What is the Impact of a Hand Hygiene Initiative on CLABSI Rates

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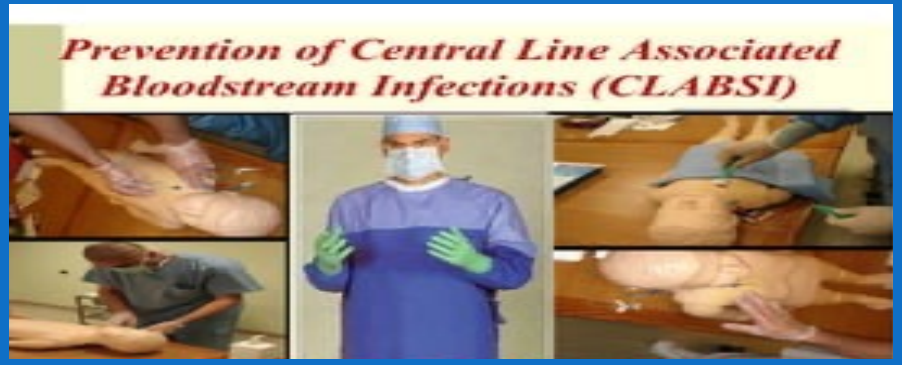
Introduction



- Hospital-acquired infections (HAIs) are preventable
- Increased morbidity, prolonged hospital stays, higher costs, and decreased overall hospital productivity
- Central line-associated bloodstream infection (CLABSI) is a preventable HAI
- In the United States, approximately 250,000 CLABSI cases with a 10% mortality rate
- Increased CLABSI costs ranging from $46,000 to $75,000 per infection
- Hand hygiene is essential for preventing CLABSIs
- The goal is to reduce the CLABSI incidence by implementing a hand hygiene initiative

Background

Effective hand hygiene practices are highly effective in preventing CLABSIs

It is a convenient and cost-effective intervention to prevent the transmission of pathogens

It is a universal strategy for preventing all nosocomial infections

The World Health Organization's recommended strategy of "Five Moments for Hand Hygiene" is an evidence-based approach in preventing hospital-acquired infections, including CLABSI

Hand hygiene, through hand decontamination with antiseptic-containing soaps or alcohol-based gels/foams, consistently reduces CLABSI rates.

Need Assessment

Insufficient adherence to hand hygiene protocols prior to assessing the central line

Lack of training for bundle care due to staff turn over rate for staff RNs increased by 8.4 percent after covid resulting in a national average of **27.1 percent**

Nurses are being complacent

Lack of knowledge about the bundle care – turnover rate and VAD (Venous assess device) training for RN's have been on pause after COVID

Busy workload and forgetfulness after scanning the patient wrist band before administering medication

Lack of a supportive hand hygiene culture

Problem Statement and Guiding Question

The lack of consistent implementation and adherence to effective hand hygiene practices is a significant challenge in preventing central line-associated bloodstream infections (CLABSIs)

