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Staff Education Project for Adult ICU Nurses

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Walden University

College of Nursing

This is to certify that the doctoral study by

Hani Ayyad

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

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Walden University

2024

Executive Summary

Staff Education Project for Adult ICU Nurses

by

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MS, Walden University, 2012

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Executive Summary Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Summary

This staff education project is a crucial initiative designed to enhance nursing knowledge and skills in the care of central lines. Its overarching goal is to reduce the incidence of central line-associated bloodstream infections (CLABSI) in a teaching hospital. Given that CLABSIs are a major concern in Intensive Care Units (ICUs), due to higher morbidity, mortality, and healthcare expenditures, this project is very important. My goal was to fill these gaps by providing a comprehensive staff education program addressing this critical issue.

The evidence-based practice question (EBP) guiding this Doctor of Nursing Project (DNP) project was: Does the Staff Education Program on central line maintenance and CLABSI prevention strategies increase nursing knowledge in this area compared to the current knowledge? A pretest and posttest were used to assess knowledge change, and skills checklists were to determine adherence to infection control measures. Qualitative data were also collected in the form of feedback on the effectiveness of the training.

The initial assessment of the program has unveiled a positive change in the level of nursing competencies with the CLABSI prevention guidelines. The program was linked with an 11.1% improvement in the knowledge scores, with most participants meeting the program's learning outcomes. The program's success underscores the crucial role of continued education, skills validation, and stakeholder engagement in maintaining progress in infection control practices. It also promotes positive social change by preparing the nurses to practice in a culturally diverse, equitable, and inclusive healthcare system to provide quality care.

Background

CLABSI is a major complication that is associated with increased morbidity, mortality, and financial burden in healthcare, especially within the ICU. From the data analysis of a large teaching hospital, the CLABSI rates have been observed to rise and go beyond the set standards, which pointed to poor infection control measures and central line management (Amavasi & Zimmerman, 2023). This increase in the number of infections can be attributed to non-compliance with infection control measures and requirements and the lack of adequate training of the nursing staff. Factors such as a 35% deviation in compliance with central line care and maintenance and 65% of nurses' inability to differentiate between negative, positive, and neutral needleless connectors have been identified. It is, therefore, essential to fill these gaps through a specific staff education program to enhance patient results, decrease infection rates, and increase the quality of care.

The project was driven by the EBP question: Does the implementation of a Staff Education Program on central line maintenance and CLABSI prevention strategies enhance the knowledge and skills of the nurses as compared to the current knowledge? My primary goal for the project was to increase the knowledge and skills of the ICU nurses about central line care and strategies for preventing CLABSIs to decrease the incidence of CLABSIs and improve the safety of the patients. My goal was to improve the quality of nursing care of central lines by ensuring that the nursing staff is well-trained on the best practices and protocols of central line care and maintenance through continuous education (Beaudry & ScottoDiMaso, 2019; McBeth, 2020).

There is much evidence for this practice change. Research has shown that targeted education, ongoing training, and infection control assessment help decrease CLABSI incidence and enhance adherence to the central line care guidelines (Assalone & Cernivani, 2022; Bonebrake et al., 2023). For example, a quality improvement project demonstrated a 100% reduction in CLABSI after implementing an educational program centered on validating the central line (Assalone & Cernivani, 2022). Researchers conducted integrative literature reviews have highlighted that education and training should be ongoing to build core competencies in infection prevention and control, which supports the need for ongoing educational interventions (Amavasi & Zimmerman, 2023). There is a need for a complete staff education program to address these gaps in practice and enhance infection prevention results at this hospital.

Staff Education Project Development

Participants and Procedures for Project Development and Implementation

The staff education project targeted the ICU nursing personnel at this teaching hospital, both experienced and those who had recently joined the organization. The staff involved in the project included me, the nursing educators, and the nursing managers to help implement the educational intervention. The project development started with the assessment of the current knowledge and practices concerning central line care and CLABSI prevention. I used the assessment to design a specific curriculum with the most critical focus areas, including infection control measures, central line management, and compliance (see Connor et al., 2023).

The educational program was designed with the help of the ADDIE model, which includes Analysis, Design, Development, Implementation, and Evaluation. In the Analysis phase, data were collected through audits, surveys, and direct observations to establish the current nursing practice and the areas that require training. In the Design and Development phases, the following evidence-based materials were developed for the learners: presentations, handouts, skills checklists, and simulation scenarios. The Implementation phase was conducted in a series of didactic sessions, hands-on training, and simulation exercises over several weeks. These sessions included aspects of central line care ranging from assisting in insertion to management, emphasizing the recommended infection prevention and control measures (Bonebrake et al., 2023). A series of seven training sessions between August 26, 2024, and September 5, 2024 was conducted, reaching 94% of the scheduled participants (Table 1: Workshop Attendance). The project schedule and the tasks were organized in the Gantt chart, which helped with the proper scheduling of the project and clear assignment of responsibilities (Figure 1: Course Flow Process).

