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The Effect of a Standardized Handoff Tool on Communication, Interunit Transitions, and Wait Time: A Quality Improvement Project

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**The Effect of a Standardized Handoff Tool on Communication, Interunit Transitions, and
Wait Time: A Quality Improvement Project**

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**Doctoral Research Project submitted to the School of Nursing at West Virginia University
in partial fulfillment of the requirement for the degree of Doctor of Nurse Practice**

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based practice, and standardized handoff tool**

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ABSTRACT

The Effect of a Standardized Handoff Tool on Communication, Interunit Transitions, and Wait Time: A Quality Improvement Project

Silvia N. Myndresku

This project sought not only to improve the communication and interunit transitions of care between emergency department providers (EDPs) and inpatient providers (IPs) using a standardized handoff tool, but also to reduce the Emergency Room (ED) wait time for patients admitted to the community hospital. The project employed a quantitative quasi-experimental pre-test/post-test design to explore provider satisfaction with an evidence-based standardized handoff tools and wait time. Forty-eight providers completed the survey before the I-PASS implementation, and 43 providers completed the survey post I-PASS implementation. Though not statistically significant, data indicates that wait time increased for the post-implementation months of December, January, and February 2022 when compared with pre-implementation months of February, March, and April of the previous year. From the discussion with the facility quality team, the increase in wait time is mainly due to nursing staffing and vacancies rates. Significant positive differences were seen in 18 of the 19 items on the provider satisfaction survey indicating that providers were more satisfied with handoff using the I-PASS tool than prior to implementation of the standardized tool. The only exception was that the agreement for need of standardized handoff tool was not significantly different in comparing pre and post survey responses. Findings from this project support the need for a standardized handoff tool in ED. Prior to the implementation of the tool, providers described missing information, inaccurate information, and incomplete care plans in handoffs. The I-PASS tool addressed all these items and was easy to use.

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This DNP project sought to improve communication among Emergency Department Providers (EDPs), and Inpatient Providers (IP), and to decrease patient wait time from entry to the Emergency Department (ED) to admission to a hospital unit. The planned project was designed to improve communication among EDPs and IPs using the I-PASS handoff tool. The objectives for this project were to decrease patient wait time and improve providers' satisfaction with interunit handoffs.

Background

Ineffective exchange of information between healthcare providers can lead to devastating consequences related to patients' safety and survival (Guttman et al., 2018) including serious medical errors and death (Rosenthal et al., 2017). This project sought not only to improve the communication and interunit transitions of care between emergency department providers (EDPs) and inpatient providers (IPs) using a standardized handoff tool, but also to improve the Emergency Room (ED) wait time for patients admitted to the community hospital. The IPs recognized inconsistency in handoffs between EDPs and IPs in relation to patient admission reports. The objective of this project was to support timely evidence-based care to improve interunit communication and wait time from emergency department to inpatient care.

Problem Description

Communication errors are a leading cause of medical mistakes resulting in compromised patient safety and decreased efficiency of referral. Additional negative outcomes include poor or failed referrals, delays in patient admission, interpersonal disagreement, and worsening of (ED) overcrowding (Lawrence et al., 2015). According to the Joint Commission, communication error is one of the most common causes of sentinel events resulting in patient death, permanent harm, or severe temporary harm (Apker, 2007; Guttman et al., 2018). Communication error is a major

factor in 70% of adverse events, 65% of sentinel events, and accounts for 37% of high-severity injury cases. Communication errors cost the United States health care system 2.2 million dollars per year (Guttman et al., 2018). Furthermore, inefficient communication during patient handoffs can lead to delays in patient treatment, inappropriate treatment, and increase the length of a patient's hospital stay (Alimenti et al., 2019).

Authors have indicated that three distinct factors contributed to the difficulty of communicating transfers or handoffs between EDPs and IPs, including the differences in the clinical information required, the culture of the organization and the clinical team, and the characteristics of the professional involvement in the transition process (Lawrence et al., 2015). Information on the clinical condition of the patient includes details on the patient's current condition, a working diagnosis, history of present concern, key tests results, plan of care, and any special consideration such as being nursing home resident. Culture, or beliefs and values of an organization impact the success of referrals (Lawrence et al., 2015).

The Institute of Medicine (IOM), now the National Academy of Science, Engineering, and Medicine (NASEM), recognizes that focusing on interunit transitions of patient care increases patient safety outcomes (Alimenti et al., 2019). Additionally, the Joint Commission National Patient Safety Goals instruct hospitals to develop and apply standardized handoff tools that allow opportunities for comments and questions (Apker et al., 2010). Lack of precise information during communication contributes to misinterpretation of information during the handoffs (Guttman et al., 2018).

As a change agent, educator, and care provider, the advanced practice nurse can positively affect the communication and interunit transition of care by identifying, implementing, and evaluating the use of a standardized handoff tool. Furthermore, it is important to provide

education concerning the use of the selected standardized handoff tool. The community hospital of interest did not have an existing standardized handoff tool to use between emergency room providers and inpatient providers. About sixty patients over the age of 18 were admitted to the community hospital each day- totaling approximately 26,000 admissions per year. The community hospital consisted of 223 beds. Patients usually presented with strokes, myocardial infarctions, respiratory failures, traumas, acute encephalopathies, falls, COVID 19 infections, meningitis, pneumonia, hypertensive crisis, hypertensive emergency, pressure ulcers, decubital ulcers, diabetic ketoacidosis, physical debility, metastatic cancers, and cardiac heart failures. At present, emergency department patients are admitted to hospitalist services, family medicine services, and independent outside providers. The wait time for patients from the time they get an ED bed to the time they are actually admitted at this facility is on average 100 minutes longer for three months when compared to the national average of 257 minutes (H. Porter, personal communication, June 3, 2021; CMS, 2020).

Problem Statement

Inconsistent handoff between EDPs and IPs at the community hospital in the Northern Panhandle of West Virginia may result in omission of pertinent clinical information and can increase patient wait times for ED to hospital admission. The implementation of a standardized handoff tool could positively affect communication and interunit transition of care between emergency room providers and inpatient providers in the community hospital and improve patient wait time.

Purpose of the Project

The purpose of proposed project was to: 1) implement the I-PASS handoff tool as an intervention to improve communication among EDPs and IPs, and 2) to decrease patient wait time from entry to ED admission to a hospital unit.

Literature Review and Synthesis

A literature search was completed using the population, interventions, comparison, outcome (PICO) format to develop the question, “Does the implementation of a standardized handoff tool affect communication and interunit transitions of care between emergency room providers and inpatient providers as well as improve wait time when compared to the usual practice in a three-month period?” A critical appraisal of the literature was performed on the provided literature to identify the similarities and differences in design and findings. The following findings were synthesized and included to the proposed design of this project.

Search strategy

Considering Larrabee’s (2009) framework, a broad literature search was performed in the Cochrane Library, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and MEDLINE. Search limitations included publications in the past 14 years (2007-2021), human subjects only, and English language. Key words included were “standardized handoff tools”, “emergency services,” “emergency room/department,” “hospitalists service,” “transition,” “transfer,” “diagnostic tests,” “protocols,” and “standardized handoff tools.” A total of 401 articles met the search criteria of which 392 did not meet the inclusion criteria. After duplicates were removed and inclusion and exclusion criteria were taken into consideration, nine articles were reviewed. Exclusion criteria included studies published before 2007, and studies that did not focused on standardized handoff.

Critical Appraisal of Literature

Critical appraisal of the nine appropriate articles was performed. A summary of each study reviewed, including the purpose, methodology, sample size and characteristics, outcome measures, statistical analyses, results, and strengths/weaknesses.

One study presented a systematic review of the literature where the aim was to analyze existing literature related to standardized handoffs between emergency departments (EDs) and inpatient services (ISs) and to evaluate their effect on perceived patient safety (Alimenti et al., 2019). Four single study articles met the final inclusion criteria, yielding a total population of 245 preintervention and 1228 postintervention participants. Two of the studies took place in the United States, one study in Abu Dhabi, and one in Australia. Settings for these studies included an adult Emergency Department (ED) in a public hospital in Abu Dhabi, Beth Israel Deaconess Medical Center in Boston MA, a Level 1 Trauma Center in Australia, and a 560-bed academic health center in the Midwestern US. All four studies were completed between 2011-2015. All the included studies focused on integrating a new handoff tool to improve patient safety and communication between providers. However, each study implemented a different handoff tool including written handoff in English, eSignouts, ISBAR verbal handoff tool and SBAR-DR verbal handoff. Results of the four studies showed an increase in perception of patient safety and improved communication ranging from 27% to 83.3 % with use of handoff tools.

Lawrence et al. (2015) conducted a qualitative phenomenological design study to obtain a more complete understanding individual participants lived experiences and the behavioral, emotional, and social meanings that these experiences have for emergency medicine physicians and inpatient medical and surgical teams. The research study incorporated a sample of 25 volunteer participants, 12 from the ED, 7 from the Division of Medicine (DOM), and 6 from the

Division of Surgery (DOS). A semi-structured interview guide was developed and used. All interviews were transcribed and then analyzed using Owen's criteria of repetition, recurrence, and forcefulness and the 32-item checklist Consolidated Criterial for Reporting Qualitative Research (COREQ) to further guide the interpretation. Three distinct factors were identified as attributing to the difficulty of communicating transfers from the EDs to inpatient services (ISs) including variations in the clinical information required, the culture of the organization and the clinical teams in which the transfer takes place, and the characteristics of the individual participants in the process. All the responders considered reports on the clinical condition of the patient a significant component of any referrals. Another fundamental component that was mentioned was the value of a Situation, Background, Assessment, Recommendation (SBAR) tool. It was important to consider the nonclinical feature of a referral and the timeliness of the contact made to complete the transfer. The authors suggest that rules around essential feedback need to be recognized in future investigations to improve patients' referrals.

