

**DNP Final Project**

**Standardizing the Hand-off Process in a Skilled Nursing Facility for Improved Provider**

**Communication Across the Transitions of Care**

Tamara Langley

The University of Alabama

Capstone College of Nursing

Dr. Kimberly Wilson, DNP, CRNP, FNP-C

Laverne Mitchell, APRN, FNP-C, CDCES

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## Abstract

**Introduction/Purpose:** As patients move from a skilled nursing facility across the transitions of care, the possibility for poor communication regarding patient information is introduced. Ineffective communication among health care providers is commonly at the root of poor patient outcomes and medical errors. A lack of standardized handoff processes is commonly at the root of communication failures. The Joint Commission has required the implementation of standardized hand-off communication tools as a remedy for communication failures. The purpose of this quality improvement project was to implement and evaluate the effectiveness of an evidence-based standardized hand-off process in a skilled nursing facility. **Methods:** This quality improvement project utilized a pre-/post intervention design which included implementing a standardized hand-off form in a skilled nursing facility over a 12-week time period. The nurse practitioners were trained in a 30-minute educational session on the new hand-off form. Compliance and error of omission rates were tracked. **Results:** Outcomes included a 97.2% compliance rate in utilization of the hand-off form, a 97.2% compliance rate in the completion of all components on the hand-off form, 0% errors of omission that resulted in failures of the health care provider at the receiving facility to address the reason for the patient's referral, and 0.6% follow-up requests for additional patient information from the health care provider at the receiving facility. **Conclusion:** A standardized hand-off process in a SNF may improve hand-off communication quality and reduce errors in omission leading to improved provider communication across the transitions of care and better patient outcomes.

**Keywords:** handoff, transitions of care, barriers, facilitator, delays in care, duplicative treatment, inappropriate treatment, skilled nursing facility

## **Standardizing the Handoff Process in a Skilled Nursing Facility for Improved Provider Communication Across the Transitions of Care**

Hand-off is the process by which patient-specific information is passed from one health care professional (HCP) to another or from one team of HCPs to another to ensure the continuity and safety of the patient's care through effective communication (Joint Commission, 2017a). The growing body of literature supports that, when hand-off communication fails, the potential for patient harm is introduced (Dingley et al., 2008; Joint Commission, 2017a; Mansukhani et al., 2015). Moreover, communication between HCPs across the transitions of care has posed a major safety concern (Bucknall et al., 2016). *Transition of Care*, as defined by the Centers for Medicare and Medicaid Services (CMS, 2014), is the transfer of a patient from one setting of care (skilled nursing facility, long-term care, home health, acute-care hospital, primary care provider, or specialist care) to another. Effective communication between HCPs is a key component of the Joint Commission's 2020 National Patient Safety Goals (Joint Commission, 2021). Effective communication is especially important in skilled nursing facilities (SNFs) as older adults with multiple chronic conditions and complex therapeutic regimens transfer frequently within healthcare settings to receive care from many providers (Naylor & Keating, 2008). A lack of standardized handoff processes contributes to communication failures (Joint Commission, 2017a). Furthermore, prior research indicates that the absence of standardized hand-off has resulted in delays in care and confusion about treatments (Dingley et al., 2008).

### **Background**

Current evidence advocates that ineffective communication among HCPs is commonly at the root of poor patient outcomes and diagnostic, medical, and treatment errors (Foronda et al., 2016; Lingard et al., 2004; Woolf et al., 2004). The Institute of Medicine released a report called

*To Err is Human* (1999), which highlights ineffective communication as a significant contributing factor in medical error resulting in 98,000 deaths. More recently, Johns Hopkins' patient safety experts have discovered that more than 250,000 deaths per year in the U.S. are due to medical errors (Daniel, 2016). Ineffective communication has been found at the root of 30% of all malpractice claims, resulting in \$1.7 billion in malpractice costs (Joint Commission, 2017a). Although there are multiple etiologies for medical errors, ineffective handoff communication is a critical patient safety concern in health care and is responsible for 80% of serious medical errors (Joint Commission Center for Transforming Healthcare, 2012).

As patients move from a SNF across the transitions of care, the possibility for poor communication regarding patient information is introduced. Communication at transitions of care can be difficult and complex, with vital information about patients not always clearly transferred between HCPs (Bucknall et al., 2016). Poor hand-off communication may lead to delays in treatment, medication discrepancies, confusion regarding treatment plans, service duplication, fragmented care, missed physician follow-up, patient dissatisfaction, hospital readmissions, incomplete treatment (Mansukhani et al., 2015), inappropriate or unwanted care, emergency department delays, and increased costs to the healthcare system (Griffiths, 2014). Additionally, previous research has identified a gap in communication between SNFs and emergency departments with a deficiency of relevant information or limited information provided (Griffiths, 2014). Moreover, care transitions from acute care hospitals to SNFs are often exacerbated by poor communication and disruptions in care among HCPs from the hospital and SNF (Britton et al., 2017). Smooth coordination across the transitions of care not only ensures continuity and successful care but is also crucial to the implementation, management, and evaluation of a patient's treatment plan (Mansukhani et al., 2015).

Nurse practitioners (NPs) are instrumental in caring for SNF patients, supporting physician practice, and reducing unnecessary SNF patient transfers to the hospital (Christian & Baker, 2009). NPs provide acute and primary care to SNF patients, staff consultation for patient issues, and education to SNF patients, families, and staff. SNFs with NPs onsite were found to have lower rates of hospitalizations for patients with chronic medical conditions (Mileski et al., 2020). In prior research, it has been shown that NPs provide effective and cost-effective care (Oliver et al., 2014). This project focuses on the utilization of NPs in the SNF to provide optimal care.

