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# Contents

Cover Art: Heaven Can Wait – Lucy Jimenez

Editors .....	1
Mission .....	2
Editorial: Research Dissemination is Essential for Promoting High-Quality Nursing Care <i>Helena Addison, MSN, RN &amp; Christine Langston BSc., BSN</i> .....	3
Code Lavender and Other Holistic Nursing Interventions for the Healthcare Workforce: A Literature Review <i>Su Neyman BSN, RN</i> .....	4–8
Art Submission: “Turning the Page on COVID” <i>Carmencita Vito</i> .....	9
Targeted Temperature Management: A Literature Review <i>Christina P. Raucci BSN, RN, CCRN</i> .....	10–15
A Focus Literature Review of Empathy Training in Nursing Education <i>Jackie Sunkler, MSN, RN, CCRN, SCRN, NPD-BC</i> .....	16–24
Art submission: “Duality of Healing” <i>Francis Cunningham</i> .....	25
Implementation of Standardized Patient Handoff on a Medical Surgical Inpatient Unit <i>Jamie L. Delgado BSN, RN</i> .....	26–38
Acknowledgements .....	39
Call For Manuscripts, Reviewers and Art Submissions .....	40–41

## *Helena Addison, MSN, RN*

### *Editor-in-Chief*



Helena Addison, MSN, RN, is a registered nurse and a PhD candidate at the University of Pennsylvania School of Nursing, in Philadelphia, PA. Ms. Addison earned her bachelor's degree in Psychology at University of Maryland, Baltimore County, graduating Magna Cum Laude. She completed her nursing degree through the Master's Entry in Nursing Program at the Johns Hopkins University School of Nursing. Ms. Addison is passionate about advancing health equity by improving mental health symptoms and health-related quality of life (HRQoL) in trauma-exposed and marginalized populations. Her current research is focused on how incarceration history influences mental health symptom severity, health-related quality of life, health-seeking behaviors, and engagement in health care in formerly incarcerated Black men. Ms. Addison is a Penn Presidential PhD fellow and a Jonas 2021-23 Scholar.

## *Christine Langston BSc., BSN*

### *Editor-Elect*



Christine Langston BSc., BSN is a PhD student who joined the Penn Nursing community as an ABSN-PhD Hillman Scholar in Nursing Innovation after earning a Bachelor of Science in Biology from Oakwood University in Huntsville, Alabama. In 2020, she earned her Bachelor of Science in Nursing Degree through the ABSN Program at Penn, graduating Magna Cum Laude. Christine's research focuses primarily on improving the standards of care for patients with serious mental illness, promoting healthy living across the lifespan and ensuring that each person receives care that is tailored to their unique needs. She is specifically interested in nursing as an intervention for increasing health outcomes for patients of color, how the relationship between nurse work-environment impacts patient health outcomes, and how the Nurse Practitioner practice restrictions impact care in disadvantaged communities. Ms. Langston is a T32 Fellow in the Center of Health Outcomes and Policy Research and a Leonard Davis Institute Associate Fellow.

## *Mission*

The Journal of Nursing Doctoral Students Scholarship (JNDSS) is a scholarly publication dedicated to the development of nursing doctoral student scholarship and the advancement of nursing science. This journal is peer reviewed by doctoral students, edited by doctoral students and targeted towards health practitioners, educators, scientists and students. This journal has both a professional and an educational mission. First, to serve the profession, each issue features articles that represent diverse ideas, spark intellectual curiosity, and challenge existing paradigms. Doctoral students will have an opportunity to explore and analyze issues and ideas that shape healthcare, the nursing profession and research around the world. Second, to fulfill its educational mission, doctoral students will be trained in the editorial and administrative tasks associated with the journal's publication and assisted in preparing original manuscripts for professional publication. This journal will be evidence of the scholarly development of nurse scientists.

# Editorial: Research Dissemination is Essential for Promoting High-Quality Nursing Care

*Helena Addison MSN, RN and  
Christine Langston BSc., BSN*

High-quality nursing care is characterized by safe, detail-oriented, empathic and patient-centered service. Patients who receive high quality nursing care experience fewer emergency department visits, reduced hospitalizations, shorter lengths of stay, and improved satisfaction with their care. For the past 20 years, nursing has been rated as the most trusted profession. To many, we are angelic (*Cover Art: Heaven Can Wait – Lucy Jimenez*), but despite this extraordinary characterization of nurses and the nursing profession, there are also many challenges and imperfections. Racism, burnout, and rapidly changing practice guidelines are just a few issues that plagues nursing practice and impedes the high-quality care that we nurses strive to provide to patients, families, communities, and one another. As we work to ameliorate these issues and advance nursing as a whole, we must recognize the students, scholars, and emerging thought leaders that contribute to productive discourse by writing and disseminating their work.

The Journal of Nursing Doctoral Student Scholarship provides an avenue for both PhD and DNP students to share their ideas and the products of their ongoing research and scholarship. The scholars included in this 9th edition of JNDSS have addressed issues related to nursing education and quality, evidence-based practice and we are enormously proud of their work and grateful for their contribution. We greatly appreciate the many nursing doctoral student who volunteered to serve as peer reviewers, often offering thoughtful and multifaceted feedback to authors to strengthen their manuscripts. To the authors not included in this edition, your work is important – continue to write, submit, revise, and resubmit your manuscripts to ensure your voice is heard. We are grateful to the creative artists that submitted original and intriguing artwork to be included in this edition. And finally, we are immensely appreciative of the staff at the University of Pennsylvania School of Nursing and the Penn Libraries for their tremendous support to ensure this journal is properly produced and accessible to anyone interested in the work of nursing doctoral students.

# Code Lavender and Other Holistic Nursing Interventions for the Healthcare Workforce: A Literature Review

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## Abstract

Holistic nursing has a long history of being implemented in patient care to improve health outcomes. In 2008 the Cleveland Clinic created a holistic crisis tool known as code lavender to provide care and support for health care professionals. Since then, code lavender and holistic interventions for employees have been implemented in numerous health facilities to decrease stress, burnout, and turnover of their employees. This manuscript will serve as a literature review on the effects of code lavender and holistic nursing within the workplace through analysis of both qualitative and quantitative studies.

## Introduction

Healthcare employees in inpatient settings often work in high demand situations under less-than-ideal circumstances. Over the past two years, the pandemic has caused the workforce to be stretched thin putting coworkers at risk for stress and burnout. Prolonged feelings of burnout without proper stress management can lead to irrational thinking processes which will ultimately affect quality of work and patient care (Balevre, 2001). Holistic nursing is a model used daily in patient care to improve overall outcomes of mind, body, and spirit. Code lavender was originally created by the Cleveland Clinic in 2008 as a holistic crisis tool to support health care workers when a stressful event or series of stressful events occur within the hospital (Stone, 2018). Like other codes within facilities, code lavender is considered an urgent crisis and warrants for immediate response from a trained holistic response nurse. Holistic response nurses are specially trained in therapeutic communication, de-escalation, reflective dialogue, as well as verbal and nonverbal empathy to help process and alleviate these feelings that are caused by stressful situations. Other holistic interventions that a code lavender can provide include nourishment, aromatherapy, and healing touch. The interventions used within each code are individualized based on the situation and needs of the person in crisis. Holistic interventions have shown restorative effects on healthcare workers by promoting feelings of comfort and caring (Longo, 2011). The purpose of this literature review is to explore the effects of code lavender or holistic nursing interventions on healthcare workers in times of stress and crisis.

## Methods

The original PICO question served as a foundation for the literature search. *In healthcare workers experiencing crisis, what are the effects of code lavender and other holistic interventions?* First, defining terms were determined for search purposes. These terms were then searched on various research databases to find applicable litera-

ture. The literature found from the search was further examined to meet inclusion and exclusion criteria. The literature that met criteria was further organized into a table by the study design, population, interventions, and findings (see figure 1).

### Inclusion Criteria

The free-text terms *code lavender*, *team lavender*, and *holistic response nursing* were all used on CINAHL to find a total of 25 articles. The MeSH terms *holistic nursing* and *nursing stress* were used on PubMed and 18 articles were found as a result. The included articles were all full-text and peer-reviewed. Additionally, the articles were nurse-centered and related to holistic nursing interventions. The dates of the articles included ranged from 2011 to 2018. In total, 43 articles were found (25=CINAHL, 18=PubMed) before applying the exclusion criteria.

### Exclusion Criteria

22 records were excluded in the screening stage after removing duplicates. 12 of these articles were excluded for focusing on the wrong population. 10 more articles were excluded for being unrelated to holistic nursing. Out of the 17 records that were further assessed for eligibility, 10 more records were excluded for being patient-centered and not peer-reviewed. The search ended with seven articles that were peer-reviewed and fully relatable to the topic of holistic interventions for nurses. Out of the seven articles, four included primary research that was analyzed in depth for their study design, population, interventions, and findings as shown in Figure 1. The remaining three articles were used to support evidence.

### Findings

#### Feeling Supported and Cared For

Holistic nursing is an intervention that makes healthcare workers feel supported and cared for (Davidson et al., 2017; Graham et al., 2019). In a study done by Davidson et al. (2017), care kits filled with words of comfort, chocolate, and essential oils were passed out to staff to see how feelings of support would be affected. Similarly, in a study done by Graham et al. (2019), trained staff members from the hospital made rounds providing emotional support to coworkers. These studies are highly comparable as they both used qualitative and quantitative research methods conducted within the same hospital using the same tools of measurement. The sample group in both studies included 500 critical care staff members from the neonatal intensive care unit, medical intensive care unit, emergency department, and the telemetry unit. The difference between these studies is that one study used emotional interventions only (Graham et al., 2019) and the other passed out physical care kits filled with comfort items such as candy, chocolate, essential oils, and motivational quotes (Davidson et al., 2019). After implementing these interventions, two surveys were given in both studies. The first survey used 10-point Likert scales to question the incidence of work-related stress, general job satisfaction, and the emotion of feeling cared for in the workplace. The second survey used the Professional Quality of Life scale, a 30-point item scale to measure compassion satisfaction, burnout, and secondary traumatic stress (Davidson et al., 2017). In both studies, the surveys were given at baseline prior to the intervention and three months after implementation. The results of this study were similar as in both studies, healthcare workers reported high levels of stress in the workplace. In Graham et al. (2019), workers reported that 59 percent of their overall stress is from the workplace. Both studies showed that the holistic interventions did not affect their feelings of burnout, secondary trauma, or compassion satisfaction but both samples found the interventions to be helpful in improving their emotions of feeling cared for. Longo (2011) also conducted a qualitative study with a small sample group of 13 nurses who were recruited from critical care units, the emergency department, and medical surgical units. The purpose of this study was to explore what nurses considered to be “caring behaviors” in the workplace, which is shown to be linked to providing better care towards patients (Longo, 2011). The interventions used to determine the caring behaviors included three focus groups led by a trained nurse researcher.

The conversations were guided by three questions regarding nurse managers caring for staff nurses, nurses caring for other nurses, and the subject caring for their peers. Results of this study showed that nurses feel cared for through help and appreciation which both can be provided through code lavender.

### Decreasing Stress Through Holistic Interventions

Vaclavik et al. (2018), conducted a qualitative study on the effects of code lavender and mindfulness interventions on stress levels in a sample of 53 oncology nurses. The purpose of this study was to implement ways to reduce stress and moral distress in the workplace. Care kits filled with chocolate, essential oils, and other holistic inspired items were given to 53 nurses on an oncology unit. Additionally, mindfulness techniques were taught to the nurses. The nurses completed a survey with the 21-item Moral Distress Scale-Revised before and after the interventions. The findings from the completed scales showed that holistic and mindfulness interventions decreased nurse perceptions of distress by 20% (Vaclavik et al., 2018).

