A STUDY ON PERFORMANCE EVALUATION OF QUALITY OF PATIENT CARE IN MICU IN TERMS OF APACHE SCORE, AT ONE OF THE LEADING HOSPITAL IN BANGALORE

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Abstract- Realizing the utility of scoring systems in mortality prediction of critical ill patient admitted to medical intensive care units (MICUs), studies worldwide have expressed a need to validate the Acute Physiology and Chronic Health Evaluation (APACHE) II score for databases of respective countries. Literature available in this area in the Indian context is scanty. The present study was undertaken to evaluate of quality of patient care in MICU in terms of APACHE score in predication of mortality risk, as well as in determination of model validity in critically ill patients in MICU. The study was prospectively carried out 2 months at MICU of a tertiary Institute in Bangalore, which admitted consecutive medical and surgical patients. Based on admission resource of MICU admission, a widely used ICU prognostic scoring model, the Acute Physiology and Chronic Health Evaluation II (APACHE II) scoring system has been recognized. It has shown to be an accurate measurement of patient severity and correlates strongly with outcome in critical patients. Nonetheless, the qualified systematic database indicating APACHE II score, i.e. patient diagnosis, clinical condition, scientific parameters and laboratory values could hardly be established in routine.

Key Words: APACHE Score, MICU (Medical Intensive Care Units), Mortality, Critical Patients, Prediction.

1. INTRODUCTION

1.1. DEFINITION:

APACHE II (Acute Physiology and Chronic Health Evaluation II) is a severity-of-disease classification system one of several ICU scoring system. It is applied within 24 hours of admission of a patient to an Intensive Care Unit (ICU): an integer score from 0 to 71 is computed based on several measurements; higher scores correspond to more severe disease and a higher risk of death.

1.2. MORTALITY RATE

A mortality rate is a measure of the frequency of occurrence of death in a defined population during a specified interval. Morbidity and mortality measures are often the same mathematically; it's just a matter of what you choose to measure, illness or death.

1.3. CALCULATION OF APACHE SCORE

APACHE II score = acute physiology score + age points + chronic health points. Minimum score = 0; maximum score = 71. Increasing score is associated with increasing risk of hospital death.

1.4. IMPORTANCE OF APACHE

The APACHE II severity score has shown a good calibration and discriminatory value across a range of disease processes, and remains the

most commonly used international severity

1.5. OBJECTIVES OF STUDY

1. To assess the quality of care at ICU by measuring predicted mortality at ICU through APACHE score.
2. The APACHE II system was applied within an intensive care unit to evaluate its ability to predict patient outcome.
3. To compare illness severity with outcome for clinical and surgical patients.
4. To compare actual mortality with the predicted death rate.

2.1. LITERATURE REVIEW

1. According to Parajuli BD, Shrestha GS, Pradhan, Amatya (2015), "Scoring system can define critically ill-patients, estimate prognosis, guide to allocate the resource and estimate the quality of ICU".
2. According to Zimmerman, Kramer, Mc Nair, Malila (2006), "APACHE IV predictions of hospital mortality have hood discrimination and calibration and should be useful for benchmarking performance. The accuracy of predictive models is dynamic and should be periodically retested. when accuracy deteriorates they should be revised and update".

2.2. METHODOLOGY

This is a Prospective study took place in the MICU of the selected hospital from January 2021- March 2021. The Simple random sampling technique and secondary data is used in order to collect data. About 107 data were collected.For this purpose, ICU prognostic scoring model, Acute Physiology and Chronic Health Evaluation II (APACHE II) scoring system has been recognized.

scoring system worldwide.

2.3. ANALYSIS

Chart-2.3.1. showing the Percentage of observation of APACHE Score for the month-January
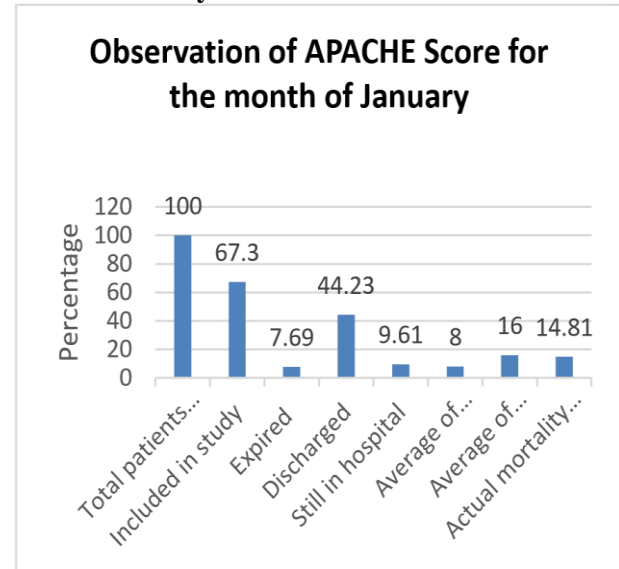
The above chart-2.3.1. shows that 100%(52) of 100%(52) of the patients are observed in the month of January, 67.3%(35) have included in the study in the month of January, 7.69%(4) patients are expired in the month of January, 44.23%(23) of patients are discharged in the month of January, 9.61%(5) are still in hospital in the month of January, 8% Average of predicted post op mortality (APACHE) in the month of January, 16% average of predicted non op mortality (APACHE) in the month of January, 14.81% Actual mortality of MICU 2 (%) in the month of January, SMR<1 (<1 indicates better quality of care at unit) in the month of January.

