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Tiered Centralized Education in the Transition-to-Practice Program to Improve Nurses'

Level of Confidence on Nursing Sensitive Indicators Outcomes

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Abstract

A tiered Centralized Education in the Transition-to-Practice (TTP) Program is crucial to improving nurses' Level of Confidence on nursing-sensitive quality indicators. The benefits of a structured orientation program taught by trained content experts are evident in the literature. In addition, training transition-to-practice RNs during onboarding with training and assessment sessions throughout the orientation program to increase frequency provides skills acquisition. This study examined the impact of a house-wide education program on the nurses' confidence levels of CLABSI prevention, a measured nursing-sensitive quality indicator. This quasi-experimental quality improvement study measured the confidence and comfort levels of transition-to-practice RNs and identified that centralized house-wide education programs statistically increase the confidence levels of TTP RNs in CLABSI prevention

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Tiered Centralized Education in the Transition-to-Practice Program to Improve Nurses'

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Chapter 1: Introduction and Background

The National Healthcare Safety Network has 18,000 reported Central Line-Associated Bloodstream Infections (CLABSI) annually (CDC, 2015). Of-the reported CLABSI in 2019, 3,602 infections were considered hospital-acquired conditions acquired during a patient's care in an acute care hospital. Central lines are catheters placed in a large vein to provide medications or fluids into the body for medical treatment (CDC, 2019). When the central line is not correctly inserted, or pathogens enter the patient's line due to the lack of sterility during catheter maintenance, the central line may become infected (CDC, 2021). The National Database of Nursing Quality Indicators (NDNQI) evaluates indicators that impact the nursing profession's structure, process, and outcomes. CLABSI is one of the original American Nurses Association (ANA) Nursing-Sensitive Indicators (NSI), and a Nursing Sensitive Quality Indicator (NSQI) endorsed by the National Quality Forum (NQF) (Montalvo, 2007).

Among all patients with a central line, the CLABSI incidence rate is 10.6 cases per 1,000 central venous catheters (CVC) days, and the risk mortality ratio causes 150 deaths per 1,000 CLABSI (95% CI: 0.0070 to 0.027) (AHQR, 2017; Baier et al., 2020; Research & Quality, 2017). Additionally, in the pediatric and neonatal intensive care unit (ICU) population, CLABSI report rates range from 1.33-to3.97 per 1,000 line days (Carter et al., 2016). Importantly, of all the hospital-acquired conditions, CLABSI has the highest cost-per-case at $48,108 (95% CI: 27,232-$68,983) and is a publicly reported health care measure by Medicaid and the Children's Health Insurance Program (AHQR, 2017; Baier et al., 2020).

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Gap in Practice and Purpose

Despite evidence that a structured centralized nursing orientation program may improve nursing outcomes, nursing outcome-focused orientation has not been consistently disseminated in most healthcare organizations' RN transition-to-practice programs (Tyndall et al., 2018). The purpose of this DNP project is to implement a structured centralized nursing orientation program to (1) meet the regulatory requirement to train all RNs on infection prevention and (2) Integrate education to impact nursing outcomes measured by the National Database of Nursing Quality Indicators into new graduate and transition RN orientation and (3) Evaluate RN confidence level in CLABSI Prevention.

Preventable Errors: CLABSI

CLABSI causes significant mortality, morbidity, and financial burden yet is a preventable infection (CDC, 2015). Contributing factors that affect CLABSI rates specific to nursing care include excessive device use and incomplete adherence to safe CLABSI maintenance practices. In addition, nursing experience directly contributes to negative patient outcomes. For example, an analysis of all nurse-sensitive indicators (NSI) indicated that less experienced nurses, specifically nurses with less than three years of experience, do not perform well on NSI metrics and have higher incidences of patient errors (Akiyama et al., 2019; Bowden et al., 2019; Grimsley et al., 2017).

Benner's From Novice to Expert's clinical competence level describes novice nurses as nurses with less than one year of experience, and advanced beginners, as nurses with less than three years of experience. In a recent Stanford Children's Health (SCH) report on preventable errors in the ICUs, novice nurses and advanced beginners had a higher number of preventable errors than more experienced nurses (CVICU LIT, 2020). Other studies that reviewed nursing

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incident reports on the nurses' experience level identified that novice and advanced beginner

nurses had a high rate of incident reports categorized as lack of knowledge, which resulted in the

new nurses' misjudgment and decreased level of confidence (Akiyama et al., 2019; Montgomery

et al., 2020).

Transition-to-Practice Programs

The National Nursing Workforce projects that the profession's workforce will increase

by seven percent annually in the next ten years (Smiley et al., 2018). The increase in the

workforce will include novice staff, nurses with no experience and, advanced beginner staff,

nurses with limited experience in clinical situations. With an estimated increase of 200,000 new

nurses entering the workforce with limited or no work experience, there are not enough

transition-to-practice (TTP) programs for new graduate and transitional nurses offered in the

United States (Edwards et al., 2015).

Tyndall's (2018) integrative review evaluated 20 peer-reviewed articles published

between 2010-to-2017 that assessed the impact of new graduate nursing transition programs on

patient safety outcomes. The authors identified that only two of the 20 studies showed improved

patient safety outcomes; however, the improved patient outcomes were self-reported practices

and self-reported error rates. In the integrative review, the authors identified that in the first six

months of practice of the new graduate nurse, 75% self-reported a risk for error resulting in

patient harm in their practice. In contrast, structured and standardized orientation program

reports indicate that TTP RNs have fewer patient errors and are less likely to have negative

safety practices.

The majority of new hires are novice and advanced beginner nurses that are either new

graduate nurses or TPP RNs. Healthcare organizations, specifically hospitals, employ

approximately 62% of all nurses (Aiken, 2007; Labor., 2019; Smiley et al., 2018)). Hospitals

must improve orientation into a structured, standardized hospital program that meets the current

nursing standards and hospital regulatory requirements. Orientation programs need to adequately

prepare nurses to provide safe patient care and meet nursing quality indicator metrics to improve

patient outcomes.

Structured Orientation's Impact on Confidence

Structured and standardized hospital-centric TTP orientation programs decrease program

costs, improve patient safety, and increase the level of confidence of TTP RNs (Agosto et al.,

2017; ANCC, 2020). Furthermore, a TTP hospital-centric orientation designed with a curriculum

to decrease hospital-acquired conditions and impact nursing-sensitive indicator metrics improves

staff confidence (p=0.001) to make better clinical decisions (Beyea et al., 2007; Monforto et al.,

2020; Tyndall et al., 2018).

Nurses in TTP start their clinical development between novice and advanced beginners

(Gilroy et al., 2020; Hickerson et al., 2016). The next level, competent, is the benchmark for

clinical safety and quality patient care (Akiyama et al., 2019; McKane, 2004; Wayman, 2009).

For complex nursing skills, such as CLABSI prevention, real-world experience for the new nurse

to attain competence and confidence, situational experience through unit-specific preceptorship

for the new nurse must be structured to practice safe, competent care.

In Casey and Fink's study on 250 nurses from multiple clinical areas throughout three

years of TTP nurses, 20% of nurses felt inadequate in providing competent care to their patients,

and 20% of nurses felt confident in caring for a patient with a central line (Casey et al., 2004).

Notably, the nurses lacked confidence and felt unsure and anxious about their ability to learn or

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apply new skills. In addition, the study identified that an increase in confidence impacts clinical

competence and increases the nurses' level of responsibility to provide safe patient care.