### **Problem Statement**

A lack of standardized handoff processes is a major contributing factor to communication failures. Since 2006, the Joint Commission has required the implementation of standardized hand-off communication tools as a remedy for communication failures (Joint Commission, 2007). Implementation of standardized hand-off patient communication tools has been associated with a reduction in medical errors and improvement in communication (Gonzalez et al., 2018). Therefore, the approach that was used to address the problem of ineffective communication during transitions of care in a SNF located in the southeast region of the U.S. was the implementation of a standardized hand-off process.

### **Organizational “Gap” Analysis of Project Site**

The *Gap Analysis Tool* from the Agency for Healthcare Research and Quality incorporates current practices, best practice strategies, and barriers to implementation of best practices (Agency for Healthcare Research and Quality [AHRQ], 2017). This tool served as the guide for conducting a needs assessment in a SNF in the Southeast to identify a gap between the current hand-off process and current best practices of effective patient hand-off communication

across the transitions of care. Results of the needs assessment revealed an opportunity for improvement. This opportunity is supported by the lack of a standardized communication hand-off for patients during transitions of care. This lack of standardization contributed to an inconsistent process involving interdisciplinary efforts between the nurses, secretaries, nurse managers, and medical providers. The SNF employees received virtually no training on completing the patient communication handoff forms. Thus, the patient hand-off forms frequently contained absent, irrelevant, or incomplete vital patient information. The most frequent errors of omission uncovered during the organizational gap analysis was the reason for referral and patient summary. Gaps in communication during the hand-off process can pose a risk to patient safety (Joint Commission, 2017a).

Lack of an integrated electronic health record is considered an environmental barrier to effective communication across care transitions. Other barriers to effective hand-off from the SNF staff included a lack of: a) a standardized hand-off form, b) a structured hand-off form utilizing mnemonics, c) a systematic approach to effective hand-off communication, d) staff awareness regarding pertinent patient information, and e) inclusion of the reason for referral and patient summary on the current hand-off. Poor hand-offs often include an omission of necessary information; the omission of information by HCPs can have devastating consequences (Friesen et al., 2008).

### **The Joint Committee**

Recommendations from the Joint Commission (2007) guided best practices. In accordance with these best practices, the hand-off process should include a transfer and acceptance of responsibility of patient care achieved through effective communication. Moreover, an effective hand-off process should include passing patient-specific information

from one team of HCPs to another to improve patient safety. The Joint Commission emphasizes that each healthcare setting has its challenges concerning hand-offs and, therefore, recommends that each organization utilize a solution to improve performance. The Joint Commission also recommends enhancing the organization's systematic approach to hand-offs rather than singling out individual errors. Furthermore, team training is likely to improve quality performance. Hand-offs should include critical content and utilize mnemonics to add structure to the hand-off and assist HCPs to perform hand-off more consistently. Training on how to conduct an effective hand-off should be standardized. Once a standardized patient communication hand-off process is customized, it should be integrated into the electronic health record. Effective hand-off programs can potentially improve patient safety (Joint Commission, 2017a).

### **Review of the Literature**

A review of literature was done using the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Cochrane Collection indexed databases. To establish a steady and factual description of the findings, the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines were utilized. Broad use of contrasting keywords including a double-tiered Boolean search was utilized to yield germane articles. The keywords were “handoff” OR “hand off” OR “handover” OR “hand-off” OR “shift report” AND “barriers” OR “facilitator” OR “transition of care” or “transitional care” or “transition” or “transfer” or “delays in care” OR “duplicative treatment” OR “inappropriate treatment.” This complex keyword search strategy was duplicated word-for-word on the above-mentioned databases. Germane articles were reviewed, summarized, and incorporated. To ensure a review of current evidence, articles included were published between February 1, 2016, and February 15, 2021. The dates were adjusted to February 1, 2011 and February 15, 2021 to yield more results. Inclusion criteria

included controlled trials, peer-reviewed articles, and English-language. Articles that did not describe an institution's approaches to develop strategies to standardize hand-off processes were excluded. To recruit studies with superior methodological quality that would yield more valid results, only controlled trials were considered.

The quality of the evidence was rated using Melnyk Levels of Evidence (Melnyk and Fineout-Overholt, 2005). Melnyk Levels of Evidence consists of levels ranging from 1-7, with 1 being the highest level of evidence on the hierarchy. A clinical trial is considered rigorous if the level of evidence is between 1 and 3 and not rigorous if the level is 4 or below. Five trials included level 2 evidence (Lautz et al., 2018; Lee et al., 2017; Reyes et al., 2016; Salzwedel et al., 2013; Weiss et al., 2013). One trial included level 3 evidence (Payne et al., 2012). None of the trials had a level of evidence below 3. One study design was controlled with no randomization (Payne et al., 2012), and the rest were randomized controlled trials (See Appendix A for the literature grid).

The literature included in this review shows the effectiveness and applicability of a standardized hand-off form approach. All the trials were performed in the hospital setting utilizing a variety of strategies with educational interventions being the most cited. Hand-off strategies included the use of cognitive aids (Weiss et al., 2013; Lautz et al., 2018), educational interventions (Reyes et al., 2016; Lautz et al., 2018; Lee et al., 2017), checklists (Salzwedel et al., 2013), or a web-based hand-off application with standardized patient data (Payne et al., 2012). Standardizing the hand-off process has demonstrated improvement in the transfer of patient information (Lautz et al., 2018; Lee et al., 2017; Payne et al., 2012; Salzwedel et al., 2018; Weiss et al., 2013), the quality of hand-off (Salzwedel et al., 2013) and sustained improvement in hand-off skills (Reyes et al., 2016). Standardization of information transmitted

during patient hand-offs using a structured, web-based application was associated with fewer perceived near-miss events (Payne et al., 2012). The literature search did not reveal any controlled trials conducted in a SNF on the effectiveness of a standardized hand-off process to improve patient-information transfer across the transitions of care. Research data in this area is greatly needed.

