**New Understandings Generated by the Evidence**

Analysis of the articles revealed critically ill patients are at an increased risk for pressure ulcers increasing patients' morbidity and mortality. While the information presented in this evidence based research project does not relate specifically to sacral Mepilex in the ICU population, it does provide valuable information to reiterate the importance of knowledge of protecting skin integrity in the hospital population. The articles reviewed discuss patients in the ICU being at an increased risk of pressure ulcer development due to their compromised health status. Having an understanding of the factors increasing the likelihood of pressure ulcer development allows the nurse to focus on and implement nursing cares on these high-risk patients. Evidence from the review of these articles includes the following:

* Lab values such as low albumin and prealbumin (Shahin, Dassen, & Halfens, 2009), low lymphocytes, decreased hemoglobin, along with high blood glucose levels and C-reactive proteins were associated with an increased risk of pressure ulcer development (Alderden et al., 2011, p. 37).
* Most pressure ulcers studied are stage II (45%) and more likely to be healed by discharge than any other stage of pressure ulcer studied (Alderden et al., 2011 p. 37).
* Pressure ulcers are most likely to develop on bony prominences including the sacrum, heel, and ischium (Alderden et al., 2011, p. 39; Shahin, Dassen, & Halfens, 2009, p. 418).
* Fifty-five percent of pressure ulcers in the ICU develop within two weeks of admission (Shahin, Dassen, & Halfens, 2009, p. 419).
* Patients requiring vasopressor therapy were five times as likely for development of unhealed pressure ulcers (Alderden et al., 2011, p. 37).
* Patients with a spinal cord injury are 15 times as likely to develop unhealed pressure ulcers while those over 40 years of age were seven times more likely to develop unhealed pressure ulcers (Alderden et al., 2011, p. 37).
* Zero out of 41patients with sacral Mepilex applied developed pressure ulcers indicating these dressings may be beneficial in aiding in the prevention of pressure ulcer development (Brindle, 2010, p. 4).
* Hydrocolloid dressings are more effective at healing pressure ulcers than standard dressings (Shahin, Dassen, & Halfens, 2009, p. 419).
* Pressure ulcers are the third most expensive disorder behind cancer and cardiovascular disease (Shahin, Dassen, & Halfens, 2009, p. 414) costing up to “$70,00 per wound” (Courtney, Ruppman, & Cooper, 2006, p. 1).
* The dressing Urgotul Flex may reduce wound surface area, with a mean reduction of 78.2% for acute wounds and 41.9% for chronic wounds over a four week period (Meaume et al., 2011, p. 184).
* “No product could ever replace bedside nursing care” (Brindle, 2010, p. 7).
* Less pain during dressing changes may increase patient compliance of wound care (Meuleneire, 2008).
* Zero out of 27 patients with the Mepilex Ag applied developed clinical signs of local wound infection or decreased healing., indicating this dressing may be beneficial in the healing of pressure ulcers (Meuleneire, 2008, p. 537).

The evidence presented above identifies nursing practices must remain the mainstay for pressure ulcer prevention in the ICU. Nursing must continue to be aware of the risk factors related to pressure ulcer development as well as methods to prevent and/or treat these wounds. Overall, the focus must remain on pressure ulcer prevention in these highly compromised patients.

Throughout the critical analysis of the literature, similar factors and assessment findings noted risk in the intensive care patient for the development of pressure ulcers. Popular measurement tools were utilized, such as the Braden Scale for skin assessment, photos, and a visual analog scale to determine pain. Pressure ulcers appear preventable through the use of appropriate nursing interventions. Products studied were noted to prevent or lessen the severity of pressure ulcers during hospital stays or during home/clinic dressing changes.

For the purpose of this evidence-based project, Levine’s Conservation Model identifies the importance of the “wholeness of the individual” (as cited in Alligood & Tomey, 2010, p. 299). This theoretical model was used to explain the nurse’s role in prevention and treatment of pressure ulcers. A focus of Levine’s Conservational Model, “conservation of structural integrity” (as cited in Alligood & Tomey, 2010, p. 229) relates to this research based study. Nurses that follow Levine’s Model develop strategies to maintain or re-establish the patient’s skin integrity. Strategies to decrease the incidence of pressure ulcer formation included thorough skin assessment on admission and continuously monitoring for risk factors. Nursing can implement appropriate early preventative skin care measures after using measurement tools that identify risk level for skin breakdown.

**Limitations**

Limitations of this evidence-based research must be acknowledged. The beginning search was completed using the CINAHL with Full Text Database accessed from Nebraska Methodist College. In the search of this PICOT, numerous terms were used to identify appropriate research articles. However, more findings may have resulted using decubitus ulcer as an additional outcome search criteria. A Google Scholar search was also completed to find more resources. This could have been expanded using additional Internet based search engines. Additionally, a hand search of *Critical Care Nurse*’s August 2011 journal was completed. An increase in findings could have been found if additional sources were used, including the *Journal of Wound, Ostomy, and Continence Nursing* among many others.

Due to the PICOT being specific to Mepilex dressing, overall studies were not specifically related to the PICOT with the exception of one study with a low level of evidence. Reliability and validity of the research were not mentioned in four of the five studies, leading to an overall lower level of study findings.

Studies used for this evidence-based research range in level of evidence. Evidence hierarchy, “a ranked arrangement of the validity and dependability of evidence based on the rigor of the method that produced it,” (Polit & Beck, 2008, p. 752) was moderately low in the research assessed. Of the articles, one was a level IV, three were level VI, and one was a level VII leading to an overall low level of evidence.