A systematic review was conducted by Rosenthal et al. (2017) to identify if standardized handoff tool interventions aimed towards physician providers affect patient care outcomes. Studies appropriate for inclusion included use of an experimental or quasi-experimental design that compared standardized handoff tool interventions with no standardized handoff tool interventions, were conducted on hospitalized patients undergoing inter- or intra-facility transition of care, used interventions affecting physician providers, and contained measures of patient-related outcomes. Fourteen articles met the inclusion criteria after the screening was completed. The literature searches were evaluated by at least two authors in a two-stage process. The settings of selected studies included: five children's teaching hospitals, three teaching hospitals, a level II trauma center, two tertiary care teaching hospitals, two multisite teaching

hospitals, and a level I trauma center teaching hospital. The authors used quality scoring system developed by Riesenber et al, that incorporated 12 items and yielded scores from 1 to 16 points, with 16 being the maximum quality score. The 14 studies investigated patient-related outcomes of a standardized handoff tool intervention for transfers. Only one study evaluated inter-facility transfers. Three standardized handoff tool interventions were recognized in this study including: checklists, scripts or templates, and mnemonics. Five groups of patient related outcomes were identified such as clinical complications, escalation of care, and mortality; length of stay; process of care, adverse events, and errors; and family satisfaction and perception of care. Quality score ranged from 7 to 11.5 with a mean = 9.1 and Standard Deviation (SD) =1.4). The study identified that no specific type of handoff tool intervention demonstrated superiority, but the results suggest standardized handoff interventions in general have promise for improving patient related healthcare outcomes. The limitations the authors included were difficulties generalizing the findings to the inter-facility transition of care, the use of bundled handoff interventions, and the quality of the studies. Although the data support using standardized handoff interventions, the authors conclude that further studies need to be conducted using medical errors or adverse events as outcomes, noting that using multisite, large sample size and high-quality designs would be beneficial.

A qualitative, ethnographic observational study by Chesluk et al. (2015) was conducted to document everyday practices by which hospitalist providers discuss obstacles to efficient teamwork. The sample of hospitals and providers was selected in partnership with the Society of Hospital Medicine. The sample size was small and included four participants who were each observed for about 40 hours. One hospitalist was observed at the community hospital, one hospitalist was observed at a suburban teaching hospital and two hospitalists were observed at a

major research hospital. There were two main goals of this study. First, researchers focused on documenting details and distinctions of what participants do and the second to understand the behavior during the study. Findings revealed that strong teamwork performed by hospitalists and other care providers can support high quality, and effective patient care. It was also discovered that hospitalists faced different barriers during their shift including patients' locations that are spread throughout the hospital, poor communication during reports, transition of care, uncoordinated teams, and unpredictable processes. The authors emphasized that hospitalist providers must break down internal boundaries within their hospitals to be able to manage their patient care. Although hospitals rely on efficient and interprofessional teamwork, there is often lack of support from hospital administration. Authors identified the following limitations including small sample size, utilizing only one location, and time restrictions. To further explore the impact of effective teamwork between HPs and other specialties, the authors recommend that hospitals evaluate and disseminate strategies that support effective teamwork (Chesluk et al., 2015).

Apker et al. (2007) performed a qualitative interview design study to identify the perceptions of EPs and HPs regarding interunit handoff communication as patients were transitioning from ED to inpatient care. The sample size included 12 participants. Six participants were from the ED and six were hospitalists. The purpose of the interview was to obtain participants' knowledge of the handoff process and how it relates to patient safety outcomes. Thematic analysis was used for data evaluation. The authors identified that poor communication during handoff, including inadequate data, insufficient information, omission of data, and unclear information reports between EDPs and HPs can eventually impact patient safety outcomes. Researchers concluded that consistent and adequate interunit handoff

communication is a fundamental factor that can decrease providers doubt and improve patient safety. Due to the lack of a large simple size and the possibility of biased recollections, the authors recommended further studies to focus on implementation of handoff communication tools across other medical specialties.

An observational qualitative design study was conducted by Apker et al (2010) to develop and evaluate the Handoff Communication Assessment (HCA), using actual handoffs of patient transitions from the ED to inpatient care. The authors emailed an invitation to the EDPs and HPs. Participants in this study were 20 physicians, 12 from the ED and eight hospitalists. This study used discourse analysis to develop and apply the HCA tool to examine a convenience sample of 15 handoffs occurring at a community hospital. The HCA tool consisted of 11 content groups discussing patient presentation (a description of the patient, consisting identifiers, history, symptoms, and past procedures), assessment (statements about future treatment, clinical impression, prognosis, outcome, admission status, and transfer of responsibility), and professional environment (descriptive talk about the clinical environment, including logistics and bed availability, and courtesy comments), as well as 11 language form categories showing information seeking, information giving, and information verifying behaviors. The study used the hospital's existing telephone audio recording system to collect 24 handoff communications during four 24- hour period for four consecutive weeks. All conversations were transcribed from audio files with TransAna software. The findings indicate that presenting unclear information affects the quality of interpersonal communication between EDPs and HPs. Data shows that the HCA tool presented reliability for the content ($k=0.71$) and for the language form ($k=0.84$). Whereas the data supports the use of the HCA tool to analyze content and structure of handoff

communication between EPs and HPs, ongoing analysis and changes in categories and reformulation of the HCA may need to be addressed in future studies.

A mixed methods study by Heilman et al. (2016), aimed to determine what modifications needed to be made in the I-PASS mnemonic and education bundle to adapt it to the ED setting. The standardized verbal handoff mnemonic stands for: I-Illness Severity, P-Patient Summary, A-Action List, S-Situational Awareness and Contingency Planning, S-Synthesis by Receiver. The authors used a mixed methods needs assessment that included literature review, focus groups, and a survey. Study participants included 24 faculty, 33 residents, and 10 adjunct ED providers. The researchers used open-ended questions designed to investigate participants perception on what elements of ED handoffs were crucial to be included into the I-PASS system. The grounded theory approach along with a constructivist/interpretivist paradigm was used to evaluate the understanding of the participants in the handoff process in ED. Three major factors were identified that can influence I-PASS changes including time, order, and culture. The study concluded that most of the participants agreed that the I-PASS tool may be acceptable to be used in an ED setting with certain changes to accommodate the time constraints and nature of patient care.

Rosenbluth et al. (2018) conducted a quality improvement study to support and enhance approval of the I-PASS handoff bundle at nine study sites from 2011 to 2013. The sample consisted of 207 observations and 875 residents. Study sites included non-ICU inpatient (medical/surgical patients) units at nine North American pediatric residency programs. Kotter's model of transformational change was used as a key element to establish urgency using local data and institutional mandates. By building a strong alliance of leaders, and communicating the vision, the team members were able to inspire others to act on the vision by combining

successful progresses and distributing the new approaches effectively. The authors created a sense of urgency by distributing information on current gaps in care that included high rates of handoff-related medical errors and communication failures. Forming a powerful coalition to help deliver the message to multiple audiences was an important part of the process. Limitations to the QI initiatives included implementation efforts differed among sites based on readiness to change from the participants, as well as baseline engagement by faculty in the handoff process. To facilitate buy-in, the residents and faculty leaders were engaged as participants and champions. Outcomes of the QI project shows a significant improvement in rates of medical errors, indicated by 23% and 30% reduction in preventable adverse events.

Starmer et al. (2014) performed a prospective intervention study which measured the rates of medical errors, preventable adverse events, miscommunications, and residents' workflow before and after the implementation of the I-PASS handoff program. The data were collected from nine pediatric residency programs throughout the United States with a study size of 36-182 residents. The authors developed, implemented, and disseminated the study from June 2010 to February 2014. The intervention included the I-PASS Handoff Bundle. The authors measured errors rates by active investigation. The handoffs were measured by examining the printed handoff documents. The audio recordings and workflow were assessed through time observations. The evaluation of implementation of the I-PASS handoff program reviewed 10,740 patient admissions and demonstrated 23% reductions in medical errors from preintervention time to the postintervention period and 30% reduction of preventable adverse events rates (Starmer et al., 2014).

Synthesis of Evidence

Introduction of a standardized handoff tool was found to improve handoff communication between providers (Alimenti et al., 2019; Apker et al., 2007; Apker et al., 2010; Heilman et al., 2016; Lawrence et al., 2015; Rosenbluth et al., 2018; Rosenthal et al., 2017; Starmer et al., 2014). Similarities and differences were noted in existing studies. Most of the studies shared a common goal to improve handoff communication between providers and patient safety (Alimenti et al., 2019; Apker et al., 2007; Apker et al., 2010; Heilman et al., 2016; Lawrence et al., 2015; Rosenbluth et al., Rosenthal et al., 2017; 2018; Starmer et al., 2014). Furthermore, significant decreases in rates of specific types of medical errors, including diagnostic errors were identified (Starmer et al., 2014).

Barriers to teamwork and handoff were discussed in the literature. One study focused on obstacles to efficient teamwork and hospitalist care and not on use of a standardized handoff tool or handoffs (Chesluk et al, 2015). The obstacles were further identified as patients' location in the hospital, fragmented information during handoffs, lack of interconnection between specialties and hospitalist team, and unreliable processes such as automatic ordering of standard tests or procedures (Chesluk et al., 2015). Furthermore, three distinct factors were recognized as obstacles of negotiating the interunit transfer including variation in the clinical information required, the culture of the organization and of the clinical providers, and the characteristics of the individual participants in the handoff process (Lawrence et al., 2015). A major barrier to the standardization of patient handoff between departments is lack of provider education (Alimenti et al., 2019). Adequate staff training on the proper use of the new tools is required for the new tools to be successful. Furthermore, proper education enhances likelihood of participants using the new tool (Alimenti et al., 2019).