Benner's From Novice-to-Expert Integration to the Project

The project focuses on a structured, standardized TTP program that integrates

interventions to impact nursing-sensitive indicator metrics into the curriculum. The first tier,

weeks one-through-four includes hospital organizational onboarding activities and bedside

preceptorship. Novice and advanced beginner nurses gain practical knowledge on topics that

impact all nurses in the organization. The second tier, which starts on week four and lasts until

week eight, includes continued bedside preceptorship and group development classes on

department-specific nursing skills. As the tier progress and situational experience increases,

nurses gain their confidence levels. Integration of the novice-to-expert theory to the DNP project

focuses on the confidence levels of the TPP nurse through a centralized tiered orientation and
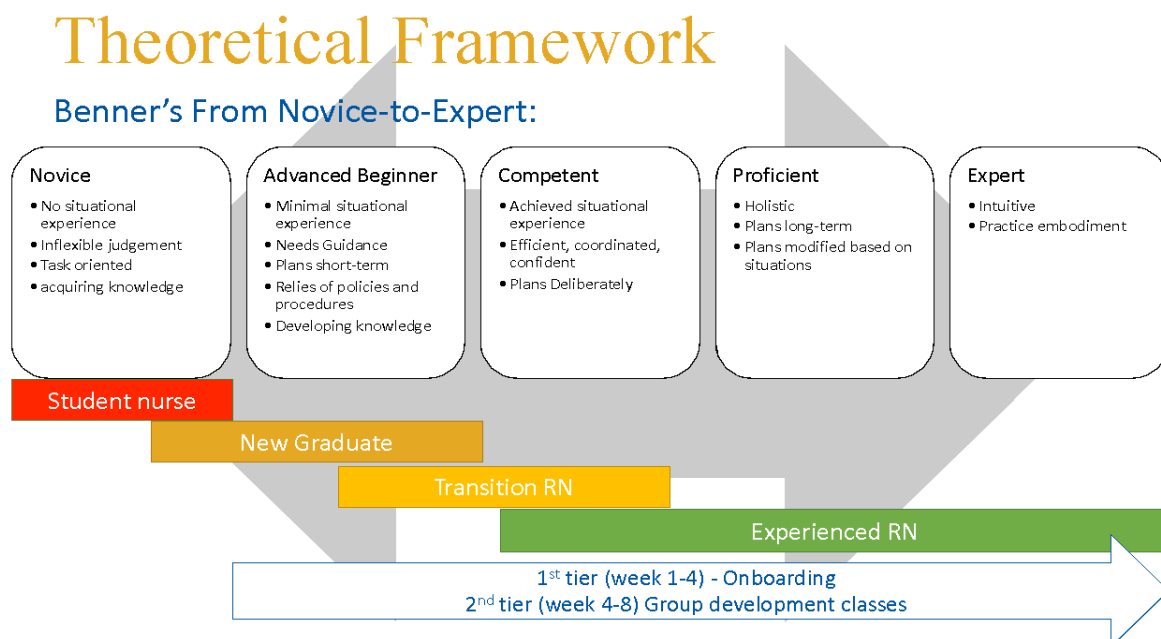
experiential onboarding of the advanced beginner level.

Figure 1: Theoretical Framework - Benner's From Novice-to-Expert

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TTP RNs have minimal or limited situational experience and rely on factual knowledge. To impact the TPP RNs' confidence level in providing care to the patient with a central line, the orientation and onboarding program included classes emphasizing CLABSI policy and procedure review. The TTP RN applied the guidelines through CLABSI skills and simulation training. Additionally, these RNs continue bedside preceptorship to gain real-world CLABSI maintenance situational experience and apply factual knowledge learned from the policy and procedure classes. Tiered classes that focus on CLABSI prevention will be spaced out in-between preceptorship throughout the orientation program to integrate real-life situational learning instead of front-loading classes during the first week of orientation.

Chapter 2: Methods

Design

This quality improvement study is a quasi-experimental design, single group, pre-survey, and post-survey design that will measure each stage of the competency domain: Knowledge, skills, and attitudes (Cronenwett et al., 2007). There are pre-and post-measures of outcomes on each stage timed during onboarding week and at the end of preceptorship.

Figure 2: Methods - Design

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Setting

The-project site, Stanford Children's Health (SCH), is a busy children's hospital with 14,000 admissions, 1,058 medical staff, and 5,005 employees (Stanford, 2020). The hospital is a 461-bed, quaternary-level, non-profit, academic hospital in Northern California— without a nursing school affiliation (Stanford, 2020). SCH has met all of the American Nurses Credentialing Center's Magnet Recognition Program requirements and was a distinguished Magnet facility (SCH, 2020). At the time of the project, SCH had two nurse TTP programs for both nurse residents and nurse fellows. The Nurse Residency Program, which admitted approximately 30 new graduate RNs semiannually, was a centralized cohort program accredited by the ANCC. The Nursing Fellowship Program was a TTP program for nurses without experience in the new specialty. Admission to the TTP depends on the organization's needs, and hiring occurs on a random schedule. The Nursing Fellowship Program was a decentralized unstructured program and was in the planning phase to apply for ANCC accreditation.

With the current shortage of experienced nurses available nationwide, SCH has primarily been hiring TTP nurses to fulfill the hospital's bed capacity and the influx of patient admissions (Labor., 2019). Two years prior to the project, SCH hired at least two nurses every two weeks that would have qualified as nurse fellows in the TPP.

Sample

Study participants included RNs in the TTP Program recruited by the Human Resource department of Stanford Children's Health. The RN Residency and RN Fellowship consists of RNs with a minimum of a Bachelor of Science in nursing, a California RN license, and Basic Life Support (BLS) certification. Specifically for the RN Fellowship Program, RNs must have more than six months of RN experience and no prior experience in their hired specialty area. The

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exclusion criteria for the RN Residency Program include graduates from an online nursing

program, graduation greater than a year, and they must not have paid RN experience. Other RN

Fellowship considerations include RNs returning to practice after being out of the workforce for

greater than a year. The exclusion criteria for the TPP are work experience in a related specialty

setting, for example, adult nursing to pediatric ICU or pediatric acute care to cardiac ICU.

The project is a quality improvement project that does not meet the definition of human

subjects research, thus excludes the study participants from informed consent of the intervention.

In addition, an IRB Exclusion form was completed and submitted to the IRB review board for

both Stanford Health Care and San Jose State University. Both institutions deemed the project

was a Quality Improvement that does not constitute human subjects research.

Data Collection

Outcomes are listed in Table 1 with operational definitions for CLABSI care and

prevention. All TTP Programs at SCH include a self-assessment at the start of the orientation,

which all TTP RNs must complete. The self-assessments are designed to assess the nurses'

foundational knowledge, skills, and attitudes. The program coordinator for the Nurse Residency

and Fellowship Programs will collect the confidence scores of participants before, during, and

after the education and training program through an electronic survey. There are concerns that

the education dissemination frequency of central line medication change could impact CLABSI

prevention confidence levels. Participants are asked the number of central line medication

changes they performed during clinical preceptorship and indicated the figure as a covariate.

Casey-Fink Graduate Nurse Experience Survey

SCH's Nurse Residency Program uses the Casey-Fink Graduate Nurse Experience

Survey (see appendix A) to measure the new hire RN's stressors, fears, and challenges during

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orientation (Casey et al., 2011). The Casey-Fink Graduate Nurse Experience Survey includes a

self-assessment and has four rating levels progressing from 1 = strongly disagree to 4 = strongly

agree.

The Casey-Fink survey originated in 1999, was first revised in 2002, and a second

revision in 2006. Multiple large-scale studies validated the Casey-Fink Graduate Nurse

Experience Survey. Additionally, more than a thousand national and international Nurse

Residency Programs use the survey, and it is the recommended survey tool for new graduate

nurse programs by the ANCC (Casey, 2019; Prion et al., 2015). Approval was obtained for use in

the project from the authors. (see appendix B)

Supplementary Self-Assessment Tool

There were concerns that central line medication change frequency could impact

CLABSI prevention confidence levels. Therefore, in addition to the Casey-Fink Graduate Nurse

Experience Survey, the Center for Excellence and Inquiry at SCH created an additional

supplementary CLABSI prevention self-assessment tool to measure skills confidence and skills

application frequency. The supplemental survey includes a self-assessment with five levels

increasing from 0 = strongly disagree to 5 = strongly agree. Additionally, the supplemental

survey includes the type of CLABSI prevention education the participant received: Preceptor

Bedside training, Unit-Educator education, and House-wide Education. Last, the skills

application frequency survey consists of the weekly number of central line changes performed.

Each participant answered a frequency of central line medication changes they performed during

clinical preceptorship and indicated the figure as a covariate. The supplemental CLABSI

Prevention self-assessment tool has not been psychometrically tested for reliability nor validated.

