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### Introducing a New 12 Week Education & Simulation Program to Optimize Financial Performance of Nurse Managers

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MSN Prospectus Clinical Nurse Leader - Final Paper

Introducing a New 12 Week Education & Simulation Program to Optimize Financial  
Performance of Nurse Managers

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## **Section I. Abstract**

### **Abstract**

**Problem:** Several nurse executives (Waxman 2018; Massarweh, 2017; Hunt, 2018) agree that in today's increasingly complex health care environment, the reality of decreasing reimbursements and increasing focus on value-based metrics reflects a crucial knowledge base for nurse managers. Therefore, it is imperative for unit-based nurse leaders to receive education and support to attain and maintain the requisite business competencies to achieve both fiscal and quality targets in their microsystem (McFarlan, 2020). In an integrated managed care delivery system in northern California, no education curriculum exists for nurse managers and assistant nurse managers that addresses gaps in financial knowledge, skills, and confidence. An improvement project was undertaken over three months to develop and implement a comprehensive initial education and simulation program to support ongoing professional development.

**Context:** A microsystem assessment and gap analysis conducted in a 24-bed ICU within a 233-bed urban hospital, indicated that one Nurse Manager (NM) and five Assistant Nurse Managers (ANM's) would benefit from more structured financial training to successfully manage the unit budget. Baseline data was collected and indicated that this ICU was allocated an Hours Per Patient Day (HPPD) of 17.75, and in pay periods 11-13 during 2020, the actual HPPD was 21.2 which was deemed unacceptable. In response to this knowledge gap an administrative clinical nurse leader (CNL) utilized a systems approach to develop and implement an innovative and interactive financial education series.

**Intervention:** The course consisted of one-hour weekly education classes with the administrative services director and the Business, Finance, & Strategy manager. One hour of pre-work was required and included targeted assignments prior to each weekly session.

**Measures:** The primary outcome measure reflected data collected during twelve pre and post class assessments. A second outcome measure and collective aim was to achieve an HPPD of 17.75 for 12 days each month between July 2020 to September 2020.

**Results:** The pre and post class assessments indicated that the team went from the majority having 20% knowledge to 60% knowledge improvement. The secondary project results from pay periods 15 through 20 revealed the HPPD target was met twice. Another significant finding indicated during such a critical care emergency of the COVID-19 pandemic, unit management was able to maintain an average HPPD 21.0, which was unanticipated but welcomed accomplishment.

**Conclusions:** Time is of the essence to give our nurse leaders the skills to optimize their financial performance. Nursing and business leaders have the opportunity to empower systems level managers with targeted financial programs such as finance 101 intended to decrease financial knowledge gaps, optimize unit-based decisions making, and decrease nurse manager turnover within a positive culture of continuous learning.

*Keywords:* finance education, simulation, HPPD, learning needs, ICU, CNL

## **Section II. Introduction**

### **Introduction**

Health care leaders must juggle value-based care delivery priorities and patient satisfaction metrics and conform to regulatory and contractual obligations while simultaneously meeting productivity targets (Waxman & Massarweh, 2018). Meeting expected nursing unit productivity continues to be a struggle for unit nurse leaders while trying to meet the demands of the patient needs. Productivity is defined as managing staffing (depending on census and patient acuity) to meet budgeted standards (Holcomb, Hoffart and Fox, 2002). Patient acuity and census can change rapidly, especially in the Intensive Care Unit (ICU). Aligning appropriate nursing resources with patient needs requires nursing leadership and clinical expertise, but also financial knowledge and skills.

The staffing budget is one of the most difficult, if not the most difficult, challenges nurse leaders face in their work (Hunt, 2018). One of the most important considerations for nurse executives in today's economically constrained environment is the relationship of nursing productivity to the care delivery model (Holcomb, Hoffart and Fox, 2002). Nursing leaders need the right tools and clear understanding of staffing and productivity to meet the unit's needs successfully. The issue is whether the nurse leader has the competencies in productivity and unit budget to successfully meet daily and monthly productivity. The purpose of this paper is to illustrate innovative financial education for nurse managers who will address the gaps in financial knowledge, skills, and confidence.

### **Problem Description**

After a microsystem assessment in one 24 bed Intensive Care Unit (ICU), six nurse leaders/managers self-identified their lack of knowledge and skills related to finance and unit budgeting related to Hours Per Patient Day (HPPD), productivity, staffing, and budget. Both a review of the literature and an ICU microsystem assessment reinforce the need for continuous training in this subject to achieve unit and organizational benchmarks for efficiency, productivity and nurse leader competency. Another problem identified in the microsystem assessment and discussed with senior leaders reflects a pattern of suboptimal achievement of organizational benchmarks in more than one unit. Therefore, an innovative approach to nurse leader education was envisioned for this change management project and will be pilot tested in the ICU.

### **Available Knowledge**

Evidence shows that there is need for financial education for nurse leaders, but there is not a longitudinal study that shows that formal nurse leader financial education improves meeting unit budget obligations. The PICOT question for this project is, In Nurse Leaders (P), how does focused and standardized education on unit finance, budget, and use of financial tools (I) compared to no focused and standardized education on unit finance, budget and use of financial tools (C) affect productivity without increasing harm index (O) within 3 months (T).

An electronic search was conducted in CINAHL Complete, Cochrane Database of Systemic Reviews, and Pub Med databases for review of literature. The following combination of search terms were used: *nursing productivity on units, meet budget on nursing units, nursing financial education, staffing efficiency, hours per patient day, financial, staffing plan, and staffing model.*

The search yielded 62 articles with search limitations set to include publication dates no earlier than 2009, and English only. Ten of the articles met search criteria, and five were selected for review. The John Hopkins nursing evidence-based practice (JHEBP) Models and guidelines (2012) was used to appraise the evidence for this review (Appendix A).

Klaus, Dunton, Gajewski, & Potter (2013) conducted a qualitative study to examine the process used by hospitals to generate nursing care hour (NCH) data. The design and setting were a two-phase descriptive study of all the National Database Quality Indicators (NDNQI). Phase I was to determine collector's knowledge of and reported compliance with the standardized NDNQI of NCH (Kalus et al., 2013). The second purpose (phase II) was to establish the reliability of the NCH measure using a quasi-interrater reliability methodology (Klaus et al, 2013). Klaus et al. (2013) assessed qualitative information to develop an understanding of the internal processes used by a hospital to staff to assure data reliability and validity. All data was analyzed with SPSS 15.0 (Klaus et al., 2013).

The results of the study showed that although barriers exist, hospitals have the ability to collect reliable nursing care hour data (Klaus et al., 2013). Phase I data was obtained from a total of 714 respondents, and half (48%) of all sites use payroll records to obtain NCH (Klaus et al., 2013). Phase II findings (n=11) support the ability of two independent raters to obtain similar results when calculating total nursing care hours according to standard guidelines (Klaus et al., 2013). Evidence shows we can collect the data, but the next question is how we use the data collected to improve productivity and staff appropriately to unit needs. This study is rated a

level III/B according to the John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool (Appendix A).

Johnson-Carlson, Costanzo, and Kopetsky (2017) conducted a qualitative study using a predictive staffing tool to predict staffing needs for nursing in an 82-bed neonatal ICU. The purpose of the study was to develop a predictive staffing simulation model as a useful tool for proactively planning staffing needs for nursing (Johnson-Carlson et al., 2017). The authors look at the importance of clear understanding over and understaffing and how its effects budget and staff satisfaction.

The predictive staffing simulation model consists of two tools, The Staffing Analysis Framework Tool and Staffing Prediction Simulation/Planning Analysis Tool (Johnson-Carlson et al., 2017). The tools used vital factors such as projected/actual patient census, staffing needs, staffing availability, budgeted full time equivalents (FTE's), model of care, and scheduled/unscheduled absences. The Nurse Leaders were educated not only how to use the tools, also given budget and benchmarking education. The tool demonstrated that it could be used to drive efficient and effective staffing decisions in proactively planning for staffing needs and availability (Johnson-Carlson et al., 2017). The predicted simulated staffing plan closely matched the actual RN FTE need and reduced the need for high-cost travelers (8 FTEs) and incentive programs that were required for staffing needs (Johnson-Carlson et al., 2017). It was an estimated 6-month savings of over \$400,000.00 in labor cost (Johnson-Carlson et al., 2017). A Nurse Leader can be successful when educated and given the right tools. This study is rated as a level III/A using the John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool.



McDonough (2013) conducted a qualitative study to develop a methodology for staffing FTEs based on patient demand in order to allocate nursing resources in a more effective and cost-efficient manner. This is accomplished by using time observations (n=28) to determine nursing work activity and matching this to patient demand by hour of the day, and day of the week (McDonough, 2013). McDonough (2013) conducted observations were conducted on a progressive cardiac 32-bed unit focusing on admissions and transfers. The unit had 3,762 patient days with an average daily census (ADC) of 20.7. The hospital-specific departmental staffing numbers were compared to the organization's benchmark approved measure (McDonough, (2013).

The findings were that nurses spend time in activities that are considered non-value-added (McDonough, 2013). McDonough, 2013 describes non-value added activities do not add to the improvement of the patient; meaning the nurse is doing other activities such as faxing paperwork, searching for equipment, supplies, or people. Patient admission averages 2 hours and 36 minutes and 20 minutes of the admission process are nonvalue-added activities (McDonough, 2013). McDonough (2013) identifies that the limitation of the study is that the observations were in one hospital, on one unit with a small sample of observations. This research shows we can collect data, but how does a Nurse Leader learn what to do with data to make improved fiscally sound decisions while maintaining safe patient care. This Study is a Level III/C using the John Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool.

Kohr, Hicky, & Curley (2012) conducted a qualitative descriptive two-phase study to generate data necessary to develop a nursing productivity system by using the Synergy Model

as a conceptual framework. In phase I charge nurses working in the medical surgical intensive care unit (MSICU), cardiac ICU (CICU), and neonatal ICU (NICU) of a large pediatric tertiary hospital in the Northeast were invited to participate in focus groups centered on identifying patient and family indicators that charge nurses considered when making nurse-patient assignments and exploratory inquiry with open-ended questions was employed (Kohr, et al., 2012). Phase 2 was focused on the development and distribution of an instrument for collecting data on nursing productivity (Kohr, et al., 2012).

For phase I qualitative methods were used for analysis of the charge nurse data and focus group data were transcribed and organized along with field notes (Kohr, et al., 2012). For phase II descriptive statistics were used to summary of the data (Kohr, et al., 2012). Kohr et al., (2012) found that using a model that centers nursing work on patients' needs may better capture what nurses do and enhance our capacity to quantify nursing resource allocation. Hospitals typically base their nurse staffing and nurse to patient ratios in critical care units on national benchmark data that identify average nursing worked hours for similar type units (Kohr, et al., 2012). This study did not bring both benchmarking and the staffing tool together to measure if charge nurses can staff effectively by meeting both acuity and budgeted staffing. This study is a level III/B using the John Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool.

Annis, Robinson, Yankey, Krein, Duffy, Taylor, & Sales (2017) administered a web-based survey to chief nurse executives (CNE) to obtain their implementation experiences with staffing methodology (SM) implementation directives. Annis, et al., (2017) described the SM as a data-driven model, relying on nursing hours per patient day (NHPPD) as the measure of staffing. The evaluation consisted of 1) qualitative interviews with a sample of Veteran Hospital

CNEs; 2) an electronic survey administered to all CNEs; and 3) quantitative analyses of nurse staffing data (Annis, et al., 2017).

Annis et al., (2017) found that despite implementing SM, incorporating SM into the facility budget remained a challenge for a number of reasons. One respondent mentioned that the facility budget was predetermined and too inflexible to accommodate SM staffing recommendations, "The budget is allocated from the regional offices and does not support the recommendations from staffing methodology (Annis, et al. 2017). Most respondents (77%) stated that their facilities have fully implemented SM into routine practice, and most (66%) reported that their SM recommendations were implemented at least some of the time (Annis, et al. 2017). More than 70% of facilities had initiated SM in fiscal year 2012 (the year mandated by the directive) or earlier; however, only 52% had actively used SM recommendations in their budget development during this same period (Annis, et al., 2017). The study shows that hospitals will rollout staffing methodologies but there continues to be lack of knowledge between understanding budget and staffing needs at the unit level. This is rated a level III/B using the John Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool.

