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## Analyzing Reporting of Hospital Acquired Pressure Injuries in the Acute Care Setting

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**Analyzing Reporting of Hospital Acquired Pressure Injuries in the Acute Care Setting**

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School of Nursing and Health Professions, University of San Francisco

NURS 653: Internship

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### **Abstract**

This project was conducted at a level one trauma center, acute care hospital consisting of 459 beds. With more patients than wound care nurses, hospital-acquired pressure injuries (HAPIs) have become a significant problem for this hospital. A gap between reporting in the Safety and Quality Information System (SQIS) and the reporting that takes place in electronic health record (EHR) with wound care consults has been observed. A root cause analysis (RCA) was used to identify discrepancies. The accurate collection of data was identified as paramount providing information necessary to create improvements and lower the occurrence of HAPIs. The conceptual framework which guided this project to decrease the incidence of inaccurate HAPI documentation was the PDSA model/cycle. The Lewin Change Model was applied as the leadership theory. The cost of one HAPI is \$14,506 and can potentially cost the hospital \$2,088,864 per year. With the proper education to prevent HAPIs from occurring, the medical center can save on average \$1,044,432 per year. The plan is to educate nurses on the prevention, correct staging, and proper documentation of HAPIs. Using process and balance measures, the team can study the effectiveness of the interventions. Additionally, nurses who attended educational sessions completed pre and post tests to assess their knowledge which was then compared through a bar chart. With all these efforts, expected outcomes are to sustain a 50% decrease in HAPIs at this hospital.

*Keywords:* hospital-acquired pressure injuries; Pressure injuries; Root-Cause Analysis; Nursing education; Acute care; Lewin Change Model; PDSA model/cycle

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## **Analyzing Reporting of Hospital Acquired Pressure Injuries in the Acute Care Setting**

Pressure injuries, also commonly called bedsores, pressure sores, or pressure ulcers, are described as areas of localized damage to the skin and soft tissue due to the decrease of blood flow to the area (UCI Health, 2023b). The lack of blood flow is caused by pressure and other contributing factors such as friction, moisture, and alterations in blood flow patterns. When positions are not changed regularly, blood flow is disrupted, causing skin and tissues to break down and ultimately result in a sore. These injuries most often form on bony areas of the body, which includes the tailbone, hips, heels, shoulder blades, back of the head, and the backs and sides of the knees. In the early stages of formation, pressure injuries start as red, blue, or purplish patches that are non-blanchable. As they progress, these injuries develop into blisters and open sores. They may become life-threatening due to their ability to progress and become infected, causing further damage to the muscle, bone, or joints, leading to other health complications.

In the United States, an estimated one to three million people are affected by pressure injuries each year. Based on the clinical setting, the incidences of pressure injuries differ. Evaluations have found that there is a prevalence of five percent to 15% among hospitalized patients (Mondragon & Zito, 2022). If a patient is not repositioned and their skincare is inadequate, they may develop pressure injuries at home, known as community-acquired pressure injury. Before admitting a patient to the hospital, their skin must be assessed for any pre-existing pressure injuries. If a patient who did not have pressure injuries before being admitted to the hospital, and then develops a pressure injury during their stay, it will be classified as a hospital-acquired pressure injury (HAPI). Due to the prevalence of pressure injuries among hospitalized patients, HAPIs are a major concern at the medical institution.

As mentioned earlier, the chosen hospital is an acute care setting consisting of 459 beds. As the only academic health system in Orange County, this hospital's mission, powered by discovery and innovation, is to advance individual and population health (UCI Health, 2023). In alignment with its vision, this medical center measures quality and safety using national benchmarks, such as the National Database of Nursing Quality Indicators (NDNQI), and strives to make advancements that address the need for change in practice regarding quality and safety to result in optimal patient outcomes.

One major topic in the quality and safety reports is patient safety indicators, which includes pressure ulcers. In order to improve this area of patient safety, the hospital has a Quality and Patient Safety physician and nurse team and a Critical Events Management Team that review cases to identify areas for improvement (UCI Health, 2023). A widely used method to identify problems and areas for improvement in the healthcare setting is the root cause analysis tool. Root cause analysis is a process that uses a systematic approach to identify and evaluate the causes of events that resulted in undesired outcomes, which may be used for quality improvement in a healthcare setting (Patient Safety Network, 2019). The first step of root cause analysis is to define the problem. During this step, data is collected in order to understand what area is in need of change. Next, it is important to determine the factors that caused the undesired outcomes. Individuals come together to determine major contributing factors that played a role in the problem. Next a more in-depth review is conducted in order to identify the root cause. After the identification of the problem and root cause of events, a plan of actions to prevent and correct undesired outcomes is created and implemented.

After reviewing areas of improvement at the medical center, it was found that there is a discrepancy in the reporting of HAPIs between the electronic health record (EHR) and the Safety

and Quality Information System (SQIS). In order to close this gap, there is a need for a streamlined and standardized approach for HAPI documentation and a need for education and training for nursing staff regarding accurate skin assessments, preventive, and prophylactic measures to impede the progression of HAPIs from stage one and two to stage three and four.

### **Problem Description**

As previously stated, HAPIs are a significant problem at this hospital. To reduce the high numbers of HAPIs, accurate data and information are imperative to provide the necessary resources to make improvements. When a nurse identifies a patient with a pressure injury, it must be documented on the patient's EHR. Additionally, it should be reported in the SQIS, the incident reporting system. It has been identified that HAPIs are consistently being underreported on EHR compared to reports submitted to the SQIS. This gap can create hospital issues, such as under budgeting for appropriate supplies, staffing adequate wound nurses, and poor health outcomes.

The underreporting of HAPIs arises from many different reasons. Nurses are aware that they must document accurate patient care on the EHR because it shows they participated in their care and addressed patients' needs. However, as the EHR is an extensive system that requires a lot of informatics skills, it can be difficult for nurses to know where in the EHR to correctly document the developing pressure injury. Additionally, the lack of education and training on how to identify and stage a pressure injury prevents many nurses from updating the EHR with the correct identification of the pressure injury. However, upon analysis of the SQIS data, it became evident that nurses were consistently placing more Incident Reports on pressure injuries in the SQIS than they were documenting pressure injuries in the EHR. This led to the conclusion that inconsistent reporting in the SQIS and EHR was leading to over-reporting of pressure injuries in

the hospital. Nurses must be re-educated on the importance and need of appropriate documentation on both the EHR and SQIS when a HAPI is identified. The goal is to decrease the gap between the reports of HAPIs in the EHR and SQIS to improve patient outcomes and provide accurate pressure injury reporting within the organization.

### **Literature Review**

After a review and assessment of patient safety indicators at the medical center, it was determined that a quality improvement project regarding HAPIs would be beneficial to improve patient outcomes. The PICO question, “In all adult inpatient admissions, how do the rates differentiate between hospital acquired pressure injuries (HAPIs) reported in the electronic health records compared to the reports in the safety and quality information system affect HAPIs assessments and evaluations within a six month period?” was developed. Next, a literature review was conducted that yielded 11 articles that reviewed HAPIs and the documentation of HAPIs. In order to review relevant literature, keywords such as skin assessments, hospital-acquired pressure injuries, pressure ulcers, pressure ulcer documentation, pressure ulcer reports, education, training, and patient medical record were used. Multiple articles found that a root cause analysis process can be used to develop a quality improvement project about certain aspects of HAPIs in order to reduce the number and severity of pressure injuries and the factors that may result in the inaccuracy of HAPIs reports. Articles also addressed the need for education and training regarding HAPIs skin assessments and documenting. A challenge of this literature review was finding relevant literature within the last five years that addressed gaps in HAPIs reports in the electronic health record and reports in another specific reporting system. Overall, the literature review reinforced the idea that a quality improvement project may close the gap in



accurate HAPIs documenting and reporting, which can potentially decrease the progression of HAPIs, ultimately increasing optimal patient outcomes at the medical center.

### **Rationale**

The conceptual framework which guided this project to decrease the incidence of inaccurate HAPI documentation was the PDSA model/cycle (Katowa-Mukwato, 2021). The PDSA model is a quality improvement model, with four stages: plan, do, study, and act, which provides a guide for planning. The planning phase is when an objective is set, the method of data collection is set, and the root cause of an issue is identified. The do phase is when data collection and analysis is carried out. During the study phase, the data found is analyzed, summarized, and compared to original predictions. The PDSA cycle can be repeated and the act phase is where the actions based on findings are determined and preparation for the next PDSA cycle occurs.

The Lewin Change Model was applied as the leadership theory. The Lewin change model has three steps: unfreeze, change, and refreeze (Ellis, 2023). Unfreeze allows the manager to communicate with their team why change may be necessary as well as allow stakeholders to weigh in on possible change. The second step is the implementation phase in which the manager should encourage and coach their team. It is essential that the manager provides resources and coaching to their team during this phase. Unfreezing is when performance indicators are set and the evaluation of performances.