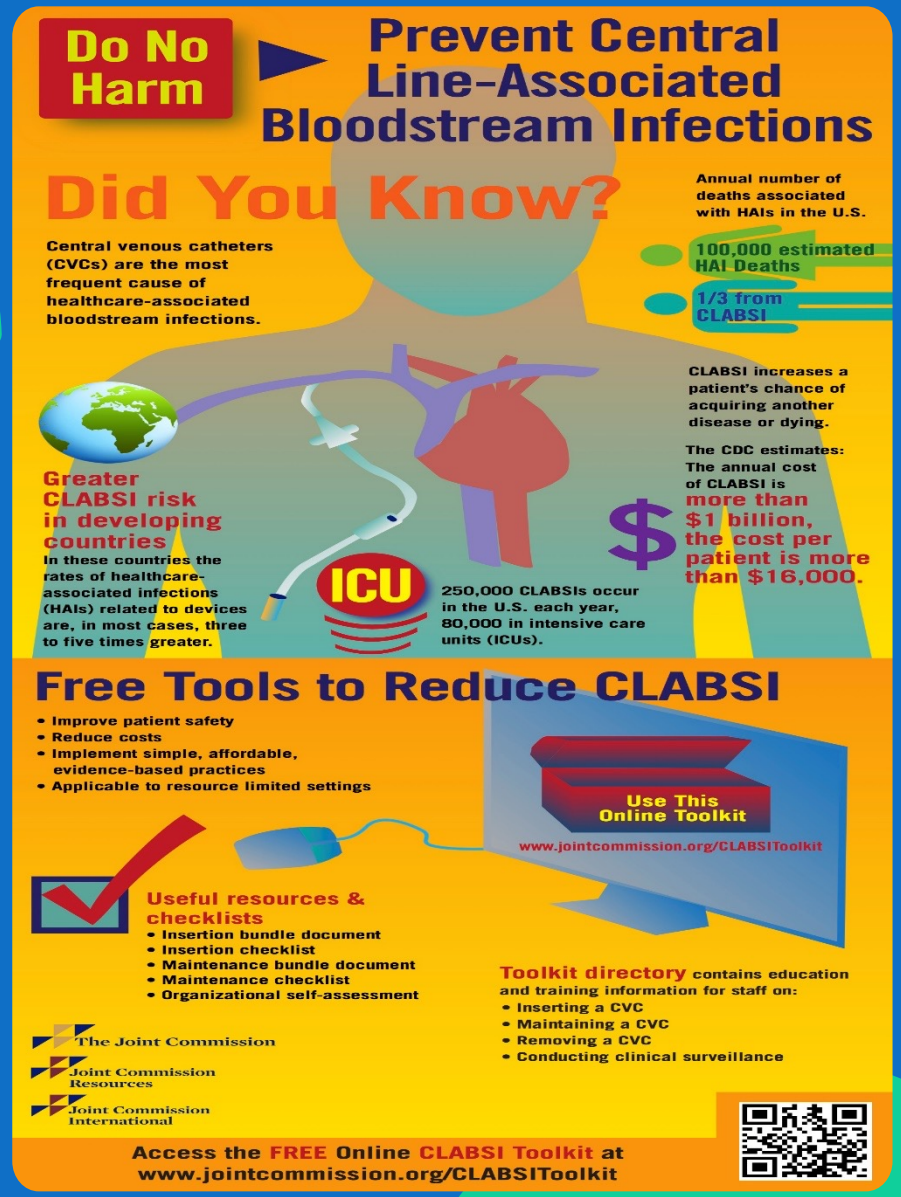
Does the implementation of a hand hygiene awareness program among ICU registered nurses increase their knowledge of proper handwashing to prevent CLABSIs?"

Guiding Question

- Does the implementation of a hand hygiene awareness program among ICU registered nurses increase their knowledge of proper handwashing to prevent CLABSIs?"

Purpose of Statement

- This study is to examine the effectiveness of implementing and promoting effective hand hygiene practices in preventing central line-associated bloodstream infections (CLABSIs)



Literature review

The evidence from rigorous literature evaluations consistently supports the efficacy of various strategies in promoting hand hygiene and improving compliance with guidelines.

These strategies encompass providing appropriate education, conducting direct observation to monitor hand hygiene practices, and implementing campaigns focused on hand hygiene.

Across studies, these interventions consistently demonstrate positive effects on compliance rates and the successful implementation of recommended guidelines.

Literature Review

Bundle Care for CLABSI Reduction

- Studies demonstrate that central venous catheter insertion bundles effectively reduce CLABSI rates among ICU patients (Foka et al., 2021; Gupta et al., 2021).

Educational Interventions for CLABSI Reduction

- Various educational interventions, such as simulated training, lectures, checklists, feedback, and audits, significantly decrease CLABSI rates (Gupta et al., 2022).