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The participants performed a return demonstration. The Nursing Professional Development Specialist and Nurse Educator validated the participants' skills using the CLABSI policy and procedure checklist on central line management (see appendix C). Upon completing the skills session, the participants completed the self-assessment for the second and last time.

Procedures

CLABSI education methods for the new hires to gain knowledge include accessing and reading the current SCH policy and procedure and completing a web-based training module. The web-based training was pre-assigned to all new staff and, as with all other required training modules offered by the hospital, and after one year of employment, all modules require annual renewing. In addition, the CLABSI education methods for skills acquisition included the new hires' clinical time with a preceptor and a centralized education.

The intervention entails a TTP program for nurse residents and fellows, a centralized cohort education, and training on hospital-acquired conditions (HAC) (Monforto et al., 2020). The Nurse Residency Program was centralized in the nursing education department and led by a program manager and has structured cohorts. However, the program's education does not focus on hospital-acquired conditions. The Nurse Fellowship Program was not centralized and is unit-led. Nurse educators base the educational content on their individual preferences and schedules. The proposal for centralizing the Nurse Residency and Fellowship Program was in process with support from the senior leadership, the Professional Development Council, and Orientation Oversight Committee.

The intervention focuses on the knowledge, skills, and attitudes of HACs, specifically CLABSI prevention (Ling et al., 2016). The implication to the organization is that the project site experienced a sudden increase in CLABSI rates and required a standard house-wide approach to

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prevent CLABSI. In addition, the incidence of increased CLABSI rates provided more project

support or frequent changes in policies and procedures that could affect the project's intervention

and results.

Training of Staff

The project manager integrated a standardized CLABSI education program into the

hospital-wide onboarding orientation program. Nursing Professional Development Specialists,

Nurse Educators, staff RNs involved in RN onboarding, and preceptors were trained on the

CLABSI bundle elements and how to validate RNs regarding CLABSI competency. The project

manager for the program disseminated the self-assessment during the first week of onboarding.

On the last day of the onboarding week, the participants completed the baseline CLABSI self-

assessment before the CLABSI prevention education session. On the fourth week, the ICU

nursing professional development specialist taught the CLABSI prevention skills to participants.

On the twelfth week, which is the last week of preceptorship, the participants completed the

post-orientation CLABSI self-assessment.

Analysis

Data analysis consisted of descriptive analysis and Repeated Measures MANCOVA.

First, descriptive statistics characterized the TTP RNs and the RN level of confidence

frequencies and percentages using the first week of orientation and the last CLABSI education

session. In the second part of the data analysis, repeated measures multivariate analysis of

covariance (RM-MANCOVA) with two within-subjects factors was conducted to determine

whether significant differences exist among the time points for Confidence Level and Comfort

Level after controlling for Unit-Educator Training, Preceptor-led Training, House-wide CLABSI

Prevention Education, and CLABSI Line Change Frequency using the data from the results from

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the descriptive statistics of each participant and its correlation with CLABSI prevention

confidence levels.

Intellectus Statistics was used to store, analyze and evaluate the data. Participants had a

unique identifier that consists of the first three digits of their phone number and the first four

numbers of their street address with leading zeros for the purposes of matching the pre and post-

survey test results. After the analysis was complete, the identifiers were deleted from the dataset.

Risks

The intervention has limited associated risks. Throughout the intervention, the preceptors,

Nursing Professional Development Specialist, and Nurse Educator closely monitored the

progress of all the RNs enrolled in the TTP and intervene in the event that the TTP RN practices

outside of their standards of care. Additionally, unique identifiers discussed in the analysis

section prevented privacy risk for participants.

Benefits

There might were no direct benefit to the participants, but the interventions likely

impacted the knowledge, skills, and attitudes to care for a patient with a central line. The

intervention could potentially decrease CLABSI infection rates and improve patient outcomes.

Costs

There were no additional costs for the project or the subject beyond the current TTP

program.

Payment

There were no payments for the subjects who participate in the project.

Confidentiality

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The subjects who participated in the project were protected by the employee

confidentiality agreement and the new graduate resident policy at Stanford Children's Health.

The physical data gathered for the project was stored in a double-locked file storage, and the

electronic data gathered will be stored in a password-protected electronic file. Reporting of the

results did not identify any subjects in the program.

Chapter 3: Results

The sample included 34 participants, which included 30 new graduate RN residents

(N=30) and 4 RN fellows (N=4). The majority of the participants identified as female (N=30).

Their reported median age of 25.63 (*SD* = 4.17, Min = 21.00, Max = 36.00) and 33.00 (*SD* =

15.43, Min = 23.00, Max = 56.00) for the new graduate RN residents and RN fellows outlined in

table 1.

Table 1: Age

Summary Statistics Table for Interval and Ratio Variables by Program

Variable: Age	*M*	*SD*	*n*	Min	Max
RN Fellow	33.00	15.43	4	23.00	56.00
RN Resident	25.63	4.17	30	21.00	36.00

The most frequent level of education for RN residents is a BSN (N=20, 66.67%), and

33.33 % have MSN (N=10,33.33%). RN Fellows' highest level of education is a BSN (N=4,

100%), as outlined in table 2.

Table 2: Level of Education by Program

Frequency Table for Nominal Variables

	Program	
Variable	RN Fellow	RN Resident
Level of Education		
Bachelor	4 (100.00%)	20 (66.67%)
Master	0 (0.00%)	10 (33.33%)

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| Total | 4 (100.00%) | 30 (100.00%) |

There were eight nursing unit areas of specialty. The most frequently observed Current

Unit Area of Specialty category was CVICU (n = 8, 23.53%), as described in table 4.

Table 4: Area of Specialty

Frequency Table for Nominal Variables

Variable: Current Specialty Unit	n	$%$
CVICU	8	23.53
NICU	6	17.65
Maternity	6	17.65
L&D	4	11.76
PCU 400	4	11.76
PCU 500/520	3	8.82
PEC	2	5.88
PCU 360	1	2.94
Total	34	100.00

The participants' pre-orientation confidence levels indicated that three strongly agree

(8.82%), 12 agree (35.29%), eight uncertain (23.53%), 7 disagree (20.59%), and four strongly

disagree (11.76%) that they are confident to care for a patient with a central line. The post-

orientation confident levels indicated that 11 strongly agree (26.47%), 13 agree (38.24%), five

uncertain (14.71%), 2 disagree (8.82%), and three strongly disagree (5.88%) that they are

confident to care for a patient with a central line. The frequencies and percentages are presented

in Table 6.

Table 6: Pre and Post Orientation Confidence Levels on CLABSI Care

	Program		
Variable	RN Fellow	RN Resident	**Total**
Pre-Orientation Confidence CLABSI Care			
Strongly Agree	3 (75.00%)	0 (0.00%)	3 (8.82%)

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Agree	1 (25.00%)	11 (36.67%)	12 (35.29%)
Uncertain	0 (0.00%)	8 (26.67%)	8 (23.52%)
Disagree	0 (0.00%)	7 (23.33%)	7 (20.28%)
Strongly Disagree	0 (0.00%)	4 (13.33%)	4 (11.76%)
Total	4 (100.00%)	30 (100.00%)	34 (100.00%)
Post-Orientation Confidence CLABSI Care			
Strongly Agree	4 (100.00%)	5 (16.67%)	9 (26.47%)
Agree	0 (0.00%)	13 (43.33%)	13 (38.23%)
Uncertain	0 (0.00%)	5 (16.67%)	5 (14.70%)
Disagree	0 (0.00%)	2 (6.67%)	2 (5.88%)
Strongly Disagree	0 (0.00%)	3 (10.00%)	3 (8.82%)
Total	4 (100.00%)	30 (100.00%)	34 (100.00%)

Figure 10 outlines the pre-orientation CLABSI care confidence levels by nursing unit area of specialty.