### **Specific Project Aim**

The aim of this project is to decrease the number of reportable HAPIs (stage 3 or higher, deep tissue injury, and unstageable) at the hospital. The process begins with identifying the gaps in reporting and how to improve HAPI documentation. This will include tracking accurate skin assessments upon admission and appropriate charting under lines, drains, and airways (LDA). In

addition to addressing the potential consequences of HAPIs for both the patient and hospital, focus will be to identify the consequences of overreporting HAPIs in the SQIS. The process ends with addressing the identified gaps in HAPI reporting and providing resources to nurses to improve the care and management of HAPIs. By working on the process, it is expected to improve the education of nurses on the process of incident reporting. Thereby increasing accurate tracking of HAPIs which in turn will allow the appropriate allocation of resources in the prevention and care of advanced HAPIs. Through prevention, we will increase hospital reimbursement from the Centers of Medicare and Medicaid Services (CMS). It is important to actively address this now, because most HAPIs are preventable and the current number of reported HAPIs at the hospital is inaccurate. Without accurate reporting in the EHR and SQIS, it is extremely challenging to get an accurate number of HAPIs within the organization which can lead to several downstream consequences including patient safety and financial impact.

## **Methods**

### **Context**

Before change could begin, an assessment of the medical center's culture was necessary. A strengths, weaknesses, opportunities, and threats (SWOT) analysis was completed first (See Appendix C). Although there are flaws, the hospital currently has the SQIS incident reporting system which is frequently reviewed and evaluated. Once HAPIs are reported an automatic wound consult is created. This can be problematic because nurses may be entering Incident Reports for wounds that are not actually pressure injuries, thus burdening the limited bandwidth of Wound Care and Quality Nurses as they will have to sort through and determine which Incident Reports are true pressure injuries versus other types of skin injuries. A team of wound care nurses is definitely a strength. However there is a large volume of patients versus wound

care nurses. Other weaknesses include a potential lack of understanding among nurses on pressure ulcer stages as well as multiple wound reporting systems found. Opportunities identified are reducing the incidence rate and stopping the progression of stage one and two HAPIs (non reportable) to stage three (reportable). As the gap of knowledge concerning pressure injury staging was identified, the opportunity to gauge that knowledge was found as well. Threats include resistance of nurses regarding time taken away from patients to submit incident reports and charting on the complicated EHR, decreased reimbursement resulting from increase in number of reported HAPIs, and potential lack of funding necessary to educate nurses on incident reporting processes.

To achieve the project's goals, a timeline was created using a GANTT chart (See Appendix B). The planning phase of the project lasted from January through June of 2023. Over two weeks in May, the Clinical Nurse Leader assigned tasks to group members. Data from quarter one and two were collected over a six month period. The second phase during the first three weeks of June included conducting an audit of data from quarter one and two. The third phase was to evaluate all of the data and findings found to create an intervention. The final stage lasting throughout July is the implementation phase.

HAPIs are major concerns in hospitals. One major reason for concern is the high cost of managing them. One HAPI is found to cost \$14,506. An audit of HAPIs at the medical center found that for quarter one of 2023, there were a total count of 36 HAPIs per SQIS reporting system. In just the first quarter of 2023, this hospital must spend a total of \$522,216 for the management of HAPIs. If the incidence of HAPIs continues at the same rate for the remainder of the 2023 fiscal year, 144 HAPIs will result and would potentially cost the hospital \$2,088,864 for the entire year.

In order to decrease the number of reportable HAPIs, skin courses that reeducate nurses about skin assessments and accurate documentation are vital. A business plan was created to evaluate the costs associated with this improvement project (See Appendix E). At the hospital, there is a plan to require 1,080 nurses to attend one of 23 classes that are taught by three educators or CNS and one wound nurse. The goal of educating these existing nurses would be to reduce the incidence of HAPIs by at least 50%. Rather than costing the hospital \$2,088,864 per year, the decreased rate of HAPIs would cost the hospital \$1,044,432 per year. Each class would last four hours, therefore, with an average nurse salary of \$60 per hour, it would cost \$259,200 for all 1,080 nurses to each attend a four-hour long class and an additional \$37,950, with an average \$68.75 per hour, to pay the three educators or CNS and one wound nurse to teach the classes. While the cost of educating existing nurses may seem high in the first year, this would only be a one-time cost and would lead to a reduction in 50% of HAPIs. In its first year, the medical center would be saving \$746,682 and potentially \$1,566,648 per year following the implementation of these education courses. Overall, educating nurses on the assessment and accurate documentation of skin and pressure injuries is crucial and could lead to decreased hospital expenditures.

### **Interventions**

This project centers around the inconsistent reporting of HAPIs. Over the course of the project, multiple analyses have been generated of the possible problems that are leading to the gap that is seen between the EHR and SQIS. These analyses consisted of both a SWOT and Fishbone analysis, ultimately contributing to our Gantt Chart. With the help of the clinical professor, a massive audit was then conducted to quantify the discrepancy between the number of reports in SQIS compared to EHR. This discrepancy was alarming and it was thereby

imperative that we take action as a team. The necessary steps were then taken to create a business model to demonstrate cost-saving potential and tackle such discrepancies.

Moving forward, efforts will be made to implement education sessions for nurses on a streamlined approach for HAPI documentation, thus having all HAPI documentation in one place. Furthermore, it is intended to educate nursing staff on skin assessments and preventative measures that can be taken to stop the progression of stage one and two pressure injuries to stage three and four pressure injuries. These educational sessions will focus on helping nurses to accurately identify the appropriate stage of pressure injuries and correctly report all relevant information to the wound nurse consults, EHR, and SQIS. The next steps include creating a multi-departmental, non-punitive processes diagram to increase effectiveness when managers have to submit root-cause analyses (RCA's) for stage three and four pressure injuries.

### **Study of Intervention**

Once the interventions have been implemented, the team will evaluate their effectiveness and identify areas for improvement. This assessment will help determine if the predictions and project goals have been met. A follow-up audit will be conducted of the reports submitted to the EHR and SQIS after the completed educational classes. This audit will be compared to the initial audit conducted prior to the classes. If there is an improvement in the correlation between EHR documentation and SQIS incident reporting on pressure injuries, it will be concluded that the strategies to improve proper documentation have been successful. Additionally, the prevalence of HAPIs will be compared before and after the classes to ensure that nurses have implemented preventative measures and increased their knowledge in staging pressure injuries. The results will conclude that nurses are adequately trained to prevent pressure injuries from turning from nonreportable to reportable pressure injuries.

## **Measures**

In the intervention study, outcome measures will be used to guide the efforts in reducing gaps in HAPIs across different hospital systems. The goal was to lower HAPI rates by 50%, and it will hopefully be achieved by educating nurses on how to correctly stage and prevent pressure injuries from progressing to later stages. The importance of reporting pressure injuries to all required health systems was also emphasized. To monitor progress, a run chart will be utilized to analyze and showcase data from the start of the project through the end. It is crucial to follow up with the results to ensure the interventions are effective.

Next, a process measure will also be utilized to study the interventions. The number of nurses attending educational classes will be tracked by requiring them to sign in and confirm their attendance. Nurse managers on all units will be responsible for ensuring their nurses attend the meetings and get checked off. A bar graph will display the percentage of nurses who completed the educational classes versus those who did not. Furthermore, nurses attending the sessions will take a pretest and posttest to assess if their knowledge of staging and documenting pressure injuries in healthcare systems has improved. A bar chart will be created to compare the level of knowledge before and after the classes to analyze the effectiveness of the interventions.

To ensure that the intervention does not cause any issues in other units or take away resources from other projects, a balance measure will be taken as the final step in the study. The team will work with nurse managers to ensure that all units have enough coverage and that nurses can attend the sessions without affecting patient care. This will guarantee that patients continue to receive quality care while the intervention is being implemented.

## **Results**

The issue of HAPIs was examined due to their significant impact. In the first quarter of

2023, 36 HAPIs were reported and audited through SQIS. The intensive care unit (ICU) had the highest rates of HAPIs, followed by the medical-surgical unit, stepdown, and emergency department. Stage two pressure injuries were the most commonly reported, followed by stage one, stage four, deep tissue pressure injuries, and mucosal. The coccyx/sacrum was the most common location for pressure injuries, followed by buttocks, heels, ears, nose, elbows, neck, and others. Continuous positive airway pressure (CPAP) was the device that caused the majority of pressure injuries, while pulse ox, tractions, and casts caused at least one injury in the first quarter.

