

Spring 5-16-2016

# Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol

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## Recommended Citation

Jasper, Charles, "Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol" (2016). *Master's Projects*. Paper 287.

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Preventing HAPUs in High-Risk Cardiac Cath Patients

Using Foam Dressing Protocol

Charles Jasper

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## Preventing HAPUs in High-Risk Cardiac Cath Patients

### Using Foam Dressing Protocol

#### **Clinical Leadership Theme**

My Clinical Nurse Leader (CNL) improvement project is entitled *Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol*. Its clinical leadership theme is patient safety, which is one of the six quality dimensions recommended by the Institute of Medicine “when working to improve health care” (Nelson, Batalden, & Godfrey, 2007). A CNL is a master’s prepared registered nurse “with a focus on quality improvement and care coordination” (Harris, Roussel, Thomas, 2014). My global aim statement is to improve patient safety by preventing hospital-acquired pressure ulcers (HAPUs) in the cardiac catheterization lab (CCL). The process begins at the point of care on admission and ends after a final skin assessment is performed and the patient is discharged. I expect 0% HAPUs for patients receiving care in the CCL.

I chose the following required clinical experience “Work with quality improvement team and engage in designing and implementing a process for improving patient safety” as the framework for my project (AACN, 2015). This Systems Analyst/Risk Anticipator competency aligns with the clinical leadership theme as the CNL functioning in this role “Participates in system reviews Evaluates/anticipates client risks to improve patient safety” (2015). Additional relevant framework competencies include analyzing the microsystem and applying evidence-based practice.

#### **Statement of the Problem**

While collecting microsystem data in previous CNL role courses I discovered a performance gap that inspired my N653 CNL Internship project. In spite of having already

decreased the total number of HAPUs by 50% in 2015, the CCL was implicated in 30% of those reported. Lengthy procedures such as transcatheter aortic valve replacement (TAVR), MitraClip®, Watchman™, and biventricular pacemakers are performed each week in the CCL and can last several hours or more. Once positioned, patients are immobilized and remain supine for the duration of the procedure as we are not able to turn or reposition patients intraoperatively, subjecting their sacrum and other bony prominences to constant friction and pressure.

A review of literature established that “All surgical patients should be considered to be at risk for pressure injuries, including pressure ulcers” (Cherry & Moss, 2011). Aside from pre/post procedural skin assessments we offer no prophylactic or preventative intervention for these individuals who are at high risk for developing HAPUs. A change in practice is essential as Ghavidel, Bashavard, Bakhshandeh Abkenar, and Mehdi Payghambari (2012) report HAPU rates post cardiac surgery as high as 21%.

### **Project Overview**

In my microsystem we are committed to safety through continuous improvement initiatives. Protecting our members from harm “requires everyone to be involved in identifying opportunities where patient care can be made safer” (AHA, 2016). In order to achieve and maintain optimal patient outcomes, “safety must be a property of the system” (IHI, 2016). Ultimately my goal is to accomplish safer cardiac catheterization procedures as evidenced by the absence of HAPUs. This project is extremely important because HAPUs are costly (no CMS reimbursement for treatment and/or increased length of stay) and there are also legal and regulatory implications. Additionally, “HAPUs are responsible for significant patient harm in the form of pain, increased susceptibility to infection, and delayed recovery” (2011).

My specific aim is to improve patient safety by reducing the number of HAPUs acquired in the CCL to 0% by three months using a prophylactic foam dressing protocol. It was derived from my global aim statement and is the result of failure modes and effects analysis (FMEA), process and cause and effect analyses, and evidence-based/best practices (2007). The measurable outcome represents the CCL percentage of total facility HAPUs based on final skin assessment prior to discharge.

### **Rationale**

Prior to selecting my project I performed a comprehensive needs assessment in order to gain a better understanding of my microsystem's current state and to locate gaps in performance. While performing my 5 P's assessment my preceptor assisted me in obtaining Regional Risk Management SB 1301 (Department of Public Health) reports which present monthly HAPU incidence at the macrosystem levels. Further inquiry revealed that the CCL was implicated in 30% of 2015 HAPUs including two TAVR patients. This information was subsequently shared with the vascular and CCL staff caring for these patients.

