

PRESSURE ULCER PREVENTION: INNOVATION AND RESEARCH PRODUCE

POSITIVE OUTCOMES

by

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Abstract

Acquiring a pressure ulcer while in the hospital is a devastating outcome for the patient and their family. Pressure ulcer formation in the medical surgical patient population reflects a gap in practice because it is the nursing staff's responsibility to reposition and protect the patient from developing pressure ulcers. The purpose of this project was to answer the following question. For patients on a medical surgical unit, how does the implementation of a pressure ulcer toolkit, along with the use of an automated patient repositioner (APR), affect the rate of the hospital acquired ulcers over a ten week period? A medical surgical unit of approximately 20 inpatient beds in a southern hospital experienced an increase in pressure ulcers over that last two years. The plan, do, study, act was the change methodology used to frame the quality improvement project. In addition, Lewin's theory of change was used to infuse a change in practice for the nursing staff to reposition high risk patients with every patient interaction. After utilizing the Agency for Healthcare Research and Quality (AHRQ) toolkit for pressure ulcer prevention and the use of the APR with every patient interaction, the medical surgical unit went from experiencing three to four pressure ulcers forming on patients each month, to zero for a consecutive three months. The AHRQ toolkit for pressure ulcer prevention supports the use of innovative tools, like the APR, which was successful at preventing pressure ulcer formation for patients highly susceptible for skin breakdown and could be systematically adopted in multiple units in the organization.

Key words: nursing interventions for pressure ulcer prevention, hospital acquired pressure ulcers, automatic patient repositioner, pressure ulcers and hospital beds, pressure ulcer prevention toolkit.

Pressure Ulcer Prevention: Innovation and Research Produce Positive Outcomes

When patients enter the provision of care in the hospital, they put their trust in the quality of care with hopes their well-being will be protected from harm. Some estimates claim that 10% of hospitalized patients develop pressure ulcers (Narzarko, 2012). Hospital-acquired pressure ulcers (HAPU) affect 2.5 million patients per year (Berlowitz et al., 2011). The formation of pressure ulcers is a burden to healthcare institutions as they often lead to an increased patient length of stay along with a decrease in Medicare reimbursement since hospitals are penalized by the Hospital-Acquired Condition Reduction Program (Ma & Park, 2015). Pressure ulcers cost the United States between 9.1 to 11.6 billion dollars a year with more than 17,000 lawsuits every year (Berlowitz et al.). Additionally, patients and families have to carry the burden from complications associated with pressure ulcers. Pressure ulcers that are hospital acquired are grave errors that are considered largely preventable (He, Staggs, & Bergquist-Beringer, 2013). A risk of developing a pressure ulcer injury can occur when nurses boost patients up in bed manually as this causes static friction when one or more body parts do not move in the same direction during the boost (Hermans & Call, 2015). When pressure is applied to tissue it causes distortion of the tissue that can result in shear and stress over the bony prominences (Dealey et al., 2013). The formation of a pressure ulcer during a hospital stay is thought to be the result of the lack of repositioning when patients are weak and immobile and unable to reposition themselves in the bed (Hermans & Call, 2015).

Studies revealed that relieving pressure by frequently repositioning patients is effective in decreasing the incidence of a HAPU (Dealey et al., 2013). If staff continue to manually reposition patients that are unable to reposition themselves, the risk of friction and shear can tear and damage the skin which predispose the patient to developing a pressure ulcer. The AHRQ

toolkit encourages healthcare providers to seek out innovative nursing interventions to prevent pressure ulcer development through evidence-based practice. One recently developed solution found in research is the automatic patient repositioner (APR) that works in an even gliding motion when the patient is pulled up in bed with the touch of a button (Hermans & Call, 2015). Implementing this modification in practice can also provide staff the ability to reposition more frequently due to the requirement of just one caregiver to do so versus multiple caregivers to manually boost and reposition patients.

This project sought to discover if the implementation of a pressure ulcer toolkit along with an APR would reduce the rate of HAPU for patients on a medical surgical unit over a ten week period. The AHRQ toolkit provides a framework to ensure implementation of any new strategies are effective and sustained. The toolkit reinforced the importance of assessing the nurses' knowledge to uncover staff attitudes about pressure ulcer prevention. A survey from the toolkit was used to reveal staff attitudes and any knowledge gap identified was addressed so staff would not undermine any practice changes required to improve pressure ulcer prevalence. Another important step the AHRQ toolkit recommended was to survey the leadership to ensure stakeholders endorse the project. Prior to implementing the survey, the toolkit encourages defining the current state and gap in care to allow the leadership team to understand the urgent need for a practice change. An aspect of this urgent need for change is due to the fact, frequent patient repositioning can be challenging when resources are limited. It was thought that the use of an APR would minimize or mitigate this barrier as patient repositioning could be accomplished by a single caregiver. The goals of reducing HAPUs have many positive effects for the patients, families, and the organization.

Problem Description

There was an increase in the incidence of HAPUs on a medical surgical unit in 2015 and 2016 at a 300-350 bed hospital in a Southeastern community of the United States. There were 80 in 2015 and 117 in 2016 (see Figure 1). The medical surgical unit accounted for a significant portion (10%) of this increase, and therefore became the site for this project. There were four HAPUs on this unit in 2015 and this number increased in 2016 as this unit ended the year with 12 recorded pressure ulcers. Figure 2 reveals the HAPU rate increased from 0.59 to 1.65 which is calculated based on the number of HAPUs per 100 patient days. Patients with high acuities are admitted to this medical surgical unit and may have long lengths of stay due to various complex medical conditions. Figure 1 displays the increase in pressure ulcers for the hospital compared to the medical surgical unit.

The pressure ulcer incidence rate is a measure of the pressure ulcer occurrence and an estimate of pressure ulcer incidence. This is calculated using the number of patients that acquired a pressure ulcer after admission to the hospital divided by the total number of patients in the population that is studied (Doughty & McNichol, 2016). The national prevalence of HAPU is 0.32% of patients in the acute care setting (Spetz, Aydin, Brown, & Donaldson, 2013). Figure 2 reveals the increase in the pressure ulcer rates of both the hospital and the medical surgical unit for 2015 to 2016, and 2017 year to date.

The anatomical location of the pressure ulcers is important to note in an effort to guide the proper care when planning to prevent future pressure ulcers from occurring. Of the 12 pressure ulcers recorded in 2016, five were on the heel and five were on the sacrum with none recorded on the buttock area.

When the patient slides down in bed, pressure increases on the heels and the sacrum causing an increased risk of developing a pressure ulcer in those locations (Hermans & Call, 2015). If the patient is in the correct position in the bed, the pressure is minimized in those areas. Boosting the patient up in bed to the proper position takes effort throughout the shift and can be a difficult intervention for the nursing staff to maintain. In order to provide high quality care, as a patient can slide down frequently, the current standard of practice to reposition a patient every two hours might not achieve the desired result.