Another review was carried out to investigate the inconsistency between the HAPIs reported in the EHR and SQIS. The aim was to identify where the underreporting was occurring. The initial findings were surprising as they contradicted the expected outcome. It was initially believed that HAPIs were being input into the EHR but were being underreported into the SQIS. However, the review revealed that there were actually more reports being inputted in the SQIS than in the EHRs. This raised some concerns about the project's progress.

After experiencing a setback, the team delved deeper to understand why the issue was happening. Through a root cause analysis, it was discovered that newly hired nurses were not receiving the same level of training as other nurses due to the COVID-19 pandemic and limited resources like time and staff. This lack of training resulted in new graduate nurses not having the necessary knowledge on how to stage and care for the wounds. Consequently, nurses were requesting wound care consults for the wound nurse to assess and treat the wound accurately. Another issue arose due to the excessive utilization of wound care nurses. The resource of wound care nurses was being taken away from actual patients who required the care; this hospital only has three wound care nurses available.

To achieve positive outcomes, it was necessary to revert back to the planning phase of the

PDSA cycle and find a new way to approach this project. It was decided that proper education for nurses is essential to prevent HAPIs, improve wound care staging, and prevent wound progression. By being in the doing stage of the PDSA cycle, it is anticipated that efforts are continuously made to correctly chart HAPIs into all the necessary electrical systems, such as EHR and SQIS, and be able to sustain a 50% reduction of HAPIs at the medical center.

### **Discussion**

During this quality improvement project, several limitations were encountered that required strategic approaches. First, the time constraint demanded effective task prioritization and the creation of a detailed project schedule using a Gantt Chart. It was then addressed that the unexpected issue of more pressure injuries being reported in SQIS than the EHR by conducting a root cause analysis (RCA) to identify discrepancies.

Generating a clickable flow chart for the RCA was challenging, therefore, additional audit information was gathered and guidance from the quality improvement team was sought through our clinical site leader as an indirect source of communication.

The shortage of wound care nurses posed another barrier, impacting pressure injury reporting and follow-up care. This was tackled by implementing educational cross-trainings on wound care and documentation requirements for existing staff. Effectively communicating the benefits and importance of attending these sessions will help to overcome any anticipated resistance from nurses.

Financial constraints were also a challenge. Resource allocation was prioritized and compensating nurses during these wound-care cross-training. Additionally, seeking external funding sources, grants, or partnerships were considered to support a cohesive pressure injury documentation technology system.



It is advised for fellow students facing similar obstacles to seek expert advice and involve relevant stakeholders. Effective communication, even through indirect means, is crucial. Being resourceful and exploring alternative channels or solutions when faced with technical limitations can also lead to successful outcomes. Overall, navigating limitations in an internship requires adaptability, collaboration, and proactive problem-solving to overcome barriers and achieve project goals.

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## Appendix A

*Project: Statement of Determination and Non-Research Determination Form*



### **Project: Statement of Determination and Non-Research Determination Form**

**Student Name:** Gisselle Chairez, Gabriella Garcia, Trineca Godfrey, Jane Kwak, Ameerah Tolentino

<p><b><u>Title of Project:</u></b></p> <p><b>Brief Description of Project</b></p> <ul style="list-style-type: none"> <li>● <b>Data that Shows the Need for the Project</b></li> <li>● <b>Aim Statement</b></li> <li>● <b>Description of Intervention(s)</b></li> <li>● <b>Desired Change in Practice</b></li> <li>● <b>Outcome measurement(s)</b></li> </ul>
<p>At the University of California, Irvine Medical Center, the issue of hospital-acquired pressure injuries (HAPIs) is significant. One problem is the inconsistency in reporting HAPIs between the electronic medical record (EMR), wound nurse consults, and the Safety and Quality Information System (SQIS). We aim to bridge this gap, enabling us to allocate resources, like wound nurses, to high-acuity patients requiring appropriate care and minimize the risk of new HAPIs. This will also prevent pressure injuries from worsening and becoming more severe.</p> <p>In order to reach our objectives, our plan is to conduct educational sessions for nurses. These sessions will focus on helping them to accurately identify the appropriate stage of pressure injuries and correctly report all relevant information to the wound nurse consults, EMR, and SQIS. Additionally, the nurses will receive re-education on the significance of documenting HAPIs in all necessary systems to ensure there are no underreported cases. The overall desired change in practice we want to achieve is that nurses will integrate reporting HAPIs into both the EMR and SQIS so that HAPIs can be addressed and prevented from being more severe. We will conduct audits of the reports submitted to EMR and SQIS to assess our progress. This will enable us to compare them and identify if there is any reduction in the gaps of underreported cases.</p>

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used:

(<http://answers.hhs.gov/ohrp/categories/1569>)



This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Students may proceed with implementation.

This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

### EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST \*

**Instructions: Answer YES or NO to each of the following statements:**

Project Title:	YES	NO
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	✓	
The specific aim is to improve performance on a specific service or program and <b>is a part of usual care</b> . ALL participants will receive standard of care.	✓	
The project is <b>NOT</b> designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does <b>NOT</b> follow a protocol that overrides clinical decision-making.	✓	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does <b>NOT</b> develop paradigms or untested methods or new untested standards.	✓	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does <b>NOT</b> seek to test an intervention that is beyond current science and experience.	✓	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	✓	
The project has <b>NO</b> funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	✓	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., <b>not</b> a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	✓	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <i>“This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”</i>	✓	


 School of Nursing and  
Health Professions

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

\*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print):**

Gisselle Chairez, Gabriella Garcia, Trineca Godfrey, Jane Kwak, Ameerah Tolentino

**Signature of Student:**

Gisselle Chairez, Gabriella Garcia, Trineca Godfrey, Jane Kwak, Ameerah Tolentino      **DATE:** 06/22/23

*(Handwritten signatures of the students are visible below the printed names)*

**SUPERVISING FACULTY MEMBER NAME (Please print):**

Caitlin Heberer

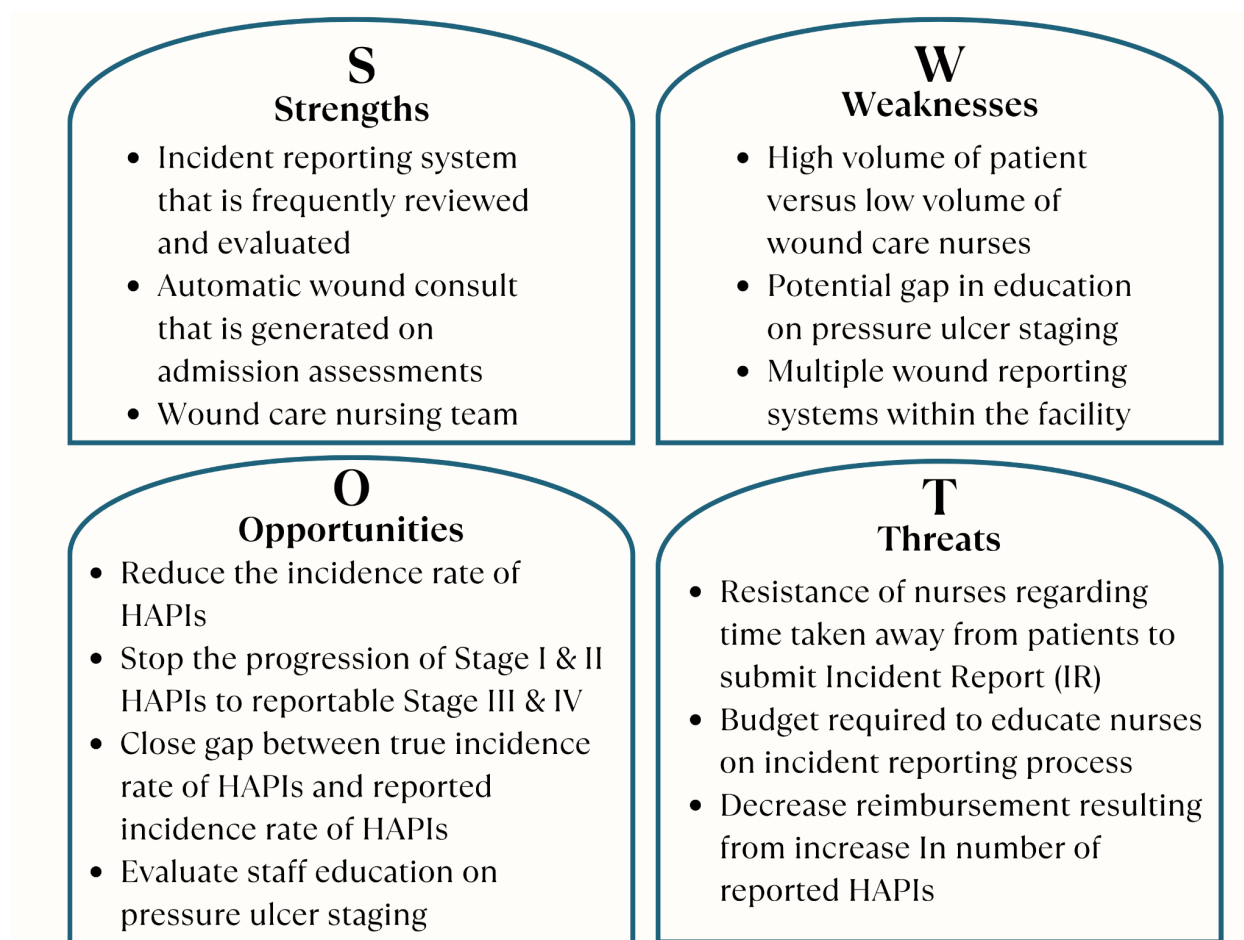
**Signature of Supervising Faculty Member**