### **IPASS THE BATON Hand-off Tool**

Of the four hand-off pedagogies that were compared in the Lee et al. (2017) study, the structured hand-off form utilizing the mnemonic I-PASS (Illness Severity, Patient Summary, Action List, Situation Awareness and Contingency Planning, and Synthesis by Receiver) had the best improvements in hand-off quality. The I-PASS hand-off form is an evidence-based package of interventions that provides a structured approach to hand-off and is designed to decrease failures in communication during the hand-off of patient information (Patient Safety Institute, 2017). In a large multicenter trial published in the *New England Journal of Medicine*, I-PASS was responsible for a 30% reduction in adverse events and a 23% reduction in medical errors that led to patient harm (Joint Commission, 2017a; Patient Safety Institute, 2017). The I-PASS hand-off form was adapted from the IPASS THE BATON (Introduction, Patient, Assessment, Situation, Safety Concerns, Background, Actions, Timing, Ownership, Next) hand-off form, designed by the AHRQ to standardize the hand-off process (2019). The IPASS THE BATON hand-off tool was proven useful in a randomized control trial (Downey et al, 2013).

### **Evidence-based Practice: Verification of Chosen Option**

According to the Joint Commission (2017a), effective hand-off programs can potentially lead to a substantial improvement in patient safety. Contrarily, omitted documentation can contribute to hand-off communication failure and potential patient harm (Joint Commission,

2017a). Based on the review of the literature, a standardized hand-off form was utilized in the SNF setting to improve hand-off communication quality. The PICOT question is: For patients in a SNF (P), how does implementation of a standardized hand-off process (I) compared with the current hand-off practice (C) affect hand-off communication quality (O) in a 12-week period (T)? For this project, high-quality hand-off communication is defined as the effective transfer of vital patient information from one HCP at the SNF to another HCP in a different (receiving) facility. Hand-off communication quality was evaluated by quantifying errors of omission that result in failures of the HCP at the receiving facility to address the reason for the patient's referral or follow-up requests for additional patient information from the HCP at the receiving facility.

### **Theoretical Framework**

Lippitt's Phases of Change Theory formed a theoretical framework that underpins the changes that were needed to implement a standardized patient communication hand-off process in a SNF. This seven-step theory focuses on the change agent rather than on the evolution of the change itself with sustained information exchange throughout the process (Kristonis, 2005). Key constructs of the theory consist of the following: (a) diagnose the problem, (b) assess the motivation and capacity for change, (c) assess the change agent's motivation and resources, (d) select progressive change objectives, (e) choose the appropriate role of the change agent, (f) maintain change, and (g) terminate the helping relationship (Mitchell, 2013) (See Appendix B for a description of how this theory was used to guide this Doctor of Nursing Practice [DNP] project).

### **Goals, Objectives, and Expected Outcomes**

The goal of this DNP project was to evaluate the effectiveness of a standardized

evidence-based hand-off process in a SNF. The objectives that were carried out by the project director were to:

1. Provide one 30-minute educational session on the new standardized evidence-based hand-off process for the NPs (See Appendix C).
2. Implement the standardized evidence-based hand-off process.
3. Collect and track data that was used to determine process measures (e.g., compliance in the utilization of the hand-off form for each transition of care and compliance in completion of all components of the hand-off form) and outcome measures (e.g., errors of omission that result in failures of the HCP at the receiving facility to address the reason for the patient's referral or follow-up requests for additional patient information from the HCP at the receiving facility).
4. Evaluate the effectiveness of the standardized evidence-based hand-off process after a 12-week time period.

Expected outcomes included a:

- a. 90% compliance rate in the utilization of the hand-off form.
- b. 95% compliance rate in completion of all components of the hand-off form.
- c. 50% decrease in errors of omission that result in failures of the HCP at the receiving facility to address the reason for the patient's referral.
- d. 50% decrease in follow-up requests for additional patient information from the HCP at the receiving facility.

## **Methods**

### **Project Design**

A pre-/post intervention prospective design was used for this quality improvement

project. A retrospective chart review was also done to help determine project effectiveness.

### **Project Site and Population**

The project site was a SNF in the southeast region of the U.S. The facility provides ongoing medical care and rehabilitative services to post-acute and long-term care patients. All the patients in the facility experience at least one transition in care. The sample population/chart review included adult patients who transitioned from the project site to a facility in an ambulatory care setting. The hand-off forms utilized for all adult patients between the ages of 21 and 99 who transitioned from the project site to a facility in an ambulatory care setting were included in this project. Patients aged 21-99 who did not transition from the project site to another facility were excluded because hand-off forms were not utilized for intrafacility consultations. Hand-off forms utilized for patients with transfers to the emergency department were excluded because a standardized hand-off communication process was already in place. The risk to patients participating in this project was no greater than the risks to patients who received standard hand-off communication. The risks to patients who transitioned from the project site to another facility included in the project were no greater than the risks to patients who transitioned from the project site to another facility without an evidence-based standardized hand-off process in place.

### **SWOT Analysis – Strengths, Weaknesses, Opportunities, and Threats**

A SWOT analysis, as described by Moran et al, 2017, was utilized to assess the resources, constraints, facilitators, and barriers that had the potential to influence project implementation. Strengths included the organization's prominent community presence. Moreover, the facility has experienced NPs on staff with expertise in the transitions of care which facilitated the implementation process. A potential weakness was the time management

challenges the NPs were projected to experience during the implementation process.

