Appropriate Placement of Patients in the Hospital

LIBERTY UNIVERSITY

Austin Love

Abstract and Background

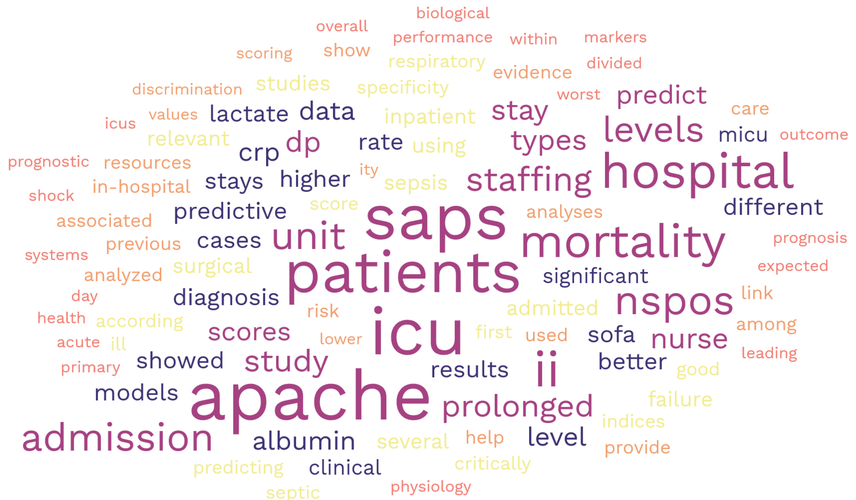
Abstract: The goal is to identify a systematical analytical method for the purpose of determining patients' risk of mortality and morbidity. The aim is to validate the appropriate use of early warning systems and their correlation to patient acuity. Patients would be placed on units that are appropriate for the patients' level of acuity. If determined effective, such methods should be evaluated for standard practice in acute care settings. **Background:** Determining the level of care needed for a patient is among the most important factors related to patient survival. Among these factors include the admission and transfer between nursing units. Patients may be placed on units that are not appropriate for the skill level needed for the patient. Inappropriate placement may result in secondary ICU admission and an increased rate of preventable adverse effects. Hospitals across the country rely on quick patient turnover rates to optimize hospital revenue (Duane, 2018). As Medicare increased constraints during the 1980's, healthcare systems began to focus on meeting Medicare guidelines. Constraints limited providers in ordering diagnostics, medications, therapies, etc. that were not encoded for the diagnosis code. Medicare and other insurance providers would not reimburse the hospital for such deemed inappropriate orders. If the patient had a longer length of stay than the predetermined timeframe, the hospital would not be reimbursed. The effect is incentivizing inappropriate discharge and transfer from more expensive intensive care to covered cheaper options. Without the assistance of Medicaid and Medicare, many rural and regional hospitals will lose revenue due to out-of-pocket expenses. The accumulation of healthcare dept has hit $190 billion in 2022 (Rae et. al., 2022). Since the outbreak of Covid-19, there has been an observation in the increasing number of patients that are not paying their out-of-pocket costs. According to Business Wire (2020), 78% of healthcare providers are unable to collect medical depts from patients within 30 days after insurance reimbursements. Given light to this, providers must increase revenue while decreasing expenses. Hospitals have difficulty maintaining adequate fiscal stability due to the loss of revenue; unfortunately, among other cost saving strategies, facilities decrease nurse employment. The intention is to treat as many patients as possible with the least amount of expenditure (Houghton, 2022).However, recent studies have observed a 16% increase of 30-day mortality for every additional patient added to a MedSurg nurse's four patient assignment (Laster et.al., 2021). It was observed that MedSurg nurses that had more than four patients contributed to 1,595 deaths and a loss of $117 million.

