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Enhancing Nurse Communication Through Standardized Handoff Practices: A Practice Change Project

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Abstract

Background: Effective communication during patient handoffs is essential to ensure patient safety and continuity of care. Miscommunication is a leading cause of preventable medical errors. Standardized handoff tools like I-PASS the BATON offer a structured approach to improve the transfer of information.

Problem: The project site lacked a standardized handoff process, resulting in staff dissatisfaction and frequent information gaps during transitions of care.

Methods: This practice change project utilized a pre-post design to evaluate the impact of the intervention. Patricia Benner's Novice to Expert theoretical framework and Lewin's Change Model guided the implementation. Nurse perceptions of handoff quality were assessed through pre- and post-intervention surveys, whereas real-time handoff quality was evaluated by direct observations.

Intervention: I-PASS the BATON was introduced as the standardized handoff tool. Staff received training through workshops and daily huddles. Implementation was supported by hospital leadership and interprofessional collaboration.

Results: Twenty-nine nurses completed the project. There was a statistically significant difference in the Handover Evaluation Scale scores before and after the intervention ($p < 0.05$). Implementation of I-PASS the BATON improved handoff quality in terms of quality of information, interaction and support, efficiency, and patient involvement.

Conclusions: Implementing I-PASS the BATON improved the consistency and quality of handoff communication. Structured training and interprofessional collaboration were key to success. Continued use may contribute to safer patient care and increased nurse satisfaction.

Keywords: I-PASS the BATON, handoff communication, transitions of care

Introduction

Ineffective communication during patient handoffs compromises patient safety and the quality of patient care. Nurses perform multiple patient handoffs daily, making precise communication essential for seamless transitions of care. Standardized handoff processes enhance patient safety and continuity of care by reducing communication errors [1]. This project concerns the implementation of I-PASS the BATON (IPB), an evidence-based intervention, to improve healthcare outcomes by enhancing patient safety and increasing the quality of nurse communication. Implementation of structured handoff tools like IPB has been shown to improve the quality of nurse communication and reduce patient harm by up to 70% [1, 2]. The practice problem was the absence of a standardized handoff process, resulting in communication gaps, increased risk of errors, and disruptions in patient care. The project's aim was to enhance handoff communication among nurses through the implementation of a standardized process. This manuscript explores an assessment of the problem, the project aim and supporting objectives, the practice question, the evidence-based intervention with synthesis, methodology, theoretical framework, implementation plans, plans for sustainability, barriers, facilitators, ethical considerations, data collection, analysis plan, required resources, budget, results, conclusions, and clinical relevance.

Problem

Handoff communication failures pose a global challenge, significantly impacting patient safety and healthcare outcomes. The World Health Organization [3] indicates that miscommunication during patient handoffs contributes to 80% of serious medical errors. Healthcare organizations worldwide experience increased morbidity and mortality due to ineffective transitions of care, leading to prolonged hospitalizations, readmissions, and increased healthcare costs [3]. Economic effects are extensive with preventable medical errors to the global healthcare system exceeding $42 billion annually [3]. In resource-limited countries, communication failures further

stress already resource-limited health systems [3]. Addressing this communication issue with a standardized handoff process is crucial to mitigating adverse outcomes and enhancing the quality of care worldwide.

In the United States, ineffective handoffs continue to be a leading cause of medical errors and adverse patient events. Nationally, it is estimated that 70% of serious medical errors are related to communication failures during care transitions [4]. The Joint Commission Online [5] reported failures in communication were among the top three leading causes for the 1,411 sentinel events reported during the 2023 calendar year, with 18% of these incidents resulting in patient deaths. Howick et al. [6] reported that over 160,000 avoidable deaths occur every year in the United States due to preventable medical errors. Communication failures not only contribute to patient safety events but also impose economic ramifications. Patient safety events account for 15% of hospital expenditures, with the cost of medication errors exceeding $17 billion per year [6]. Economically, these communication failures contribute to significant costs, including $1.7 billion in malpractice claims and extended hospital stays [7]. Nurses, physicians, and other healthcare professionals face heightened workloads and stress due to unclear or incomplete handoffs, impacting care quality, and contributing to burnout [7]. Addressing communication failures with a standardized handoff process is critical to improving patient outcomes and alleviating the financial burden on the healthcare system.

At the project site, the absence of a standardized handoff process was identified as a significant practice issue. Observations, staff feedback, and discussions with hospital leadership indicated frequent inaccuracies and omissions in patient information during transitions of care. Since 2006, the Joint Commission has maintained a standardized handoff protocol as a National Patient Safety Goal to promote patient safety and reduce errors [8]. Research indicates that 67% of communication errors in healthcare are attributed to deficiencies in patient handoffs [9]. The project site's lack of a standardized approach presented a notable risk to patient safety. Unfortunately, the project site had not shown evidence of addressing this practice problem. Addressing this gap through implementing an evidence-based handoff strategy had the potential to enhance the delivery of safe patient care.

Project Aim and Supporting Objectives

The primary aim of this project was to implement and evaluate the effectiveness of a standardized handoff tool in nursing shift reports to enhance the accuracy, consistency, and safety of handoff communication. The supporting objectives were: (a) assess nursing staff's knowledge of the I-PASS the BATON handoff tool through pre- and post-training assessments administered before and immediately after structured educational sessions, with a target of achieving a post-assessment score of 90% or higher, (b) evaluate handoff quality before and after the implementation using validated measurement tools, including the Handover Evaluation Scale [10] and the Observation Tool [11] with a goal to demonstrate a 40% improvement in handoff quality scores at eight weeks post-implementation, and (c) ensure at least 85% compliance of the use of IPB through systematic audits and staff self- reporting to evaluate adoption and sustainability with compliance monitored weekly over the eight week implementation period.

Practice Question

The following practice question served as the basis for the project: In nurses on a medical-surgical unit, does the implementation of the I-PASS the BATON handoff tool compared with usual practice, impact the quality of handoff communication between nurses over eight weeks?

Evidence-Based Intervention with Synthesis

Evidence-Based Intervention

I-PASS the BATON is a structured handoff tool designed to facilitate transitions of patient care by ensuring complete, consistent, and accurate transfer of information between caregivers [2, 11-16]. The mnemonic I-PASS the BATON represents these key elements: I- Introduction: introduction of caregiver and their role; P – Patient: provide the patient's name and date of birth; A- Assessment: chief complaint, diagnosis, vital signs, and pain score; S- Situation: explain the current patient status, code status, lines, tubes, level of consciousness, and any recent changes; S- Safety: allergies, alerts, critical labs, isolation precautions, fall risk, and pressure injuries; B- Background: comorbidities, current medications, family history; A- Action: orders pending, nursing interventions needed, labs to collect; T- Timing: level of urgency and prioritization of actions; O- Ownership: physician, nurse practitioner, and consulting physician assigned to the patient; and N- Next: plan for the day and for discharge [11]. The IPB handoff tool is a component of the TeamSTEPPS framework, a nationally recognized program with the AHRQ [1], designed to improve teamwork and optimize healthcare communication. Originally introduced in 2008, I-PASS was developed as an evidence-based framework to standardize the exchange of information between caregivers [1]. The tool was later expanded into I-PASS the BATON to incorporate additional components to provide a more comprehensive approach to transitions of care [1].

Evidence Synthesis

This section presents an evidence synthesis of ten research articles supporting the implementation of I-PASS the BATON. The research also highlights I-PASS, a more concise version of IPB, as an effective handoff tool. However, IPB provides a more comprehensive approach, ensuring that all aspects of patient care are thoroughly addressed [1]. The AHRQ [1] advocates for a standardized handoff protocol to ensure consistency and completeness in the transfer of patient information. Ten evidence-based, peer-reviewed research articles published within the last five years were analyzed to evaluate the effectiveness of I-PASS and IPB in improving handoff communication, nurse satisfaction, and patient safety. Two articles were evidence level II, quality A [11,17]. Three articles were evidence level II, quality B [16, 18, 19]. Three articles were evidence level III, quality A [13, 14, 15]. Two articles were evidence level III, quality B [12, 20]. The reviewed studies provided a robust evidence base supporting the use of standardized handoff tools like IPB.

Main Themes in the Evidence

Reduction of Patient Safety Events. Structured handoff interventions such as I-PASS the BATON (IPB) significantly improve patient safety by reducing communication errors and adverse events [1, 2, 12, 13, 15, 17, 18, 20]. Effective handoffs ensure continuity of care, minimizing information loss during transitions of care [1, 12, 15, 17, 18, 20]. The standardization and structure of the IPB handoff tool promotes the accurate transfer of information, reducing medication errors, inpatient falls, and pressure injuries [2, 12, 15, 17, 18, 20]. The research suggests that implementing a structured handoff tool leads to enhanced collaboration, strengthening patient safety efforts [12, 14, 15, 17].

Enhanced Communication and High-Quality Handoffs. Enhanced communication and high-quality handoffs are critical for patient safety, as evidenced by research highlighting the effectiveness of the IPB handoff tool in facilitating an accurate, well-structured exchange of information during transitions of care [11-15]. The Joint Commission [9] and the AHRQ [1] identified communication errors in patient handoffs as a leading contributor to adverse events, underscoring the critical need for standardized approaches such as the I-PASS the BATON handoff tool. Multiple studies highlight

improvements in handoff quality, efficiency, and consistency following IPB implementation, with nurses and physicians reporting fewer errors due to omitted or incorrect information [11-17, 19].