\_\_\_\_\_ **DATE** \_\_\_\_\_

## Appendix B

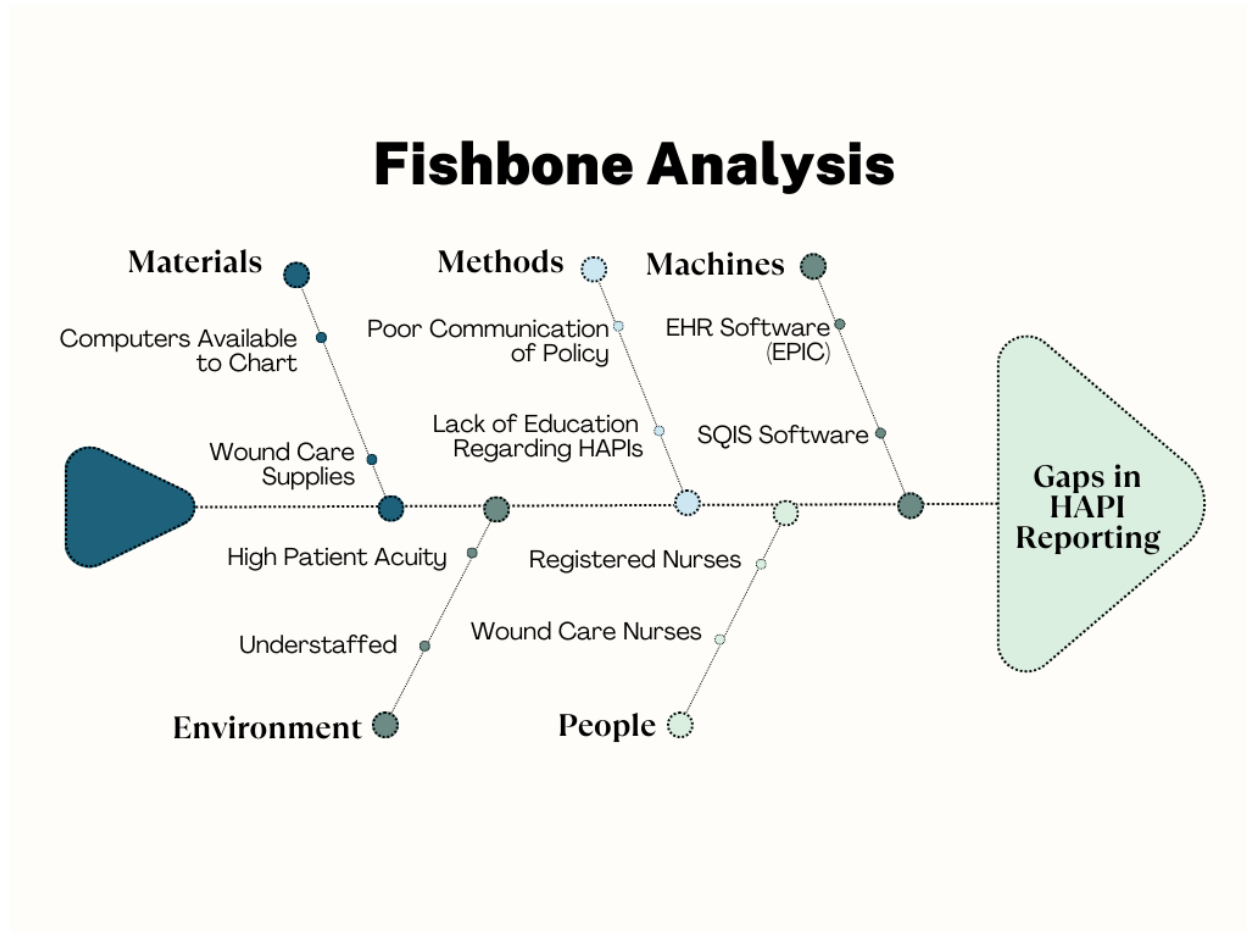
### Gantt Chart

		Year 1: 2023																																			
		Spring				Summer												Fall																			
WHO		January		February		March		April		May				June				July				August				September				October				November			
		W1-4	W1-4	W1-4	W1-4	W1-2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4					
<b>Planning</b>																																					
Collected data on reported HAPIs	CNS - Lisa	█		█		█																															
Audited reports on Nutrition Orders & Wound Care Orders on Epic and compared to the SQIS Report	RN & CNL Students							█		█																											
Identified there were gaps in the HAPI reporting	RN & CNL Students							█		█																											
Assigning tasks to group members	CNL Student							█																													
Develop a Global Aim Statement	CNL Students							█																													
Conduct a Needs assessment - SWOT analysis and Fishbone analysis	CNL Students							█																													
Develop PICO Question	CNL Students							█		█																											
Performed a Literature Review	CNL Students							█		█		█																									
Conduct a Business Plan	CNL Students							█		█		█																									
Create Root-Cause-Analysis Template Flowchart	CNL Students							█		█		█																									
Create and Prepare for implementation plan																																					
<b>Doing</b>																																					
Hold Educational sessions for nurses regarding HAPI Documentation	CNS/Nurse Educator																	█				█				█											
Hold Educational sessions for nurses on identifying and staging pressure injuries	Wound Care Nurse																	█				█				█											
Implement RCA template into the Units for Managers to utilize	RN & Nurse Managers																	█				█				█											
<b>Studying</b>																																					
Conduct a follow-up audit on HAPI Documentations	CNL Student																					█				█											
Conduct a follow-up audit on HAPI Rates at UCI Medical Center	CNL Student																					█				█											
Survey Nurses on Increased Knowledge on Identifying and Staging Pressure Injuries	CNL Student																					█				█											
Identify areas of project that need to be modify	CNL Student																					█				█											
<b>Acting</b>																																					
Conduct any changes to the project that are needed	CNL Student																									█											
Repeat PDSA Cycle	CNL Student																									█											
Clinical Nurse Leader	CNL																																				
Registered Nurse	RN																																				
Clinical Nurse Specialists	CNS																																				