Opportunities included support from leadership as well as the NPs for a procedure change that may lead to improved patient outcomes. Threats included the possibility of staff attrition during the implementation period.

### **FADE Model**

The FADE model was used to help guide this quality improvement project. Five key constructs are incorporated within this model: (a) *focus* - explain the process that needs improvement, (b) *analyze* - data is collected and analyzed, (c) *develop* - a plan of action is defined, (d) *execute* - the plan is implemented, and (e) *evaluate* - the change is measured and continuously monitored (Moran et al., 2017).

#### ***Focus***

*Explain the process that needs improvement* - The focus of this project was to improve provider communication and relevant patient-information transfer across the transitions of care by implementing a standardized hand-off form in the SNF.

#### ***Analyze***

*Data was collected and analyzed* - The needs assessment revealed that a standardized hand-off process was needed to improve communication across the transitions of care.

#### ***Develop***

*A plan of action was defined* - The project director developed an evidence-based hand-off form based on components of the IPASS THE BATON tool (See Appendix D for permission for use) and components from the Joint Commission's *8 Tips for High-quality Hand-offs* (Joint Commission, 2017b), thus, incorporating all items of best practice. (See Appendix E for the hand-off form template). The IPASS THE BATON tool was chosen over the I-PASS tool

because of its versatility and applicability to the SNF setting. The project director provided an education session for the NPs. Under the new process, the NPs were responsible for completing the tool for all patients who underwent a transition in care.

### ***Execute***

*The plan was implemented* - The project director conducted a 30-minute education session for the NPs using a PowerPoint presentation to convey important information regarding the new hand-off process and tool. The NPs began using the new hand-off form after the completion of the education session.

### ***Evaluate***

*The change was measured and continuously monitored*- The project director collected data on a weekly basis for a 12-week time period (June 1, 2021 - August 24, 2021). The project director conducted the educational session, participated in the hand-off process, supervised the hand-off process, and performed data collection and analysis.

### ***Measurement Instruments.***

The project director used a Microsoft Excel spreadsheet (Appendix F) to record and track process measures (e.g., compliance in utilization of the hand-off form for each transition of care and compliance in completion of all components of the hand-off form) and outcome measures (e.g., errors of omission that result in failures of the speciality physician to address the reason for the patient's referral or follow-up requests for additional patient information from the HCP at the receiving facility).

## **Data Collection**

Implementation of the new hand-off process commenced on June 1, 2021. At that time, the project director (principal investigator) began collecting data on a weekly basis for a 12-week

time period (June 1, 2021 - August 24, 2021). Data was collected by the project director via electronic chart reviews. The sample population/chart review included all adult patients who transitioned from the project site to another health care facility in an ambulatory care setting. Prospective data were collected from the hand-off forms located in the patient charts on a weekly basis during the 12-week project period. A total of 67 prospective charts were reviewed including 176 hand-off forms. A retroactive chart review was conducted for a one-year pre-intervention time period. To account for medical appointment disruptions and the surge in telehealth appointments due to the COVID-19 pandemic, patient charts were reviewed from June 1, 2019 - June 1, 2020. A sum of 58 retrospective charts was reviewed including 268 hand-off forms. The chart reviews consisted of patients who underwent a transition of care while at the SNF. The hand-off forms located in the electronic chart were used to collect process measures (e.g., compliance in the use of the hand-off form for each transition of care and compliance in completion of all components of the hand-off form) and outcome measures (e.g., errors of omission that result in failures of the HCP at the receiving facility to address the reason for the patient's referral or follow-up requests for additional patient information from the HCP at the receiving facility). The project director used a Microsoft Excel spreadsheet to record and track measures.

### **Data Analysis**

Data analysis consisted of comparing compliance rates and errors of omission rates for the one-year pre-intervention with those for the 12-week project period. McNemar's Test was utilized using the International Business Machines Statistical Packages for the Social Sciences software (IBM SPSS) Statistics version 22 to compare the differences between the pre-intervention and post-intervention groups. The level of statistical significance was the traditional

$p \leq .05$ . Dichotomous variables (yes/no) were utilized for compliance rates and errors of omission rates; therefore, the Chi-Square Test was the statistical tool used to analyze this data.

### **Cost-Benefit Analysis/Budget**

This quality improvement project did not cost the facility any money directly. However, there were some costs associated with the project. (See Appendix G for the cost-benefit analysis table). The cost associated with printing the new hand-off form did not differ from the same costs used to print the old hand-off form. The project director devoted at least 540 hours to the planning, implementation, and evaluation of the standardized hand-off form. According to the U.S. Bureau of Labor Statistics [BLS], the salary of an NP is \$55.67 per hour (BLS, 2020). The project director educated two NPs for 30 minutes on the new standardized hand-off process which cost the facility \$55.67. Three hours of the project director's time was also spent throughout the project consulting with the NP's costing the facility an additional \$167.01. The director of nursing (DON) receives an average salary wage of \$73.00 per hour. The project director spent a total of three hours consulting with the DON reviewing the new hand-off process costing the facility \$219.00 (salary.com, 2021). The average salary for a physician is \$100 per hour (BLS, 2020). The project director spent 30-minutes consulting with the physician costing the facility \$50.00. The potential return on investment was reduced laboratory, diagnostic testing, prescription, and transportation costs as a result of an effective standardized hand-off process.

### **Timeline**

The project spanned over the course of a year, see Appendix H for the project timeline.