Collection and Analysis of Evidence

Pre- and posttests showed an 11.11% improvement in knowledge, and OSCE stations validated skill acquisition, with over 90% of participants demonstrating adherence to infection control protocols (Table 2: Post-Training Knowledge and Compliance Improvement). The data collection process involved using quantitative and qualitative methods to collect evidence. Both pre- and posttests were conducted to assess the difference in nursing staff's knowledge before and after the training. Furthermore, skills validation checklists were employed to evaluate the practical knowledge about the care of

the central line. Quantitative data were collected through questionnaires, while qualitative data was collected through focus group interviews. Data analysis included comparing the pre-and posttest scores to determine the knowledge gain, skills validation scores, and adherence to infection control practices. Quantitative data were used to assess the participants' overall satisfaction, while qualitative data was analyzed thematically to understand the participants' perception of the training and areas that need improvement (Assalone & Cernivani, 2022; Lowery et al., 2022).

Evaluation Process

In my assessment, I used formative and summative assessments to ensure the program is effective. A formative evaluation was conducted during the implementation phase to enable changes to be made as the program was being delivered based on the participants' feedback and their performance during the skills practice sessions. This continuous assessment was based on the 45 nurses' attendance, course plan compliance, and the efficiency of the teaching strategies. A summative evaluation was done at the end of the program whereby the following measures were used: pre and posttest score changes, skills validation, and course evaluation. Feedback from course evaluations also indicated high satisfaction, with a mean score of 3.8 out of 4, supporting the continuation and expansion of this program to other units (Figure 3: Course Evaluation). The results were shared with the nursing leadership and other relevant stakeholders to assess the program's effectiveness, areas of strength, and areas of improvement and to make recommendations for future education programs. A cost-benefit analysis was also

discussed to support the program's benefits in improving the patients' conditions and decreasing the rate of infections (Maria & Christos, 2022; Woods-Hill et al., 2021).

Results

Postimplementation Results

After the Staff Education Program was implemented, there was a marked enhancement in the nursing competencies concerning the care of central line and CLABSI prevention in this large teaching hospital. The pretest mean score was 87.30% before the intervention, which changed to 98.41% after the intervention, an improvement of 11.1%. Also, skills validation sessions revealed that more than 90% of participants could correctly execute key competencies, including handling sterility, line care, and documentation. This competency increase should support a decrease in CLABSI rates across the ICUs, which benefits patient care and overall well-being (Connor et al., 2023).

Impact on the Organization

The education program impacted the nursing department within the organization in a way that changed its culture, allowing the staff to learn more and follow the best practices of infection control. Reducing CLABSI rates would improve the patients' conditions, reduce the duration of hospital stays, and decrease the costs of treating these infections. Also, the program improved the teamwork and communication among the nursing staff, thus creating a good working culture that fosters quality care. Compliance with the standard and quality indicators relevant to infection control is also enhanced, thus making any healthcare organization among the leading institutions in patient safety and quality care (Kim & Choi, 2024; Lowery et al., 2022).

Limitations and Their Impact on Results

Some factors may have affected the project's outcome in one way or another. First, the postimplementation observation period was relatively short; therefore, assessing the durability of the changes in knowledge, skills, and CLABSI rates was impossible. Also, the difference in the presentation of educational content from one session to another may have led to differences in the level of learning among the participants. Variations in the initial knowledge and experience of the nursing staff may also have influenced the amount of knowledge and skills acquired. Finally, the project was implemented in a single healthcare organization, which may affect the transferability of the results to other healthcare organizations (McBeth, 2020; Woods-Hill et al., 2021).

Importance Beyond the Local Site

The implications of the project are not limited to the local site and can be helpful for other healthcare organizations that wish to improve patient safety through the implementation of evidence-based education. The project also shows that a well-coordinated and systematic staff education program can help prevent HAIs like CLABSI. The program's focus on ongoing learning, competencies assessment, and compliance with infection control measures is in line with the international standards of patient care. It can be applied to various healthcare organizations. Furthermore, by enhancing the understanding of CLABSI prevention in this project, this work contributes to the improvement of the social conditions that affect the nursing practice, particularly the safety of the healthcare environment for diverse populations (Maria & Christos, 2022; Woods-Hill et al., 2021)

Table 1*Workshop Attendance*

Critical Care Unit	Total RN count including managers and NH excluding PCAs.	#of staff on Leave not scheduled	# of staff scheduled for the CLABSI workshop	# of staff attended CLABSI workshop	# of No Show for scheduled staff
2C (CCU)	17	1	16	16	0
3C (SICU)	15	1	14	11	3
5C (MICU)	18	0	18	18	0
Total	50	2	48	45	3