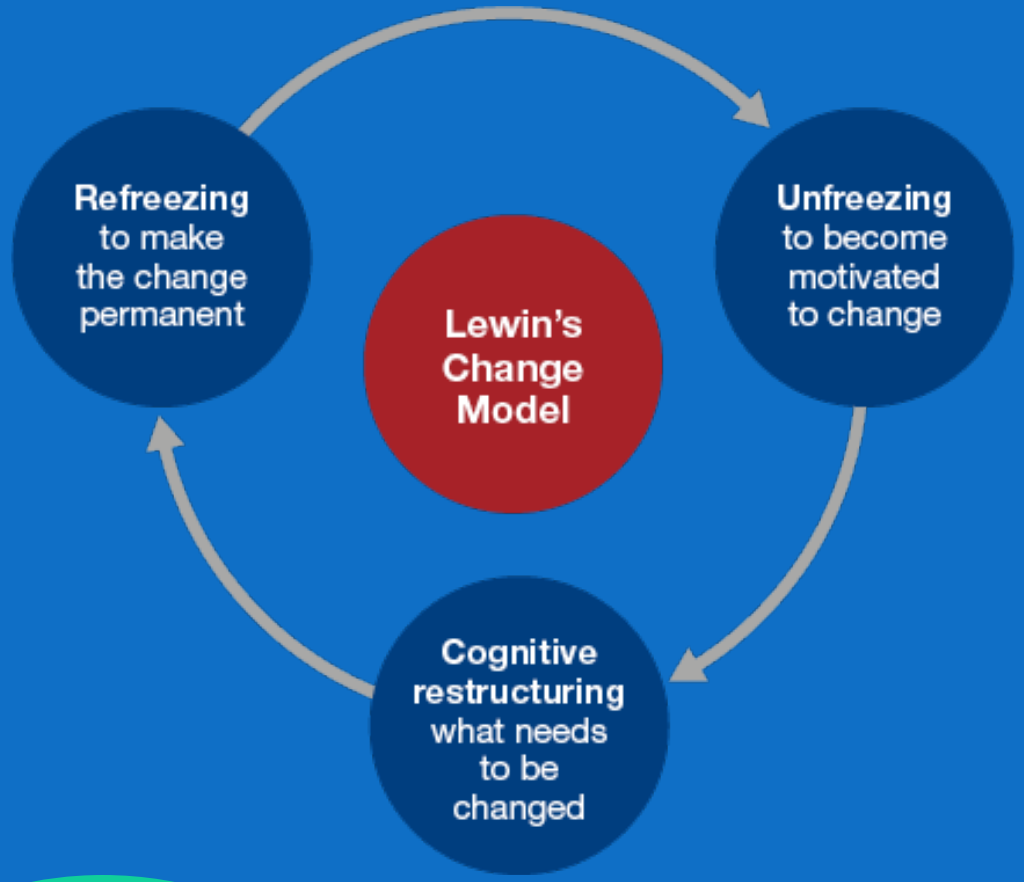
Hand Hygiene and Hub Care for CLABSI Reduction

- Proper hand hygiene and hub care, including using alcohol-based hand sanitizers and disinfecting hubs, are critical in preventing CLABSI (Garcia-Molina et al., 2020; Webster et al., 2019; Johnson et al., 2020; Smith et al., 2020).

Ongoing Education and Training for Sustained CLABSI Reduction

- Continuous education and training programs are necessary to sustain low CLABSI rates as knowledge and compliance tend to decline over time (Mishra et al., 2019).