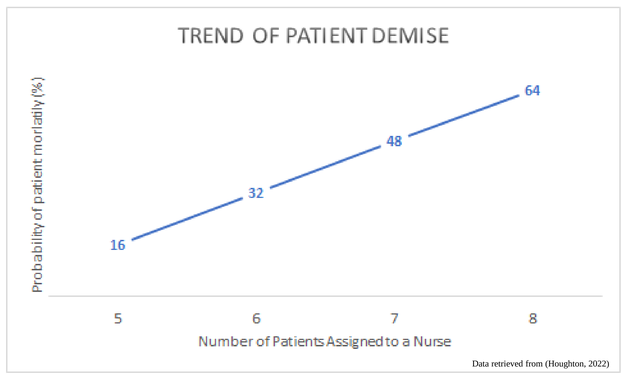
Research Questions

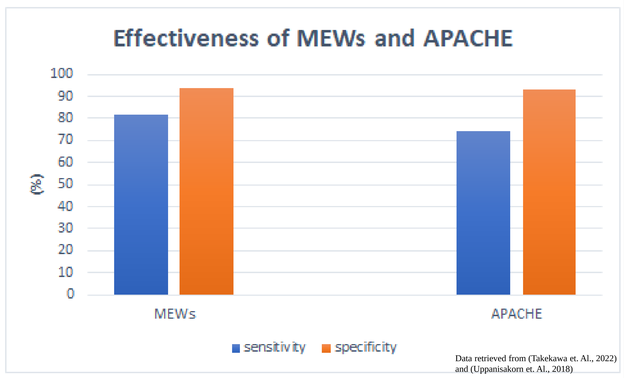
Should the severity of the patient's acute needs be evaluated before being placed on MedSurg floors?
Are early medical warning systems effective at predicting patient outcomes while in an inpatient setting?
If early medical warning systems are effective, should they be used to determine appropriate placement within the acute care setting?

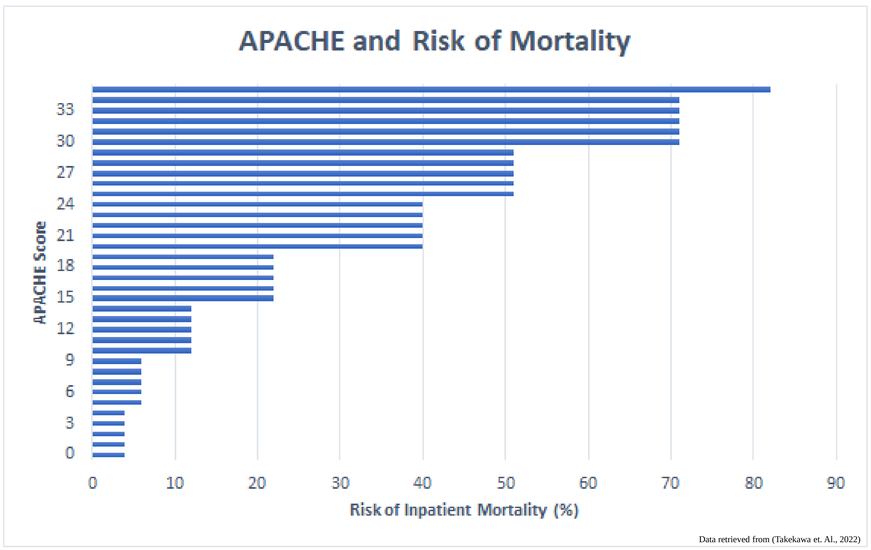
Methods

This integrated literature review was produced to determine if there is evidence suggesting that there are quality process improvements in admitting and transferring patients in an acute care setting. The key words identified to guide article review were rapid response team, APACHE, SOFA, SAPS, early warning system, unplanned admission to ICU, mortality, and morbidity. Using these key words, articles that addressed adult patients in the acute care setting and their risks of mortality and morbidity were selected. Twenty-seven articles, published in the past eight years, were reviewed and seventeen met inclusion criteria. These seventeen articles were systematically vetted (with permission) by levels of evidence, according to John's Hopkins University.
Through thematic analysis, the articles suggested that hospital length of stays are associated with higher risks of mortality and morbidity. Patients at risk for lengthy hospital stays are dependent on current pathologic states and clinical manifestations. Patients that were placed on MedSurg units that required the intervention of a rapid response team had a higher risk of ICU admission and a longer length of stay in the ICU. Prolonged ICU stays were associated with an increased risk of mortality and morbidity. Patients that were cared for by a MedSurg nurse, who had more than four patients, had an increased risk of ICU admission and death. Articles that included use of the APACHE scoring systems were able to identify patients, with high specificity and sensitivity, that would have higher mortality rates while in the acute care setting. These articles suggested that APACHE scores are able to define the risks associated with inappropriate acute care placement.









