A FORMATIVE PROGRAM EVALUATION OF A PERFORMANCE IMPROVEMENT PROJECT CHARTER: HAPI REDUCTION

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Hannah Tufarelli, titled A Formative Program Evaluation of a Performance Improvement Project Charter: HAPI Reduction, and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project are contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

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LAND ACKNOWLEDGEMENT

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. The University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

DEDICATION

To all the patients who have endured the silent struggle of pressure injuries and to the family members who stood by them to offer unwavering support. To the nurses devoted to preventing and educating others about pressure injuries, so others don’t have to endure the same pain.

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Abstract

Background: Hospital-acquired pressure injuries (HAPIs) result in patient morbidity, prolonged hospital stays, and increased healthcare costs. The organizational benchmark established by Banner Health is to maintain fewer than 2.95 HAPIs per 1,000 patient discharges. Banner Thunderbird Medical Center (BTMC) continues to report rates higher than the organizational average, with the highest rate being 6.3 HAPIs per 1,000 patient discharges, resulting in extended hospital stays and annual costs that exceed $2.8 million.

Purpose: The aim of this project is to assess the success of Banner's HAPI prevention program, which was implemented in March 2024. The goal of Banner's HAPI prevention program is to increase staff compliance with HAPI interventions and proper documentation for high-risk patients to achieve the goal of fewer than 2.95 HAPI events per 1,000 patient discharges at BTMC by December 30, 2025. The purpose of this formative evaluation is to examine the progress of the performance initiative, including baseline data from January 1, 2023, through September 30, 2025. The goals include identifying current gaps, monitoring early implementation, and evaluating staff engagement.

Methods: This formative evaluation utilized the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance) in conjunction with the CDC Program Evaluation Framework. Participants included nursing staff—registered nurses (RNs) and patient care technicians (PCTs)—across intensive care units (ICUs), progressive care units (PCUs), and medical-surgical units (MS). Data was collected through monthly adherence audits, surveys, pre/post quiz scores and training evaluations following participation in the HAPI Bootcamp education sessions. A quantitative analysis was completed by analyzing trends in participation,

knowledge gains, HAPI rates, and adherence. A qualitative analysis was conducted by analyzing the open-ended survey feedback. Then the project assessed progress toward HAPI rates of ≤2.95/1,000 discharges and if that goal was attained.

Results: From 2023 to 2025, BTMC's overall HAPI rate decreased from 4.26 to 3.02, reflecting a downward trend following implementation of the HAPI Bootcamp intervention. The Medical-Surgical Units achieved the greatest reduction of 35.4%, followed by the Progressive Care Units with 20.3%, and the Intensive Care Units demonstrated a 21.6% reduction but remained to have the highest rates compared to the other units at BTMC.

Conclusions: The formative evaluation indicated BTMC's HAPI prevention program was practical, sustainable, and adaptable for long-term use. Continued attention to documentation accuracy and data quality is necessary for maintaining progress toward the target of ≤ 2.95 HAPIs per 1,000 patient discharges by December 2025.

Background

Hospital-acquired pressure injuries (HAPIs) are localized damage to the skin and underlying tissues caused by prolonged pressure on the tissue, often combined with shear or friction forces (Zaidi & Sharma, 2024). These injuries commonly occur when a patient is receiving care in a healthcare setting, such as a hospital. HAPIs typically develop over bony prominences and can occur because of immobilization, diseases that contribute to poor circulation (such as peripheral vascular disease and diabetes), excessive moisture or dryness of the skin, altered sensation, age, and environmental factors (Mortada et al., 2020).

The prevalence of HAPIs happening in the intensive care setting is 13.6% in the United States, which places a significant financial burden on hospitals each year (Isfahani et al., 2024). The US national average of HAPIs in the Intensive Care Unit is approximately 5.85%, which is higher than the average for general acute care settings which is 2.85% (Cox et al., 2022). In ICU patients, deep tissue pressure injuries (DTPIs) are the most common HAPI type, followed by stage 2 injuries. The most common locations for HAPIs in the ICU are the sacrum/coccyx, buttocks, and heels. The main risk factors for HAPI development in critically ill patients include diabetes mellitus, mechanical ventilation, and the use of vasopressor agents. The United States healthcare system spends $26.8 billion annually on HAPIs (Padula & Delarmente, 2019). Hospital-acquired pressure injuries (HAPIs) generate costs through longer hospitalization periods, specialized professional care focused on wound healing and preventing worsening conditions, plus necessary medications and medical supplies.

Healthcare facilities can reduce the annual incidence of HAPIs and associated costs by implementing a multidisciplinary approach. This approach would involve patient, family, and

staff education, evidence-based risk assessments, frequent staff rounding, improved documentation, and modification of risk factors when applicable. A systematic review found that 86% of studies showed that multidisciplinary approaches were more effective in reducing the prevalence of pressure injuries than single-intervention strategies (Roderman, Wilcox, & Beal, 2024).

Banner Health is a nonprofit healthcare system with hospitals and other healthcare facilities in Arizona, California, Colorado, Nebraska, Nevada, and Wyoming. The organization has set a benchmark target for all its hospitals to maintain a hospital-acquired pressure injury (HAPI) rate lower than 2.95 pressure injuries per 1,000 patient discharges (Banner Health, 2024). However, Banner Thunderbird Medical Center (BTMC) in Glendale, Arizona, reported an average HAPI rate of 6.3 pressure injuries per 1,000 patient discharges in 2022 and early 2023. These figures are among the lowest performing within the Banner Health system. It is also important to note that hospital-acquired pressure injuries continue to occur every 3.3 days at BMTC, which leads to an average of excess length of stay for 4 days and cost the facility $2.8 million dollars per year.

The aim of this project is to evaluate the success of Banner's HAPI prevention program. The goal of Banner's HAPI prevention program is to increase staff compliance with HAPI interventions and proper documentation for high-risk patients to achieve the goal of fewer than 2.95 HAPI events per 1,000 patient discharges at Banner Thunderbird Medical Center by December 30, 2025. The program started March 1, 2024, and the purpose of this formative evaluation is to assess the progress of the performance improvement project, including baseline

data from January 1, 2023 through September 30, 2025. The goals include assessing current gaps, monitoring early implementation, and assessing staff engagement.

Performance Improvement Project: HAPI Reduction

The aim of the HAPI prevention program is to decrease the overall rate of HAPI events at Banner Thunderbird Medical Center to no more than 2.95 events per 1,000 patient discharges by increasing compliance with HAPI prevention interventions and improving documentation for high-risk patients by December 31st, 2025. The target population is adult patients in the intensive care unit, progressive care unit, and medical-surgical service lines with a Braden score of less than or equal to 12 and Bedside Mobility Assessment Tool (BMAT) of 0-2. The Braden scale is a tool utilized to identify patients at risk for pressure ulcers by calculating a score based on sensory perception, moisture, activity, mobility, nutrition, friction, and shear (Braden & Maklebust, 2005).

Since the introduction of the HAPI program in 2024, the initiative has aimed to reduce pressure injuries and improve patient outcomes. However, there has been limited progress specifically in the intensive care unit (ICU) setting. One significant risk factor resulting in increased pressure injuries include limited participation of ICU staff in the HAPI prevention program. Participation is not mandatory for ICU nurses, which has led to decreased participation and an increase in HAPI incidence. The decreased ICU nurse participation, along with increased HAPI incidence indicates the need for stronger leadership support and implementation of mandatory involvement for ICU nurses to decrease HAPI rates.

The hospital has initiated multiple projects surrounding HAPI reduction since 2020, and each project has faced two main barriers: 1) lack of documented HAPI interventions and 2) real

time HAPI education was not favorable for nursing staff. To address both barriers, the HAPI Prevention Committee implemented HAPI Bootcamps on March 1, 2024. The HAPI Bootcamp is a mandatory class held every month that provides education to RNs and PCTs including the importance of turning patients, off-loading, and moisture management. The target population is adult inpatients within intensive care (ICU), progressive care (PCU), and medical-surgical (MS) service lines. The total number of staff between the three units includes 1,000 nurses and 1,500 patient care technicians. The HAPI Prevention Committee's goal is to increase classes to two per month, identify skin champions for each unit that can educate other nurses on the unit, and split the committee into small sub-teams that focus on one important intervention to prevent HAPIs and present it to the HAPI Prevention Committee.