Theory



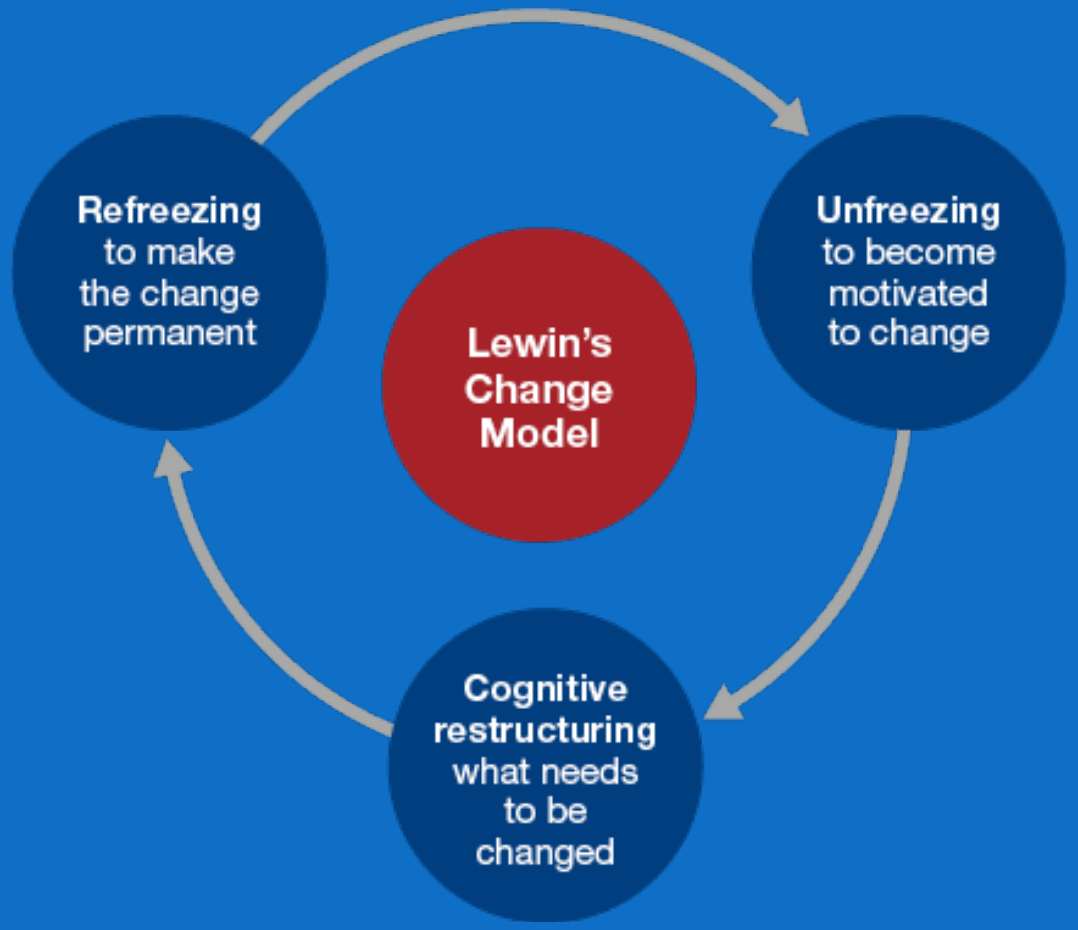
Phase 1: Unfreezing Phase

- SICU's awareness of the need for change and practice gap Identification of low hand hygiene compliance
- Assessment of hand hygiene compliance knowledge
- Increase in CLABSIs serves as evidence for the need to change

Phase 2: Change Phase

- Employees' awareness and acceptance crucial for change
- Project manager obtained baseline data and discussed roles, responsibilities, and training
- Reminders for hand hygiene compliance
- Monitoring of hand hygiene practices by the project manage

Theory



Phase 3: Refreeze Phase

Employees embrace and form a habit without resistance	Comparison of pre and post-intervention outcomes
Presentation of findings to unit manager	Cooperation and collaboration for sustainability
Staff audit to evaluate support and application of change	Policy changes and dissemination efforts if appropriate

Methodology

- Quantitative pre-post-post interventional study design with convenience sampling
- Return Demonstration

Intervention

Retrospective CLABSI occurrence rate 2 months prior to intervention	Mandatory Inservice with voluntary participation of SICU nurses (Your five moments for hand hygiene)	Consent
Administer WHO –pre - test	Educational session - 15 minutes during shift huddle	Administer WHO post test after 2 weeks
Evaluation and feedback	CLABSI occurrence rate 2 months following initial education implementation	WHO Post test after 6 weeks

Teaching

Step 1: Pre-test WHO Hand Hygiene Knowledge Questionnaire for Health-Care Workers
Step 2: Education
- Teach about Hand hygiene, handwashing, alcohol-based hand hygiene, when to wash in relation to CVL access, care, and medication access for medications
- Give clean hands count from the CDC (Poster)
- WHO 5 moments of Hand Hygiene (Print outs)
- Posters up in Unit
- You tube video from CDC for handwashing steps
- https://youtu.be/zpqKKvfUPDU?t=15

Step 3: Return Demonstration of hand hygiene and handwashing
Step 4: Post-Test WHO Hand Hygiene Knowledge Questionnaire for Health-Care Workers
Step 5: 6-week follow-up Post-Test WHO Hand Hygiene Knowledge Questionnaire for Health-Care Workers

Outcome

Increase the knowledge of hand hygiene compliance among SICU employees.

Decrease the incidence of CLABSI among ICU patients by improving hand hygiene practices among SICU employees.