The costs associated with this project are small when compared to its potential savings and benefits (see Budget Table in Appendix E). The amount of money this project will save is significant as CMS discontinued reimbursement for HAPUs in 2008 in addition to intangible costs such as pain and suffering and organization reputation. The net benefit (savings) of this project using the lower estimate for treatment plus fines for the 30% of HAPUs reported in 2015 is \$187,142.60.

### **Methodology**

The objective and specific evidence-based changes in practice involve prospective data collection, enhanced skin assessments, and the application of foam dressings in patients deemed

high-risk for developing sacral HAPUs and/or those whose procedures are anticipated to last three hours or more. I will personally collect all project data however the latter two changes are the responsibility of the microsystem and its professionals. Patient selection will be predetermined based on daily catheterization schedule. I created an excel spreadsheet to audit compliance and track the outcome measure (absence of reportable HAPUs) using my organization's electronic health record, HealthConnect®.

I chose Lewin's change theory for developing my CNL project based on the needs of the project itself and the unique characteristics of my microsystem's professionals, which consists of leaders and effective team members. The discovery of a performance gap necessitated a need for change, or unfreezing. Movement represents PDSA cycles where small tests of change, in this case the application of sacral dressings in high-risk patients for HAPU prevention along with subsequent skin assessment tracking, are executed and evaluated. The most significant driving force for my project based on SWOT analysis is microsystem support. Champions emerged as expected and immediately began implementing foam-dressing protocol. Lastly, refreezing is when the evidence-based change in practice will become the standard of care.

As team leader and change agent my first PDSA-Do action will be innovation diffusion and selecting/partnering with early adopters. Other actions include providing transformational leadership and collecting, analyzing, and comparing data in order to determine program effectiveness. Patient demographics along with procedure type will be gathered from the catheterization schedule. The patient's EHR will be used for studying pre/post skin assessments for the outcome measure (presence/absence of HAPU). Based on SWOT analysis I predict successful implementation as well as 0% HAPUs for patients receiving care in the CCL by one

month. Outcome measure predictions will be ongoing and compared monthly with expected results using Regional Risk Management SB 1301 reports.

### **Data Source/Literature Review**

The focus of my study involves Regional Risk Management SB 1301 reports. These reports, accessible only through my preceptor, show monthly HAPU incidence at both the regional and facility levels. This report is particularly appropriate as the CCL was implicated in 30% of those reported in 2015. Also, HAPU reporting is mandatory—failure to do so may incur fines up to \$25,000.00 per incident.

I began my literature review by formulating the following PICO statements (C represents no treatment): In cardiac catheterization patients does using a sacral foam dressing reduce the risk HAPUs? In high risk patients does Mepilex® Border Sacrum reduce HAPU incidence? I utilized the CINAHL Complete database via Gleeson Library to locate relevant sources however statement and combination searches retrieved few results. Determined, I was able to locate a multitude of information by searching for PICO items individually. I found websites such as Agency for Healthcare Research and Quality, American Hospital Association, Institute for Healthcare Improvement, and Institute of Medicine to be extremely useful as well.

The literature included in the literature review supports my project's specific aim and evidence-based change in practice: to improve patient safety by reducing the number of HAPUs acquired in the CCL to 0% by three months using a prophylactic foam dressing protocol. It also supports the improvement theme, global aim, business case, methodology, change theory, implementation, and barriers. See annotated bibliography for materials used for research evidence including current, peer-reviewed journal articles as well as Mepilex® Border Sacrum product information.

### **Timeline**

Pilot testing is already in progress as project questionnaire has been distributed and dressings are available in each lab. Formal project implementation and data collection will begin in April 2016. It was decided that dressing application is the responsibility of all microsystem professionals. I will be closely observing PDSA-Do phase as well as collecting, analyzing, and comparing all data. Please see timeline in Appendix F for more detail as well as dates each step is due to be completed.