Traditionally, the patients on this medical surgical floor were manually repositioned. This creates a problem when patients migrate down in the bed as it usually requires two or more caregivers to boost them back up. Staff on the medical surgical floor have struggled finding the assistance they need to reposition patients and are therefore not compelled to reposition patients as often as they should. The practice of manually boosting patients causing friction and shear leads to a deformation in the capillary bed of the skin which causes tissue death (Hermans & Call, 2015). The APR reduces friction and shear when compared to manual methods on other bed surfaces (Hermans & Call, 2015). The desired state is zero pressure ulcers that are acquired while the patient is within our care. With the proper education to the staff, an increase in the recognition of high risk patients for developing pressure ulcers can be uncovered. Tailored interventions, such as repositioning patients frequently, can be implemented.

Available Knowledge

A systematic and complete literature review was conducted on strategies and nursing interventions to prevent hospital acquired pressure ulcers. The databases that were utilized to conduct a literature review in the Capella University library as well as the nursing reference center available for hospital staff are as follows: Medline (PubMed), Cumulative Index to

Nursing and Allied Health (CINAHL), and Elton B. Stephens Company (EBSCO).

Keyword searches included *nursing interventions for pressure ulcer prevention, hospital acquired pressure ulcers, automatic patient repositioner, pressure ulcers and hospital beds, pressure ulcer prevention toolkit*. The terms were combined with Boolean operators “AND” to cultivate findings of relevant articles. Searching for *nursing interventions for pressure ulcer prevention* resulted in 14,153 articles that was further narrowed down with adding *hospital acquired pressure ulcers and repositioning*, that narrowed the scope to 1,305 articles. Many of these articles discuss other interventions to reduce pressure ulcers in addition to repositioning and there were a handful of studies that were aimed at analyzing frequent repositioning as a pressure ulcer prevention strategy. Twenty-one articles remained after eliminating repeated articles and those that did not apply to the clinical question. The search for *patient positioning* resulted in 3,718 articles while *automatic patient repositioning* resulted in three relevant articles. The three articles uncovered with the APR discussed the surface of the mattress included with this device has a pressure reducing component. The search for *pressure ulcer prevention toolkit* resulted in 1,100 articles with only 230 peer-reviewed journal articles with a further narrowing to reveal 32 articles addressing the *AHRQ pressure ulcer prevention toolkit*.

The themes from the literature review confirmed there are many contributing factors to pressure ulcer formation along with multiple nursing interventions to combat those factors. Frequent repositioning is one of the most effective nursing interventions to prevent pressure ulcers, but this is difficult to achieve with staffing constraints. It was also recognized in the literature that the AHRQ toolkit for pressure ulcer prevention can provide an effective template to implement new innovative prevention strategies in multiple healthcare settings.

Nursing interventions for pressure ulcer prevention. There are many nursing interventions in the literature that have been linked to preventing pressure ulcer formation. Identifying patients who are high risk with the use of the Braden Scale is important for the nursing staff to guide certain interventions (Swafford, Culpepper, & Dunn, 2016). At risk patients, identified by the Braden Scale, have been identified to have a 7.9% incidence rate versus all patients who have a 3.6% incidence rate (Bergquist-Beringer, Donge, Jianghua, & Dunton, 2013). Once high risk patients are identified the following nursing interventions include: proper hygiene care for incontinent patients, an appropriate nutritional plan, continuous bedside pressure mapping, and frequent repositioning.

Ensuring a well-balanced diet is a valid intervention for managing pressure ulcer prevention (Chasmore, Bernard, & Taylor, 2009). Supplements can be given to high risk patients to confirm proper consumption of nutritional elements are accounted for. Screening for nutritional deficits is also an important component of care. During a pressure ulcer prevention project at a community hospital identified one of their strategies was to have nursing students monitor the nutritional intake of patients who were high risk for pressure ulcer formation (Chasmore et al.). Challenges arose as patients who were identified as high risk often had orders to hold food prior to diagnostic procedures and tests further complicating adequate nutritional intake (Chasmore et al.). As many interventions were included in their toolkit used for pressure ulcer prevention, there was an indirect link to nutrition as being a factor in prevention pressure ulcer formation. This concludes nutrition is not an intervention that is solely based on nursing interventions. While nurses administer prescribed supplements, physician orders, and dieticians dedicated to the floor often manage the nutritional needs of the patient population.

Pressure mapping can provide a graphic display with real-time visual feedback on the

results of repositioning patients to off-load pressure. Using continuous bedside pressure mapping reduced pressure ulcer formation and can be an effective way to provide immediate cues if the patient has increased pressure in certain areas (Behrendt, Ghaznavi, Mahan, Craft, & Siddiqui, 2016). With the use of continuous pressure mapping, pressure ulcer formation was decreased but not eliminated as two stage II ulcers formed during the two months it was conducted. Visualization of repositioning effectiveness can be valuable so staff can ensure patient pressure points are relieved. This technology can be costly and impractical in all units outside of critical care areas. While continuous pressure mapping is a nice feature to have, the conclusions support the idea that effective repositioning is one of the most important interventions for pressure ulcer prevention.

Developing a pressure ulcer during a patient's hospital stay has been directly linked to nursing care and is described as a nursing sensitive indicator (Tzeng, Grandy, & Yin, 2013). A link between a staff's response to call lights and pressure ulcer incidence concluded that staff response is a significant indicator to predict hospital acquired pressure ulcer rates (Tzeng et al.). Several inpatient units in a Michigan hospital tracked the call light response time and measured the response time to the rate of pressure ulcers on the unit (Tzeng et al.). The study surmises the slower the call light response time was on a unit highly correlated with a higher HAPU rate (Tzeng et al.). Keeping incontinent patients free from moisture along with frequent repositioning and staff interaction lowers the risk of developing pressure ulcers.

The general search for *patient repositioning* revealed 3,718 articles, but only a handful were proven relevant to the clinical question. Three research articles discussed different aspects of patient repositioning relevant to this clinical project. One discussed the problem with patient migration in the hospital bed (Hermans & Call, 2015). When a patient slides down in bed,

nurses will boost the patient up creating friction during the boost (Hermans & Call, 2015). Frequent and routine repositioning is an effective method to reducing patient's risk of developing a pressure ulcer (Hermans & Call, 2015). Routine repositioning was shown to reduce patients' risk of pressure ulcer formation by 14% (Bergquist-Beringer et al., 2013). Bed immobility reduces peripheral perfusion and skin loses integrity over bony prominences (Fragala & Fragala, 2014). Therefore, repositioning in bed is essential to preventing hospital acquired pressure ulcers (Fragala & Fragala, 2014). Some areas like the heels and the sacrum areas remain a risk for pressure injuries despite the repositioning by experienced caregivers (Peterson, Gravenstein, Schwab, van Oostrom, & Caruso, 2013). The importance of patient positioning to reduce negative patient outcomes may be the most effective nursing intervention to prevent pressure ulcer formation. The current standard of practice to repositioning patients every two hours may be not be adequate.