Setting

Registered nurses working in the surgical ICU, encompassing both day and night shifts.

Convenience sampling will be employed as the sampling method,

The sample will consist of a diverse representation of nursing staff, including both experienced RNs and new RNs in the unit.

The exact sample size will depend on the number of nurses present during the study period n =30.

Inclusion

- Registered nurses providing direct patient care in the surgical ICU during both day and night shifts
  - Full time
  - Part time
  - Per diem
  - Travel nurses

Exclusion

Nurse mangers/ Directors

RN’s from MICU, NICU , CVICU , PCU, Telemetry and medical surgical floor

APRN’s

Facilitators and Barriers

Facilitators:	Strong leadership support and available resources promote adherence to hand hygiene protocols.	Mandatory training sessions with voluntary participation foster accountability.	Integration of evidence-based practices enhances effectiveness.	Collaboration among healthcare professionals and interdisciplinary teams promotes adherence to guidelines.
Barriers:	Staff workload and resistance to change hinder participation and implementation.	Inadequate staffing levels and access to resources impede consistent practices.	Variability in perceptions of hand hygiene's importance affects compliance.	

Ethics

- Informed consent
- Voluntary Participation
- Confidentiality and privacy
- Respect autonomy
- Professional Competencies
- Clear communication
- IRB approval

Recruitment

- Inform eligible surgical ICU nurses about the educational programs and seek their volunteer participation.
- Communication with staff through staff meetings, emails, and unit announcements.
- Individualized emails explaining the educational programs, their advantages, and their voluntary participation.
- Post notices in break rooms and nurse stations.
- Clear and open communication

Outcome Goal

- Pre and post test survey
- Increase the hand hygiene practice knowledge to 90-100%
- Decrease the CLABSI rate to zero

Instrument

WHO hand hygiene knowledge questionnaire for healthcare workers”

- Reliability ranged from 0.54 to 0.86
- This process confirmed the usability and reliability of this tool for the promotion of hand hygiene in health care (Stewardson et al.,2013)

CLABSI report rate from the hospital monthly
CLABSI report-Excel spreadsheet

Analysis

Descriptive Analysis

Pre and Post Interventional Survey and Analysis

ANOVA

Cost /Budget

Category	Amount
Nurses' salaries	$620
Project developer's in-kind contribution	$4500
Pre- and post-assessment costs per nurse	$30
Educational materials per nurse	$40
Advertising expenses	$30
Hand sanitizer gel per nurse	$5
Total Budget	$5105

Data Collection Process

Data Collection and Analysis Methods:

- RED CAP
- Pre- and post-surveys administered to nurses.

Descriptive Analysis

- Provides a concise summary of infection rates.
- Metrics include mean CLABSI rates, standard deviations, and frequency distributions.

Comparison through Surveys:

- Pre- and post-interventional surveys enable direct comparisons.
- Facilitates identification of significant changes in CLABSI rates following hand hygiene interventions.

Statistical Tools for Analysis:

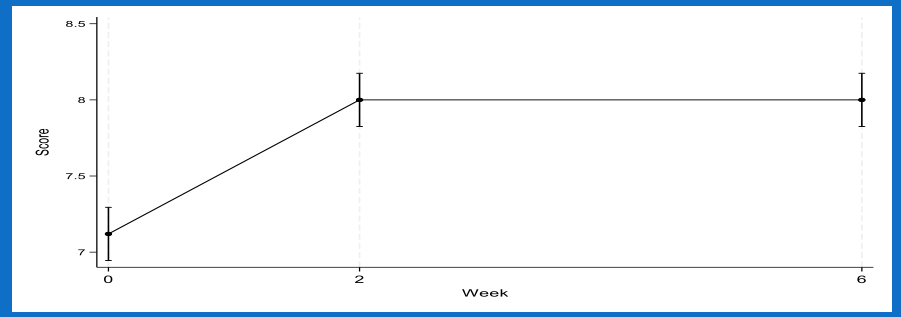
- Analysis of Variance (ANOVA) used to scrutinize CLABSI data across time periods or units.
- Paired sample T-Test compares means before and after interventions to assess significant effects.