### **Ethical Considerations/Protection of Human Subjects**

The University of Alabama (UA) Institutional Review Board (IRB) approval was obtained prior to initiating the project. A deferment letter was signed by the project site. Once a

deferment letter was signed by the site, the official IRB eProtocol was prepared. All participants were protected by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) which, among other guarantees, protects the privacy of patients' health information (Health and Human Services Department, 2013). Additionally, Standards of Care for practice in a skilled nursing facility were carefully followed. All information collected as part of evaluating the impact of this project included aggregated data from the project participants and did not include any patient identifiers.

The risk to patients participating in this project was no greater than the risks of patients who received standard hand-off communication. Participant confidentiality was assured by coding the participants using unique identification numbers. Data were de-identified by the principal investigator. All electronic files containing identifiable information were stored on the HIPPA secure University of Alabama Box.

## **Results**

For data analysis, the IBM SPSS Statistics Version 22 was utilized. The pre-/post-intervention hand-off forms were the independent groups. Data analysis consisted of comparing dependent outcomes (utilization, compliance, and error of omission rates) for the one-year pre-intervention time period with those for the 12-week project period. For the retrospective and prospective chart reviews, a nonparametric McNemar's test was utilized to differentiate the proportion of the paired samples. This test was conducted to evaluate whether there was a statistically significant decrease in errors of omission and an increase in hand-off form utilization after the intervention. Dichotomous variables (yes/no) were used to track utilization, compliance, and error of omission rates; therefore, the Chi-Square test was the statistical tool used to analyze the data.

Retrospective and prospective chart reviews were done on a total of 444 hand-off forms. This number incorporated hand-off forms utilized for all adult patients between the ages of 21 and 99 who transitioned from the project site to another facility except the emergency department. This included 268 hand-offs pre-implementation and 176 hand-offs post-implementation. Prior to the intervention, the hand-off tool was used 78% of the time (209 of 268). All components of the hand-off form (patient demographics, reason for referral, patient/background, assessment/actions, situation/safety concerns) were completed on 71.6% (192 of 268) of the hand-offs. Omission errors that resulted in failure of the HCP at the receiving facility to address the reason for the referral were found in 5.2% (14 of 268) of the hand-offs. Omission errors on the hand-off form that resulted in requests for additional information were found in 11.2% (30 of 268) of hand-offs (See Appendix I).

In the post-intervention period, the hand-off form was utilized for 97.2% (171 of 176) of patients who experienced a transition in care. All components of the hand-off form (patient demographics, reason for referral, patient/background, assessment/actions, situation/safety concerns) were completed in 97.2% (171 of 176) of the hand-offs. There were no omission errors detected on the hand-off forms resulting in failure of the HCP to address the reason for the referral (0 of 176). Omission errors that resulted in requests for additional patient information were found in 0.6% (1 of 176) of the hand-offs (See Appendix J).

Statistical analysis was performed to compare 176 pre- and post-intervention hand-off forms. Pre-intervention, hand-off forms were utilized 78% of the time. The expected outcome included at least a 90% compliance rate in the utilization of the hand-off form. Following the intervention, the utilization of the hand-off form increased to 97.2%. A McNemar's test (McNemar, 1947) with continuity correction (Edwards, 1948) was conducted to determine the

differences between the prospective and retrospective hand-off form utilization. The result showed that the difference in the proportion of hand-off utilization between the retrospective and the prospective time periods was statistically significant ( $\chi^2(1) = 20.103, p < 0.001$ ).

Furthermore, the asymptomatic significance of a Chi-square test needs to be .05 or smaller to be significant; based on the results, the chi-square was .000 indicating a statistical significance between hand-off utilization before and after the intervention (See Appendix K).

All components of the hand-off form were completed 71.6% of the time in the pre-intervention period. The expected outcome included a 95% compliance rate in the completion of all components on the hand-off form. Following the intervention, this number increased to 97.2%. Another McNemar test (McNemar, 1947) with continuity correction (Edwards, 1948) was conducted to determine the differences between the compliance rates with prospective and the retrospective hand-off forms. The result showed that the difference in the proportion of the compliance rates between the retrospective and the prospective hand-off forms was statistically significant ( $\chi^2(1) = 30.42, p < 0.001$ ). The asymptomatic significance of the chi-square test was .000, indicating a statistical significance between hand-off form compliance before and after the intervention.

Pre-intervention, 5.2% of the hand-off forms contained an omission error that resulted in the failure of the HCP at the receiving facility to address the reason for referral. The expected outcome included a 50% decrease in errors of omission that result in failures of the health care provider at the receiving facility to address the reason for the patient's referral. Following the intervention, 0% of the hand-off forms contained an omission error that resulted in the failure of the HCP at the receiving facility to address the reason for the referral. The difference in the

proportion of the error of omission rates between the retrospective and the prospective hand-off forms was statistically significant ( $p = 0.002$ ).

Prior to the intervention, 11.2% of the hand-off forms contained an omission error that resulted in requests for additional patient information. The expected outcome included a 50% decrease in follow-up requests for additional patient information from the HCP at the receiving facility. Post-intervention, 0.6% of the hand-off forms contained an omission error that resulted in requests for additional patient information. The difference in the proportion of the paired samples was statistically significant from one another ( $p < 0.001$ ).

### **Discussion**

Effective communication is especially important in SNF's and plays a major role in patient safety. The Joint Commission has required the implementation of standardized hand-off communication tools as a remedy for communication failures (Joint Commission, 2017a). The implementation of a standardized hand-off process was an important landmark for improving provider communication across the transitions of care in this SNF. The purpose of this quality improvement project was to implement an evidence-based standardized hand-off process in a SNF and evaluate its effectiveness in enhancing utilization and compliance rates, as well as decreasing errors of omission for improved patient outcomes.