Hospital-Acquired Condition Reduction Program

Hospitals may face financial penalties based on their performance on hospital-acquired condition measures. The Hospital-Acquired Condition (HAC) Reduction program encourages hospitals to implement best practices to reduce hospital patient safety problems (CMS, 2016). The Agency for Healthcare Research and Quality (AHRQ) is a U.S. government agency under the Department of Health and Human Services (HHS) that develops "measures that health providers can use to identify potential in hospital patient safety problems for targeted institution-level quality improvement efforts" (CMS, 2016). The pressure ulcer rate is one of 26 Patient Safety Indicators (PSIs) developed to identify safety-related adverse events occurring in hospitals. Pressure injury prevention can be challenging in the hospital setting due to inadequate staffing needs, limited resources, and lack of education. Pressure injuries are most seen in patients who are elderly and critically ill. In 2008, the U.S. Centers for Medicare and Medicaid

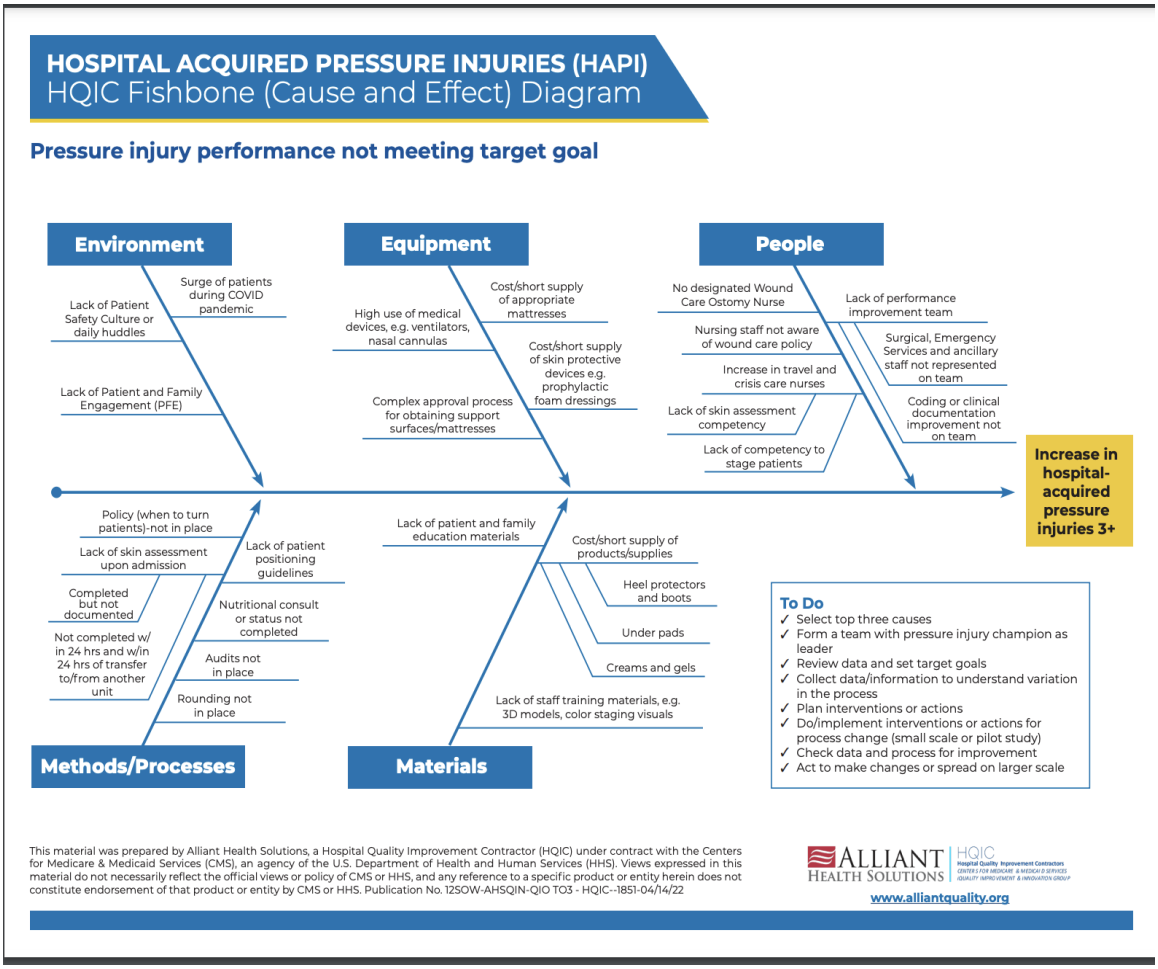
Services (CMS) announced it would no longer reimburse hospitals for HAPIs (The Joint Commission, 2016). Implementing evidence-based nursing interventions can significantly reduce the incidence of pressure injuries, leading to improved patient outcomes and decreased hospital costs.

Improving Pressure Injury Outcomes Through Root Cause Analysis and Staff Education

The Hospital Quality Improvement Contractors (HQIC) Fishbone Diagram for Pressure Injuries developed by Alliant Health Solutions, provides a root cause analysis that outlines and addresses factors that can lead to an increase in pressure injuries in the hospital if not addressed (n.d.). The six primary categories addressed in the diagram include the environment, equipment, people, methods, and materials. There are several studies that identify a lack of staff knowledge of pressure injuries can hinder skill performance (Tomas & Mandume, 2024). Designating skin champions on each unit to collaborate with the wound care team for education and support can help improve pressure injury knowledge. Creating a work environment that values teamwork is also necessary when reducing pressure injuries within the hospital and making it the responsibility of the entire unit to turn patients will help reduce pressure injuries. Providing the appropriate equipment such as skin protective devices, appropriate mattresses, and ensuring adequate linen (Tomas & Mandume, 2024) can improve the motivation of nurses and their ability to prevent patients from developing pressure injuries. Encouraging nurses to conduct adequate skin assessment within 24 hours of admission to identify if patients have pressure injury risk and implementing interventions can help reduce pressure injuries (Roderman, et al., 2024). By utilizing this tool, healthcare facilities can address specific areas for improvement, implement interventions, and reduce hospital-acquired pressure injuries.

Figure 1

Hospital Acquired Pressure Injuries (HAPI) HQIC Fishbone (Cause and Effect) Diagram



(Alliant Health Solutions, n.d.)

This figure illustrates the cause and effects of reasons why a hospital would not meet the target goal for pressure injury performance.

Literature Review

Literature Search Methodology

A systematic approach was used to identify relevant literature on Hospital-acquired pressure injuries (HAPIs). The databases searched included PubMed, CINAHL, Scopus, and

Google Scholar. The search terms utilized were “hospital-acquired pressure injuries,” “pressure ulcers prevention,” “risk factors for pressure ulcers,” and “economic impact of pressure injuries.” Inclusion criteria included peer-reviewed studies published within the last 15 years, systematic reviews, clinical trials, and guidelines from reputable organizations such as the National Pressure Injury Advisory Panel (NPIAP). Studies that focused on non-hospital settings or lacked empirical data were excluded. The selected articles were critically appraised for relevance, methodology, and findings before being synthesized into this review.

Prevalence and Impact

HAPIs remain a persistent problem despite advancements in healthcare practices. The prevalence of HAPIs happening in the intensive care setting is 13.6% in the United States and 14.5% in Europe which places a significant financial burden on a hospital each year (Isfahani et al., 2024). Pressure injuries not only prolong hospital stay, but increase the risk of secondary infections, sepsis, and mortality. According to an article published by Padula and Delarmente, the United States healthcare system spends $26.8 billion annually on HAPIs (2019). The cost of HAPIs includes extended hospital stays, professional and specialty care to prevent further deterioration and promote wound healing, medications, and supplies.

Risk Factors for HAPIs

Several intrinsic and extrinsic factors contribute to the development of HAPIs. Intrinsic factors include age, obesity, diabetes, cardiovascular diseases, anemia, and malnutrition (Weng & Chang, 2023). Extrinsic factors include prolonged immobility, medical device use, friction, shear forces, and inadequate nursing care. Early recognition of skin abnormalities and prompt intervention are crucial for improving patient outcomes (Edsberg et al., 2016). Identifying risk

factors at the earliest stage plays a fundamental role in effective prevention and treatment strategies.

Prevention Strategies

Effective prevention strategies for HAPIs focus on early risk assessment, skin care management, and patient repositioning. The Braden Scale is widely used for assessing patients' risk levels, helping healthcare providers implement targeted interventions (Braden & Maklebust, 2005). Healthcare workers should utilize a multimodal approach, including pressure redistribution surfaces, frequent repositioning, and moisture management to reduce the incidence of HAPIs (Lovegrove et al., 2022). Furthermore, nurse-led initiatives and adherence to standardized protocols, such as those recommended by the National Pressure Injury Advisory Panel (NPIAP), have proven effective in reducing pressure injury rates. It is important to involve the patient, family, and provide staff education, evidence-based risk assessments, frequent staff rounding, improved documentation, and modification of risk factors when applicable. A systematic review found that 86% of studies showed that multidisciplinary approaches were more effective in reducing the prevalence of pressure injuries than single-intervention strategies. (Roderman, et al., 2024).

Innovations in Pressure Injury Prevention

Recent advancements in technology have led to innovative solutions for preventing HAPIs. Wearable pressure sensors are being developed to monitor pressure distribution in real time, alerting caregivers to reposition patients before tissue damage occurs (Turmell et al., 2022). Additionally, artificial intelligence (AI) and machine learning algorithms are being integrated into electronic health records (EHRs) to predict patients at high risk for pressure injuries based

on clinical data trends (Padula et al., 2024). Smart hospital beds with automated repositioning capabilities have also demonstrated promising results in reducing pressure ulcer incidence, particularly in ICU settings (Ajami & Khaleghi, 2015). As these technologies continue to evolve, their integration into routine clinical practice could revolutionize pressure injury prevention strategies.

Economic and Ethical Considerations

Beyond clinical concerns, HAPIs pose ethical and financial challenges for healthcare institutions. Hospitals face financial penalties under value-based purchasing programs if they fail to prevent hospital-acquired conditions, including pressure injuries (Centers for Medicare & Medicaid Services, n.d.). Additionally, these injuries negatively impact patients' quality of life, leading to emotional distress and prolonged recovery. Ethical considerations necessitate prioritizing patient-centered care and continuous staff education on pressure injury prevention (Lindhardt et al., 2020).