Hospital-acquired pressure ulcers. Patients that develop pressure ulcers in the hospital setting are linked with higher mortality rates and longer lengths of stay (Wilborn, 2015). In the hospital environment, impaired mobility of the patient in Intensive Care Unit (ICU) patients were at greater risk for pressure ulcer formation than medical surgical patients (Lahmann, Kottner, Dassen, & Tannen, 2011). The comparison between medical surgical and ICU units concluded that patient acuity and immobility is significantly higher in the ICU setting and contributes to this increased risk (Lahmann et al.).

Hospital unit work environments were significantly reflective of the rate of HAPU (Ma & Park, 2015). The more cohesive the work environment that was able to function as a team, the lower the HAPU. This correlates with the premise that if more staff were available to assist with repositioning the patient, the less likely the patient would develop a pressure ulcer (Ma & Park,

2015).

Automatic patient repositioner. A comparison of the pressure distribution on different body locations using pressure mapping revealed that preventing the patient from sliding down in bed is vital to decreasing skin pressure (Hermans & Call, 2015). With the APR, repositioning the patient by boosting them up in the bed reduces the pressure in the heel and sacrum based on the ability to be in the correct position while in the bed (Connolly, Lister, & Branch, 2015).

One hospital utilized a pro-active repositioning plan where the nursing staff used the APR to boost a patient up in bed with every patient interaction with hopes to reduce the chance of patients with a Braden Scale less than 18 to develop a pressure ulcer (Connolly, Lister, & Branch, 2015). Efficiency in workflows were noted as only one caregiver is needed to reposition patients along with a new standard of care with repositioning patients in their hospital that no longer allows patients to migrate down in bed by using the APR with every patient interaction (Connolly et al.). After a ninety day trial period, no patients on the APR system developed any skin breakdown or nosocomial pressure ulcers (Connolly et al.).

A hospital offered a new APR that changed the practices of caregivers to promote a safer and more comfortable environment by repositioning them with a single caregiver (Cartwright, 2016). The APR that allows the bedside staff to quickly and safely reposition a patient who has slid down in bed, bringing them back up in bed with the simple push of a button (Cartwright, 2016). The nursing staff was instructed to boost the patient up in bed every time they enter the room. When patients slide only 6 inches down in bed, they have a higher risk to developing pressure ulcers (Hermans & Call, 2015). An issue can arise when the head of the bed is elevated as the patient easily migrates downward in the bed. In addition, the APR reduces the friction and shear often associated with traditional repositioning which has lowered the patients risk for skin

breakdown (Cartwright, 2016).

From a clinical standpoint, this hospital saw a dramatic reduction in their incidence of hospital acquired pressure ulcers since introducing the APR. In 2013, their HAPU incidence rate was 6.1% compared to 2015, where the rate dropped to 1.3%, representing a 79% decrease (Cartwright, 2016). Another healthcare facility had similar results when they purchased APRs in every room in their ICU. Their HAPUs on this unit went from 3.3% to zero in a 12 month period (Brunsman, 2015).

Pressure ulcers and hospital beds. Many innovations have pointed to seeking different bed surfaces to prevent pressure ulcers from forming while patients are in bed. A new viscoelastic foam mattress has been proven to prevent new pressure ulcers from developing along with the healing of existing ulcers (Motta, Milne, & Saucier, 2016). Skin integrity was actually improved at discharge in comparison to other specialty surfaces used to prevent pressure ulcers (Motta et al.). Additional studies have challenge the premise specialty surfaces make a difference as the position of the patient in the bed strongly correlates to the pressure the patient experiences and it appears to be independent of the type of surface on the hospital bed (Hermans & Call, 2015). The idea the surface of the bed is the sole solution in reducing the pressure in various patient positions in the bed dismisses the complexity of this problem. When comparing multiple bed surfaces some specialty surfaces are helpful in the reduction of pressure ulcer formation, but frequent repositioning remains an essential ingredient to mitigating the risk of a HAPU (Hermans & Call, 2015).

Pressure ulcer prevention toolkit. Pressure prevention toolkits are designed to bundle interventions to provide solutions to the contributing factors in pressure ulcer formation. The AHRQ toolkit is designed to be effective in multiple care settings and support the best practices

in pressure ulcer prevention (Berlowitz et al., 2011). Pressure ulcer prevention is a complex issue that requires a systematic approach and the toolkit addresses several interventions to prepare the organization for a successful practice improvement change. The pressure ulcer prevention strategies should focus on what the healthcare team's role can contribute to prevent pressure ulcer formation. Practice improvement following the outline of the toolkit was successful because the tools assessed organizational readiness and garnered leadership support for the practice changes (Berlowitz et al.). The toolkit guides a team through each phase of practice change and supports the plan, do, study, act (PDSA) methodology. The AHRQ implementation guide is comprised of tools to assess a readiness for change, how to uncover the gap in knowledge, steps to change practice, and sustain best practices in pressure ulcer prevention.

Rationale

The framework used for this project was the PDSA cycle. This methodology was incorporated to assist with building the steps for this project. In the planning phase, the team determined the objective for the project was to decrease or eliminate pressure ulcers that had begun forming on patients on the medical surgical unit. The project assumption was with the use of the tools in the toolkit to prepare the organization for change, along with the APR to proactively reposition patients, pressure ulcers would not occur. Another assumption in this project was staff would reposition patients more often since the APR can be used with a single caregiver. The variables included determining if tools in the pressure ulcer prevention toolkit and utilizing the APR on high risk patients substantially decreased pressure ulcer prevalence on the medical surgical unit. The "do" phase in the PDSA cycle allowed the team to carry out the improvement plan implementing the process of assessing patients on admission who are high

risk for pressure ulcer formation and those identified would be repositioned with the APR with every patient interaction. The study phase is where the team analyzed the results that revealed zero pressure ulcers over the course of the project. The act phase was determining if these tools should be implemented system-wide and specifically in the ICU setting to further test the evidence using the AHRQ pressure ulcer prevention toolkit to identify high risk patients and implement the APR to reposition patients more frequently than the current standard of practice suggests.

In addition to the PDSA cycle to frame the project, the theoretical framework used to assist in changing nursing behavior is Lewin's theory of planned change (TPC). There are three stages to the TPC which are *unfreezing*, *transitioning or moving*, and *refreezing* (Shirey, 2013). Unfreezing is the first stage that uncovers a problem or a gap in practice. The gap in practice discovered on the medical surgical unit, was the pressure ulcer rate is on the rise and needed to be addressed. To mobilize change, a sense of urgency was created during the unfreezing stage. The sense of urgency was assisted by tools in the AHRQ toolkit for pressure ulcer prevention by surveying the staff on their attitudes toward pressure ulcer prevention. Those results uncovered the fact that nurses are focused on managing the critical needs of the patient and often overlook the potential hazards that infrequent repositioning causes. This urgency was heightened by the unit's pressure ulcer rate spike with the National Database of Nursing Quality Indicators (NDNQI) index and the notion that any development of a pressure ulcer is a nursing failure of care (Ma & Park, 2015). Lewin's theory discusses identifying the barriers to the change during the unfreezing stage. One of the barriers that existed in this project was the concept of efficiency. Staff nurses were instructed to boost the patient up in bed using the APR with every patient encounter and could feel they do not have the time to do this with every interaction.