Figure 10

Barplot of Pre_Confidence_CLABSI_Care by X_Current_Unit_Area_of_Specialty
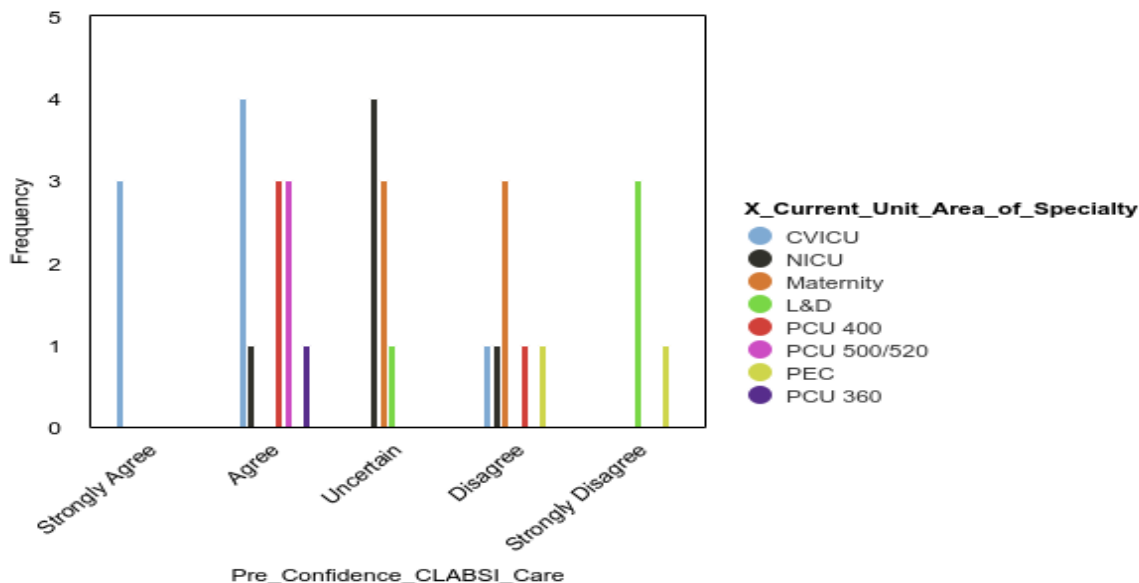
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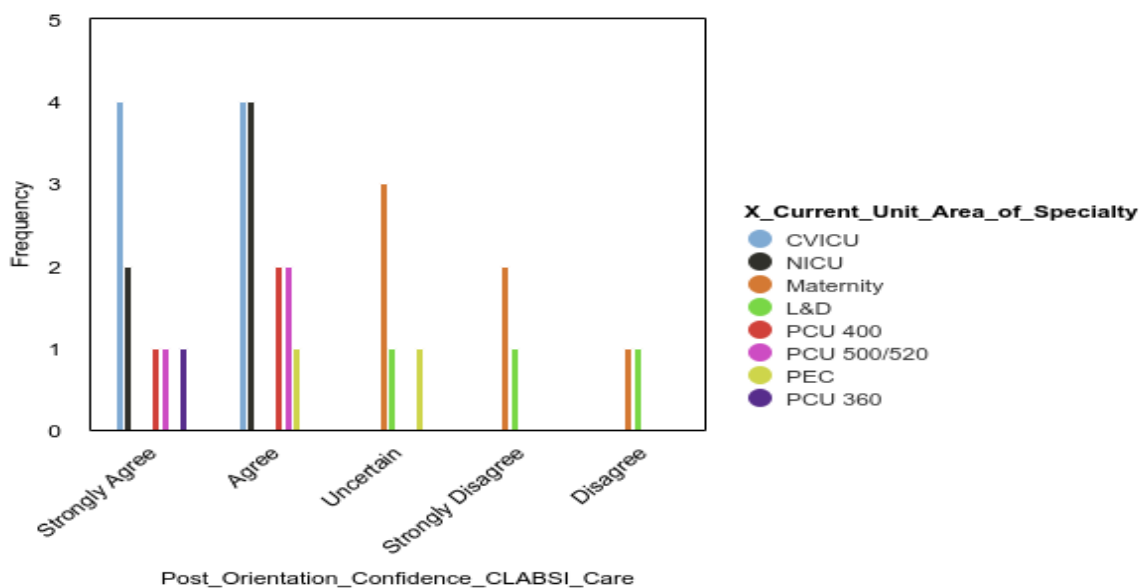
Figure 23 outlines the pre-orientation CLABSI care confidence levels by nursing unit area of specialty.

Figure 23

Barplot of Post_Orientation_Confidence_CLABSI_Care by X_Current_Unit_Area_of_Specialty

Some participants in some units such as Labor and Delivery, Maternity, and PEC rarely care for patients with a central line. When results were filtered to demonstrate the participants'

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confidence levels (N=22) specific to a nursing unit area of specialty that cares for patients with a

central line, participants responded strongly agree (40.91%), agree (51.55%), uncertain (0%),

disagree (0%), strongly disagree (0%) presented in figure 63.

Figure 63 *Post Orientation Confidence CLABSI Care filtered by Unit Area of Specialty that*
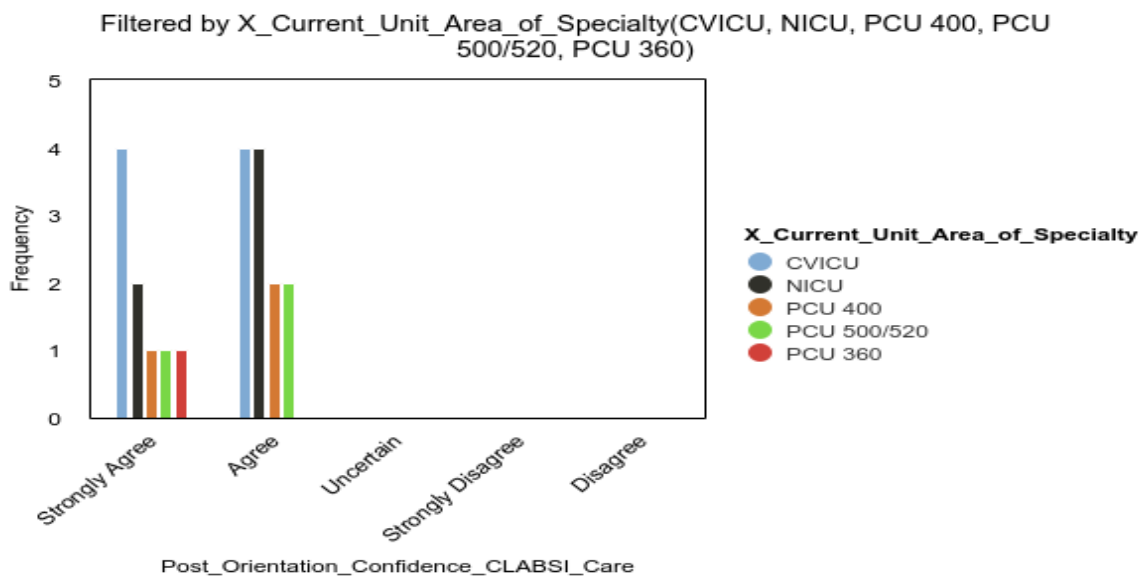
cares for patients with a central line

Figure 64

Pie Chart of Post_Orientation_Confidence_CLABSI_Care

The results of repeated measures multivariate analysis of covariance (MANCOVA) with

two within-subjects factors was conducted to determine whether significant differences exist

among the time points for Confidence and Comfort Level after controlling for Unit-Educator

Training, Preceptor-Led Training, House-wide CLABSI Prevention education, and CLABSI-

Line Change Frequency. The results were examined based on an alpha of .05. Table 5 presents

the MANCOVA results.

Between-Subjects. The between groups of CLABSI education indicated that the

covariate Unit-Educator Training was significantly related to Confidence and Comfort

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Level, F(1, 28) = 9.50, p = .005, House-wide CLABSI Prevention education was significantly

related to Confidence and Comfort Level, F(1, 28) = 231,006.32, p < .001, CLABSI-Line

Change Frequency, was significantly related to Confidence and Comfort Level, F(1, 28) =

6.43, p = .017. Lastly, The covariate, Preceptor-Led Training, was not significantly related to

Confidence and Comfort Level, F(1, 28) = 2.33, p = .138.