Conceptual/Theoretical Model

The Centers for Disease Control and Prevention (CDC) Program and Evaluation Framework is a six-evaluation step guide that is used to understand programs (2011). The six steps include “engage the stakeholders; describe the program; focus the evaluation, design; gather credible evidence; justify conclusions; ensure use and lessons learned” (CDC, 2011). This framework will be utilized alongside the RE-AIM theoretical framework. The RE-AIM theoretical framework focuses on how interventions are adopted, implemented, and sustained in real-word settings (Holtrop et al., 2021). The RE-AIM theoretic includes defining the problem and organizing the resources to fix it, collecting data, analyzing data and defining opportunities,

creating interventions to drive improvement, implementing interventions and showing improvement, and creating a sustainability plan and schedule a 6-month check in (Holtrop et al., 2021). Utilizing both CDC Program and Evaluation Framework and RE-AIM provides a comprehensive approach to conducting the formative evaluation of the HAPI Prevention Project at Banner Thunderbird Medical Center.

Engage the Stakeholders

Identifying the key stakeholders that are involved in the planning, approval, implementation, and sustainment phases is important to establish who is maintaining and enforcing the program (Holtrop et al., 2021). Stakeholders help shape and refine a program before full implementation. A formative evaluation determines if a program is practical, suitable, and well-received in the real-world setting before implementation. Examination of the process and outcomes help determine the feasibility of the intervention. Formative evaluation also focuses on continuous learning and improving implementation efforts (Young, 2021). Establishing key stakeholders is imperative when completing a formative evaluation.

Stakeholders and Governance Structure for the Performance Improvement Project

The key stakeholders for this performance improvement project include the Sponsor and Chief Nursing Officer (CNO) at Banner Thunderbird, the Team Lead and Co-Lead, and a Facilitator.

To ensure accountability and monitor progress, Quality and Safety Council meetings are held on the third Tuesday of each month. These meetings are attended by the Chief Nursing Officer, team leads, and other key administrative staff. The primary objectives of these meetings are to: review progress made toward established performance improvement goals, identify and

discuss areas requiring further improvement, foster collaboration among stakeholders to implement necessary changes, and ensure alignment with organizational quality and safety priorities. This structured and recurring review process supports sustained improvement and reinforces a culture of safety and excellence across the organization.

Following the conclusion of each Quality and Safety Council meeting, one of the co-Team Leaders leads HAPI Bootcamp sessions. These educational classes are designed to disseminate key information and updates to all bedside nurses working in the Intensive Care Units (ICUs), Progressive Care Units (PCUs), and Medical-Surgical Units. Held monthly, the HAPI Boot Camp serves as a critical bridge between administrative leadership and frontline staff. The goal is to ensure consistent understanding and alignment between those overseeing the performance improvement project and those responsible for implementing best practices in daily patient care. These sessions provide nurses with 1) Evidence-based strategies for preventing pressure injuries, 2) Updates on project goals and current performance metrics, 3) Opportunities to ask questions and share feedback and 4) Reinforcement of the organization's commitment to quality and patient safety. By fostering open communication and ongoing education, the HAPI Bootcamp supports a culture of continuous improvement and empowers nursing staff to deliver high-quality, safe patient care.

Describe the Program

Defining the program is the foundation of all the steps in a formative evaluation (CDC, 2024). Collaboration with stakeholders brings clarity to the program description. A logic model can be utilized to showcase the program's activities and its intended outcomes (Kidder et al., 2024). Evaluations consider need, inputs, activities, outcomes, contextual factors, and stage of

development of programs (Kidder et al., 2024). Engaging stakeholders collaboratively helps identify inconsistencies in program descriptions and clarifies the program to align with expected outcomes.

Evaluation Design

Formative evaluations are defined "as a rigorous assessment process designed to identify potential and actual influences on the progress and effectiveness of implementation efforts" (Stetler et al., 2006). There are various uses for formative evaluations, but the main goal is to improve the quality of clinical care. Potential uses include assessing whether a program addresses a significant need, assisting interpretation of program outcomes, standardizing on-going implementation, obtaining ongoing feedback for short-term adjustments, and documenting continual progress (Stetler et al., 2006). Formative evaluations allow researchers to study implementation projects and provide ongoing feedback.

Gather Credible Evidence

Evaluators need to understand the credibility and rigor of data collection occurring in the program. Collaborating with stakeholders helps establish a data collection strategy that "defines expectations for credible evidence, methods that will be used to ensure data quality, indicators and associated measures of interest, and data sources" (Kidder et al., 2024). It is essential that evaluation data collection methods ensure the accuracy, reliability, and credibility of the data gathered.

Justify Conclusions

Transparency of the formative program evaluation allows insight on the strengths and limitations of the program. Evaluators and stakeholders work together to understand the findings

and focus on areas for improvement to promote health equity (Kidder et al., 2024). Implementing perspectives from the evaluator and stakeholders, with systematic data collection and analysis, supports the development of informed recommendations and promotes timely action on evaluation findings (Kidder et al., 2024).

Ensure Use and Lessons Learned

Effectively using evaluation data, promoting accurate understanding, and ensuring the evidence is well-understood are all vital to facilitating the use of evaluation findings. Evaluators help "interpret results, surface insights, foster learning, and guide stakeholders in applying findings to improve programs" (Kidder et al., 2024). Evaluators may find additional opportunities to share evaluation information throughout implementation as they arise. Turning findings into action involves thoughtful planning, adapting results for practical application, and establishing clear steps to guide implementation (Kidder et al., 2024). To stay informed and responsive, evaluators can proactively engage collaborators by asking questions and exploring innovative ways to involve stakeholders.

Purpose

The goal of this DNP project is to conduct a formative program evaluation to assess the development, implementation, and impact of Banner's Thunderbird Medical Center (BTMC) HAPI reduction efforts since the program's inception in March 2024 until the end of September 2025. It will also gather baseline data from January 2023 to September 2025 to compare the HAPI rates before and after the implementation of the Performance Improvement Project Charter. The project will identify strength and gaps, ensure alignment with root causes, and provide an opportunity for the hospital to make any necessary course corrections to achieve their

HAPI goal of no more than 2.95 HAPIs per 1,000 patient discharges by December 31, 2025. This formative evaluation will also lay the foundation for a summative evaluation to be completed by the hospital team after the end of the goal period. In summary, the formative evaluation determines whether the interventions are practical, feasible, and applicable to everyday nursing practice.

Methods

Site

Banner Thunderbird Medical Center (BTMC) is a level 1 trauma center that has 595 beds currently experiencing a significant issue with hospital-acquired pressure injuries (HAPIs). There is on average 3.3 HAPIs per 1,000 patient discharges at BTMC, which is a decrease from the rate of 6.3 HAPIs per 1,000 patient discharges before the inception of this program. HAPIs can lead to excess length of stay (LOS) of 4 days per affected patient and costs $2.8 million for the facility. The average length of stay for a patient at BTMC is 5 days. The increased incidence of HAPIs can also cause lower performance ratings on quality benchmarks, which can affect the hospital's reputation. The Performance Improvement Project Charter implemented HAPI Bootcamps which are evidence-based training sessions that focus on prevention, early detection, and management of pressure injuries. The formative evaluation assessed the implementation efforts of the Performance Improvement Project Charter aimed at developing and embedding evidence-based practices to reduce the incidence of HAPIs.

Participants

This formative evaluation involved nursing staff across inpatient hospital units within Banner Health. Participants included RNs and PCTs who are directly involved in patient care.

The units involved include 3 ICU units, 5 PCU units, and 4 MS units. The total staff across participating units included approximately 1,000 RNs and 1,500 PCTs. Including all levels of nursing staff ensures a comprehensive understanding of the clinical practices, workflows, and barriers related to the prevention of hospital-acquired pressure injuries (HAPIs).

Intervention

This formative evaluation DNP project utilized the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance) to evaluate Banner Healthcare's HAPI Bootcamp intervention (Holtrop et al., 2021). Provided below are methods under each RE-AIM domain for this formative evaluation DNP project.

Reach

Reach refers to the extent of participation in the program. The objective of the HAPI prevention program is to involve all nursing staff across the organization, including RNs and PCTs. This participation was achieved through mandatory HAPI reduction policies endorsed by leadership. The evaluation measured the extent of participation. Data collection for the evaluation involved assessing the number and percentage of nursing staff who attended the HAPI Bootcamps, conducting a demographic analysis to determine representativeness, and analyzing feedback collected in surveys to identify barriers to participation (Appendix E).

Effectiveness

Effectiveness refers to whether the program has been effective in achieving the primary goal. The goal of the HAPI reduction program is to reduce the incidence rate of hospital-acquired pressure injuries (HAPIs) following the interventions that comprise the program. Effectiveness was measured by analyzing HAPI rate using hospital data to determine the changes over time. To

determine the overall effectiveness of the program, this evaluation compared baseline HAPI rates from the beginning of the program in March 2024 to HAPI rates at specific intervals throughout the program to measure a change.