**Appendix C***SWOT Analysis*



## Appendix D

*Fishbone Analysis*

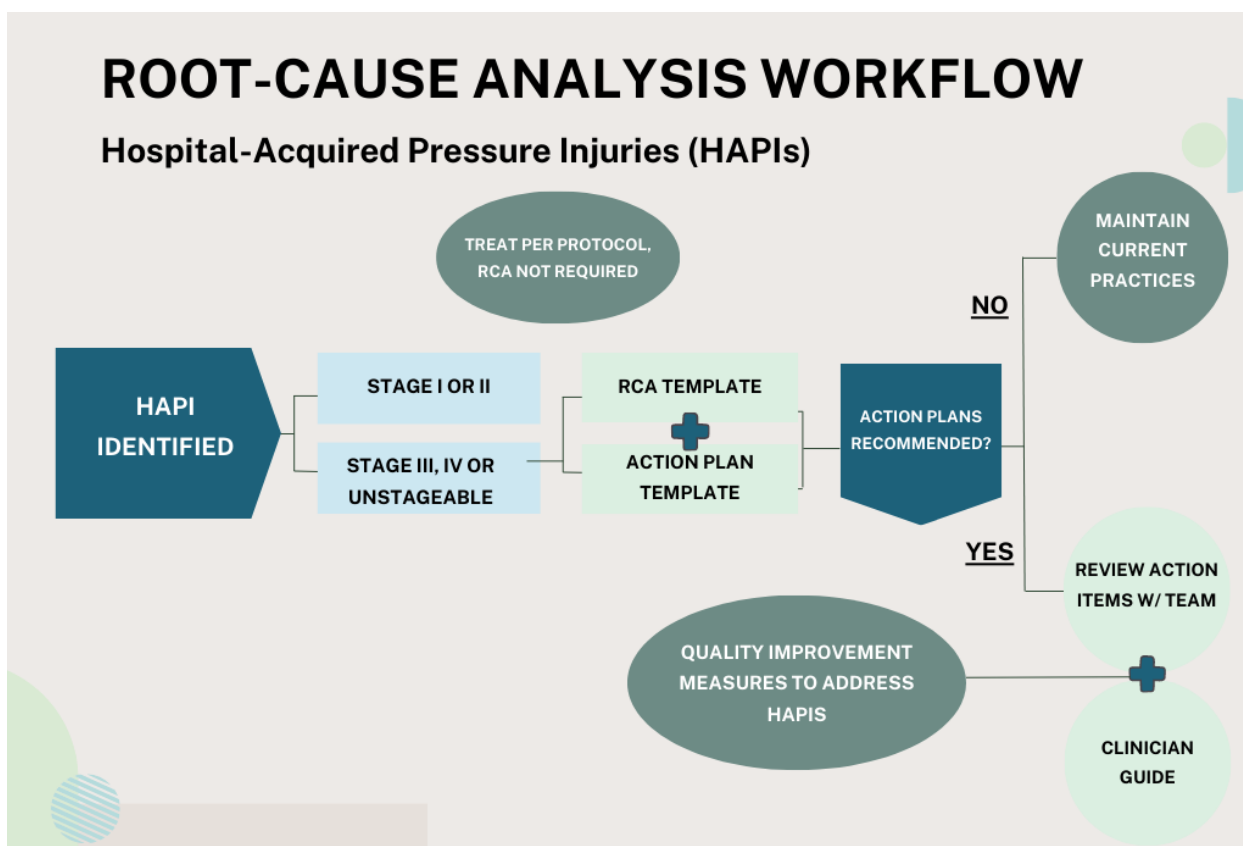
## Appendix E

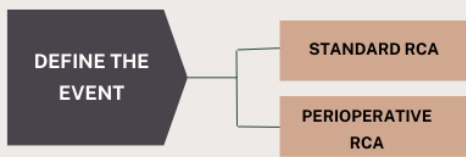
*Budget Cost Analysis*

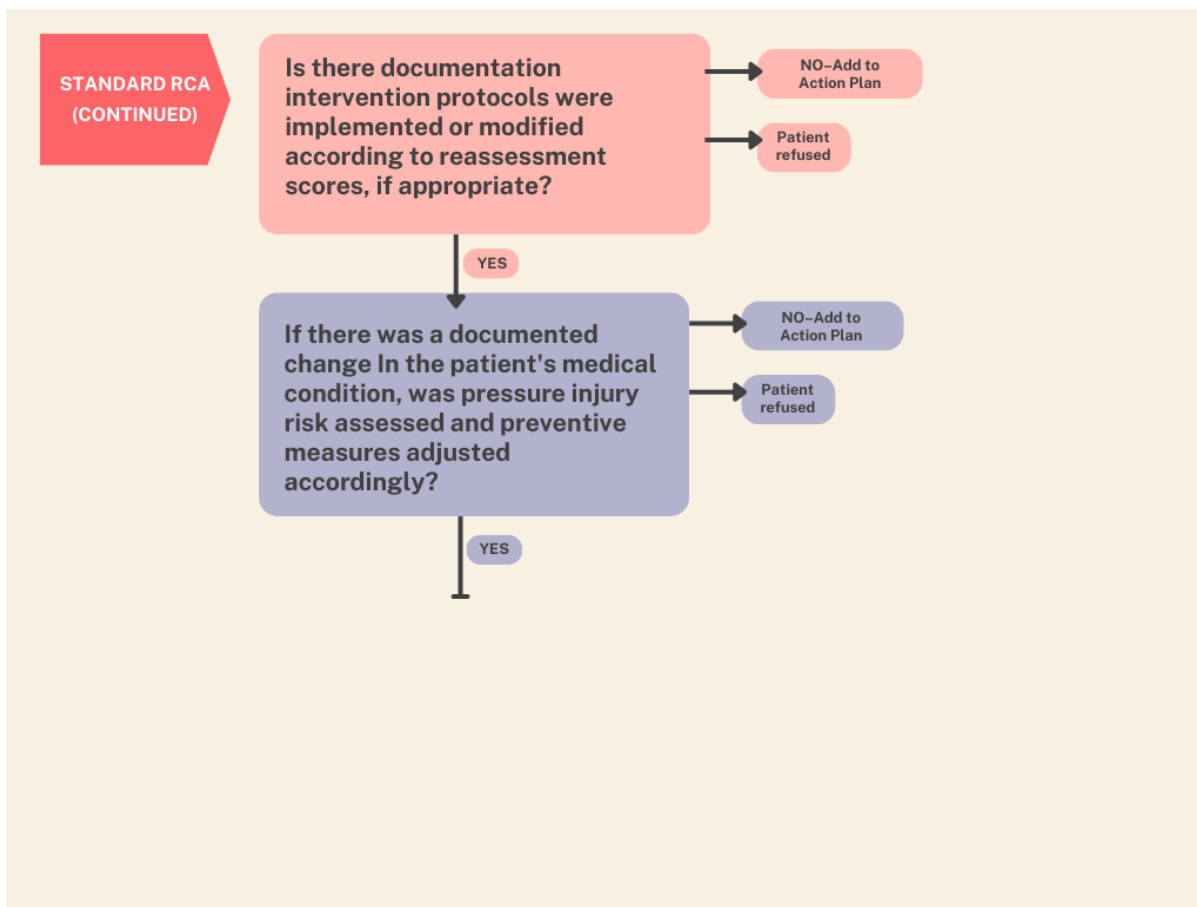
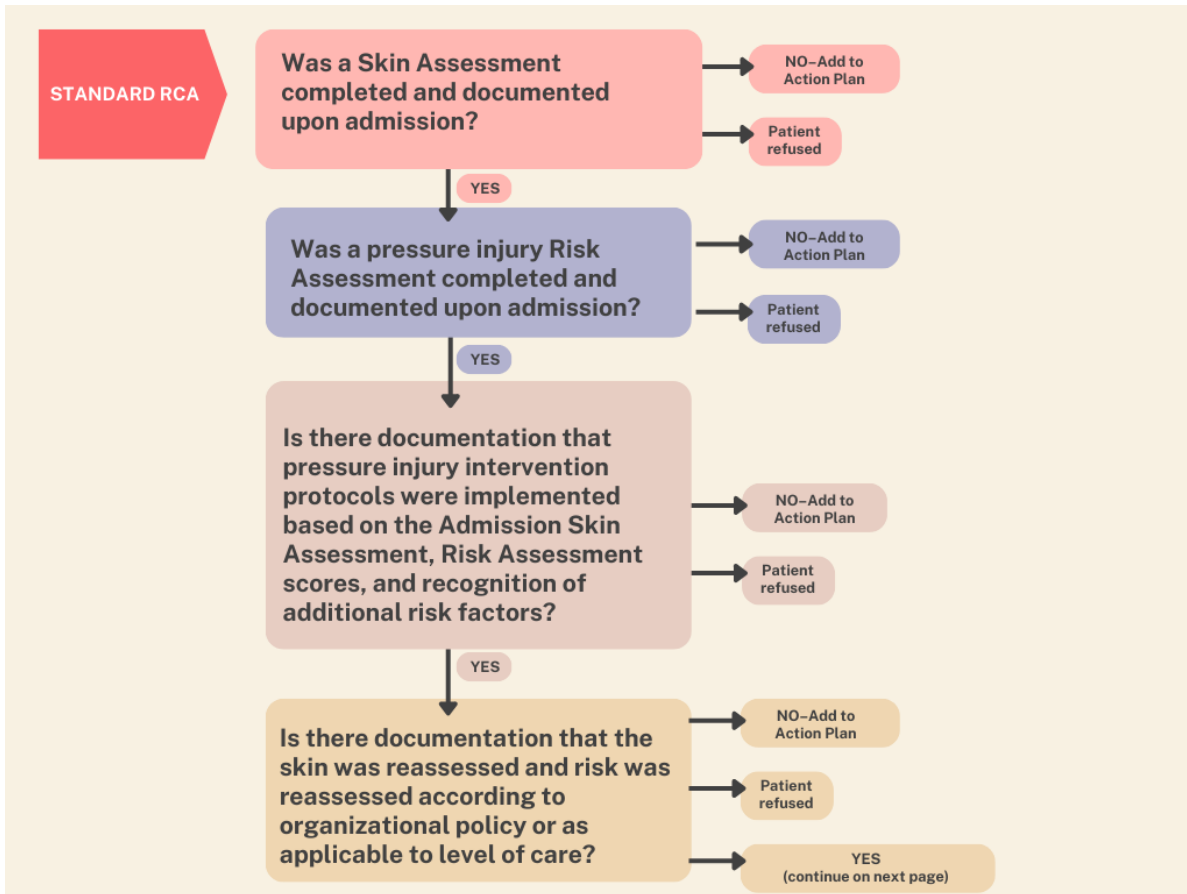
<b>Cost of HAPIs</b>			
	<b>Number of HAPIs</b>	<b>Cost per HAPI</b>	<b>Total Cost</b>
<b>2023 Quarter 1</b>	36	\$14,506	\$522,216
<b>2023 Predicted Total</b>	144	\$14,506	\$2,088,864