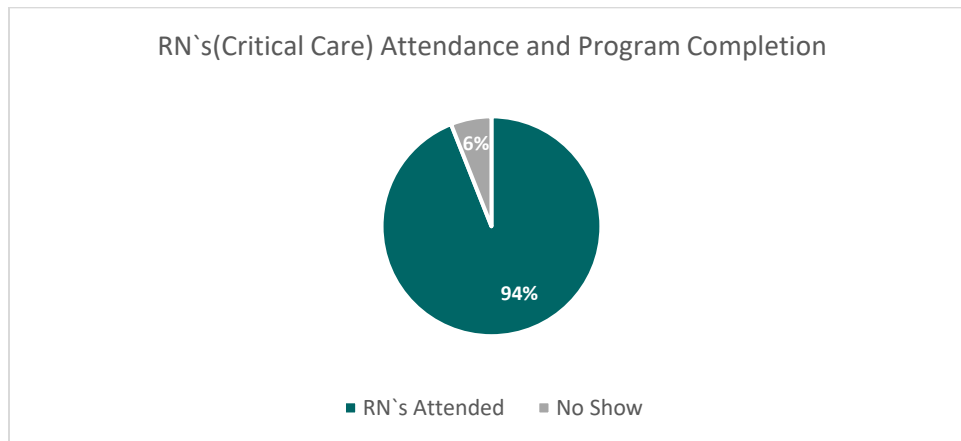
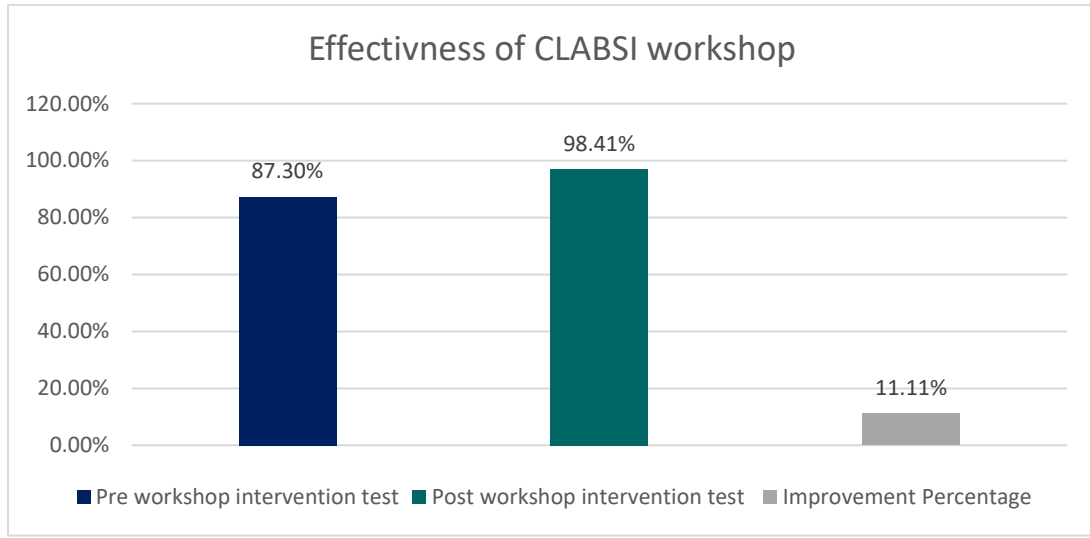
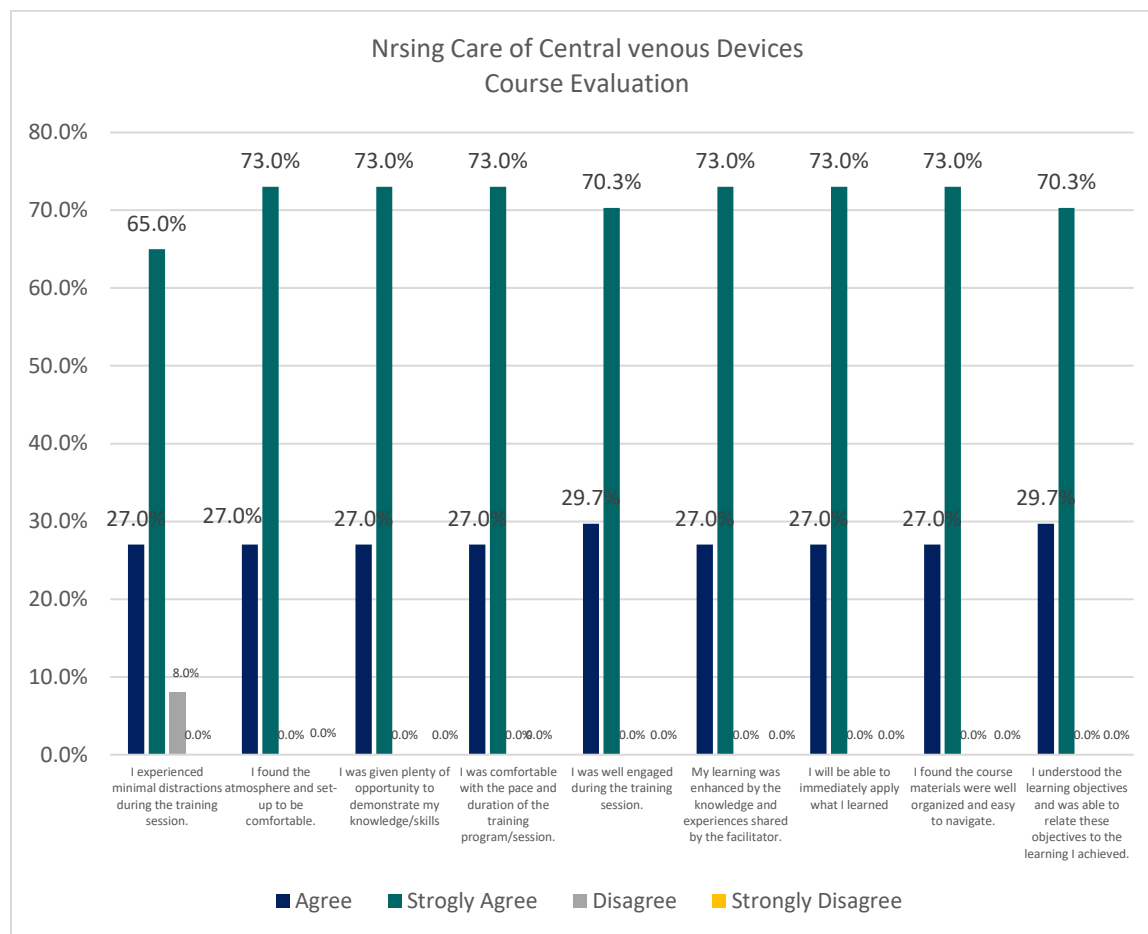
Figure 1*RN's Attendance and Program Completion*