Adoption

Adoption refers to the degree in which the participants have acquired the necessary knowledge to implement the components of the program. The objective of the program is to increase nursing staff knowledge about HAPIs and how to prevent them. The objective of the evaluation is to measure knowledge acquisition of the staff following monthly HAPI bootcamps held by the team leaders since March 2024. This involved utilizing data collected by unit leadership that analyzed pre and post survey scores of RNs and PCTs collected during HAPI bootcamps. As of January 2025, the team leaders decided to increase the HAPI bootcamps to twice monthly to reach more staff. There are approximately 1000 RNs and 1000 PCTs that need to participate in the bootcamps. For each bootcamp, there are about 40 staff members that attend, and they must attend one session. The surveys, designed by the HAPI Prevention Team, completed after the session provide quantitative data and qualitative insight to assess their awareness and uptake of pressure injury prevention protocols in their practice.

Implementation

Implementation refers to the fidelity and consistency with which the HAPI prevention interventions are delivered. This was measured through chart audits and process-level indicators including patient repositioning frequency, completion of skin assessments, and adherence to HAPI prevention protocols. Manual tracking of Braden interventions and spot checking on the

units by unit leadership was done every month to monitor if what the nurses were charting was an accurate representation of the patient.

Maintenance

The goal of the HAPI prevention program is to be sustainable for the long term to ensure consistently low HAPI rates at BTMC in the future. To evaluate the sustainability of the HAPI prevention activities over time, the hospital performance improvement team will continue to review compliance reports and HAPI rates every three to six months after the end of the goal period. Data collection tools included longitudinal outcome tracking and policy compliance logs. The evaluation of sustainability falls outside the scope of this project.

Data Analysis

Reach

Quantitative data was collected on the number and percentage of nursing staff, specifically RNs and PCTs who attended the HAPI Bootcamp sessions from March 2024 to September 2025. Attendance records were reviewed to calculate participation rates and to identify representation across the ICU, PCU, and MS units (Appendix E). Descriptive statistics (mean, median, and mode) were used to summarize participation data and demographic analyses were conducted to assess the representativeness of attendees.

Effectiveness

Effectiveness was evaluated by examining whether the HAPI Bootcamp program contributed to a reduction in hospital-acquired pressure injuries (HAPI) rates. To evaluate the effectiveness of the prevention protocol adherence, we measured compliance rates with HAPI prevention measures from the start of the program until September 2025, using descriptive

statistics to identify trends or changes. Quantitative data on HAPI incidences were collected from all hospital units from March 2024 to September 2025. Descriptive statistical analyses (mean, median, mode) were used to compare HAPI rates over time and across units to determine improvements or declines in adherence and HAPI outcomes.

Adoption

Adoption was measured by evaluating staff knowledge acquisition and engagement with the HAPI Bootcamp content. The project initially planned to analyze pre- and post- HAPI Bootcamp survey data using paired T-tests or Wilcoxon signed-rank tests (depending on data distribution) to determine statistically significant changes ($p < 0.05$) in staff knowledge. However, because the pre/post survey data was deleted after each session, this analysis could not be completed. Instead, HAPI Bootcamp evaluations completed by each participant after each session from March 2024 to September 2025 were analyzed descriptively to serve as the adoption measure (Appendix B). The HAPI Bootcamp evaluations asked participants to rate the HAPI Bootcamp from 1-5 (1= poor, 5=excellent), list two things they learned during the session, and offer constructive feedback (Appendix E).

Implementation

Implementation was analyzed by evaluating the fidelity of the HAPI prevention protocol application. Data from monthly chart audits and process-level indicators-such as patient repositioning frequency were collected and analyzed. Manual tracking and random spot checks by unit leadership verified the accuracy of nursing documentation. Descriptive statistics summarized compliance levels over time, which provided insight into the consistency and reliability of program delivery.

Maintenance

Maintenance focused on the long-term sustainability of the HAPI prevention program. Data analysis included review of compliance reports and longitudinal tracking of HAPI rates every three to six months after the goal period. The performance improvement team continues to collect and monitor data to ensure ongoing adherence and sustained improvement. Data was compiled using compliance logs; however, evaluation of sustainability falls outside the current project's scope.

Ethical Considerations

Every effort was made to protect the privacy, dignity, and rights of both patients and staff involved in this project. Because this is a quality improvement initiative that aligns with best practices in patient care. However, all data used was de-identified, and no personal or identifying information was included in any reports or publications. The project was carried out with care and respect for everyone involved.

IRB Review and Approval

Before the project began, it was submitted to the appropriate Institutional Review Board (IRB) for review and approval. All project activities followed ethical standards for research and quality improvement involving human subjects.

Results

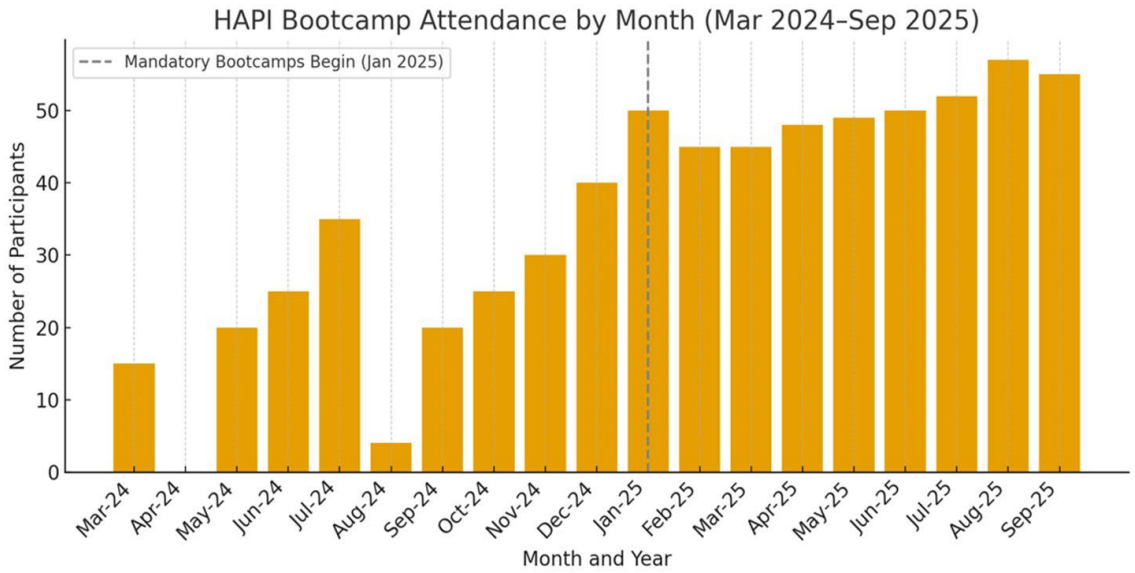
Reach

Participation of nurses and patient care technicians in the HAPI Bootcamps varied throughout the 19-month study period from March 2024 to September 2025, with a total of 556 participants engaged in the program. The highest participation months were August 2025 with 57

participants, September 2025 with 55 participants, January 2025 with 50 participants, and June 2025 with 50 participants. The lowest participation month was April 2024 with no recorded participants and August 2024 only had 4 participants. There has been a notable increase in participation beginning in January 2025, with sustained engagement through September 2025, due to making the HAPI Bootcamps mandatory for all staff in PCU, ICU, and MS units (Figure 2). The nurses on the PCU floors demonstrated the highest participation throughout the study period with 160 total participants, followed the PCTs on the PCU floors with 55 participants and nurses on the MS floors with 45 participants. There is an "Unknown" category that recorded 164 participants, which was due to the lack of participants sharing their title or unit they belong to on the attendance sheet.

Figure 2

HAPI Bootcamp Attendance by Month, March 2024 to September 2025



Note. Figure generated with assistance from ChatGPT (OpenAI,2025). This figure shows monthly attendance counts for HAPI Bootcamp education sessions from March 2024 through September 2025. The dashed vertical line indicates when Bootcamp sessions became mandatory (January 2025). Attendance increased drastically after and reflects improved program reach and engagement across all units.

