in favor of the program as an ongoing education for novice and advanced beginner nurses to improve their skill sets and demonstrate competency in performing more surgical procedures that are more complex in nature.

High absenteeism rates have been identified as a barrier because oftentimes, the designated preceptors are either unavailable or re-assigned to perform other procedures that were not previously chosen. This can result in delays with learning the top ten procedures indicated for training. Following the intended course is vital in maintaining consistency in practice. Any delays can hinder the learner's progress and may require extended time for orientation. It is projected that when implemented, the number of nurses who can scrub will increase from 50% to 75% within two to three years. Prior to its launch, the program needs to be presented to the selected members of the educational support team to identify competencies, markers of progress or failures, and to obtain full support.

While all changes do not lead to improvement, and all improvement requires change, the success of this program depends on the ability of the CNL, support team, and the entire department to drive improvement from the frontlines. Redesigning the educational system to enable RNs to become effective caregivers is a goal that is embedded in the principles of TEAMSSTEPS and SPLINTS. The scrub practitioner's behavioral skills must become inherent to make it less likely for the nurses to make errors and recognize patterns of deficiencies in

workflows that could potentially cause errors. It is also important to recognize that individuals will present learning curves that could result to resistance, social impact, and side effects of the proposed change. As nurses grow with more knowledge and competencies, there are valuable lessons learned from past mistakes, sequencing of tasks, and working with colleagues to help them adopt and adapt to a change.

Nurses who are fully engaged in their practice have the ability to impact outcomes, whether a change will lead to an improvement or not. The process entails that the team focus on one change at a time to minimize issues and resistance that may occur from the implementation. Sustaining the improvement requires planning on how best to adapt to the change and if the change occurred in the microsystem. Incorporating a change within the microsystem is expected to affect documentation, written policies and procedures, hiring and orientation process, compensation and benefits. It is often difficult to maintain sustainability because of departmental budgets, priorities, and the pressure to rapidly improve without the ability to make it inherent in the core of the organization first. To sustain this improvement, high performance is required, evidence-based practice, and standardized workflows to reinforce, support, and improve work at all levels. The OR culture must be transparent in its effort to encourage and sustain the activities. Quality assurance and control are needed to ensure that the newly designed system is performing up to standard and that frontline clinical managers are able to drive the process and make corrective actions when the plan is not delivered according to what it was set up for.

Lastly, the program must utilize a systematic approach to improve performance once it is implemented. The support team must be continuously involved in the process to review the standard work, provide feedback, and consensus for change.