The second phase of Lewin's theory of change is moving or transitioning the practice of identifying high risk patients and repositioning them with each interaction. Formative surveys were sent out to uncover the barriers to the change. The team modified the project to remove these barriers which was an important step prior to hardwiring the practice in the last stage of Lewin's theory of refreezing behavior to stabilize the change into existing practice. Staff behavior was changed at the bedside and repositioning the patient with the APR is now routine and habitual with every patient encounter. Without the refreezing stage, this change in practice cannot be sustained over time. Summative surveys were sent out at the end of the project to capture the staff's overall response to the pressure ulcer prevention methods that were introduced using the AHRQ toolkit.

Specific Aims

The aim of this project was to determine if the use of the AHRQ toolkit along with an APR was effective in preventing pressure ulcer formation in an acute care setting on the medical surgical unit. The AHRQ toolkit provides a best practice guideline in preparing the team to implement strategies in pressure ulcer prevention and the evaluation of those tactics. The APR is a new technology that allows caregivers to efficiently reposition patients in bed. The AHRQ toolkit can help determine if nursing practice to repositioning patients more frequently using the APR reduced the prevalence of pressure ulcer formation for patients while they are in the hospital. If the project were successful, the AHRQ toolkit survey tools along with the use of the APR to reposition patients would be implemented system-wide.

Methods

Context

The setting for this project was an acute care, community-based hospital in the southern United States. The medical surgical unit has about 20 beds within a 300-to-350 licensed bed hospital. The age of the patients admitted to this unit ranges between 18 year old patients to 100 year old patients with the mode of patients being 68-75 years of age. The medical surgical unit does not admit pediatric patients. This unit mainly cares for the elderly patients with multiple co-morbid conditions. The hospital provides 24-hour nursing services and employs a hospitalist team of physicians along with multiple specialized services.

The unit has a nurse to patient ratio of one to five during the day and one to six patients at night. The patient care technicians can be assigned to up to 10 or 12 patients for their shift. This unit is at its maximum capacity of patients 87% of the time. This medical surgical unit is a busy unit with staffing challenges that may impact proper repositioning of patient to prevent pressure ulcer formation. Prioritizing care by stratifying high risk patients along with innovative solutions to reposition patients can produce positive patient outcomes.

The target population was patients on the medical-surgical unit who are highly susceptible for the formation of a pressure ulcer. These patients include those who have poor nutritional intake or are immobile and weak from a serious illness, who cannot reposition themselves in bed, are recovering from surgery, or have suffered a stroke. Other high risk patients might have a chronic condition such as peripheral vascular disease or diabetes as these slow the healing process (Dealey et al., 2013). Patients that are incontinent of urine and stool expose their skin to a consistent moist environment that can increase their risk for developing a pressure ulcer (Dealey et al.). Patients who are confined to bed and have poor oxygen and air

exchange due to a disease such as chronic obstructive pulmonary disease or congestive heart failure can present with a higher risk than other patients in developing skin breakdown (Omolayo, 2013). Patients who were admitted for less than 24 hours and those with an existing stage 4 pressure ulcer were excluded from the project as those patients typically require a specialty bed and it is difficult to determine if the pressure ulcer has increased in severity during the hospital stay.

There are several factors internally and externally that can contribute to the formation of a pressure ulcer. The external factors can include shear, friction and pressure on the patient's skin from sliding down in the bed (Hermans & Call, 2015). Since the patients on this unit are often boosted with the sheet, skin tearing can result from the friction and shearing that can happen during this manual repositioning process. In addition, the nursing staff elevates the head of the bed (HOB) since this assists in proper respiratory functions and protects from regurgitation during tube feedings. Gravity will pull the patients downward causing a cycle of positioning and repositioning the staff struggle to maintain. This mechanism of sliding down in bed causes pressure in the heels and sacrum areas on the patient that could cause pressure ulcers to form in these locations. Internal factors such as nutritional status and incontinence should be assessed to determine if these are contributing factors that would increase the patient's risk of developing a HAPU.

Interventions

The AHRQ toolkit for pressure ulcer prevention was a best practice guideline used to implement the assessment of high risk patients for skin breakdown and to introduce the APR so proactive repositioning of the high risk patients occurs. The pressure ulcer prevention toolkit developed by AHRQ outlines a template to introduce evidence-based practices for preventing

pressure ulcers in multiple healthcare settings (Berlowitz et al., 2011). This toolkit provides an implementation guide to assess organizational readiness for change when caring for patients who are at high risk for developing pressure ulcers. The seven domains within this toolkit are: assessing readiness, managing change, investigate for best practices, implement practices, measure change, sustain change, and reference tools within the toolkit (Berlowitz et al.). The AHRQ toolkit recommends caregivers determine what practice changes need to be implemented to accomplish decreasing pressure ulcers from forming while in a care environment. The first domain in the toolkit prepared the team for assessing the readiness for change and assess the knowledge of the bedside staff so education can be provided to improve the quality of care. The attitudes and knowledge of the risk for patients developing a pressure ulcer were assessed by using the views on pressure ulcer prevention survey from the AHRQ toolkit. Education was provided to the staff to cover identified gaps. The leadership group was also surveyed using a tool from the AHRQ toolkit to ensure any intervention or change in the clinical practice would have support from administration.

The second domain of the AHRQ toolkit addressed how this change was managed. The toolkit recommends the PDSA methodology that was used as an effective way to implement change (Berlowitz et al., 2011). After the need for change was uncovered, the next step was to find evidence-based solutions to preventing pressure ulcers and utilize the framework of the AHRQ toolkit to implement those practices at the bedside.

The third domain in the AHRQ toolkit addressed how to investigate best practices and pressure ulcer bundles encompass three main components that are incorporating a standard skin risk assessment, deciding which best practices should be bundled for care, and creating a pressure ulcer prevention nursing care plan that incorporates the intervention bundle. For this

project, the team focused on ensuring a standardized skin risk assessment was being completed. The staff performed a comprehensive skin assessment when the patient was admitted. Using a standard risk assessment will direct staff to implement a care plan that is customized to the deficiencies found on the skin assessments. Risk assessments allowed the clinician to identify patients highly susceptible for pressure ulcer development and target preventative interventions for those patients (Berlowitz et al., 2011). A standardized risk assessment tool the AHRQ toolkit recommends is the use of the Braden Scale. The Braden Scale for predicting pressure ulcer risk is a validated tool that is being used with permission.

Omolayo et al. (2013) states that the assessment of the patient's pressure ulcer risk consists of "six subscales of the Braden Scale: sensory perception, moisture, activity, mobility, nutrition, and friction and shear" (p. 122). The Braden Scale adds up six separate subscales that are totaled and can range from six to 23 (Omolayo et al., 2013). If a patient scores 19 or higher, the lower the pressure ulcer formation risk exists and this score would not require specific interventions for pressure ulcer prevention. The lower the number reflects a decreased level of functioning which contributes to a greater risk for the patient to potentially develop a pressure ulcer (Omolayo et al., 2013).