**Implications**

Numerous implications can be noted with this evidence based project. While the direct PICOT question was not answered, additional information was provided related to pressure ulcer development in the high-risk population that would be of concern to stakeholders of patients, nursing staff, physicians, and hospitals. First and foremost patients are of main concern as their skin integrity is at risk. It is expected that nursing staff know and implement methods to prevent skin breakdown in these high-risk patient populations. The evidence presented reiterates the necessity that nurses are aware of the risk factors for pressure ulcer development.

Nursing staff will benefit from this information as it reiterates the characteristics of those at a high risk for skin breakdown as well as discusses nursing practices that can decrease the risk of pressure ulcers. Nursing staff must realize that pressure ulcers tend to develop within the first fourteen days of admission to the ICU (Shahin, Dassen, & Halfens, 2009. Futther more it is imparative to understand patients with multiple co-morbidities or illnesses (Brindle, 2010; Shahin, Dassen, & Halfens, 2009) along with those patients who have received vasopressor therapy, with spinal cord injuries or over the age of 40 are at an increased risk for pressure ulcers (Alderden, Whitney, Taylor, & Zaratkiewicz, 2011). Findings also identified the use of different dressings to assist in healing of wounds in various patient populations (Meaume et al., 2011). As stakeholders, nursing can advocate for use of these specialized dressings if patients do develop pressure ulcers.

The information from this evidence based project can assist in understanding not only those patients at high risk for pressure ulcer development, but also the importance of monitoring patient laboratory values and correcting imbalances among other interventions as a method to decrease the risk of pressure ulcers. This information can be shared with physicians while understanding the implications these lab values have related to impaired skin integrity.

Overall, as a hospital employing staff that recognizes and implements appropriate measures to prevent pressure ulcers can not only increase patient satisfaction but also can decrease the length of stay and cost to the hospital in general. “Development of a hospital acquired pressure ulcer increases the mean duration of hospitalization by 8 days with an associated $15000 increase cost of care” (Alderden et al., 2011, p. 31). While the information presented in this evidence based research project does not relate specifically to sacral Mepilex in the ICU population, it does provide valuable information to reiterate the importance of knowledge of protecting skin integrity in the hospital population.

**Future Recommendations for Nursing Research**

Much information regarding the importance of pressure ulcer prevention has come to light in recent years. However, large numbers of patients continue suffer a preventable pressure ulcer during their time in the ICU. Efforts should be made by the nursing community to advocate for additional research to help prevent these unnecessary events from occurring. Additional nursing research regarding the effect of preventative dressings, such as the Mepilex, needs to be performed. Although many hospitals have begun to use such dressings, little research has been done about the true preventative effect. A literature search performed did not produce many studies regarding Mepilex’s effect on coccyx/sacral pressure ulcers. Therefore, an additional broadened literature search is recommended, focusing on prevention of generalized pressure ulcers.

**Future Recommendations for Nursing Education**

Nurse educators should be open to the role of evidenced based practice in the classroom. As best practice is constantly changing, so must the education being delivered to future nurses. As nurse educators are teaching the next generation of nurses, they also understand many current issues in practice. The application of a quarterly meeting between the educators and hospital nursing managers to develop a relationship and discuss current issues in the nursing practice may be beneficial in helping bridge this gap.

**Future Recommendations for Nursing Administration**

The support of nursing administration is considered necessary when seeking funding for additional research. Understanding the costs associated with every pressure ulcer is beneficial for administrative personnel. A single pressure ulcer may cost a hospital up to“$70,000 per wound” (Cooper, Courtney, & Ruppman, 2006, p. 1). The use of preventative strategies, such as Mepilex, may cost only “$22” (Metro Medical Online, 2011). Understanding of the idea that cost of prevention far outweighs the cost of treatment is necessary. During this time of hospital reform all administrative personnel should be in-tune to preventative strategies for money saving techniques. Administration can assist by developing focus groups to look into preventative strategies, instituting research within their facility, and providing education to their staff.

**Future Recommendations for Nursing Practice**

It is a general understanding that ICU patients who may be immobilized, sedated, lack proper nutrition, advanced age, lack appropriate sensation, among other things, are at an increased risk for the development of pressure ulcers is of upmost importance (Bell, 2008). Continued education regarding proper prevention methods including positioning, nutrition, repositioning, and skin barriers is essential to preventing pressure ulcers within the ICU (Lavrencic, 2011). These techniques and preventative strategies should be evaluated frequently by the nurse educators and reassessed with nursing staff often. It is recommended that nurses advocate for proper skin care through their own practice and the practice of others.

**Conclusion**

Pressure ulcer development in the critically ill patient remains of great concern to the healthcare provider as well as the patient. Because these ulcers can develop very quickly with the correct combination of risk factors, an effort to prevent the development of ulcer has been noted especially in the intensive care unit. The focus of this evidence-based research project was to identify if the use of sacral Mepilex would decrease the risk of pressure ulcers in the ICU population. Since the use of these dressings has not been statistically noted to reduce pressure ulcer development, it appears that more research on sacral Mepilex is needed. However, supportive findings from reviewing the five articles related to pressure ulcer development were noted. The articles reviewed confirmed it remains the responsibility of nursing to monitor and provide appropriate nursing interventions to reduce the risk of pressure ulcer development. These interventions include a thorough skin assessment on admission by nursing as well as being aware of risk factors for pressure ulcer development while maintaining proper positioning, nutrition and skin barriers as indicated in this high risk patient population. Recommendations gathered from this evidence based project included gaining support for research from nursing administration and continued education for nursing staff related to pressure ulcer development. While more research is needed related to the use of specialized dressings to prevent pressure ulcer development, it appears at this time, there is no replacement for preventative nursing care practices.