Improved Nurse Satisfaction. Implementation of the I-PASS the BATON (IPB) handoff tool has significantly enhanced nursing collaboration and teamwork, leading to an increase in job satisfaction [11-16, 18]. Enhanced peer interaction and support have led to more accurate, efficient communication about patient status during handoffs [11-16]. The structured format of the IPB tool enables nurses to focus on patient needs with greater confidence, reducing omitted information and reinforcing workflow effectiveness [11-15, 18].

Contrasting Elements in the Research

While all the studies acknowledged the benefits of a standardized handoff tool such as IPB, notable variations of the research methodologies were worth highlighting. Some studies were conducted over three to six months to evaluate the immediate effects on communication efficiency and nurse satisfaction [11, 14, 16, 18], others were conducted up to three years to identify the long-term impact and sustained improvements to patient safety [12, 13, 15, 19]. While some studies included a broad population of nurses across multiple settings [13, 15, 17, 19, 20], others focused on specific hospital units [11, 12, 14, 16, 18]. Additionally, some studies measured the effectiveness of the intervention through self-reports and direct observational audits [11, 14, 16], others relied solely on self-reports [12, 13, 15], and others relied solely on direct observations [18, 19].

Support for the Evidence-Based Intervention

Extensive research supports the effectiveness of the IPB handoff tool in improving patient safety, communication, the quality of handoffs, and nurse satisfaction, with studies ranging from Level II to Level III [11-20]. Findings consistently demonstrated that a structured handoff protocol such as IPB reduces errors, strengthens teamwork, enhances communication, and improves nurse satisfaction, reinforcing the need for standardized handoff communication in the healthcare setting [11-20]. The extensive research underscored the IPB as a fundamental tool for optimizing nurse communication to improve the quality of patient care.

Methodology

The methodology section of the manuscript contains the essential components that shape the practicum project's foundation. The methodology provides a comprehensive review of the organizational setting, population, translational science model, project management plan, project implementation plan, and plans for sustainability.

Organizational Setting

The project site was a 28-bed medical-surgical unit within a non-profit community hospital in the southeastern United States. The hospital serves a mid-sized rural population and functions as a regional healthcare provider, offering comprehensive services including inpatient and outpatient care, emergency services, oncology, and inpatient hospice care. The patient population spans all age groups and presents with diverse medical needs, including primary care, surgical interventions, chronic disease management, and emergency services. Common diagnoses include diabetes, asthma, chronic obstructive pulmonary disease, hypertension, congestive heart failure, myocardial infarctions, orthopedic injuries, joint replacements, and general surgical conditions.

Each month, the medical-surgical unit accommodates approximately 130 patients, with an average length of stay of 4.36 days. A dedicated interdisciplinary team including physicians, nurses, physical therapists, pharmacists, and social workers collaborates to deliver high-quality, patient-centered care. The interdisciplinary team develops individualized treatment plans aimed at optimizing health outcomes.

Population

The project population included nurses employed in a medical-surgical unit at the practicum site. A total of 35 nurses participated in the project's initiation; 29 remained active participants at the project's conclusion. Inclusion criteria for participation required that nurses actively work on the medical-surgical unit and regularly participate in shift handoffs. Exclusion criteria included nurses hired after the start of the implementation process, nurses not actively working on the medical-surgical unit at time of implementation, and nurses who do not regularly participate in shift handoffs. As the IPB handoff tool was considered a standard of care, all nurses assigned to the unit were automatically included in its implementation; informed consent was not required. Enrollment was coordinated with the unit Nurse Director to confirm that all nurses were informed about the project and attended a scheduled educational session.

Translation Science, Nursing Theory, and Project Management Plan

Theoretical Framework

Patricia Benner's Novice to Expert theoretical framework and Lewin's Change Model were used to guide the implementation of the I-PASS the BATON handoff tool. Benner's model outlines five stages of nursing competence novice, advanced beginner, competent, proficient, and expert which ensures nurses receive appropriate support at their respective competency levels as they adopt the new handoff tool [21]. Lewin's model employs three phases unfreezing, moving, and refreezing that facilitate change through stakeholder engagement, education, implementation, and reinforcement for sustainability [22]. Together, these models provided a structured framework for the successful adoption and implementation of the I-PASS the BATON handoff tool.

Project Implementation Plan

Week 1 Project Implementation Began- Lewin's Unfreezing Phase & Benner's Novice to Advanced Beginner Stages. One week before the intervention implementation, the project lead promoted the upcoming educational sessions to generate interest and familiarize staff with the IPB handoff tool (see Appendix A). The project lead was present at the unit staff meetings where the Nurse Director introduced the project intervention as a new standard of care. In week one, the project lead conducted comprehensive educational sessions designed to familiarize nursing staff with the purpose and significance of the IPB handoff tool. Educational sessions addressed common handoff challenges, including incomplete information transfer, errors resulting from communication failures, and the benefits of standardized handoff practices. The sessions provided instructions on the steps of the IPB handoff tool (see Appendix B). To accommodate all nursing staff, 60-minute sessions were held at 7:00 am and 7:00 pm on five separate days in the unit's conference room.

To evaluate the effectiveness of the training, participants completed paper-based pre- and post- education quizzes (see Appendix C), with a target of achieving a score of 90% or higher on the post-assessment administered immediately following the training. For structured pre-implementation data collection, each nurse completed the Handover Evaluation Scale (HES) on paper [10] (see Appendix D). Concurrently, the Nurse Director used a paper-based handoff observation tool [11] (see Appendix E) to document observations during morning and evening handoffs prior to the educational sessions in week one. Permission to use both instruments was obtained from the original authors (see Appendices F and G).

Weeks 2-9: Intervention Implementation Began- Lewin's Moving Stage. During weeks two-nine, the nursing staff used a paper copy of the IPB handoff tool during the morning and evening shift handoffs. The off-going nurse would introduce themselves and the patient, summarize the diagnosis and care plan, describe relevant assessment

findings, list outstanding tasks, highlight safety concerns, and offer contingency plans. The process continued with the off-going nurse adding pertinent background information, urgent interventions, timing of tasks, responsible providers, and anticipated next steps. The oncoming nurse then confirmed understanding. The intervention entailed completing the IPB handoff tool in its entirety as designed. The project lead was present at the practicum site two to three times per week to monitor compliance, address staff concerns, answer questions, and offer support. The Nurse Director and charge nurses served as project champions conducting weekly formative assessments using an intervention checklist (see Appendix H). The formative assessment-intervention checklist verified that all IPB components were addressed, confirmed staff comprehension, and ensured the accurate transfer of handoff details. If intervention fidelity fell below 75%, corrective actions would have been implemented to improve IPB adherence, including targeted retraining and individual coaching for staff who need additional support. The Nurse Director and charge nurses' observation of the handoff process provided real-time insights and feedback, reinforcing structured communication, and promoting consistency in the handoff process. The project champions were restricted to supporting the project implementation team and did not serve as a replacement for the project manager. The project lead completed the formative assessment-high level implementation checklist (see Appendix I) weekly to ensure execution of data collection procedures, educational sessions, huddles, and other essential implementation steps, enabling early detection of potential fidelity gaps.

Week 10: Project Evaluation-Benner's Expert stage and Lewin's Refreezing phase. In week ten, post-implementation data was collected using paper-based tools: each nurse completed the Handover Evaluation Scale (HES), and the Nurse Director completed the handoff observation tool [10, 11]. All pre- and post-summative data were submitted to a statistician for analysis.

Plans for Sustainability

To support sustainability of the practice change initiative, the intervention plan including implementation procedures and both formative and summative evaluation strategies were formally transitioned to key stakeholders. Pre- and post-intervention data, along with statistical analyses, were presented to show the intervention's effectiveness. Ongoing stakeholder engagement and the strategic use of project champions will be critical to fostering continuous improvement and ensuring long-term sustainability.

Barriers, Facilitators, Ethical Considerations

Implementation of the IPB handoff tool required careful planning and strategic execution, as changes within the clinical environment were challenging and met with resistance. The process involved addressing potential barriers, leveraging organizational facilitators, and ensuring adherence to ethical standards to support successful, sustainable project execution [23]. Barriers included staff resistance to change and workflow disruption. Some nursing staff were hesitant to adopt a new handoff tool because it was perceived as time-consuming with no added value [24]. Early stakeholder engagement and educational sessions addressed these concerns by emphasizing evidence-based outcomes, improvements in patient safety, and increased nurse satisfaction [11]. To mitigate potential workflow challenges, the project lead and project champions were readily available to support staff, answer questions, and receive feedback from staff.

Facilitators at the project site offered dedicated support for implementing the IPB handoff tool. Key leaders including the Chief Nursing Officer, Director of Quality, and Nurse Director consistently endorsed the structured communication tool, as it aligns with institutional goals and national patient safety initiatives. Leadership remained unchanged since the project's inception, providing continuity, reliability, and sustained engagement throughout the planning and implementation process. Regular communication and progress updates reinforced transparency and sustained stakeholder engagement throughout the implementation period.

Ethical considerations, including protection of privacy, confidentiality, and data integrity, were foundational to the project [25]. No patient-level identifiable data was collected, and all evaluation metrics were aggregated and de-identified to uphold participant's anonymity. Collected data will be securely stored for seven years on a password-protected computer, to ensure confidentiality and data integrity. These safeguards reinforced the ethical integrity of the project and ensured that the participants' rights were fully protected. A letter of support was obtained from the project site, affirming that Institutional Review Board (IRB) approval was not required. As the IPB handoff tool is considered a standard of care, informed consent was not required.