Within-Subjects. The within-subjects, repeated measures, Confidence level, and

Comfort level over time points of pre and post-orientation indicated that the time factor was

significant F(1, 28) = 744,600.19, p < .001

Within-Covariate Interactions. The relationships between Confidence and Comfort

level over time points of pre-and post-orientation and Educator Training F(1, 28) = 0.12, p =

.727, preceptor-led training F(1, 28) = 0.37, p = .547, and CLABSI-Line Change Frequency F(1,

28) = 0.59, p = .447, were not statistically significant. The relationship between the Confidence

and Comfort level over time points of pre-and post-orientation House-wide CLABSI Prevention

education was significant, F(1, 28) = 765,880.93, p < .001, indicating that the relationships

between pre-and post-orientation confidence and comfort level differed significantly between

levels of House-wide CLABSI Prevention education.

The interaction effect over time points, Confidence and Comfort level, and Unit-Educator

training F(1, 28) = 0.02, p = .898, Preceptor-Led Training F(1, 28) = 0.00, p = .970, and

CLABSI-Line Change Frequency, F(1, 28) = 0.23, p = .638 were not significant. The interaction

effect over time points of pre-and post-orientation, Confidence and Comfort level, and House-

wide CLABSI Prevention education was significant, F(1, 28) = 1.92×10^6, p < .001, indicating

that the relationships between the combinations of effect over time points of pre-and post-

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orientation and Educator Training, Confidence and Comfort level differed significantly between

the levels of House-wide CLABSI Prevention education.

Table 5: Repeated Measures MANCOVA

Source	df	SS	MS	F	p	η_p2
Between-Subjects						
Unit-Educator Training	1	14.96	14.96	9.50	.005	0.25
Preceptor-Led Training	1	3.68	3.68	2.33	.138	0.08
House-wide CLABSI Prevention education	1	364,010.74	364,010.74	231,006.32	$< .001$	1.00
CLABSI-Line Change Frequency	1	10.13	10.13	6.43	.017	0.19
Residuals	28	44.12	1.58			
Within-Subjects						
Time Factor	1	353,221.04	353,221.04	744,600.19	$< .001$	1.00
Unit-Educator Training: Time Factor	1	0.06	0.06	0.12	.727	0.004
Preceptor-Led Training: Time Factor	1	0.18	0.18	0.37	.547	0.01
House-wide CLABSI Prevention education: Time Factor	1	363,316.13	363,316.13	765,880.93	$< .001$	1.00
CLABSI-Line Change Frequency: Time Factor	1	0.28	0.28	0.59	.447	0.02
Time Factor Residuals	28	13.28	0.47			
Dv Factor	1	354,926.83	354,926.83	1.83×10^6	$< .001$	1.00
Unit-Educator Training: Dv Factor	1	0.94	0.94	4.85	.036	0.15
Preceptor-Led Training: Dv Factor	1	1.03	1.03	5.32	.029	0.16
House-wide CLABSI Prevention education: Dv Factor	1	364,658.59	364,658.59	1.88×10^6	$< .001$	1.00
CLABSI-Line Change Frequency: Dv Factor	1	0.60	0.60	3.12	.088	0.10
Dv Factor Residuals	28	5.43	0.19			
Time Factor: Dv Factor	1	351,498.10	351,498.10	1.86×10^6	$< .001$	1.00
Unit-Educator Training: Time Factor: Dv Factor	1	0.003	0.003	0.02	.898	0.0006
Preceptor-Led Training: Time Factor: Dv Factor	1	0.0003	0.0003	0.00	.970	0.00005
House-wide CLABSI Prevention education: Time Factor: Dv Factor	1	363,404.44	363,404.44	1.92×10^6	$< .001$	1.00

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CLABSI-Line Change Frequency: Time Factor: Dv Factor	1	0.04	0.04	0.23	.638	0.008
Time Factor: Dv Factor Residuals	28	5.29	0.19			

Chapter 4: Discussion

TTP RN education requires intensive knowledge and skills training, especially nursing interventions that impact nursing quality indicators and patient outcomes. Before implementing the TTP centralized education, the organization implemented several rapid improvement processes (RPI) to decrease CLABSI rates. The CLABSI education included practice standardization and audio-video resources for just-in-time training disseminated throughout the organization. Although the current staff received education and training as a result of the CLABSI RPI, at the same time, the project site underwent an expansion and added 149 new patient beds, which required more RNs in all departments. The organization filled most RN positions with staff with limited or no work experience in their hired specialty area. The new hire expansion included nurse educators, who were mainly inexperienced and did not participate in the CLABSI RPI initiatives. Notably, the new educators were not aware of including or standardizing CLABSI prevention during new hire onboarding created during the RPI campaign to prevent CLABSI.

Individual units expected new preceptors and nurse educators without previous training on CLABSI prevention to teach CLABSI prevention strategies, resulting in content inconsistencies and outdated training materials. Notably, the current preceptor training program, which trains preceptors to orient new hires, does not integrate hospital-acquired conditions, specifically CLABSI prevention, in its training.

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To avoid inconsistencies and improve standardization, the TTP manager developed the

orientation education project to integrate an intervention for new hires during the onboarding and

orientation program. As a result, the orientation education for the TTP RNs met the regulatory

requirement to train RNs, new educators, and preceptors on infection prevention and impact

nursing outcomes measured by the National Database of Nursing Quality Indicators and affected

the confidence levels of RNs in CLABSI prevention.

Major Findings Associated with the Project's Purpose

All nurses in the TTP RN program participated in the CLABSI prevention education,

which met the regulatory requirement to train all new hired RNs, including experienced RNs, in

infection prevention. Notably, upon completion of the education session, all the participants

reported improved confidence and comfort levels in their ability to care for patients with a

central line.

Findings and Relationship with Published Literature

Nursing clinical practice skills for new hires, particularly for TTP RNs, remain

unchanged despite the known problems of inconsistent training (Gonzalez & Kardong-Edgren,

2017). In addition, despite orientation training, the infrequent use of these foundational skills

leads to a lack of retention and skill decay. The orientation education program's incorporation of

deliberate skills instruction and practice through integrating education to train RNs improves

skills mastery and prevents loss of learned skills (Kardong-Edgren et al., 2019).

The pre-survey results confirmed that TTP RNs, have less confidence in their nursing

skills with their limited clinical background (Casey et al., 2004). When new nurses enter the

workforce, and the job expects them to function as competent nurses, they experience decreased

confidence levels (Casey et al., 2004; Zieber & Sedgewick, 2018). The advantage of a house-

wide orientation education program shows that when education and skills repetition training, which increases the frequency of educational activities, is integrated into orientation, confidence levels directly relate to performance outcomes and clinical skill improvement (Bortolotto, 2015; Montgomery et al., 2020). In addition, this project identified the benefits of infection prevention education during onboarding, of which CLABSI prevention is one subset. Several factors impact the TTP RNs' infection prevention confidence levels, such as a structured house-wide education program, NPDS expertise, nursing unit specialty, and frequency of skills.

Although this project identified an increase in their confidence levels, Casey's (2004) study reported that the TTP RNs still do not feel completely skilled and confident in caring for patients, especially at six months, despite completing the orientation program. Therefore, it is crucial that a house-wide CLABSI education program that includes skills training and evaluation to maintain or elevate the confidence and comfort level of the TTP RN will positively impact clinical performance.

Sustainability Plan

The project indicated positive results in integrating a standardized, centralized education program during orientation. In addition, the orientation and onboarding committee, along with the TTP program, collaborated to incorporate the CLABSI prevention education and skills session into the onboarding and orientation program for all new hires. Notably, the onboarding and orientation committee plans to include all infection prevention skills and clinical skills that impact the NSQI and foundational skills that affect all nurses in the organization during orientation.

Another factor that impacts the sustainability of the orientation education program is the inclusion of an evaluation process. Before developing the Orientation Education Program, an

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orientation evaluation did not exist. For the program to be successful and sustainable, the TTP

program manager, who serves as the evaluator, must gather and present the program's data and

outcomes to the stakeholder groups. In addition, the orientation and onboarding committee,

which oversees all orientation programs in the organization, must meet quarterly to identify

program sustainability and identify if the orientation education program continues to fulfill the

program's purpose.

Additionally, the TTP program manager must review the TTP program participant

evaluation results to identify if the program meets the end-users needs and whether the education

and information provided impact the participant's practice. The final process for sustainability is

to have an annual meeting with the organizational leaders. The annual meeting would include a

formal presentation and manuscript that highlights the program's results, addresses issues that

occurred or are foreseeable, and how to improve the program and keep the program going

without losing the momentum created by this intense program.