Figure 2*Effectiveness of CLLABSI Workshop***Table 2***Posttraining Knowledge and Compliance Improvement*

Category	Pre-Test Score	Post-Test Score	Improvement (%)
Knowledge of CLABSI Prevention	87.3%	98.41%	+11.11%
Skill Competency in Central Line Care	80%	90%	+10%

Figure 3*Course Evaluation***Conclusions**

The Staff Education Program at a large teaching hospital has positively changed the organization by improving nursing knowledge in central line and CLABSI. The program should positively impact the decrease in the incidence of CLABSI, thus enhancing the quality of patient care and decreasing the costs of treating these infections. Furthermore, the program encouraged the culture of learning and practice of evidence-

based nursing. It enhanced teamwork and communication among the nursing staff, creating a positive working atmosphere that enhances quality nursing care delivery.

In order to improve the achievements of this program further, the following recommendations have been made. The first recommendation is to continue and increase the educational program to provide the nurses with opportunities for continuing education and skills updates in the future. It is also possible to extend the program to other departments and units of the organization to ensure that all its departments and units adhere to the same standards. Furthermore, conducting routine assessments of the nursing staff's adherence to the central line maintenance guidelines and providing feedback at the right time will help cement the best practices and correct any lapses. Nurses, physicians, infection control specialists, and other healthcare workers should be engaged to ensure a holistic care plan and a collaborative effort to prevent CLABSI. Technology and data analytics to support the tracking of infection rate compliance and deliver engaging educational content can also be used to strengthen the program. It is also essential to design educational content that addresses the different baseline knowledge and experiences of the nursing staff to achieve uniform learning.

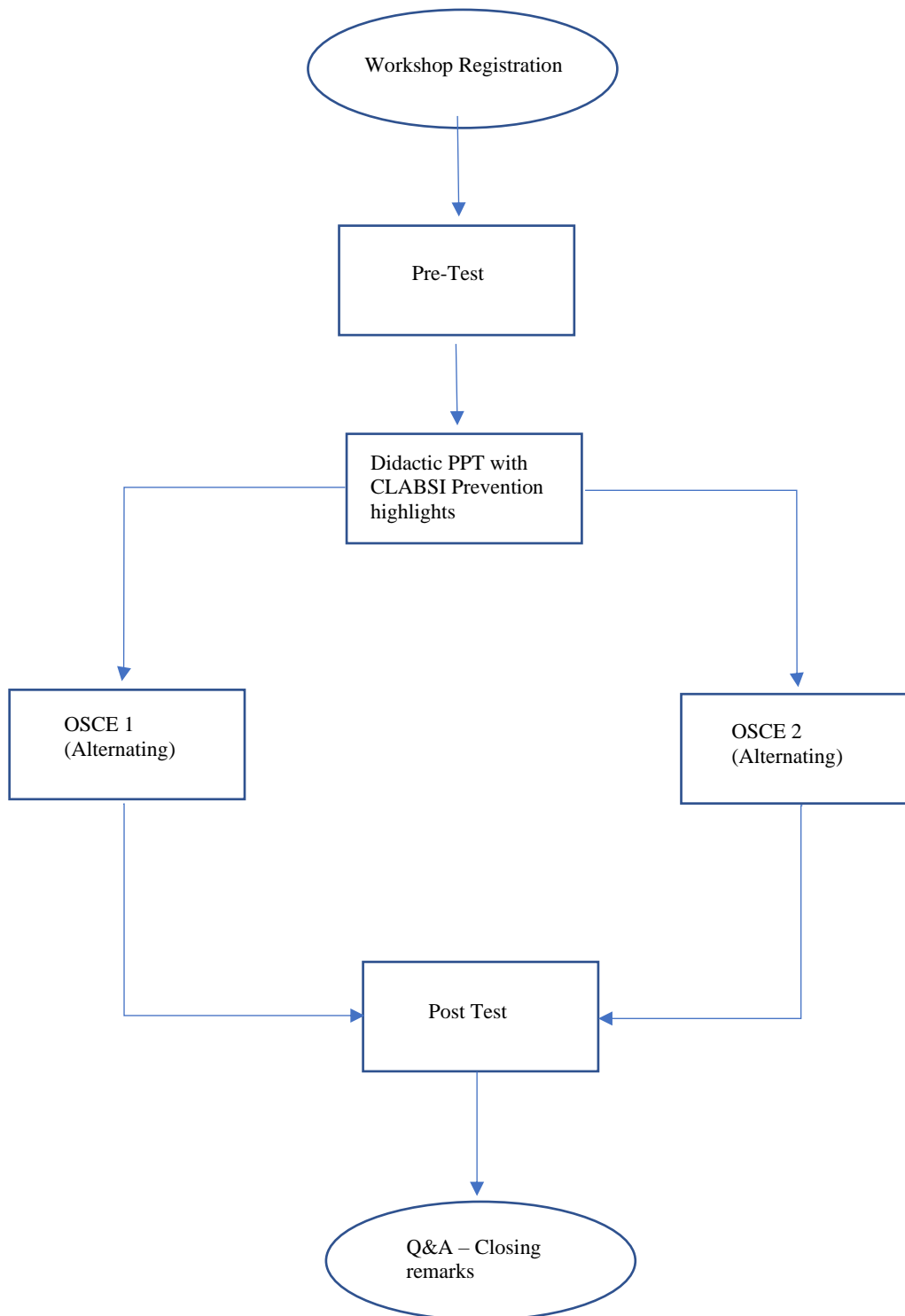
These efforts should be supported by an excellent organizational culture that embraces learning, research, and the safety of the patients. Involving the nursing leaders and other stakeholders in the program will ensure that the program is sustained and achieves its intended goals. The program also implies nursing practice as it provides a basis for quality care through the education and training of nursing professionals. It enhances positive social change by preparing a diverse, culturally and linguistically