Data Collection and Analysis Plan

This project used a pre-post intervention design over an eight-week intervention implementation period to evaluate the effectiveness of the I-PASS the BATON handoff tool in improving the quality of handoff communication between nurses. Data was collected from the nurses on the designated unit before and after the intervention using two instruments: the Handover Evaluation Scale (HES) [10] and the Observation Tool [11]. The HES (see Appendix D), a self-report survey, evaluated the effectiveness of handoff and contains seventeen questions in four subscales including the quality of information, interaction and support, efficiency, and patient involvement. Each survey item was scored on a seven-point Likert scale with higher scores indicating better perceptions of the handover process. The construct validity was confirmed by O'Connell et al. [10]. The researchers first performed exploratory factor analysis (EFA) to examine whether the items formed the intended structure and thereby the construct validity of the tool [10]. Then, O'Connell et al. [10] performed two competing nested models of confirmatory analysis (CFA) to confirm the structure of the subscales and to determine whether the subscales generated using EFA measured one latent construct. The reliability of the tool was confirmed using Cronbach's alpha analysis with $\alpha = 0.80$ for quality of information, $\alpha = 0.86$ for interaction and support, $\alpha = 0.67$ for efficiency, and $\alpha = 0.69$ for patient involvement [10].

The Nurse Director collected observational data pre- and post-intervention using the Observation Tool [11] (see Appendix E) to evaluate real-time adherence to the I-PASS the BATON elements. The instrument consisted of eleven questions with each item scored on a six-point Likert scale. A higher score indicated a higher quality of handoff. Nemati et al. [11] reported that to determine the validity of the observation instrument, ten nursing instructors approved its construct validity and its reliability was assessed using inter-rater reliability. The Observation Tool was used in the quasi-experimental study by Nemati et al. [11], demonstrating effective application in structured communication evaluations. Permission to use each tool was obtained from the original authors and is included in Appendices F and G.

Intervention fidelity was monitored through formative assessment-intervention checklists completed by the Nurse Director. These checklists verified that all IPB components were addressed, confirmed staff comprehension, and ensured accurate transfer of handoff details. Formative assessment-high level checklists were

completed weekly to ensure execution of data collection procedures, educational sessions, huddles, and other essential implementation steps, enabling early detection of potential fidelity gaps.

To assess the effectiveness of the I-PASS the BATON intervention, a statistician conducted data analysis to ensure validity and methodological rigor. The statistician performed Mann Whitney U tests to compare the pre-intervention and post-intervention scores on the HES and Observation Tool. This statistical test was appropriate, as it analyzed two independent groups when the assumption of normality was not met.

Comparison of pre- and post-intervention data from the HES and Observation Tool was used to determine whether the implementation of the IPB handoff tool improved the quality of nurse-to-nurse handoff communication. The statistically significant increase in post-intervention scores indicated an improvement in the quality of handoff communication. These results provided direct evidence of practice improvement and supported the effectiveness of the IPB intervention. These positive findings justified the broader implementation of the IPB handoff tool within the practicum site.

Required Resources and Budget

For the implementation of the I-PASS the BATON handoff tool, several essential resources were required to support successful planning, training, data collection, and evaluation. Education time for nursing staff represented a significant portion of the budget, with one hour of education provided to 32 nurses, calculated at an average hourly wage of $32.00 including benefits, totaling $1024. To support daily use of the tool, printed IPB worksheets were used during the intervention period. Additional materials such as posters and flyers were developed for visual reinforcement, with printing completed by the practicum site's printshop. A professional statistician was contracted for data analysis to ensure accurate interpretation of the results. Finally, refreshments for the nursing staff during training sessions were provided to support engagement and participation. Each resource is itemized in the budget table (see Table 1), with corresponding revenue support aligned to each expense. This structure ensured that the budget remained balanced and sustainable, yielding a net zero balance.

EXPENSES		**REVENUE**	
Direct			
Salary for staff education	$1024	Institutional budget support	$1024
I-PASS the Baton & audit tools	$350	Institutional budget support	$350
Marketing materials	$100	Institutional budget support	$100
Statistician	$150	In-kind donation	$150
Refreshments for training sessions	$100	In-kind donation	$100
Total Expenses	$1724	Total Revenue	$1724
Net Balance			-0-

Table 1: Budget

Results

Data was compiled for analysis in a Microsoft Excel™ database after securing site authorization and institutional board review. During the implementation of IPB, the nursing staff used the IPB tool during morning and evening handoffs. The scores for the pre- and post-implementation survey instruments (HES and Observation Tool) were calculated using their associated scoring rubrics. After the subscale and total scores were calculated, the statistical assumption of each score was tested using Shapiro-Wilk tests. When the assumption was violated, non-parametric Mann-Whitney U tests were performed to compare the pre-intervention and post-intervention groups on each subscale and total score [26]. Medians (Mdn) and interquartile ranges (IQR) were reported for each group, per analysis. Statistical significance was assumed at a two-sided alpha value of 0.05, and all analyses were performed using SPSS Version 29 [27].

For the HES total and subscales, the post-intervention group had significantly higher median values versus the pre-intervention group for the HES total score (pre-intervention, Mdn = 4.88, IQR 4.21 – 5.15 vs. post-intervention, Mdn = 6.41, IQR 6.18 – 6.71, $p < 0.001$), HES – Quality of Information (pre-intervention, Mdn = 5.00, IQR 4.67 – 5.58 vs. post-intervention, Mdn = 6.50, IQR 6.17 – 6.83, $p < 0.001$), HES – Interaction and Support (pre-intervention, Mdn = 5.60, IQR 5.10 – 6.00 vs. post-intervention, Mdn = 6.40, IQR 6.00 – 6.808, $p < 0.001$), HES – Efficiency (pre-intervention, Mdn = 4.00, IQR 3.33 – 5.00 vs. post-intervention, Mdn = 6.67, IQR 6.00 – 7.00, $p < 0.001$), and HES – Patient Involvement (pre-intervention, Mdn = 3.33, IQR 2.67 – 4.67 vs. post-intervention, Mdn = 6.33, IQR 6.00 – 6.67, $p < 0.001$).

Similarly, there were significant increases in the Observation Tool subscales including Introduction (pre-intervention, Mdn = 2.50, IQR 1.00 – 4.75 vs. post-intervention Mdn = 6.00, IQR 6.00 – 6.00, $p < 0.001$), Patient (pre-intervention, Mdn = 4.00, IQR 3.50 – 4.75 vs. post-intervention, Mdn = 5.50, IQR 5.00 – 6.00, $p < 0.001$), Action (pre-intervention, Mdn = 3.50, IQR 2.75 – 4.75 vs. post-intervention, Mdn = 5.50, IQR 5.00 – 6.00, $p < 0.001$), Situation (pre-intervention, Mdn = 4.00, IQR 3.00 – 5.00 vs. post-intervention, Mdn = 5.50, IQR = 5.00 – 5.00, $p < 0.001$), Safety (pre-intervention, Mdn = 3.50, IQR 2.00 – 5.00 vs. post-intervention, Mdn = 5.50, IQR 5.00 – 6.00, $p < 0.001$), and The Baton (pre-intervention, Mdn = 4.00, IQR 2.50 – 5.00 vs. post-intervention, Mdn = 6.00, IQR 6.00 – 6.00, $p < 0.001$). See Table 2 for the descriptive statistics associated with each analysis and Figures 1-11 for graphical depictions of the differences between the groups.

Score	Pre-intervention	Post-intervention	p-value
HES Total	4.88 (4.21 – 5.15)	6.41 (6.18 – 6.71)	< 0.001
HES – Quality of Information	5.00 (4.67 – 5.58)	6.50 (6.17 – 6.83)	< 0.001
HES – Interaction and Support	5.60 (5.10 – 6.00)	6.40 (6.00 – 6.80)	< 0.001
HES – Efficiency	4.00 (3.33 – 5.00)	6.67 (6.00 – 7.00)	< 0.001
HES – Patient Involvement	3.33 (2.67 – 4.67)	6.33 (6.00 – 6.67)	< 0.001
Observation Tool – Introduction	2.50 (1.00 – 4.75)	6.00 (6.00 – 6.00)	< 0.001
Observation Tool – Patient	4.00 (3.50 – 4.75)	5.50 (5.00 -6.00)	< 0.001
Observation Tool – Action	3.50 (2.75 – 4.75)	5.50 (5.00 – 6.00)	< 0.001
Observation Tool – Situation	4.00 (3.00 – 5.00)	5.50 (5.00 – 6.00)	< 0.001
Observation Tool – Safety	3.50 (2.00 – 5.00)	5.50 (5.00 – 6.00)	< 0.001
Observation Tool – The Baton	4.00 (2.50 – 5.00)	6.00 (6.00 – 6.00)	< 0.001

Table 2: Descriptive Statistics for Wilcoxon Signed Ranks Tests

Note: Values are median (interquartile range)