Onboarding and orientation programs impact the outcomes of the organization.

Therefore, the evaluation process for the program requires a structured, standardized transition-

to-practice framework to guide improvement work for a program of this magnitude.

Limitations

The result of this project supports previous studies that the perception of confidence

levels results in the level of knowledge and skills (Zieber & Sedgewick, 2018). However, this is

only one cohort that consists of TTP RNs, and it is crucial to identify the limitations of the

project. Currently, the orientation education program does not have an evaluation process with

the stakeholders. The failure to secure input from stakeholders on the up-to-date practice to meet

the program goals to evaluate will affect program outcomes. For example, if the relevant

stakeholders do not review the current organizational policies or mandates, the program

outcomes will not meet its clinical practice goals (Newcomer et al., 2015). To mitigate the

program's failure to secure input from the stakeholders, the team must inform the right people

with updates regularly. Equally important is seeking feedback from the orientation program's

staff, orientation and onboarding committee, and previous orientation attendees to identify

appropriate, realistic, and relevant outcome measures.

The second factor that might affect outcomes is the failure to acknowledge the effect of

multiple program components (Newcomer et al., 2015). Currently, orientation education does not

have an evaluation process. As a result, several factors could impact the orientation education

program. One factor is the staff knowledge deficits, including insufficient staffing personnel that

leads to inconsistent facilitators teaching the courses; lack of subject matter experts to teach the

classes; staff unaware of the overall goal of training the new hires to gain knowledge and skills

and verify the participant's competency. Another critical factor is the components that affect the

new hire's clinical practice, such as lack of supplies, busy patient assignments, lack of support,

and understaffing.

As mentioned, the program evaluation includes new hire clinical practice long-term

outcomes at 2, 6, 12, and 24 months to identify whether there is an increase in incident reports or

nursing errors involving new nurses' infection prevention practices. Therefore, conducting a

quality improvement audit on all incident reports on infection prevention RNs on Benner's

Novice-to-expert theoretical framework for RNs with minimal or limited situational experience

is crucial. The audit must include whether the incident was the result of the process, a product or

equipment, or a gap in the new nurse's knowledge, skills, and ability. In addition, if the new

nurses have a gap in performing clinical practice, the evaluator must study the orientation and onboarding and change the process that will improve the program.

Finally, despite the direct relationship between confidence levels and patient outcomes identified in other studies, due to time constraints and the short-term design of this program, we did not collect any CLABSI data to determine whether the orientation education program impacted CLABSI rates. A possible future study would include whether the orientation education program affects CLABSI rates and other Nursing Sensitive Quality Indicator outcomes.

Chapter 5: Conclusion

This study confirms the benefits of a house-wide structured orientation program, taught by trained content experts during onboarding with skills training and assessment sessions throughout the orientation program to improve the novice and advanced beginner Nurses' level of confidence. In addition, TTP programs with a structured format focused on decreasing nursing-sensitive quality indicator outcomes increase the nurses' level of confidence in CLABSI prevention.

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Table 1: Variables and Covariates

Variable Name/Covariate	Operational Definition
Dependent Variable: Confidence in Central Line-Associated Bloodstream Infection (CLABSI) prevention	Self-confident in the ability to care for a patient with a central line 0 Strongly Disagree 1 Disagree 2 Uncertain 3 Agree 4 Strongly Agree
Dependent Variable: Comfort Level in central line care	Comfortable performing Central line care (dressing change, blood draws, discontinuing) independently at this time 1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Disagree
Education Program	Preceptor Bedside training Unit-Educator education House-wide Education
Central Line change	Frequency of central line medication and line change

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Completion Date 05-Feb-2021
Expiration Date 04-Feb-2026
Record ID 40702762

This is to certify that:

Froiland Agana Ascano

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Students conducting no more than minimal risk research
(Curriculum Group)
Students - Class projects
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

San Jose State University

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w4ef5a25d-f4e2-4614-8338-6482fc441f08-40702762

Centralized NSQI Education

Agency Supervisor Letter of Support

Stanford | Lucile Packard
Children's Health | Children's Hospital
Stanford

August 13, 2021

The SJSU DNP Project Proposal Committee
San Jose State University
One Washington Square
San Jose, CA 95192-0057

To SJSU DNP Project Proposal Committee:

As the Associate Chief Nursing Officer (ACNO) of Stanford Children's Health," I am writing this letter of support for the Tiered Centralized Education in the Transition-to-Practice Program (TTP). The TTP Tiered, Centralized Education Program, is being submitted by Froiland A Ascaño in partnership with Stanford Children's Health

The goals of the TTP Tiered Centralized Education program are to implement a structured centralized nursing orientation program to (1) meet the regulatory requirement to train all RNs on infection prevention (2) Integrate education to impact nursing outcomes measured by the National Database of Nursing Quality Indicators into new graduate and transition RN orientation and (3) Evaluate RN confidence level in CLABSI Prevention. In addition, Stanford Children's Health continues to expand our clinical services to successfully implement nursing professional development programs to provide exceptional patient outcomes.

As the Associate Chief Nursing Officer of Stanford Children's Health, I highly support the Transition-to-Practice Tiered Education Program and believe the implementation of this program will provide data to increasing nursing professional development.

Respectfully,

Kathleen Bradley

Kathleen Bradley, DNP, RN, NEA-BC
Associate Chief Nursing Officer
Stanford Children's Health

Centralized NSQI Education

Appendix A: Data Collection Instrument - Casey-Fink Nurse Experience Survey (revised)

List the top three skills/procedures you are *uncomfortable performing* independently at this

time? (please select from the drop down list) list is at the end of this document.

1. skill_1

2. skill_2

3. skill_3

4. I am independent in all skills

For all items above on this page run frequencies. Can also import the last item (II) into excel and sort on responses to get responses with similar starting word alphabetized.

Please answer each of the following questions by placing a mark inside the circles:

Assuming using 1 to 4 for the responses (or 4 to 1) for the following 24 items

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1. I feel confident communicating with physicians.	○	○	○	○
2. I am comfortable knowing what to do for a dying patient.	○	○	○	○
3. I feel comfortable delegating tasks to the Nursing Assistant.	○	○	○	○

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4. I feel at ease asking for help from other RNs on the unit.	○	○	○	○
5. I am having difficulty prioritizing patient care needs.	○	○	○	○
6. I feel my preceptor provides encouragement and feedback about my work.	○	○	○	○
7. I feel staff is available to me during new situations and procedures.	○	○	○	○
8. I feel overwhelmed by my patient care responsibilities and workload.	○	○	○	○
9. I feel supported by the nurses on my unit.	○	○	○	○
10. I have opportunities to practice skills and procedures more than once.	○	○	○	○
11. I feel comfortable communicating with patients and their families.	○	○	○	○
	STRONGLY DISAGREE	**DISAGREE**	**AGREE**	**STRONGLY AGREE**
12. I am able to complete my patient care assignment on time.	○	○	○	○

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13. I feel the expectations of me in this job are realistic.	○	○	○	○
14. I feel prepared to complete my job responsibilities.	○	○	○	○
15. I feel comfortable making suggestions for changes to the nursing plan of care.	○	○	○	○
16. I am having difficulty organizing patient care needs.	○	○	○	○
17. I feel I may harm a patient due to my lack of knowledge and experience.	○	○	○	○
18. There are positive role models for me to observe on my unit.	○	○	○	○
19. My preceptor is helping me to develop confidence in my practice.	○	○	○	○
20. I am supported by my family/friends.	○	○	○	○
21. I am satisfied with my chosen nursing specialty.	○	○	○	○
22. I feel my work is exciting and challenging.	○	○	○	○
23. I feel my manager provides encouragement and feedback about my work.	○	○	○	○

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24. I am experiencing stress in my personal life.	○	○	○	○

25. If you chose agree or strongly agree, to #24, please indicate what is causing your stress. (You may circle more than once choice.)

The following items can be scored as yes=1/no=0 (frequencies)

        Finances

        Child care

        Student loans

        Living situation

        Personal relationships

        Job performance

        Other_____

How *satisfied* are you with the following aspects of your job:

The following items (IV) are not used in the residency evaluation – would suggest scoring 1 to 5 and either summing for a total score or reporting frequencies on each item.