The results of this quality improvement were consistent with the findings found in the literature review which provided statistical evidence on the effectiveness and applicability of a standardized hand-off form approach. Prior studies have demonstrated improvement in the transfer of pertinent patient information (Weiss et al., 2013; Lee et al., 2017), improved hand-off quality (Salzwedel et al., 2013), and the inclusion of essential patient information all associated with the implementation of a standardized hand-off process (Lautz et al., 2018). The clinical

significance of this project as inferred by these outcomes may be an enhancement in patient safety through improvements in communication leading to a reduction in medical errors through the utilization of a standardized hand-off process (Lautz et al., 2018).

Reyes and colleagues (2016) conducted a randomized controlled trial utilizing an educational intervention to improve hand-off skills essential for patient safety through a standardized hand-off process. The results of this study displayed a statistically significant improvement in hand-off skills following the intervention (2.6–3.8;  $p < 0.0001$ ). In this quality improvement project, the implementation of a standardized hand-off process in a SNF following an educational intervention proposed to the NPs enhanced hand-off skills by improving compliance rates. The findings in this project indicate that effective hand-off programs may potentially lead to an improvement in patient outcomes by promoting patient safety through the reduction of patient harm (Joint Commission, 2017a).

In this quality improvement project, the compliance rate in the completion of all components of the hand-off form was 71.6% in the pre-intervention time period compared to 97.2% in the post-intervention time period. This indicates that providing staff education on the use of a standardized hand-off process enhanced hand-off skills leading to improved compliance rates. Accordingly, it can be assumed that this process may avert negative patient outcomes secondary to deficient communication and information loss linked to inadequate handoffs (Reyes et al., 2016). During the implementation period, issues regarding compliance arose. The unit secretaries required frequent reminders to send patient appointment schedules to the NPs. Inconsistencies in this process lead to variations in hand-off utilization in the post-intervention time period. Although the NPs required substantial time to appropriately complete the standardized hand-off forms, the new process was well-accepted by the NPs. Inversely, there was

some resistance to change amongst some of the staff; even so, the improved hand-off form provided the facility a standardized process to improve provider communication across the transitions of care.

According to Friesen et al (2008), omission errors disrupt the provision of safe care, posing major threats to patient safety that can impact the quality of care rendered. Therefore, the results of this project are promising and signify that pertinent patient information was relayed through the standardized hand-off process. This serves as an important milestone for improving provider-to-provider communication across the transitions of care at the SNF. Furthermore, the use of a standardized hand-off process may reduce communication failures leading to improved patient safety by reducing delays in care and confusion about treatments (Dingley et al., 2008).

Overall, in this quality improvement project, hand-off quality, compliance, and utilization rates improved, and errors of omission decreased following implementation of the standardized hand-off process in the SNF, indicating improved provider-to-provider communication across the transitions of care; thus, it can be inferred that the findings in this study may assist in avoiding delays in treatment, medication discrepancies, confusion regarding treatment plans, service duplication, fragmented care, missed physician follow-up, patient dissatisfaction, hospital readmissions, and incomplete treatment (Mansukhani et al., 2015). Furthermore, these results may indicate the possible reduction in inappropriate or unwanted care, emergency department delays, and increased costs to the healthcare system (Griffiths, 2014). Additional studies are needed to evaluate if the correlation of improved patient information transfer across the transitions of care through the implementation of a standardized hand-off process improves patient outcomes and patient safety.

The Lippitt's Phases of Change Theory guided this quality improvement project. Seven key constructs were incorporated in this theory: (a) *diagnose the problem*- a comprehensive needs assessment performed in a SNF identified a lack of a standardized hand-off process; (b) *assess the motivation and capacity for change*- meetings were held with key stakeholders and staff to identify the inspiration and capacity for the new process change; (c) *assess the change agent's motivation and resources*- stakeholders at the project site were made aware of the implementation of the standardized hand-off process and offered to provide resources to assist with implementation; (d) *select progressive change objectives*- the standardized hand-off process was developed and implemented in the SNF; (e) *choose appropriate role of the change agent*- the project director functioned as the facilitator and actively engaged in the change process; (f) *maintain change*- hand-off responsibilities were delegated to the nurse managers with the NPs available to provide feedback on progress, teamwork, and motivation; (g) *terminate the helping relationship*- after the 12-week implementation period, the project director withdrew from hand-off responsibilities and remained available for feedback and guidance (Mitchell, 2013). This theoretical framework provided the guidance needed to identify the potential for communication failures through the lack of a standardized hand-off process; furthermore, this framework facilitated the use of a standardized hand-off process to improve patient information transfer across the transitions of care.

Some limitations were discovered in this project. The implementation phase was limited to 12 weeks; more time will be needed to study the impact of this process over a longer period. The project was limited to one healthcare facility; further studies will be needed to determine generalizability to other healthcare facilities. This study was limited to two advanced practice clinicians; future studies should be performed to determine how standardizing the hand-off

process in a SNF will impact the nursing staff. Future studies should also be performed to evaluate the usability and effectiveness of a standardized hand-off process in interfacility and intrafacility communication in the SNF setting. Additional studies are needed to evaluate patient outcomes using a standardized hand-off process.

A summative evaluation was done to evaluate the outcomes of this project and guide future practices and policies. The standardized hand-off process was approved by key stakeholders for permanent use in the SNF. Time constraints were a huge factor that prohibited the implementation of the standardized hand-off process in the NPs workflow, with NPs already deluged with other clinical duties and administrative tasks. The standardized hand-off process has since been adopted by the nurse managers with initial training, ongoing feedback, and guidance from the NPs.