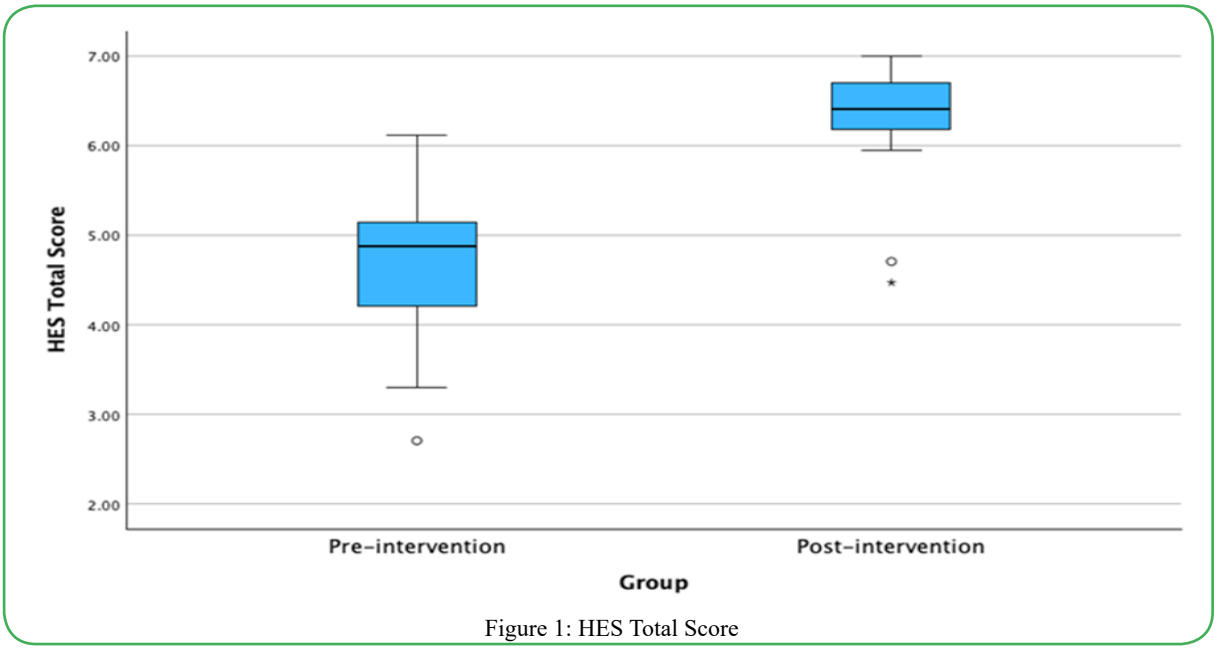

Figure 1: HES Total Score

Note: Small circles denote an outlier at 1.5x the interquartile range, asterisks denote an outlier at 3.0x the interquartile range

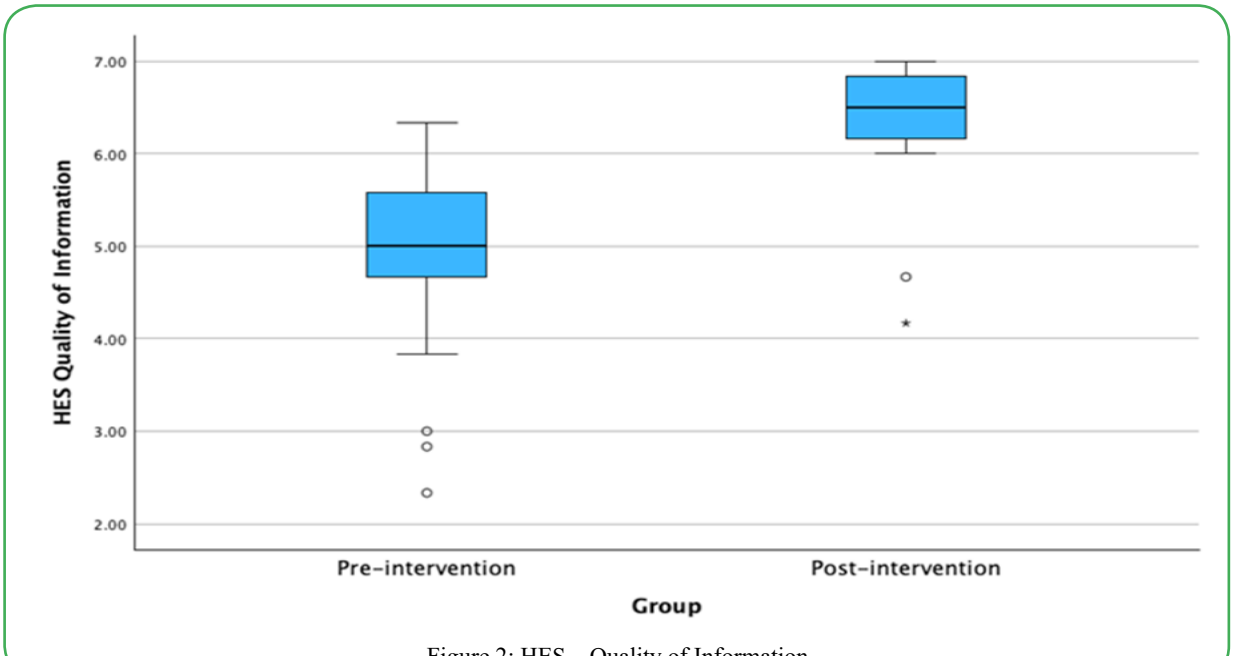

Figure 2: HES – Quality of Information

Note: Small circles denote an outlier at 1.5x the interquartile range, asterisks denote an outlier at 3.0x the interquartile range