	VERY DISSATISFIED	MODERATELY DISSATISFIED	NEITHER SATISFIED NOR DISSATISFIED	MODERATELY SATISFIED	VERY SATISFIED
Salary	○	○	○	○	○
Vacation	○	○	○	○	○
Benefits package	○	○	○	○	○
Hours that you work	○	○	○	○	○
Weekends off per month	○	○	○	○	○

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Your amount of responsibility	○	○	○	○	○
Opportunities for career advancement	○	○	○	○	○
Amount of encouragement and feedback	○	○	○	○	○
Opportunity for choosing shifts worked	○	○	○	○	○

Transition (please circle any or all that apply) For the following 5 items run frequencies on responses

What difficulties, if any, are you currently experiencing with the transition from the

"student" role to the _"RN"_ role? Difficulties

role expectations (e.g. autonomy, more responsibility, being a preceptor or in

charge)

lack of confidence (e.g. MD/PT communication skills, delegation,

knowledge deficit, critical thinking)

workload (e.g. organizing, prioritizing, feeling overwhelmed, ratios, patient

acuity)

fears (e.g. patient safety)

orientation issues (e.g. unit familiarization, learning technology, relationship with

multiple preceptors, information overload)

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What could be done to help you feel more supported or integrated into the unit?

Support

improved orientation (e.g. preceptor support and consistency, orientation

extension, unit specific skills practice)

increased support (e.g. manager, RN, and educator feedback and support,

mentorship)

unit socialization (e.g. being introduced to staff and MDs, opportunities for staff

socialization)

improved work environment (e.g. gradual ratio changes, more assistance from

unlicensed personnel, involvement in schedule and committee work)

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What aspects of your work environment are most satisfying? Most_satis

peer support (e.g. belonging, team approach, helpful and friendly staff)

patients and families (e.g. making a difference, positive feedback, patient

satisfaction, patient interaction)

ongoing learning (e.g. preceptors, unit role models, mentorship)

professional nursing role (e.g. challenge, benefits, fast pace,

critical thinking, empowerment)

positive work environment (e.g. good ratios, available resources, great

facility, up-to- date technology)

What aspects of your work environment are least satisfying? Least_satis

nursing work environment (e.g. unrealistic ratios, tough schedule, futility of care)

system (e.g. outdated facilities and equipment, small workspace, charting,

paperwork)

interpersonal relationships (e.g.gossip, lack of recognition, lack of teamwork,

politics)

orientation (inconsistent preceptors, lack of feedback)

Please share any comments or concerns you have about your residency program:

Comments

_____

_____

Demographics: Circle the response that represents the most accurate description of your

individual professional profile.

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Age:__years Age

Gender:

Female

Male

Ethnicity:

Caucasian (white)

Black

Hispanic

Asian

Other

I do not wish to include this information

Area of specialty:

Adult Medical/Surgical

Adult Critical Care

OB/Post Partum

NICU

Pediatrics

Emergency Department

Oncology

Transplant

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Rehabilitation

      OR/PACU

      Psychiatry

      Ambulatory Clinic

      Other: _____

School of Nursing Attended (name, city, state located): _

Date of Graduation: _____

Degree Received: AD:___Diploma:_____BSN:__ND:

_____

Other Non-Nursing Degree (if applicable): _____

Date of Hire (as a Graduate Nurse): _____

What previous health care work experience have you had:

      Volunteer

      Nursing Assistant

      Medical Assistant

      Unit Secretary

      EMT

      Student Externship

      Other *(please specify)*:

      ____

Have you functioned as a charge nurse? Charge_nurse

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Yes 1

No

Have you functioned as a preceptor? Preceptor

Yes 1

No

What is your scheduled work pattern? Work_pattern

Straight days	1
Straight evenings	2
Straight nights	3
Rotating days/evenings	4
Rotating days/nights	5
Other *(please specify)*:	6_____

How long was your unit orientation? Orient

Still ongoing	1
≤ 8 weeks	2
9 – 12 weeks	3
13 – 16 weeks	4
17 - 23 weeks	5
≥ 24 weeks	6

Quality Indicators Tiered Education

How many *primary* preceptors have you had during your orientation? Primary_preceptors

_____number of preceptors

Today's date: _____

Drop down list of skills

   Assessment skills

   Bladder catheter insertion/irrigation Blood draw/venipuncture

   Blood product administration/transfusion

   Central line care (dressing change, blood draws, discontinuing)

   Charting/documentation

   Chest tube care (placement, pleurovac) Code/Emergency Response Death/Dying/End-of-

   Life Care Nasogastric tube management ECG/EKG/Telemetry care

   Intravenous (IV) medication administration/pumps/PCAs Intravenous (IV) starts

   Medicati0n administration MD communication

   Patient/family communication and teaching Prioritization/time management

   Tracheostomy care

   Vent care/management

   Wound care/dressing change/wound vac

   Unit specific skills _____

Appendix B: Casey-Fink Approval Letter

From: Ascano, Froiland <FAscano@stanfordchildrens.org>

Sent: Thursday, June 3, 2021 7:31 PM

To: Casey, Kathryn RN <Kathryn.Casey@dhha.org>

Subject: [EXTERNAL] Casey-Fink Nurse Experience Survey Electronic Version

Dear Dr. Casey.

I am writing to inquire about the Casey-Fink Nurse Experience Survey. Stanford Children's Health uses the Casey-Fink Experience Survey for our new graduate RNs through the Vizient/AACN Nurse Residency Program. Recently, I was assigned to develop the ICU Nurse Fellowship program. The Nurse Fellowship program is separate from the Residency program and does not have access to the Casey-Fink Nurse Experience Survey through Vizient.

To assist our Nurse Fellowship program's evaluation and journey to the transition-to-practice accreditation, I completed the required survey tool from the UCHealth website to gain access to the Graduate Nurse Experience Survey. Would you help me with the following questions?

- Is there an electronic version of the Casey-Fink Nurse Experience Survey that we can use for the Stanford Children's Health ICU Nurse Fellowship Program?
- If there is, how can I access it?
- If there isn't an electronic version available, would you allow me to convert it (without altering any content) into an electronic version?

Quality Indicators Tiered Education

Sincerely,

Froiland A Ascano RN, MS, MSN/ED, CPNP-AC, NPD-BC, CCRN

Nursing Professional Development Specialist

From: Casey, Kathryn RN <Kathryn.Casey@dhha.org>

Sent: Friday, June 4, 2021 6:46 AM

To: Ascano, Froiland <FAscano@stanfordchildrens.org>

Cc: REGINA.FINK@CUANSCHUTZ.EDU

Subject: RE: Casey-Fink Nurse Experience Survey Electronic Version

Hello Froiland-

Thank you for your interest in using our survey with your fellowship participants. We do not have an electronic version of the survey and yes, you have our permission to

convert the survey into an electronic version of your choice. We do not collect the data,

however we are very interested in knowing how the survey performs and if you have

any feedback from your participants.

Please let us know if you have any further questions.

Sincerely,

Kathy and Regina

Kathy Casey PhD RN NPD-BC

Professional Development Specialist

Nurse Residency Program Coordinator

Nursing Education and Research

Denver Health

Office: 303.602.2704

Kathryn.Casey@dhha.org

Appendix C: CPEI SCH CLABSI Confidence Level Self-Assessment

Date *

[   ] 📅

Age *
Circle the response that represents the most accurate description of your individual professional profile.

[   ]

Sex *

[   ]

Ethnicity *

[Select or enter value   ▾]

Level of Education *

[Select or enter value   ▾]

School of Nursing Attended
Name, city, state located

[   ]

Date of graduation

[   ]

Degree Recieved:

[Select or enter value   ▾]

Other Non-Nursing Degree
(if applicable)

[   ]

Quality Indicators Tiered Education

Previous Health Care work
What previous health care work experience have you had:

| Select or enter value | ▼ |

Length of time in service as an RN (YEARS) *

| Select or enter value | ▼ |

Current Unit/Area of Specialty *

| Select or enter value | ▼ |

Length of time on the Unit (MONTHS) *

| Select or enter value | ▼ |

Shift Commitment *

| Select or enter value | ▼ |

CLABSI Line Change Frequency
Number of central line set-up or central line tubing

○ 1   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7
○ 8   ○ 9   ○ 10   ○ 11   ○ 12   ○ 13   ○ 14
○ 15   ○ 16   ○ 17   ○ 18   ○ 19   ○ 20   ○ 21
○ 22   ○ 23   ○ 24

Self-confidence in the ability to . . . .