The standardized hand-off process is cost-effective and will pose no additional cost compared to the conventional hand-off process. Nursing leadership in the SNF will have to continuously communicate expectations to the staff regarding the utilization and proper implementation of the standardized hand-off form. With ongoing tracking and monitoring of utilization, compliance, and error of omission rates by the Quality Assurance Performance Improvement Committee at the SNF, long-term improvements can be monitored and sustained. Additionally, incorporating this tool during the training period for new hires will help with sustainability.

### **Conclusion**

Current evidence advocates that ineffective communication among HCPs is commonly at the root of poor patient outcomes and diagnostic, medical, and treatment errors. Patients in SNFs are at increased risk of poor outcomes from communication failures between HCPs at the

transitions of care. The implementation of a standardized hand-off communication process may decrease communication failures. A standardized hand-off process in a SNF may improve hand-off communication quality and reduce errors in omission leading to improved provider communication across the transitions of care and better patient outcomes.

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## Appendix A

### Literature Review Grid

Authors	Study Design	Sample/Setting	Methods & Strategies	Results	Level of Evidence	Implications	Limitations & Barriers
(Weiss et al., 2013)	RCT	Academic PICU	Assessed the impact of a written cognitive aid on expressed clinical reasoning and the accuracy of information transfer during resident physician hand-off (intervention) vs standard practice (control).	The hand-off cognitive aid improved information transfer and resident physician expression of clinical reasoning without prolonging the handover duration.	2	Future research to further validate this evaluation method of resident physician hand-off performance and attempt to quantify the amount of relevant information retained by the receiving physician.	The focus of the study was on the transmission of information from one resident physician to another; although, hand-off is a complex interaction involving multiple healthcare disciplines.
(Reyes et al., 2016)	RCT	Hospital	Assessed the impact of an educational intervention to improve medical student hand-off skills (intervention) vs untrained students (control)	Intervention students demonstrated a sustained improvement in hand-off skills in the workshop and later on in the clinical setting.	2	These findings should be useful to others considering introducing hand-off teaching in the undergraduate medical curriculum in preparation for post-graduate medical training.	The study was conducted among medical students and was not designed to assess the impact on patient outcomes of an intervention to improve

							hand-off skills.
(Lee et al., 2017)	RCT	Tertiary-care hospital	Compared four hand-off pedagogies (I-PASS, policy mandate on task accountability, Plan-Do-Study-Act, control) on hand-off quality following one-hour quality improvement training interventions	Improvements in the transfer of patient information were seen in the I-PASS, policy mandate, and PDSA groups. Compared to the control, I-PASS reported the best improvements in hand-off quality.	2	Different training emphases improved different dimensions of hand-off quality. A combination of training pedagogies is likely to yield optimal results.	This study did not include other measures of clinical outcomes. The study was performed in the evening. Future studies should consider daytime hand-offs, other hospital settings, clinics, nonacute patient settings, and rural hospitals to ascertain generalizability.
(Salzwedel et al., 2013)	RCT	Post-anesthesia Care Unit)	Hand-offs were recorded on video and analyzed after the implementation of a checklist	The use of a checklist for post-anesthesia hand-off might improve the quality of patient hand-off by increasing information handed over.	2	Future research is needed to design and implement a checklist to ensure that post-anesthesia hand-off includes the necessary information for patient safety and as little information as possible to increase compliance with the checklist.	There was no guarantee that every participating anesthesiologist had the opportunity to use the checklist.

(Lautz et al., 2018)	RCT	Academic children's hospital	The intervention group (pediatric resident physicians) received education after baseline hand-off observation and a cognitive aid before second hand-off observation.	Structured hand-off training and provision of a cognitive aid may improve the inclusion of essential patient information in the hand-off of simulated critically ill children.	2	Future studies should examine the durability of hand-off training, as well as the effectiveness in improving hand-offs during actual pediatric emergencies.	Did not evaluate skill retention (hand-off improvement) over longer periods of time; however, because a reference card was formed as the basis of the cognitive aid, it is probable that long-term implementation would be feasible and cost-effective.
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(Payne et al., 2012)	Controlled trial	Hospital	Introduction of a structured, web-based hand-off application that standardized patient data in a format suitable for both patient hand-offs and day-to-day patient management for resident physician use.	Standardization of information transmitted during patient hand-offs through the use of a structured, web-based application led to the consistent transfer of vital patient information and was associated with improved resident confidence and fewer perceived near-miss events on call.	3	The implications of this study may extend beyond residency programs to other hospital-based physician groups, as well as other types of care transitions in the hospital, such as hospital discharges, change of clinical service, and intrahospital transfers. Standardization has the potential to provide a consistent transfer of information within other areas of care transitions.	Results not generalizable to other settings due to the lack of an integrated and robust EMR to support hand-offs. Actual adverse events were not identified or quantified in the medical record.
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## Appendix B

### Theoretical Framework

1	Diagnose the problem	<ul style="list-style-type: none"><li>• Comprehensive needs assessment</li><li>• Lack of standardized hand-off process identified at project site</li></ul>
2	Assess the motivation and capacity for change	<ul style="list-style-type: none"><li>• Met with key stakeholders and staff</li><li>• Assessed motivation and capacity for change</li><li>• Responded to concerns</li></ul>
3	Assess the change agent's motivation and resources	<ul style="list-style-type: none"><li>• Stakeholders at the project site were made aware of the impending change</li><li>• Leaders offered to provide resources and staff to assist with the implementation</li></ul>
4	Select progressive change objectives	<ul style="list-style-type: none"><li>• Standardized hand-off process was developed and implemented</li></ul>
5	Choose appropriate role of the change agent	<ul style="list-style-type: none"><li>• The project director functioned as the facilitator of the change process</li></ul>
6	Maintain change	<ul style="list-style-type: none"><li>• Feedback on progress, teamwork, and motivation was provided to the staff at the project site</li><li>• Nurse managers involved in change</li></ul>
7	Terminate the helping relationship	<ul style="list-style-type: none"><li>• After the 12-week implementation period the project director withdrew and remained available for feedback and guidance</li></ul>