Chart-2.3.2showing the Percentage of observation of APACHE Score for the month of February
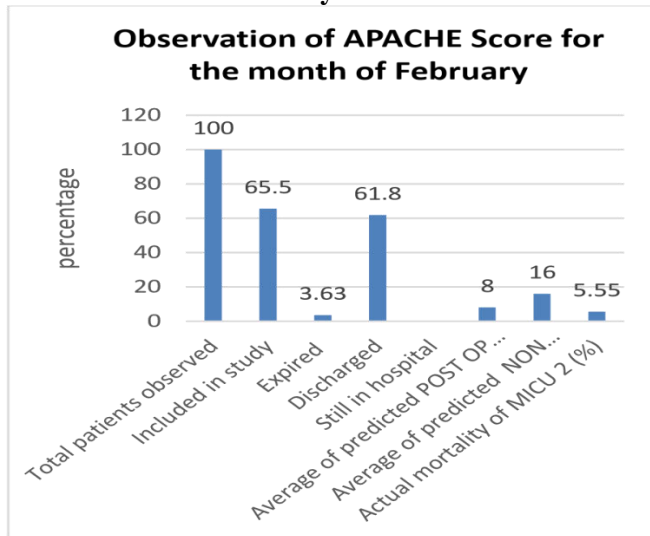
The above chart-2.3.2. shows that 100%(55) of the patients are observed in the month of February, 65.45%(36) have included in the study in the month of February, 3.63%(2) patients are expired in the month of February, 61.81%(34) of patients are discharged in the month of February, 8% Average of predicted post op mortality (APACHE) in the month of February , 16% average of predicted non op mortality (APACHE) in the month of February , 5.55% Actual mortality of MICU 2 in the month of February , <1 SMR (<1 indicates better quality of care at unit) in the month of February .

2.4. MAJOR FINDINGS& RECOMMENDATIONS:

1. 100%(52) of the patients are observed in the month of January, 67.3%(35) have included in the study in the month of January, 7.69%(4) patients are expired in the month of January, 44.23%(23) of patients are discharged in the month of January, 9.61%(5) are still in hospital in the month of January , 8% Average of predicted post op mortality (APACHE) in the month of January , 16% average of predicted non op mortality (APACHE) in the month of January , 14.81 Actual mortality of MICU 2 (%)in the month of January , SMR <1 (<1

indicates better quality of care at unit) in the month of January

2. 100%(55) of the patients are observed in the month of February, 65.45%(36) have included in the study in the month of February, 3.63%(2) patients are expired in the month of February, 61.81%(34) of patients are discharged in the month of February, 8% Average of predicted post op mortality (APACHE) in the month of February , 16% average of predicted non op mortality (APACHE) in the month of February , 5.55% Actual mortality of MICU 2 in the month of February , <1 SMR (<1 indicates better quality of care at unit) in the month of February .

The recommendations include,

1. Regular audit should be done in order to ensure the patient safety in MICU.
2. Findings and feedbacks should be discussed and shared with MICU consultants in MICU departmental meeting.
3. To calculate APACHE Score for all the patients in MICU, all required parameters should be captured in more systematic manner in order to enhance Patient safety.
4. APACHE score being a good indicator for identifying severity of the condition and predictor of likely outcomes should be captured for each patient systematically and correlated with outcomes to track changes in quality of care in ICU settings.

3. CONCLUSION

The APACHE score has the advantage of being able to assess the patient at any point during the illness. Information derivable from effective mortality predicting tools may facilitate the appropriate administrative management rationale among the scarcity of healthcare resources and help guiding physician for proper evidence-based decision-making. (Standard Mortality Rate) SMR <1 in both the months indicated good Quality of care at MICU (Non-

Covid ICU). Prediction models do face many challenges, but proper application of these models helps in decision making at the right time and in decreasing hospital cost. To enhance patient safety in MICU, involve the whole team, concept of risk and perceived relevance of required parameters for all the team members should be addressed and that results in the reduction of mortality in intensive care units.

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