### Clinical Application

Code lavender is an intervention used when challenging situations threaten unit stability, personal emotional equilibrium, or professional functioning. Burnout has been shown to be common in caregivers which puts the nursing population at a high risk (Duquette et al., 1994). The healthcare workforce can be a demanding environment leaving little time for breaks and recuperation. In a study conducted by Graham et al. (2019), healthcare workers reported that over half of their overall stress comes from their workplace. Workdays in the inpatient setting consist of long hours around the clock for up to 16 hours a shift in situations such as mandatory upstaffing. The combination of rapid workflow at extended durations puts employees at high risk for fatigue and stress. Stressful work environments increase feelings of burnout (Duquette et al., 1994). Although there is no simple fix for these situations, initiating code lavender interventions has shown to significantly decrease levels of perceived stress in healthcare workers (Davidson et al., 2017; Vaclavik et al., 2018). Although additional studies need to be conducted, more money invested into existing coworkers through programs such as holistic response nursing or code lavender may increase job longevity and overall coworker satisfaction. (Duquette et al., 1994).

### Conclusion

Code lavender increases feelings of being cared for and emotionally supported in healthcare workers (Davidson et al., 2017; Graham et al., 2019; Longo, 2011). Feelings of support within the workplace boost morale, job satisfaction, and the care provided towards patients. Patient tragedies happen often in the inpatient setting which can lead to moral distress and secondary trauma as a result (Davidson et al., 2017). Many of these cases are complex and without the proper social support and active coping skills, healthcare workers are at a high risk of experiencing burnout (Duquette et al., 1994). The studies included in this analysis show that initiating code lavender and holistic interventions result in decreased stress levels of healthcare workers dealing with crisis (Vaclavik et al., 2018), and improves feelings of being supported and cared for (Davidson et al., 2017; Graham et al., 2019; Longo, 2011).



Figure 1. Table of Research Findings

Title	Study design	Population	Intervention	Findings
Davidson et al. (2017). Code Lavender: Cultivating intentional acts of kindness in response to stressful work situations.	Qualitative/ Quantitative study	500 staff members from NICU, MICU, tele, and ER.	Code lavender kits filled with words of comfort, chocolate, essential oils, and employee resource referrals passed out to staff	43% of nurses reported a stressful event at work over last 3 months. 100% of nurses who received Code lavender intervention found it helpful and 84% would recommend it to others. No significant changes demonstrated in ProQOL (professional quality of life) Scores or job satisfaction, however emotion of feeling cared for improved.
Graham et al. (2019). Testing of a caregiver support team	Qualitative/ Quantitative study	500 staff members in the NICU, MICU, tele, and ER.	Trained staff members from hospital made rounds providing emotional support to coworkers	59% of stress is caused by workplace. 100% found it helpful and 100% would recommend. No significant changes demonstrated in ProQOL (professional quality of life) Scores or job satisfaction, however emotion of feeling cared for improved.
Vaclavik et al. (2018). Moral distress: Using mindfulness-based stress reduction interventions to decrease nurse perceptions of distress.	Qualitative/ Quantitative Study	56 oncology nurses	Moral Distress Scale- Revised (MDS-R) was given to oncology nurses before and after use of guided mindfulness interventions and care kits	The results from the MDS-R scales showed that before the intervention 53% of the nurses stated their levels of distress were “distressing” when going through a distressing situation. The post results show that 33% of the participants stated their levels of distress as “distressing.” Mindfulness interventions decreased nurse perceptions of distress.
Longo (2011). Acts of caring: Nurses caring for nurses.	Descriptive, Qualitative Study	13 inpatient registered nurses from Medical-Surgical, ER, and Critical Care units	3 guided focus groups were held with guided topics regarding nurses caring for other nurses	The findings suggest that nurses demonstrate caring behaviors towards their colleagues after knowing them both personally and professionally. Nurses feel cared for through help and appreciation.
Balevre (2001). Professional nursing burnout and irrational thinking	Qualitative/ Quantitative Study	192 nurses in a large urban hospital setting	Rational Emotive Behavior Therapy used in nurses to examine maladaptive thinking patterns related to burnout and address them through stress management programs	Regular stress management programs can foster professional growth and development, decrease workplace conflict, and stress, and provide health-care workers with strategies to prevent burnout
Duquette et al. (1994). Factors related to nursing burnout: A review of empirical knowledge.	Literature review of 15 studies regarding nursing burnout	N/A	N/A	The findings from this literature review highlight that role ambiguity, workload, age, hardiness, active coping, and social support are the largest correlates of nursing burnout

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In the midst of the COVID-19 aftermath, the sun continues to shine through a valley of clouds and provide light to the city of Philadelphia.

- Carmencita Vito, DNP student at University of Pennsylvania School of Nursing

Art Submission: "Turning the Page on COVID"

*Carmencita Vito*

# Targeted Temperature Management: A Literature Review

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## Abstract

Targeted temperature management (TTM) following cardiac arrest may help improve neurologic outcomes. Currently, a target temperature between 32°C and 36°C is recommended over 24 hours for post-cardiac arrest patients. Recent studies have shown variable outcomes for patients who reach a target temperature of hypothermia (32°C to 34°C) versus controlled normothermia (36°C to 37°C). Appropriate temperature goals for optimal patient outcomes are still debatable. This literature review examines how a TTM goal of hypothermia versus controlled normothermia following cardiac arrest affects neurologic outcomes. TTM adverse events and lack of protocol adherence were also discussed.

## Targeted Temperature Management: A Literature Review

Cardiac arrest is considered a public health crisis, affecting more than 356,000 people a year (Tsao et al., 2022). Anoxic brain injury is a common cause of mortality following cardiac arrest. During cardiac arrest a reduced oxygen supply causes anoxic brain injury and cellular necrosis or death (Duggelin et al., 2020). The American Heart Association (AHA) recommends targeted temperature management (TTM) therapy as the standard of care for patients who are unable to follow commands after cardiac arrest (Panchal et al., 2020).

Using hypothermia to improve patient recovery has been of interest to researchers for centuries (Bohl et al., 2019; Omairi & Pandey, 2021). Entire body hypothermia as a treatment for systemic illness is credited to the Hippocratic School, where patients get covered in wet mud. The areas that dried the fastest, due to more heat, were considered to be infected or diseased (Bohl et al., 2019). In the 1930s, Temple Fay of Temple University in Philadelphia, PA, completed research in the lab to analyze the effects of hypothermia on preserving tissue and later introduced hypothermia to the modern medical era (Bohl et al., 2019; Omairi & Pandey, 2021). In the 1990s, mild hypothermia was found to be associated with fewer adverse side effects, compared to moderate hypothermia, as a treatment for traumatic brain injury and intracranial hypertension. By the 2000s, trials began to show improved neurologic outcomes for cardiac arrest survivors with anoxic brain injury.

Hypothermia reduces the metabolic rate creating a decrease in anaerobic metabolism (Pandey, 2021). Anaerobic metabolism causes a build-up of waste products, such as lactate, that lead to cell necrosis and death. Hypothermia also helps to suppress the inflammatory process. The inflammatory process can be both beneficial and harmful. A prolonged inflammatory response can worsen brain injury (Johnson et al., 2020; Omairi & Pandey, 2021).

Targeted temperature management may improve neurologic outcomes and reduce mortality rates (Johnsson et al., 2020). An average body temperature ranges from 36.1 to 37.2 degrees Celsius (Omairi & Pandey, 2021). TTM therapy causes a controlled reduction in body temperature. TTM therapy uses surface cooling systems

that require external cooling pads or core cooling systems that require intravascular devices. A target temperature between 32°C and 36°C is recommended over 24 hours for post-cardiac arrest patients (Panchal et al., 2020).

Over the last 15 years, TTM therapy is used for post-cardiac arrest patients despite limited and uncertain supporting evidence (Dankiewicz et al., 2021; Johnsson et al., 2020). TTM therapy and appropriate temperature goals for optimal patient outcomes are still debatable. For this literature review, a target temperature 32°C to 34°C Celsius will be part of the hypothermia group. Target temperature of 36°C to 37°C will be part of the controlled normothermia group. This literature review examines how the TTM goal of hypothermia versus controlled normothermia following cardiac arrest affects neurologic outcomes.

### Synthesis of Literature

The following databases were used to complete a literature search: Google Scholar, The Cochrane Library (the leading resource for systematic reviews in healthcare), PubMed, Scopus, and Ovid. Electronic versions of the *Circulation Journal* published by the American Heart Association (AHA) and *The Journal of Neurosurgery* (JNS) published by the American Association of Neurological Surgeons were also searched. Terms used to search for literature included a combination of “TTM,” “33°C versus 36°C,” and “neurologic outcomes.” To ensure the most current research was evaluated articles were limited to publication after 2017. Exclusions included pediatric studies and animal studies. After finding 30 articles, 18 were excluded because they did not address any temperature goals or neurologic outcomes. After narrowing down 12 research articles five were excluded because the results were not evaluated at hospital discharge. The seven remaining articles had three different themes appear. The three themes discovered included neurologic outcomes, the occurrence of adverse events, and changes in TTM utilization.

### Neurologic Outcomes

The Cerebral Performance Categories (CPC) scale was commonly used to assess neurologic functioning following TTM therapy to compare the effects of hypothermia versus controlled normothermia in post-cardiac arrest patients. The CPC scale has five categories that classify patients based on neurologic function (Stammet et al., 2017). CPC scores of 1 and 2 are considered good or favorable neurologic outcomes with normal function and minor to moderate disability (Johnson et al., 2020; Johnsson et al., 2020; Stammet et al., 2017). CPC scores of 3 to 4 are considered poor neurologic outcomes with severe disability or a vegetative state. A deceased person is regarded as having a CPC score of 5.

Several studies compared hypothermia versus controlled normothermia and the effects on neurologic outcomes at hospital discharge following TTM therapy (Duggelin et al., 2020; Johnson et al., 2020; Johnsson et al., 2020). All three studies used CPC scores to evaluate neurologic outcomes. Duggelin et al. (2020) and Johnsson et al. (2020) completed retrospective observational studies and used CPC scores to evaluate neurologic outcomes at hospital discharge.

Duggelin et al. (2020) conducted a retrospective observational study from 2012 to 2016 assessing CPC scores of 162 patients at hospital discharge. Sixty-nine patients were part of the TTM 33°C (hypothermia) group, and 64 patients were part of the TTM 36°C (controlled normothermia) group. Both the hypothermia and the controlled normothermia groups showed similar results of good neurologic outcomes. In the hypothermia group 34% had a CPC score of less than 3 and in the controlled normothermia group 46% had a CPC score of less than 3. Johnsson et al. (2020) also completed a retrospective observational study. They found that the hypothermia group of 389 out of 1242 patients (31.3%) had good neurologic outcomes and the controlled normothermia

group of 135 out of 468 patients (28.8%) had poor neurologic outcomes.

Johnson et al. (2020) conducted a retrospective before and after cohort study to compare hypothermia versus controlled normothermia and neurologic outcomes at hospital discharge. Before April 2014, the TTM goal temperature of 33°C (hypothermia) was standard. Two hundred fifty-eight cardiac arrest patients before April 2014 were put on TTM therapy with a goal of 33°C. One hundred ninety-five cardiac arrest patients after April 2014 were put on TTM therapy with a goal of 36°C. Neurologic outcomes for both groups were evaluated using CPC scores. However, Johnson et al. (2020) found that the hypothermia group had a 79% higher likelihood of neurologically favorable results than the controlled normothermia group (odds ratio 1.79; 95% CI, 1.09-2.93).

The increased likelihood of favorable neurologic outcomes for the hypothermia group may be related to patient characteristics, time to goal temperature, or differentiation in cardiac arrest care (Johnson et al., 2020). Johnson et al. (2020) stated that it took only 1.5 hours to begin TTM therapy for the hypothermia group compared to 3.5 hours to begin TTM therapy for the controlled normothermia group. Differences in timing of CPR, witnessed arrest, and initial rhythm may also have played a role in the increased likelihood of favorable neurologic outcomes for the hypothermia group.