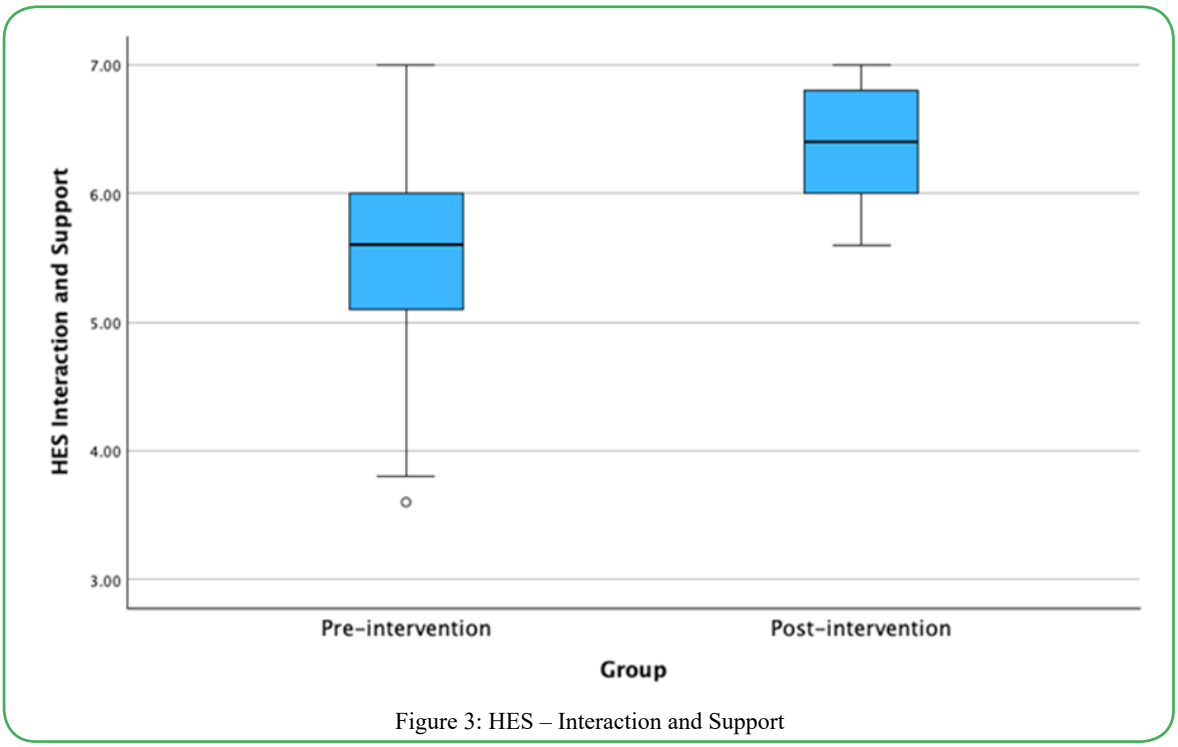

Figure 3: HES – Interaction and Support

Note: Small circle denotes an outlier at 1.5x the interquartile range

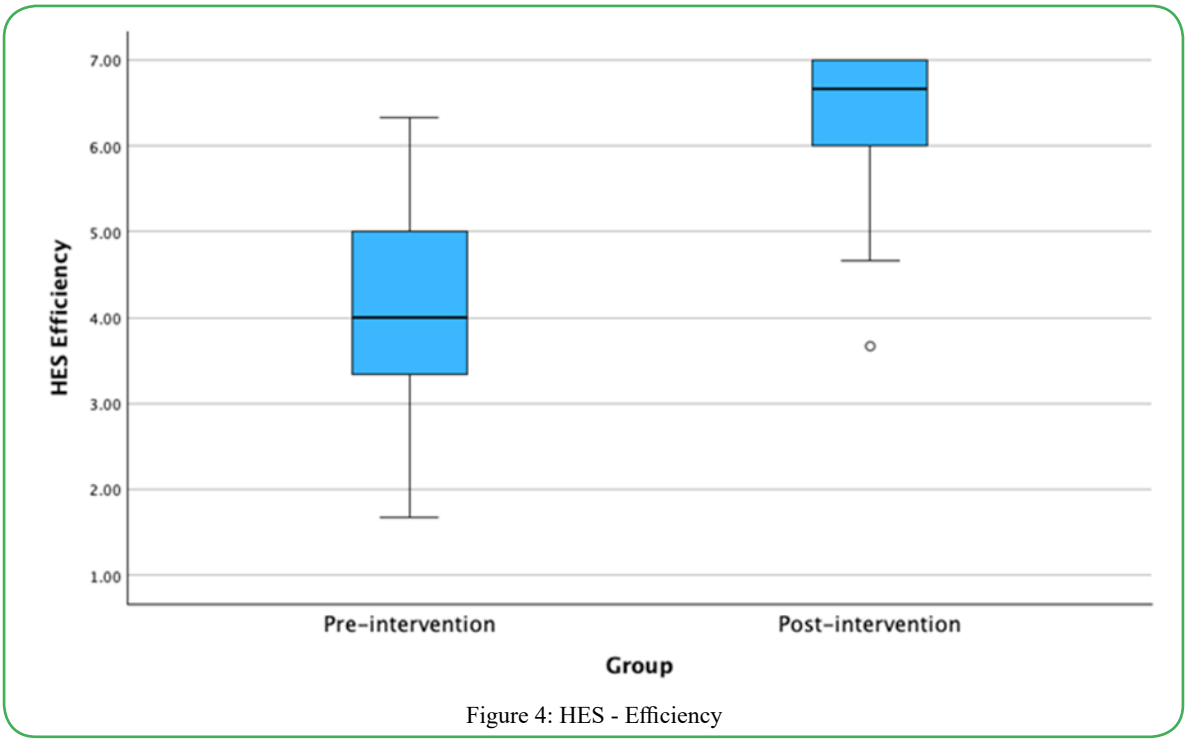

Figure 4: HES - Efficiency

Note: Small circle denotes an outlier at 1.5x the interquartile range

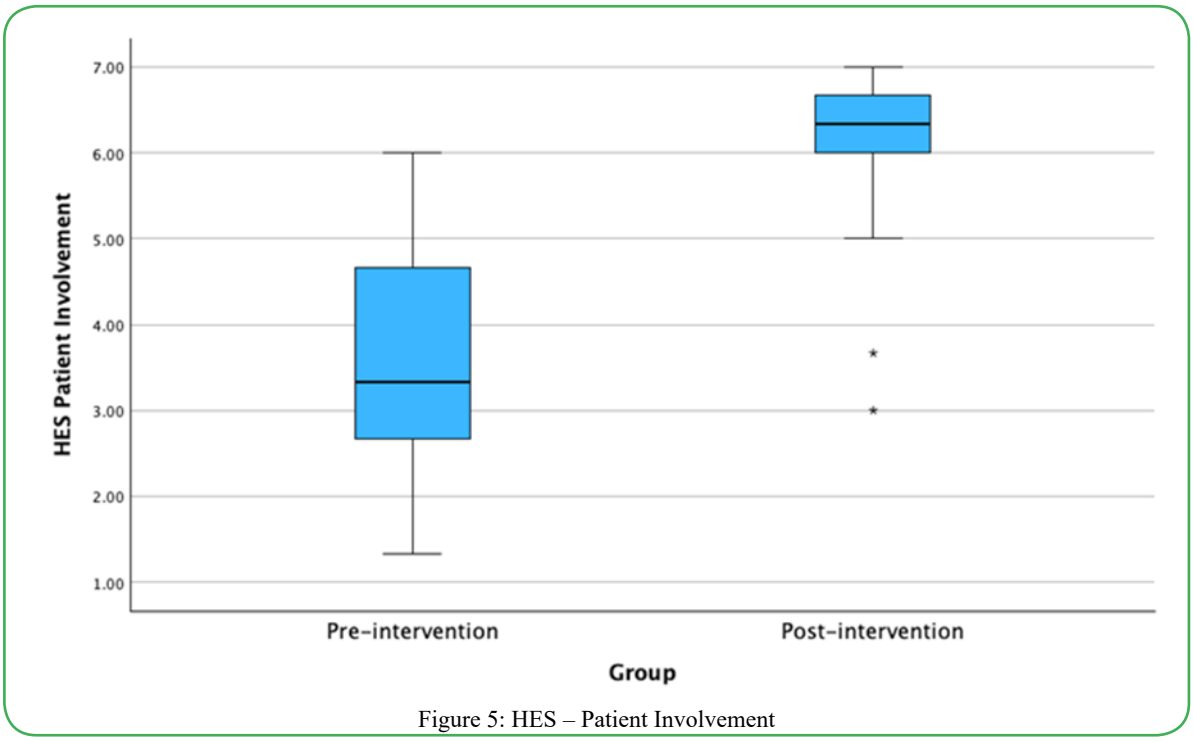

Figure 5: HES – Patient Involvement

Note: The asterisks denote outliers at 3.0x the interquartile range

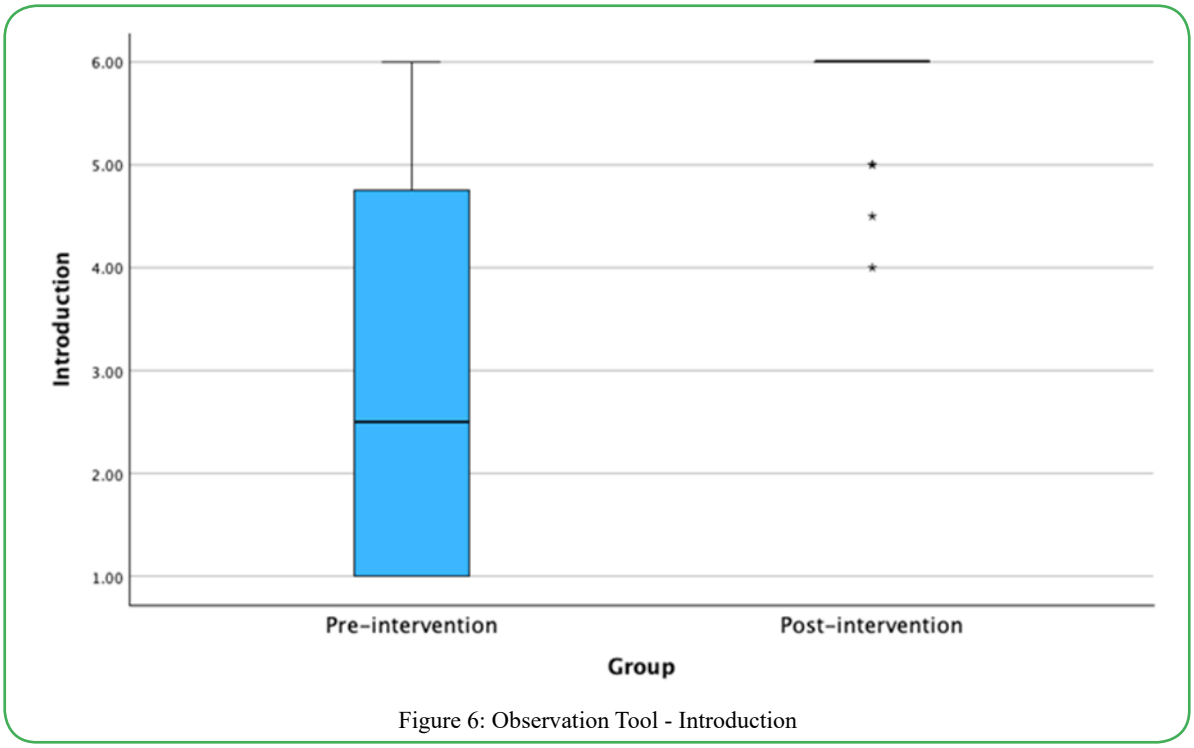

Figure 6: Observation Tool - Introduction

Note: The asterisks denote outliers at 3.0x the interquartile range

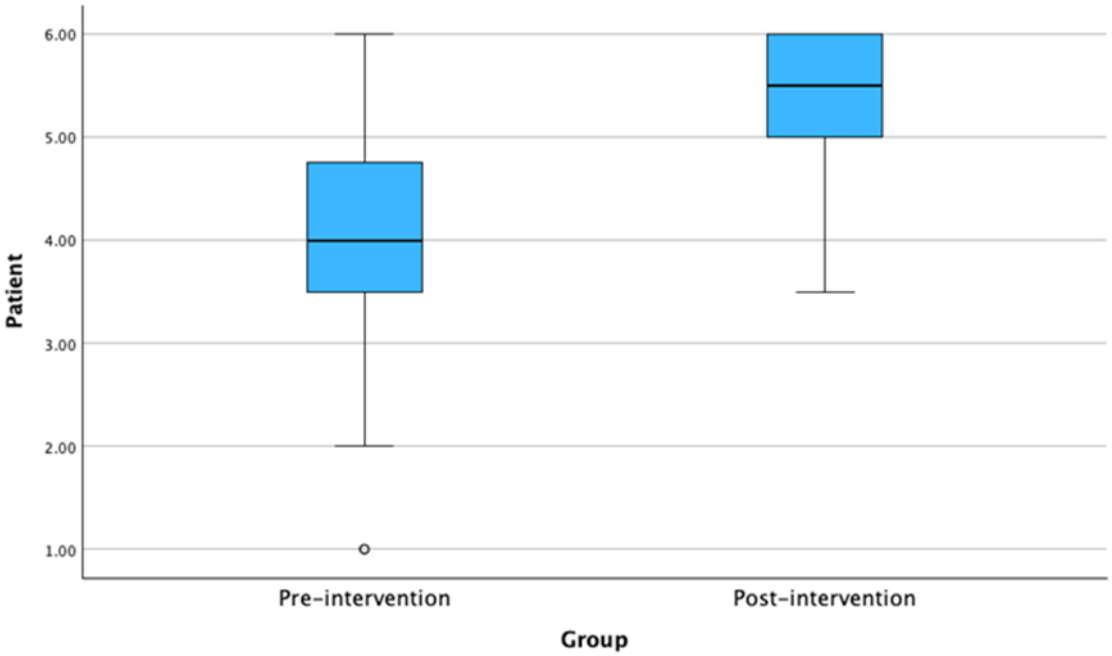

Figure 7: Observation Tool – Patient

Note: Small circle denotes an outlier at 1.5x the interquartile range

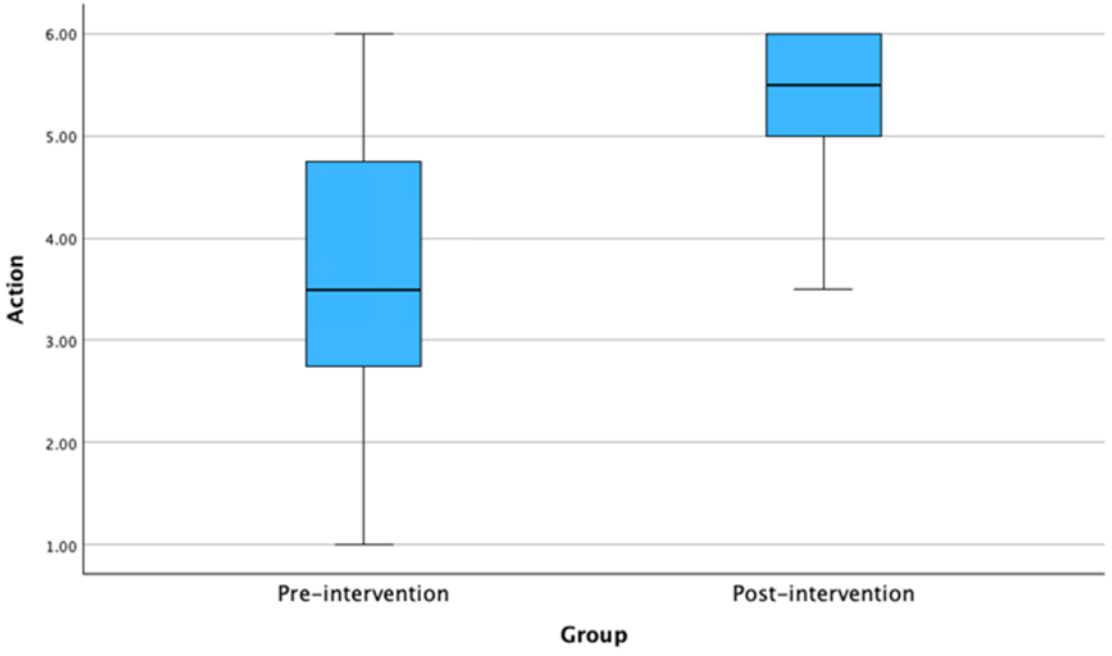

Figure 8: Observation Tool – Action

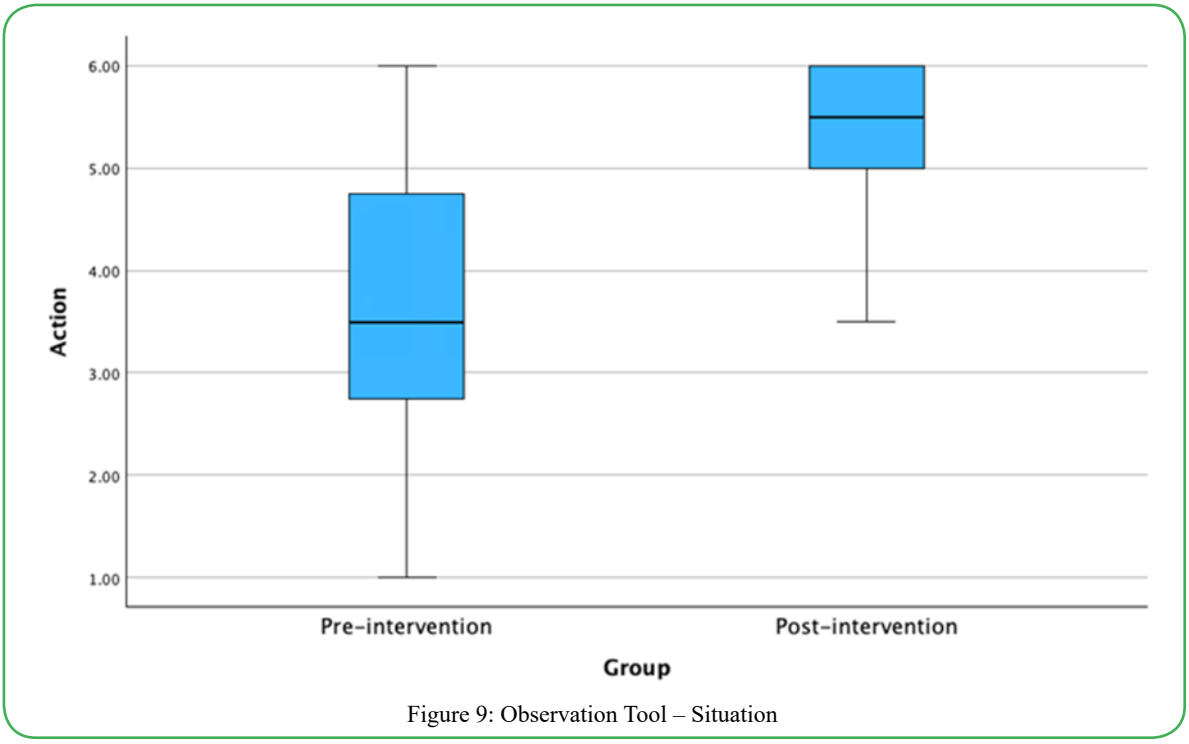

Figure 9: Observation Tool – Situation

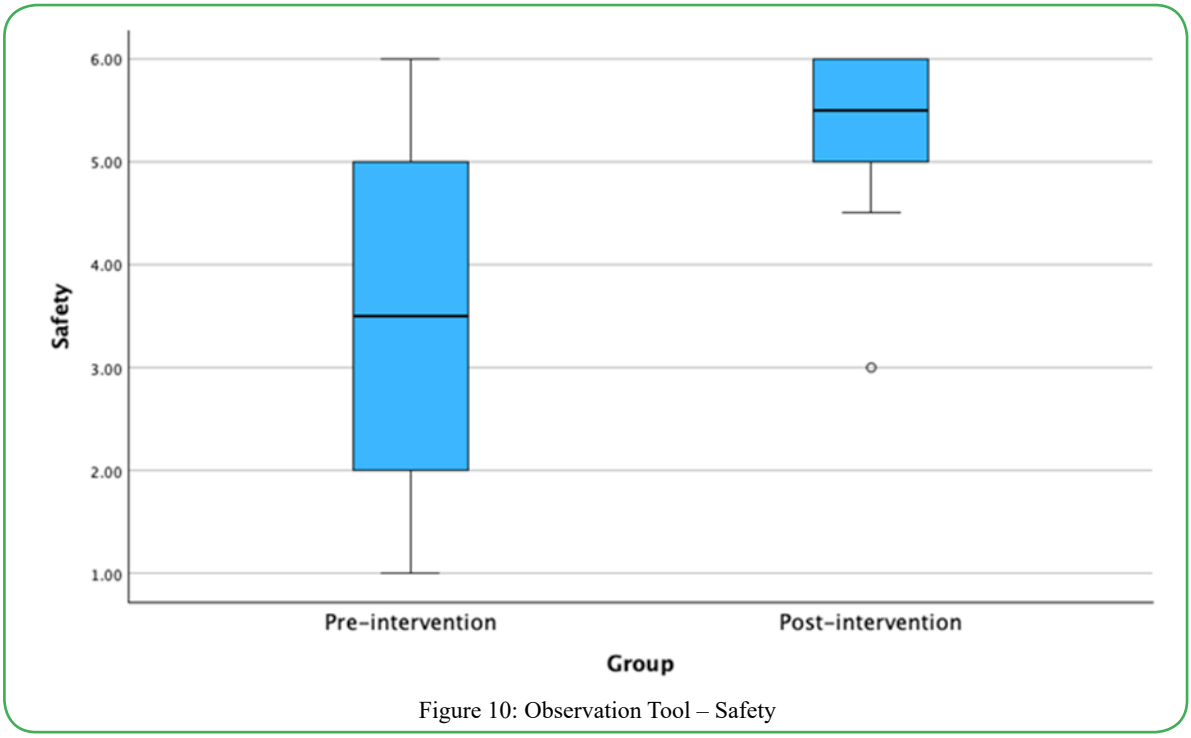

Figure 10: Observation Tool – Safety

Note: Small circle denotes an outlier at 1.5x the interquartile range

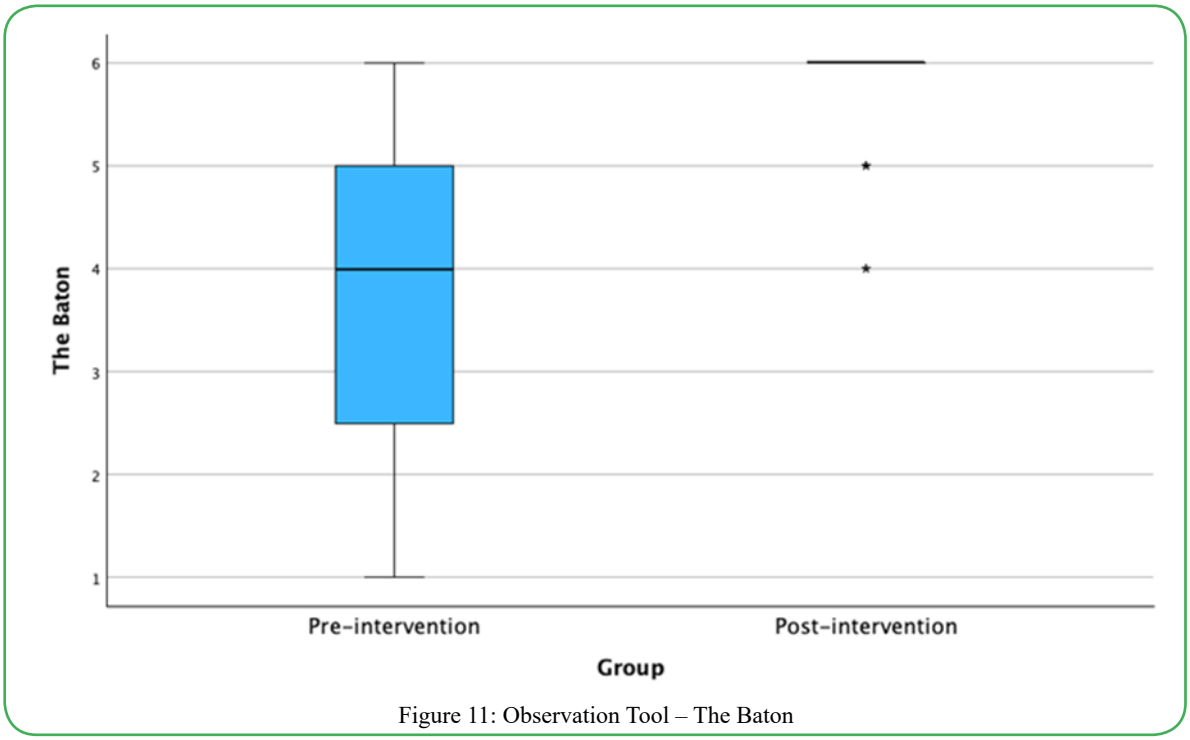

Figure 11: Observation Tool – The Baton

Note: The asterisks denote outliers at 3.0x the interquartile range

Conclusions

This practice change project aimed to enhance the accuracy, consistency, and safety of handoff communication through the implementation of a standardized process, I-PASS the BATON. The intervention was designed to enhance clarity, consistency, and completeness of information exchange during transitions of care. Analysis of pre- and post- implementation data from the HES and Observation Tool demonstrated a significant increase in post-implementation median scores, indicating significant improvement in handoff quality in terms of quality of information, interaction and support, efficiency, and patient involvement. These findings support the effectiveness of standardized communication tools in advancing patient safety and nurse satisfaction, reinforcing the value of this evidence-based practice change in the clinical setting.

While the results are promising, interpretation should consider several limitations, including single-site design, small sample size, short follow-up period, and potential for observer bias. Future work should explore broader implementation across multiple units or hospitals, incorporate longer evaluations periods, and examine sustainability over time.

Clinical Relevance

The implementation of I-PASS the BATON significantly improved the quality of nurse-to-nurse handoff communication at the project site, as evidenced by increased post-intervention scores on the HES and Observation Tool. These findings align with existing literature demonstrating that standardized handoff tools enhance the complete transfer of patient information, improve patient safety, and promote nurse satisfaction [11-15]. For nursing leaders, the results highlight the importance of standardized communication tools to support safer transitions of care and nurse satisfaction [11, 13, 18]. At the systems level, standardized handoffs can improve efficiency and support regulatory compliance, while fostering improved patient outcomes and enhancing staff satisfaction.