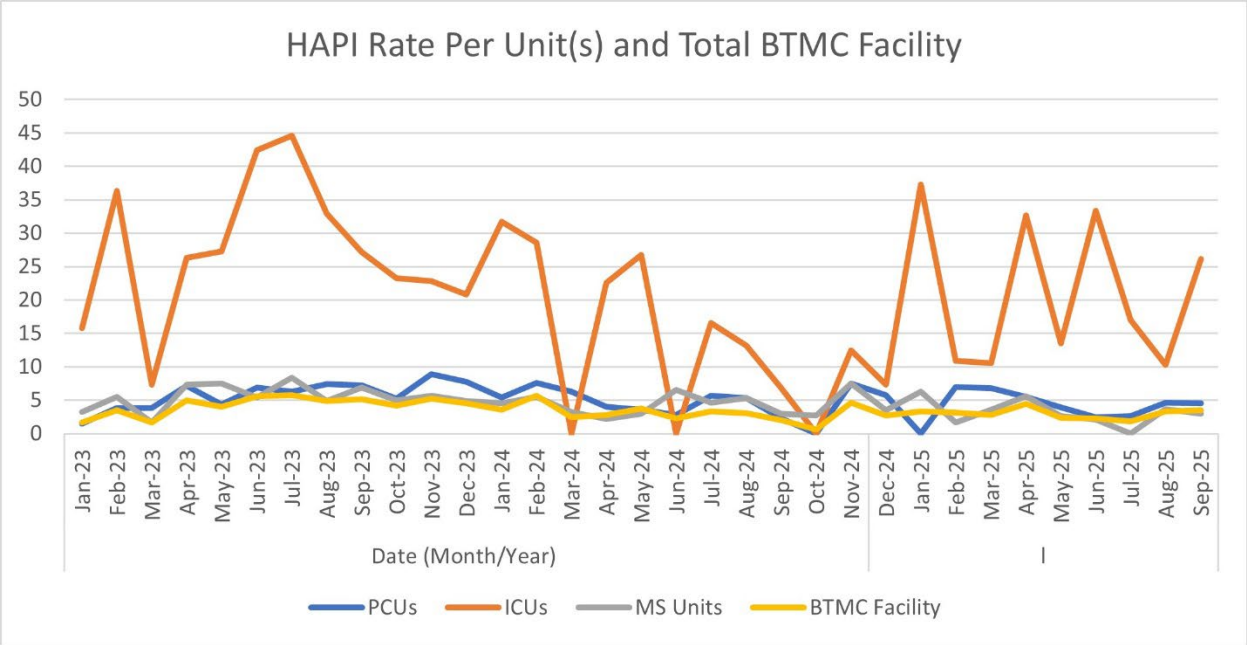
Effectiveness

Hospital-acquired pressure injury rates demonstrated varied trends across the Progressive Care Units (PCUs), Intensive Care Units (ICUs), and Medical-Surgical Units (MS) at Banner Thunderbird Medical Center from 2023 to 2025. HAPI rates are defined as rate of HAPI encounters with stages 3, DTI, and unstageable in 1,000 encounters of inpatients. The numerator is the number of encounters that meet HAPI definition, and the denominator is number of inpatient encounters. The PCUs showed consistent improvement, with mean HAPI rates declining from 5.87 in 2023 to 5.1 in 2024, and further decreasing to 4.68 in 2025, representing a 20.3% reduction over the three-year period. The MS units showed the most substantial and sustained improvement, with mean rates decreasing progressively from 5.53 in 2023 to 4.29 in 2024, and reaching 3.57 in 2025, reflecting a 35.4% overall reduction. However, the ICUs demonstrated a more convoluted pattern, with mean rates initially declining sharply from 27.17 in 2023 to 18.44 in 2024, a 32.1% decrease, but then increasing to 21.29 in 2025. Although, their rates remain the highest compared to the rest of the units, the ICUs maintained a 21.6% reduction from baseline 2023 levels. The ICUs demonstrated rates approximately four to five times higher than the HAPI rates of both PCUs and MS units throughout all three years. This reflection could be due to the increased acuity and risk profile of the critically ill patient population. The BTMC facility goal for the end of year 2025 is 2.95. The average 2023 HAPI rates was 4.26, in 2024 was 3.06, and 2025 is trending 3.02. In 2024, the facility showed improved over 2023, with the average rate decreasing from 4.26 to 3.06. Currently in 2025, the HAPI rate is maintaining similar performance to 2024 with 3.02 as the current average through September. In July 2023

the highest rate was 5.75. There has been an overall downward trend in HAPI rates from 2023 to present (Figure 3).

Figure 3

HAPI Rate per Unit(s) and Total BTMC Facility, January 2023 to September 2025



Note. This figure illustrates the hospital-acquired pressure injury (HAPI) rates per 1,000 discharges across the intensive care units (ICUs), progressive care units (PCUs), and medical surgical units (MS) from January 2023 to September 2025. Overall trends demonstrate declining HAPI rates across all units, with the largest improvement observed in the medical-surgical units.

Adoption

The participants of the HAPI Bootcamp provided evaluation ratings, learning points, and constructive feedback after the program. The HAPI Bootcamp evaluations reflected consistently high satisfaction and engagement among participants. The evaluation rating was 0 to 5, with 0 being the lowest satisfaction score and 5 being the highest. The mean rating was 4.86, with a median of 5 and a mode of 5, which indicates the highest rating was the most frequently given score. Ratings of 1 or 2 were nonexistent, with only 2 instances of rating of 2 recorded across all

months (August 2025). Ratings of 3 were rate only being seen 6 times and ratings of 4 appeared 35 times. Many of the evaluations were scored as 5, which was 449 out of 492 total ratings that represented 91.3% of all responses. Participants consistently identified recurring learning points centered on several key aspects of pressure injury prevention. The recurring themes included understanding the role of adequate nutrition in skin integrity and healing, correct use of pressure-relieving equipment, proper application of InterDry to manage moisture and friction, and proper use of waffle boots to reduce pressure on high-risk areas.

The constructive feedback of the participants was overwhelming positive and valuable for program improvement. The most common feedback themes focused on session length and pacing, with requests for shorter sessions and scheduled breaks. The participants voiced a desire for more interactive learning, such as demonstrations, small group activities, and case discussions. There were also recommendations to integrate HAPI Bootcamp into new staff orientation and consider online options. These suggestions highlight opportunities to improve engagement by accommodating diverse learning needs and improve the overall learning environment while providing the educational content that is valued by the participants. In summary, participant evaluations reflected strong engagement and satisfaction, with valuable insights that will inform ongoing refinement and sustainability of the HAPI Bootcamp initiative

Implementation

The evaluation of the program's implementation identified several challenges and innovations over time. Prior to the HAPI Bootcamps, in 2023 until 2024, they utilized Safe Skin Audit Tools that compared charting accuracy with visual observations patient positioning, offloading devices, and moisture management (Table 1).

Table 1

Safe Skin Audit Tool

Room:	RN:	PCA:
	Room Evaluation	Interventions Charted
Patient Positioning	○ Supine ○ Left Side ○ Right Side ○ Sitting in Chair	○ Supine ○ Left Side ○ Right Side ○ Sitting in Chair
Off Loading Devices	○ Pillows ○ Wedges ○ Waffle Boots ○ Waffle Cushion ○ Ear/Nasal Cushions ○ Specialty Bed	○ Pillows ○ Wedges ○ Waffle Boots ○ Waffle Cushion ○ Ear/Nasal Cushions ○ Specialty Bed
Moisture Management	○ Purewick/Male Incontinence Pad ○ Inter Dry ○ Chux ○ Supplies Available in Room	○ Purewick/ Male Incontinence Pad ○ Inter Dry ○ Chux ○ Supplies Available in Room
Notes/Education Provided: ☐ MVP Sent		

This table demonstrates an auditing tool that was used by designated auditors to compare charting accuracy with visual observations, patient positioning, offloading devices, and moisture management. Each unit was assigned an auditor that was either another staff nurse on that unit or a manager, and they would assess high-risk patients and provide real-time staff education. However, this process was found to be labor intensive and time consuming. In 2024, a Microsoft Forms audit was piloted on the PCU units to streamline data collection. The HAPI mPage

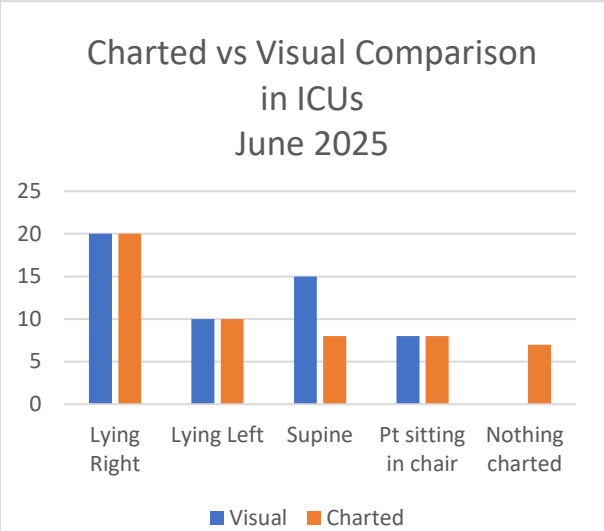
creation went live officially on September 2025 and helped provide a real-time electronic audit platform and reduce auditing time. Despite improved efficiency, data from June 2025 to September 2025 (see Table 2,3, and 4) revealed inconsistencies throughout every unit between what was visually audited and charted. Examples included patients found supine, and either nothing was charted, or they were charted as lying left or right. Findings highlight a need for additional staff education on accurate charting and patient repositioning, along with an assessment of barriers that hinder staff from performing these essential duties.