### **Expected Results**

As stated in the Clinical Leadership Theme section, I expect 0% HAPUs for patients receiving care in the CCL when I compare my data with Regional Risk Management SB 1301 reports in February 2017. I base this expectation on overwhelming support for this project including physicians, leadership, and all microsystem professionals consisting of leaders and effective followers who are more than willing to make patient safety their priority. Each one understands that this is not a just a school project but an evidence-based change in practice that will provide safer procedures resulting in zero HAPUs.

### **Nursing Relevance**

My facility's WOCN certified Surgical CNS implemented a similar improvement project in perioperative services after a percentage of patients undergoing cardiovascular surgery developed HAPUs. To our knowledge my project is unique in that HAPU prevention has not been studied extensively in CCL patients and warrants further research and publication. My project has nursing relevance and contributes to our present understanding of HAPU prevention in an understudied microsystem/patient population. Also, improving patient outcomes is important for nurses. The American Nurses Association Code of Ethics for Nurses With



Interpretive Statements states, “Nurses must participate in the development, implementation, and review of and adherence to policies that promote patient health and safety, reduce errors and waste, and establish and sustain a culture of safety” (ANA, 2016).

### **Summary Report**

As stated previously, the objective of my CNL Internship project was to improve patient safety by reducing the number of HAPUs acquired in the CCL to 0% by three months using a prophylactic foam dressing protocol. The actual population encompassed all patients undergoing lengthy (estimated three hours or more), complex cardiac catheterization procedures with or without anesthesia including chronic total occlusions (CTOs), TAVR, MitraClip®, Watchman™, biventricular implanted devices, and/or any patient who might benefit from sacral protection based on nursing assessment and/or provider discretion. The setting included three cardiac catheterization labs and one hybrid suite.

Methods used to implement project were unchanged from prospectus. They involved prospective data collection, enhanced skin assessments, and the application of foam dressings in patients deemed high-risk for developing sacral HAPUs and/or those whose procedures are anticipated to last three hours or more. Baseline data gathered from needs assessment revealed that the CCL was implicated in 30% of 2015 HAPUs including two TAVR patients. A posttest was administered to all CCL staff following instruction (see Appendix G).

To date 80 patients met procedural inclusion criteria. All were administered prophylactic sacral dressings and subsequently tracked for the outcome measure using EHRs. As predicted, zero patients treated with prophylactic sacral dressing experienced HAPUs based on discharge skin assessments. Post implementation data demonstrated a reduction in the number of HAPUs acquired in the CCL from 30% to 0% at eight weeks. This project is sustainable as dressings are

readily available in each lab and implementation is successfully being incorporated into workflow. I conclude that this evidence-based change in practice effectively reduces HAPUs in high-risk CCL patients.