Three of the studies identified that all the handoff reports should include information on the clinical condition of the patient (Apker et al., 2010; Lawrence et al., 2015; Rosenthal et al., 2017). Information on the clinical condition of the patient included: patient working diagnosis, history of the present concern, key tests results, management plan, and any special patient characteristics (Lawrence et al., 2015).

The development and implementation of standardized handoff tools have been shown to improve interunit communication and patient safety outcomes (Alimenti et al., 2019; Starmer et al., 2014). Standardized handoff methods discussed in the literature include the use of electronic sign-out tools, bedside handoffs, and the use of Situation, Background, Assessment, Responsibilities and Risks, Discussion and Disposition, and Read-back and Record (SBAR) (Alimenti et al., 2019). Several methods to standardize handoffs have been created to improve communications; the I-PASS tool is currently considered the gold standard for handoff communication (Alimenti et al., 2019).

The I-PASS tool was adapted for use in a variety of hospital settings (Heilman et al., 2016; Rosenbluth et al., 2018; Starmer et al., 2014). Heilman et al. (2016) stated that the I-PASS tool may be acceptable to be used in the ED setting with certain changes to accommodate the time constraints and nature of patient care. The modifications mentioned included context, brevity, and clarity (Heilman et al., 2016). Evidence supports that the incorporation of a standardized tool such as I-PASS helps reduce medical errors and sentinel events (Rosenbluth et al., 2018; Starmer et al., 2014). The implementation of the I-PASS tool was successful in achieving significant improvements in rates of medical errors, yielding 23 % and 30% reduction in preventable adverse events (Rosenbluth et al., 2018). The quality of written and oral handoff communications significantly improved with the use of I-PASS tool and accounted for the

observed reduction in medical errors without an increase in the time required to complete handoffs (Starmer et al., 2014).

Six of the studies included emergency departments as their settings (Alimenti et al., 2019; Apker et al., 2007; Apker et al., 2010; Heilman., 2016; Lawrence et al., 2015). Other studies included hospital settings such as pediatric units (Chesluk et al., 2015; Rosenbluth et al., Rosenthal et al., 2017; 2018; Starmer et al., 2014).

All the studies had various limitations including small sample size, which may have resulted in sampling bias (Alimenti et al., 2019; Apker et al., 2007; Apker et al., 2010; Chesluk et al., 2015; Heilman et al., 2016; Lawrence et al., 2015; Rosenbluth et al., 2018; Rosenthal et al., 2017; Starmer et al., 2014). One study identified that lack of provider education on the standardized tool was one of the limitations (Alimenti et al., 2019). Moreover, generalization of the findings to the inter-facility transition of care as well as the use of bundle handoff interventions were considered some of the limitations (Rosenthal et al., 2017). Time restrictions and utilizing only one location for the study were identified as additional limitation (Chesluk et al., 2015).

Strengths were noted in all the studies. A strength of standardized handoff tools that one study identified was providers gaining an understanding of the relationship between interservice handoff communication, and patient safety (Apker et al., 2007). Another strength that one of the studies identified was a positive first step in emergency provider-hospitalist handoff communication (Apker et al., 2010). Two studies identified extensive, and rigorous searches as study strengths (Alimenti et al., 2019; Rosenthal et al., 2017). Furthermore, a major strength identified was significant reduction in medical errors and preventable adverse events with the implementation of the I-PASS handoff tool (Starmer et al., 2014).

This literature review supported the use of standardized handoff tools and additionally demonstrates the potential of the handoff tool to improve communication between EDPs and HPs. Furthermore, implementation of a standardized handoff tool was associated not only with reductions in medical errors and in preventable adverse events, but also enhanced providers' understanding of the relation between efficient handoffs and patient safety outcome (Starmer et al., 2014). According to Rosenthal et al (2017), standardized handoff interventions improved not only activities such as early patient extubation, but also improve outcomes such as avoidance of clinical complications, escalation of care, length of stay, adverse events and errors, improvement of family satisfaction and perception of care (see Table 1).

Table 1
Evidence Table

Author, year, discipline, title	Country	Purpose	Sample Description including ages, mean, range	Design	Measures	Findings	Comments
Lawrence et al. (2015) (MBBS, PhD, MPH, BA, RN, BS, MS, PhD, CS, CB, FSB) It takes two to tango: improving patient referrals from the emergency department to inpatient clinicians. <i>The Ochsner Journal</i> , 15: 149-153.	Australia	To improve patient referrals from the ED to Inpatient Clinician To understand individual participants 'lived experiences and meanings	Convenience sample N=25 12 from the ED, 7 from the DOM 6 from the DOS Years since graduation DOM:1979-2010 ED and DOS: 1998-2010. Males >females for DOM and	Qualitative, phenomenological Y	Semi-structured interviews, the 32-item checklist (COREQ)	Themes: All referrals should include a report on the clinical condition of the patient. A formal referral structure, such as SBAR, has merit. A prescribed guideline should not be used. For harmonious referrals, consider clinical aspects of the patient, the organizational culture, and the personal	LOE: VI Strengths: strong data analysis techniques Limitations: study was conducted in a PTH, small sample size Conclusion: difficulty of negotiating transfer relate to 3 factors variations in the clinical information, culture of organization and clinical teams, and characteristics of the participants Recommendation: rules around feedback to be established, train students in two-way

			DOS Equal in ED Ages NA			characteristics of all stakeholders. Rules around essential feedback need to be established.	communication, develop SBAR template
Alimenti et al. (2019) (MSN, RN, OCN, AGACNP-BC, CCRN, ACNPC-AG, MPH). Improving perceptions of patient safety through standardizing handoffs from the emergency department to the inpatient setting: a systematic review. <i>Journal of American Association of Nurse Practitioners. 31: 354-363</i>	United States, Australia Abu Dhabi	To analyze existing literature pretraining to standardized handoffs between ED and IS To analyze its effect on perceived patient safety	Convenience sample N 245 preintervention N 1,228 postintervention ED, IRP, RN and registrars. 4 studies completed between 2011-2015. Ages NA	Systematic review Qualitative design	PRISMA guidelines	The process of standardizing handoff tools increases provider's perception of patient safety. Standardization of patient handoff between departments is provider education Adequate training of staff is required in order for the new tools to be successful	LOE: I Systematic review Qualitative design Strengths: extensive and rigorous search process used by the researchers. Limitations: no objective data on pt. safety, small sample size, no direct examination of pt. content validity survey not analyzed, potential for recall bias in survey responses, content validity on survey not analyzed, no demographic information on providers Conclusion: Lack of research looking specifically at the safety and

							<p>efficacy of standardized patient handoff in the ED and IS.</p> <p>Provider education and implementation of standardized handoff tools in the ED positively affect perceptions of patient safety and provider satisfaction.</p> <p>Recommendation: hospital administrations should strongly consider incorporating standardized handoff tools into practice</p>
<p>Chesluk et al. (2015) (MD, MPH) How hospitalists work to pull healthcare teams together. <i>Journal of Health Organization and Management</i>. 29 (7) 933-947.</p>	<p>United States</p>	<p>To document everyday practices by which hospitalist physicians</p> <p>To negotiate barriers to effective teamwork</p>	<p>Purposive Sample</p> <p>N =4 3 -IMP 1-DO Ages NA</p>	<p>Qualitative, ethnographic observation</p>	<p>Ethnographic fieldwork</p>	<p>Hospitals rely of effective, interprofessional teamwork</p> <p>Hospitals do not support interprofessional teamwork</p> <p>Hospitalist physician must bridge the internal</p>	<p>LOE II</p> <p>Qualitative, ethnographic observation design</p> <p>Strengths: Strong teamwork skills carried out by hospitalists and other care providers can promote high quality, efficient patient care.</p> <p>Limitations: small sample size</p>

						<p>boundaries within their hospitals to coordinate their patient's care,</p> <p>Hospitalists face challenges: scattered patients, fragmented information, uncoordinated teams, and unreliable process</p> <p>The need for effective, coordinated interprofessional work</p> <p>Formal support for teamwork is applied unevenly</p>	<p>Conclusion: The hospitalists represent an approach that relies on individual physicians and their network.</p> <p>The hospitalists addressed systemic issues far beyond individual.</p> <p>Recommendation: Hospitals must recognize the issues hospitalists and other providers face.</p> <p>Hospitals must evaluate and disseminate supports for teamwork.</p> <p>Hospitals must make interprofessional teamwork a core feature of hospital design and evaluation.</p>
Heilman et al (2016) (MD, BS, PhD, MCR) Adapting the I-PASS handoff program	United States	To determine what modifications the I-PASS mnemonic and	Sample: N=67 24 faculty 33 residents	Mixed Methods Qualitative	Grounded theory approach with constructivism/interpretive	Three major themes that influence modifications to the I-PASS	LOE VI Mixed Methods Qualitative study Strengths: I-PASS bundle of interventions reduces medical