Duggelin et al. (2020) and Johnson et al. (2020) completed studies at single centers, creating a limited sample size. Johnsson et al. (2020) used the International Cardiac Arrest Registry 2 (INTCAR2), which provided information about post cardiac arrest care, from multiple centers allowing for a larger sample size. It is also worth mentioning that devices used for TTM therapy varied in the different studies. Duggelin et al. (2020) completed treatment using an intravascular cooling device. Johnson et al. (2020) completed treatment using external cooling pads and intravascular cooling devices. Johnsson et al. (2020) did not specify which cooling devices were used.

Hospital characteristics, like having an interventional radiology program or specializing in cardiac arrest care, may affect patient outcomes following TTM therapy (Johnson et al., 2020; Johnsson et al., 2020). Hospitals specializing in cardiac arrest care may have different results than other hospitals. Bias and data misinterpretation are also limitations discussed following the studies (Duggelin et al., 2020; Johnson et al., 2020; Johnsson et al., 2020). When completing a retrospective observational study, there is always a possibility of incorrect data interpretation and documentation. CPC scores rely on documented data, and assessment of CPC scores may be subject to bias.

### Adverse Events

A common theme found while completing this literature review was the occurrence of adverse events during TTM therapy (Dankiewicz et al., 2021; Duggelin et al., 2020; Johnsson et al., 2020). Adverse events of cardiac function including hemodynamic instability, characterized as low blood pressure, and arrhythmias characterized by low heart rate, were commonly discussed as having a significant effect on TTM therapy. Adverse events also included pneumonia, bleeding, and sepsis (Dankiewicz et al., 2021; Duggelin et al., 2020; Johnsson et al., 2020).

Three studies had similar findings of arrhythmia leading to hemodynamic instability being more common in patients receiving targeted hypothermia therapy (Dankiewicz et al., 2021; Duggelin et al., 2020; Johnsson et al., 2020). Dankiewicz et al. (2021) found that 24% in the hypothermia group versus 17% in the normothermia group ( $P < 0.001$ ) had arrhythmias with hemodynamic instability. Similarly, Johnsson et al. (2020) explain that the hypothermia group had a greater incidence of instability compared to the controlled normothermia group

leading to discontinued TTM therapy (n=58, 4.9% versus n=8, 1.7%,  $p < 0.001$ ). Duggelin et al. (2020) also had similar findings of increased arrhythmia in the hypothermia group. Arrhythmia during TTM therapy occurred in 78% of patients in the hypothermia group and 66% of patients in the normothermia. Arrhythmia may be more common among the hypothermia group due to increased fluid shifts, electrolyte changes, and the effects of low temperature on cardiac function (Dankiewicz et al., 2021).

Another adverse event that occurred is pneumonia and may be characterized by having new or progressing infiltrates on chest x-ray, a fever greater than 38°C, high white blood cell count, or increased infected secretions within the first 72 hours from admission (Johnsson et al., 2020). Pneumonia occurred in 38.4% of patients in the hypothermia group compared to 37.1% of patients in the controlled normothermia group. Duggelin et al. (2020) found that pneumonia occurred in 42% of patients in the hypothermia versus 44% in the normothermia group. No statistically significant difference was found between the two groups related to the incidence of pneumonia (Dankiewicz et al., 2021; Duggelin et al., 2020; Johnsson et al., 2020). Sepsis and bleeding were also listed as adverse events, but no difference was found when comparing the two groups.

### TTM Utilization

Five research studies discussed TTM trends and protocol adherence. (Bradley et al., 2018; Khera et al., 2018; Duggelin et al., 2020; Johnson et al., 2020; Salter et al., 2018). In 2013 the TTM trial was published and found that outcomes were no different for a patient who reached a target temperature of 33°C compared to patients who achieved a target temperature of 36°C (Nielsen et al., 2013, as cited in Salter et al., 2018). This trial led to changes in practice and TTM protocols, including the national cardiac arrest guidelines recommending a target temperature range from 32°C to 36°C (Salter et al., 2018).

Salter et al. (2018) completed a retrospective cohort study to examine knowledge interpretation after the post-cardiac arrest care guideline changes. This large study included 4,450 patients in the pre TTM trial group and 5,184 patients in the post TTM trial group. Patients who reached a goal temperature of less than 34°C (hypothermia) declined from 57.1% to 24.8% following the TTM trial in 2013. The guideline changes in target temperature brought on an increased incidence of fevers. Fever could possibly cause an increased risk of death and poor neurologic outcomes in post-cardiac arrest patients. Reduced protocol adherence following the TTM trial correlates with an increased occurrence of fevers due to the higher target temperature of 36°C. Multiple authors found that following the publication of the TTM trial in 2013, protocol adherence declined (Bradley et al., 2018; Khera et al., 2018; Johnson et al., 2020).

Bradley et al. (2018) used the Cardiac Arrest Registry to Enhance Survival (CARES) to conduct a retrospective cohort study to assess TTM utilization trends. The CARES registry provides data collected from communities on cardiac arrest outcomes. This study was conducted from January 2013 to December 2016 and included 45,935 patients. In 2013 TTM use for post cardiac arrest patients at hospital admission was at 52.5%, and by the beginning of 2014, TTM use dropped to 46% and continued to stay below 46.5% for the rest of the study period. TTM utilization had an 18% reduction from the end of 2013 to the start of 2014 (OR 0.82; 95% CI, 0.71-0.94;  $p = .006$ ). It is worth noting that reduced TTM use did not strongly correlate with mortality rates at patient discharge. Similarly, Khera et al. (2018) and Johnson et al. (2020) found a reduction in TTM adherence. A retrospective before and after cohort study completed by Johnson et al. (2020) found a 32% reduction in TTM use in emergency departments, and initiation of TTM also declined after the guideline changes were introduced in 2013 (Johnson et al., 2020).

Khera et al. (2018) completed a multicenter prospective cohort study from May 2012 to October 2015. Out of

8,313 patients included in the study, 2,878 patients received TTM therapy. As the study continued, the use of TTM therapy continued to decline. In 2012 57.5% of post cardiac arrest patients received TTM therapy and by 2015 TTM use decreased to 26.5% ( $p < 0.001$ ). Deviations from TTM protocol and practice recommendations during the study were also discovered. Deviations from TTM protocol included a delay in starting therapy, a shorter duration of therapy of fewer than 24 hours, and temperatures reaching less than 32°C. Of patients who received TTM therapy the median rate of deviation from one or more TTM protocol recommendations was 60%.

Alternatively, Duggelin et al. (2020) mention an increase in protocol adherence. The controlled normothermia group with a target temperature of 36°C had better compliance than the hypothermia group with a target temperature of 33°C. Increased compliance may be due to the use of the intravascular cooling device and the fact that reaching a controlled normothermia range is more easily attainable. The reduced adherence for the hypothermia group may also be related to adverse events such as arrhythmias like bradycardia and hemodynamic instability leading to a discontinuation of therapy.

### Summary

The literature review examined how a TTM goal of hypothermia versus controlled normothermia following cardiac arrest affects neurologic outcomes (Duggelin et al., 2020; Johnson et al., 2020; Johnsson et al., 2020). Duggelin et al. (2020) and Johnsson et al. (2020) both found no significant difference between the hypothermia group versus the controlled normothermia group. Johnson et al. (2020) found an increased likelihood of good neurologic outcomes for the hypothermia group; this may be related to patient characteristics, time to goal temperature, or differentiation in cardiac arrest care.

During this review, adverse events and changes in utilization of TTM therapy were discovered. Adverse events included arrhythmias, hemodynamic instability, pneumonia, bleeding, and sepsis. Dankiewicz et al. (2021), Duggelin et al. (2020), and Johnsson et al. (2020) all discovered arrhythmias and hemodynamic instability were significant adverse events that occurred more frequently during hypothermia.

Bradley et al. (2018), Khera et al. (2018), Johnson et al. (2020), and Salter et al. (2018) all found that TTM protocol adherence and TTM utilization decreased by about 30% following the TTM trial published in 2013. Changes in TTM utilization showed an increased risk of fever in the controlled normothermia groups. Fever is thought to be associated with poor neurologic outcomes or even death (Duggelin et al., 2020; Johnson et al., 2020; Salter et al., 2018).

Guidelines recommend using TTM for patients who cannot follow commands after cardiac arrest. A target temperature between 32°C and 36°C is recommended over 24 hours (Panchal et al., 2020). Hypothermia versus controlled normothermia is still debatable, and quality research is limited (Johnsson et al., 2020). Hypothermia seems to cause arrhythmia and hemodynamic instability. Following the TTM trial reduced utilization was found along with increased occurrence of fever. Thus far, there appears to be debatable evidence regarding neurologic outcomes and hypothermia versus controlled normothermia. It may be beneficial to continue researching different target temperatures and the effects on neurologic outcomes months to years after hospital discharge, as neurologic function may continue to improve over time.



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# A Focused Literature Review of Empathy Training in Nursing Education

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## Abstract

**Background:** Many occupations conduct empathy training, offering professionals such as physicians and lawyers numerous positive benefits. Empathy is a key component in healthcare settings, where nurses are required to conduct difficult conversations with patients and their families, yet empathy training among nursing students is understudied.

**Aim:** This literature review examined recent research to identify potential gaps in nursing education in the topics of empathy and emotional intelligence.

**Methods:** A literature search was conducted, using key search terms. Twelve articles were selected based on availability of full text and relevance of abstract to the research aims. The review covered articles published between 2012 and 2020.

**Findings:** This focused literature review identified a distinct lack of empathy training for nursing students in the United States. However, in other professions and countries research has provided evidence that increased empathy is beneficial in a healthcare field to both patients and nurses, achieved by empathy training. Empathy training is often conducted with physicians and with nurses in Australia, South Korea, Spain, Turkey, Greece, and Iran. Only one article was found regarding empathy training for United States nursing students.

**Discussion:** To strengthen nurse-patient relationships and guide nursing education to an enhanced, comprehensive curriculum, future studies should explore the meaning and perceptions of newly graduated nurses around empathy. Improved empathy has the potential to reduce nursing burnout and retention rates.

**Conclusion:** Developing professional empathy can prevent potential adverse patient outcomes by creating a trusting relationship between the patient and the healthcare provider. This skill needs to be stressed in the baccalaureate nursing curriculum.

**Keywords:** empathy, nursing education, empathy training, baccalaureate nursing students, emotional intelligence

Empathy is often learned over time. Rarely does a new nurse step on the job with this essential component of care; rather, the art of empathy requires practice and experience. Experienced and motivated nurses “recognize, interpret and manage emotions in the clinical context, with these emotional intelligence capabilities influencing cognition and reasoning” (Hutchinson et al., 2018, p. 601). This allows nurses to provide quality nursing care, but also decreases the frequency of safety errors. Emotional intelligence and empathy must be paired with experience to make a good nurse. However, patients cannot wait for a nurse to gain experience before they

provide quality care imbued with empathy. Therefore, empathy training and simulation should be incorporated into the nursing curriculum during undergraduate studies. Empathy requires a clear indulgence of one's own emotions, as well as that of others (Jihyun, 2019).