competent workforce, providing quality care to patients, thus contributing to achieving the healthcare goals of diversity, equity, and inclusion.

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Appendix A**Graph 1: Course Flow Process**

Appendix B: Pre / Post-Test to be used with the program.**Central Line Care and Management Knowledge Assessment**

Name: _____

Date: _____

Please answer the following questions to the best of your ability. This pre-test is designed to assess your current knowledge of central line care and management based on the MSP-151 Vascular Access Devices Care and Management Policy and the CLABSI Compliance Summary of Findings.

1. **Which solution is recommended for skin antisepsis before central line insertion?**
 - a. 70% Isopropyl Alcohol
 - b. 2% Chlorhexidine Gluconate in 70% alcohol
 - c. Povidone-Iodine
 - d. Soap and water
2. **What is the recommended frequency for assessing the necessity of a central line?**
 - a. Every 12 hours
 - b. Daily
 - c. Every shift
 - d. Weekly
3. **When changing the dressing for a central line, which practice must be followed?**
 - a. Use antiseptic ointment
 - b. Clean the site with soap and water
 - c. Use 2% Chlorhexidine Gluconate in 70% alcohol for at least 30 seconds
 - d. Use only sterile water
4. **Which checklist must nurses complete during central line maintenance?**
 - a. CLABSI Prevention Maintenance Bundle (Policy-6505)
 - b. Daily Task Log
 - c. Medication Administration Record
 - d. Shift Change Report
5. **What should a nurse do if blood return is not present when aspirating a central line?**
 - a. Force flush the line with saline
 - b. Change the dressing immediately
 - c. Discontinue the use and notify the physician
 - d. Use a smaller syringe to draw blood
6. **How often should nurses perform hand hygiene during the care of a central line?**
 - a. Before and after each patient interaction
 - b. Only before central line insertion

- c. Only when the line is accessed for blood draws
 - d. Once per shift
7. **What is a critical component of the Aseptic Non-Touch Technique (ANTT)?**
- a. Applying antiseptic ointment after dressing change
 - b. Ensuring that only sterile equipment and fluids interact with the sterile field
 - c. Cleaning the insertion site with soap and water
 - d. Using gloves only during the insertion
8. **Which type of personal protective equipment (PPE) must nurses use when assisting with central line insertion?**
- a. Gloves and mask
 - b. Cap, mask, sterile gown, and sterile gloves
 - c. Face shield and gloves only
 - d. Sterile gown and mask only
9. **How often should transparent dressings be changed on central lines according to the MSP-151 policy?**
- a. Every 24 hours
 - b. Every 48 hours
 - c. Every 7 days
 - d. Every 4 days
10. **What action should a nurse take if a patient's central line insertion site shows signs of infection?**
- a. Apply a new dressing and monitor
 - b. Notify the physician and obtain a culture of the site
 - c. Flush the line with 0.9% Sodium Chloride
 - d. Continue normal monitoring protocols
11. **Which protocol should nurses follow for accessing central line hubs?**
- a. Switch to new gloves each time
 - b. Use a non-touch technique
 - c. Vigorously scrub with 70% alcohol
 - d. Rinse with sterile water
12. **When should nurses replace the needleless connectors on central lines?**
- a. Every 12 hours
 - b. Only when visibly soiled
 - c. Every four days or with administration set change
 - d. Annually
13. **What must nurses do before accessing a central line to administer medication or flush the line?**
- a. Perform a handwriting check

- b. Ensure the dressing is intact
 - c. Confirm patient identification again
 - d. Assess line patency and flush with 0.9% Sodium Chloride
14. **What is a nurse's responsibility if a central line dressing becomes damp, loosened, or visibly soiled?**
- a. Wait 24 hours before changing
 - b. Replace the dressing immediately
 - c. Inform the next shift to replace it
 - d. Document and leave it as is
15. **Which practice helps prevent contamination during central line maintenance?**
- a. Using a sterile drape only for insertion
 - b. Managing central lines with a dedicated securement device
 - c. Avoiding the use of hand sanitizer
 - d. Flushing the line only once a day

This pre-test is intended to gauge your current knowledge and areas of improvement regarding central line care and management. Please answer every question to the best of your abilities.

Appendix C: PowerPoint Presentation

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THANK YOU



Measuring Impact

- **Pre- and Post-Test Comparison:**
 - Analyze pre-test and post-test scores.
 - Identify areas of significant improvement.
 - Highlight any remaining knowledge gaps.