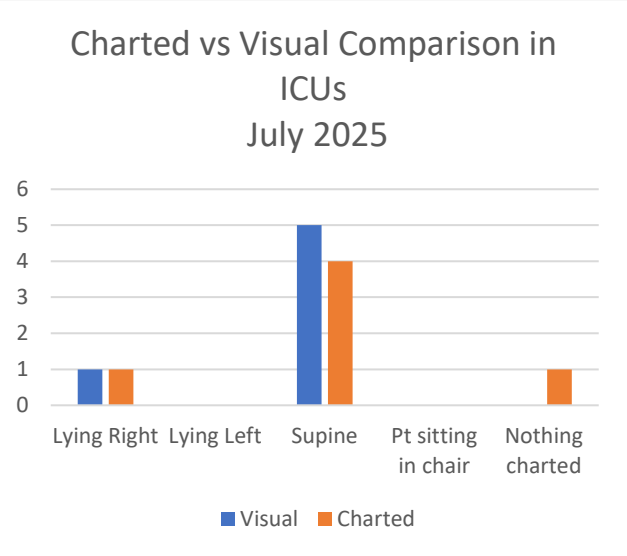
Maintenance

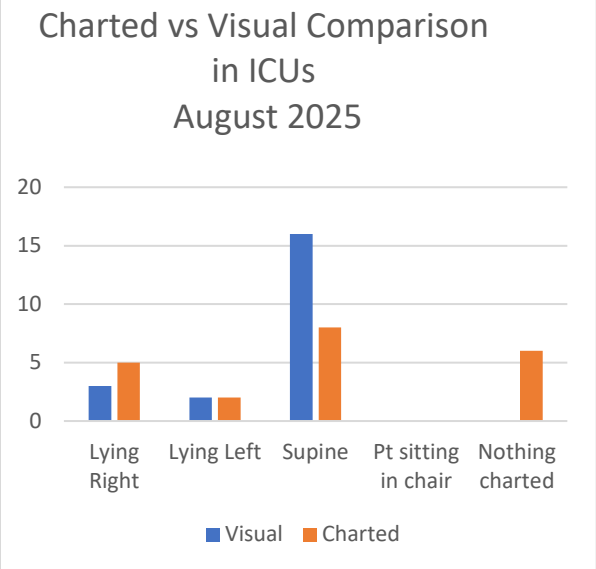
Long-term sustainability evaluation was outside of this project's primary scope; however preliminary indicators suggest continued support for the HAPI Bootcamp initiative. The BTMC HAPI Prevention Team realized the data collection related to HAPI Prevention was challenging and problematic due to lack of streamlined system data. To address this problem, they created a HAPI mPage that is a real time auditing tool that is used across all facilities to decrease the time it takes to visualize the intervention details already charted for the high-risk patient on the unit to round on staff to 10 minutes. When auditors completed their rounds, it took 34.5 minutes for them to do chart reviews, and with the mPage it now takes 5 minutes, which is an 85% decrease in time. As of March 2025, an individual can look at the mPage and observe an entire unit of patients in minutes, for example it takes 1.5 minutes to look up a 40-patient unit. The continued integration of HAPI Bootcamp training and digital tools demonstrates organizational commitment to sustaining gains in HAPI prevention and staff education.

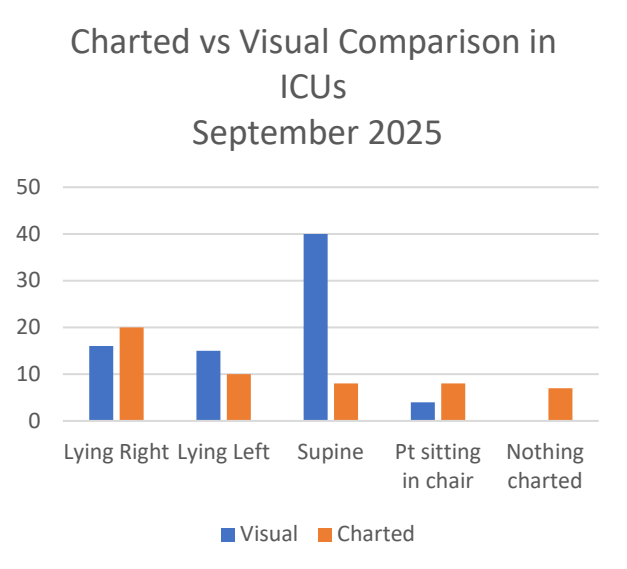
Table 2

Audit Protocol Adherence: Visual vs Charted Patient Positions in ICU Units (June to September 2025)





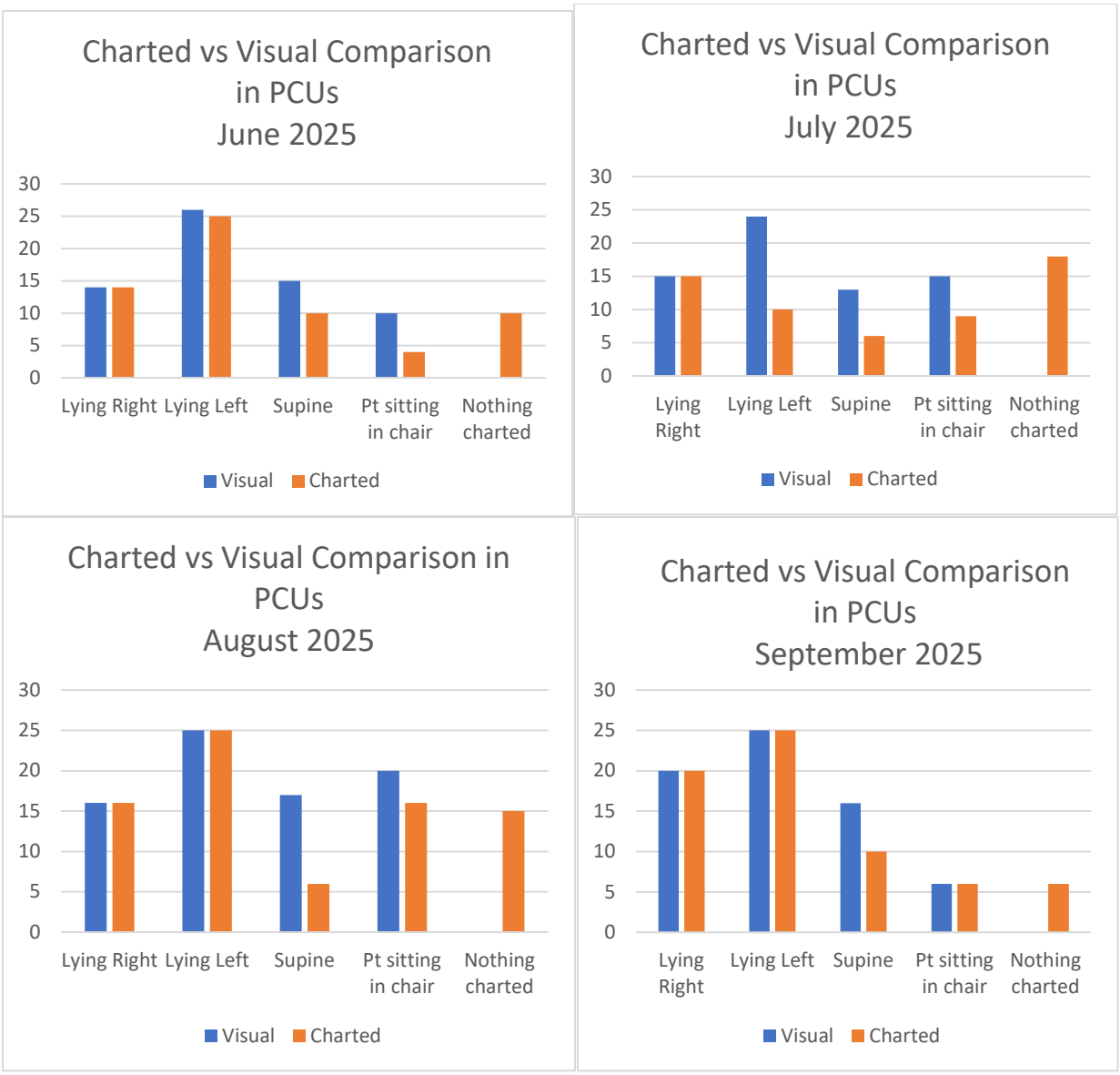




This table demonstrates the charted vs. visual comparison of the patients in the ICU units.

Table 3

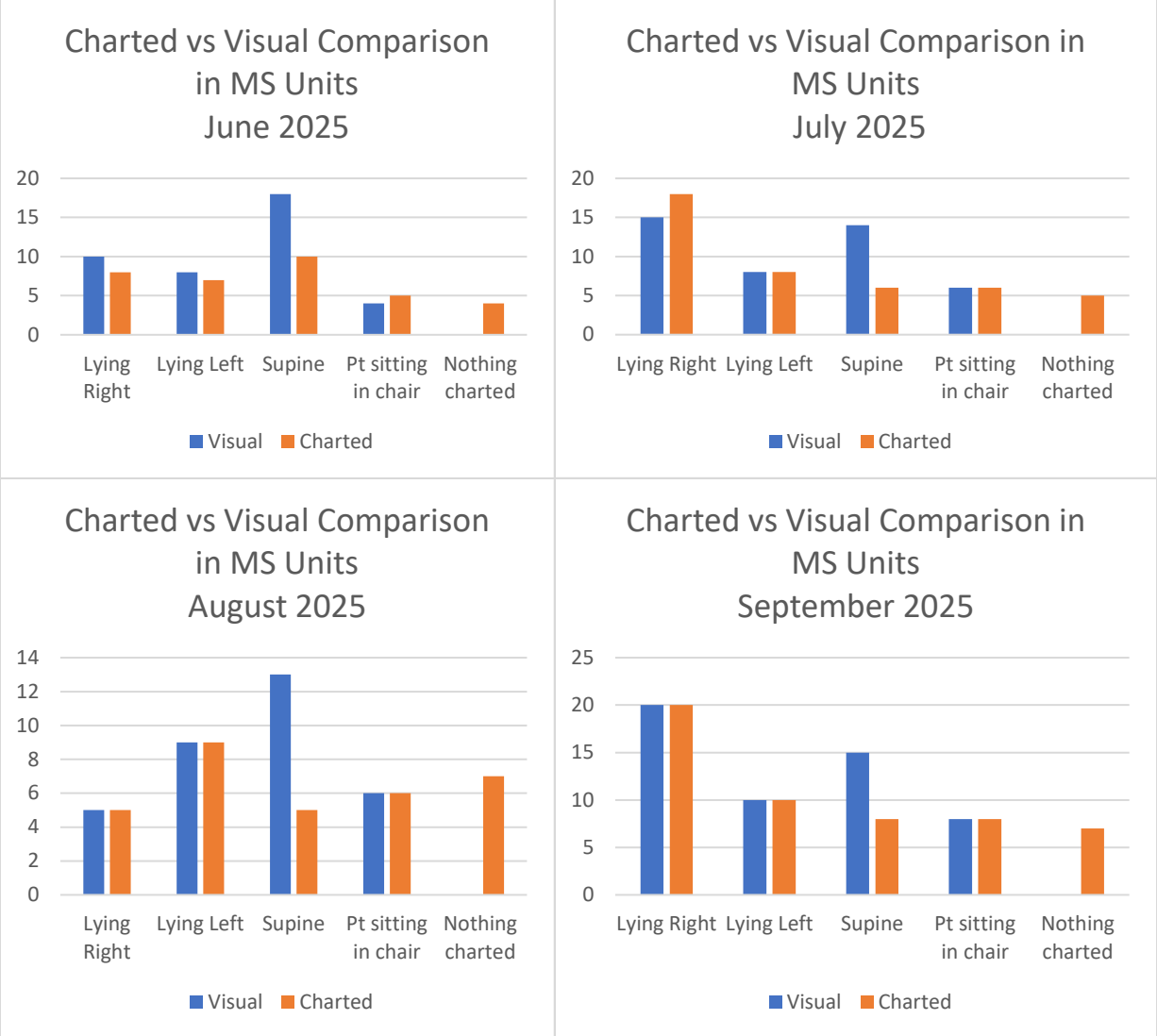
Audit Protocol Adherence: Visual vs Charted Patient Positions in PCU Units (June to September 2025)