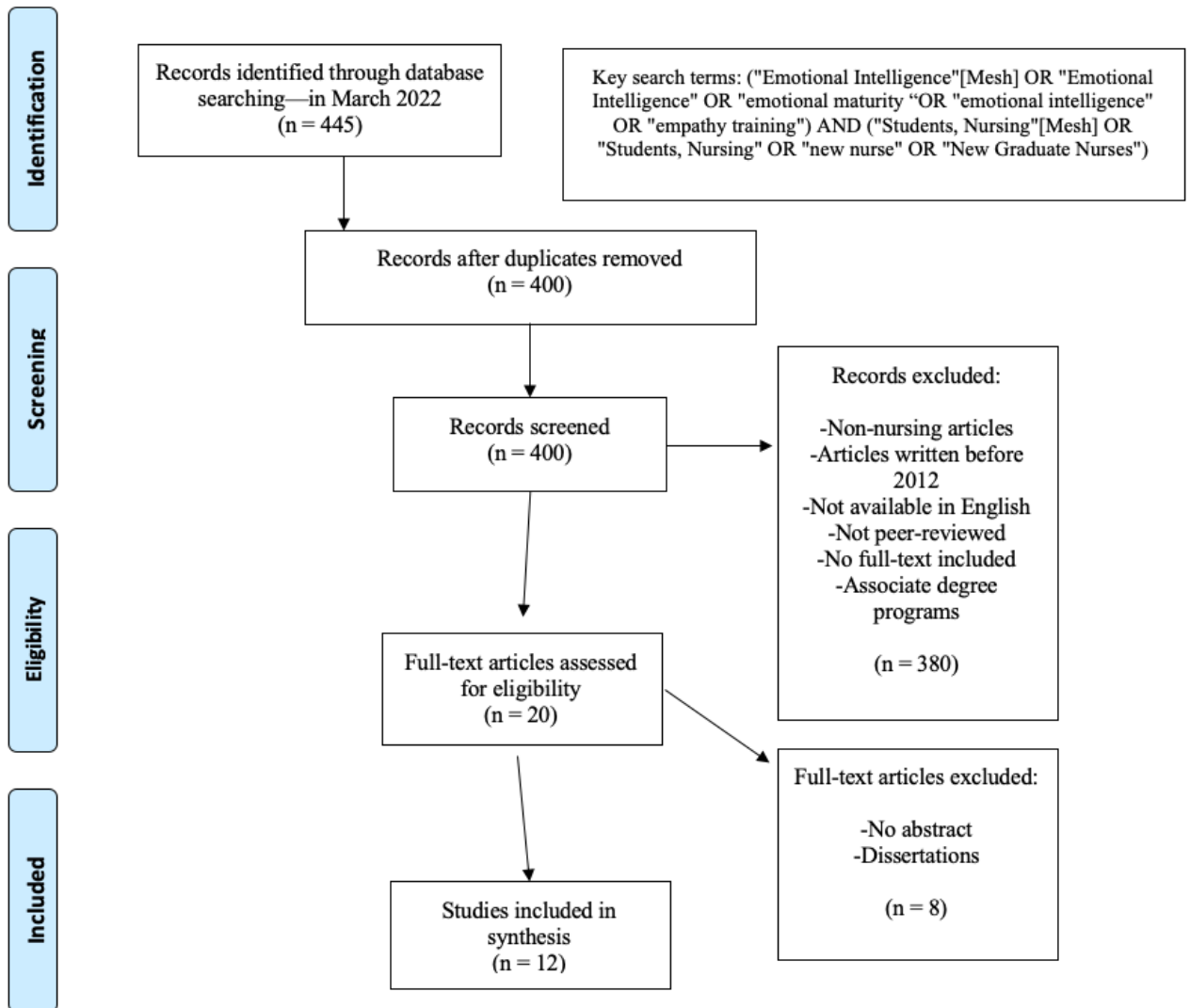
Difficult conversations held with patients and family members require empathy and are often done by the nurse, as the physician has many more patients to see daily. This begs the question, how are we preparing our future nurses to handle these kinds of situations? The topic of empathy is not taught enough in nursing institutions but can arguably be just as important as pathophysiology or med-surg (Honkavuo, 2019). Empathy is not only about what words to say, but body language as well. Sometimes all the patient needs is for someone to sit there quietly and listen. It is about humble inquiry and letting the patient come to their own conclusion. Empathy is about removing all biases and imagining oneself in another's shoes; this is not something that can be taught in one day over a lecture. This is a behavior that is learned over time through experience, and clinical can only provide so many experiences. Empathy builds trust, and trust is imperative in order to have a successful, caring relationship between nurse and patient. If the nurse cannot show empathy, the patient will most likely not trust the nurse. This leads to poor communication and poor patient outcomes (Gonnella et al., 2022, p. 224). The incorporation of meaningful empathy training would benefit both patients and caregivers alike. It is vital that the patient, in any unit and in any scenario, trusts the nurse and feels comfortable sharing information with them. According to Cerit & Beser (2014), nurses have higher emotional intelligence and empathy scores than other professions; however, nurses need this higher level of empathy in order to do their job effectively. Empathy is something that can be taught, and the importance of this education in nursing has been minimalized for far too long. Empathy increases trust, improves patient satisfaction, decreases the use of resources, and in turn can decrease length of stay and costs (Honkavuo, 2019). Thus, to identify gaps in nursing education in the United States, this literature review examined recent research on the topics of empathy and emotional intelligence among nursing programs.

## Methods

A literature search was conducted utilizing the databases CINAHL and PubMed, with key search terms below in the PRISMA diagram. These databases had the most to offer on the topic of empathy training in nursing students. Twelve articles were selected based on availability of full text and relevance of the abstract to the keywords. Impact factors for the journals were also assessed for quality metrics if available, and only journals higher than a score of one were utilized. Non-nursing articles, articles written in languages other than English, articles that were not peer-reviewed, associate degree programs, and dissertations were excluded. This research covered articles published between 2012 and 2020, to keep literature current and within the last ten years. In order to avoid study bias, the author included a study that did not show empathy training to be effective. Based on the results of the focused literature review, the following questions regarding empathy in nursing education became apparent: In nursing education, why is empathy currently not a focus? What would the benefits of empathy training be in a nursing curriculum?



## PRISMA Flow Diagram



## Results

This focused literature review analyzed recent research on the topic of empathy training in nursing students and identified a distinct gap in the literature. Only one article was found regarding empathy training of US nursing students. However, this topic is researched in other professions and countries, providing evidence that increased empathy is beneficial to both patients and nurses, achieved by empathy training. A study conducted by Deane & Faine (2016) in Boston, Massachusetts incorporated Peplau's Theory of Interpersonal Relations to promote holistic communication between older adults and nursing students. Peplau's Theory of Interpersonal Relations emphasizes patient experiences and the profound impact that nurse-patient relationships have on those experiences, including the crucial aspect of empathy. The study found that younger individuals struggle with emotional intelligence, empathy, and holistic communication. Furthermore, since baccalaureate nursing programs have an 84% occupancy of students under thirty years of age, their research indicated a need for intervention with nursing education to aid students in holistic interactions with older adults. Typically, communication skills are only touched upon in lecture at the beginning of nursing programs, which may not be adequate for developing empathy. The researchers recommended something more interactive that utilizes Peplau's Theory of Interpersonal Relations, such as simulation or role play (Deane & Faine, 2016).

One qualitative study on emotional intelligence and empathy in nursing that shed light on the need for more research was conducted in Australia. Hutchinson et al. (2018) held semi-structured interviews with twelve nurses following empathy training in order to see how these nurses employ empathy in their decision making and clinical reasoning. The training program included a mixture of experiential exercises of emotional intelligence capabilities and theoretical information on empathy. The participants were trained and coached throughout a six-hour workshop with follow-up coaching sessions for an eight-week period. Following the completion of the coaching, participants were invited to take part in the individual interviews. By interviewing nurses that have difficult conversations every day, these researchers were able to uncover some themes regarding how they employ empathy and emotional intelligence. Three themes that emerged were the sensibility to engage emotional intelligence capabilities in clinical contexts, motivation to actively engage with emotions in clinical decision making and incorporating emotional and technical perspectives in decision making (Hutchinson et al., 2018).

## Empathy and Competence

As someone increases their capacity to show empathy, their interpersonal competence rises as well (Jihyun, 2019). This descriptive quantitative study conducted out of South Korea included 247 nursing students and examined nursing students' empathy, interpersonal competence, and nurse attributes. Empathy "enables one to respond to others' expectations by understanding their emotions and needs, thereby enabling the construction of an intimate relationship with others by paying attention to and listening to them. Thus, empathy plays an important role in building and maintaining relationships with others" (Jihyun, 2019, p. 132). The vision is that empathy training in nursing programs would enable new nurses to adequately build and maintain these trustful relationships with their patients, thus improving patient care and satisfaction. These new nurses would all have a greater sense and ability to provide empathetic care. Immediately transitioning from orientation to having to have those difficult conversations with patients and family members is a huge issue during the first years in nursing. The end goal and motivation for all stakeholders—including patients, nurses, and clinical instructors—is for the patient to experience excellent and wholesome care (Jihyun, 2019).

Bas-Sarmiento et al. (2017) conducted a quasi-experimental study out of Spain, with an objective to determine the efficacy of an experiential training program for improving the empathy of nursing students in terms of capacity building, empathetic performance, and increased learning perception and retention of the materi-

al. The sample consisted of 48 sophomores in a baccalaureate nursing program over one semester utilizing role play, behavioral assay, and a flipped classroom approach; they were evaluated with a pre- and post-test. Bas-Sarmiento et al. (2017) used Reynold's Empathy Scale (RES) to evaluate students' perception of their own performance and the Consultation and Relational Empathy (CARE) tool to evaluate the patient's perception of the student's empathy. The CARE tool is a patient-rated experience measure regarding the interpersonal quality in encounters with healthcare professionals, such as nursing. The Jefferson scale of Empathy was used to measure the general empathy level in students overall, and the training was proven to be effective. The training consisted of ten two-hour sessions with a follow-up one month after the semester ended.

The overall mean empathy score on the Jefferson Scale of Empathy prior to training was 119.91 (SD = 8.44). For the women, the mean score was 121.07 (SD = 8.53), and for the men, it was 115.50 (SD = 6.75), with statistically significant differences between these scores. After evaluating the participants in the follow-up at one month, there were statistically significant differences between the scores of the observers ( $z = -5.162$ ,  $p = 0.000$ ) and the RES questionnaire ( $z = -4.820$ ,  $p = 0.000$ ) in the pretest and follow-up, showing higher follow-up scores for both cases. Similarly, there were statistically significant differences between the mean scores of the CARE questionnaire in the pre-test and follow-up measurements ( $z = -4.997$ ,  $p = 0.000$ ) and the post-test and follow-up ( $z = -2.298$ ,  $p = 0.022$ ). Therefore, the researchers could conclude that empathy can be learned through both education and practice (Bas-Sarmiento et al., 2017). This study, as well as many of the others, shows statistical significance in empathy training for nursing students, yet the same is not being replicated or studied in the United States.

### Empathy and Emotional Intelligence

Cerit & Beser (2014) conducted a similar study in that its objective was to measure emotional intelligence and empathy in nursing students. The results were comparable and also showed statistical significance. This study was conducted in Turkey and included 183 nursing students. Cerit & Beser (2014) used the Emotional Intelligence Assessment Scale, which has 5 subscales: emotional awareness, managing one's emotions, self-motivation, empathy, and social skills, as well as a 20-item questionnaire. In this study, this scale had a Cronbach's Alpha coefficient of 0.83, showing great validity and reliability. No statistical significance was found between gender, age, and place where the nursing student grew up. Most importantly, the mean scores of the group that received training about emotional intelligence were higher than the group that did not. They also found a statistically significant difference between grades and emotional awareness, marital status and social skill, and financial status and self-motivation. The mean emotional intelligence scores were found to be at a normal level (136.9+21.1). Mean scores of managing one's emotions (28.4+5.3), self-motivation (28.3+5.1), empathy (28.2+5.0), and social skills (26.7+5.0) were at a moderate level, whereas the mean score of emotional awareness (25.3+5.2) was low. As found in the other studies discussed below, these researchers found that at baseline, nursing students have a moderate amount of emotional intelligence, if not less; 52.2% of students had a normal emotional intelligence score, 30.1% had a low score, and 17.4% was high. The conclusion recommended training and studies be conducted in order to improve levels of emotional intelligence and empathy in nursing students due to the difficult conversations they are required to have needing a higher-than-average score (Cerit & Beser, 2014).