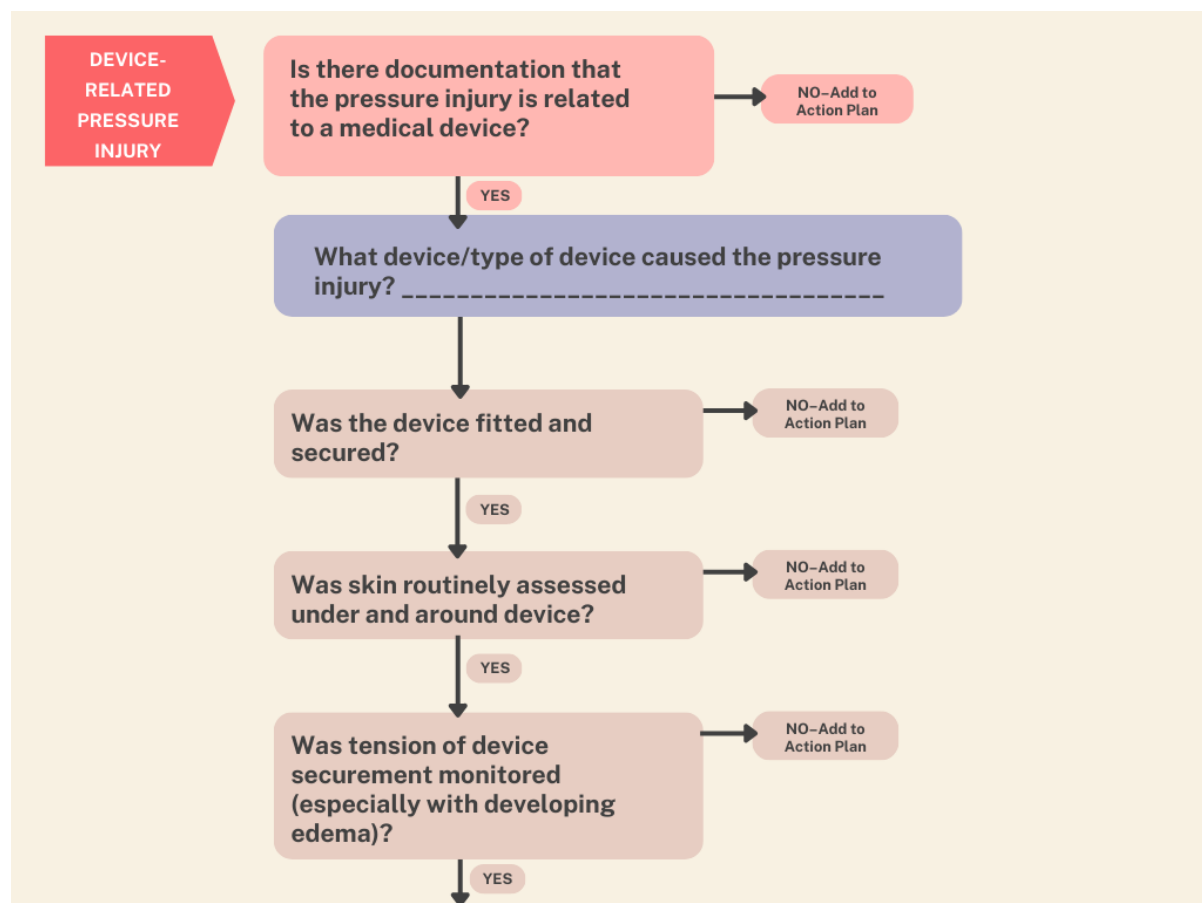
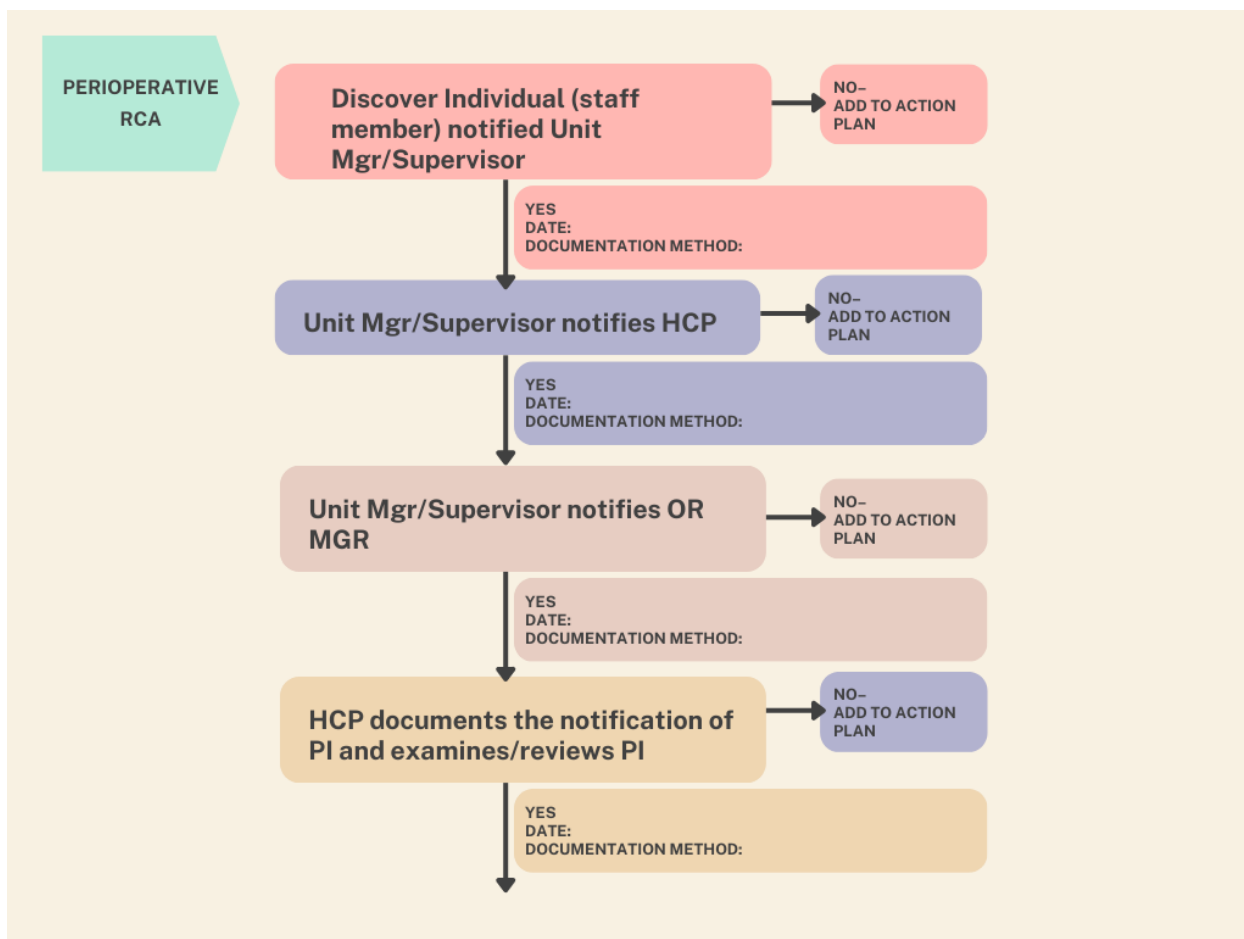
<b>Potential Cost Savings</b>				
<b>Attendance</b>	<b>Average Salary per Hour</b>	<b>Duration of HAPI Class</b>	<b>Total Cost</b>	
1,080 nurses	\$60	4 hours	\$259,200	
3 educators or CNS and wound nurse	~\$68.75 per hour per nurse	4 hour HAPI class + 4 hour preparation	\$12,650 per nurse x 3 nurses = ~\$37,950	
	<b>Cost of Educating Nurses</b>	<b>Cost of HAPIs (50% reduction each year)</b>	<b>Total Cost of HAPIs and Education</b>	<b>Total Cost Savings</b>
<b>Year 1</b>	\$297,150	\$1,044,432	\$1,341,582	\$746,682
<b>Year 2+</b>	\$0	\$522,216	\$522,216	\$1,566,648