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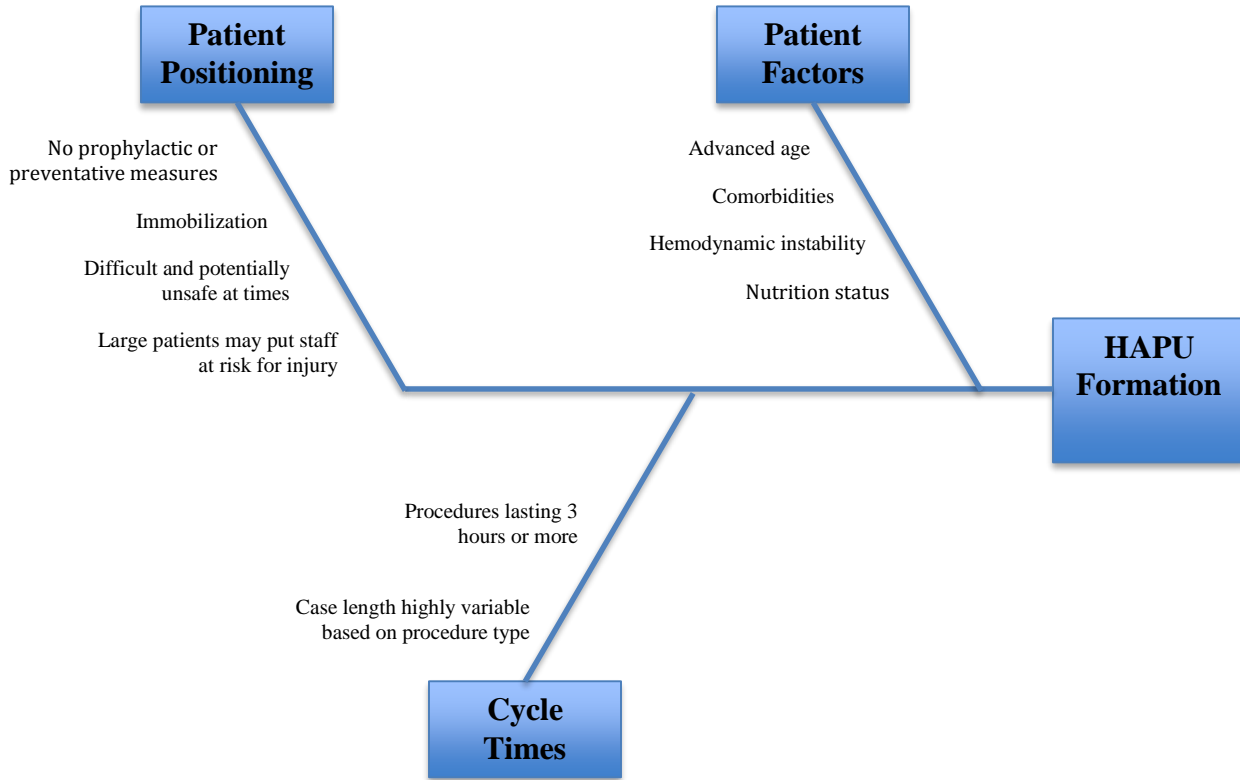
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Appendix A

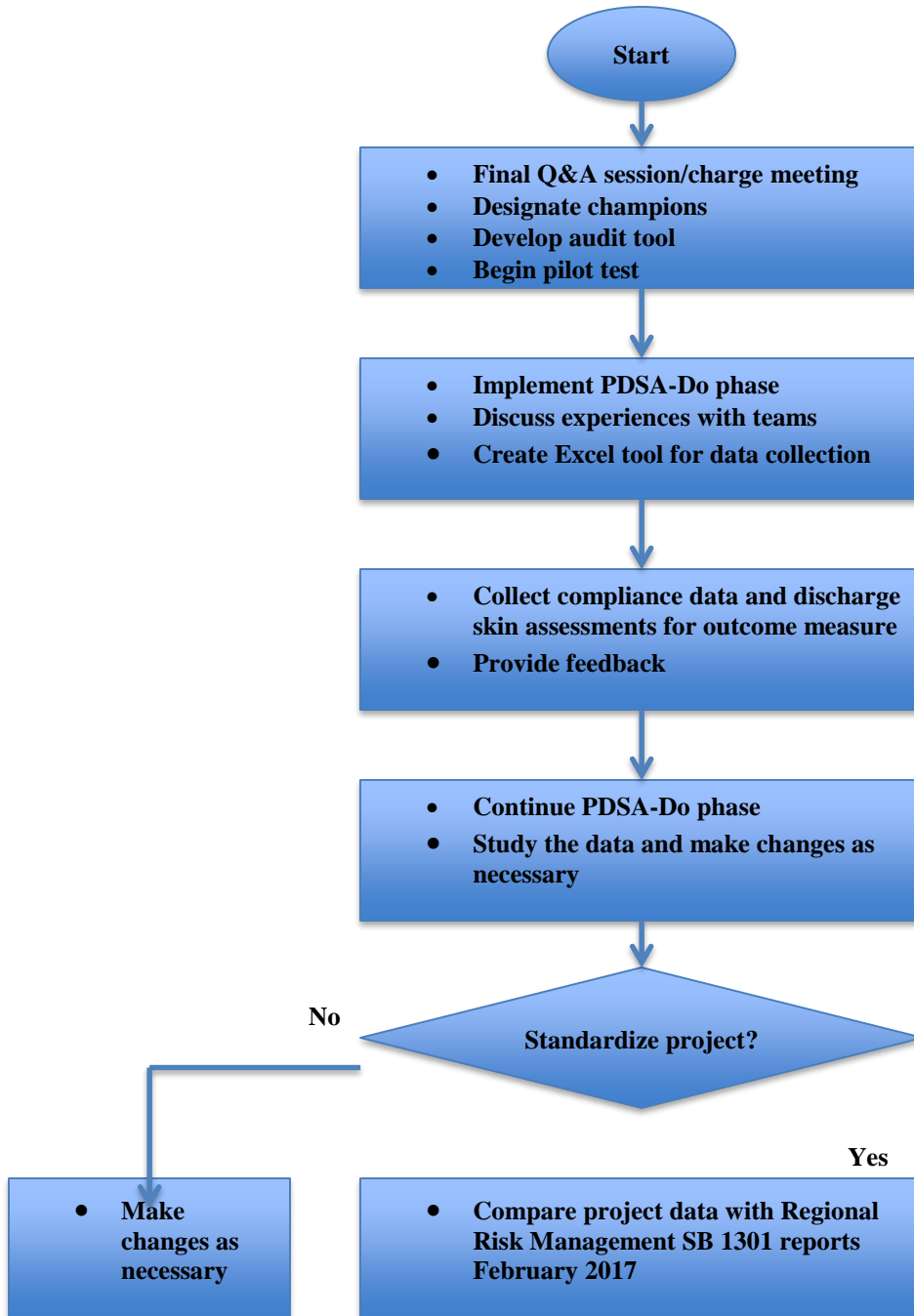
**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol  
Fishbone Diagram**