<p>for emergency department inter-shift handoffs. <i>Western Journal of Emergency Medicine</i> 10.5811</p>		<p>education bundle required to be adapted to the ED setting.</p>	<p>10 adjunct providers</p>		<p>etivist paradigm</p>	<p>handoff: time, order, and culture.</p>	<p>errors during handoffs in the impatient pediatric setting.</p> <p>Limitations: Limited to the single center.</p> <p>Conclusion: I-PASS system is appropriate for ED.</p> <p>Recommendations: Future studies are needed to investigate if use of the I-PASS tool is feasible and improves patient outcomes in the ED environment.</p>
<p>Apker et al. (2007) (PhD, MD). Communicating in the “gray zone”: perceptions about emergency physician-hospitalist</p>	<p>United States</p>	<p>To identify the perceptions of EP and hospitalists regarding interservice handoff</p>	<p>N= 12 6 from ED 6 hospitalists Years since graduation EPS 15.8 years IMP 9.3 years</p>	<p>Qualitative research design, Interview study (ground theory)</p>	<p>Owen’s criteria of repetition, recurrence, and forcefulness was used.</p>	<p>Poor communication practices and conflicting communication expectations were found as barrier that exacerbated</p>	<p>LOE VI.</p> <p>Qualitative research design, Interview study (ground theory)</p> <p>Strengths: important first step in understanding the relationship between interservice handoff</p>

handoffs and patient safety. 14: 884-894		<p>communication for patient transfer ED to IS.</p> <p>To explore physician's perceptions of the patient safety implications of ED-hospitalist interservice handoff communication.</p>	<p>The average age was 39 years for IMP.</p> <p>The average age was 47 years for ED participants.</p>		Critical incident technique	<p>physicians' information ambiguity.</p> <p>Handoffs consisting of insufficient information, incomplete data, omission, and faulty information flow exacerbated the gray zone problems.</p> <p>Poor handoff communication =safety risks.</p>	<p>communication and patient safety.</p> <p>Limitations: small sample size.</p> <p>Inaccurate or biased recollections.</p> <p>Reliance of participants' perceptions that particular physician communication practices may create or exacerbate patient safety risks.</p> <p>Conclusion: Handoff communication is a fundamental component of hospital health care delivery.</p> <p>Handoff communication depends on correct information being available on a timely basis to appropriate caregivers. Consistent, effective interservice communication is a key to reducing physicians' information ambiguity and improve patient safety.</p>
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							<p>Recommendation: A need for implementation of handoff communications across medical specialization.</p> <p>EPs and emergency medicine faculty should provide a role model of effective interservice handoff communication.</p> <p>EP education could include interactive exercises that place novice physicians in realistic interservice handoff situations.</p> <p>Physicians and hospital leaders should develop organizational policies promoting practice environments for best practices in handoff communication.</p>
Apker et al. (2010) (MD, PhD, MBA, RN) Exploring emergency physician-hospitalist	United States	To develop and evaluate	N=15 ED physicians & hospitalists	Qualitative observational	Discourse analysis	Handoff communication is a central activity in EMC.	LOE II Strengths: Positive first step emergency physician-hospitalist handoff communication.

<p>handoff interactions: development of the handoff communication assessment.</p>		<p>te Handoff Communication Assessment (HCA) , using actual handoffs of patient transfers from the emergency room to inpatient setting.</p>	<p>Years since graduation = 16 ED Year since graduation = 6 hospitalists</p>	<p>design study</p>		<p>The HCA showed good reliability for context and language form. EP talk more during handoff. Hospitalists function in a listening mode.</p>	<p>Limitations: The HCA was developed and tested by the same investigators, using only EP-hospitalist handoff interactions collected same place. Study limited to telephone conversation. Conclusion: EP to hospitalist handoff include of giving information and not geared toward question-and-answer events. Recommendations: Future research to be developed in other hospital settings.</p>
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<p>Rosenthal et al. (2017) (MD, MPH) The effectiveness of standardized handoff tool interventions during inter- and intra – facility care transitions on patient-related outcomes: a systematic review.</p>	<p>United States</p>	<p>To identify if standardized handoff tool interventions targeting physician providers affect patient related outcomes.</p>	<p>Sample=14 studies</p>	<p>Systematic review quantitative study</p>	<p>Quality scoring system</p>	<p>Handoff tool Interventions consistently improved process of patient care.</p> <p>Interventions didn't improve mortality.</p> <p>Inconsistent results, heterogeneity of the outcome measures used, and limited number of quality studies.</p>	<p>LOE 1 Systematic review study</p> <p>Strengths: Broad review of this study included all types of intra-facility and inter-facility transfers.</p> <p>Limitations: The search resulted in only 1 study examining a handoff intervention for inter-facility transfers.</p> <p>Limited ability to generalize the findings to the inter-facility transition of care. Use of bundled handoff interventions.</p> <p>Limited ability to conduct meta-analysis due to quality of 14 studies.</p> <p>Conclusion: Standardized handoff interventions can improve patient related outcomes and processes.</p>
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							<p>Recommendation: Further research needs to be conducted using multisite, large sample size, and high-quality designs.</p> <p>Researchers should consider studying inter-facility transitions of care.</p>
<p>Rosenbuth et al. (2018) (MD, MPH) I-PASS handoff program: use of a campaign to effect transformational change. <i>Pediatric Quality and Safety</i> 3(4): e088</p>	<p>United Stated</p>	<p>To support and enhance uptake of the I-PASS handoff bundle.</p>	<p>Sample size N= 875</p>	<p>Quality Improvement Study</p>	<p>Kotter's model of transformational change</p>	<p>I-PASS was successful in achieving substantial improvements in rates of medical errors and preventable adverse events.</p>	<p>LOE VI</p> <p>Strengths: Large sample size.</p> <p>I-PASS is supported by a strong evidence-based.</p> <p>Limitations: Implementation efforts varied among sites.</p> <p>Needs assessment identified variations including baseline engagement.</p> <p>Conclusion: the implementation of the I-PASS tool was successful</p>

							in achieving improvements in rates of medical errors by 23% and 30% reduction in preventable adverse events
<p>Starmer et al. (2014) (MD, MPH, MPA, PhD, BS, M.Ed, BSN, BA, MS) Changes in medical errors after implementation of a handoff program. <i>The New England Journal of Medicine</i> 371:1803-1812</p>	<p>United States and Canada</p>	<p>To observe if the implementation of the I-PASS tool was associated with reductions in medical errors and in preventable adverse events</p>	<p>Sample size Nine sites N= 875</p>	<p>Prospective intervention qualitative study</p>	<p>Poisson regression with dichotomous covariate</p>	<p>The medical-error rate decreased by 23% from the preintervention period to the postintervention period.</p> <p>The rate of nonpreventable adverse events did not change significantly.</p> <p>Site-level analysis showed significant error reductions at six of nine sites.</p> <p>No significant changes from the preintervention period to the postintervention period in the</p>	<p>LOE VI</p> <p>Strength: Large study.</p> <p>Limitations: Error rates did not change significantly at three from nine sites. The intervention focused only on pediatric inpatient units.</p> <p>Conclusion: implementation of the handoff program was associated with reductions in medical errors and in preventable adverse events and with improvement in communication.</p> <p>Recommendations: future studies to determine the broader applicability of the intervention.</p>

		, and miscommunication as well as resident workflow.				duration of oral handoff or in resident workflow.		
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Key: ED=Emergency Department, DOM= Division of Medicine, DOS= Division of Surgery, COREQ=Consolidated Criteria for Responding Quality Research, LOE= Level of Evidence, PTH=Public Teaching Hospital, EP=Emergency Physician, HIS=Hospitalist Inpatient Services. IS=Inpatient Setting, IMP=Internal Medicine Physicians, PRISMA=Preferred Reporting Items for Systematic Review and Meta-analysis, PT=patient, DO=Doctor of Osteopathy, HCA = Handoff Communication Assessment, EMC=Emergency Medical Care, RCT=Randomized Control Trials, NH=Non-Hospitalist, RPD=Randomized Prospective Design, NA=Not Available, LOS=Length of Stay.

Theoretical Framework

Change in healthcare organizations is often met with resistance. Leaders within organizations can utilize change theories to overcome barriers. The Kotter's Change Model is used successfully to improve healthcare organizations, providing steps that focus on engaging individuals and organizations in preparing for and accepting changes (Campbell et al., 2020).

This framework's eight steps were implemented in this project. The first step of this model involved creating a sense of urgency using community hospital data. The data obtained from the Vice President (VP) of Quality states that the community hospital was 100 minutes above the national average when it comes to wait time in their emergency department (H. Porter, personal communication, June 3, 2021). This created a sense of urgency for healthcare providers to realize that ineffective handoffs between emergency department providers (EDPs) and inpatient providers (IPs) may lead to compromised patient safety outcomes and increased wait time in the emergency department.

Step two of Kotter's Change Model focuses on forming a powerful coalition after a climate of change is created (Kotter, 1996). A powerful coalition was formed between the DNP student and individuals with high position and expertise within the community hospital. For the proposed project, these individuals include the Chief Executive Officer (CEO), the Chief Medical Officer (CMO), the VP of Quality, and the Director of Nursing (DN).

The third step of Kotter's Change Model was to create a vision change, where clear values and a picture of the future were evident (Aziz, 2017). The ultimate vision and plan were created to improve handoffs between EDPs and IPs and decrease patient wait time in the emergency room by using the I-PASS handoff tool. Several meetings with the community

hospital officials took place and highlighted the significance of improving handoffs between EDPs and IPs using the I-PASS tool.

Step four of Kotter's Change Model incorporated communicating the vision of change clearly and powerfully for the standardized handoff tool to be implemented efficiently (Kotter, 1996). Meetings with the hospital stakeholders took place biweekly. The project vision created a change by adapting a culture that encouraged the project participants to understand the importance of using the standardized handoff tool during reports.

Step five of Kotter's Change Model involved empowering action. This step included providers' introduction to and education about use of the I-PASS tool.

Step six of Kotter's Change Model addressed creating short-term wins. Positive reinforcements were provided to the participants who were using the I-PASS tool.

Step seven of Kotter's Change Model discussed building on the change (Kotter, 1996). The first step was communicating the upcoming change then the providers were educated about the change. Positive feedback were obtained from providers.

The final step of Kotter's Change Model focused on making change enduring. Continuous reinforcement was provided to the participants especially in the early stages on the use of I-PASS during handoffs. The DNP student contacted IT and the VP of Quality about the possibility of including I-PASS handoff into the SUNRISE Electronic Health Record System and training all the providers on use. Handoff communication between Emergency Department providers and Inpatient Providers is a major element of the hospital health care delivery.