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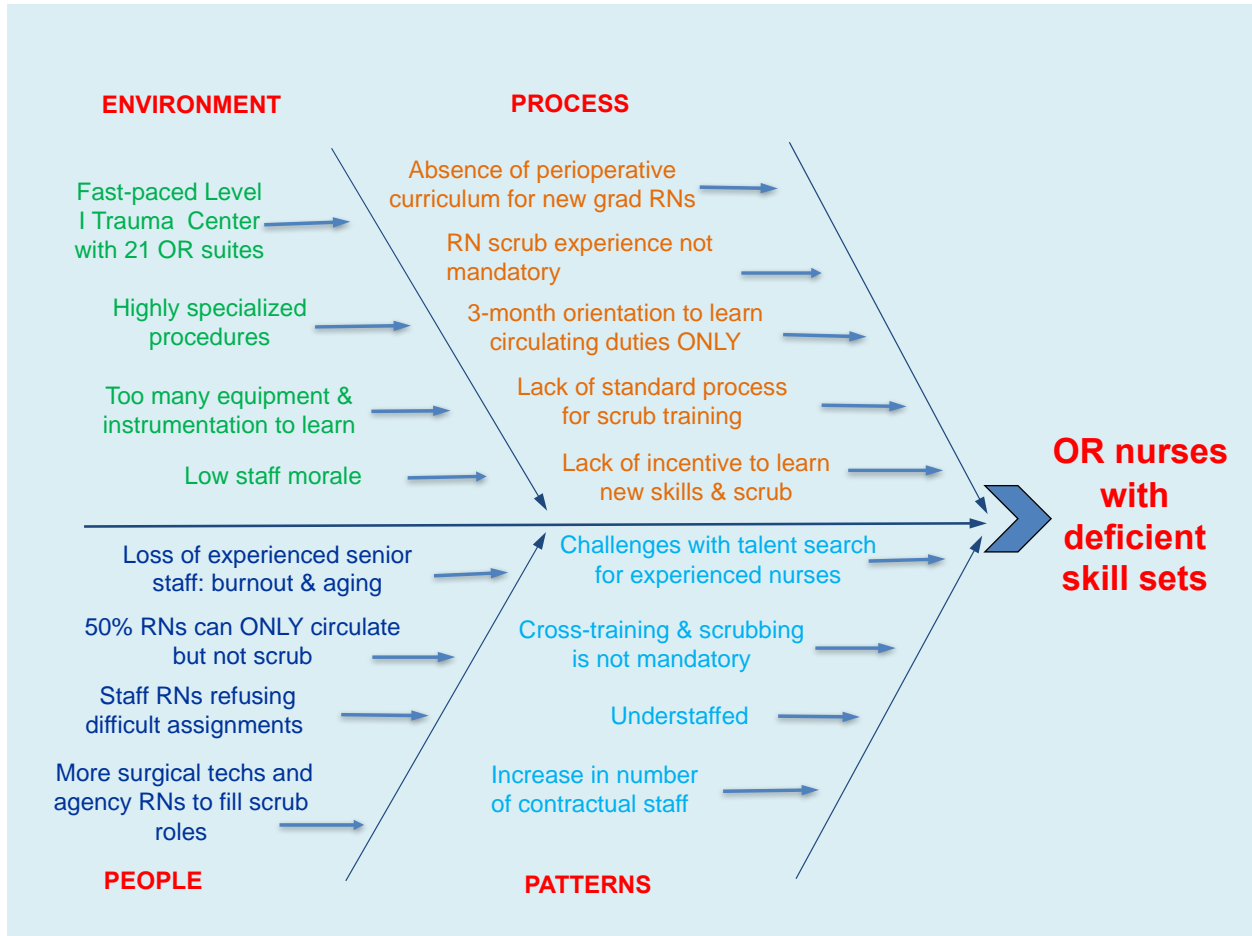
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Appendix A

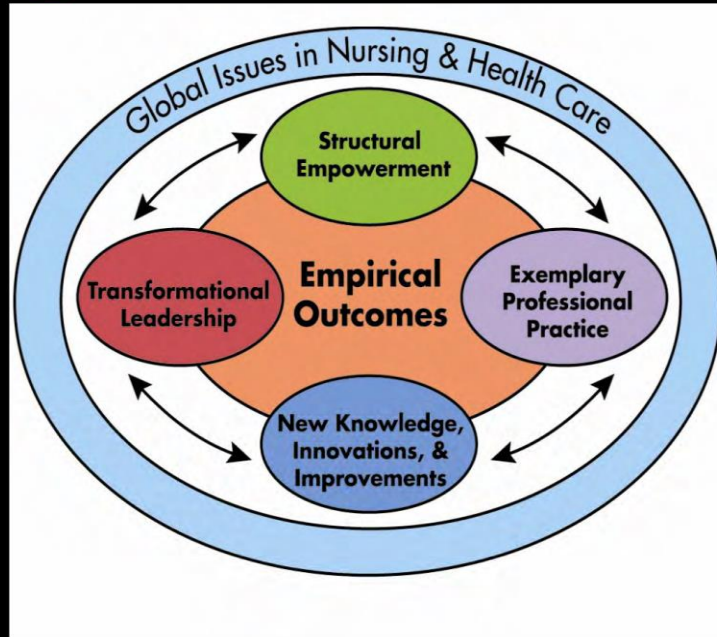**Ishikawa Fishbone Diagram**

Appendix B

SWOT Analysis

STRENGTHS

- Senior RNs and STs are highy skilled
- Highly specialized OR procedures
- Academic medical center with 21 OR suites
- Magnet hospital
- Opportunities for professional development

WEAKNESSES

- 50% of circulators have no scrub skills
- Fear of complex & high risk procedures
- Preference for more surgical techs
- Lack of coaches and mentors
- Lack of incentives to learn scrub skills