A similar study to the one conducted by Cerit & Beser (2014) was piloted by Fountouki et al. (2020) and aimed to look at emotional intelligence scores in nursing students from Turkey and Greece. A survey of 220 students, 110 from each country, was conducted using the Emotional Intelligence Self-evaluation scale. The Turkish students had lower emotional intelligence scores than the Greek students, and in both sets of students they found that gender was a huge factor in emotional intelligence scores, females being higher. This was the one

aspect that had contrasting results to the study done by Cerit & Beser (2014) that found gender to not have any impact on emotional intelligence scores. Fountouki et al. (2020) suggested gender-specific, enhanced training to increase empathy and emotional intelligence in nursing students, with emotional awareness being the first step to building emotional intelligence. They believe that nurses need to build the fundamental skill of controlling one's emotions before emotional intelligence can be improved. A helpful suggestion for future research was the common theme of recommending more time for education and using students at the end of school rather than at the beginning. This is attributed to the increased amount of clinical time and patient interaction towards the end of nursing school. A qualitative understanding of the new nurses' perceptions would greatly validate these findings and help guide further research on the phenomenon. Empathy is essential in any therapeutic relationship between a nurse and a patient, and more training is recommended to be incorporated into the nursing curriculum (Fountouki et al., 2020).

### Teaching Empathy

Another quasi-experimental study that was conducted in Iran utilized 69 nursing students and aimed to investigate the effect of the first-year nursing students' level of empathy. Orak et al. (2016) held eight two-hour sessions over eight weeks to improve empathy scores. However, this study utilized a control group and an experimental group, so only half the students received the training. This uses the same method as the Cerit & Beser (2014) study. The scores were still similar for all, so the education was deemed not effective. These results differed from all five other studies. They recommended that others recreating the study use students in the third or fourth year to investigate how this training benefits them through clinical, and also spread it out over a longer period of time and utilize practice tools such as simulation (Orak et al., 2016).

A study in Boston, Massachusetts evaluated improvement in empathy scores in resident physicians (Riess et al., 2012). This study randomly assigned 99 residents and fellows 60-minute empathy training modules and used the Consultation and Relational Empathy (CARE) measure to measure empathy. The trained group showed a greater increase in emotional intelligence/empathy scores than the control group, so the study was deemed statistically significant. While this study was done with physicians, it could certainly be applied to nursing and, more importantly, should be applied in nursing. It consisted of three 60-minute modules spanned over four weeks, using videos with real-time responses and the Jefferson Scale of Empathy to measure general empathy level in students overall. This scale was used in the Bas-Sarmiento et al. (2017) study as well. The training was grounded in the neurobiology of emotions, which was a different approach than the other studies, but very interesting. They found significant improvement in the ability to decode subtle facial expressions of emotion with the residents, and their suggestion for further research stated a need to do it over a longer period of time (Riess et al., 2012). This suggestion is the same as that from Orak et al. (2016).

### Empathy and Burnout

Levels of empathy not only affect patient outcomes, but nursing outcomes as well; specifically, nurse burnout. According to Hunt et al. (2017), nurses strive for compassion satisfaction, not burnout or compassion fatigue. Unfortunately, these negative outcomes are contagious. The ability to self-regulate emotions during empathic engagement will reduce the risk of burnout and experiencing empathic concern will motivate altruistic action from the nurse (Hunt et al., 2017). In three studies conducted out of Ireland and the United Kingdom—once again contributing to the literature gap on empathy in American nursing literature—it was found that nurses with lower empathy scores reported higher burnout scores in either depersonalization and emotional exhaustion or both. Similarly, Hunt et al. (2017), in a study of physicians, social workers and psychologists, found that those individuals higher in empathy scores reported lower burnout and secondary traumatic stress syndromes. There is extensive literature suggesting a higher level of empathy has a positive correlation in not only patient

outcomes, but nursing outcomes as well (Shao et al., 2018).

### Empathy in Other Medical Professions

Since nursing literature is scarce in regard to empathy training, it is important to look into other healthcare professions and see what is recommended. Released this year, *Fifty Years of Findings from the Jefferson Longitudinal Study of Medical Education (JLSMED)*, by authors Joseph Gonnella, Clara Callahan, Jon Veloski, Jennifer DeSantis and Mohammadreza Hojat, documents a longitudinal study of medical students and graduates in a single medical school. This book found significant associations between scores on the Jefferson Scale of Empathy and measures of clinical competence and patient outcomes. Medical schools are “socially accountable to select qualified applicants with the best potential to become caring physicians, not just those who can successfully pass examinations of recalling factual knowledge” (Gonnella et al., 2022, p. 18). Furthermore, this book analyzed cognitive factors, such as knowledge and skills, and non-cognitive factors, such as interpersonal skills, attitudes, and personal qualities. These qualities contribute to a physician’s competence, but schools tend to focus on the cognitive factors more than the non-cognitive. The researchers looked at National Board Examination scores of medical students and correlated them with cognitive factors and non-cognitive factors. They found that non-cognitive factors, such as empathy, yielded a much higher correlation with better scores on the exam than the cognitive factors (Gonnella et al., 2022). Baccalaureate nursing programs should consider empathy education and training as well since nurses also strive to become compassionate caretakers and not just machines recalling factual information.

Another hallmark study in the JLSMED is Hojat et al.’s (2009) “The Devil is in the Third Year: A Longitudinal Study of Erosion of Empathy in Medical School.” This study found a significant decline in empathy scores as medical students entered year three of school and continued to decline until graduation. This is when the curriculum is shifting toward patient care activities when empathy is most essential. Future research in nursing should focus on this phenomenon. Does nursing empathy decline once students start clinical and are immersed in patient care? This would be detrimental to the profession, and methods to prevent this should be a main focus in programs. In some of the included empathy studies, ways to prevent this decline included volunteering and service-learning with student-run free clinics, empathy training with simulation, meaningful feedback from peers in videotaped interactions, and online training modules. One of the biggest barriers was sustainability; training must be ongoing in order to be effective. Empathy in patient care “must be considered as an important component of a physician’s overall competence and is a significant factor in optimal patient outcomes” (Gonnella et al., 2022, p. 224). The same can certainly be said for nursing.

### Discussion

This focused literature review suggests strong implications to strengthen nurse-patient relationships and guide nursing education to an enhanced, more comprehensive curriculum. The lack of literature describing empathy training for nursing programs in the United States suggests it may not be a priority, let alone part of the curriculum at all. Thus, when nursing students arrive in clinical, many have no empathic awareness when talking to patients and family members. Future studies should explore the meaning and perceptions of newly graduated nurses around empathy. Improved empathy would also mend nursing burnout and retention rates. Nursing curriculums are constantly changing, and the staff are re-evaluating the importance of courses. While pathophysiology and pharmacology will never be removed, perhaps there is room for an additional class regarding emotional intelligence and empathy training; or even a scaffolding approach where each course incorporates one or two objectives in each class on empathy. It is recommended that trainings and studies be conducted in order to improve levels of empathy in nursing students (Cerit & Beser, 2014). The implications for empathy research in nursing students will touch on nursing science and nursing research, but most of all nurs-



ing education. Developing the correct body language and verbiage in order to communicate with a patient is essential in building a caring and trusting relationship. The training would also help the nursing students to understand themselves and how and why they react in certain situations by instinct (Honkavuo, 2019). One limitation of this focused literature review was the lack of literature in empathy training in nursing students, so empathy training in medical students was explored as well. Additionally, some literature could potentially be missing in this review that only utilized two databases to look for literature around empathy training in nursing education.

Overall, these studies all point to a clear need for empathy training to be incorporated into a nursing curriculum, and for more research in nursing education on this topic in the United States. The studies' variables differed in that some studies found gender and social status to be a major factor in scores and some did not. Most of the studies looked at nursing students but were not done in the US. Clearly, this is a major gap in research on a topic that is important to the future of healthcare. Many of the quasi-experimental studies that implemented an educational intervention while looking at emotional intelligence scores both before and after the intervention using tools such as the CARE measure to quantify level of empathy had statistical significance. A future direction that studies could focus on would be the cultural differences in empathy, given that most of these studies were not conducted in America. Some suggestions for future research were given and were very helpful, such as the common theme of recommending more time for education and training students at the end of school rather than at the beginning (Riess et al., 2012).

### **Conclusion**

Developing professional empathy prevents potential adverse patient outcomes by creating a trusting relationship between the patient and the healthcare provider. Empathy training would create small goals that work toward the end vision of having a prepared nursing task force. Nurses reported that empathy training significantly improved their confidence in responding empathically to patient concerns. Jean Watson stressed the importance of compassion and caring in the nursing profession because it is so much more than symptoms and diagnoses. Having a nurse that is adequately trained in empathy can improve patient satisfaction, adherence to treatment, and the overall outcome. Future research is warranted to understand whether undergraduate nursing programs in the US are providing the empathy training emerging nurses need to adequately prepare them for the difficult conversations ahead.

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**There is sometimes a duality in the healing process -- the necessity of both things that cut and things that bandage; the contrast of the sharp and the soft. This abstract drawing is meant to illustrate the balancing act between these two modalities of healing.**

**- Francis Cunningham, MSN student at University of Pennsylvania School of Nursing**

*Art submission: "Duality of Healing"*  
Francis Cunningham

# Implementation of Standardized Patient Handoff on a Medical Surgical Inpatient Unit

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## Abstract

**Problem:** Poor communication within a health care organization has been cited as one of the main causes of error and poor patient outcomes. Inadequate patient handoff communication can lead to delay in treatment or hospital discharge. Improved communication with I-PASS (Illness severity, patient summary, action list, situation awareness and contingency plan, and synthesis by the receiver) standardized handoff has shown to have a positive correlation to conveying necessary information, preventing errors, and improving patient safety. Report and Learn (RL) is an incident reporting system that monitors patient safety events at a community hospital. Approximately one to six safety incidents were reported weekly by the inpatient medical/surgical unit. Communication delivery may have accounted for two to six incidents of error or near error in monthly safety reports. Evidence reviewed showed that a structured handoff tool can help to promote sufficient input from the nurse to communicate pertinent patient care information at change of shift to improve giver to receiver communication and prevent error.

**Purpose:** The purpose of this project was to implement and evaluate the effectiveness of the I-PASS standardized handoff tool for nursing shift report to improve communication and reduce medical errors.

**Methods:** This was a quality improvement (QI) project that measured percent errors related to poor handoff on the medical/surgical unit. The medical/surgical unit has 36 beds with 35 full-time nursing staff. The QI project collected data on communication with the use of I-PASS over a 15-week period.

**Results:** Findings indicated 69% staff education in use with the I-PASS tool. There was a 23% decrease in error over the course of project implementation and a 50% decrease from start of project to completion.

**Conclusion:** The I-PASS tool was useful and relevant to decreasing communication errors and patient safety events. Opportunity to further expand use of the I-PASS tool to other units would further validate the tool's effectiveness.

Patient hand-off is a transfer and acceptance of care responsibility achieved through communication of specific information from one healthcare provider to another for the purpose of ensuring continuity and safety in patient care (The Joint Commission, 2017). The Joint Commission conducted a study in 2016 which estimated 30% of malpractice claims were a result of communication failures. The researchers also assessed those who participated in handoffs. Those who received handoff perceived 37% as unsuccessful and those who were senders of handoff perceived 21% as unsuccessful. The bedside nurse plays a central role in ensuring timely and accurate conveyance of patient information and the development of an appropriate plan of care. Com-

munication failures among healthcare providers is a common root cause of medical errors and preventable patient harm (Blazin et al., 2020). One measure that provides reporting of structure, process, and outcome of nursing care is the RL Incident Reporting System. Through the RL reporting system, safety events are reported, and trends and patterns are identified to allow corrective action to improve care and patient safety. The medical surgical unit in which the QI project was conducted had an average of one to six safety incidents reported on a weekly basis. The safety events identify gaps specifically within the health care system that allow evaluation of errors which impact patient care.