Recommendations include hospital-wide implementation of I-PASS the BATON with integration into the electronic medical record using the implementation procedures and both formative and summative evaluation strategies established in this project. Sustainability will be supported through weekly fidelity audits, staff huddles, leadership engagement, and continuous education. Ultimately, this practice change project reinforces the critical role of standardized communication in nursing practice.

Conflict of interest: There are no conflicts of interest to disclose.

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Appendix A

I-PASS the BATON Handoff Tool

I – PASS the BATON

I	**Introduction** Introduce yourself and your role
P	**Patient** Name, age, gender
A	**Assessment** Chief complaint, Diagnosis, VS, Pain score
S	**Situation** Current status, code status, LOC, Lines, Tubes, Recent changes
S	**Safety** Allergies, Alerts, Critical labs, Isolation, Fall risk, Pressure injury
the	
B	**Background** Comorbidities, current medications, family history
A	**Action** Orders pending, Nursing interventions needed, Labs to collect
T	**Timing** Level of urgency: Prioritization of actions
O	**Ownership** MD, NP, Consulting provider
N	**Next** Plan for the day and for discharge

Agency for Healthcare Research and Quality. (2023)

Appendix B

Educational Offering Table

OBJECTIVES	CONTENT (Topics)	TEACHING METHODS	TIMEFRAME During Week 1	EVALUATION METHOD
Define the key components of the IPB handoff tool and their role in structured communication during patient handoffs	-Definition, explanation, and examples of the IPB components -Importance of standardized healthcare transitions	-Lecture, presentation, discussion, handouts	20 minutes	Pre- & Post-Test
Explain the significance of structured patient handoffs	-Patient safety -Continuity of care -Reduction of errors -Nurse satisfaction -Decrease in omitted information	-Lecture, presentation, discussion, handouts	10 minutes	Pre- & Post-Test
Demonstrate the effective use of IPB in a simulated handoff scenario	-Practical application with interactive role-play exercises -Peer feedback on handoff effectiveness	Demonstration of effective and ineffective handoffs -Hands-on practice with scripted patient transitions -Group discussion and self-reflection	20 minutes	Teach-Back and self-reflection on how they can use IPB in clinical practice

Appendix C

Pre- & Post- Education Quiz

Pre- & Post-Training Quiz: I-PASS the BATON

1. What is the primary purpose of I-PASS the BATON in nurse handoff communication?