### **Rationale**

Lippitt's Change Theory was used to guide this project. Lippitt's Change Theory is, when a need for change is recognized, nurse leaders must be adept at searching existing literature for potential interventions, recognizing key stakeholders, resources and barriers, and navigation attitudes and behaviors related to change (Udod & Wagner, 2018). Lippitt's Change Theory provides a seven-step process that advances the work of Lewin, focusing on the person serving as the change agent (Harris, Roussel, & Thomas, 2018). Each of the stages is moved through in

a sequential manner and requires the involvement of members of a team or group for success (Udod & Wagner, 2018).

The Lippitt Change Theory consists of seven stages (Appendix B):

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 change.
4. Choose elements that need change and develop and plan a timeline to address change.
5. Choose those who will lead the change and manage the team dynamics and any conflicts that arise.
6. Maintain the changes and revise policies and procedures.
7. Gradually terminating the helping relationship as the change becomes part of the organizational culture (Harris, Roussel, & Thomas, 2018).

The steps in this model place emphasis on those affected by the change, with a focus on communication skills, rapport building, problem-solving strategies, and establishing mechanisms for feedback (Udod & Wagner, 2018). Using the Lippitt model, the ICU unit nurse leadership team will receive financial education while building their team dynamics, improve their communication, and learn problem-solving with a clear timeline.

Lippitt's model focuses more on the role and responsibility of the change agent than on the process of the change itself (Udod & Wagner, 2018). A change agent is an individual who has formal or informal legitimate power and whose purpose is to direct and guide change (Udod & Wagner, 2018). This person identifies a vision and rationale for the change and is a role model for nurses and other health care personnel (Udod & Wagner, 2018). The financial

educational need is there, but building the team is just as important. Using the change agent will move the ICU leadership team to the next level and meet their unit's financial obligations.

### **Specific Project Aim**

By October 1, 2020 ICU Nurse Leaders will continually meet their targeted HPPD of 17.75 or less twelve days a month by increasing their knowledge of unit finance, budget and use of financial tools.

### **Section III. Methods**

#### **Context**

A microsystem assessment and gap analysis (Appendix C) was conducted in a 24-bed ICU within a 233-bed urban hospital, indicated that one Nurse Manager (NM) and five Assistant Nurse Managers (ANM's) would benefit from more structured financial training to successfully manage the unit budget. Baseline data was collected and showed that this ICU was allocated an HPPD of 17.75, and in pay periods 11-13 during 2020, the actual HPPD was 21.2 which was deemed unacceptable. Six project participants completed a self-evaluation to assess their learning needs for financial education (Appendix D). In response to this knowledge gap an administrative clinical nurse leader (CNL) utilized a systems approach to develop and implement an innovative and interactive financial education series. A charter was created (Appendix E) along with a timeline (Appendix F) and a driver diagram (Appendix G). Strengths, weaknesses, opportunities, and threats (SWOT) Analysis was completed (Appendix H).

The team was not meeting their HPPD, rarely made the Emergency Department (ED) to Admission Bed 60 minutes or less metric with ready staffed beds, had missed meals and breaks

when staffed with a break relief, over an average of ten FTEs each pay period, did not understand staffing to budget, flex staffing, and the importance of position control. This team was also in the storming phase, which complicated their daily and long-term goals. The team was competitive against one another and focused on their shift without thinking about the next 24 hours. The next step was to find the change agent amongst the group to drive the project forward, understanding that the ICU management team has not had formal financial training, the goal was to create effective education.

The SWOT analysis showed several factors that could influence the implementation of this 12-week financial education course. Strengths are the core content includes systems level priorities, initiatives, and metrics, program fosters unit manager support and community of practice, and senior leaders created a positive culture to promote proactive learning vs punitive, reactive feedback on financial accountability. Opportunities included increased capacity and dedicated pool of skilled master trainers/champions to address replication and spread of the education and to develop and integrate standardized, and practical financial/productivity tools into existing electronic systems and infrastructure. Threats include increased manager and ANM turnover rate and unpredictable changes in organizational in required financial and productivity tools resulting in re-education and rework.

During the twelve-week course, the expectation was to see a 0.56 HPPD improvement every three weeks to total a HPPD decrease of 1.9 (Appendix I). The anticipated cost savings was \$64,646 and 153.34 hours. With continued sustainment, the annual cost savings could reach \$258,584. The estimation of savings is based on conservative estimations and in turn could result in \$100,000-\$200,000 more in savings. The

program's cost was \$6,840. The education materials were created and presented by the Business, Strategy, & Finance (BS&F) manager and the Administrative Services Director (ASD) at no cost. There was not any added cost for supplies or software. The analysis between the costs and benefits made this 12-week education program's advantages clear.

### **Intervention**

The ICU management team was offered a comprehensive financial education course including role-play simulation with individual, collective, and peer feedback during a 12-week pilot test project. The course consisted of one-hour weekly education classes with the ASD and the BS&F manager. One hour of pre-work was required and included targeted assignments prior to each weekly session. The courses used finance basics, medical center finance tools and reports, and the ICU financial expectations as the core curriculum. Each week, education was tailored to the team's progression and to meet the learning needs (Appendix J).

The required prep work included pulling information from the ICU shift assignment sheets, the staffing HPPD tool, running reports, finding information in the regional daily HPPD Flash report, and pay period reports. The prep work was designed to create a teamwork environment and the nurse leaders would have to work together to achieve successful deliverables each week. Each one-hour session included introducing new concepts and reviewing their prep work using roleplay simulation of senior leader report out forums. Roleplay simulation was used to practice new skills one learner at a time in a safe environment. Low-fidelity simulation exercises have demonstrated positive outcomes as a means of facilitating the development of non-technical leadership skills (Pollard, et al., 2014). The learner reported out budget variances and presented financial findings. Simultaneously, the rest of the team played scripted roles, so

the learner would be in scenarios that simulate leadership report out. At the end of the course each member received a certificate of completion (Appendix K).

### **Study of the Intervention**

The Plan, Do, Study, and Act (PDSA) model was used to analyze each education session and adjusted each week according to the team's progress with financial understanding and the team dynamics (appendix L.). The approach was to ensure ongoing improvements according to the team's needs based on their learning progress shown in their prep work. Review of the prep-work before each session allowed just in time adjustment according to the answers provided by each team member. Daily HPPD, pay period HPPD, shift staffing decisions, and budget spending was monitored and evaluated for improvement. Team prep-work and report outs were tracked for knowledge improvement and understanding. Good leadership, nurturing positive team dynamics and communication, encourages shared problem solving and acceptance of the change (McKibben, 2017).

### **Measures**

The measures include outcome, process, and balance measures (See appendix D, p. 41-42). The primary outcome measure reflected data collected during twelve-week pre and post class assessments. A second outcome measure and collective aim was to achieve an HPPD of 17.75 twelve days each month between July 2020 to September 2020. Process measures included attendance, level of engagement and completion of pre-work class assignments. Balancing measures to ensure adequate staffing and patient safety included monitoring of missed meals and breaks; the metric related to emergency department admission to ICU bed of 60 minutes or less.



### **Ethical Considerations**

Nurse managers and executives must ensure that nurses have the knowledge, skills, and dispositions to perform professional responsibilities that require preparation beyond the basic academic programs (ANA *Code of Ethics*, 2015, p. 11). The complexity and sensitivity of finance were taken into consideration in this project. To this end, the importance of a safe non-punitive learning environment was emphasized during the 12-week education. A social environment for working that exemplifies respect, interdependency, service, learning, growth, and joy in the work was developed for this project (Nelson, Batalden, & Godfrey, 2007, p.118).

The University of San Francisco (USF) upholds the Jesuit tradition, values, and views, which were adhered to for this quality improvement (QI) project. This project was approved as a quality improvement by the facility using QI review guidelines and does not require IRB approval (Appendix M). The project was presented to the hospital senior leadership team who agreed to support the project. The confidentiality of the participants was adhered to according to policy. The author declares no conflict of interests that could inappropriately influence (bias) this work.

## **Section IV. Results**

### **Results**

These findings were reported within the medical center's peak of COVID-19 related admissions during the 2020 pandemic. Despite the increased critical care patient acuity and required staffing levels, project participants improved in both knowledge and skill level. The pre and post class assessments indicated that the team went from the majority having 20% knowledge to 60% knowledge improvement. The secondary project results from pay periods 15

through 20 revealed the HPPD target was met twice in this evaluation period (Appendix N).

Another significant finding indicated during such a critical care emergency the unit management was able to maintain an average HPPD of 21.0, which was unanticipated but welcomed accomplishment (Appendix O).

Attendance, assignment completion and engagement were tracked and measured (Appendix P). Attendance and assignment completion were imperative to close the knowledge gap. Those who attended more classes had a greater knowledge increase than those who missed classes. Engagement was measured by a scale from 1-5 and higher scores correlated with more engagement. The participants' attendance, assignment completion, and engagement had a range from high engagement, 100% assignment completion and 100% attendance to low engagement and 50% assignment completion and attendance.

The watch metrics showed slight increase in their ED to Admit Bed in less than 60 minutes metric (Appendix Q). The increase was due to the complexity of bringing up unstable COVID-19 positive patients to the unit. Missed meals and missed breaks peaked in August at 2.5% (Appendix R); this is attributed to the census increase high acuity 1:1 patients, and need for an increased staffing core. The core staff went from an average of 10-12 to 15, which often made it difficult to obtain enough staff for break coverage.

The priceless improvement was the decrease in the knowledge gap. Week after week, the ICU management team became more engaged. By the third week the team dynamics shifted from storming to norming and they began to work on solving issues, which vastly improved their reports. They expanded their knowledge with finance tools and became efficient in reading and running reports, as shown in their prep work progress and post-self-assessment. Two

members created spreadsheets for tracking their financial decisions for each shift and they adopted the tool for their daily standard work.

The final project was a business case of their choice with the goal of a positive return on investment (ROI). The team presented a business case that included evidence-based research. To our surprise, they wanted to decrease the number of 1:1's and create a role for one resource nurse to help multiple people. They were able to show an ROI that decreased 1.2 FTE's per week at maximum census. The key components did not include why they could achieve the savings in FTE's without adding a resource. The criteria to receive this resource nurse was not included and the unit was expected to receive this resource 24 hours a day. Regardless of missing components it was a good business case for their first one.

## **Section V. Discussion**

### **Summary**

Despite the project coinciding with increased one nurse-to-patient ratios due to the COVID-19 pandemic, the ICU maintained an HPPD average of 21, which was their pre-COVID-19 average. From these results, it can be concluded the management team made better staffing choices and had better resource management than prior to the intervention. They also grew as team, and the growth led them to understanding the importance of their responsibility to manage resources and unit fiscal expectations. This proves that the importance of creating a safe learning environment, with the opportunity to practice skills using roleplay simulation, can close the financial knowledge gaps.

There were several lessons learned along the way; there is a need to create pre-course materials that include basic financial definitions, core financial concepts, and the current

unit budgets when starting at the novice to beginner level. Additionally, the change agent should be engaged earlier by including them in the pre-kickoff meeting to become an early adopter prior to the start of the project. The service line director should be included as part of the project team, as this will prepare the director to give ongoing support and long-term sustainment. The project should be announced at least one month before the start date with fun weekly communication about the project and its goals. This communication will give the team time to prepare and go into the first meeting with a clear understanding of the project.

Allotting time to give comprehensive financial education has given these nurse leaders the knowledge and confidence they need to optimize their unit finances. At the final meeting, the team was very thankful and appreciative of the time the BS&F manager and ASD took to teach them finance and they asked to continue the weekly meeting. They had a further unexpected query to receive more regional reports to continue monitoring their unit budget in real-time, which leads to sustainability. To keep the team's momentum and excitement, the ICU team will create finance education to teach to their peers. They will present their education and be rewarded prizes for first, second, and third places. This will continue to meet their desire for more education as we move to sustainability.