Note: This table demonstrates the charted vs. visual comparison of the patients in the PCU units.

Table 4

Audit Protocol Adherence: Visual vs Charted Patient Positions in MS Units (June to September 2025)



Note: This table demonstrates the charted vs. visual comparison of the patients in the MS units.

Discussion

The HAPI Bootcamp program demonstrated strong participation and adoption from the RNs and PCTs, as evidenced by high participation rates, identified learning points, and exceptional satisfaction scores. There has been a total of 556 participants across 19 months, with a mean satisfaction of 4.85/5, which indicates a high acceptance among RNs and PCTs. Enforcing mandatory attendance to the HAPI Bootcamps in July 2025 resulted in sustained engagement through September 2023, particularly from the ICU staff who had previously lower participation rates. It is worth noting that formal-knowledge acquisition data through pre- and post- HAPI Bootcamp quizzes were planned but unavailable for analysis due to deletion at the site level before data extraction could occur. This represents a significant data quality concern that highlights the necessity of improved tracking mechanisms and data governance protocols.

Audit findings and HAPI outcomes data from 2023 to 2025 at Banner Thunderbird Medical Center showed an overall improvement in hospital-acquired pressure injury prevention outcomes. The BTMC facility HAPI rate decreased from 4.26 in 2023 to 3.02 in 2025, which represents a 29.1% reduction. However, the facility has not yet achieved its target goal of 2.95 per 1,000 encounters by the end of 2025. The Medical-Surgical units achieved the greatest improvement with a 35.4% reduction in HAPI rates, which got closer to the target rate of 3.12. The Progressive Care Units showed the most consistent progress with a 20.3% reduction in HAPIs. In contrast, the worst performing units were the ICU units that achieved a 32.1% reduction from 2023 to 2024 but in 2025 have rates increasing from 18.44 to 21.29 per 1,000 patient encounters. Although this represents a setback, the ICU units' rates remain 21.6% below baseline 2023 levels. The persistently elevated HAPI rates in the ICUs likely represent the

increased acuity and risk profile of the critically ill patient population, who face greater physiological instability, prolonged immobility and hemodynamic compromise that put them at higher risk for pressure injury development.

Despite strong educational participation and high satisfaction with the HAPI Bootcamp, the visual and charted data revealed discrepancies between observed clinical practice and documented care. The findings suggest educational interventions alone are not sufficient to ensure consistent translation of knowledge into both clinical practice and accurate documentation. There are several barriers contributing to these discrepancies, such as time constraints, clinical demands, and poor integration of documentation into clinical workflows. The high-acuity environments of the ICUs, where documentation discrepancies were observed to be the worst despite intensive educational efforts, demonstrates the barriers mentioned.

To achieve the facility's goal of 2.95 HAPI encounters per 1,000 patient discharges by the end of 2025, several corrections need to be considered. It's necessary to address the ICUs rebound in HAPI rates and implement targeted interventions that include changes in patient acuity, staffing ratios, and resource availability. Providing more support to staff and unit-specific interventions is what is going to help improve the HAPI rates in the ICUs. The chart audits showed documentation gaps after the implementation of HAPI Bootcamps throughout all units which indicates a need for a different approach beyond education. Focusing on re-designing workflow to include documentation into clinical routines and have real-time audit feedback can help address what the staff needs to be successful in documenting and performing accurately. Utilizing the HAPI mPage tool to monitor documentation completeness and accuracy during shift rounds may enhance accountability. Improving data quality and tracking mechanisms is

important to help evaluate the ongoing HAPI Bootcamp program. To keep better track of participant's role and units on attendance sheets, there should be an implementation of an electronic attendance tracking sheet through the mPage or similar system. Finally, future program improvements should incorporate the feedback from the participants including shorter sessions, more interactive learning modalities, integration into new staff orientation, and online learning options. Accommodating diverse learning preferences and reducing the demanding nature of the program could help boost engagement and improve knowledge retention.

Alignment with DNP Essentials

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

The HAPI Bootcamp reflects interprofessional collaboration by encouraging RNs, PCTs, and leadership from multiple units to address hospital-acquired pressure injury and improve patient outcomes. The HAPI Bootcamp helps to provide real-time education to the RNs and PCTs and identify areas for improvement in terms of prevention strategies, equipment use, and documentation. The participation of the staff with educators shows effective interprofessional teamwork. The shared accountability amongst staff for HAPI rates, helped to decrease the HAPI rates and led to sustained improvement in the PCU and MS units. The ICUs require continued interprofessional collaboration due to their higher HAPI rates and more complex patient scenarios. Effective communication and feedback integration is also important to help strengthen team communication and based on the participant feedback and satisfaction data from the HAPI Bootcamp it represents a culture encouraging open communication. Finally, the combination of HAPI data trends, participation rates, satisfaction score, and time-efficiency metric demonstrates

data-informed collaboration. The creation of mPages represents improvement in practice to help improve patient outcomes. Overall, this project exemplifies DNP Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes, by interprofessional and data-driven collaboration. The HAPI Bootcamp is a unifying educational and quality improvement that helps cultivate open communication, improve prevention practices, and reduce hospital-acquired pressure injuries.

Sustainability

The HAPI Bootcamps are sustainable and effective in educating RNs and PCTs on how to reduce healthcare-acquired pressure injuries in patients. The ongoing staff education through mandatory HAPI Bootcamps and implementing them into the orientation program will help support the program's continuity and institutionalization. The implementation of the HAPI mPage is a major advancement toward sustainability. It helped reduce time by 85% and allowed real-time visualization of interventions for the entire units. The mPage tool allows continuous monitoring, standardizes chart reviews, and provides real-time feedback. The introduction of the HAPI mPAge could help institutionalized HAPI-reduction efforts across all Banner facilities to help reduce HAPIs.

Limitations

The limitations of the performance improvement project charter include incomplete data tracking, survey limitation, documentation variability, ICU complexity, and manual data collection in the early phase. While doing the HAPI Bootcamps attendance sheets, it would be better to utilize a digital solution versus a paper attendance sheet to keep better track of participants, their role, and area of work. There was a large "unknown" category due to

participants not putting their role or what specific area they work at, which led to a limited analysis. Participants also completed pre- and post-surveys for the HAPI Bootcamp class, and the surveys are deleted after each session, which prevents a longitudinal measurement of knowledge gain. However, the pre- and post-surveys may inaccurately represent true knowledge acquisition, because participants scores are expected to increase right after they receive the education on the topics they are going to be tested on. The inaccuracy of pre and post survey leads to misleadingly positive and negative assessments of the intervention's effectiveness. The documentation variability reflected the inconsistencies of charting, as reflected in the audit discrepancies between observed and documented positions. Comparing units to the ICUs without taking into consideration the higher acuity and variability in patient conditions skew HAPI rates and make cross-unit comparison less precise. Many of the patients that are charted as supine and are supine in the ICUs have a device that prevents them from moving. Reliance on manual data collection caused a limit in sample size and consistency before the mPage implementation. It is imperative to establish permanent survey data storage for future evaluations.

Conclusion

The formative evaluation of Banner Thunderbird Medical Center (BTMC) Hospital-Acquired Pressure Injury (HAPI) Prevention Program demonstrates progress toward achieving the organizational goal of less than or equal to 2.95 HAPIs per 1,000 patient discharges by December 2025. The program combines staff education through HAPI Bootcamps with system improvements and data-driven auditing practices. The program shows how preventable HAPIs are and that these prevention efforts are sustainable. From 2023 to 2025, BTMC's overall HAPI rate declined from 4.26 to 3.02 per 1,000 patient discharges. The most substantial reductions

occurred in the Medical-Surgical (MS) and Progressive Care Units (PCU), which also had the highest participation rate in the HAPI Bootcamps. However, the Intensive Care Units (ICUs) had the highest HAPI rates, and least amount of participation in the HAPI Bootcamps. The persistent high HAPI rates in the ICUs indicates a need for targeted education, staff support, and process improvements. Overall, the formative evaluation findings support BTMC's HAPI Prevention Program reaching its 2025 goal of 2.95/1,000 by the end of December. The development of the HAPI mPages and Bootcamps help cultivate a culture of prevention and accountability, and continued interventions in high-acuity units will promote patient safety and quality care.