Post-Test Overview

- **Purpose**: Evaluate knowledge gained from the didactic and skills validation sessions.
- **Format**:
 - Multiple-choice questions.
 - Scenario-based questions.
- **Timing**: Conducted immediately after the training program.

Skills Validation Session

- **Station 1**: Proper hand hygiene and PPE application.
- **Station 2**: Simulated central line insertion assistance and dressing.
- **Station 3**: Flushing, locking, and securing the central line.
- **Station 4**: Recognizing and managing central line complications.

Interactive Elements

- **Activity 1: Role-Playing Scenarios:**
 - Proper hand hygiene and PPE usage.
 - Central line insertion techniques.
- **Activity 2: Group Discussions:**
 - Common challenges and best practices in central line care.

Case Studies and Discussion

- **Case Study 1:** Recognizing and managing catheter-related infections.
- **Case Study 2:** Strategies for handling patient non-compliance with line care.
- **Discussion Prompt:** What strategies can be implemented to ensure consistent protocol adherence in your unit?

Nurse Responsibilities

- **Daily Assessment:**

- Check for signs of infection or complications.
- Document findings in the patient's EHR.

- **Communication:**

- Report irregularities to physicians promptly.
- Coordinate with multidisciplinary teams.

Proper Hand Hygiene

- **When to Wash Hands:**

- Before and after patient contact.
- Before aseptic procedures.
- After contact with bodily fluids.
- After touching patient's surroundings.

Common Issues and Solutions

- **Inconsistent Practices:**
 - Reinforce standardized protocols.
 - Conduct regular audits.
- **Non-Compliance:**
 - Continuous education.
 - Use data to demonstrate importance.

Handling Catheter Occlusion

- **Recognition:**
 - Poor or no blood return.
 - Increased resistance during flushing.
- **Action:**
 - Stop use and notify physician.
 - Consider instillation of alteplase (t-PA) if ordered.

Correct Dressing and Securement Methods

- **Dressing:**

- Use sterile, transparent dressings.
- Change every 7 days or sooner if compromised.

- **Securement:**

- Use dedicated devices to prevent dislodgement.

Proper Flushing and Locking Protocols

- **Flushing:**

- Use 10 ml syringes.
- Perform before and after medication administration.
- Employ "push-pause" technique.

- **Locking:**

- Utilize appropriate solutions (0.9% Sodium Chloride, Heparin).
- Follow guidelines for volume and frequency.

Daily Review Protocols

- **Importance:**

- Evaluate necessity.
- Avoid prolonged use

- **Documentation:**

- Accurate and timely entries in patient records.
- Ensure clear communication with the healthcare team.

Central Line Bundle Elements

- **Key Components:**

- Hand hygiene.
- Maximal barrier precautions.
- Chlorhexidine skin antisepsis.
- Optimal catheter site selection.
- Daily necessity review.

Personal Protective Equipment (PPE)

- **Components:**

- Cap, mask, sterile gown, and gloves.

- **Usage:**

- During central line insertion and maintenance.

Aseptic Non-Touch Technique (ANTT)

- **Definition:**

- Prevents contamination.
- Ensures sterile field integrity.

- **Steps:**

- Use sterile gloves and materials.
- Minimize direct contact with key parts.

Infection Control Best Practices

- **Key Elements:**

- Proper hand hygiene.
- Aseptic Non-Touch Technique (ANTT).
- Correct use of Personal Protective Equipment (PPE).

Importance of Central Line Care

- **Why It Matters:**

- Crucial for patient safety.
- Minimizes infection risks.
- Ensures effective treatment delivery.

Pre-Test

- Purpose: Assess baseline knowledge of central line care and infection prevention.
- Format:
 - Multiple-choice questions.
 - Scenario-based questions.
- Timing: Conducted before the training program starts.

Objectives

- Objective 1: Increase adherence to central line maintenance protocols.
- Objective 2: Enhance knowledge and skills in CLABSI prevention.
- Objective 3: Achieve tangible improvements in nursing competence.
- Objective 4: Embed best practices within daily routines.
- Objective 5: Measure impact through pre- and post-assessments.

Project Implementation Overview

- Participants: Adult ICU Nurses
- Evaluation method(s): Pre and Post-Test and skills validation

Project Implementation Overview

- Program objectives: The SafeLine ICU—Advancing Central Line Care project focuses on improving nursing knowledge and practical skills in central line care.
- It aims to ensure sustained improvements in nursing practice and patient outcomes at our organization through structured training, hands-on practice, and continuous assessment.
- We will address the identified knowledge gaps and promote best practices in central line management.

Practice Question:

Does implementing a comprehensive Staff Education Program on central line maintenance and CLABSI prevention improve nursing competencies and ultimately help reduce the risk of CLABSI incidence at our hospital compared to knowledge levels?



PowerPoint Presentation: SafeLine ICU—Advancing
Central Line Care
Enhancing Nursing Knowledge and Competence
Hospital Setting

Advancing Central Line Care

Gap in Practice or Problem

Improve nursing knowledge and practical skills in central line care.

The SafeLine ICU project offers a well-rounded and comprehensive approach to improving central line care through targeted and practical training. While there are challenges, strategic planning, continuous support, and strong institutional backing can ensure its success, leading to better patient outcomes and enhanced professional competencies among ICU nurses.