### **Conclusion**

Time is of the essence for comprehensive financial training for nurse managers to meet unit fiscal obligations successfully. By optimizing the work of all team members and by promoting a culture where everyone matters, the microsystem can attain levels of performance not previously experienced (Nelson, Batalden, & Godfey, 2007, p. 106). This 12-week finance

education course will be updated based upon recommendations and lessons learned. The CNL, in collaboration with senior leaders, will continue to test and implement updates on a medical telemetry unit. The medical center goal is to provide the 12-week finance education to all current management with ongoing professional development and support. New managers will take the 12-week course upon hire. Nursing and business leaders have the opportunity to empower systems level managers with targeted financial programs, intended to decrease financial knowledge gaps, optimize unit-based decisions making, and decrease nurse manager turnover within a positive culture of continuous learning.

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**Section VII. Appendices****Appendix A****Evaluation Table**

<b>Citation</b>	<b>Conceptual Framework</b>	<b>Design/Method</b>	<b>Sample/Setting</b>	<b>Variables Studied and their Definitions</b>	<b>Measurement</b>	<b>Data Analysis</b>	<b>Findings</b>	<b>Appraisal: Worth to Practice</b>
Johnson-Carlson, P. (2017). Predictive staffing simulation model methodology. <i>Nursing Economic\$, 35(4)</i> , 161-169.	None Indicated	The most critical RN staffing metrics were collected and formatted using the Predictive Staffing Model. Nursing leaders used data analysis framework provided by this methodology to develop NICU staffing plans to meet patient needs.	Children's Hospital in western United States  82-bed neonatal intensive care unit during a 12-month period. NICU RN's actual staffing data (excluding charge nurses and neo-response nurses) and was analyzed for four identified quarters of time.	Staffing data for this study were obtained using several of the hospitals systems to populate the analysis tools: time keeping, human resources management, scheduling, financial reporting, and electronic medical records.	The use of two tools to analyze staffing needs and determine their value to proactively plan for staffing needs.	Descriptive data analysis was completed on the staffing needs and staffing availability factors for predicted using means and percentages for predicted and actual bedside staffing numbers.	Decreased need for travelers and incentive programs (estimated 6-month savings over \$400,000.00 in labor cost).  Decreased difference between RN need and available RN FTE's (actual RN FTE need SD 12.2 RN's; planned RN FTE need SD 10.4 RN's).  There was no significance in turnover (from employee	<b>Strengths:</b> Gathered 4 quarters of data. Created tools that were effective.  <b>Limitations:</b> Only tested one unit that is highly specialized. The tools were made to fit their organization only.  <b>Critical Appraisal Tool &amp; Rating:</b> John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool. Level III/A

							<p>engagement questionnaire vendor) between pre and post-implementation in the nurse <i>engagement</i> responses to the item “Adequacy of Resources and Staffing” (pre 3.69; post 3.78; <math>SS&gt;0.06</math>).</p> <p>The national benchmark average on this item decreased during this period (December 2014 – 3.52; January 2016 – 3.48), this unit’s score increased.</p>	
Citation	Conceptual Framework	Design/Method	Sample/Setting	Variables Studied and their Definitions	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
Klaus, S. F., Dunton, N., Gajewski, B., & Potter, C. (2013). Reliability of the nursing care hour measure: A descriptive study.	None Indicated	two-phase descriptive study of all NDNQI hospitals that submitted data in third quarter of 2007.	Hospitals voluntarily join NDNQI and submit an annual membership fee to obtain	Nursing Care Hour represents an hour of productive nursing care personnel with	A multiple-choice, questionnaire (Table 1) was developed to ascertain the processes	All data was analyzed with SPSS 15.0.	The unit-level nature of the NDNQI NHPPD measure does not link individual nurses to individual	<p><b>Strengths:</b> Studied multiple hospitals.</p> <p><b>Limitations:</b> Two separate raters were consistently</p>

<p><i>International Journal of Nursing Studies</i>, 50(7), 924-932. Doi:10.1016/j.ijnurstu.2012.07.012</p>			<p>quarterly reports of staffing and nursing-sensitive outcomes that can be used for bench-marking and quality improvement. Approximately 25% of all US hospitals belong to NDNQI, along with 16 hospitals outside the US. Although annual variations exist, when compared to hospitals reporting to the American Hospital Association (AHA), NDNQI has a higher proportion of Magnet designated and large (&gt;500 beds) hospitals and a lower proportion of for-profit hospitals.</p>	<p>direct patient care responsibilities.</p> <p>It is frequently the numerator in a commonly used nurse supply to patient ratio: nursing hours per patient day. International experts agree that nursing hours per patient day is a useful operational staffing measure and it should continue to be included in studies that investigate the relationship between nurse staffing and patient outcomes. Until now, there has been no systematic investigation of NCH reliability. The purpose of this study was to investigate compliance with a standard NCH definition and data collection protocol developed by the National Database of Nursing Quality</p>	<p>hospitals used to collect NCH for NDNQI and to assess the SC's knowledge of and compliance with the NDNQI NCH definition. The survey was based upon frequently asked questions by NDNQI participating hospitals and issues discovered by the NDNQI analytic team during quarterly data cleaning. The questionnaire also included three hospital demographic items. The instrument was reviewed by NDNQI project staff and researchers. After revisions, the items were deemed to be clear and with</p>		<p>patients, nor does it account for patient differences. There is no specific and quantifiable associated "dose" of nursing for an NCH. Additionally, as the measurement of nurse staffing has continued to develop, researchers have suggested that adjustments should be made for patient acuity (e.g. Sermeus et al., 2008; Mark and Harless, 2011) which the standard NHPPD measure does not do. While NHPPD, and therefore NCH, are valid proxies for unit staffing, it is also important to acknowledge the need for on-going research on the conceptual measurement of</p>	<p>able to create nursing care hours values with high reliability.</p> <p><b>Critical Appraisal Tool &amp; Rating:</b> John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool.</p> <p>Level III/A</p>
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				<p>Indicators1 (NDNQI1) and endorsed by the National Quality Forum (NQF) and test the inter-rater reliability of the NCH measure.</p>	<p>adequate depth and breadth to obtain the necessary information. The survey was administered via a commercial online vendor, SurveyMonkey. These individual monthly NCHs are submitted to NDNQI via a secure website. The data entry website is locked for data processing each quarter and the analysis staff at NDNQI performs rigorous outlier, error and missing data audits prior to generating hospital and benchmark reports.</p>		<p>staffing for benchmarking reports and for research.</p>	
<b>Citation</b>	<b>Conceptual Framework</b>	<b>Design/Method</b>	<b>Sample/Setting</b>	<b>Variables Studied and their Definitions</b>	<b>Measurement</b>	<b>Data Analysis</b>	<b>Findings</b>	<b>Appraisal: Worth to Practice</b>

<p>McDonough, K. S. (2013). Development of the McDonough optimum staffing method: Evidence-driven recommendations based on patient demand. <i>Virginia Nurses Today</i>, 21(2), 8-11.</p>	<p>None Indicated</p>	<p>The mission of this project is to develop a methodology for staffing nursing full-time equivalents (FTEs) based upon patient demand in order to allocate nursing resources in a more effective and cost-efficient manner. This is accomplished by using time observations to determine nursing work activity and matching this to patient demand by hour of the day, and day of the week. Examining this data, nursing leaders may better allocate resources to meet patient demand, more effectively administering to patient needs. Ideally, a staffing matrix may be developed which would aide nurse leaders in projecting nurse workload as it relates to the unit's operational budget.</p>	<p>The unit identified was a 32-bed progressive cardiac unit at a suburban hospital. For the first six months of 2012, the unit had 3,762 patient days with an average daily census (ADC) of 20.7. The average age of adult patients is 66 with a median age of 68. There are a higher percentage of males admitted to the unit than females; 50.7% male and 49.3% female. The top five primary diagnoses, based on ICD-9 codes, for this unit was 1) chest pain; unspecified, 2) atrial fibrillation, 3) shortness of breath, 4) syncope and collapse, and 5) chest pain; other.</p>	<p>Data were collected using lean methodology principles and the Institute of Healthcare Improvement's (IHI) Paper Time Study Worksheet July 2008, which is a valid and reliable tool. Nursing activities were clearly identified and defined, making the use of the tool very effective in documenting nursing activities. The data collection became saturated with 28 observations, which was representative of all shifts, and allowed the ability to characterize churn.</p>	<p>The activities within each category were grouped by the following common designations: a) direct patient care, b) documentation – paper c)documentation – electronic, d) coordination of care, e) patient/family counseling, f) support – duties, g) resources, h) idle, and i) other. Each activity was further classified as value-added, business value-added or nonvalue-added. These classifications supported the analysis of the value stream from the patient's perspective.</p>	<p>In order to demonstrate the methodology, I used to capture admissions, discharges, transfers and Other-duties, the admission findings will be used as the example. To understand the amount of time nurses on the unit spend with their patients, it is important to know their productivity. An average admission takes a nurse 2 hours and 36 minutes, which translates to 156 minutes. The nursing productivity is expressed in patients per hour and is calculated by dividing 60 minutes by the number of minutes required to admit the patient – the result is 0.38 patients per hour. The Other-duties category is a representation of work activities associated with the average care of a</p>	<p>The findings were that nurses spend time in activities that are considered non-value-added. Nonvalue-added activities do not add to the improvement of the patient; meaning the nurse is doing other activities such as faxing paperwork, searching for equipment, supplies, or people. The model is based on beds, not the work.</p>	<p><b>Strengths:</b> The research design could be used in other hospitals to analyze their staffing optimum.</p> <p><b>Limitations:</b> The main limitation of the study is that the clinical observations were in one hospital, on one unit with a small sample of observations.</p> <p><b>Critical Appraisal Tool &amp; Rating:</b> John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool.</p> <p>Level III/C</p>
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Citation	Conceptual Framework	Design/Method	Sample/Setting	Variables Studied and their Definitions	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
<p>Kohr, L. M., Hickey, P. A., &amp; Q. Curley, M. A. (2012). Building a nursing productivity measure based on the synergy model: First steps. <i>American Journal of Critical Care</i>, 21(6), 420-431. Doi:10.4037/ajcc2012859</p>	<p>Synergy Model</p>	<p>Study participation was voluntary.</p> <p>Potential subjects received a letter of invitation to participate in the focus groups and/or to complete a survey.</p> <p>The letter contained information about the study</p>	<p>Nurses from 3 different intensive care units participated.</p> <p>In phase 1, charge nurses in focus groups described patient and family indicators considered when making nurse-patient assignments.</p>	<p>Focus group data were transcribed and organized along with field notes. Credibility of data interpretation was achieved by prolonged engagement by the nurse scientist. The nurse scientist was well known to the staff and intimate with the work setting and</p>	<p>Differences in VAS scores by level of workload were analyzed by using 1-way analysis of variance. The numbers and percentages of nurses choosing each indicator as 1 of their top 3 indicators within each of the 8 patient dimensions of</p>	<p>Qualitative methods were used for analysis of the charge nurse data.</p> <p>Descriptive statistics were used to summarize the data. Points on the VAS were measured with a standard ruler.</p>	<p>The results of this study revealed that the Synergy Model can be used as the foundation for developing a nursing productivity model that captures objective and measurable patient/family indicators.</p>	<p><b>Strengths:</b> Used the synergy model as a foundation.</p> <p><b>Limitations:</b> The reflects the results of a single medical center. The scientist used had relationships with participants creating possible biased.</p> <p><b>Critical Appraisal Tool &amp; Rating:</b> John Hopkins</p>