Methods

Context

EDPs and IPs ages 18 and older at community hospital in the Northern Panhandle were the population of interest for this project. There were 30-35 ED providers and 30-35 inpatient providers. This project took place in the community hospital that serves populations in the Northern Panhandle of West Virginia and the Upper Ohio Valley. The project employed a quantitative quasi-experimental pre-test/post-test design to explore provider satisfaction with evidence-based standardized handoff tools and wait time (see Table 2).

Table 2

Methods Table with Change Theory

Phase	Actions	Link to Kotter's Change Theory
Pre-planning Phase	<ul style="list-style-type: none"> • Identify Stakeholders in the organization • Obtain buy-in from stakeholders through presentation of current data r/t hospital wait times and accrediting body recommendations • Project manager develops expertise in I-PASS tool 	<ul style="list-style-type: none"> • Form a coalition for change • Create a Sense of Urgency • Create a vision change
Planning Phase	<ul style="list-style-type: none"> • Communicating the upcoming change to Emergency Department Providers (EDPs) and Inpatient Providers (IPs) • Survey/pretest EDPs and IPs on satisfaction with the current practices • Educate providers on I-PASS tool • Finalize the inclusion of the I-PASS tool in the SUNRISE system at the community hospital 	<ul style="list-style-type: none"> • Communicate the vision of change clearly and powerfully • Create a vision change • Empowering acting
Implementation Phase	<ul style="list-style-type: none"> • Putting project plan into action • The participants will implement the I-PASS tool during handoffs between the EDPs and IPs • Second round of education pamphlets 	<ul style="list-style-type: none"> • Create short term wins • Empowering acting

	<ul style="list-style-type: none"> • Nurse leader will check with EDPs and IPs on any concerns and evaluate the progress • Provide the participants with three informal questions concerning the use and barrier to use of the I-PASS tool 	
Evaluation Phase	<ul style="list-style-type: none"> • Determine the relevance of the standardized tool and the level of achievement of the project objectives, effectiveness, impact, and sustainability • Survey/posttest questionnaire to evaluate the participants' feedback • Obtain data from VP of Quality on the wait time 	<ul style="list-style-type: none"> • Making the change permanent

Intervention

The intervention for this project was the implementation of a standardized handoff tool, I-PASS, to improve interunit handoffs between EDPs and IPs, as well as to improve patient wait time. Standardized tools show improvement in outcomes for interunit handoffs (Alimenti et al., 2019) (see Figure 1 in Appendix A). The statistical analysis used to evaluate change in providers' satisfaction was Mann-Whitney U Test. Data on the wait time was obtained from the Vice President (VP) of Quality.

There were two overarching goals for this project: 1) to improve communication and interunit transitions of care between EDPs and IPs using a standardized handoff tool and 2) to improve wait time from the time patient gets an ED bed to the time patient is admitted to the community hospital. A strategic plan to implement the I-PASS standardized handoff tool included four phases: a preplanning phase, a planning phase, an implementation phase, and an evaluation phase. The nurse leader played a vital role as a change champion, and the key person responsible for implementing this project.

Preplanning Phase

In the preplanning phase, the nurse leader obtained buy-in from stakeholders, identified strengths, weaknesses, and threats to the organization, and increased personal knowledge and skills in the use of the I-PASS tool. The nurse leader obtained Institutional Review Board (IRB) approval from The West Virginia University IRB committee. The timeline, budget, and work plan were presented. This step included seeking key stakeholders to help carry out the project. The stakeholders consisted of the community hospital VP of Quality, key administrators, information technology (IT) representatives, nursing educators, and ED/IS providers. Communication methods between the nurse leader and the stakeholders included email updates, phone calls, and face-to-face meetings as needed during the four phases of the intervention. The nurse leader became a champion in the use of the I-PASS tool through completion of an online CE offering. The time frame for the preplanning phase was June -September 2021.

Planning Phase

Goals of the planning phase included communicating the upcoming change to ED and IS providers, surveying/pretest ED and IS providers on satisfaction with the current practices, educating providers on the I-PASS tool, and finalizing the inclusion of the I-PASS tool in the SUNRISE system. The nurse leader has adopted an existing survey/pretest questionnaire for the participants including two open-ended questions and 17 forced-choice questions (Sand-Jecklin, K. & Sherman, 2013). The goal of the pretest questionnaire was to gather participants' impressions of the handoff process from the ED to an inpatient service (IS), as well as to discuss any safety issues related to handoff communication. The nurse leader sent the pretest/survey questions to participants by putting them in providers' mailboxes (see Figure 2 in Appendix B).

The participants received education on the standardized tool in the form of either a poster presentation, pamphlet, or a PowerPoint presentation. The DNP student leader had a video meeting with the I-PASS representative on 7/19/21, who suggested the use of the already available I-PASS power point for the participants' education. The nurse leader provided an education session at staff meetings as well as pamphlets about the I-PASS tool. The nurse leader met with IT representatives to finalize the inclusion of the I-PASS tool in the SUNRISE electronic health record system at the community hospital. The time frame for the planning phase was October-November 2021.

Implementation Phase

The implementation phase involved putting the project plan into action. The study participants implemented the I-PASS tool during handoffs between the EDPs and the IPs. The participants received another round of educational pamphlets, a poster presentation, and/or a PowerPoint presentation to reinforce the standardized handoff tool use. During the implementation phase, the nurse leader checked with EDPs and IPs on any concerns and evaluated the progress in using the tool. On the postintervention survey, the nurse leader asked two informal questions for the participants concerning the use and barriers to use on the I-PASS tool: a) What percentage of time do you use the handoff tool? (Not at all, <25%, 26-50%, 51-75% or 76%- 100%? b) What benefits, or barriers do you see with the use of I-PASS tool? The nurse leader received reports from IT on the providers' use of I-PASS tool every two weeks. The nurse leader praised the providers for the use of I-PASS if success was made, by providing small posts in the department with positive feedback. The time frame for the implementation phase was December 2021-February 2022.

Evaluation Phase

The goal of the evaluation phase was to determine the relevance of the standardized tool and the level of achievement of the project objectives, effectiveness, impact, and sustainability. The nurse leader sent a posttest/survey questionnaire to the study participants. The survey was placed in providers mailboxes after the intervention phase. Questions on the survey paralleled those in the pretest/survey, to allow comparisons between participant responses. The nurse leader evaluated the participants' feedback. Data from the VP of Quality was obtained on the wait time from the time patients arrive at emergency department to the time they were admitted to the hospital. The time frame for the evaluation phase was February-March 2021 (see Figure 3 in Appendix C).

Feasibility Analysis

Needs Assessment. The community hospital for the study site did not have an existing standardized handoff tool to use between emergency room providers and inpatient providers. About 60 patients over the age of 18 were admitted to the community hospital each day- totaling approximately 26,000 admissions per year. The community hospital consists of 223 beds. At the time the project took place, the emergency department patients were admitted to the hospitalist services, the family medicine services, and the independent outside providers' service. The wait time for patients who presented to the ED to the time they got admitted was on average 100 minutes longer for the months of January, February, and March 2021 when compared to the national average, which was 257 minutes (H. Porter, personal communication, June 3, 2021; CMS, 2020).

SWOT Analysis. A strengths, weaknesses, opportunities, and threats analysis was performed for this project. Strengths of this project were hospital administration support, technological support, limited financial investment necessary for change, strong leadership support for change, and adequate EDPs and IPs. The weaknesses for the project were identified as lack of a standardized tool for handoff between EDPs and ISPs, leadership changes, and potential resistance to a change from the providers. The opportunities that were identified included new handoff tool implementation, new technology, potential for a decrease in patient wait time in the emergency department, and the opportunity to improve patient safety outcomes. One of the additional benefits could be the organization serving as the regional hub of change for WVU Medicine. The threats to the project included a small number of participants, implementation of new policies, inconsistency on the part of the providers in using the handoff tool, and negative feedback concerning the standardized tool.

Budget and Financial Plan. The financial plan for this project included a small budget since it was a small study. The planning of the project, implementation, and evaluation was done by the DNP student. The average cost of an APRN nurse hourly rate is \$55.05 according to the Bureau of Labor Statistics. Including the 100 hours that APRN nurse spent, this project would result in total cost of \$5,505. The cost was assumed by the DNP student. The organization will be responsible for paying IT for including building the standardized tool into the SUNRISE system. The organization was on board with including the I-PASS tool into the SUNRISE system. The student was responsible for printing pamphlets, with the total cost average being \$100. No additional cost was incurred in the implementation of this project.

Personnel. The Doctor of Nurse Practitioner (DNP) student served as the leader for project implementation. The DNP student has worked with the hospitalist services for the last

seven years in the role of nurse practitioner. The nurse leader distributed the invitation letters, educate the participant about the I-PASS tool, distributed pre and postimplementation surveys and evaluated the findings. Additional stakeholders that played a significant role in the implementation of this project were the organization nursing educator, QI representative, and SUNRISE system specialists.

Technology. Significant aspects for the project included the use of the computers, printers, and the SUNRISE system. The SUNRISE system had the capabilities to include the standardize handoff tool which was used by the EDPs and ISPs. Other technology that was available was the projector for the Microsoft-Power-Point presentations. No added cost for the use of these technologies was required since the organization already has computers and printers. Other materials needed for the project included education information about the I-PASS tool. The DNP student completed all the needed requirements.

Sustainability of the Proposed Project. This project was performed as a Quality Improvement study. The NP interventionist is able continue providing the education at the community hospital as long as employment continues, but the voluntary donation of time maybe limited to this research project. The project will be submitted for journal publication and poster presentation to encourage program implementation in other healthcare settings.