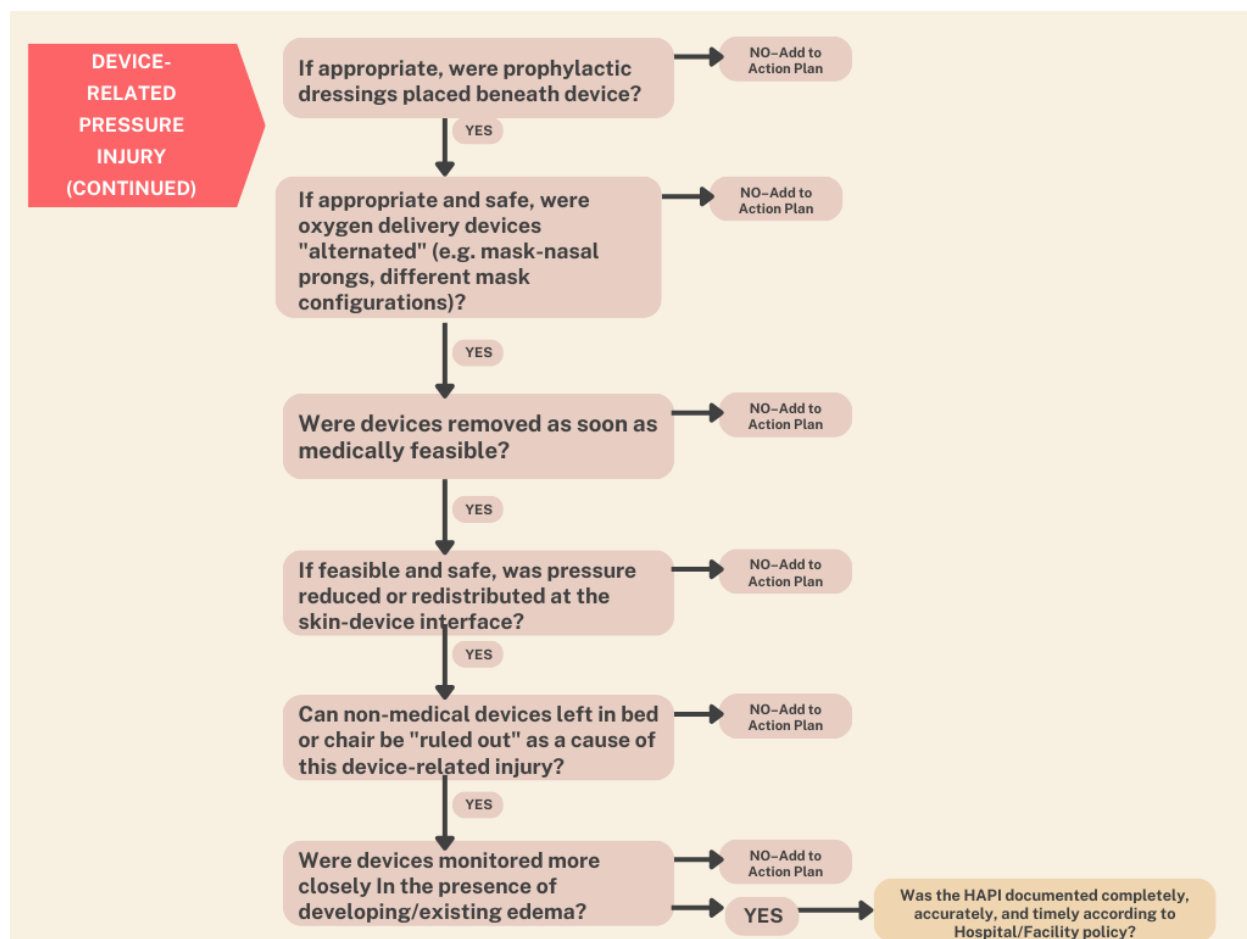
## Appendix F

*Root-Cause Analysis Workflow Template*









## Appendix G

### *Annotated Bibliography*

**Abela, G. (2021). Root cause analysis to identify contributing factors for the development of hospital acquired pressure injuries. *Journal of Tissue Viability*, 30(3), 339–345. <https://doi.org/10.1016/j.jtv.2021.04.004>**

This article shared how root cause analysis was used to identify common contributing factors to the development of pressure injuries. The root cause analysis was conducted using a framework developed by the National Pressure Ulcer Advisory Panel. This framework classified the injuries as “Avoidable” or “Unavoidable.” Between December 2017 and May 2018, patients who developed a Stage 3 or 4 deep tissue injuries or unstageable HAPI were investigated, and a timeline was reconstructed to determine if the pressure injury was avoidable or not, depending on the pre-set criteria. These cases found that there were common causes such as poor equipment and inadequate educational programs, which resulted in recommendations such as reinforcing adherence to hospital guidelines, streamlining documentation, and improving educational programs.

**Argenti, G., Ishikawa, G., Fadel, C. B., & Gomes, R. Z. (2022). Singular predictors of hospital-acquired pressure injuries under intensive care: A retrospective cohort study in a medium-complexity hospital. *Clinical Nursing Research*, 31(4), 639–647. <https://doi.org/10.1177/10547738211051567>**

This article collected data from a general ICU of a medium-complexity hospital regarding hospital-acquired pressure injuries (HAPIs). The hospital records showed that the main predictors of HAPI incidences in the ICU were time variables. The time variables



included ICU length of stay, duration of mechanical ventilation, and period of norepinephrine administration.

**Armstrong, A. A. (2023). Implementing an electronic root cause analysis reporting system to decrease hospital-acquired pressure injuries. *Journal for Healthcare Quality: Promoting Excellence in Healthcare*, 45(3), 125–132.**

**<https://doi.org/10.1097/JHQ.0000000000000371>**

This article describes the development of a HAPIs root cause analysis (RCA) process and the impact of this standardized electronic RCA has led to the improvement of the prevention and management of pressure injuries. The Plan-Do-Study-Act (PDSA) model was used by two wound, ostomy, and continence nurses (WOC) and a nursing professional development specialist from the interprofessional skin team to develop the HAPIs RCA process. Researchers' findings determined the need for an electronic format and database that allowed the nurses and nursing leaders to complete the RCA forms. After the implementation of the electronic RCA process from May 2020 to April 2021, there was a reduction from 1,301 HAPIs to 631, a 38.8% decrease. In the second year, there was an additional reduction to 423 HAPIs, which is a reduction of 33% from the previous year. There was an overall 53.5% reduction from the beginning of the RCA process.

**Black, J. M. (2019). Root cause analysis for hospital-acquired pressure injury. *Journal of Wound, Ostomy & Continence Nursing*, 46(4), 298–304.**

**<https://doi.org/10.1097/WON.0000000000000546>**

This article describes the root cause analysis (RCA) process and how it can be used for quality improvement in areas such as pressure injuries. In order to determine how a

facility or health system can improve through the reduction of the number and severity of pressure injuries, there are multiple steps of the RCA. The RCA process begins with ensuring that the wound is a pressure injury. Next, there is an examination of the processes of care for missed interventions or actions that may be linked to the development or progression of a particular pressure injury. The final step is the assessment of the system, including the people and the processes. This step helps identify modifiable trends or patterns to prevent future occurrence or recurrences.

**Chavez, M. A., Duffy, A., Rugs, D., Cowan, L., Davis, A., Morgan, S., & Powell-Cope, G. (2019). Pressure injury documentation practices in the department of veteran affairs: A quality improvement project. *Journal of Wound, Ostomy & Continence Nursing*, 46(1), 18–24. <https://doi.org/10.1097/WON.0000000000000492>**

This article shared a quality improvement project that emphasized the main barriers of conducting and documenting daily skin assessments in Veteran Affairs facilities. The lack of knowledge, poor templates, and staffing issues were the main barriers in conducting and documenting accurate daily skin assessments. The identification of these barriers allowed leadership to implement necessary changes such as training and the revision of Veterans Health Administration policies and directives regarding pressure injuries.

**Crunden, E. A., Schoonhoven, L., Coleman, S. B., & Worsley, P. R. (2022). Reporting of pressure ulcers and medical device related pressure ulcers in policy and practice: A narrative literature review. *Journal of Tissue Viability*, 31(1), 119–129. <https://doi.org/10.1016/j.jtv.2021.10.010>**

This literature review evaluated the reporting and documenting of pressure ulcers and medical device-related pressure ulcers. This review found that many organizations

experience a wide variation in the recording and reporting of these types of injuries. After review of the literature, researchers advise that future research focuses on standardized data collection for the HAPI reports.

**Holbrook, S., O'Brien-Malone, C., Barton, A., & Harper, K. (2021). A quality improvement initiative to reduce hospital-acquired pressure injuries (HAPI) in an acute inpatient setting by improving patient education and seating. *Wound Practice & Research, 29(4)*, 198–205. <https://doi.org/10.33235/wpr.29.4.198-205>**

This research study tested the influence of seating and education on the level of skin injury risk in a sample of 105 medical and oncology patients with 53 patients in the intervention group and 52 patients in the control group. The authors researched the influence of pressure redistribution cushions and enhanced education on patient-reported outcomes regarding HAPIs. The questionnaire found that increased comfort, reduced pain, and increased time spent sitting out of bed were found to provide improvements in patient-reported outcomes.

