Development of a Scale to Determine Risk for Developing a Hospital-Acquired Pressure Ulcer During Surgery
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Introduction
Studies have shown pressure ulcers caused by surgical positioning in the operating room (O.R.) to occur in up to 45% of cases. Anesthesia providers are held responsible for patient positioning because they cause the patient to be insensate. Therefore, it is imperative that anesthesia providers understand what puts a patient at risk for pressure ulcers, so they can intervene.

- The University of Iowa Hospitals and Clinics (UIHC) has identified a problem with hospital-acquired pressure ulcers (HAPUs) in its O.R. This patient safety issue will require a systems change at UIHC.
- The Centers for Medicare and Medicaid no longer reimburse hospitals for stage III, IV, and unstageable HAPUs, putting the burden of cost on the hospital itself.
- A comprehensive, evidence based plan has been established to reduce the incidence of HAPUs at UIHC:
  1. Understanding the Incidence
  2. Identification of High-Risk Patients
  3. Reducing Pressure
  4. Education of practitioners

The purpose of this project was to create a pre-operative risk scale to detect patients at high-risk for developing pressure ulcers in the O.R., with the long-term goal of decreasing the incidence of pressure ulcers at UIHC.

Literature Review
A literature search was conducted using Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Medline (PubMed) databases. The search phrases used were “pressure ulcers in the operating room” and “pressure injuries in the operating room.” A total of 209 articles were returned of which, 45 were chosen for this project based upon their relevant pressure ulcer risk data. Exclusion criteria included the English language. Risks identified for inclusion in this pre-operative screening tool were those most commonly seen in the literature review, those easily assessed in the pre-operative period, and those which can be objectively identified:

- Surgery (every surgical patient has this risk factor) (+1 point)
- Length of surgery
  - >2.5 hours (+1 point)
  - >4 hours (+2 points)
- Patient age
  - > 40 years (+1 point)
  - > 70 years (+2 points)
- History of (+1 point for each of the following)
  - Hypertension
  - Diabetes
  - Vascular disease
- Patient Weight (BMI > 35 or <18) (+1 point)
- Chronic steroid use > 6 months (+1 point)
- Serum albumin < 3 g/dL within previous 3 weeks (+1 point)
Lewin’s Change Management Model was chosen to anchor this project, as implementation of this scale is part of a systems change at UIHC. Lewin’s model is composed of four parts, describing what must be assessed prior to implementing change, what motivates people to change, how group dynamics play a role in change, and the steps involved in change. These four parts will factor into the acceptance of this practice change for addressing pressure ulcers at UIHC.

Methodology
The primary objective of this project was to develop a pre-operative risk scale to detect patients at high-risk for developing pressure ulcers in the O.R. A secondary objective is the implementation of this scale into the electronic medical record (EMR) at UIHC. The scale will be turned into a best practice alert (BPA), notifying practitioners of patients who qualify as high-risk. The tertiary objective is to reduce the incidence of pressure ulcers at UIHC.

Resources needed to complete this project include a full-time nursing informatics team and an EMR system with the capacity to add a BPA. There are minimal risks, as the resources used are already in place. No additional equipment or personnel are necessary and the budget simply includes time spent on this project by the author and nursing informatics team.

Evaluation
• Objective 1: Successful development of a pre-operative risk scale.
  o Scale reviewed by an expert in skin care and pressure ulcers.
  o Planned research to validate the scale.
• Objective 2: The nursing informatics team at UIHC is currently working on converting this scale into a BPA in the EMR.
• Objective 3: HAPU incidence data after implementation will be compared to known baseline incidence.

Impact on Practice
This scale will: 1) Allow UIHC to evaluate the number of patients at high-risk for developing HAPUs undergoing anesthesia; 2) Alert the anesthetist to those patients deemed high-risk, utilizing a BPA that is triggered if the patient has 5 or more risk factors; 3) Heighten awareness of the risks for HAPUs and thus help change practitioner positioning behavior; and 4) Help to reduce the incidence of HAPUs, which will reduce length of stay and cost of care, as well as improve satisfaction for patients.

Conclusion
This pre-operative risk scale was developed in response to the identified problem of HAPUs in the O.R. at UIHC. As part of the comprehensive plan, the scale will lower the incidence of HAPUs by alerting anesthetists of patients who are high-risk, utilizing a BPA in the hospital EMR. This will help practitioners modify patient positioning to prevent HAPU. In the future, identifying the number of high-risk patients undergoing anesthesia may help secure funding for additional HAPU prevention materials and equipment.

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References