Current practice for handoff at the hospital was the use of an escalation tool based on the acronym SBAR, which stands for Situation, Background, Assessment, and Recommendation (Clements, 2017). Although the SBAR was being used as recommended, nurse communication continued to underperform on the medical surgical unit as evidenced by the RL reporting system. Communication errors for the unit were reported 2-6 times a month, resulting in delayed patient care, delayed medication administration, missed physical assessments for pressure ulcers, and delay in discharge. The format of SBAR was sufficient for handoff summary but missed important tasks to be performed during the next shift. Staff reporting missed details related to procedures, wound assessment, medications, and discharge when receiving report. The I-PASS mnemonic is defined as (I) illness severity, (P) patient summary, (A) action list, (S) situation awareness and contingency planning, and (S) synthesis by receiver (Blazin et al., 2020). The I-PASS format provides more detail to the program of care and ensures understanding by the person receiving handoff with the synthesis by the receiver. The purpose of this project was to implement and evaluate the effectiveness of I-PASS for nursing shift report to improve communication and reduce medical errors.

### Evidence Review

The need for a standardized patient handoff for nurse report was the focus for this evidence review. The review began broadly with evidence supporting the uses of a standardized tool, specifically I-PASS, and the effectiveness of standardized reporting in reducing communication errors. Fifteen articles supported this change, five were selected. These five include quasi experimental, mixed method, and quality improvement studies. The articles selected were of the highest quality (Table 1).

Starmer et al. (2017) conducted a pre and post intervention pilot study of the effects of the I-PASS handoff tool among nurses on a pediatric intensive care unit. Implementation of the tool was associated with significant increase in the opportunity to ask questions (73%,  $p=0.001$ ), formulating a to do list (100%,  $p<0.001$ ), and identifying abnormal exam findings (91%,  $p<0.001$ ). There was no significant change in the timeframe of reporting and the use of the tool was related to a 40% reduction in the rates of interruptions.

Blazin et al. (2020), conducted a quality improvement study of the implementation of the I-PASS handoff across multiple settings. The results were significant for intervention adherence with a mean of 87%. Seventy-five percent of inpatient nurses and 46% of procedure nurses reported improvement with overall handoff. The nurses' ability to set priorities for tasks and assessments, based on professional expertise and knowledge, was improved through good communication and was important for overall error prevention.

Heilman et al. (2016) conducted a mixed method study in the emergency department demonstrating a reduction in medical errors from the use of the I-PASS handoff. They utilized focus group participants including residents, attending, nurses, and other healthcare providers. The facility had a preexisting handoff process with SBAR and a primary aim of adapting the I-PASS mnemonic. Data analysis showed that participants agreed that an action list helped frame the role of the oncoming team and the summary suggested modification of appli-

cation. A survey was conducted and completed by 71% of the residents and 68% of the attendings to compare understanding of the handoff process. The study incorporated I-PASS handoff and demonstrated a 26% reduction in medical errors after implementation.

Malekzadeh et al. (2013) conducted a pre and posttest quasi-experimental study of shift handoff to improve nurses' practice in the intensive care unit. Nurses were educated on the handoff protocol and evaluated on the standardized practice. The researchers found a significant increase in safer practice post intervention with a mean score of 46.5%. The standardized handoff improved nursing safe practice and communication of patient needs.

The studies conducted by Starmer et al. (2017), Blazin et al. (2020), Heilman et al. (2016), and Malekzadeh et al. (2013) demonstrated statistically significant improvement in communication between nurses at handoff with the use of the I-PASS tool. The studies were convenience samples conducted across hospital and clinical settings. There was an increase in verbal and written handoff with use of I-PASS with no change in duration of communication. Staff observed an overall improvement in the quality of their handoff. Educational training, implementation, and reinforcement material for sustainability were well perceived. The use of the I-PASS tool is supported to reduce communication errors, safety error, and improve staff satisfaction and patient care outcomes.

### Theoretical Framework

The Self-Determination Theory (SDT), developed by psychologists Edward Deci and Richard Ryan, was used to help guide an understanding and implementation of the practice change. The SDT encompasses three psychological needs for autonomous motivation which include autonomy, competence, and relatedness. Human nature and psychological need for autonomy, competence, and relatedness involve intrinsic and extrinsic motivation within one's environment (Patrick & Williams, 2012). Humans are rarely driven by one type of motivation, they are complex beings with different goals, desires, and ideas (Patrick & Williams, 2012). The SDT differentiates the individual's autonomous motivation and controlled motivation (see Figure 1). Self-directed motivation is driven by intrinsic factors that inspire one's core values and morality. Whereas extrinsic motivation is driven by external sources such as awards, accolades, or respect and admiration of others (Patrick & Williams, 2012). The SDT looks at how autonomous-supportive environments impact function, performance, and persistence in one's behavior. These factors were key concepts to be utilized in the practice change and promote a standard in nurse communication to reduce error. At the project site, staff were informed of the errors that have occurred on the unit due to miscommunication. They were given the I-PASS tool with explanation as to how it improves communication in handoff, promotes patient safety and reduces error, engaging the intrinsic motivation for change. The unit was rewarded with candy, donuts, and accolades, engaging the extrinsic motivation to promote compliance with practice change. This theory was selected for the QI project to promote the nurses' adaptation of the I-PASS handoff tool, because it focused on the contextual factors that influence behavior.

The Framework for Complex Innovations (Helfrich et al., 2007) supports the ability of the implementation plan of standardized nurse handoff in the structure, process, and outcome goals. The framework's first characteristic is effective innovation. The hospital strives for excellence in their services provided to the patients and dedicated to high standards of quality patient centered care. Communication is key in support of quality care. Improving the current practice of communication by implementing a standardized nurse hand off tool at change of shift facilitates a culture remodeling. The support of nursing management can set and maintain the climate to motivate staff. The nursing staff has established a rapport with management. Buy-in for the tool will improve nurse communication with care for their assigned patients allowing sufficient input in the plan of care.

The second characteristic of the framework is outcome and implementation effectiveness. Data collected over the course of the implementation process will determine the effectiveness of the practice change, showing improved communication and decreased error.

## Methods

The I-PASS tool was implemented at a large community hospital on a medical/surgical unit with a patient population of adults with chronic and acute conditions. The staff educated on the tool were the 35 full-time nursing staff members. Ethical considerations were included to protect patients and staff. All participants, both patients and staff, were adults 18 years old and older. Patient information was removed by the change champion or charge nurse prior to storage in a locked file on the medical unit. To protect patients and staff, forms were de-identified and stored in a locked file on the medical unit. Weekly the data collected was uploaded by the project lead to a password protected computer to keep information confidential and the paper copy was shredded.

The first step in implementing the quality improvement project was to identify unit change champions for the I-PASS handoff tool. The nurses selected were recommended by the unit manager and provided feedback with initial use. One-on-one education and training were given by the project leader. Feedback was given to the charge nurse or directly to the project leader for ease of tool use.

Following the selection of change champions, education was given to all nursing staff. A total of 35 full-time nursing staff were eligible to participate, 24 nurses on night and day shift were educated on the I-PASS tool. Factors that affected 100% of staff education include maternity leave, terminal leave, float to other units, and travel nurse assignments. The I-PASS handoff tool was kept at the central nursing station for staff use. Additionally, a poster was presented and displayed for informational purposes with examples and definitions of I-PASS. Each workstation on wheels (WOW) received an I-PASS handoff card listing the criteria for reporting as reference. Nursing staff received immediate feedback on shift report following randomized audits. Permission for use of I-PASS material was granted by the I-PASS study group.

Measurement was analyzed and tracked on structure, process, and outcome. Structure was identified as nurse education on the I-PASS tool and measured by how many nurses were eligible for education and the total number who were educated (Figure 2). The process measure was the utilization of the I-PASS tool and measured by how often the tool was used (Figure 3). The outcome measure was percent error related to poor handoff on the medical/surgical unit (Figure 4). Methods employed for assessing completeness and accuracy of data were conducted with daily audits by the charge nurse and weekly audits by the project lead.

Run charts were used to track utilization of tool and trends in reported error. Data was examined on a weekly basis with written I-PASS handoff tool utilization and audit of verbal I-PASS handoff. Monthly the RL reporting system was appraised for reported communication error and analyzed for decrease in reported events. The chart results were shared with the unit management and clinical site representative monthly throughout implementation to view tracked changes. Permissions were granted by the organization's Institutional Review Board to affirm that the project design was non-human subject research.

## Results

Through the 15-week period, 24 staff members were educated and utilized the I-PASS tool consistently. A total of 35 staff members were eligible for educational training. Sixty-nine percent of the staff participated in the quality improvement project. Education sessions were conducted throughout implementation due to staff

scheduling and inclusion of night and day shift nursing staff. Observation was done by the project lead to analyze handoff process and compliance with I-PASS. The QI project goal was to reduce error in communication with nurse-to-nurse shift report by utilizing I-PASS. Pre-implementation, a total of 13 communication errors were reported. Post-implementation the report error decreased to 10. The mean score of reported error pre-implementation was 4 (SD= 2.08). The mean score post-implementation was 3 (SD=1.53). An independent t test was performed to determine if there was a statistical difference between the mean of pre and post implementation ( $p=.539$ ). The run chart trend shows an association between use of the I-PASS handoff tool and decrease communication error reported. As with other studies, verbal communication improved during the QI project as evidenced by the 23% decrease in reported error.

Antidotal observations and feedback from staff regarding use of I-PASS included statements such as there was “too much extra documentation and paperwork”. An alteration was made in the documentation to check off verbalization of I-PASS communication at change of shift nurse reporting, thus limiting double charting for the collection of data. The written I-PASS handoff tool domains of “situational awareness/contingency planning” and “synthesis by receiver” were not well utilized on the handoff tool but were applied effectively during verbal handoffs. Some senior staff felt that they effectively communicated in handoff, whereas more novice staff and nurse residencies were more receptive. A barrier to this project was staffing challenges, shortages related to COVID, and other QI projects. The nurses reported feeling overwhelmed with these changes.

## Discussion

The purpose of the QI project was to implement and evaluate the effectiveness of the I-PASS handoff tool with nurse-to-nurse shift report. Data collected over the course of the implementation process determined the effectiveness of the practice change by showing improved communication and decrease in error. Structure was measured on nurse education to the I-PASS tool. Education was impacted by changes in staffing due to the COVID pandemic, which included contractors, float pool nursing staff, voluntary and involuntary termination, and new hires. Additional educational sessions on the I-PASS were not anticipated. Nursing staff floating from other units and contracted travel nurses were not anticipated during the project. Crossover of staff and contracted employees presented a potential barrier as well as newly hired nurse resident program candidates. Newly hired nursing staff were more open to unit structure change than senior nurses.

The process was measured on the utilization of I-PASS in shift report. Nursing staff adhered to all five components of I-PASS but were inconsistent with using the form. Over the 15-week project implementation, use of I-PASS varied from a minimum of 2 times during a week to a maximum of 32 times during a week. More night shift nurses utilized the tool than day shift. This could have been due to when reminders were given at the daily nurse huddle at morning change of shift, which was right before night shift handed off report to the day shift. The anticipated outcome measure was a decrease in percent errors related to poor handoff communication. The outcome on this unit was consistent with the findings in the literature, but not found to be statistically significant. The tool was helpful to new staff in guiding consistency in shift reporting. There was improvement in verbal and written handoff. Apprehension was perceived with additional documentation, project design shifted to accommodate staff concern. Efforts to minimize and adjust for limitations included project lead making weekly visits to interact with staff, observe I-PASS process during change of shift, and effort to educate the variety of staff (dayshift, nightshift, new, and travel nurses).



## Conclusion

Overall, the quality improvement project was useful and relevant to decreasing communication errors and patient safety events. Pre-implementation there were a total of 13 incidents reported that were related to errors in communication over 3 months. Post-implementation there was a total of 10 in 3 months. There was a 23% decrease in error over the course of the project implementation and a 50% decrease from start of the project to completion. Project sustainability would include: (1) I-PASS training incorporated in new staff unit-based orientation; (2) Incorporation of I-PASS on other inpatient units; (3) Inclusion of I-PASS into the electronic medical records system; (4) Ongoing monitoring of the report learning system to provide data to nursing management and leadership on communication and patient safety.