Appendix B

**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol**

**Flowchart**



Appendix C



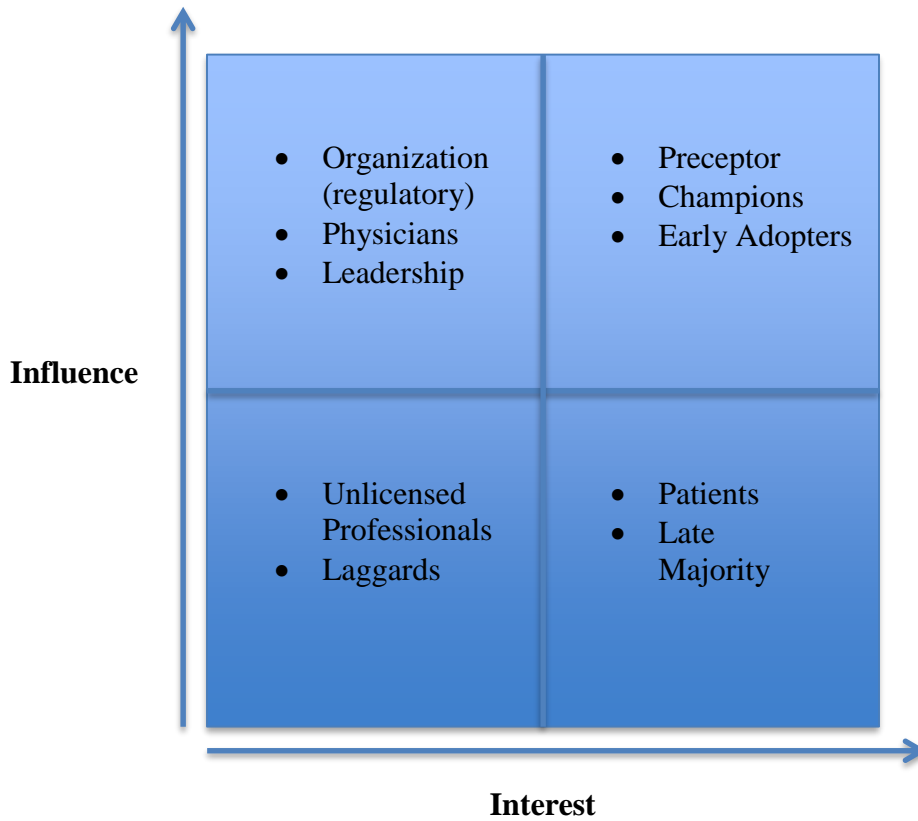
**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol  
SWOT Analysis**