SafeLine ICU – Advancing Central Line Care



Appendix D: Educational Handout

SafeLine ICU—Advancing Central Line Care Education Program Handout for Nurses

Introduction: Welcome to the SafeLine ICU—Advancing Central Line Care project. This program aims to boost nursing knowledge and skills in central line care to continuously improve patient outcomes at our hospital.

Learning Objectives (SMART Objectives):

1. **S:** Train ICU nurses in best central line care practices.
2. **M:** Improve pre-test to post-test scores by 20% and complete 90% skills validation.
3. **A:** Utilize the ADDIE model for a 6-week development and training program.
4. **R:** Enhance infection control and aseptic knowledge base and techniques to help improve outcomes.
5. **Time-bound:** Complete training by September 15, 2024, and evaluations by September 30, 2024.

What You Will Learn:

Content Overview:

- **Infection Control Best Practices:** Proper hand hygiene, aseptic non-touch techniques, and the proper use of PPE.
- **Central Line Bundle Elements:** Steps such as hand hygiene, barrier precautions, selections of catheter sites, and daily review protocols.
- **Practical Management Techniques:** Proper methods to handle flushing, locking, dressing, and securing central lines, along with managing potential complications.

Schedule and Format:

Training Timeline:

- **Develop Materials (July 30 - August 4, 2024):** Prepare slides, handouts, and checklists.
- **Conduct Training Sessions (August 15 - August 29, 2024):** 2-hour didactic sessions followed by 1-hour hands-on skills validation across different shifts.
- **Evaluation and Follow-up (September 1 - September 15, 2024):** Gather and analyze data, provide feedback, and engage nursing leadership.

Training Sessions:

- **Didactic Session (2 Hours):**
 - Introduction

- Infection Control Practices
- Central Line Bundle Elements
- Practical Management Techniques
- Case Studies and Discussion
- Q&A and Wrap-Up
- **Skills Validation Session (1 Hour):**
 - Hands-on practice in stations covering hand hygiene, PPE application, dressing changes, etc.
 - Individual competency validation by the instructor.

Assessment Tools:

- **Pre- and Post-Tests:** Multiple-choice questions to gauge your before and after knowledge.
- **Skills Validation Checklists:** Hands-on assessments to validate your practical skills.

Instructions for Participation:

1. **Attend All Sessions:** Attend the mandatory 2-hour didactic and the 1-hour hands-on skills validation sessions. Multiple sessions are scheduled across different shifts to accommodate everyone.
2. **Complete Pre- and Post-Tests:** These will measure your baseline knowledge and the improvements you make throughout the program.
3. **Participate Actively:** Engage in role-playing scenarios, group discussions, and hands-on practice to enhance your learning experience.
4. **Provide Feedback:** Complete a brief survey at the end of each session to help us improve future training.

Key Topics to Be Covered:

- **Aseptic Non-Touch Technique (ANTT):**
 - Minimizing direct contact with key parts and sites.
 - Ensuring the use of sterile equipment.
- **PPE Usage:**
 - Correct methods of donning and doffing PPE.
 - Importance of full barrier precautions during procedures.

- **Daily Review Protocols:**
 - Consistently evaluating the necessity of central lines.
 - Accurately documenting findings in patient records.
- **Medication Administration and Documentation:**
 - Proper flushing (using 10 ml syringes, push-pause technique).
 - Locking protocols (appropriate solutions and volumes).
 - Correct documentation procedures to maintain effective communication.

Hands-On Practice:

- **Station 1:** Proper hand hygiene and PPE application.
- **Station 2:** Central line dressing changes—sterile and transparent dressings.
- **Station 3:** Flushing, locking, and securing central lines.
- **Station 4:** Recognizing and managing central line complications.

Feedback and Continuous Improvement:

- **Ongoing Support:** Utilize the hospital intranet and periodic reminders via email and SMS to stay informed about best practices and upcoming refresher sessions.
- **Feedback Surveys:** Your immediate feedback is crucial. Fill out the provided survey after each session.
- **Regular Audits:** Continuous monitoring and regular audits will ensure compliance and identify opportunities for further improvement.

Conclusion:

Thank you for your participation in the SafeLine ICU—Advancing Central Line Care program. By enhancing your knowledge and practical skills, you contribute to improved patient outcomes and uphold the highest standards in central line care.

Appendix E: Skills Validation Checklist

Assessment Tool

This checklist is intended to assess and validate the practical skills of ICU nurses in central line care as part of the SafeLine ICU—Advancing Central Line Care project at our hospital. Please complete this checklist during the hands-on skills validation session.

Participant Information

- **Name:** _____
- **Date:** _____
- **Evaluator:** _____

Skill Stations

Station 1: Proper Hand Hygiene and PPE Application

Task	Steps	Completed	Comments
Hand Hygiene	1. Use alcohol-based hand rub or wash hands with soap and water for at least 20 seconds.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Ensure hands are dry before donning PPE.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
PPE Application	1. Don cap and mask properly, covering mouth and nose.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Wear sterile gown correctly, tying at the back.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Don sterile gloves without contaminating them.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Station 2: Simulated Central Line Dressing Change