Strengths of the project included leadership and key stakeholder buy-in and support, continuous involvement of change champions, and staff engagement. Staff were welcoming of the QI project. Staff members ranged from novice/new graduates to experienced nurses. Staff engaged in the QI project and gave feedback to barriers that may prevent compliance. Adjustments were made based on the staff process review. This was an opportunity to improve handoff and include staff input in the project. For future QI projects, it would be ideal to extend the time frame of implementation. Longer time would provide the project lead and stakeholders more ability to adjust to changes in the event of national emergencies and pandemics, staffing shortages, and vaccine mandates that affect the employment of healthcare providers, especially nurses. The educational tools and training developed by I-PASS and utilized for this project can be used for ongoing implementation. As a result of the success of this project, it is possible to expand to the other units in this hospital.

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**Table 1**

*Evidence Review*

<p><b>Citation:</b> Blazin, Lindsay J. MD*; Sitthi-Amorn, Jitsuda MD*<sup>†</sup>; Hoffman, James M. PharmD<sup>†,§</sup>; Burlison, Jonathan D. PhD<sup>‡</sup>; for the I-PASS Working Group Improving Patient Handoffs and Transitions through Adaptation and Implementation of I-PASS Across Multiple Handoff Settings, Pediatric Quality and Safety: July/August 2020 - Volume 5 - Issue 4 - p e323 doi: 10.1097/pq9.0000000000000323</p>					
					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
Standardized, structured handoffs improve communication and patient safety.	Quality improvement	<p><b>Eligible:</b> All oncology fellows and hospitalists, all registered nurses in the inpatient setting, and personnel in imaging/procedures</p> <p><b>Accepted:</b> Inpatient nurses (n=180) Physicians (n=15) Diagnostic imaging technologists (n=15) Sedation or procedure nurses (n=24)</p>	<p><b>Control:</b> N/A</p> <p><b>Intervention:</b> Implement I-PASS handoff of evening shift to shift physician signout, morning and evening inpatient nurse bedside report, and handoffs when admitted patients were temporarily transferred</p>	<p><b>DV:</b> Communication and patient safety</p> <p><b>Measure tool, time, procedure:</b> Tracked performance via observed adherence to I-PASS model, self-reported change to overall and personal handoff performance following implementation.</p> <p>Analyzed pre- and postimplementation differences in nursing perceived handoff errors</p> <p>Measurements done at 8, 16, and 24 weeks postimplementation</p>	<p><b>Statistical Procedures(s) and Results:</b></p> <p>Statistical process control (SPC) charts (p-charts)</p> <p>The mean number of perceived handoff errors per handoff encounter for inpatient nursing was 0.42 errors per handoff.</p> <p>Seventy-five percent of inpatient nurses, 80% of physicians, 94% of diagnostic imaging technologists, and 46% of procedures nurses reported that I-PASS improved or greatly improved overall handoff quality.</p> <p>Inpatient nursing and imaging/procedures, adherence to all 5 I-PASS components was strong and consistent (mean= 87% and 89%)</p> <p>Paired samples t tests comparing means of personal perceptions of handoff effectiveness pre- and post-I-PASS revealed statistically significant improvements for inpatient nurses, physicians, and diagnostic imaging technologists (P &lt; 0.001)</p>
<p><b>Citation:</b> Heilman, J. A., Flanigan, M., Nelson, A., Johnson, T., &amp; Yarris, L. M. (2016). Adapting the I-PASS Handoff Program for Emergency Department Inter-Shift Handoffs. <i>The western journal of emergency medicine</i>, 17(6), 756–761. <a href="https://doi.org/10.5811/westjem.2016.9.30574">https://doi.org/10.5811/westjem.2016.9.30574</a></p>					
					Level V
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
Aim to explore what modifications the I-PASS handoff system requires to be effectively modified in emergency department (ED) inter-shift handoff.	Mixed Method	<p><b>Sampling Technique:</b> theoretical sampling</p> <p><b>Eligible:</b> Residents and attendings N=63 4 not included due to conducting the survey</p> <p><b>Control:</b> 22/31 (71%) residents and 22/32 (68%) attendings</p>	<p><b>Control:</b> N/A</p> <p><b>Intervention:</b> Literature review of previous surveys and open-ended questions on I-</p>	<p><b>DV:</b> Handoff, communication, medial error, user satisfaction, improvement in time of handoff</p> <p><b>Measurement tool, time, procedure:</b> Survey Monkey and review of notes</p>	<p><b>Statistical Procedures(s) and Results:</b></p> <p>I-PASS system may be well suited for application to the ED setting.</p> <p>Studies have demonstrated a</p>

			PASS system in the ED	taken from focus group sessions. Participant data was de-identified	reduction in medical errors.
<b>Citation:</b> Malekzadeh, J., Mazluom, S. R., Etezadi, T., & Tasseri, A. (2013). A standardized shift handover protocol: improving nurses' safe practice in intensive care units. <i>Journal of caring sciences</i> , 2(3), 177–185. <a href="https://doi.org/10.5681/jcs.2013.022">https://doi.org/10.5681/jcs.2013.022</a>					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
The aim of the study was to investigate the effects of standardized shift handover on the nurses' safe practice in the intensive care unit.	Pre- and posttest quasi-experimental	<b>Sampling Technique:</b> Convenience sample  <b>Eligible:</b> 56 nurses; inclusion criteria: Master or baccalaureate degree in nursing, at least 6-month work experience in ICUs, participating in at least 90% of education classes  <b>Accepted:</b> n= 55  <b>Control:</b> N/A  <b>Intervention:</b> N/A  <b>Power analysis:</b> confidence level of 95% and a power of 80% $N = \frac{(Z1 - \alpha/2 + Z1 - \beta)^2 \times (S1^2 + S2^2)}{(\text{Mean1} - \text{Mean2})^2}$  <b>Group Homogeneity:</b> no statistical significance	<b>Intervention:</b> Educated nurses on the developed handover protocol in two 90-minute sessions	<b>DV:</b> patient safety, continuity of care, inter-shift communication  <b>Measurement tool, time, procedure:</b> McNemar and Paired-samples t test  To determine the validity of Shift Handover Evaluation Checklist (SHEC) and Nurses' Safe Practice Evaluation Checklist (NSPEC), the Content Validity Index (CVI) was calculated for each item of the checklist; 0.94 and 0.92	<b>Statistical Procedures(s) and Results:</b> Study findings revealed that nurses' mean score on the Safe Practice Evaluation Checklist increased significantly from 11.6 (2.7) to 17.0 (1.8) (P < 0.001)  Using shift handover protocols result in effective and regular inter-shift information communication which in turn, promotes the continuity of care.
<b>Citation:</b> Starmer, A. J., Schnock, K. O., Lyons, A., Hehn, R. S., Graham, D. A., Keohane, C., & Landrigan, C. P. (2017). Effects of the I-PASS Nursing Handoff Bundle on communication quality and workflow. <i>BMJ quality &amp; safety</i> , 26(12), 949–957. <a href="https://doi.org/10.1136/bmjqs-2016-006224">https://doi.org/10.1136/bmjqs-2016-006224</a>					Level VI
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
Implementation of a modified I-PASS Handoff Bundle for nurses working in an ICU would lead to improvements in verbal communication and a reduction in handoff interruptions, without a negative impact on nursing workflow	Prospective pre-post intervention pilot study	<b>Sampling Technique:</b> Convenience sampling  <b>Eligible:</b> All nurses working on the study unit  <b>Accepted:</b> only nurses who provided informed consent  <b>Intervention:</b> 126 handoffs observed (n=81 preintervention, n=45 postintervention)  <b>Power analysis:</b> N/A  <b>Group Homogeneity:</b> N/A	<b>Control:</b> no standardized nursing handoff  <b>Intervention:</b> Educational training, verbal handoff I-PASS mnemonic implementation, and visual material to provide reinforcement and sustainability. Prospective intervention study to evaluate the effects of I-PASS Nursing Handoff Bundle  <b>Intervention fidelity:</b> Educational training, verbal handoff I-PASS mnemonic implementation, and visual materials to provide reinforcement and sustainability.	<b>DV:</b> patient safety, communication in verbal handoff  <b>Measurement tool, time, procedure:</b> $\chi^2$ tests to compare the percentage of verbal handoffs with any interruptions in the preintervention versus postintervention periods and Poisson tests to compare the number of interruptions per 100 handoffs. 5-point Likert scale  June 2011- March 2012, with 6-month wash in period	<b>Statistical Procedures(s) and Results:</b> Improvements in verbal handoff communications, including inclusion of illness severity assessment (37% preintervention vs 67% postintervention, p=0.001), patient summary (81% vs 95%, p=0.05), to do list (35% vs 100%, p<0.001) and an opportunity for the receiving nurse to ask questions (34% vs 73%, p<0.001)

<b>Citation:</b> <a href="#">Starmer, A. J., Spector, N. D., West, D. C., Srivastava, R., Sectish, T. C., Landrigan, C. P., &amp; I-PASS Study Group (2017). Integrating Research, Quality Improvement, and Medical Education for Better Handoffs and Safer Care: Disseminating, Adapting, and Implementing the I-PASS Program. <i>Joint Commission journal on quality and patient safety</i>, 43(7), 319–329. <a href="https://doi.org/10.1016/j.jcjq.2017.04.001">https://doi.org/10.1016/j.jcjq.2017.04.001</a></a>					Level V
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
Standardized, structured handoffs improve communication and patient safety. I-PASS is a handoff program that decreases medical errors.	Mixed method quality improvement	<b>Sampling Technique:</b> Convenience sampling  <b>Eligible:</b> 35 hospitals in the United States  <b>Accepted:</b> Community hospital (n=13) Academic hospital (n=22) [internal medicine (n=12), pediatrics (n=12), other/mixed (n=11)]  <b>Control:</b> N/A  <b>Intervention:</b> 16 hospitals  <b>Power analysis:</b> N/A  <b>Group Homogeneity:</b> N/A	<b>Intervention:</b> Innovative patient safety concept of a “bundled intervention” handoff communication with large dissemination of across hospital and clinical settings.	<b>DV:</b> patient safety, communication, medical errors, adverse events  <b>Measurement tool, time, procedure:</b> Data tracking through the launch of the website in 2011	<b>Statistical Procedures(s) and Results:</b> Medical errors decreased by 23%, and preventable adverse events— injuries due to medical errors— decreased by 30%.  Significant increases in the proportion of both verbal handoffs and written handoff documents that included key elements that the literature suggests should be included to optimize patient safety (and around which our mnemonic was built).  There was no change in the time it took to hand off patients.