<b>Strengths (Internal)</b>	<b>Weaknesses (Internal)</b>
<ul style="list-style-type: none"> <li>• Overwhelming support from physicians, leadership, and all microsystem professionals</li> <li>• Direct purchasing of supplies</li> <li>• Fully integrated EHR for tracking project data</li> <li>• Dressings are relatively inexpensive, already approved for purchase, and easy to apply/remove</li> </ul>	<ul style="list-style-type: none"> <li>• Positioning of patient for dressing placement/removal in certain situations (unsafe during mechanical ventilation, intra aortic balloon counterpulsation, etc. Also, positioning large patients may put staff at risk for injury)</li> </ul>
<b>Opportunities (External)</b>	<b>Threats (External)</b>
<ul style="list-style-type: none"> <li>• Partner with Vascular and Interventional Radiology departments</li> <li>• Opportunity for enhanced assessment, collaboration, and teambuilding</li> </ul>	<ul style="list-style-type: none"> <li>• Initial skin/risk assessments and dressing application/removal will at times be provided by adjacent microsystems (threat to data collection)</li> <li>• Hybrid catheterization lab poses a potential threat, as it is located two floors above the rest of the microsystem</li> </ul>



Appendix D

**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol  
Stakeholder Analysis**



## Appendix E

**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol  
Budget Table**

<b>Personnel</b>	<b>Cost:</b>
Personnel (0.6 FTE):	\$15,855
<b>Non-personnel</b>	
Start-up medical supplies:	\$1,542
<b>Total Start-Up Operating Expenses</b>	<b>\$17,397</b>
<b>CNL Improvement Project Net Benefit (Savings)</b>	<b>\$187,142</b>

Appendix F

**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing Protocol**

**Gantt Chart 2016-2017**

2015	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Task 1												
Task 2												
Task 3												
Task 4												
Task 5												
Task 6												

**Definitions:**

**Task 1:** Final Q&A session/charge meeting; designate champions; develop audit tool; begin pilot test.

**Task 2:** Implement PDSA-Do phase; discuss experiences with teams; create Excel tool for data collection.

**Task 3:** Collect compliance data and discharge skin assessments for outcome measure; provide feedback.

**Task 4:** Continue PDSA-Do phase; study the data and make changes as necessary.

**Task 5:** Standardize project.

**Task 6:** Compare project data with Regional Risk Management SB 1301 reports February 2017.

## Appendix G

**Preventing HAPUs in High-Risk Cardiac Cath Patients Using Foam Dressing****Protocol Posttest**

1. **True or False** CCL patients are high-risk for HAPU based on advanced age, comorbidities, and hemodynamic instability.
2. **True or False** Foam dressing protocol is appropriate for *all* CCL patients.
3. **True or False** Senate Bill 1301 requires *optional* reporting of all HAPUs along with an administrative penalty not to exceed \$25,000.
4. **True or False** The Centers for Medicare & Medicaid, The Joint Commission, Agency for Healthcare Research Quality, National Quality Forum, and Institute for Healthcare Improvement all recognize pressure ulcers as a quality indicator.
5. **True or False** Preventing HAPUs enhances the quality of services we provide our members.
6. **True or False** HAPUs are costly (no CMS reimbursement for treatment and/or increased length of stay) and there are also legal and regulatory implications.
7. **True or False** The CCL was implicated in 30% of 2015 HAPUs including two TAVR patients.
8. **True or False** Dressing application is the responsibility of all microsystem professionals.

**Key:** True, False, False, True, True, True, True, True