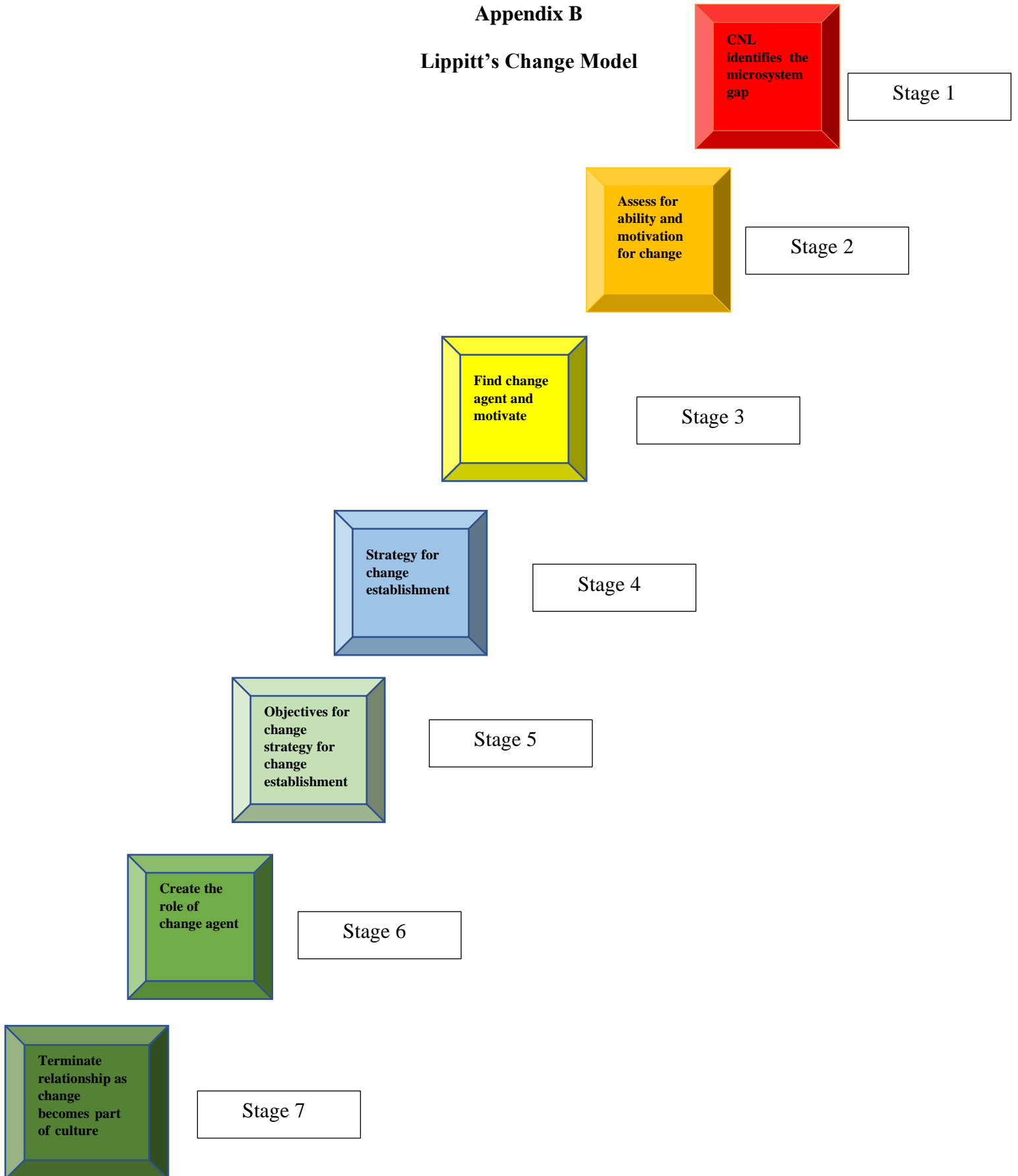
		and described what was being requested of each participant.  All data were collected anonymously.	In phase 2, charge nurse data were used to construct a survey for experienced staff nurses, asking them to link the indicators to 3 levels of nursing workload.	roles of the staff nurses. Credibility was also achieved by peer debriefing through extended discussions. The nurse met with the research team to review the data and compare coding. To verify interpretations, member checks were conducted by the nurse managers from the 3 units.	the Synergy Model.	All data analysis was conducted by using SPSS 19 (IBM Corporation, 2010).	The information gathered from this preliminary work may be used to launch a comprehensive plan to quantify the full range of nursing's work and provide a better estimate of nursing resource allocation.	Nursing Evidence-Based practice Research Evidence Appraisal Tool.  Level III/B
<b>Citation</b>	<b>Conceptual Framework</b>	<b>Design/Method</b>	<b>Sample/Setting</b>	<b>Variables Studied and their Definitions</b>	<b>Measurement</b>	<b>Data Analysis</b>	<b>Findings</b>	<b>Appraisal: Worth to Practice</b>
Annis, A. M., Robinson, C. H., Yankey, N., Krein, S. L., Duffy, S. A., Taylor, B., & Sales, A. (2017). Factors associated with the implementation of a nurse staffing directive. <i>Journal of Nursing Administration</i> ,	The Logic Model	An initial assessment of Staffing Methodology implementation in VHA facilities conducted by the Government Accountability Office in 2014 found a need for	Developed and administered a Web-based survey to VHA CNEs to learn about their perceptions and experiences implementing the SM Directive.	Several variables demonstrated associations with the facility's rating of SM success in bivariate analyses, only 3 of these relationships remained significant after the addition of other independent variables in the model. Respondents	Organized relevant items into structural (eg, respondent, facility, and leadership characteristics), process (eg, expert panels, training, use of data), and outcome (eg, level of	Descriptive statistics were calculated for all survey items.	Most respondents (77%) stated that their facilities have fully implemented SM into routine practice, and most (66%) reported that their SM recommendations were implemented at least some of the time (Table 3). More than 70% of	<b>Strengths:</b> Study conducted among 136 facilities. Sample size 104  <b>Limitations:</b> Information from CNE's only. Did not involve front-line staff or financial officers.



<p>47(12), 636-644. Doi:10.1097/NNA.000000000000559</p>		<p>rigorous evaluation of SM.</p> <p>Formal evaluation of the SM Directive was initiated, and a description and preliminary findings are provided elsewhere.</p> <p>The evaluation consisted of: 1) qualitative interviews with a sample of VHA CNEs; 2) an electronic survey administered to all CNEs (data reported here); and 3) quantitative analyses of nurse staffing data.</p>		<p>who reported that their facility’s senior leadership had full confidence in the SM process were almost 5 times as likely to rate the success of SM implementation in their facility higher than those whose senior leadership had only partial confidence.</p> <p>Facilities that began SM implementation in fiscal year 2012 or earlier were also more likely to have a higher rating of success, as compared with those that started SM in later years.</p> <p>Finally, the frequency in which facility nursing staff think in terms of NHPPD was significantly associated with the rating of SM success (“sometimes” vs “never or rarely” “often or all of the</p>	<p>implementation, leadership and staff engagement) components per our conceptual model. The main outcome of interest was a subjective measure of implementation success, which asked respondents to rate on a scale from 1 to 10 (10 being the highest) how successful their facility had been in using SM as a budgeting and forecasting tool. Responses were collapsed into 5 categories: 1 to 2, 3 to 4, 5 to 6, 7 to 8, and 9 to 10.</p>		<p>facilities had initiated SM in fiscal year 2012 (the year mandated by the directive) or earlier; however, only 52% had actively used SM recommendations in their budget development during this same period. Just more than half (52%) rated their level of success in using SM as a budgeting and forecasting tool, a 7 or higher on a scale of 1 to 10 (10 being the highest).</p> <p>More respondents reported that their frontline nursing staff had some enthusiasm (75%) versus no enthusiasm (20%), whereas only 5% reported that their staff had lots of enthusiasm. Almost half of facilities (45%) stated that staff members rarely or never think in terms of NHPPD.</p>	<p><b>Critical Appraisal Tool &amp; Rating:</b> John Hopkins Nursing Evidence-Based practice Research Evidence Appraisal Tool.</p> <p>Level III/B</p>
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				time” vs “never or rarely”.			<p>Respondents commented that “<i>Staff have a preference to think in staff to patient ratios, not NHPPD.</i>”</p>	
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**Appendix B**  
**Lippitt's Change Model**



Appendix C

Microsystem Assessment

A Microsystem Self-Assessment, Diagnosis and Treatment Plan										
Inpatient Unit Profile - ICU										
<b>A. Purpose:</b>										
Why does your unit exist?										
			Site Contact: MS - Manager			Date: March 1, 2020				
Administrative Director: MH			Nurse Director: SM			Medical Director: AW				
<b>B. Know Your Patients:</b> Take a close look into your unit, create a "high-level" picture of the PATIENT POPULATION that you serve. Who are they? What resources do they use? How do the patients view the care they receive?										
<b>Est. Age Distribution of Pts:</b>		<b>%</b>	<b>List Your Top 10 Diagnoses/Conditions</b>				<b>Patient Satisfaction Scores</b>		<b>% Always</b>	
19-50 years		5	1. MI		6. Cancer		Nurses		65	
51-65 years		20	2. Respiratory Failure		7. End stage Alzheimer's disease		Doctors		45	
66-75 years		40	3. Sepsis		8. Trauma		Environment		65	
76+ years		35	4. End Stage Liver Disease		9. Surgery		Pain		78	
			5. End Stage Kidney Disease		10.		Discharge % Yes		55	
% Females			<b>Point of Entry</b>					Overall % Excellent		76
<b>Living Situation</b>		<b>%</b>	Admissions					<b>Pt Population Census: Do these numbers change by season? (Y/N)</b>		<b>Y/N</b>
Married			Clinic			5		Pt Census by Hour		Y
Domestic Partner			ED			75		Pt Census by Day		Y
Live Alone			Transfer			20		Pt Census by Week		Y
Live with Others			<b>Discharge Disposition</b>			<b>%</b>		Pt Census by Year		Y
Skilled Nursing Facility			Home					30 Day Readmit Rate		N
Nursing Home			Home with Visiting Nurse					Our patients in Other Units		Y
Homeless			Skilled Nursing Facility					Off Service Patients on Our Unit		N
<b>Patient Type</b>	<b>LOS avg.</b>	<b>Range</b>	Other Hospital					Frequency of Inability to Admit Pt		Y
Medical	85%		Rehab Facility					<b>*Complete "Through the Eyes of Your Patient", pg 8</b>		
Surgical	15%		Transfer to ICU							
<b>C. Know Your Professionals:</b> Use the following template to create a comprehensive picture of your unit. Who does what and when? Is the right person doing the right activity? Are roles being optimized? Are all roles who contribute to the patient experience listed?										
<b>Current Staff</b>		<b>Day FTEs</b>	<b>Evening FTEs</b>	<b>Night FTEs</b>	<b>Weekend FTEs</b>	<b>Over-Time by Role</b>	<b>Admitting Medical Service</b>		<b>%</b>	
MD Total							Internal Medicine		N/A	
Hospitalists Total		2	1	Remote 1	1		Hematology/Oncology		30	
Unit Leader Total		2	1	1	1		Pulmonary		N/A	
CNSs Total		1	0	0	0	0	Family Practice		N/A	
RNs Total		10	10	10	10	N/A	ICU		99	
LPNs Total		N/A	N/A	N/A	N/A	N/A	Other - HBS		1	
LNAs Total		N/A	N/A	N/A	N/A	N/A	<b>Supporting Diagnostic Departments</b>			
Residents Total		N/A	N/A	N/A	N/A	N/A				
Technicians Total		2	2	1	3		Respiratory, Lab, Cardiology, Pulmonary, Radiology, and Interventional radiology.			
Secretaries Total		1	1	0.5	2.5					
Clinical Resource Coord.		1	1	0	1					
Social Worker		1	1	0	2					
Health Service Assts.		0	0	0	0					
Ancillary Staff		3	3	1	7					
Do you use Per Diems?		x_Yes	___NO	<b>Staff Satisfaction Scores</b>						<b>%</b>
Do you use Travelers?		x_Yes	___NO	How stressful is the unit?				% Not Satisfied		30
Do you use On-Call Staff?		x_Yes	___NO	Would you recommend it as a good place to work?				% Strongly Agree		20
Do you use a Float Pool?		x_Yes	___NO							
<b>*Each staff member should complete the Personal Skills Assessment and "The Activity Survey", pgs. 10 - 12</b>										
<b>D. Know Your Processes:</b> How do things get done in the microsystem? Who does what? What are the step-by-step processes? How long does the care process take? Where are the delays? What are the "between" microsystems hand-offs?										
1. Create flow charts of routine processes.			Do you use/initiate any of the following?			Capacity	# Rooms 24	# Beds 24		

a) Overall admission and treatment process	Check all that apply	Capacity	# ROOMS 24	# BEDS 24
b) Admit to Inpatient Unit	<input type="checkbox"/> Standing Orders/Critical Pathways	# Turnovers/Bed/Year _____		
c) Usual Inpatient care	<input checked="" type="checkbox"/> X Rapid Response Team	Linking Microsystems		
d) Change of shift process	<input type="checkbox"/> X Bed Management Rounds	ED, ICU, 2 medical surgical units, and 2 telemetry units.		
e) Discharge process	<input type="checkbox"/> X Multidisciplinary/with Family Rounds			
f) Transfer to another facility process	<input type="checkbox"/> Midnight Rounds			

g) Medication Administration	<input type="checkbox"/> Preceptor/Charge Role	
h) Adverse event	<input checked="" type="checkbox"/> X Discharge Goals	
<b>2. Complete the Core and Supporting Process Assessment Tool, pg. 14</b>		
<b>E. Know Your Patterns:</b> What patterns are present but not acknowledged in your microsystem? What is the leadership and social pattern? How often does the microsystem meet to discuss patient care? Are patients and families involved? What are your results and outcomes?		
<ul style="list-style-type: none"> <li>Does every member of the unit meet regularly as a team? Yes</li> </ul>	<ul style="list-style-type: none"> <li>Do the members of the unit regularly review and discuss safety and reliability issues? Yes, daily during huddle</li> </ul>	<ul style="list-style-type: none"> <li>What have you successfully changed? Ongoing assessment</li> <li>What are you most proud of?</li> <li>What is your financial picture? Assessment in progress.</li> </ul>
<ul style="list-style-type: none"> <li>How frequently? Daily huddles, Daily rounds, monthly staff meetings</li> </ul>		
<ul style="list-style-type: none"> <li>What is the most significant pattern of variation? Missed meals and breaks, 1:1 ratio <u>assignments</u>, acuity level lower or higher than the clinical assessment, staff feel understaffed, units do not want share break relief or other resources, and ANM lacks knowledge of HPPD, FTE, and staff flexing.</li> </ul>	<b>*Complete "Metrics that Matter", pgs. 20 &amp; 21</b>	