Congruence with the Organization's Strategic Plan. The mission statement of Wheeling Hospital WVU Medicine, the hospital for the project, incorporates the values, goals, and strategic plan of the organization. The mission statement is:

Wheeling Hospital is a Catholic hospital which serves as a healing ministry, providing compassionate care to people of all faiths in a loving, spiritual environment. God gives us the responsibility to carry out His mission of healing and to promote the well-being of our

employees and our community. In doing so we, the Wheeling Hospital Family, fulfill our mission through our: healing, understanding, ministry, advanced technology, nurturance, tradition, ongoing education, unity, continuing quality care and hope (Wheeling Hospital, 2020).

The underlying goal for this project was to improve interunit handoff communication between EDPs and IPs, and to decrease patients' wait time in ED to the time these patients get admitted to the hospital which indirectly improve patients' health care outcomes. The mission statement for the hospital supported this interest.

Evidence of Key Site Support. The primary stakeholder who supported this project is the Vice President of Quality (see Figure 2 in Appendix D). The mission statement for the hospital communicated support for this type of intervention.

Project Timeline

This quality improvement project was proposed as a four-phase project as identified earlier in the paper. Table three describes start and end dates, as well as duration of each phase (see Table 3).

Table 3

Project Timeline

Start Date	Duration Days	End Date
Jun-21	sixty one	31-Jul
Aug-21	sixty one	30-Sep
Oct-21	ninty two	31-Dec
Jan-22	fifty nine	28-Feb

The nurse leader was the key person responsible for implementing the intervention. The nurse leader role was significant as a change champion and as an experienced practitioner. Open communication was vital for the success of this project.

Ethical Considerations

The nursing leader sought WVU IRB approval for the project. The nursing leader didn't collect data that was considered protective health information. The nurse leader included a cover letter about the project for the participants to complete the survey. The cover letter included the nurse researcher name, the purpose of the project, participant's rights, rights to participate or not complete the survey, a description of the topic of the survey and the content of questions on the survey, and a statement about confidentiality. By completing the survey, the participants consented to participate in the project. The nursing leader attempted to remain as objective as possible to not influence the project participants. The nurse leader saved the collected data in a locked cabinet. Only the nurse leader has access to the cabinet.

Evaluation Plan

The project included the following two measurable objectives:

1. Patients 'wait time, the time patient is admitted to an ED bed to the time patient is admitted to inpatient care, will decrease with the use of a standardized handoff tool compared to prior to the implementation of the standardized I-PASS tool.
2. Providers 'handoff satisfaction will increase post implementation of the standardized handoff tool.

The participants in the project included emergency department providers (EDPs) and inpatient providers (IPs). There were estimated 35 EDPs and 35 IPs at the project facility. The

project was evaluated using quantitative data and some qualitative data. The demographic data on the survey was collected and evaluated (see Table 4).

Table 4*Evaluation Plan*

Purpose or intention	Outcomes.	Objective/Criteria, AEB.	Target population	Data collected	Collection methods	Data Analysis
Providers 'handoffs satisfaction will increase post use of the standardized tool compared to pre use of standardized tool	Provider satisfaction	<p>Self-report survey using 5-point Likert Scale # questions on surveys.</p> <p>Strongly agree to strongly disagree</p> <p>Pre and post intervention</p> <p>Differences in pre and post survey</p>	<p>Emergency department providers and inpatient providers</p> <p>Estimated 35 ED providers and 35 inpatient providers</p>	<p>Provider satisfaction with current handoff practice -using a self-report Likert response survey</p> <p>Provider satisfaction with I-PASS tool for patient handoff using a self-report Likert response survey</p>	<p>Pre-survey will be placed in provider mailboxes one month before implementation of I-PASS intervention.</p> <p>Reminders will be sent to providers weekly to complete the survey.</p> <p>I-PASS will be implemented for 3 months, at that point a post survey will be given to providers.</p> <p>Surveys will be placed in provider mailboxes.</p>	<p>Data will be entered into SPSS.</p> <p>Descriptive statistics will be provided.</p> <p>Independent T-test will be used to evaluate change in providers' satisfaction.</p> <p>Descriptive narratives of responses to open ended questions will be provided.</p>

					Providers will have two weeks to complete-remainders will be sent weekly.	
Patients' wait time will decrease with the use of standardized handoff tool compared to pre use of the standardized handoff tool such as I-PASS	Wait time	Minutes from time patient enters ED room until time that patient admitted to the hospital room (time patient is in hospital-not ED bed)	Patients who are admitted from the emergency department to inpatient services - estimated of # over 3 months	3 months' time period before implementation of I-PASS- minutes from time patient enters ED room until time that patient is admitted to hospital. 3 months' time period post implementation of I-PASS - minutes from time patient enters ED room until time that patient is admitted to hospital	Data to be obtained on wait time from Vice President of Quality	Z-score will be utilized to evaluate wait time.

Objective 1: Decrease Wait Time.

Minutes from the time the patient enters the ED room until the time that patient was admitted to the hospital unit were evaluated over a period of three months. Post I-PASS tool implementation, the nurse leader obtained data on wait times from the Vice President (VP) of Quality. The Mann-Whitney U Test was used for evaluation.

Objective 2: Providers Satisfaction.

The providers' satisfaction survey was adapted from a tool used to reflect nurses' perception of shift report prior to and after implementation of bedside shift report. The tool was adapted with permission from Dr. Sand-Jecklin. The provider satisfaction survey included 19 questions from which 17 are numerical questions and two are open-ended questions. The 5- point Likert Scale was used for questions on the surveys. The Likert Scale is a scale from which responders choose one option that best supports their point of view. The responses vary from strongly agree to strongly disagree (Mcleod, 1979). The demographic data for the survey was collected and evaluated.

Pre-surveys were placed in provider mailboxes two weeks before the implementation of the I-PASS intervention. Reminders were sent to the providers weekly to complete the survey. The I-PASS was implemented for three months and at that point a post-survey was given to providers. Providers had two weeks to complete the post-survey. Reminders were sent to participants weekly. Objective two data were evaluated using Mann-Whitney U Test. The data was entered into SPSS. Descriptive statistics and descriptive narratives of responses to open-ended questions were provided.

Results

Forty-eight providers completed the survey before the I-PASS implementation, and 43 providers completed the survey post I-PASS implementation. Experience of providers who completed the pre-survey ranged from 1-31 years, with a mean of 11.04, while experience of providers completing the post survey ranged from 1-33 years with a mean of 10.31. The total mean for provider's years of experience pre and post survey was 10.65. There was no significant difference in mean years of experience between respondents in the pre-implementation and post-implementation surveys.

Decrease Wait Time

Although not statistically significant, wait time increased for the post-implementation months of December, January, and February 2022 when compared with pre-implementation months of February, March, and April of the previous year. The time from patient admission to the inpatient placement was 366 minutes for the month of February 2021, 322 minutes for March 2021, and 313 minutes for April 2021. During the time the DNP project took place, the time from patient ED admission to the inpatient placement was 597 for the month of December 2021, 521 minutes for January 2022, and 543 minutes for February 2022. However, a Mann Whitney U Test showed no significant difference in mean wait times between pre (M=333.7) and post (M=553.7) implementation of the I-PASS handoff tool (U=9.00, p=.100).

The quality department team indicated that wait time increases were not necessarily a reflection of the I-PASS tool, but rather nursing staffing vacancies and increased COVID cases; nursing vacancy was 16.6 % with nursing staff turnover of 24.29% during the time the DNP project was implemented compared to 8-12% on nursing vacancy of last year (H. Porter, personal communication, 5/5/22).

Provider Satisfaction

Significant positive differences were seen in 18 of the 19 items on the provider satisfaction survey, indicating that providers were more satisfied with handoff using the I-PASS tool than without a standardized tool than prior to implementation of the standardized tool. The only exception was that the agreement for the need of standardized handoff tool was not significantly different in comparing pre and post survey responses (see Table five).

Table 5

Mann-Whitney Test for Pre and Post Implementation Surveys

Variable	N	Mean Rank	Statistics
Yrs. in practice Pre-implementation Post-implementation	48 43	44.31 47.88	Mann-Whitney U = 1113.00 Wilcoxon W = 2051.00 Z = 646 Sig (2-tailed) = .519
Yrs. at Wheeling Hosp Pre-implementation Post-implementation	48 43	42.60 49.79	Mann-Whitney U = 1195.00 Wilcoxon W = 2141.00 Z = .646 Sig (2-tailed) = .189
Handoff is efficient means of communication Pre-implementation Post-implementation	48 43	31.84 61.80	Mann-Whitney U = 1711.50 Wilcoxon W = 2657.50 Z = 5.59 Sig (2-tailed) = <.001
Handoff is satisfactory Pre-implementation Post-implementation	48 43	31.21 62.51	Mann-Whitney U = 1742.00 Wilcoxon W = 2688.00 Z = 5.80 Sig (2-tailed) = <.001
Handoff provides adequate understanding of pt. condition Pre-implementation Post-implementation	48 43	32.59 60.97	Mann-Whitney U = 1675.00 Wilcoxon W = 2621.50 Z = 5.29 Sig (2-tailed) = <.001
Handoff helps ensure provider accountability Pre-implementation Post-implementation	48 43	31.84 61.80	Mann-Whitney U = 1711.50 Wilcoxon W = 2657.50 Z = 5.59 Sig (2-tailed) = <.001
Handoff ensures report is given professionally Pre-implementation Post-implementation	48 43	34.44 58.91	Mann-Whitney U = 1587.00 Wilcoxon W = 2533.00 Z = 4.63 Sig (2-tailed) = <.001