**Table 2**

*Synthesis of research*

⊕ <b>Evidence Based Practice Question (PICO):</b> In patients admitted to a medical surgical unit, does structured nurse-led multidisciplinary rounds when compared to physician led rounds improve nurse and patient satisfaction?				
Level of Evidence	# of Studies	Summary of Findings	Overall Quality	
IV	2	<a href="#">Blazin et al. (2020)</a> found that the utilization of standardized structured handoffs improved communication and patient safety. Adherence to use of the tool was strong and consistent. There was significant improvement to error with handoff.	C, Non-randomized, small sample size, reduced generalizability of results, unable to conclude findings	
		<a href="#">Malekzadeh et al. (2011)</a> found that the effect of a standardized shift report promoted safe continuity of care and reduced error. There was significant statistical finding to the mean score of safety.	C, Non-randomized, small sample size, measured pre and post, unable to conclude if findings are generalizable to other care settings	
V	2	<a href="#">Stramer et al. (2017)</a> conducted a pre and post intervention pilot study with nurse handoff. The study was found to have improvement on verbal communication including pertinent information such as illness severity and assessment. The implementation had no negative change on workflow.	B, Small sample size, 1 hospital with a small subset of employees, however reasonable reproducible for a larger change or larger population	
		<a href="#">Stramer et al. (2017)</a> conducted a mixed method quality improvement at multiple hospital facilities. The results showed significant improvement with medical error, preventable adverse events and decrease in injury related to medical error.	B, Reasonably consistent results, potential for bias associated with convenience sampling, mixed-method data provided insight to potential benefits, tool is fairly definitive	

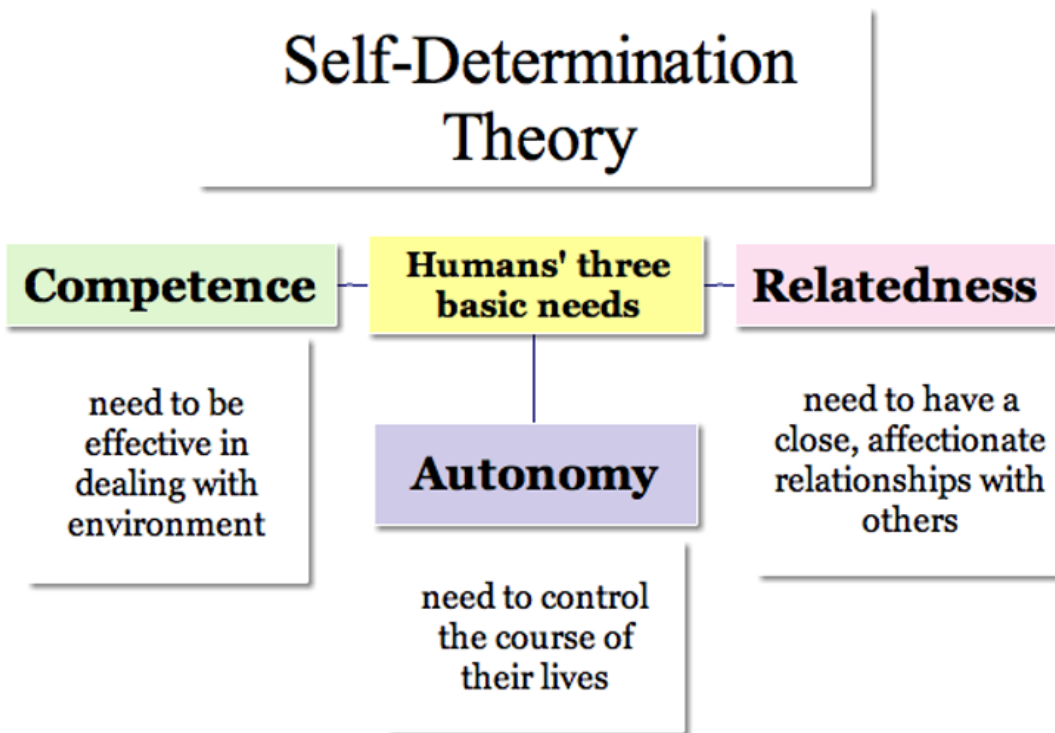
**Table 3**

*Reporting and Learning Incident Reporting System Communication Error*

	<i>Pre-Implementation</i>	<i>Post- Implementation</i>
Mean	4.33	3.33
Standard Deviation	2.08	1.53
Standard of error mean	1.20	0.88
Sample size ( <i>n</i> )	3	3
df	4	
t	0.6708	
P two tail	0.5391	

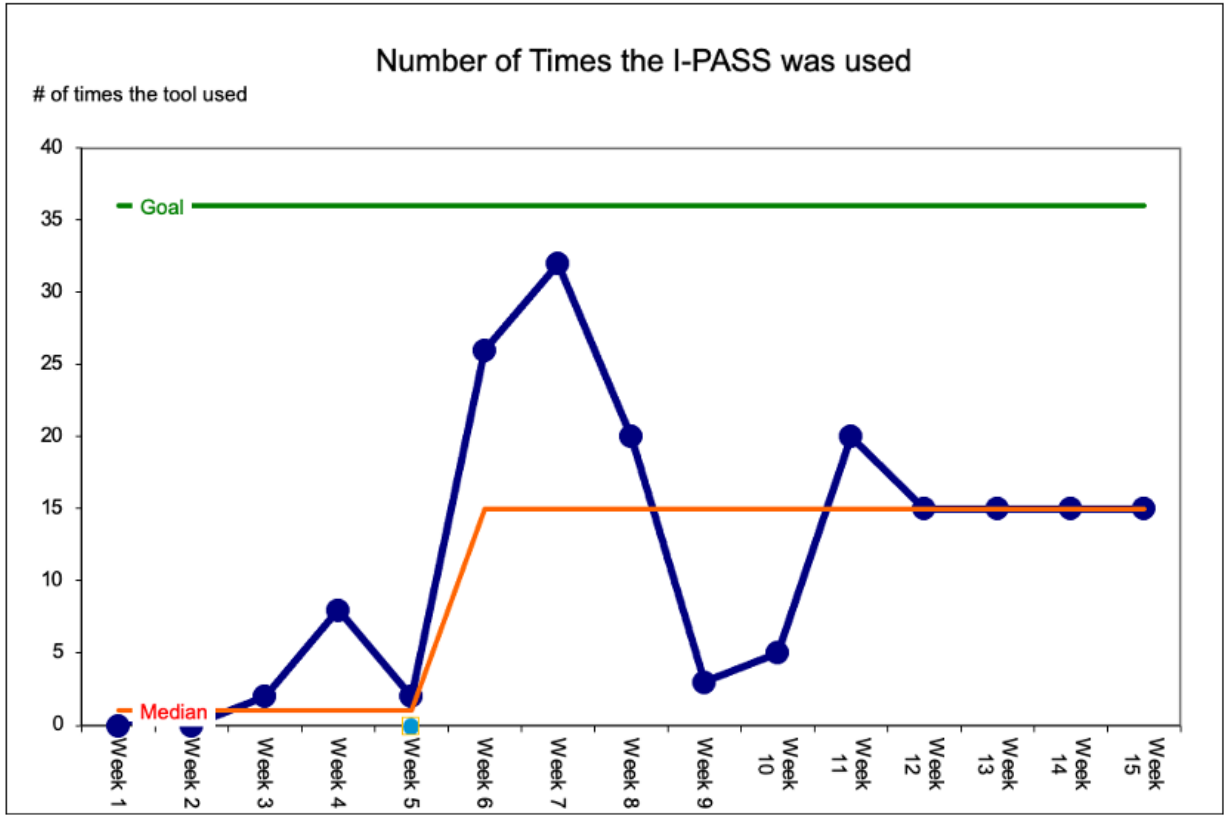
**Figure 1**

*Theoretical Framework*



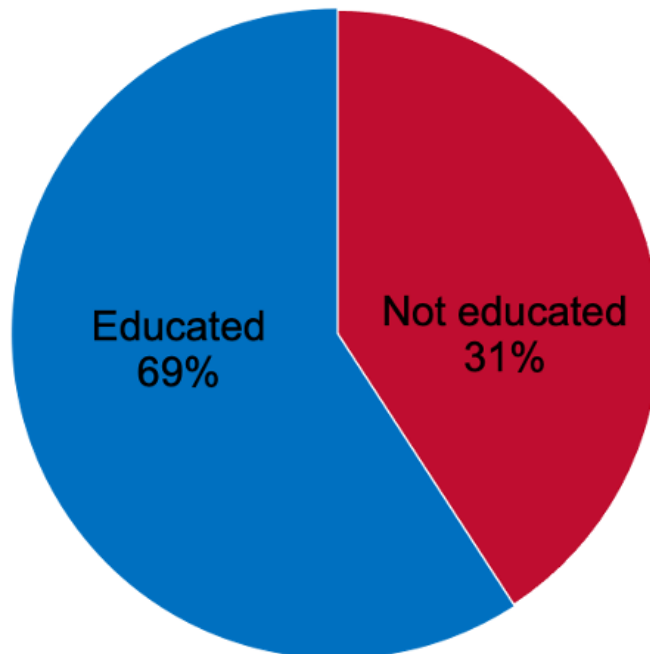
**Figure 3**

*Process chart: Use of tool*



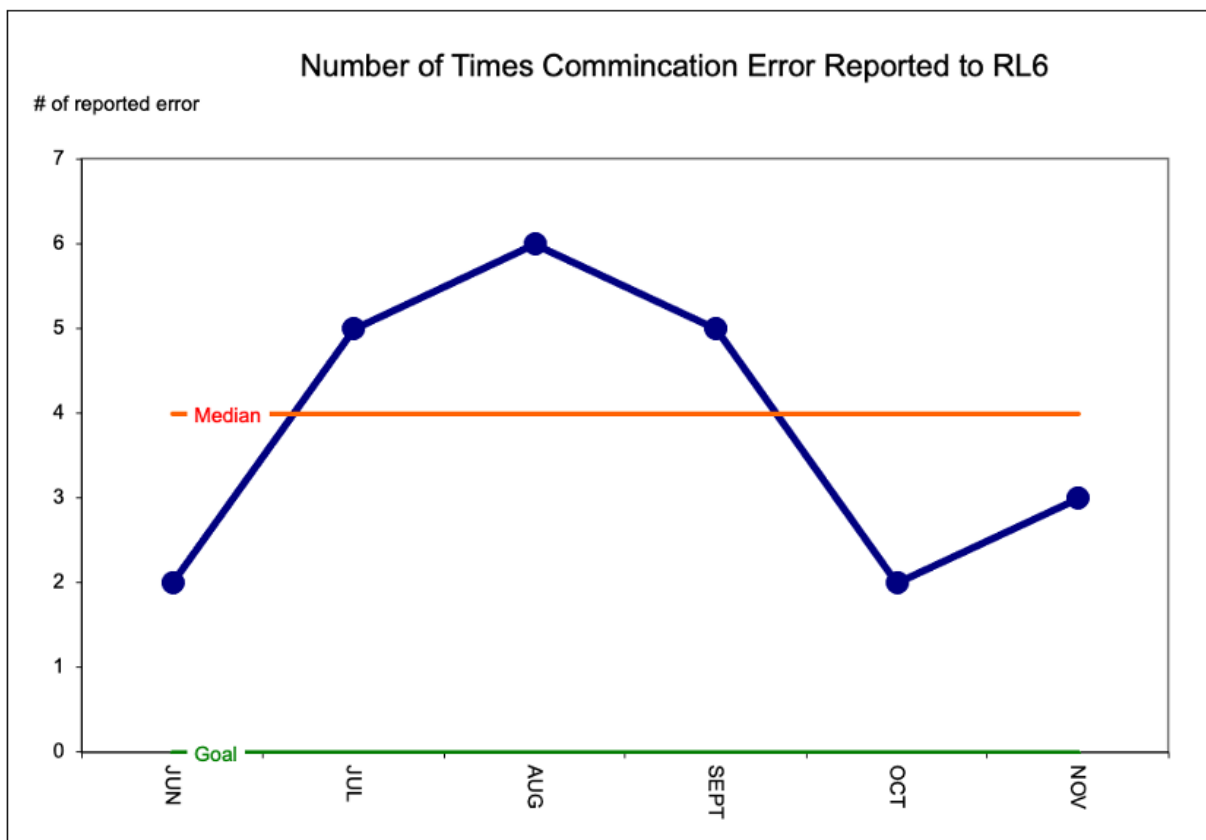
**Figure 2**

*Structure chart: Education*



**Figure 4**

*Outcome chart: Error reported*





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- Commentaries
- Research Briefs
- Concept Analyses
- Theoretical Frameworks
- Systematic or Focused Literature Reviews

### Author Guidelines:

Manuscripts should be a minimum of 3 pages and not exceed 20 pages in length, however, considerations will be made for submissions that exceed the requested size. Manuscripts should be double-spaced with 1-inch margins and written using Times New Roman 12-point font. References should be formatted using the *Publication Manual of the American Psychological Association* (7th edition). Figures and tables should be placed in the body of the manuscript and on a separate page at the end of the document. **Please send your submissions in a Word document to [JNDSS@nursing.upenn.edu](mailto:JNDSS@nursing.upenn.edu).** Manuscripts will be reviewed by at least 2 reviewers. In the event that reviewers have a request for minor revisions, authors will have 3 weeks to complete and resubmit. The target date for publication is August 2023. Please feel free to contact Ellen Munsterman ([ellenmun@upenn.edu](mailto:ellenmun@upenn.edu)) with any questions regarding the journal or possible submissions.

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