Note: Adapted from Dartmouth (2011)

**Appendix D**

**Personal Skills Assessment**

<b>Personal Skills Assessment</b>				
Name _____		Unit: _____		
Role: _____		Date: _____		
<b>Financial Knowledge for a Nursing Unit:</b>				
<i>ICU Leadership Team</i>	Want to Learn	No or Little Knowledge	Some Knowledge	Knowledgeable
Hours per Patient Day (HPPD)	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Productivity	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
HPPD Staffing Tool	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Prism Reports	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Regional Daily flash Report	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Flex Staffing	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Return on Investment	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Business Plans	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
How to Calculate HPPD (by Shift or Day)	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Non-Productive Time	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Budgeted Census vs. Daily Census	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Full Time Equivalent (FTE)	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
<b>Technical Skills: ICU Leadership Team</b>				
<i>Please rate the following on how often you use them.</i>	Want to Learn	Never Use	Occasionally	Frequently
Excel	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Microsoft Word	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
Prism	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10
	<input type="checkbox"/>	1 2 3	4 5 6 7	8 9 10

Note: Adapted from Dartmouth (2011)

## Appendix E

### Project Charter

#### Optimizing ICU Financial Performance Using Simulation

**Project:**

Conduct a twelve-week comprehensive finance course using roleplay simulation for one Nurse Manager (MN) and five Assistant Nurse Managers (ANM's).

**Global Aim:**

With comprehensive finance education the ICU will meet their HPPD of 17.75 twelve days each month between 7/2020-9/2020.

**Specific Aim:** During the implementation of the project, 7/202-9/2020, ICU Nurse Leaders will meet their targeted HPPD of 17.75 twelve days a month by increasing their knowledge of budget, HPPD, and use of financial tools.

**Background:**

Nurse executives are feeling pressure from multiple perspectives to staff safely, yet cost effectively (Hill, Higdon, Porter, & Rutland, 2015). Contemporary health care leaders must juggle value-based care delivery priorities and patient satisfaction metrics and conform to regulatory and contractual obligations while simultaneously meeting productivity targets (Waxman & Massarweh, 2018). It can be challenging for people who work on the clinical side to appreciate the financial implications of delivering care, but it's important for nursing and other staff to think in terms of the art of possible (Brennan, Hinson, & Taylor, 2008).

Staffing an acute nursing unit is not an easy task even for the seasoned manager. The act of pairing nurses' skills to patients with varying care needs occurs several times a day in many nursing units across the globe (Massarweh, Tidyman, & Luu, 2017). Most nurse leaders learn that they need the skills to meet unit budgeted targets, productivity, safe fiscal staffing, and budgeted HPPD once they are promoted to manager. Experts agree that in today's increasingly complex health care environment, with decreasing reimbursement and focus on value-based metrics, it is imperative for nurse leaders to be educated and receive ongoing support in attaining and maintaining the business competencies needed to achieve their fiscal and quality targets (McFarlan, 2020). To be successful the nurse manager will need be given the education and the tools to understand and successfully meet their financial requirements of their units.

**Goals:** The management team will better understand the overall picture of unit financials, staffing, flex staffing, FTE, hiring plan, and meet their HPPD target of 17.75.

1. Learn and understand the components of unit budget, productivity, and how staffing affects both.
2. Learn and understand budgeted HPPD and how to calculate.
3. Learn to use and understand financial tools and reports.
4. Learn to present business plans, productivity variances, daily HPPD variances, clinical variances, and return on investment.

**Sponsors:**

Chief Nurse Executive	JG
Area Finance Officer	KE

**How to engage stakeholders:** The stakeholders will be asked to attend specific meetings throughout the project, required to attend weekly report outs, and conduct weekly senior leader rounds to ensure the manger still has the support needed and the team is recognized for their success. If they are unable to attend they will need to send an alternate.

**Team:**

Project Lead	Melissa Hathcoat
ICU Manager	MS
Assistant Nurse Manager	ML
Business, Strategy, and Finance Manger	EC
Staffing Office Manager	AF
Adult Services Director	SM
Ad hoc Regional Enterprise, Strategy, and Finance	JL



**Measures:**

Measure	Data Source	Target
<b>Outcome</b>		
Primary data collected during twelve-week pre and post class assessments	Attendance and prep-work	Current percentage or above
Meet budgeted HPPD 12 days each period per month 7/2020-9/2020	Prism Data Base and Regional Flash Report	Meet the budgeted HPPD of 17.75 Twelve days a month.
<b>Process</b>		
Level of engagement and completion of prep-work	Weekly prep-work turned in and attendance.	80% or above
<b>Balance</b>		
Missed Meals and Breaks	Regional bi-weekly reports	Current % or less
ED to Bed 60 minutes or less metric	Daily and monthly Health Connect medical center report	Current % or less

**Measurement Strategy:****Population Criteria:**

Population includes ICU Manager, and Assistant Nurse Mangers.

**Data Collection Method:**

Data will be collected from prep-work, attendance, Prism database, Walnut Creek HPPD staffing tool, daily regional flash reports, regional bi-weekly finance reports, and Health Connect regional ED to Bed daily.

**Measure Descriptions:**

Measure	Measure Definition	Data Collection Source	Goal
HPPD	Hours per patient days	Prism	Meet budgeted HPPD of 17.75 or less twelve days a month.
Missed Meals and Breaks	The number of breaks missed by staff during a shift.	Regional finance reports	Current % or lower
ED to Bed Metric 60 minutes or less	ED departure to admitted bed.	Daily regional Health Connect ED to Bed reports	Current % or higher

**Changes to Test:**

- Financial education for unit manager and ANM's.
- Daily and shift staffing management strategies.
- Lookback meetings to discuss choices made, learnings, and best practices.
- Roleplay simulations for reporting budget and writing business plans.

**CNL Competencies:**

The Clinical Nurse Leader (CNL) is a leader in the healthcare delivery system, not just the acute care setting but all settings in which health care is delivered (King, Gerard, & Rapp, 2019). The CNL assumes accountability for patient-care outcomes through the assimilation and application of evidence-based information to design, implement, and evaluate patient-care processes and models of care delivery (American Association of Colleges of Nursing [AACN], 2007). Nurse Leaders (e.g., CNLs/APRNs) must be able to effectively interface and collaborate across a variety of disciplines and settings to ensure that the total patient experience creates value (King, et al., 2019). The CNL must participate in performing clear, documented process improvement cycles, garnishing support, achieving outcomes, and disseminating celebrations of practice changes (King, et al., 2019).

Across practice settings and organizations, graduate nurse leaders are in roles to affect quality, safety, and finance (King, et al., 2019). This project requires the CNL to look at the microsystem from a financial lens while maintaining positive patient outcomes. The project is to improve the nursing unit through the responsibility of financial stewardship. The budgeting and financial and management competencies needed for daily operations, the master's-prepared nurse leader is increasingly accountable for collaborating with financial officers and other

stakeholders for building viable business cases for quality and safety (King, et al., 2019). Financial stewardship is in place so that patients can receive affordable quality care and is an important part of the CNL's role.

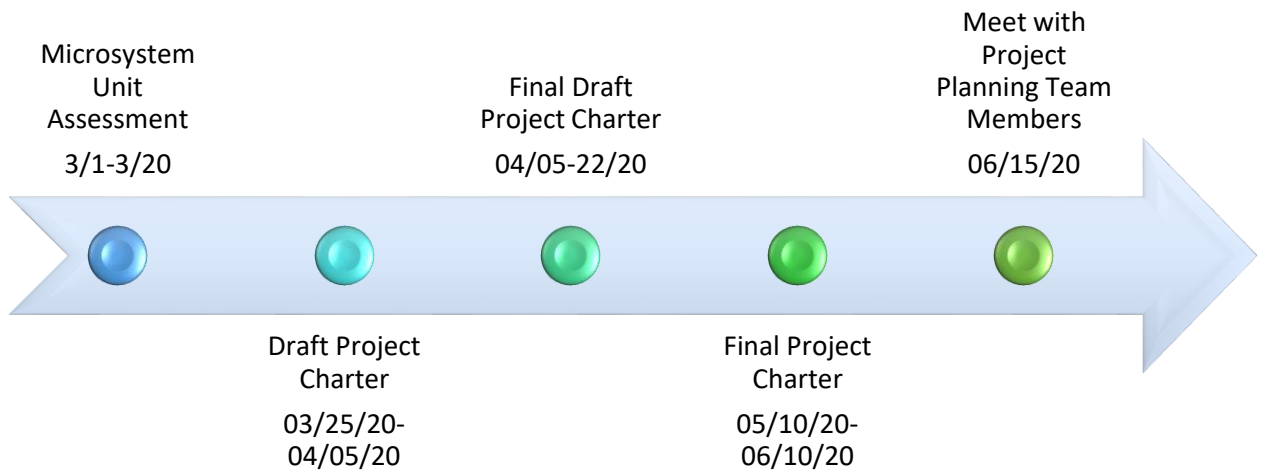
**Lessons Learned:**

- Full support from Clinical Adult Services Director.
- Earlier identification of implementation team.
- Pre kick-off meeting with director and manager of the unit.
- Late daily discharges burden for the evening shift staffing.
- Ensure everyone feels they are in a safe learning environment before the start of the project.
- ANM's needs to know how to log into Microsoft Teams for the staffing call, so they can see the staffing tool when staffing.
- Look back meetings required to review financial decisions made.