When nurses assess a pressure ulcer risk assessment on admission, the patient is less likely to develop a pressure ulcer during their hospitalization (Bergquist-Beringer et al., 2013). Upon admission, the nursing staff performed a comprehensive skin assessment that included the Braden Scale as the standardized risk assessment. Patients were then assessed every 48 hours after they had been admitted on the unit.

Domain 4 in the AHRQ toolkit advises to search best practices and develop a multidisciplinary group to explore which practices to implement. A team that included unit

champions, members of the wound care staff, and leadership support to guide and implement the best practices. Utilizing the APR was an innovative best practice the team chose to implement. Any patient who scored under 18 on the Braden scale had customized interventions such as being placed on the APR to prevent breakdown in skin on the sacrum and heels.

The fifth domain is how pressure ulcer rates are measured in the organization. The toolkit addressed the metrics to track pressure ulcer rates, which the medical surgical unit has been doing and reporting data to the NDNQI database. The AHRQ toolkit outlined how to measure and track the pressure ulcer prevalence. This is currently being done in the hospital by the wound care nurses and the nursing councils and subsequently reported to NDNQI.

The sixth domain in the toolkit addresses sustaining the positive results and how to expand the project system-wide. This was beyond the scope of this project, but the team is already pursuing sustaining the practices and is specifically interested in expanding this project to the ICU setting next.

The seventh domain addressed the value of utilizing the tools. This is a comprehensive, extensive kit that provides multiple tools to address barriers and issues in the care of patient's skin. The kit is designed to be adaptable so when interventions are not effective, the toolkit provides a path to regroup and analyze other improvement practices to implement. The toolkit directs the team to focus on strategies behind implementing best practices so the interventions are vetted and sustainable by the staff. The tools utilized in this project were the clinical attitudes and knowledge assessment survey, the leadership support survey, and the recommendations to adopt a standardized skin assessment tool, which was the Braden Scale.

This project took a collaborative effort among the nursing staff to commit to the new behaviors and utilize the APR with every patient interaction. The nursing staff utilized the

nursing assessment with the assistance of the Braden scale to identify high risk patients who were included in the project.

Study of Interventions

To assess organizational readiness for this project a survey provided in the AHRQ toolkit to determine the attitudes of the clinical staff regarding pressure ulcer prevention was conducted. This tool is an eleven item survey by Moore and Price that assists with uncovering initial implications pertaining to staff education for pressure ulcer prevention (Berlowitz et al., 2011). The clinical staff attitudes toward pressure ulcer prevention study has a Cronbach's alpha score of 0.79 that proves this survey to be a reliable and valid tool (Olson, 2015). A leadership support assessment tool was used to assess how this project would be endorsed by the organization.

Assessing which patients are at risk is an important step to tailoring the proper plan of care to prevent skin breakdown. When a patient is unable to reposition themselves in bed after migrating down in the bed, their risk of developing skin breakdown increases. Audits were performed weekly to determine if the patients were being assessed for their risk of skin breakdown with the use of the Braden Scale. The accuracy of the Braden Scale risk score was assessed each week when the team would round and perform skin prevalence assessments on every patient admitted on the medical surgical floor. Adherence to utilizing the APR for high risk patients was assessed during these rounds and immediate feedback was given to the staff if a gap in practice was noted. The project team made recommendations based on the findings from the project. The expected outcome is to utilize the implementation guide and the tools in the AHRQ toolkit and develop a standard of care of the frequent repositioning of patients with the use of the APR to reduce the risk for developing skin breakdown.

Formative surveys were given during the implementation phase to uncover any barriers associated with frequent repositioning using the APR. These early surveys revealed some of the barriers to boosting the patient up in bed. The staff formative survey during the study uncovered a barrier with the specialized sheets used in the APR. The linen department had a lag in time getting these sheets through the washing process and back on the unit causing the APRs to be disabled. The team met with the linen department to construct solutions to this problem to ensure sheets were provided to the department each day and this included putting more sheets in circulation to elevate this risk. This issue was rectified early in the project to guarantee the unit would always have clean sheets when needed. In addition, the formative surveys revealed the issue of awareness. The awareness problem was two-fold; the first was the lack of reporting to the team which patients are high risk with using the Braden Scale, and the other issue was remembering which patients required repositioning with every patient interaction. The team decided to add the Braden score to the reporting structure when the hand-off bedside shift report is conducted so the risk score is highlighted during the change in caregivers. The second issue was addressed by changing the color of the APR tracking tool posted in the rooms as a visual reminder to reposition identified high risk patients with every patient interaction.

The other expected outcome was the staff would gain knowledge that impacts their attitudes towards caring for patients who are high risks for developing pressure ulcers. The clinical staff attitudes toward pressure ulcer prevention harvested from the survey revealed the attitudes of the medical surgical staff are mostly positive (average score of 43 with 55 as the highest possible score), but the survey uncovered an opportunity. Staff admitted they lacked time in their shift to focus on pressure ulcer prevention. This survey reinforced the importance

of finding innovative, efficient solutions like the APR to allow staff to reposition their patients more often because the repositioner is easy to use and only requires one caregiver to operate.

In addition, the reduction in the physical overexertion of staff during the repositioning of patients in the bed was mentioned. Boosting a patient up in bed is a repetitive physical motion that is done multiple times throughout the shift. If this action is automated using the APR, the staff's physical exertion goes down and their efficiency goes up. Patients are also expected to have a positive impact from the results of this project, as they will be properly placed in bed where breathing is easier and overall position in bed will be more comfortable. Patient dignity was maintained with the automated boost versus the manual boost when patients required more than two caregivers and now staff can easily reposition without waiting for extra help to arrive. Patients can feel less burdensome to the staff with the ability to reposition with the touch of a button versus seeking multiple caregivers for repositioning assistance.

The leadership support assessment was overall very positive reflecting that patient safety is articulated in the organization's strategic plan and pressure ulcer prevention is a priority. Six leaders participated in the study that revealed an opportunity with the budgetary support. The current financial constraints may eliminate costly solutions as proper resources may not be available to allocate for certain pressure ulcer prevention strategies.

Measures

The primary desired outcome was a reduction in the number of new pressure ulcers. Nursing practice was monitored to ensure their practice has changed by repositioning the patients with every patient interaction rather than the current standard of repositioning the patient every two hours. The staff documented on an APR tracking tool form to determine how often they are repositioning the patient during the shift and within four weeks of the project, the practice was

hardwired and the tracking tool was no longer necessary.

The prevalence of the ulcer was monitored by an assessment form from the NDNQI that was utilized during the project for patients who met the criteria for being placed on the APR and boosted with every patient interaction. The skin assessments were reported by stage I, II, III, IV, unstageable, or deep tissue injury (DTI) by the implementation team. An assessment documentation tool was used to assess the high risk patients in the project to determine if any pressure ulcers are discovered.