Data analysis

Descriptive Analysis	Pre and Post-Interventional Surveys:	ANOVA and Paired t-tests:	CLABSI Rates Declined Post-Ontervention:
• Revealed significant increase in nurses' performance scores post-intervention. • Baseline mean rose from 7.1 to 8 at both two and six weeks. • Accompanied by reduced standard deviations, indicating enhanced consistency	• Enabled direct comparisons. • Consistently showed improved performance following the intervention period.	• Confirmed statistical significance. • Showcased increased scores across different time points. • Demonstrated significant differences between baseline and post-intervention periods.	• Emphasizing the effectiveness of the intervention. • Highlighting the importance of rigorous statistical methods in healthcare evaluation.

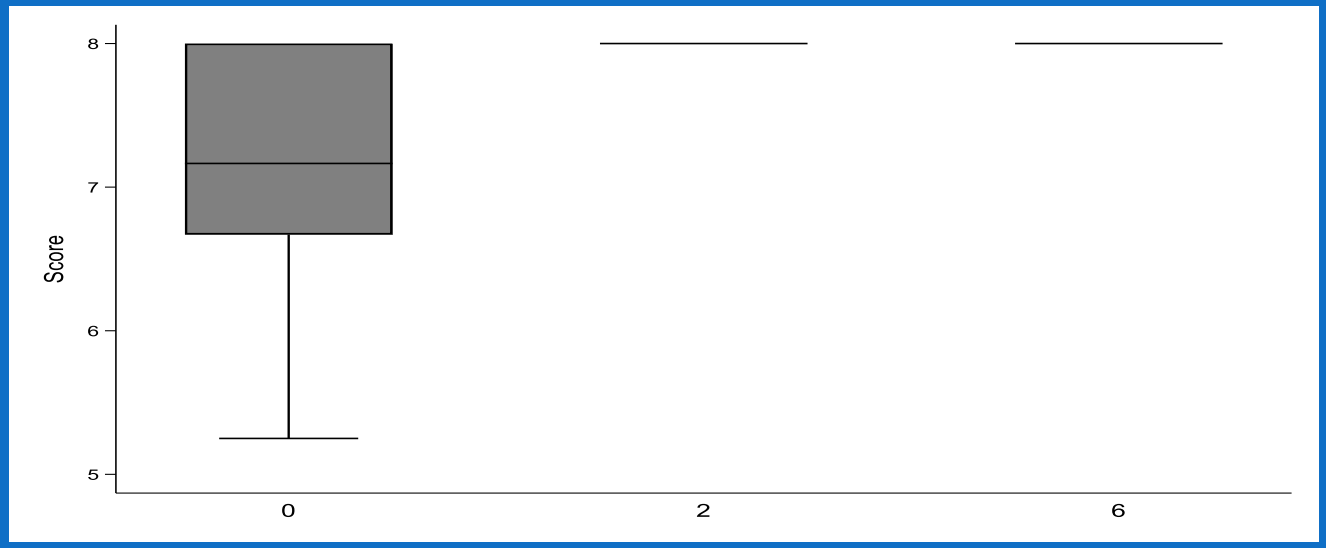
Result

Measure	N	Baseline	Week 2	Week 6	F	P-value
		Mean (SD)	Mean (SD)	Mean (SD)		
Score	30	7.1 (0.8)	8 (0)	8 (0)	33.88	< .001