SWOT

OPPORTUNITIES

- Performance improvement
- Improve patient safety and clinical outcomes
- Enhance work efficiency and staff productivity
- Rebuild staff engagement and morale
- Build competency & leadership skills

THREATS

- High turnover rate
- Increased surgical errors and adverse events
- Increase in physician dissatisfaction
- Nationwide shortage of OR nurses

Appendix C

Cost Analysis

8-WEEK SCRUB ORIENTATION FOR PERIOPERATIVE NURSES							
	# OF RNs	TOTAL HOURS/Staff*	TOTAL HRS/WK	HOURLY SALARY		BENEFITS	TOTAL SALARY 8 WKS
STAFFING NEEDS:							
RN ORIENTEES (PER YEAR)	5	1600	200	$ 60.00	$ 96,000.00	1.4	$ 134,400.00
CNL	1	267	267	$ 80.00	$ 21,360.00	1.4	$ 29,904.00
PRECEPTOR (SURG TECH)	5	1600	200	$ 40.00	$ 64,000.00	1.4	$ 89,600.00
8-week Orientation * 40 hrs/wk. = 320 hours for 1 RN							$ 253,904.00
SAVINGS:							
COST OF 1 LAWSUIT				$ 2,000,000.00	1		$ 2,000,000.00
Cost Savings							$ 1,746,096.00

Appendix D

Magnet Model

The Magnet Model

Global Issues in Nursing & Health Care

Structural Empowerment

Transformational Leadership

Empirical Outcomes

Exemplary Professional Practice

New Knowledge, Innovations, & Improvements

Appendix E

Scrub RN Competency Checklist

TEAMSSTEPS Principles	Activities	SPLINTS	Competent? (Yes or No)	Comments
Communication and Teamwork	1. SBAR 2. Call Out 3. Check Back 4. Handoff – "I PASS THE BATON" Technique 5. Communicate any changes	1. Acting assertively 2. Exchanging information 3. Coordinating with others		
Leadership and Decision-Making	1. Articulates clear goals 2. Manage back table 3. Support MDs and team members 4. Model effective teamwork 5. Shares plan with team 6. Participates in huddle. Timeout, debrief.	1. Follow AORN standards and guidelines for practice		
Situation Monitoring	1. Uses STEP S- Status of the Patient T- Team members	1. Gathering information 2. Recognizing and understanding		

	E- Environment P-Progress toward Goal 2. Cross – Monitoring * monitoring actions of team members *ensuring mistakes and oversights are caught quickly *watch each other's back *providing a safety net within the team 3. IM SAFE I- Illness M-Medication S- Stress A–Alcohol and Drugs F-Fatigue E-Eating and elimination	information 3. Identify team's concerns and/or requirements during procedure. 4. Project possible problems		
Mutual Support	1. Task assistance 2. Feedback (timely, respectful, specific, directed toward improvement, considerate) 3. Advocacy and assertion 4. Two-challenge rule (for safety breach) *Uses "Stop the Line!" twice *if the safety issue has not been addressed: *call the supervisor or chain of command 5. Uses CUS:	1. Planning and preparing 2. Providing and maintaining standards 3. Coping with pressure		