The primary source of data was the patient skin documentation in the medical record revealing the admission Braden Scale score. The skin was assessed at admission, 48 hours after admission and every 24 hours while in the hospital to determine if any pressure injury formation occurred using an NDNQI pressure ulcer prevalence tool. The nursing staff repositioned by boosting the patient with the APR with every interaction and documented this action on the flow sheet. The patient's medical record was accessible through the electronically through the documentation system the hospital uses as the patient's electronic medical record. The staff knowledge and attitude surveys, leadership support survey, the formative and summative staff survey information were collected through an electronic survey through MonkeySurvey and Qualtrics software.

The AHRQ toolkit outlined how to measure and track the pressure ulcer prevalence. This project focused on driving the measurement and progress down to the bedside level and present results of skin assessments at the staff meetings. According to NDNQI, the average incidence rate of pressure ulcers for a medical surgical unit is 1.47. This medical surgical unit reported a rate of 1.96 in January of 2017 and spiked to 5.41 in February of 2017.

Analysis

Qualitative methods were used to gain insight on the clinical attitudes survey, the leadership assessment survey, formative and summative surveys to gain insight on the organizational readiness for this project and the barriers or successes of the project. Quantitative data for the skin surveys was placed in a frequency distribution table for staging the pressure ulcer. Data was reported by stage I, II, III, IV, unstageable, or deep tissue injury (DTI) by the implementation team that included wound care nurses as experts in their field and assessment of pressure ulcer development. Data was also analyzed in correlation with the Braden Scale or patient risk for developing a pressure ulcer and the staffing matrix for the care delivered. See Table 1 that reveals the Braden Scale accuracy correlation of what the staff documented and what the pressure ulcer prevention team found upon rounding on the patients.

Through education of the staff and sharing the Braden score upon hand-off report, the accuracy of skin assessment risk increased during the project. Staff also entered data on a tracking tool for the amount of times they repositioned the patient using the APR. The data was analyzed by the project team and determined nursing practice was in the re-freezing stage as staff were adhering to the new standard of care outlined in the project. This behavior was different from their original practice of manually turning high risk patients every two hours as they were using the APR every time the staff entered the room that allowed the staff to efficiently boost the patient with one caregiver by touching the button to boost the patient up in bed.

The summative survey allowed the project team to determine if the change can be hardwired into practice if the results match our project assumption that patients who are frequently repositioned with the APR decrease the patient's risk of developing a pressure ulcer. The summative survey revealed that staff felt their awareness to pressure ulcer prevention

increased, along with the use and communication of patients that are high risk using the Braden Scale during shift report. The staff felt the APR was an effective tool in decreasing HAPUs and felt they repositioned their patients more often with the APR than if the patient had to be manually boosted.

Ethical Considerations

Ethical considerations in this project included patient privacy and dignity while conducting the study. The preservation of privacy was maintained as patient identifiers were not used in reporting data or Braden score accuracy results. In addition, it was discovered that utilizing the APR allowed patients that normally were repositioned with multiple caregivers the ability to maintain their dignity and privacy when it only required one caregiver to boost them up in bed. The data was maintained and compiled through a secure electronic database with no patient identifiers saved. The project was presented to members of the organization's Institutional Review Board (IRB) and deferred based on the decision this project is a quality improvement endeavor and not a research project. This project was also submitted to Capella University's IRB and was deemed exempt due to the constructs of this quality improvement project. There were no conflicts of interest to indicate for this project.

Results

The results of this project revealed similar outcomes in practice improvements that were made by implementing this toolkit in six medical centers throughout the country (AHRQ, 2014). The AHRQ toolkit for pressure ulcer prevention guided the team to best practice interventions. The project confirmed that when the patient is positioned in the bed correctly; they should not develop a pressure ulcer. The National Pressure Ulcer Advisory Panel (NPUAP) defines a pressure ulcer as a localized injury to the skin or underlying tissue that is common over a bony

prominence, as a result of pressure, or a combination of pressure with shear and friction (Tzeng et al., 2013). The APR has demonstrated through pressure mapping to remove the pressure by allowing staff to boost the patient easily and frequently to keep patients positioned up in bed. The APR system also claims to reduce the amount of shear and friction as the boosting with the device is smoother and less aggressive than manual pulling (Connolly et al., 2014).

This project revealed these interventions were effective with changing current nursing practice of boosting patients manually when they slide down to using the APR with every patient interaction in preventing HAPUs. Since the project began at the end of March, the unit has experienced four straight months free from any HAPUs. Figure 3 reflects the number of pressure ulcers prior to the project and the positive result of no pressure ulcer formation on the unit after project implementation. The transition phase reflects the time the project team was surveying the staff and leadership group subsequently educated the medical surgical staff on the urgent need to change practice to prevent pressure ulcers.

Discussion

Summary

This project was highly successful in decreasing the number of pressure ulcers on the medical surgical unit. Since project implementation, this unit has experienced zero pressure ulcers from forming on patients admitted on the unit. The nursing practice was changed as their workflow now includes repositioning the patient more frequently than the old standard of care to reposition bed ridden patients every two hours. With the use of the APR, staff were able to boost the patient up in bed with every patient interaction. Education from the team raised the awareness and importance of assessing every patient's risk of developing a pressure ulcer.

Adding the Braden Scale score during handoff report to routinely communicate the patient's risk assisted in preventing patients on the unit from developing a pressure ulcer.

In addition, the clinical attitudes survey revealed the staff felt they did not have time during their shift to focus on pressure ulcer prevention and efficient solutions are necessary to implement in order to have staff buy-in and incorporate an effective change in practice. The leadership survey uncovered budgetary restrictions that could impede future funding for pressure ulcer prevention tools, like purchasing more APRs. An effective return on investment will be necessary to advocate APRs on other units as these have proven to be an effective part in the collective effort for pressure ulcer prevention.

Interpretation

An important piece of the project was the educational element at each step. This is reflected by the results this unit achieved with zero HAPUs for four straight months, those results were taking form at the beginning stages of the project during the clinical attitude survey offering in the project transition and unfreezing phase. Before the practice interventions were launched, the team educated the medical surgical staff of the importance for pressure ulcer prevention. This heightened awareness of the critical need to change practice and motivated the staff to address patients who are high risk. The use of staff huddles and the dissemination of the weekly skin care rounds were a pivotal part of keeping the staff informed of key findings and solutions to the barriers that were discovered along the way.

Pressure ulcer prevention is a complex problem that needs multiple factors in place to be successful. The intrinsic and extrinsic factors must be considered. This project focused mainly on the extrinsic factor of frequent repositioning for high risk patients that quality nursing care can contribute in the quest for pressure ulcer prevention. Education was provided to cover the

intrinsic patient risk factors, like the moisture of skin or nutritional intake, and those risk factors are incorporated into the Braden Scale scoring that is discussed during the hand-off report. This practice assisted with communicating to the caregiver team the need to combat intrinsic factors patients may have that contribute to skin health.