   A) To provide a general update on patient conditions
   B) To standardize communication for accurate and complete patient handoffs
   C) To replace verbal communication with written notes

2. Which of the following is NOT part of the I-PASS the BATON mnemonic?
   A) Patient Summary
   B) Background
   C) Actions

3. How does the "Ownership" component of I-PASS the BATON improve handoff communication?
   A) It clarifies who is responsible for ongoing patient care and follow-ups
   B) It lists the family members involved in patient decision-making
   C) It describes the physician's specialty

4. According to the Joint Commission, what percentage of healthcare communication errors are related to patient handoffs?
   A) 50%
   B) 67%
   C) 80%

5. Why is the "Next" component of I-PASS the BATON important in transitions of care?
   A) It ensures providers understand the immediate plan and future expectations for the patient
   B) It allows nurses to decide whether the patient should be discharged
   C) It provides a complete list of interventions

6. What does the "Safety" component of I-PASS the BATON emphasize?
   A) The patient's Morse score
   B) Critical safety risks such as allergies, fall risk, and isolation precautions
   C) The family's safety concerns

7. Which of the following best describes the "Timing" component of I-PASS the BATON?
   A) The nurse's availability for follow-up questions
   B) The estimated length of the patient's hospital stay
   C) The urgency and prioritization of actions needed for the patient

8. How does the I-PASS the BATON improve nurse communication during patient handoffs?
   A) By limiting the amount of information shared during handoffs
   B) By replacing electronic health records with verbal reports
   C) By ensuring structured, standardized, and complete information exchange

9. What is the primary goal of the "Background" component in I-PASS the BATON?
   A) To list the patient's dietary preferences
   B) To document the patient's daily routine
   C) To highlight relevant medical history, comorbidities, and current medications

10. Why is the "Ownership" component critical in patient handoffs?
    A) It ensures responsibility for patient care is clearly assigned
    B) It tracks the number of handoffs a patient has received
    C) It provides a list of responsible family members

The goal is a post-assessment score of 90% or higher. All incorrect answers will be reviewed with the participants at the end of the training.

Appendix D

Handover Evaluation Scale

Handover Evaluation Scale

Handover can have several purposes including the transfer of patient information, staff debriefing, support, and nurse education.

Please indicate the extent to which you disagree or agree with the following statements from the perspective of a nurse commencing a shift on your current ward.