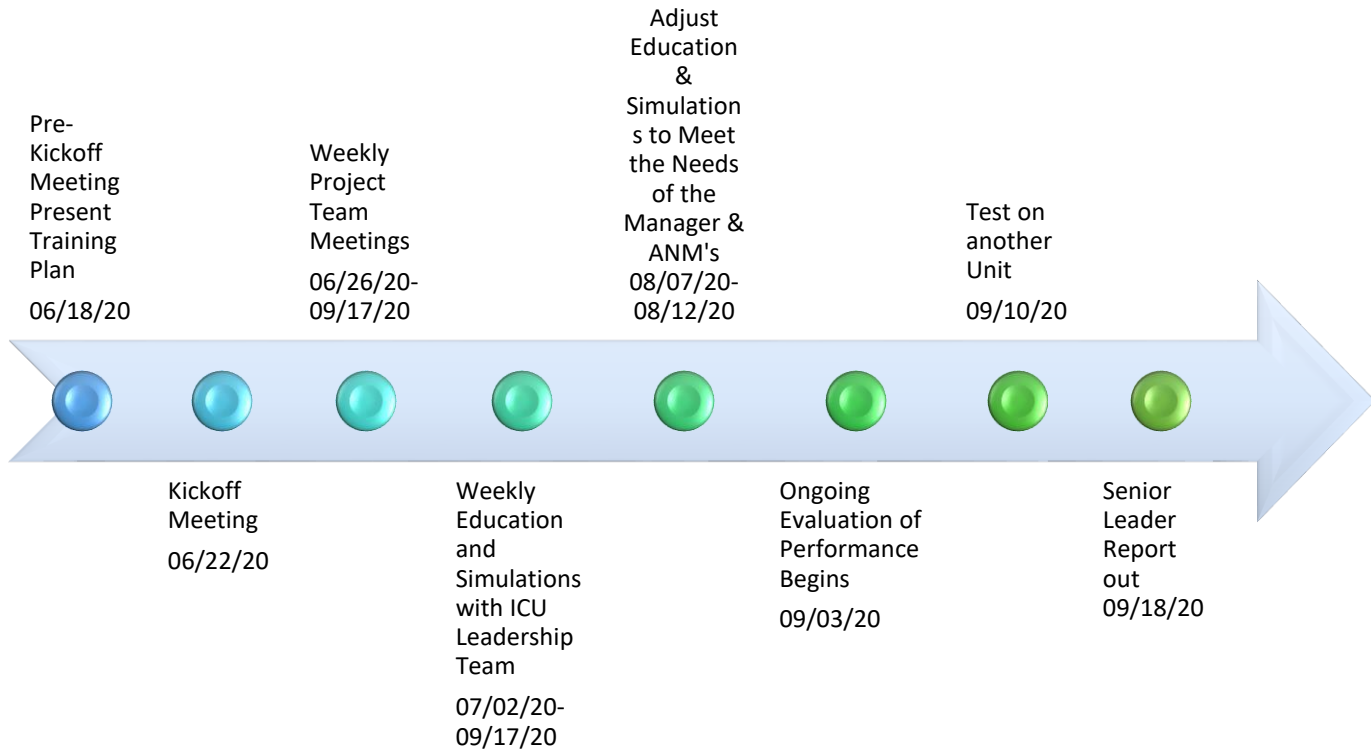
**Appendix F**

**Timeline**

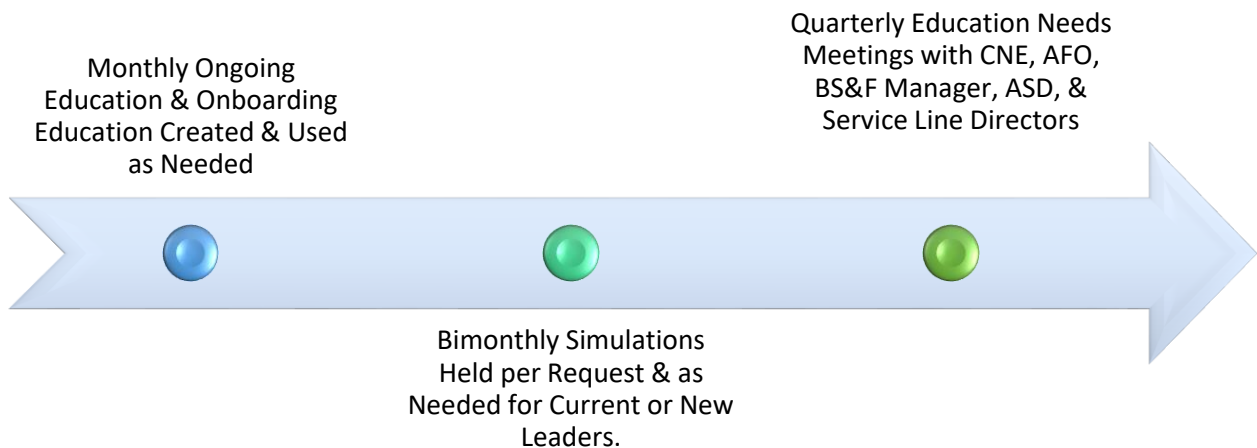
**Phase I**



**Phase II**

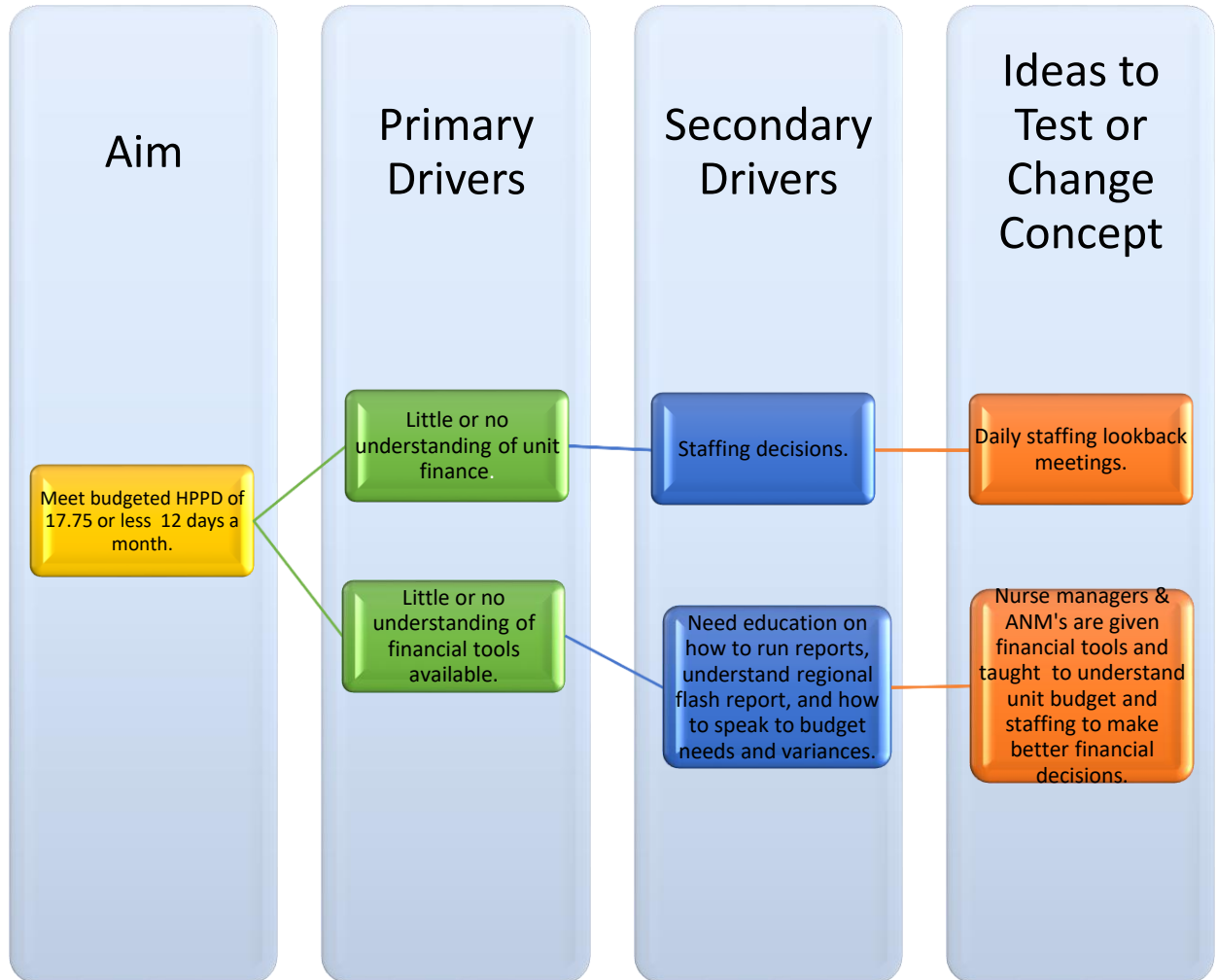


**Phase III**

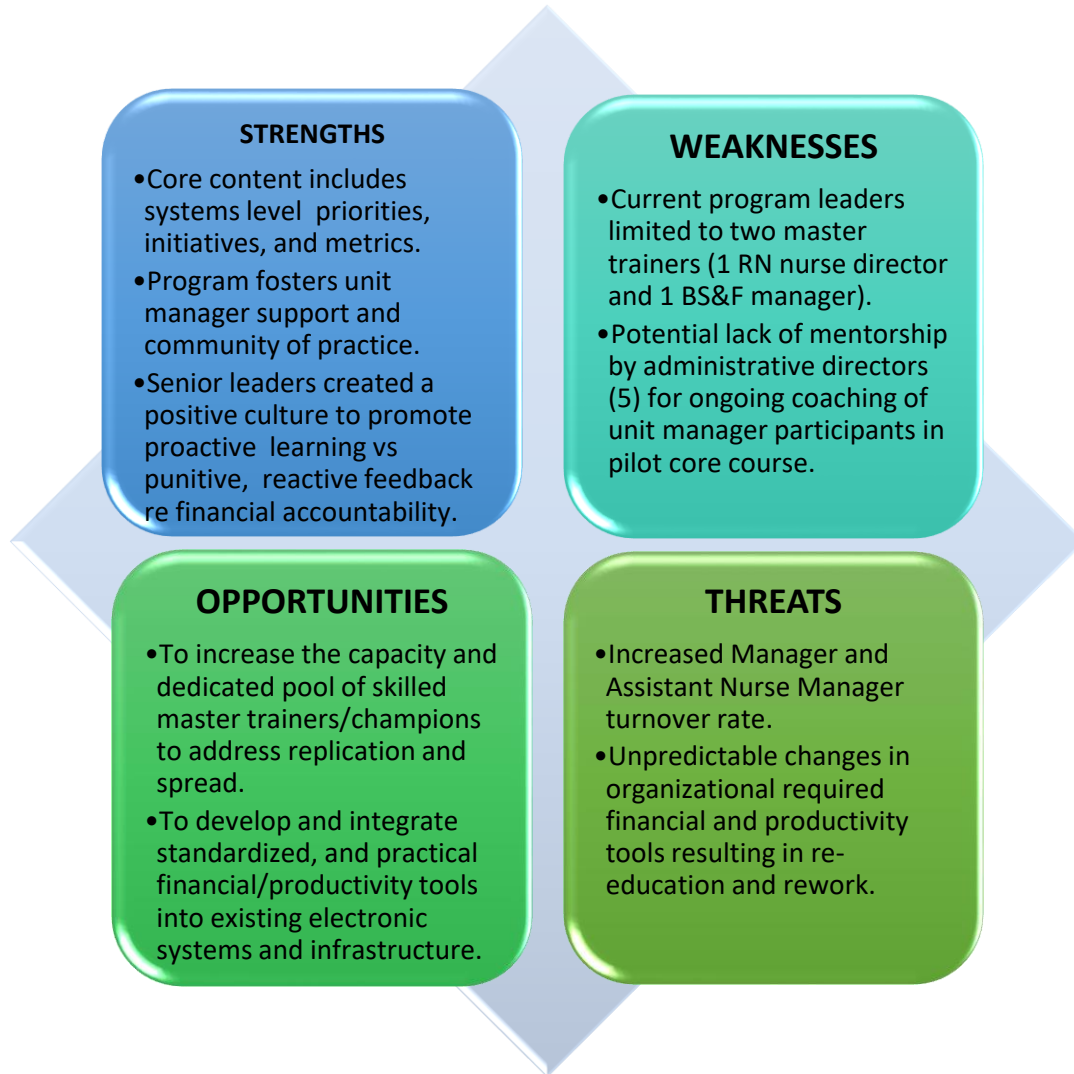


**Appendix G**

**Driver Diagram**



**Appendix H**  
**SWOT Analysis**



## Appendix I

### Cost Saving Analysis

#### SOFT COST SAVINGS - HPPD improvement compared to 2020 Pay Period 11-13 baseline

Pay Period 11-13 Actual HPPD	21.12
Budget Target	17.75
Gap to Target	3.37
HPPD Improvement	1.69
50% Improvement	19.44
ADC Target	13.00
Avg RN Rate	\$ 85.00

Week	Original HPPD	Projected HPPD	Improvement	HPPD Improvement	Hours Saved	FTEs	Dollars Saved
1	21.12	21.12		-	-	-	\$ -
2	21.12	21.12		-	-	-	\$ -
3	21.12	21.12		-	-	-	\$ -
4	21.12	20.56	0.56	0.56	50.60	1.27	\$ 4,301
5	21.12	20.56		0.56	50.60	1.27	\$ 4,301
6	21.12	20.56		0.56	50.60	1.27	\$ 4,301
7	21.12	20.56		0.56	50.60	1.27	\$ 4,301
8	21.12	20.01	0.56	1.11	101.20	2.53	\$ 8,602
9	21.12	20.01		1.11	101.20	2.53	\$ 8,602
10	21.12	20.01		1.11	101.20	2.53	\$ 8,602
11	21.12	20.01		1.11	101.20	2.53	\$ 8,602
12	21.12	19.44	0.57	1.69	153.34	3.83	\$ 13,033
						1.58	\$ 64,646

#### INVESTMENT DOLLARS

ANMs	\$/Hr	# Weeks	Total Incremental Cost
6	95	12	\$ 6,840

Note: The goal during this project was to decrease the overall HPPD by 1.69, which was half of the 3.4 reduction needed to reach the budgeted target of 17.75. The anticipated savings was \$64,646 and 153.34 hours. Despite of the presence of a concurrent pandemic, the overall HPPD remained 21.0 during the study pay periods. These data points are monitored daily.