Limitations

The project limitations are the reliability of the tools presented in the AHRQ toolkit. Not all the tools have reported reliability and validity. When the staff use the APR with every patient interaction and the nursing assessment during admission to identify the high risk patients, the possibility exists that laundering of the sheets for the APR could create a problem if the staff do not have access to the sheets to use the APR as intended. This process has already been sorted out with the laundry services, but nonetheless could be a factor to hinder the project and needs to be further monitored. Other limitations could exist if a patient is admitted with a community acquired pressure ulcer and this was not identified during admission. This ulcer could be inaccurately attributed to the care on medical surgical unit. Another limitation might be if a patient develops a pressure ulcer from a different surface or scenario like sitting in the bedside chair too long or having an extended time in the operating room in one position as this project focused on solutions for bed-ridden patients. These limitations were monitored and discussed by the project team to ensure these barriers and limitations were minimized to keep the project results as valid as possible. The project team will evaluate each case and any pressure ulcer development to determine a root cause. Developing more interventions to ensure pressure ulcer prevention interventions can protect patients on various surfaces will be an important factor to consider in future project improvements.

Conclusions

This project successfully implemented a patient safety initiative and practice change for decreasing HAPUs with the use of new evidence-based technology on the medical surgical unit. Implementing research into practice is an integral part of improving quality care and preventing never events in the health care setting. There is hope to expand this project to a system-wide level that manifests through the three different hospitals including the ICU setting. Patients will be reviewed for their risk of skin breakdown and those patients that are high risk will be pro-actively repositioned with the use of the APR. The clinical staff attitudes towards pressure ulcer prevention survey is a useful tool from the AHRQ toolkit as this allows the education to be tailored to fit the needs and deficits within specific nursing units.

Pressure ulcers forming in the hospital setting has become a common negative patient outcome that Medicare has begun to label as an adverse event that consequently will not reimburse the hospital for care to treat the injury (Kotowski, Davis, Wiggermann, & Williamson, 2013). With 2.5 million patients getting harmed with the formation of a pressure ulcer during their hospital stay in the United States every year, costing the nation billions of dollars, pressure ulcer prevention needs to be a focus to improve quality patient care (Kotowski et al.). Preventing pressure ulcers is a major challenge that could be getting worse with the population propensity towards obesity and caring for high acuity patients which contributes to a decreased ability for patients to mobilize themselves. Thus, nurses are encumbered with the burden to reposition their patients to prevent skin breakdown. Changing nursing practice and providing a way to reposition patients up in bed with new technology versus manual force will decrease that burden for caregivers and allow staff to maintain their patient's skin integrity in an efficient and effective manner.

References

- Behrendt, R., Ghaznavi, A.M., Mahan, M., Craft, S., & Siddiqui, A. (2014). Continuous bedside pressure mapping and rates of hospital-associated pressure ulcers in a medical intensive care unit. *American Journal of Critical Care, 23*(2), 127-133. doi:10.4037/ajcc2014192
- Berlowitz, D., Lukas, C.V., Parker, V., Niederhauser, A., Silver, J., Logan, C., ... & Zulkowski, K. (2011). Preventing pressure ulcers in hospitals: A toolkit for improving quality of care. *Agency for Healthcare Research and Quality*. Retrieved from <http://www.ahrq.gov/professionals/systems/hospital/pressureulcertoolkit/index.html>
- Bergquist-Beringer, S., Dong, L., He, J., & Dunton, N. (2013). Pressure ulcers and prevention among acute care hospitals in the United States. *The Joint Commission Journal on Quality and Patient Safety, 39*(9), 404-414. doi: 10.1016/S1553-7250(13)39054-0
- Brunsmann, B.J. (2015, May 22). Invention could save backs of nurses with push of a button. *Cincinnati Business Courier*. Retrieved from <http://www.bizjournals.com/cincinnati/news/2015/05/12/exclusive-invention-could-save-backs-of-nurses.html>
- Cartwright, K. (2016). *System-wide Hercules implementation results in significant patient and caregiver benefits*. Retrieved from <http://www.morelcompany.com>
- Chasmore, S., Bernard, F., & Taylor, S. (2009). The implementation of a pressure ulcer prevention program at St. Joseph's at Fleming. *Perspectives, 32*(4), 14-18.
- Connolly, M., Lister, L., & Branch, K. (2015). Asheville specialty hospital's pressure ulcer initiative utilizing The Hercules Patient Repositioner. *Asheville Specialty Hospital*. 1-2. Retrieved from http://morelcompany.com/media/Asheville_CaseStudy_MN0022.REV2.pdf
- Dealey, C., Brindle, C.T., Black, J., Alves, P., Santamaria, N., Call, E., & Clark, M. (2013). Challenges in pressure ulcer prevention. *International Wound Journal, 12*(1), 309-312. doi:10.1111/iwj.12107
- Doughty, D.B., & McNichol, L.L. (2016). *Core curriculum: Wound management*. Philadelphia, PA: Wolters Kluwer.

- Fragala, G., & Fragala, M. (2014). Improving the safety of patient turning and repositioning tasks of caregivers. *Workplace Health & Safety*, 62(7), 268-273. doi:10.3928/2165079920140617-01
- He, J., Staggs, V.S., Bergquist-Beringer, S., & Dunton, N. (2013). Unit-level time trends and seasonality in the rate of hospital-acquired pressure ulcers in US acute care hospitals. *Research in Nursing & Health*, 36(1), 171-180. doi:10.1002/nur.21527
- Hermans, M.H.E., & Call, E. (2015). Failure to reposition after sliding down in bed increases pressure at the sacrum and heels. *Wounds Journal*, 27(7), 191-198. Retrieved from <http://www.woundsresearch.com/article/failure-reposition-after-sliding-down-bed-increases-pressure-sacrum-and-heels>
- Kotowski, S.E., Davis, K.G., Wiggermann, N., & Williamson, R. (2013). Quantification of patient migration in bed: Catalyst to improve hospital bed design to reduce shear and friction forces and nurses' injuries. *Human Factors*, 55(1), 36-47. doi:10.1177/0018720812474300
- Lahmann, N.A., Kottner, J., Dassen, T., & Tannen, A. (2011). Higher pressure ulcer risk on intensive care? Comparison between general wards and intensive care units. *Journal of Clinical Nursing*, 21(1), 354-361. doi:10.1111/j.1365-2702.2010.06550.x
- Ma, C., & Park, S.H. (2015). Hospital magnet status, unit work environment, and pressure ulcers. *Journal of Nursing Scholarship*, 47(6), 565-573. doi:10.1111/jnu.12173
- Motta, G., Milne, C.T., & Saucier, D. (2016). *Prevention and treatment of pressure ulcers with a new viscoelastic foam mattress with surface modification technology in general medical-surgical patients*. Morel Company Study. Retrieved from <http://morelcompany.com/hercules/clinicalcomponents>
- Nazarko, L. (2012). Turning back time. *British Journal of Community Nursing*, 17(3), 101.
- Omolayo, T. (2013). Construct validity of the moisture subscale of the Braden Scale for predicting pressure ulcer sore risk. *Advances in Skin & Wound Care* 26(3), 122. doi:10.1097/01.ASW.0000427921.74379.c5