Results and Discussion

There are multiple patient scoring systems that were determined to have high specificity and sensitivity when identifying patients that are at increased risk in decompensation and subsequent mortality and morbidity. The Royal College of Physicians of London developed the National Early Warning Score (NEWS), which is a common, simple, and effective tool to measure the risk of patient deterioration. The National Early Warning System utilized an algorithm identifying respiratory rate, oxygen saturation, oxygen requirement, body temperature, heart rate, systolic blood pressure, and level of consciousness. The National Early Warning System classified patients into three categories identifying patients as low, moderate, or high risk. The National Early Warning System was able to identify patients that deteriorated, post-ICU discharge to a MedSurg floor, and identified these patients as having a higher risk of unplanned secondary admission into the ICU. This system has a 94% sensitivity and 82% specificity in identifying these high-risk patients (Uppanisakorn et. al., 2018). The MEWs scoring system, in current practice, is utilized in determining the need for an RRT evaluation. However, there have been observations identifying the inconsistent use of the MEWs scoring system. Also, there is not significant evidence suggesting that the MEWs scoring system is a sensitive indicator of the acute pathology of the patient. Meaning, the MEWs scoring system does not have as high of a specificity and may not have the potential in determining the placement of a patient in the hospital, dependent on the specific risks associated with the patient's current pathological state and clinical manifestations.
The Acute Physiology and Chronic Health Evaluation (APACHE) scoring system may be utilized when determining the risk of mortality while a patient is hospitalized. The APACHE scoring system factors the patient's history of organ failure, immunosuppression, type of surgery, if any, age, temperature, mean arterial pressure, arterial pH, heart rate, respiratory rate, serum sodium, potassium, creatinine, the presence of renal failure, hematocrit, the white blood cell count, Glasgow Coma Scale, FiO2, PaO2, and covid-19 status. Patients that scored higher on the APACHE scale had an increased risk of prolonged ICU stays with the associated higher risk of mortality (Takekawa et. al., 2022). The use of APACHE scoring has been identified as having a specificity and sensitivity rate, 93.4% and 74.5% respectively, in identifying the patient's risk of mortality in association with the patient's admitting diagnosis and other co-morbidities (Godinjak et. al., 2016). The successfulness of the APACHE scores in determining high risk patients, makes it an efficient tool in determining the appropriate placement of patients on hospital units. While higher scoring patients need more acute care, lower scoring patients may be appropriately placed on a MedSurg unit.

Future Work

This integrated literature review identifies the need for future work in the use of APACHE and MEWs scores when determining appropriate placement of patients. In the reviewed article, APACHE and MEWs scores were able to identify the most acutely ill patients and their likelihood of death while in the hospital. However, there has not been significant research identifying the use of APACHE or MEWs scores when evaluating the admission or transfer of patients within the hospital. The recommendation is to implement the use of both APACHE and MEWs scoring systems and utilizing them to justify patient admission to the hospital.

References

Basile-Filho, A., Lago, A. F., Menegueti, M. G., Nicolini, E. A., Rodrigues, L. A. B., Nunes, R. S., Auxiliadora-Martins, M., & Ferez, M. A. (2019, June 5). The use of APACHE II, SOFA, SAPS 3, C-reactive protein/albumin ratio, and lactate to predict mortality of surgical critically ill patients: a retrospective cohort study. *Medicine, 98*(26), e16204. doi: 10.1097/MD.0000000000016204

Godinjak. A., Iglica, A., Rama, A., Tancia, I., Jusufovic, S., Ajanovic, A., and Kukulijac, A. (2016). Predictive value of SAPS II and APACHE II scoring systems for patient outcome in a medical intensive care unit. *Acta Medica Acedemica,* 45(2), 97-103. doi: 10.5644/ama2006-124.165.

Houghton, K. (2022, August 26). *Hospitals Cut Jobs and Services as Rising Costs Strain Budgets*. Kaiser Health News. https://khn.org/news/article/hospitals-cut-jobs-services-rising-costs-budgets-covid-pandemic-inflation/

Laster, K. B., Aiken, L. H., Sloane, D., French, R., Martin, B., Alexander, M., & McHugh, M. D. (2021, December 8). *Patient outcomes and cost savings associated with hospital safe nurse staffing legislation: an observational study*. BMJ open, 11(12), e052899. https://doi.org/10.1136/bmjopen-2021-052899

Takekawa D., Endo H., Hashiba E., & Hirota K. (2022, June 16). *Predict models for prolonged ICU stay using APACHE II, APACHE III and SAPS II scores: A Japanese multicenter retrospective cohort study*. PLOS One. https://doi.org/10.1371/journal.pone.0269737