Implications for Future Practice

The performance improvement project charter recognizes that to reduce HAPI rates, there needs to be an enhancement in documentation accuracy, expansion in data integration, and interventions targeting high-risk units. The gap between observed and charted patient positions indicates the need for real time education to staff members and identification of barriers preventing nursing from charting and turning their patients appropriately. If there is better accountability of the HAPI Bootcamp attendance, audit compliance, and HAPI outcomes then it is possible to identify the interventions that are most successful in lowering HAPI rates. It is essential to concentrate on targeted ICU interventions to reduce the amount of HAPIs occurring in the Intensive Care Units.

Appendix A

Pre-/Post-HAPI Bootcamp Quiz

1. What nutrition supplement would be considered first for a patient who is diabetic?
    a. Glucerna
    b. Ensure
    c. Nephro
    d. Thrive Ice Cream
    e. All of the above
2. A brief should be placed on a patient with a Purewick to help keep the Purewick in place.
    a. True
    b. False
3. What interventions would you implement for a patient who is “constantly moist”? Select all that apply.
    a. Barrier Cream
    b. External Catheter
    c. Interdry
    d. Extra Chux pads
    e. PH balanced soap
    f. All of the above
4. What Braden Score indicates a patient is at risk for developing a Pressure Injury?
    a. 12 or less
    b. 15 or less
    c. 18 or less
5. The 6 sub scales of the Braden Assessment are:

   a. Sensory, moisture, mobility, nutrition, friction and shear, and activity
   b. Sensory, moisture, activity, nutrition, movability, and friction
   c. Friction and shear, activity, mobility, nutrition, sensory, and condensation

6. If a patient's sensory perception is "completely limited", what are some interventions that you would implement? Select all that apply.
   a. Reposition every 2 hours
   b. Consider a wound consult
   c. Float heels
   d. Consult for a specialty bed
   e. All of the above
7. How often should the Braden Scale be assessed and documented?
   a. Upon admission, every shift, at change of caregiver, and change of condition
   b. Every 24 hours, change of caregiver, and change of condition
   c. Upon admission and every shift
8. Do we need an order from the Doctor for a nutrition supplement?
   a. Yes
   b. No
9. What is allowed on a specialty bed underneath a patient?
   a. Fitted sheet with one chux pad
   b. Flat sheet with two chux pads
   c. Flat sheet, draw sheet, and one chux pad
   d. Flat sheet with one chux pad

10. Whose job is it to document nutritional intake?

    a. RN

    b. PCA

    c. Dietary Tech

    d. RN and PCA

Appendix B

HAPI Bootcamp Evaluation

1. *How valuable was the information shared today on a scale of 1–5?* (5 being the most relevant, valuable, and important)

2. *What are two things you learned today that you will be able to apply to your practice?*

3. *What suggestions do you have to make this class even better?*

Appendix C

Evidence Table

Citation	Title of Document or Instrument	Type of Evidence	Main Outcome of Findings	Relevance to Project
Isfahani et al., 2024	Prevalence of hospital-acquired pressure injuries in intensive care units of the Eastern Mediterranean region: a systematic review and meta-analysis	Systematic Review and meta-analysis	HAPIs happening in the intensive care setting is 13.6% in the United States.	Establish prevalence of HAPIs in the intensive care setting
Padula & Delarmente, 2019	The national cost of hospital-acquired pressure injuries in the United States	Systematic Review	United States healthcare system spends $26.8 billion annually	Economic Impact
Weng & Chang, 2023	Extrinsic factors of pressure injuries in patients during surgery: A frequency matched retrospective study Guideline 2019	Retrospective study	Age, obesity, diabetes, cardiovascular diseases, anemia, and malnutrition	Intrinsic Risk Factors
Edsberg et al., 2016	Revised National Pressure Ulcer Advisory Panel Pressure Injury Staging System: Revised Pressure Injury Staging System	Clinical Guideline	Immobility, medical devices, friction, shear forces, inadequate care	Extrinsic Risk Factors
Lovegrove et al., 2022	Effectiveness of interventions to prevent pressure injury in adults	Systematic review and meta-analysis	Braden Scale, pressure redistribution,	Prevention Strategies

	admitted to intensive care settings: A systematic review and meta-analysis of randomised controlled trials		repositioning, moisture management.	
Turmell et al., 2022	Improving Pressure Injury Prevention by Using Wearable Sensors to Cue Critical Care Patient Repositioning	Clinical Study	Visual cueing about patients' mobility needs is associated with increased compliance with the facility repositioning protocol.	Technological Innovations
Lindhardt et al., 2020	Nursing care for older patients with pressure ulcers: A qualitative study.	Qualitative Study	Patient safety, quality of life, staff education	Ethical Considerations

Appendix D

Site Authorization Approval Letter

Banner Thunderbird Medical Center

Date: 09/02/2025

To: Hannah Tufarelli
University of Arizona
Doctor of Nursing Practice Student

cc: Dr. Heather Carlisle Committee Chair / Amy Krisko Mentor/ Banner Health Research Determination Committee (via iRIS)

From: Patrick Schultz, Director of Quality Improvement

Re: A Formative Program Evaluation of a Performance Improvement Project Charter: HAPI Reduction

Our team at the Banner Thunderbird Medical Center (BTMC) Quality Improvement Department has assessed the above referenced project proposal for implementation potential and determined that the project is feasible and congruent with Banner Health initiatives: Reducing Hospital-Acquired Pressure Injuries (HAPI). It aligns with our goal toward Zero Preventable Harm.

The resources needed, of staff time & effort, equipment, and supplies, have been reviewed and determined necessary/acceptable. Further it is my understanding that nursing directors and nursing departments impacted by the project are in support the project. Amy Krisko, Associate Nursing Director and co-lead of the HAPI reduction team is closely involved with this project.

The Banner Health Research Determination Process requires this letter of support along with the project application be uploaded into the IRIS electronic program. The Banner Research Determination Committee (RDC) will then review your initiative. This same committee will provide one final check for HIPPA compliance.

Following a determination of non-research, non-human subjects research, or exempt human subjects research that falls under one of the categories the RDC may grant approval for, you will be notified of approval to begin your project at Banner Thunderbird Medical Center.

However, should the RDC determine your project constitutes human subjects research or involves protected health information (PHI), that requires Institutional Review Board (IRB) review, you will be notified and may begin the IRB review process. If your project will be reviewed by the Banner Health IRB, the Banner Research Regulatory Affairs team will also be notified to assist you with the submission process. You may not initiate the project until the IRB has granted approval.

Should you have any questions during the process, please contact Shelly Fleiner <Shelly.Fleiner@bannerhealth.com> or RDC Staff at mailto: BHIRB_RDCMailbox@bannerhealth.com. Upon completion of your project, we request that you disseminate your findings to Banner Thunderbird Medical Center Quality Improvement Department to share at our Quality and Safety Council or in another mutually agreed upon forum. Best wishes on the successful completion of your project.

Sincerely,

Patrick Schultz MS, RN, ACNS-BC, CPHQ

☒ By checking this box, I attest to the project feasibility and confirm all necessary department/facility approval have been obtained.

[redacted]

Appendix E

Data Collection Tool

HAPI Boot Camp Attendance by Unit/Role																							
Unit	Date (month and year)	March 2024	April 2024	May 2024	June 2024	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024	January 2025	February 2025	March 2025	April 2025	May 2025	June 2025	July 2025	Aug-25	Sep-25		Total Per Category	
PCU - RN																							
PCU - PCA																							
ICU - RN																							
ICU - PCA																							
MS - RN																							
MS - PCA																							
OBS - RN																							
OBS - PCA																							
CCO - RN																							
CCO - PCA																							
PCT																							
CVICU RN																							
LLA PCT																							
Unknown																							

HAPI Boot Camp Evaluations																							
		March 2024	April 2024	May 2024	June 2024	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024	January 2025	Febuary 2025	March 2025	April 2025	May 2025	June 2025	July 2025	Aug-25	Sep-25			
Rating (1 = poor 5 = excellent)																							
1																							
2																							
3																							
4																							
5																							
		March 2024	April 2024	May 2024	June 2024	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024	January 2025	Febuary 2025	March 2025	April 2025	May 2025	June 2025	July 2025	Aug-25	Sep-25			
Learning Points																							
		March 2024	April 2024	May 2024	June 2024	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024	January 2025	February 2025	March 2025	April 2025	May 2025	June 2025	July 2025	Aug-25	Sep-25			
Constructive Feedback																							

Audit Protocol Adherence		Mar-25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25
1. When you visually inspected the patient, in which position were they lying?								
	Lying Right							
	Lying Left							
	Supine							
	N/A - Pt sitting in chair							
2. When you checked the charting for the patient, which position was charted?								
	Lying Right							
	Lying Left							
	Supine							
	N/A - Pt sitting in chair							

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