Care for patient with central lines *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Administer medication through a central line *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Change injection cap on a central line *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Change tubing on a central line *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Draw blood through a central line *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Change a dressing on a central line *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Referring to the specific Policy and/or Procedure *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Environment

Environment Survey obtained reference:
Ikwuerne, S. (2018). Assessing Nurses' Safety Attitudes in Preventing CLABSI.

Policies and Procedures are available to staff *

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

CLABSI Prevention *
There are regular training programs on CLABSI Prevention

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Staff Understanding *
Staff understands current CLABSI protocols

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Infection Prevention *
Infection Prevention education is provided to staff

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

Prevention Activities *
Data obtained about CLABSI are used to direct prevention activities

○ Strongly Disagree   ○ Disagree   ○ Uncertain   ○ Agree
○ Strongly Agree

☐ Send me a copy of my responses

Submit

Appendix C: SCH CLABSI Procedure

	Approval Date:	Last Revision Date:
Stanford Children's Health | Lucile Packard Children's Hospital Stanford	January 2019	January 2019
	Approved by:	
Departments Affected: All Departments		
Personnel: All Intensive Care Clinical Staff	**Page 1 of 6**	
Name of Procedure: Vascular Access: Central Venous Pressure (CVP) Line Set-Up, Management and Monitoring		

I.   PURPOSE

To outline the appropriate steps to correctly set-up and care for a central venous pressure (CVP) line.

CONSIDERATION

A.   Zero calibrate and/or trouble shoot the transducer and tubing set up any time measurements are suspected to be inaccurate. See Appendix A: Troubleshooting for more information.

B.   Central venous catheters in proper position display a waveform that is even and steady. A pulsatile waveform may indicate malposition of the line which can be further assessed by obtaining an x -ray.

C.   To decrease risk of infection:

1.   Change IV tubing and pressure transducer at least every 96 hours or upon concern for contamination, refer to Transducer Line Change video.

2.   Minimize line entries.

3.   Use aseptic technique when accessing or changing lines.

EQUIPMENT

A.   IV solution as ordered

B.   IV tubing

C.   IV filter

D.   CVP transducer kit

E.   Stopcocks F. Sterile gloves

G.   Sterile field

H.   Mask

I.   Bouffant cap

J.   10ml sterile flush

K.   Chlorhexidine alcohol pads

L.   Clean gloves

M.   Tubing labels

N.   Infusion pump or pressure bag

Personnel: All Intensive Care Clinical Staff	**Page 2 of 6**
Name of Procedure: Vascular Access: Central Venous Pressure (CVP) Line Set-Up, Management and Monitoring	

PROCEDURE

Steps	Key Point	Rationale	Illustration
Set-Up for Monitoring			
1. Gather supplies.			

2. Don bouffant cap and mask.			
3. Perform hand hygiene.			
4. Don clean gloves.			
5. Disinfect work surface with hospitalapproved disinfectant.	Use bedside table or a mayo stand.	To decrease risk of infection.	
6. Remove gloves and perform hand hygiene.	Refer to <u>Infection Control Manual: Hand Hygiene</u>		
7. Prepare sterile field.			
8. Using sterile technique, drop supplies on sterile field.			
9. Perform hand hygiene and don sterile gloves.	Refer to <u>Infection Control Manual: Hand Hygiene</u>		

10. Assemble IV tubing, filter, and transducer set up.			
11. Spike bag with IV tubing.	• Use gauze when handling IV bag to maintain sterility of hands. • Prime IV tubing onto sterile field		

Personnel: All Intensive Care Clinical Staff	Page 3 of 6
Name of Procedure: Vascular Access: Central Venous Pressure (CVP) Line Set-Up, Management and Monitoring	

	· New tubing must be infusing within one hour of set up.		
12. Prime tubing and transducer.	Prime tubing and transducer with vented cap in place, replace with nonvented cap once primed.		
13. Clamp the lumen of the patient line that will be transduced.	• Use slide clamp on patient line if present or plastic forceps. • Use gauze to maintain sterility of hands when handling the catheter.		
14. Place sterile field under catheter hub.		Reduces risk of contaminating catheter when hub is exposed.	

15. Disconnect any existing tubing or cap as needed to allow for connection of transducer.	Prior to disconnecting existing tubing, scrub the junction between catheter hub and existing line using a chlorhexidine alcohol pad for 5 seconds and allow to dry for 5 seconds.		
16. Attach transducer tubing to the catheter lumen.	• Using 10ml sterile flush, drip normal saline into catheter hub to eliminate air. • Unclamp lines as needed. • Start infusion.		
17. Label bag and tubing. Document in the electronic health record (EHR).	• Label bag and tubing with date and time. • Document line change, IV fluids initiation, and rate. Add LDA for any new line.		
Zero Calibration and Measurements			
1. Perform hand hygiene and don clean gloves.			
2. Place transducer level with the patient's heart.	Secure transducer to the patient's bed.		

3. Turn transducer stopcock off to the patient and open to air.	Remove transducer stopcock cap for open air calibration.		

Personnel: All Intensive Care Clinical Staff	**Page 4 of 6**

| **Name of Procedure:** Vascular Access: Central Venous Pressure (CVP) Line Set-Up, Management and Monitoring ||

4. Calibrate transducer to patient and monitor.	• Press zero button on pressure module or touch screen, and follow monitor prompts. • Set alarm parameters according to provider orders.		
5. Once zerocalibration completed, turn transducer stopcock off to air and open to patient.	Replace open transducer stopcock port with sterile non-vented cap.		
6. Obtain pressure reading; document in EHR.			

APPENDICES

A.   Troubleshooting

B.   [Transducer Line Change Video](#)

DOCUMENT INFORMATION

A.   References

Reference	Level of Evidence	Review Date
Centers for Disease Control (2015). Guidelines for the Prevention of Intravascular Catheter-Related Infections. Retrieved from: https://www.cdc.gov/infectioncontrol/guidelines/bsi/index.html#rec6	D	10/2018
The Joint Commission (2013). CLABSI Toolkit – Preventing Central-Line Associated Bloodstream Infections: Useful Tools, an International Perspective. Retrieved from: https://www.jointcommission.org/topics/clabsi_toolkit.aspx	D	10/2018
Chopra, V., Krein, S.L., Olmsted, RN, Safdar, N., Saint, S. (2013). Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices. Agency for Healthcare Research and Quality Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK133364/	D	10/2018
Children's Hospitals' Solutions for Patient Safety (2014). SPS Prevention Bundles. Retrieved from: http://www.solutionsforpatientsafety.org/wp-content/uploads/SPSPrevention-Bundles.pdf	D	10/2018

B.   Distribution and Training Requirements

This policy resides in the Patient Care Manual of Lucile Packard Children's Hospital Stanford.

C.   Review and Renewal Requirements

This policy will be reviewed and/or revised every three years or as required by change of law or practice.

D. Review and Revision History

11/06, 5/07, 6/08, 9/10, 11/10, 2/11, 8/13, 2/13, 1/15

Andrew Palmquist; Dr. Matias Bruzoni: 8/15

Sarah Ferrari: 9/16

E. Approvals

Vascular Access Committee: 6/08, 8/10, 2/11, 1/15

Infection Control Committee: 1/15

Policy Review Committee: 6/08, 9/10, 11/10, 2/11, 2/13, 8/13, 2/15, 8/15, 12/16, 10/18 Board of Directors, 1/19

APPENDIX A

TROUBLE SHOOTING

A. Check for kinks in tubing.

B. Ensure there are no air bubbles in system.

C. Assess patency of line and tubing set up.

D. Recalibrate transducer.

E. Attempt to aspirate for blood return. If no blood return flush with normal saline.

F. Notify provider if troubleshooting steps do not restore normal monitoring.