**Jacobson, T. M., Thompson, S. L., Halvorson, A. M., & Zeitler, K. (2016). Enhancing documentation of pressure ulcer prevention interventions. *Journal of Nursing Care Quality, 31(3)*, 207–216. <https://doi.org/10.1097/NCQ.000000000000175>**

This article shared a quality improvement project where the documentation of HAPI incidences at a children's hospital were evaluated in order to ultimately encourage the decrease of HAPI incidences. The researchers found that there was an increase in the frequency of documentation of evidence-based pressure ulcer prevention intervention by nurses. They also found that there was a decrease in incidences of full-thickness hospital-acquired pressure ulcers that were considered avoidable due to lack of

documentation. Changes in documentation where the reporting may be streamlined to one location on the charts may reduce barriers to the reporting of HAPIs.

**Polancich, S., Williamson, J., Poe, T., Armstrong, A., & Vander Noot, R. M. (2019).**

**Innovations in pressure injury reporting: Creating actionable data for improvement. *Journal for Healthcare Quality: Promoting Excellence in Healthcare*, 41(3), 180–187. <https://doi.org/10.1097/JHQ.000000000000196>**

This article describes a quality improvement project that first evaluated data regarding the reports of HAPIs at an academic medical center in southeastern United States.

Researchers found that there were inaccurate reports which allowed for an area of improvement. The area for improvement was the implementation of quality informatics solutions, which would allow for timely and accurate pressure injury reports and documentation. In addition to the technology innovations for reporting and documenting, the workflow of the wound, ostomy, and continence nurses (WOC) was redesigned, which resulted in a 39% decrease in documentation of all stage HAPIs.

**Sankovich, K., Fennimore, L. A., Hoffmann, R. L., & Ren, D. (2019). The impact of education and feedback on the accuracy of pressure injury Staging and documentation by bedside nurses. *Patient Safety (2689-0143)*, 1(1), 10–17.**

**<https://doi.org/10.1097/PAT.0000000000000019>**

This quality improvement project recognized the importance of accurate documentation of pressure injury stage or progression and aimed to increase nurses' knowledge and accuracy of staging and documenting pressure injuries. Nurses completed a pre- and post-test including case descriptions of pressure injuries where they identified appropriate pressure injury stage. In addition to these tests, the nurses completed online National

Database of Nursing Quality Indicators pressure injury training modules and participated in four face-to-face educational training sessions that included assessment, staging, appropriate documentation, and required Medical Care Availability and Reduction of Error (MCARE) reporting. This study found that educational interventions increased nurses' knowledge, but skills development and validation for correct staging of pressure injuries may be needed to build competency.

**Team, V., Tuck, M., Reeves, J., Way, M., Enticott, J., Evans, S., & Weller, C. D. (2020).**

**pressure injury data in Australian acute care settings: A comparison of three data sets. *International Wound Journal*, 17(3), 578–586. <https://doi.org/10.1111/iwj.13320>**

This study compared three different data sets at a hospital in Melbourne, Australia on HAPIs in order to provide benchmarks. The data was generated from surveys such as the Pressure Ulcer/Injury Point Prevalence Surveys. This comparison of data sets emphasized areas for improvement in accurate documentation of pressure injuries. This comparison of data sets within one hospital also allows the comparison to other medical facilities to work towards reducing the incidences of preventable HAPIs.



# Analyzing Reporting of Hospital Acquired Pressure Injuries in the Acute Care Setting

Gisselle Chairez, Gabriella Garcia, Trineca Godfrey, Jane Kwak, and Ameerah Tolentino  
University of San Francisco



## Specific Aims

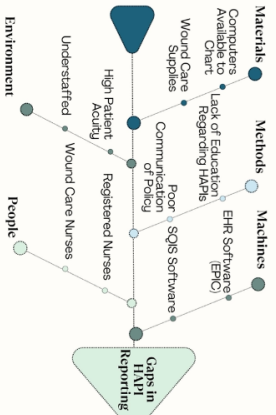
**Project Aim:** The aim of this project is to decrease the number of reportable HAPIs (stage 3 or higher) in a specific acute care facility by 50%.

**Global Aim:** By decreasing HAPI rates at this facility, this project aims to improve overall patient safety and quality of care. The prevention of HAPI's and appropriate allocation of resources will ultimately reduce HAPI associated healthcare costs for the hospital.

## Needs Assessment

- Shortage of the facility's Wound Care Nurses
  - Three for the entire hospital
- Audit revealed that there were more HAPI reports inputted in the SQIS than in the EHRs
- A Root-Cause-Analysis, discovered that newly hired nurses are not receiving the same level of training as other nurses due to the COVID-19 pandemic
  - Leading to inaccurate wound care assessment and documentation

## Fishbone Analysis



## Background

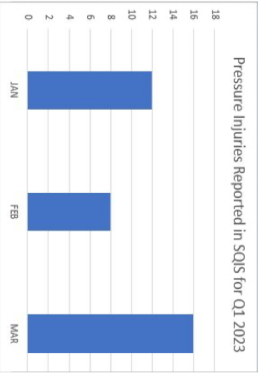
**Setting:** An acute care hospital consisting of 459 beds.

**Quality Gap:** After reviewing areas of improvement at the facility, a discrepancy was found between HAPIs reporting in the electronic health record (EHR) and the Safety and Quality Information System (SQIS).

**Evidence:** In the first quarter of 2023, 36 HAPIs were reported and audited through SQIS

- If the incidence of HAPIs continues at the same rate, 144 HAPIs will result by the end of 2023, potentially costing the hospital \$2,088,864

## HAPI Data



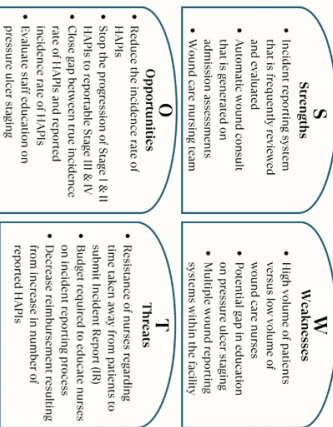
## Cost of HAPIs

Year	Number of HAPIs	Cost per HAPI	Total Cost
2023	36	\$14,506	\$522,216
2023 Quarter 1 Predicted Total	144	\$14,506	\$2,088,864

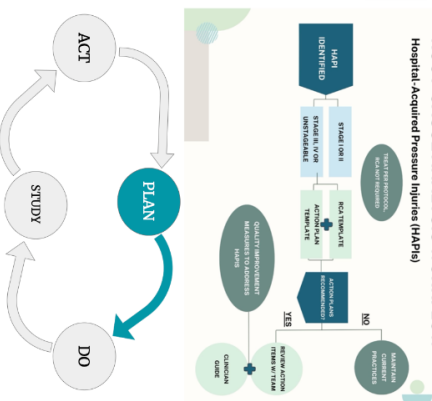
## Potential Cost Savings

Attendance	Average Salary per Hour	Duration of HAPI Class	Total Cost
1,080 nurses	\$60	4 hours	\$259,200
3 educators or CNS and wound nurse	~\$68.75 per hour per nurse	4 hour HAPI class + 4 hour preparation	\$12,650 per nurse x 3 nurses = ~\$37,950
Year 1	\$297,150	Cost of HAPIs reduction (each year)	\$1,044,432
Year 2+	\$0	Cost of HAPIs and Education	\$1,341,582
		Total Savings	\$746,682
		Total Cost	\$1,566,648

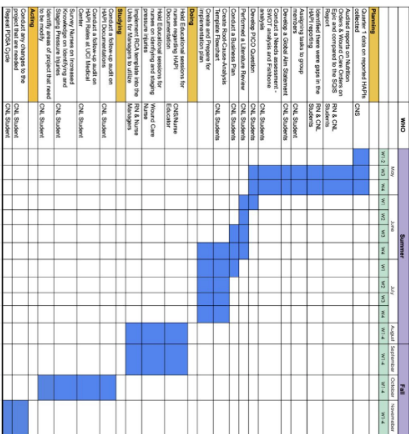
## SWOT Analysis



## ROOT-CAUSE ANALYSIS WORKFLOW



## Gantt Chart



## Conclusion

- An audit on HAPIs report established a need for a quality improvement project to address the gap in accurate reporting of HAPIs

- **Planned interventions to close this gap:**
  - A streamlined and standardized approach for HAPI documentation in one place
  - Nursing reeducation classes regarding accurate skin assessments, preventative, and prophylactic measures to impede the progression of HAPIs from stage one and two to stage three and four
  - Implement the RCA workflow template to provide guidelines to aid nurses in the prevention of HAPI formation and progression

## Acknowledgements

Thank you to the following individuals for their support and assistance in the completion of this project: [List of names and roles]