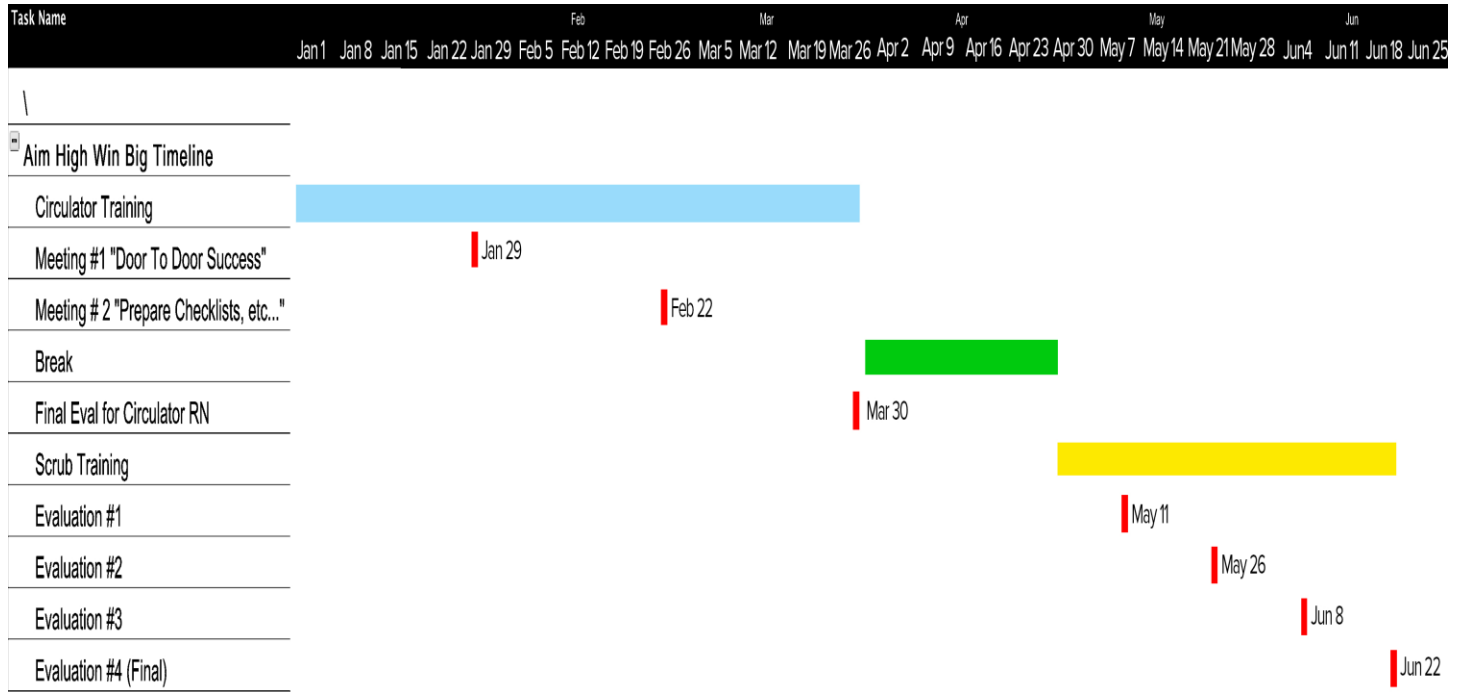|				
	I am **C**oncerned! I am **U**ncomfortable! This is a **S**afety Issue! 6. Uses DESC Script: **D**escribe the situation **E**xpress your concerns **S**uggest other alternatives **C**onsequences stated in terms of impact to team goals; strive for consensus			
Assessed by:				
Reviewed by:				

Appendix F

Competency Model for OR Nurses

TEAMSSTEPS and SPLINTS

Appendix G

Gannt Chart / Timeline

STAGES:

I.   **Circulator Training – January 2nd to March 30th.**

II. **Meeting #1 "Door to Success" – January 29th, 2018**

    Agenda: To identify candidates for the RN scrub program and determine a plan of action to coordinate activities, match the right preceptors, learning needs assessment, and evaluation dates. CNL will present the model of TEAMSSTEPS and SPLINTS for the training. Will convene on Feb 28th to review the list of candidates and checklists.

    Participants: Nurse managers, unit educators, preceptors, service leaders

III. **Meeting #2** – February 28th, 2018

Agenda: to prepare competency checklists, initiate discussion with candidates and

preceptors.

Participants: unit educators, service leaders, preceptors

IV. **Final Evaluation for Circulator RN** – March 30th, 2018

*To initiate discussion for scrub training

V. Break – April 2nd – April 30th

*Nurses should have completed the circulator orientation and will independently

function for a month before beginning the scrub training.

Rationale: To allow time to reinforce learning and adapt to new role.

VI. **Scrub RN Training** – May 1st – June 30th, 2018.

*Day 1: Meet preceptor and discuss goals for the day.

VII. **Evaluation #1**: May 11th (to be done with the nurse manager or service leader)

VIII.   Evaluation #2: May 22nd

IX. **Evaluation #3**: June 8th

X. **Evaluation #4**: June 22nd (completion of scrub training)