- Olson, B.J.V. (2015). *Implementing the AHRQ toolkit for preventing pressure ulcers in a skilled nursing facility*. (Order No. 3664044). Available from ProQuest Dissertations & Theses Global. (1714126374)
- Peterson, M.J., Gravenstein, N., Schwab, W.K., van Oostrom, J.H., & Caruso, L.J. (2013). Patient repositioning and pressure ulcer risk- monitoring interface pressures of at-risk patients. *Journal of Rehabilitation Research & Development*, 50(4), 477-488. doi: 10.1682/JRRD.2012.03.0040
- Shirey, M.R. (2013). Lewin's theory of planned change as a strategic resource. *Journal of Nursing Administration*, 43(2), 69-72. doi: 10.1097/NNA.0v013e31827f20a9
- Spetz, J., Aydin, C., Brown, D.S., & Donaldson, N. (2013). The value of reducing hospital-acquired pressure ulcer prevalence. *The Journal of Nursing Administration*, 43(4), 235-241. doi:10.1097/NNA.0b013e3182895a3c
- Swafford, K., Culpepper, R., & Dunn, C. (2016). Use of a comprehensive program to reduce the incidence of hospital-acquired pressure ulcers in an intensive care unit. *American Journal of Critical Care*, 25(2), 152-155. doi: 10.4037/ajcc2016963
- Tzeng, H.M., Grandy, G.A., & Yi Yin, C. (2013). Staff response time to call lights and unit acquired pressure ulcer rates in adult in-patient acute care units. *Contemporary Nurse*, 45(2), 182-187.
- Wilborn, W. (2015). Pressure ulcer prevention strategies. *Nursing Made Incredibly Easy*, 13(6), 10-12. doi: 10.1097/01.NME.0000471848.53131.8c

Table 1
Braden Scale Accuracy on the Medical Surgical Floor

Date	% Accurate
4/5/2017	36%
4/12/2017	70%
4/19/2017	72%
4/26/2017	76%
5/3/2017	50%
5/9/2017	75%
5/17/2017	77%
5/23/2017	80%
5/30/2017	89%
6/7/2017	89%
6/14/2017	87%
6/21/2017	85%
6/28/2017	98%

Note: Project implementation occurred on April 12th and continued a few weeks beyond the 10 week target. Accuracy rate compared team rounds Braden score to nurse’s documented score.

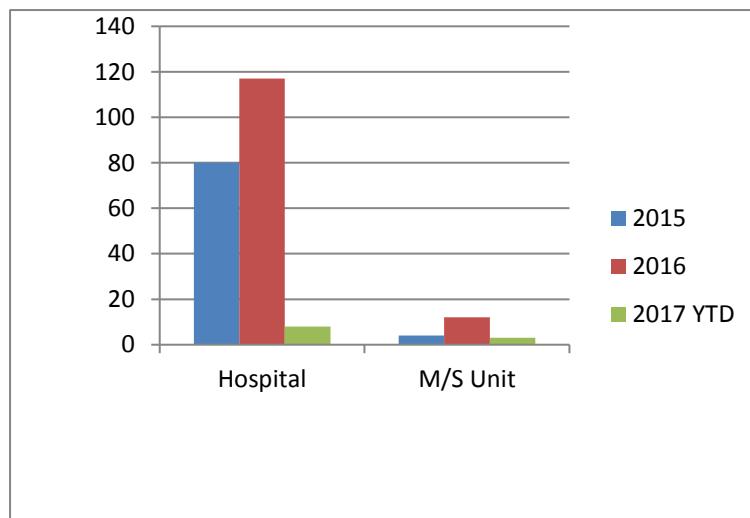


Figure 1. Hospital acquired pressure ulcer data for 2015, 2016 and YTD 2017. Data reflects the whole hospital and the medical surgical unit.

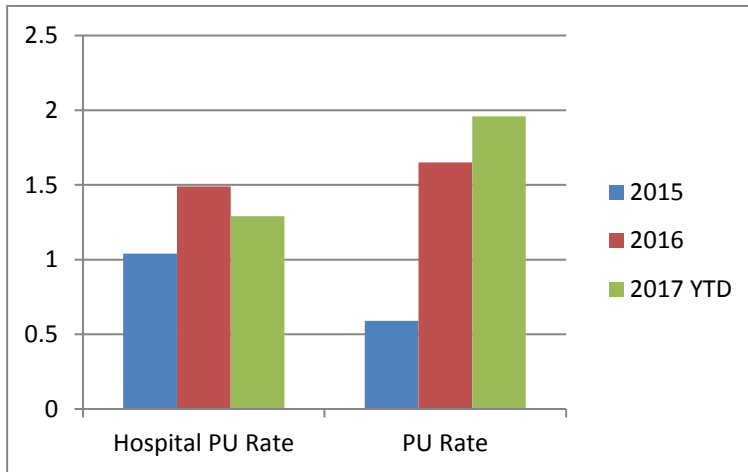


Figure 2. Hospital and medical surgical unit’s pressure ulcer rate. The 2017 rate is only calculating one month for the year as this graph was generated in February of 2017.

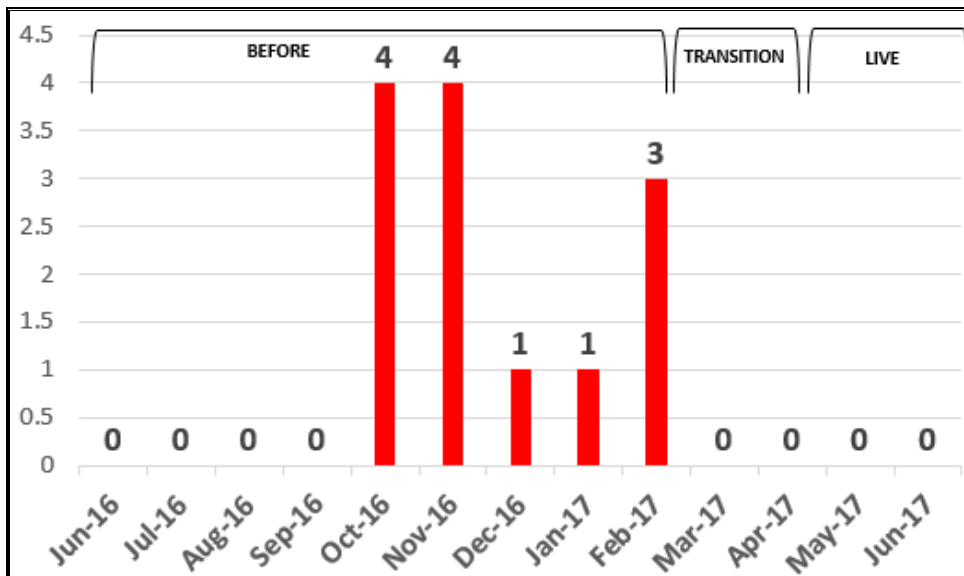


Figure 3. Number of HAPU for medical surgical unit results from pressure ulcer project