Lippitts Phases of Change Theory (Mitchell, 2013)

## Appendix C

### Outline: Evidence-Based Standardized Hand-Off Process

<ul style="list-style-type: none"><li>• Background/Significance</li></ul>
<ul style="list-style-type: none"><li>• Literature Review</li></ul>
<ul style="list-style-type: none"><li>• Purpose/Aim</li></ul>
<ul style="list-style-type: none"><li>• Expected Outcomes</li></ul>
<ul style="list-style-type: none"><li>• Review of the Standardized Hand-off Form</li></ul>

## Appendix D

### Permission to use IPASS THE BATON Tool

From: **Lewin, David (AHRQ/OC)** <[David.Lewin@ahrq.hhs.gov](mailto:David.Lewin@ahrq.hhs.gov)>  
Date: Fri, Apr 16, 2021 at 4:57 PM  
Subject: RE: Permission to use and reproduce hand-off tool  
To: Tamara Langley <[talangley@crimson.ua.edu](mailto:talangley@crimson.ua.edu)>  
CC: Holland, Howard (AHRQ/OC) <[Howard.Holland@ahrq.hhs.gov](mailto:Howard.Holland@ahrq.hhs.gov)>, Haugstetter, Monika (AHRQ/CQuIPS) <[Monika.Haugstetter@ahrq.hhs.gov](mailto:Monika.Haugstetter@ahrq.hhs.gov)>

Dear Ms. Langley:

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Health Communications Specialist/Manager of Copyrights & Permissions

Office of Communications

Agency for Healthcare Research and Quality

5600 Fishers Lane

Room # 07N58D / Mail Stop # 07N94A

Rockville, MD 20857 USA

Email: [David.Lewin@ahrq.hhs.gov](mailto:David.Lewin@ahrq.hhs.gov)

Phone: +1 301-427-1895

Fax: +1 301-427-1783

## Appendix E

### Electronic Standardized Hand-off Form Template

REFERRAL FORM		
Facility Name:	Facility Phone #	Date:
Patient Name: DOB: MR#	Unit: Allergies:	Room: Bed:
Attending Physician: Phone #:	Consultant: Phone #:	Emergency Contact: Phone #:
Insurance: Group #: Insured ID#		
<b>ICD-10 Diagnoses:</b>		
<input type="checkbox"/> Nurse Practitioner Name & Phone # _____	<input type="checkbox"/> Nurse Manager Name & Phone # _____	<input type="checkbox"/> Unit Secretary Name & Phone # _____
Reason for referral:		
Patient/Background:		
Assessment/Actions:		
Situation/Safety Concerns:		
See attached documents:		
Form completed by:		MD/ APRN / RN / LPN
Physician/Consultant Notes		
Progress Note:		
Findings/Recommendations:		
Orders:		
New Diagnosis:		
Next Appointment:		
Physician/Consultant Signature		Date:

Note: Standardized Hand-off Tool Template. Adapted from *TeamSTEPPS Fundamentals Course*, AHRQ, 2019, from <https://www.ahrq.gov/teamstepps/instructor/fundamentals/module3/igcommunication.html>



Appendix G

DNP Project Cost-benefit Analysis Table



## DNP Project Cost Analysis

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<b>Fund</b>	<b>Cost Calculation</b>	<b>Total Amount</b>
NP Education	\$55.67/hr x 2 NPs x 30 minutes	\$55.67
NP Consultation	\$55.67/hr x3 hours	\$167.01
DON Consultation	\$73.00/hr x 3 hours	\$219.00
Physician Consultation	\$100/hr x 30 minutes	\$50.00
<b>Total Project Cost</b>		<b>\$491.68</b>

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### Appendix I

Table 1: *Frequency table for Retrospective*

		N	%
Completion of all components of the hand-off form?	Yes	192	71.6
	No	76	28.4
Hand-off form utilized for patient transfer?	Yes	209	78
	No	59	22
Omission error on hand-off form resulting in failure of the HCP to address the reason for referral?	Yes	14	5.2
	No	254	94.8
Omission error on hand-off form resulting in requests for additional information	Yes	30	11.2
	No	238	88.8

## Appendix J

*Table 2: Frequency table for Prospective*

		N	%
Completion of all components of the hand-off form?	Yes	171	97.2
	No	5	2.8
Hand-off form utilized for patient transfer?	Yes	171	97.2
	No	5	2.8
Omission error on hand-off form resulting in failure of the HCP to address the reason for the referral?	Yes	0	0.0
	No	176	100.0
Omission error on hand-off form resulting in requests for additional information	Yes	1	.6
	No	175	99.4

### Appendix K

	Omission error on the hand-off form resulting in failure of the HCP to address the reason for the referral? (Pre-intervention and post-intervention)	Omission error on the hand-off form resulting in requests for additional information? (Pre-intervention and post-intervention)	Completion of all components of the hand-off form? (Pre-intervention and post-intervention)	Hand-off form utilized for patient transfer? (Pre-intervention and post-intervention)
Chi-Square Asymp. Sig. Exact Sig. (2-tailed)	.002	.000	30.420 .000	20.103 .000