Variable	N	Mean Rank	Statistics
Handoff is relatively stress-free Pre-implementation Post-implementation	48 43	31.29 62.42	Mann-Whitney U = 1738.00 Wilcoxon W = 2684.00 Z = 5.82 Sig (2-tailed) = <.001
Handoff provides opportunities for mentoring/teaching Pre-implementation Post-implementation	48 43	33.55 59.90	Mann-Whitney U = 1629.50 Wilcoxon W = 2575.00 Z = 4.88 Sig (2-tailed) = <.001
Handoff provides all necessary diagnostic results Pre-implementation Post-implementation	48 43	32.60 60.95	Mann-Whitney U = 1675.00 Wilcoxon W = 2621.00 Z = 5.25 Sig (2-tailed) = <.001
Handoff includes information about consultant's involvement Pre-implementation Post-implementation	48 43	34.65 58.67	Mann-Whitney U = 1577.00 Wilcoxon W = 2523.00 Z = 4.47 Sig (2-tailed) = <.001
Handoff provides for discussing patient safety issues Pre-implementation Post-implementation	48 43	34.26 59.10	Mann-Whitney U = 1595.50 Wilcoxon W = 2541.5 Z = 4.66 Sig (2-tailed) = <.001
After handoff, I feel informed about all aspects of pt. condition Pre-implementation Post-implementation	47 43	28.82 63.73	Mann-Whitney U = 1794.50 Wilcoxon W = 2740.50 Z = 6.49 Sig (2-tailed) = <.001
After handoff, I am informed about lab results needed Pre-implementation Post-implementation	47 43	32.24 59.99	Mann-Whitney U = 1633.50 Wilcoxon W = 2579.50 Z = 5.19 Sig (2-tailed) = <.001
After handoff, I feel informed about the pt. plan of care Pre-implementation Post-implementation	47 43	30.71 61.66	Mann-Whitney U = 1705.50 Wilcoxon W = 2651.50 Z = 5.78 Sig (2-tailed) = <.001
After handoff, I feel informed about the pt. condition Pre-implementation Post-implementation	47 43	31.83 60.44	Mann-Whitney U = 1653.00 Wilcoxon W = 2599.00 Z = 5.34 Sig (2-tailed) = <.001
Handoffs are completed in a reasonable amount of time Pre-implementation Post-implementation	48 43	36.47 56.64	Mann-Whitney U = 1489.00 Wilcoxon W = 2435.00 Z = 3.87 Sig (2-tailed) = <.001
There is a need for a standardized handoff tool Pre-implementation	48	45.85	Mann-Whitney U = 1049.00 Wilcoxon W = 1995.00 Z = 0.146

Variable	N	Mean Rank	Statistics
Post-implementation	43	46.40	Sig (2-tailed) = ,884
There is good teamwork between ED and inpatient providers			Mann-Whitney U = 1527.00 Wilcoxon W = 2473.00
Pre-implementation	48	25.69	Z = 4.10
Post-implementation	43	57.51	Sig (2-tailed) = <.001

Post-survey response findings for open-ended question one: “Have you experienced barriers in using I-PASS tool?” showed that 31 providers answered “no”, one provider answered “yes”, and eleven providers provided no answer. Post-survey response findings for open-ended question two: “How frequently is I-PASS handoff tool used in your experience, please give a percentage?” showed that most frequently, survey respondents indicated they had used the I-PASS tool 52-75% of the time (n=17), followed by 76-100% (n=12), 0-25 % (n=6), 26-50% (n=5), and three providers provided no answers.

Facilitators, Barriers, and Unintended Consequences

Key facilitators to improve provider satisfaction included buy in and support from hospital administrators and the use of information technology (IT) to implement and track I-PASS usage. To assess buy-in, facilitators, and barriers to implementation of the I-PASS tool, two open-ended questions were asked on the pre-test. Of the 48 providers that completed the pre-test, 23 did not respond to or responded with “I don’t know” to question one: “What if anything is typically missing from handoff reports between providers?” Twelve providers indicated that they would like to see a more accurate history, full clinical picture & acuity of the illness severity, patients background & detailed past medical history (PMH), appropriate assessment and plan, reason for admission, and appropriate labs with results during handoffs. Four providers specified that they would like to see overall clinical suspicion of diagnosis or accurate admission diagnosis during the handoffs. Two providers indicated that they would like to see appropriate

notifications of consultants and plans from consulting physicians. Furthermore, two providers indicated that they would like to see the use of a standardized scoring system and agreed upon clinical protocols during handoffs.

Question two asked providers what they would like to see included on a standardized hand-off tool. Of the 48 providers that completed the pre-test, 18 did not respond to or responded with “I don’t know” to the question. Sixteen providers indicated that they would like to see improved thrupt of the ED, improvement in articulating patient pertinent data PMH, History of Present Illness (HPI) matching assessment and plan, more smooth and more effective transition from ED to inpatient unit, criteria for admission, accuracy in the handoff process, complete workup, proper triage for patients in terms of appropriate level of care, complete understanding of the clinical picture, and assurance that the proper specialists or consultants are on the case in order to provide appropriate level of care at the facility. Six of the providers wanted to see a list of potential differential diagnosis provided to the inpatient team that is supported by ED provider’s workup, an official statement about the patient’s severity of disease and level of care than may be needed, less patients admitted to the incorrect acuity of care and less unstable patients admitted to the floor, and clear and working diagnosis. Two providers indicated that they would like less pushback regarding admissions, and less pushback on standard admission as well as less need to contact consultants. Two providers implied that they would like less stress in the process, better communications between providers, and better teamwork between care providers on a patient plan of care. One provider stated they he/she would like continuation of care rather than the feeling of starting over with a new patient (see Table 8).

IT added the I-PASS to the SUNRISE electronic system for the providers use. Providers then documented the I-PASS handoff in the SUNRISE system. The IT representative was able to

provide reports on the percentage of the I-PASS tool use every two weeks. The percentage of I-PASS tool use by the provider ranged 48.8% to 64.7% with peak usage in the last block of implementation (see Table six).

Table 6

Percentage of I-PASS tool Use

11/22/21-12/5/21	48.8%
12/6/21-12/19/21	51.54%
12/20/21-1/2/22	59.7%
1/3/22-1/16/22	54.39%
1/17/22-1/30/22	53.3%
1/31/22-2/13/22	54.51%
2/14/22-2/22/22	64.7%

This report from IT allowed the project leader to provide additional education on the tool and encourage use when needed throughout the project.

The COVID 19 pandemic and staffing were barriers to improved provider satisfaction and improved wait time. COVID 19 cases increased in the hospital from 25% of cases on 11/21 to 60% on 11/25/22-2/25/22, which is 35% increase when the DNP project took place. Nurse staffing levels also declined during this period. Nursing vacancy was 16.6% with nursing staff turnover of 24.29 % during the time the DNP project was implemented compared to 8-12 % on

nursing vacancy last year. These events could negatively impact the project implementation due to providers being overwhelmed with COVID 19.

Unintended consequences associated with this project were: missing data and hospital change from the SUNRISE electronic system to the Electronic Privacy Information Center (EPIC) electronic documentation system. The transition to EPIC happened after the project implementation, however the preparation for EPIC transition started months before April 1st during the DNP project implementation. The EPIC program is used not only at the community hospital, but system wide. The facility where the project took place is now a part of the WVU hospital system. The I-PASS handoff tool was not incorporated into EPIC. With the change in documentation system, the use of the I-PASS tool can no longer be tracked. Additionally, some participants didn't answer the narrative questions or answered with "I don't know".

Discussion and Recommendations

Handoff communication can positively or negatively impact patient outcomes. The I-PASS tool has the potential to decrease gaps in provider communication that result in medical errors and sentinel events. Provider responses to open-ended questions indicate that pre- I-PASS handoff reports sometimes lacked pertinent patient data including PMH, HPI matching assessment and plan, smooth and effective transition from ED to inpatient unit, criteria for admission, complete workup, proper triage for patients in terms of appropriate level of care, complete understanding of the clinical picture, and assurance that the proper specialists or consultants were on the case. Standardized handoff tools, such as I-PASS ensure the inclusion of important data and may therefore decrease medical errors and sentinel events. Furthermore, providers were more satisfied with handoff report after the implementation of the I-PASS tool, which incorporated information on patient illness severity, patient information, action list,

situational awareness and contingency plan, and synthesis by receiver. Findings support the use of the I-PASS tool to standardize patient handoff and include pertinent patient information, therefore decreasing gaps in providers knowledge, medical errors, and sentinel events.

Apker et al. (2007), identified that poor communication during handoff, including inadequate data, insufficient information, omission of data, and unclear information reports between EDPs and HPs can eventually impact patient safety outcomes. Three studies found that all handoff reports should include information on the clinical condition of the patient (Apker et al., 2010; Lawrence et al., 2015; Rosenthal et al., 2017). Similar communication deficiencies among providers were identified in this project, as providers identified lack of inclusion of pertinent data in handoff report. Findings support the significance of having consistent, complete, and accurate patient handoff. The I-PASS tool is a method to provide consistent and adequate interunit handoff communication to decrease providers uncertainty in care and improve patient safety.

This project reinforced the idea that the I-PASS tool is acceptable for use in the ED setting (Heilman et al., 2016). The participants in the study by Heilman et al. (2016) agreed that the I-PASS tool may be adequate to be used in an ED setting with some specific changes to adjust the time constraints and nature of patient care. Responders in this project identified a need for standardized form of handoff from the ED to the inpatient setting. Several findings from this project support feasibility of the I-PASS tool in the ED. Usage of the I-PASS tool during this project was high; tool usage trended up throughout implementation and peak usage was 64.7% at completion of the project. The I-PASS tool contained all the information that providers identified as necessary for proper handoff and was easy to use. Furthermore, survey results support that the providers were more satisfied with handoff after implementation of the I-PASS tool.

One of the major strengths of this project was the feasibility. The I-PASS tool did not cost anything to the organization where the project was implemented. The I-PASS representative allowed the use of the training materials at no cost to the project leader; all providers, regardless of credentials, received the same standardized education on tool use. This standardized training addresses a barrier to standardized patient handoff described in the literature and reinforces the idea that proper education would increase the likelihood of tool use by providers (Alimenti et al, 2019). The project was implemented across various providers including MDs, DOs, PAs, and NPs. The peak usage of the I-PASS tool occurred in the end of the project implementation signifying that the change was becoming permanent and accepted by providers.