		Strongly Disagree	Disagree	Slightly Disagree	Neither Disagree or Agree	Slightly Agree	Agree	Strongly Agree
1	I have the opportunity to discuss difficult clinical situations I have experienced.	○	○	○	○	○	○	○
2	I am able to check the patient during handover.	○	○	○	○	○	○	○
3	I am provided with sufficient information about patients.	○	○	○	○	○	○	○
4	I have the opportunity to debrief with other colleagues when I have had a difficult shift.	○	○	○	○	○	○	○
5	I have the opportunity to discuss workload issues.	○	○	○	○	○	○	○
6	I am often given information during handover that is not relevant to patient care.	○	○	○	○	○	○	○
7	The way in which information is provided to me is easy to follow.	○	○	○	○	○	○	○
8	I am often interrupted by patients and their significant others during handover.	○	○	○	○	○	○	○
9	I am able to clarify information that has been provided to me.	○	○	○	○	○	○	○
10	Patient information is provided in a timely fashion.	○	○	○	○	○	○	○
11	I have the opportunity to ask questions about things I do not understand.	○	○	○	○	○	○	○
12	I find handover takes too much time.	○	○	○	○	○	○	○
13	The information that I receive is up to date.	○	○	○	○	○	○	○
14	Patients are involved in the handover process.	○	○	○	○	○	○	○
15	I am able to keep my mind focused on the information being given to me.	○	○	○	○	○	○	○
16	I am educated about different aspects of nursing care.	○	○	○	○	○	○	○
17	I feel that important information is not always given to me.	○	○	○	○	○	○	○

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Subscales

The following four subscales were derived from exploratory and confirmatory factor analysis supported by structural equation modelling.

Quality of information

3. I am provided with sufficient information about patients.
7. The way in which information is provided to me is easy to follow.
9. I am able to clarify information that has been provided to me.
13. The information that I receive is up to date.
15. I am able to keep my mind focused on the information being given to me.
17. I feel that important information is not always given to me.

Interaction and support

1. I have the opportunity to discuss difficult clinical situations I have experienced.
4. I have the opportunity to debrief with other colleagues when I have had a difficult shift.
5. I have the opportunity to discuss workload issues.
11. I have the opportunity to ask questions about things I do not understand.
16. I am educated about different aspects of nursing care.

Efficiency

6. I am often given information during handover that is not relevant to patient care.
10. Patient information is provided in a timely fashion.
12. I find handover takes too much time.

Patient involvement (optional subscale – only relevant if handover is conducted at the bedside)

2. I am able to check the patient during handover.
8. I am often interrupted by patients and their significant others during handover.
14. Patients are involved in the handover process.

Scoring

Most items are scored on a seven-point scale, as follows:	1 = Strongly Disagree 2 = Disagree 3 = Slightly Disagree 4 = Neither Disagree or Agree 5 = Slightly Agree 6 = Agree 7 = Strongly Agree
The following four ***negatively worded*** items need to be reverse scored for scale/subscale calculation: 6. I am often given information during handover that is not relevant to patient care. 8. I am often interrupted by patients and their significant others during handover. 12. I find handover takes too much time. 17. I feel that important information is not always given to me.	1 = Strongly Agree 2 = Agree 3 = Slightly Agree 4 = Neither Agree or Disagree 5 = Slightly Disagree 6 = Disagree 7 = Strongly Disagree

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Calculation of subscale scores

Given the different number of items per subscale, we recommend calculating a mean score (i.e., out of 7) rather than a sum/total score for each subscale. This makes it easier to compare responses across subscales.

In addition, our analysis suggested that the scales are equally well represented as separate but related subscales, or as one overall *Perceptions of handover* scale.

Additional items

The original version of our survey included additional sections to capture other relevant information that may also be relevant to your research. Some of the additional items you may want to consider are outlined below.

Key demographic characteristics of respondents:

- Position/role
- Years of experience
- Years at health service
- Employment hours (e.g., full-time, part-time, casual)
- Employment status (e.g., permanent, agency)
- Ward/speciality area

Key characteristics of handover:

- How long does it take to *prepare* for handover?
- How long does handover usually take?
- Where is it conducted? (e.g., bedside, nurses' station, staff room)
- How is information communicated? (e.g., in person, written, audio recorded)
- Who provides the information? (e.g., nurse in charge of shift, nurse allocated to patient)
- Are other staff included? (e.g., medical, allied health)

Free text items:

- What are the strengths of handover in your ward?
- What are the limitations of handover in your ward?
- Do you have any other comments about handover in your ward? (Please describe)

Further information

If you require any further information about the HES, please contact: qps@deakin.edu.au

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Appendix E

Observation Tool

Observation Tool

Domains	Criteria	Very Poor	Poor	Fair	Good	Very Good	Excellent
Introduction (I)	Nurse introduced themselves and the patient.						
	Patient's identity was verified.						
Patient (P)	Patient's history and current status were summarized.						
	Key medical details (diagnosis, treatment plan) were included.						
Action (A)	Actions taken during the shift were described.						
	Pending tasks for the next shift were communicated.						
Situation (S)	Current clinical situation was explained.						
	Concerns or critical issues were highlighted.						
Safety (S)	Safety risks (e.g., fall risk, allergies) were communicated.						
	Critical tasks (e.g., medications, tests) were clearly handed over.						
The Baton	Responsibility was transferred to the incoming nurse, who confirmed understanding and asked clarifying questions.						

Likert Scale

1 = Very Poor (Criterion Not Met):
- The criterion was not addressed or was completely inadequate.
- Example: No introduction of the patient or nurse during the handover.

2 = Poor (Criterion Minimally Met):
- The criterion was addressed minimally but with significant gaps or errors.
- Example: The patient's identity was mentioned, but no other details were provided.

3 = Fair (Criterion Partially Met):
- The criterion was partially addressed, but some important aspects were missing.
- Example: The patient's history was summarized, but the current status was unclear.

4 = Good (Criterion Mostly Met):
- The criterion was mostly addressed, with only minor gaps or issues.
- Example: Most key medical details were communicated, but one or two items were omitted.

5 = Very Good (Criterion Fully Met):
- The criterion was fully addressed, with no significant gaps or errors.
- Example: All essential information was communicated clearly and accurately.

6 = Excellent (Criterion Exceeded):
- The criterion was not only fully met but also exceeded expectations.
- Example: The handover was exceptionally clear, organized, and included additional helpful details.

Appendix F

Permission to Use Handover Evaluation Scale Tool

Centre for Quality and Patient Safety Research
School of Nursing and Midwifery
Deakin University
221 Burwood Highway
BURWOOD VIC 3125

Dear Researcher

Thank you for your interest in the Handover Evaluation Scale (HES)—your application for permission has been approved.

This document contains a copy of the HES along with information regarding the subscale composition, scoring, and additional items you may want to consider for your own research.

Conditions of use

1. You have permission to make adjustments to the survey, as necessary, to suit your local context and to reproduce your edited version of the survey.
2. Where the HES requires translation to a language other than English, professional translation and back translation from English to the other language is recommended.
3. You must not share the HES with any other party—please direct any enquiries to our web page.
4. The following citation must be included on all copies of the HES, and all reports (e.g., thesis, published manuscript) arising from the research:

O'Connell, B., Ockerby, C., & Hawkins, M. (2014). Construct validity and reliability of the Handover Evaluation Scale. Journal of Clinical Nursing, 3(3-4), 560-570. doi: 10.1111/jocn.12189

We would be very interested to read about your findings once completed, so please do send us a link to any publications that arise from your research.

If you require any further information about the HES, please contact us at qps@deakin.edu.au.

Kind regards

Directors
Centre for Quality and Patient Safety Research

ISSN: 2581-3846

Appendix G

Permission to Use Observation Tool

Question about research study

valiee@muk.ac.ir <valiee@muk.ac.ir> Sun, Jan 19, 2025 at 2:37 PM
To: Neely Chandler <nchandler1@murraystate.edu>

Hello Neely Chandler,,

Thank you for reaching out! I'm glad to hear that you found our research study helpful for your DNP work on nursing handoffs.

I would be more than happy to share the tool we developed to observe the quality of handoff. Please find it attached to this email. If you have any further questions or need additional information, feel free to reach out.

Best of luck with your research, and I look forward to seeing the impact of your work!

Warm regards,

Sina Valiee, BSN, MSN, Ph.D. of Nursing Education

Professor
Faculty of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran.

Appendix H

Formative Assessment Checklist: Intervention

Formative Assessment Checklist: Intervention

Date:	Yes	No	Notes
Have all staff members received education on the IPB tool?			
Was the IPB tool used for all patient handoffs today?			
Were all sections of the IPB tool addressed during the handoff?			
Did all staff demonstrate an understanding of the IPB tool's correct usage?			
Have staff received adequate training or refresher education this week?			
Were handoff details conveyed effectively and without omissions?			
Did the handoff process include an opportunity for questions and clarifications?			
Was there direct observation of the handoffs?			
Did staff report any difficulties or deviations from the standard process?			
Are intervention adjustments needed based on identified fidelity issues?			

Observed fidelity score: Based on direct observation, how many handoffs were conducted in full adherence to the IPB handoff tool? (Give a percentage)

All 100%

Most 75-99%

Some 50-74%

Few Below 50% (Below 75%, indicates need for corrective action)

Appendix I

Formative Assessment Checklist: High-Level Implementation Steps

Formative Assessment Checklist: High-Level Implementation

Implementation element	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Notes/Comments
Preceptor & Mentor engagement											
Staff meeting to introduce IPB											
Promotional posters implemented											
IPB Educational Sessions offered at 7AM and 7PM on:	7AM 7PM 7AM 7PM 7AM 7PM										
Handover Evaluation Scale completed by participating nurses											
Observation Tool completed by Nurse Director											
IPB handoff tool in use											
Huddle Reinforcement twice a week											
Formative Assessment Checklist completed twice a week											