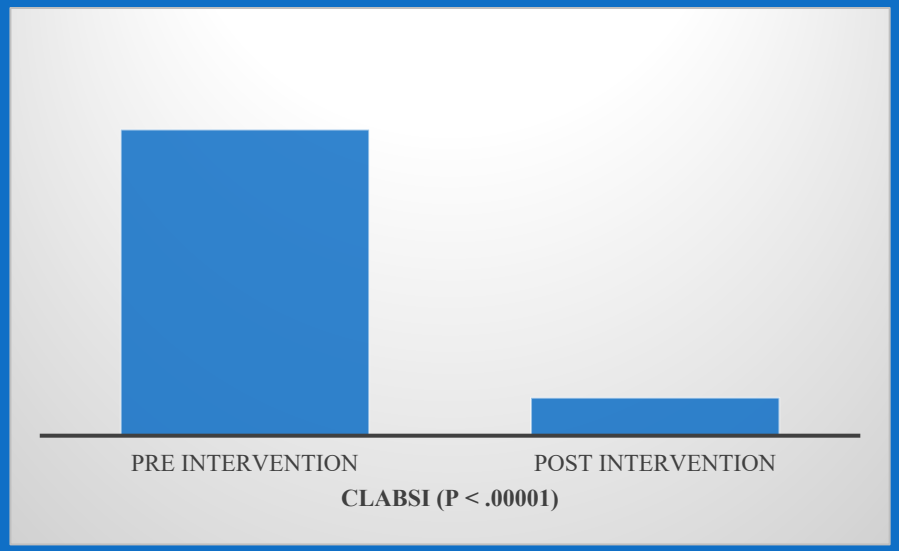


Mean plot showing baseline and post-intervention score

Baseline and Post Intervention Comparison



Baseline and postintervention score



Pre and post intervention CLABSI comparison

Participants Demographics

Study participants:

- Total of 30 registered nurses involved.
- Comprised both male and female individuals.
- Included nurses working full-time, part-time, and per diem positions.

Demographic data:

- Not collected or reported.
- Concerns regarding potential breach of confidentiality cited.
- Demographic information unavailable for analysis or inclusion in the report.

Evaluation of Outcome

Hand hygiene initiative led to significant improvements in nurse performance and patient safety.

Descriptive analysis showed a notable increase in nurse performance scores post-intervention.

Pre- and post-intervention surveys confirmed consistent enhancements in nurse performance.

ANOVA and paired t-tests demonstrated statistical significance.

CLABSI incidence rates notably declined post-intervention.

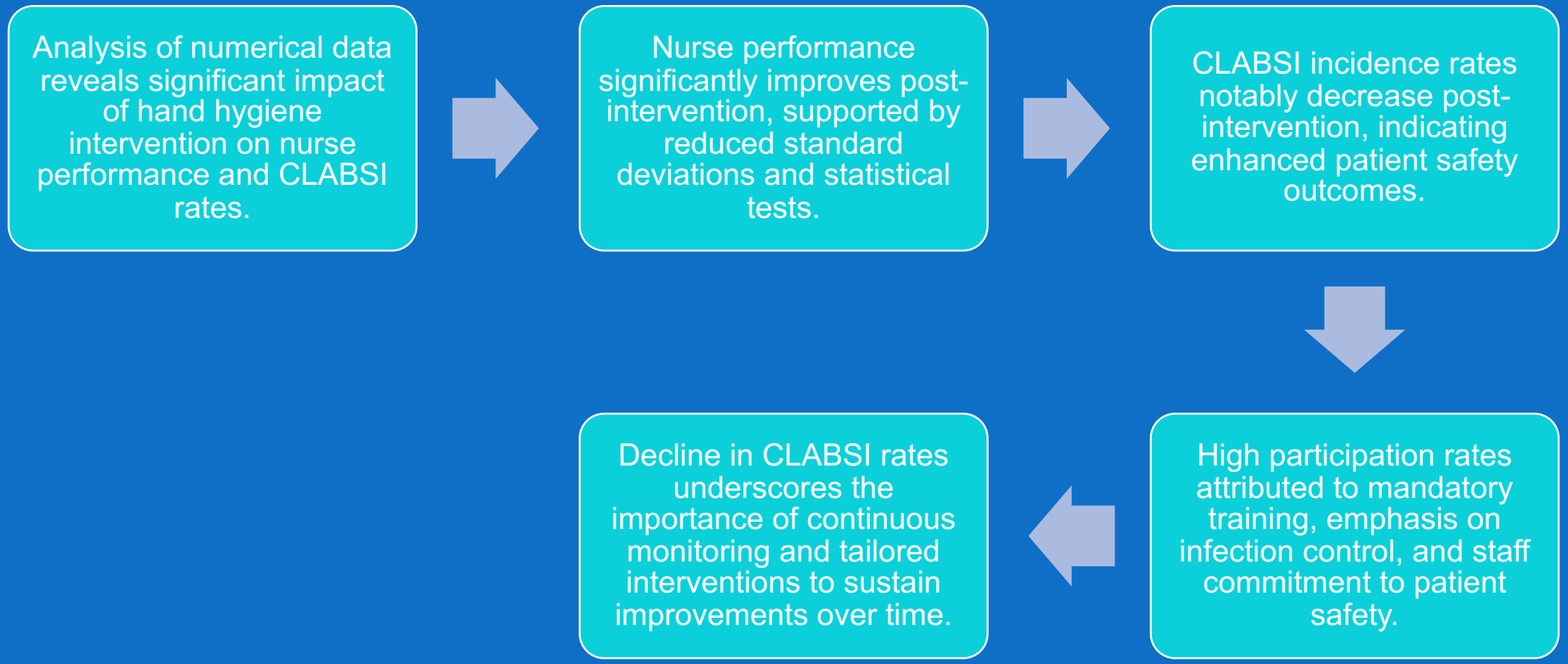
High participation in the initiative emphasized its success.