The use of the I-PASS tool for handoffs is not only useful for ED to inpatient transfers, but for other transitions in care as well, including hospital to skilled care, hospital to hospital, hospital to home, and transfer between departments. Furthermore, there is an opportunity to sustain this project at the community hospital and expand to larger West Virginia University system that include 20 hospitals. There can be an opportunity to integrate the I-PASS handoff tool into the EPIC system at the other WVU hospitals.

Extant studies provide additional ideas for opportunities to expand this project. Rosenbluth et al. (2018), implied that the implementation of the I-PASS tool decreased rates of medical errors, indicated by 23% and 30% reduction in preventable adverse events. Starmet et al. (2014) also found that medical errors and other adverse events could be reduced by the implementation of a standardized provider handoff tool. While this project did not measure medical errors as an outcome, this measure could be integrated into future projects. Rosenthal et al. (2017) identified five groups of patient related outcomes including clinical complications, escalation of care, and mortality; length of stay; process of care, adverse events, and errors; and

family satisfaction and perception of care. While this project didn't measure clinical complications, escalation of care, and mortality, length of stay, process of care, adverse events, and errors, or family satisfaction and perception of care, these elements could be incorporated into the future projects. Rosenthal et al. (2017) suggested in his research that using multisite, large sample size and high-quality designs would be beneficial. This also could be an important element for further research studies.

Though not statistically significant, patient wait times actually increased after the implementation of the I-PASS tool. Hospital nursing vacancies and the COVID-19 pandemic may have played a part in this outcome. COVID-19 cases increased in the hospital from 25% of cases on 11/21 to 60% on 11/25/22-2/25/22 when the DNP project took place. During the implementation of the project, emergency room visits and hospital admissions increased, while nurse staffing levels declined.

Limitations

The DNP project was implemented in one hospital; therefore, generalizability of findings is limited. Factors that may have influenced internal validity include personal bias, individual desire for change and personal work relationship with participants. Efforts made to minimize and adjust for internal validity included identifying personal bias and developing methods to decrease influence of personal bias on the project, such as using a scripted education program. All of the providers received the same training, regardless of the title/position. The surveys were anonymous.

Conclusions

Communication failures between healthcare providers can lead to devastating consequences related to patients' safety and survival. Throughout this DNP project, the EDPs

and the IPs had the opportunity to implement the standardized handoff tool, I-PASS, to improve interunit communications and decrease wait time in the emergency room to the time patients are admitted to inpatient services. Findings from this project support the need for a standardized handoff tool in ED. Prior to implementation of the tool, providers described missing information, inaccurate information, and incomplete care plans in handoffs. The I-PASS tool addressed these items and was easy to use. Furthermore, providers were more satisfied with handoff procedures after implementation of the I-PASS tool; even despite of difficult work conditions due to the COVID 19 pandemic. Moreover, the use of the I-PASS tool to improve communication, interunits transitions, and patient wait time can also be further evaluated between different hospital providers, between interhospital providers, and between hospital providers and skilled or nursing facilities.

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Appendix A

Figure 1

I-PASS Tool

		
I	Illness, Severity, Diagnosis	<ul style="list-style-type: none"> • Stable, “watcher”, unstable
P	Patient Summary	<ul style="list-style-type: none"> • Summary • Events leading up to admission • Facility course • Plan
A	Action List	<ul style="list-style-type: none"> • To do list • What might happen next shift
S	Situation Awareness and Contingency Planning	<ul style="list-style-type: none"> • Know what’s going on • Plan what might happen
S	Synthesis by Receiver	<ul style="list-style-type: none"> • Receiver summarizes what was heard • Asks questions • Restates key action/to do items

Appendix B

Figure 2

Assessment of Perception of Unstandardized and Standardized Handoff Tool Pre-Test

Thank you for taking the time to complete this survey. Please respond to the questions by indicating your level of agreement with the following statements.

Please provide a little information about yourself by completing the following questions

1. Age:
 21 and Under 22 to 34 35 to 44 45 to 54 55 to 64 65 and Over
2. Years in Medicine/Nursing _____
3. Years in current position at Wheeling Hospital _____
4. Current degree held: MD DO PA NP
5. Usual Shift worked:
 7am-7pm 7pm-7am 7am-3pm 3pm-11pm 11pm-7am
 7am-7pm weekends 7pm-7am weekends or other times

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
The current standard handoff system is an effective means of communication between emergency department providers and inpatient providers.	1	2	3	4	5
The current standard handoff system for transitioning of patient care from emergency department to inpatient service is satisfactory.	1	2	3	4	5
The current standard handoff system between emergency department providers and inpatient providers provides adequate understanding of patient condition.	1	2	3	4	5

The current standard handoff system helps to ensure inpatient provider accountability.	1	2	3	4	5
The current standard handoff system helps to ensure that report is given in a professional manner.	1	2	3	4	5
The current standard handoff system is relatively stress free.	1	2	3	4	5
The current standard handoff system provides opportunities for mentoring/teaching of newer providers.	1	2	3	4	5
The current standard handoff between emergency department providers and inpatient providers provides all the necessary diagnostics results for patient admission.	1	2	3	4	5
The current handoff system includes all the necessary information concerning consultant's involvement in patient care.	1	2	3	4	5
The current standard handoff system provide room for discussing patient safety problems.	1	2	3	4	5
After receiving a handoff, I feel adequately informed about all aspects of my patient condition.	1	2	3	4	5
After receiving handoff, I feel adequately informed about the laboratory results needed for my patient.	1	2	3	4	5
After receiving handoff, I feel adequately informed about the information for the plan of care for a patient.	1	2	3	4	5
After receiving handoff, I feel informed about patient condition.	1	2	3	4	5
In general, interunit handoffs between emergency room providers and inpatient	1	2	3	4	5

providers are completed within a reasonable amount of time.					
There is a need for standardized handoff tool between emergency department providers and inpatient providers.	1	2	3	4	5
There is good teamwork between emergency department providers and inpatient providers	1	2	3	4	5

The following two questions are open ended questions.

Question 1: What if anything is typically missing from handoff reports between providers?

Question 2: If a standardized sign-out process was adopted, what outcomes would you hope could be improved by implementing the process?

Appendix C

Figure 3

Post Intervention Survey

Assessment of Perception of Unstandardized and Standardized Handoff Tool Post-Test

Thank you for taking the time to complete this survey. Please respond to the questions by indicating your level of agreement with the following statements.

Please provide a little information about yourself by completing the following questions

1. Age:

____ 21 and Under ____ 22 to 34 ____ 35 to 44 ____ 45 to 54 ____ 55 to 64 ____ 65 and Over

2. Years in Medicine/Nursing _____

3. Years in current position at Wheeling Hospital _____

4. Current degree held: ____ MD ____ DO ____ PA ____ NP

5. Usual Shift worked:

____ 7am-7pm ____ 7pm-7am ____ 7am-3pm ____ 3pm-11pm ____ 11pm-7am

____ 7am-7pm weekends ____ 7pm-7am weekends or other times

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
The current I-PASS system is an effective means of communication between emergency department providers and inpatient providers.	1	2	3	4	5
The current I-PASS system for transitioning of patient care from emergency department to inpatient service is satisfactory.	1	2	3	4	5
The current I-PASS system between emergency department providers and inpatient providers provides adequate understanding of patient condition.	1	2	3	4	5
The current I-PASS system helps to ensure inpatient provider accountability.	1	2	3	4	5
The current I-PASS system help to ensure that report is given in a professional manner.	1	2	3	4	5
The current I-PASS system is relatively stress free.	1	2	3	4	5
The current I-PASS system provides opportunities for mentoring/teaching of newer providers.	1	2	3	4	5
The current I-PASS handoff between emergency department providers and inpatient providers provides all the necessary diagnostics results for patient admission.	1	2	3	4	5
The current I-PASS system includes all the necessary information concerning consultant's involvement in patient care.	1	2	3	4	5
The current I-PASS system provide room for discussing patient safety problems.	1	2	3	4	5

After receiving a handoff using I-PASS tool, I feel adequately informed about all aspects of my patient condition.	1	2	3	4	5
After receiving handoff using I-PASS, I feel adequately informed about the laboratory results needed for my patient.	1	2	3	4	5
After receiving handoff using I-PASS, I feel adequately informed about the information for the plan of care for a patient.	1	2	3	4	5
After receiving handoff using I-PASS, I feel informed about patient condition.	1	2	3	4	5
In general, interunit handoffs between emergency room providers and inpatient providers are completed within a reasonable amount of time.	1	2	3	4	5
There was a need for standardized handoff tool between emergency department providers and inpatient providers.	1	2	3	4	5
There is good teamwork between emergency department providers and inpatient providers	1	2	3	4	5

There following two questions are open ended question.

Question 1: Have you experienced barriers in using I-PASS tool?

Question2: How frequently is I-PASS handoff tool used in your experience, please give a percentage?

0-25% 26-50% 51-75% 76-100%

Appendix D

Figure 4

Letter of Support



WHEELING HOSPITAL

6/29/21

To whom it may concern:

I am writing this letter in support for Silvia Myndresku's DNP project. The aim of the project is to improve communication and inter-unit transition of care between the emergency department providers and inpatient providers using a standardized handoff tool such as I-PASS. An additional focus is improving wait times. This project will be a benefit to our institution as a potential of improving patient experience, throughput, wait time, and increase providers' satisfaction.

Silvia has permission to conduct this project. Kind regards,

A handwritten signature in black ink that reads 'Heidi Porter'.

Heidi Porter
Vice President of Quality and Regulatory Affairs