Task	Steps	Completed	Comments
Preparation	1. Gather all necessary supplies (sterile dressing kit, chlorhexidine, sterile gloves).	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Removing Old Dressing	1. Perform hand hygiene and don clean gloves.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Carefully remove old dressing without touching the insertion site.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Dispose of old dressing in medical waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Task	Steps	Completed	Comments
Applying New Dressing	1. Clean insertion site with 2% Chlorhexidine Gluconate in 70% alcohol for at least 30 seconds.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Allow site to air dry completely.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Apply new sterile, transparent dressing.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	4. Document the dressing change in the patient's record.	<input type="checkbox"/> Yes <input type="checkbox"/> No	Station 3: Flushing, Locking, and Securing the Central Line
Task	Steps	Completed	Comments
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Flushing	1. Perform hand hygiene and don sterile gloves.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Attach 10 mL syringe containing normal saline to the needleless connector.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Use the "push-pause" technique to flush the line.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Locking	1. After flushing, lock the line with the appropriate solution (saline or heparin) based on protocol.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Remove syringe and ensure the hub remains sterile.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Securing	1. Ensure the central line is secure using a dedicated securement device.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Replace needleless connectors as per protocol (every four days or with administration set change).	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Document the procedure in the patient's record.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Station 4: Recognizing and Managing Central Line Complications

Task	Steps	Completed	Comments
Assessment	1. Perform hand hygiene and don appropriate PPE.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Assess insertion site for signs of infection (redness, swelling, discharge).	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. Evaluate for catheter integrity and securement.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Task	Steps	Completed	Comments
Management	1. If signs of infection are present, notify the physician immediately.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2. Collect a culture from the insertion site if ordered by the physician.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3. If no blood return is present, do not force flush; notify the physician for further assessment.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	4. Document findings and actions taken in the patient's record.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Conclusion

Upon completing each station, please ensure all tasks are marked appropriately. Use the comments section to note any areas that require further improvement or any observations that stood out during the assessment.

Evaluator's Summary:

- **Nurse's overall performance:** Satisfactory Needs Improvement
- **Specific areas for improvement:**
- **Additional comments:**

Evaluator's signature: _____

Date: _____

Participant Acknowledgment:

I acknowledge the receipt of feedback on my performance and understand the areas that need improvement.

Participant's signature: _____

Date: _____

Appendix F: SWOT Analysis for SafeLine ICU—Advancing Central Line Care DNP

Project

Strengths:

1. **Comprehensive Approach:** The project uses the ADDIE model to ensure a well-structured and thorough educational experience.
2. **Reputable Institution:** Implementation at our hospital lends credibility and ensures access to robust resources.
3. **Targeted Training:** Focuses on ICU nurses, ensuring that the training is relevant and specific to those who are directly involved in central line care.
4. **Data-Driven:** This approach utilizes pre- and post-tests, along with skills validation, to measure knowledge and skill improvement objectively.
5. **Hands-On Practice:** Incorporates practical, hands-on sessions reinforcing theoretical knowledge.
6. **Continuous Monitoring:** Regular audits and follow-ups ensure sustained protocol adherence and ongoing improvement.

Weaknesses:

1. **Time Constraints:** ICU staff often work extended hours and varying shifts, making scheduling and participation in training sessions challenging.
2. **Resource-intensive: It requires significant investment in** time, materials, and personnel for development and implementation.
3. **Resistance to Change:** Staff who feel overburdened by additional training requirements may resist change.
4. **Diverse Skill Levels:** Varying levels of existing knowledge among nurses may require additional tailored instructions.

Opportunities:

1. **Improved Patient Outcomes:** Better central line care will likely reduce infection rates and improve overall patient safety and outcomes.
2. **Professional Development:** Enhances professional skills, increasing job satisfaction and potentially better retention rates.
3. **Scalability:** Successful implementation can serve as a model for other departments or hospitals within the network.

4. **Innovative Techniques:** The project can incorporate the latest best practices and emerging technologies in central line care.

Threats:

1. **High Turnover Rates:** High turnover in nursing staff might undermine the sustainability of training outcomes.
2. **Shifts in Healthcare Policy:** Changes in healthcare guidelines or policies could impact the relevance or applicability of the training content.
3. **Compliance Issues:** Ensuring continuous compliance post-training can be challenging, especially without regular follow-ups and strong leadership support.
4. **External Disruptions:** Unforeseen events (like pandemics) can disrupt the training schedule and implementation phases.

Appendix G: GANTT Chart

Project Duration: July 30, 2024 - September 15, 2024

Task Name	Start Date	End Date	Duration	Responsible Party
Preparation Phase				
Develop Curriculum & Materials	July 30, 2024	Aug 4, 2024	6 days	Hani Ayyad
Schedule Training Sessions & Logistics	Aug 21, 2024	Aug 22, 2024	2 days	Hani Ayyad
Training Phase				
Conduct Didactic Sessions	Aug 23, 2024	Sep 7, 2024	16 days	Hani Ayyad
Administer Pre-Tests	Aug 23, 2024	Sep 7, 2024	16 days	Hani Ayyad
Administer Post-Tests	Aug 23, 2024	Sep 7, 2024	16 days	Hani Ayyad
Skills Validation and Evaluation Phase				
Conduct Skills Validation Sessions	Sep 7, 2024	Sep 10, 2024	4 days	Hani Ayyad
Collect and Analyze Data	Sep 7, 2024	Sep 10, 2024	4 days	Hani Ayyad
Feedback and Evaluation Phase				
Gather Participant Feedback	Sep 11, 2024	Sep 12, 2024	2 days	Hani Ayyad
Present Findings to Nursing Leadership	Sep 13, 2024	Sep 15, 2024	3 days	Hani Ayyad