Variations in participation rates may be due to workload and perceptions.

Rapid decline in CLABSI rates post-intervention highlighted the intervention's effectiveness.

Continuous monitoring and tailored communication strategies are recommended for sustainability.

Discussion


Analysis of numerical data reveals significant impact of hand hygiene intervention on nurse performance and CLABSI rates.
Nurse performance significantly improves post-intervention, supported by reduced standard deviations and statistical tests.
CLABSI incidence rates notably decrease post-intervention, indicating enhanced patient safety outcomes.
High participation rates attributed to mandatory training, emphasis on infection control, and staff commitment to patient safety.
Decline in CLABSI rates underscores the importance of continuous monitoring and tailored interventions to sustain improvements over time.

Strength and Limitation

Rigorous statistical analysis provides compelling evidence of effectiveness.	Multifaceted approach leads to rapid decline in CLABSI rates.	High participation rates indicate strong support for patient safety.	Integration of evidence-based practices ensures alignment with best practices.	Collaboration enhances impact and sustainability of the initiative.
Lack of demographic data limits analysis.	Small sample size affect generalizability.	Variability in participation rates may introduce bias.	Short-term follow-up period may not capture long-term impact.	External factors could influence outcomes independently.

Cost Benefit analysis

Hand hygiene intervention aimed to improve nurse performance and reduce CLABSI rates with an average cost of $5105.

CLABSI costs range from $27,232 to $68,983, with a median of $48,108.

Potential savings per prevented CLABSI case amount to $48,108.

Calculated ROI stands at approximately 943.48%.

This suggests a potential return of $9.43 for every dollar invested.

Substantial ROI underscores financial effectiveness, reinforcing value proposition.

Modest investment justifies project's cost, emphasizing impact on patient safety and healthcare quality.

Future Implications/Sustainability/Dissemination

Hand hygiene initiative's impact on CLABSI rates suggests promising future implications for patient safety and infection control.

Implementation process provides a blueprint for future interventions, emphasizing education, training, and multifaceted approaches.

Sustainability relies on continuous monitoring and reinforcement of best practices.

Dissemination of findings is crucial for knowledge transfer and adoption of effective strategies.

Future Implications/Sustainability/Dissemination

Leadership endorsement and commitment to infection control measures are vital for high participation.

Future interventions should address individual barriers and tailor communication strategies.

Unexpected rapid decline in CLABSI rates underscores the need for ongoing evaluation and adaptation.

Rigorous statistical methods provide a robust framework for assessing intervention effectiveness and promoting patient safety.

Implications for Nursing Practice

The hand hygiene initiative underscores the significance of incorporating evidence-based practices into nursing care.

Implementation of multifaceted interventions aligns with DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking.

Nurse leaders play a critical role in promoting and sustaining interventions that enhance patient safety and reduce healthcare-associated infections.

Education and training programs should be tailored to meet the needs of nursing staff, emphasizing the importance of adherence to hand hygiene protocols.

Implications for Nursing Practice

Continuous evaluation of outcomes aligns with DNP Essential VII: Interprofessional Collaboration for Improving Patient and Population Health Outcomes.

Nursing practice should prioritize patient safety and infection control, integrating best practices into everyday care delivery.

Collaboration with interprofessional teams fosters a holistic approach to improving healthcare outcomes and preventing adverse events.

The success of the hand hygiene initiative highlights the pivotal role of nurses in driving quality improvement efforts within healthcare settings.

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