Source: Internal company report



## **Appendix J**

### **12-Week Education Agenda**

#### **Week I - Mission Statement**

- Understanding the Model.
- Knowing actual expense.

#### **Week II - Common Terms and Definitions**

- How is all this applied to the day-to-day?
- Staffing collaborative huddles.
- Report out expectations.

#### **Week III – How is all this applied to the day-to-day? Common Terms and Definitions**

- Daily manager look back meetings. What did we do the past 24-hours?
- Tracking tools.
- Report out.

#### **Week IV – What is productivity?**

- HPPD Driver Diagram Breakdown.
- Review HPPD and look back.
- Report out.

#### **Week V – Prism Data, how to run reports and read reports**

- Regional daily HPPD reports.
- Review HPPD Driver Diagram Breakdown.
- Report out- each partner reports out for their partners shift.

#### **Week VI – Business Case Prep – 6 Weeks down 6 Weeks to go**

- Reports out to senior leaders.

- Data continued.
- Report out – new partners report out for their partners shift.

**Week VII – Prism Data and Daily Flash Report – Fake news or heads up?**

- Show how you ran your missed meals and missed break report. Who are the top 5 offenders?
- Role play report out to Chief Nurse Executive.

**Week VIII – All things reports**

- Flash report and what does the data tell you?
- How to read the HPPD tool.
- Role play report out to productivity council.

**Week IX – What does position control mean to me as an ANM**

- What is position control really mean? What does it have to do with me?
- Business report prep.
- Report out using the flash report on your shifts worked over the past week.

**Week X – Wait another report? How to look at Fin. Stat and PCSTR reports.**

- Fin. Stat and PCSTR enhance your view of HPPD, overall unit finance, and position control.
- Business report prep.
- Report out on shifts weekly variances. What do you expect your end of pay period HPPD to be?

**Week XI – Recent business case example presented to region.**

- Business case Q&A

- Report out

**Week XII – Business case presentation and completion celebration**

- Plus/delta

**Appendix K**


**Certificate of Achievement**



Note: Each participate receives certificate of achievement after course completion.

## Appendix L

## PDSA

<b>PLAN DO STUDY ACT (PDSA) FORM</b>	
	<b>Cycle #:</b> <b>Start Date:</b> 07/03/20 <b>End Date:</b> 8/23/20
<b>Project Title:</b> ICU Financial Optimization Using Simulation	<b>Project Lead:</b> Melissa Hathcoat
<b>State:</b> California	<input type="checkbox"/> Task-related; Task: <input checked="" type="checkbox"/> Internal Process
<b>Objective of this Cycle:</b> <input checked="" type="checkbox"/> Develop a Change <input type="checkbox"/> Test a Change <input type="checkbox"/> Implement a Change	
<b>Aim Statement (WHAT YOU ARE TRYING TO ACCOMPLISH):</b> <ul style="list-style-type: none"> <li><u>Specific</u>- targeted population: ICU management team.</li> <li><u>Measurable</u>- what to measure and clearly stated goal: HPPD and productivity of 100%-110% met 12 days a</li> <li><u>Achievable</u>- brief plan to accomplish it: 12-week education using role-play simulation.</li> <li><u>Relevant</u>- why is it important to do now: This ICU currently runs at an HPPD of 21.12 and has a budgeted HPPD</li> <li><u>Time Specific</u>- anticipated length of cycle: 4 weeks</li> </ul>	
<b>PLAN</b>	
<b>Test/Implementation Plan (THINK ABOUT WHAT CHANGES YOU CAN MAKE THAT WILL RESULT IN IMPROVEMENT):</b>  <b>What change will be tested or implemented? Include how change will be conducted, who will run it, where it will be run and when it will be run unless already noted in Aim Statement above. (If needed, include specifics on tasks, responsibilities and due dates.)</b> A twelve-week financial education course with role-play simulation. Each week education will be created and built on the week prior and on the teams understanding of previous content. By the end of the twelve-week education the team will build a small business plan and report out.	
<b>Prediction:</b> The team will make better financial decisions by gaining financial knowledge and how to use financial tools.	
<b>Data Collection Plan (THINK ABOUT HOW YOU WILL KNOW THE CHANGE IS AN IMPROVEMENT):</b>  <b>What data/measures will be collected?</b> Daily flash report and PRISM reports. Will monitor daily, weekly, and pay period HPPD, OT, and paid FTE's  <b>Who will collect the data?</b> As the project manager I will collect the data in partnership with the Business, Strategy, & Finance manager.	
<small>July 24, 2014 Credit to IHI Open School for Health Professionals for original form. Modified for Telligen Use.</small>	
<small>Page 1 Revised: 02/11/2015</small>	

**When will the collection of data take place?**

Each week the reports will be collected and analyzed.

**How will the data (measures or observations) be collected and displayed?**

The data will be retrieved from regional reports and PRISM reports. Graphs and trends will be displayed at the end of the project to show if there was improvement or no improvement.

**What decisions will be made based on data?**

Education may need to be adjusted.

**DO****Activities/Observations:****Record activities/observations that were done in addition to those listed in plan (above):**

The team is storming and not aligned with organization expectations. Wanted to use the education time as a platform to complain about how short staffed they are vs. to learn how to build a business case for what they think they need. The CNE attended 4th session to reset the team by level setting and reminding them of the expectations. The team is now focused, turning in prep-work, and asking questions.

**STUDY**

**Questions:** Copy and paste Prediction from Plan above and evaluate learning. Complete analysis of the data. Insert graphic analysis whenever possible.

**Prediction:****Learning (Comparison of questions, predictions, and analysis of data):**

The team was at more novice level than expected. Had to start with basics and it took two weeks longer for basics understanding. Their data shows no improvement. There is an increased number of 1:1 ventilated

**Summary** (Look at your data. Did the change lead to improvement? Why or why not?):

The team is asking the right financial questions to make improvements. They are tracking and trending their shifts and what they could have done better. The increased number of 1:1's is the cause of no improvement.

**ACT****Describe next PDSA Cycle:** Based on the learning in "Study," what is your next test?

Continue education with the team logged on to Teams and use their cameras to show they are engaged and watching the lessons. work with the team on how to optimize their resources.

**When will the collection of data take place?**

Each week the reports will be collected and analyzed.

**How will the data (measures or observations) be collected and displayed?**

The data will be retrieved from regional reports and PRISM reports. Graphs and trends will be displayed at the end of the project to show if there was improvement or no improvement.

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**ACT****Describe next PDSA Cycle:** Based on the learning in "Study," what is your next test?

Continue education with the team logged on to Teams and use their cameras to show they are engaged and watching the lessons. work with the team on how to optimize their resources.

## Appendix M

### IRB Exemption for Non-Research of Determination Form



**CNL Project: Statement of Non-Research Determination Form**

**Student Name:** Melissa Hathcoat

<p><b>Title of Project:</b> ICU Optimizing Financial Performance</p> <p><b>Brief Description of Project:</b></p> <p><b>A) Specific Aim Statement:</b> By November 1, 2020 ICU Nurse Leaders will meet their targeted HPPD of 17.78 or less and productivity of 100-110% twelve days a month by increasing their knowledge of budget and use of financial tools.</p> <p><b>B) Description of Intervention:</b> Teach Nurse Managers and Assistant Nurse Managers (ANM's) how to manage their HPPD and unit budgets while maintaining positive patient satisfaction scores, ED to Bed, maintain quality metrics and no increase in patient harm scores.</p> <p><b>C) How will this intervention change practice?</b> Giving managers and assistant nurse managers education about hospital unit finance and finance tools they will be able to better manage their unit budget and HPPD.</p> <p><b>D) Outcome measurements:</b> Meet budgeted HPPD of 17.78 or less and productivity of 100-110% twelve days a month.</p>
---

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: <http://answers.hhs.gov/ohrp/categories/1569>

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

This project involves research with human subjects and must be submitted for IRB

5-17

approval before project activity can commence.

Comments:

**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST \***

**Instructions: Answer YES or NO to each of the following statements:**

Project Title: <b>Optimizing ICU Financial Performance</b>	YES	NO
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	Yes	
The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.	Yes	
The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does NOT follow a protocol that overrides clinical decision-making.	Yes	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.	Yes	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	Yes	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	Yes	
The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	Yes	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	Yes	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: "This project was undertaken as an Evidence-based change of practice project at Northern California Medical Center and as such was not formally supervised by the Institutional Review Board."	Yes	

**ANSWER KEY:** If the answer to ALL of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is NO, you must submit for IRB approval.

\*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

5-17



**STUDENT NAME (Please print):** Melissa R. Hathcoat

Signature of Student:

Melissa R. Hathcoat

**DATE:** June 17, 2020

**SUPERVISING FACULTY MEMBER NAME (Please print):**

Signature of Supervising Faculty Member

Cathy Coleman

**DATE:** 6/30/2020



**Appendix N**

**Daily HPPD**

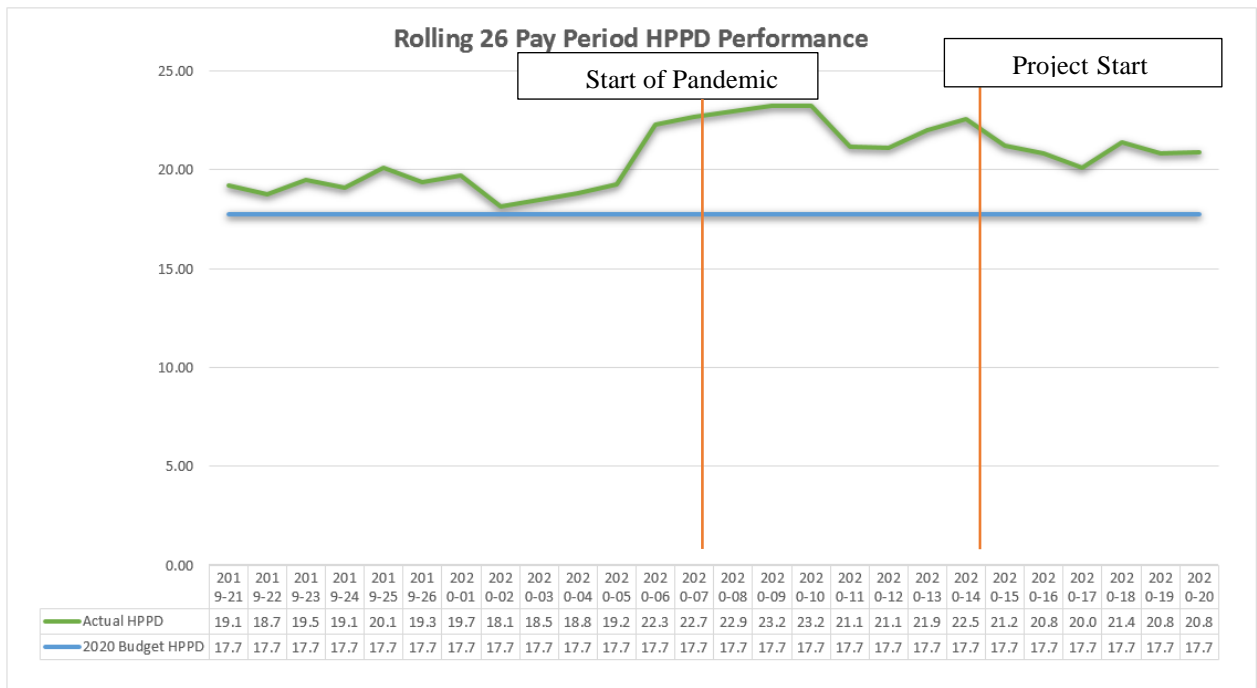
ICU Daily HPPD  
Pay Periods 15-20

Pay Period 15	7/5/02	7/6/02	7/7/02	7/8/02	7/9/02	7/10/02	7/11/02	7/12/02	7/13/02	7/14/02	7/15/02	7/16/02	7/17/02	7/18/02	Pay Period Average
	18.67	24.76	18.81	18.67	18.7	19.51	17.86	24.05	20.47	23.95	18.36	20.77	23.99	25.6	20.83
Pay Period 16	7/19/20	7/20/20	7/21/20	7/22/20	7/23/20	7/24/20	7/25/20	7/26/20	7/27/20	7/28/20	7/29/20	7/30/20	7/31/20	8/1/20	Pay Period Average
	22.96	19.12	22.92	22.67	22.78	23.25	21.09	24.83	23.15	17.45	20.72	20.09	20.07	18.99	21.17
Pay Period 17	8/2/20	8/3/20	8/4/20	8/5/20	8/6/20	8/7/20	8/8/20	8/9/20	8/10/20	8/11/20	8/12/20	8/13/20	8/14/20	8/15/20	Pay Period Average
	18.44	22.33	18.94	20.13	19.17	22.05	20.61	20.14	20.21	19.73	21.55	21.14	20.68	19.59	20.73
Pay Period 18	8/16/20	8/17/20	8/18/20	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	8/25/20	8/26/20	8/27/20	8/28/20	8/29/20	Pay Period Average
	22.18	19.84	18.32	22.29	19.5	22.68	19.41	20.75	19.76	21.99	22.46	22.67	19.68	19.95	20.45
Pay Period 19	8/30/20	8/31/20	9/1/20	9/2/20	9/3/20	9/4/20	9/5/20	9/6/20	9/7/20	9/8/20	9/9/20	9/10/20	9/11/20	9/12/20	Pay Period Average
	20.99	18.97	19.01	17.07	21.88	19.05	22.19	20.44	20.07	24.04	20.18	22.89	19.12	23.85	20.45
Pay Period 20	9/13/20	9/14/20	9/15/20	9/16/20	9/17/20	9/18/20	9/19/20	9/20/20	9/21/20	9/22/20	9/23/20	9/24/20	9/25/20	9/26/20	Pay Period Average
	18.42	18.43	21.93	18.48	18.54	22.45	24.01	21.94	20.48	23.59	20.99	22.3	20.38	21.03	20.69

Note: Internal company data.

■ = Days HPPD was met.

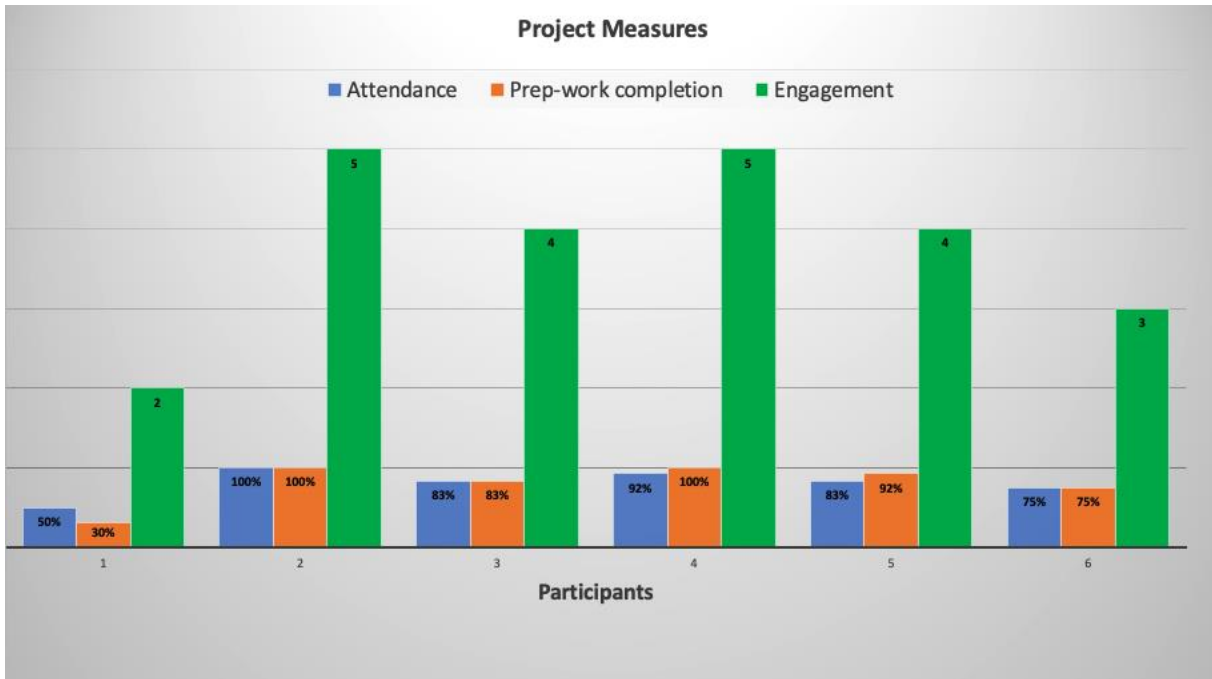
### Appendix O HPPD Run Chart



Note: Internal company data.

## Appendix P

### 4Project Measures



Note: n=6

■ Attendance = % of classes attended out of 12.

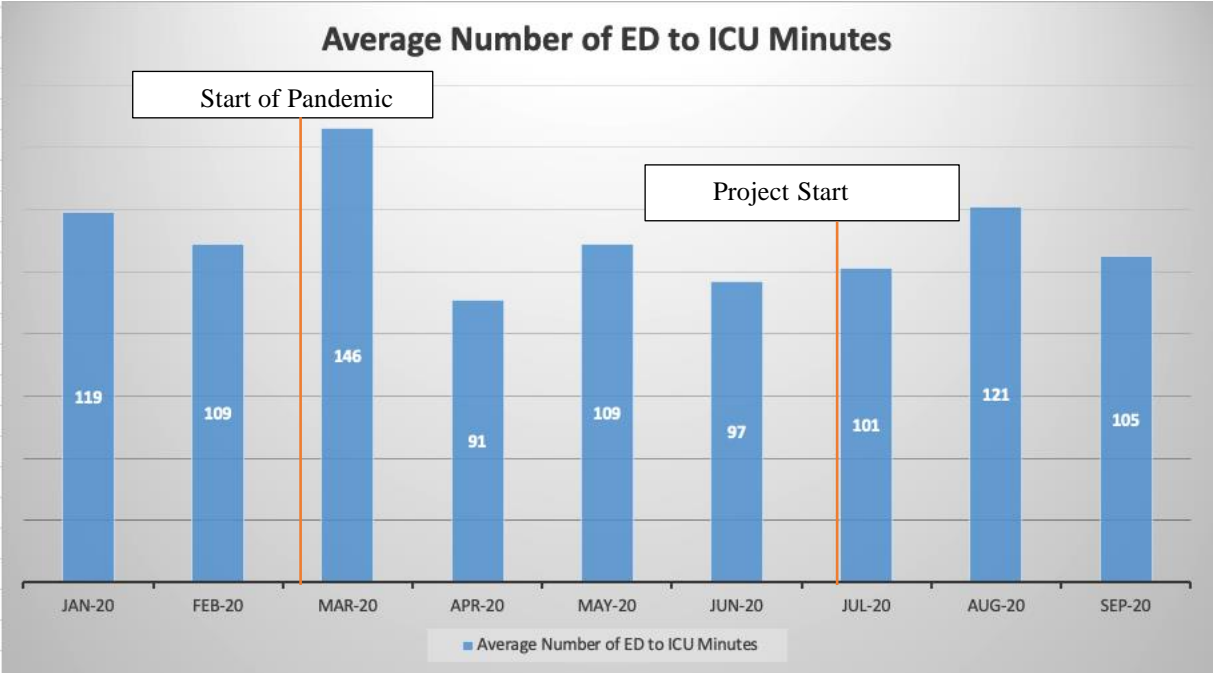
■ Prep-work = % assignments completed out of 12.

■ Engagement =

1. Did not ask questions, share experiences, or report out
2. Report out only
3. Asked a question and report out
4. Asked a question, shared when asked, and report out
5. Volunteering to share experiences, asked questions, and reported out

**Appendix Q**

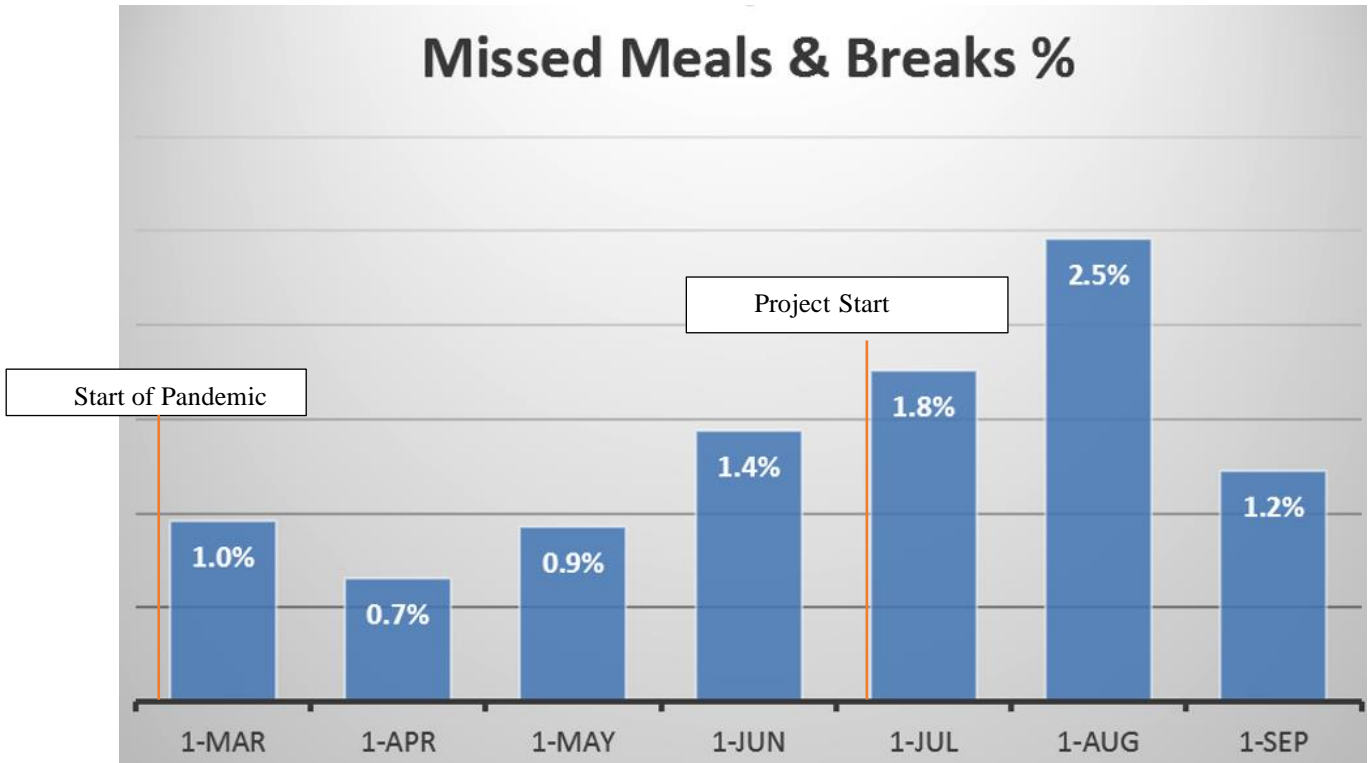
**ED to Admit Bed Data**



Note: Internal company data.

**Appendix R**

**Missed Breaks and Meals Data**



Note: Internal company data.