

Title- To assess the use of Apache scoring system in critical patients for predicting the mortality rate of hospital and to compare it with observed mortality rate.

Introduction

Acute Physiology and Chronic Health Evaluation II" is a severity-of-disease classification system (Knaus et al., 1985),one of Several [ICU scoring systems](#). The APACHE II index consists of a score that takes account of the patient’s age, chronic health condition and physiological variables (internal temperature, heart rate, respiratory rate, oxygenation, arterial pH, sodium, potassium, creatinine, Hematocrit, white blood cells and Glasgow coma score). 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. The first APACHE model was presented by Knaus et al. in 1981.

Objectives

This study aimed to assess the APACHE II prognostic index of critical patients in Manipal hospital Jaipur. The analysis of the capacity of the system for predicting hospital mortality rate was also an objective of this study, as well as to compare the hospital’s recorded mortality rate with the expected mortality rate.

Research Methodology

- 1. **Study Type:-** Retrospective cohort.
- 2. **Sampling Technique:-** Purposive sampling
- 3. **Study Area:-** MICU
- 4. **Study Tool:-** Checklist
- 5. **Sample Size:-** 75 Samples
- 6. **Method Used:-** Checklist containing 12 parameters covering all the important aspects.

Parameters Taken

Patient Name & UHID	Date & ICU	Categories	Age	HSOI/IC	Temp	MAP	HR	RR	FIO ₂	PIO ₂	pH	Na ⁺	K ⁺	SC	HCT	WBC Count	GCS	Total APS
		Value																
		Score																
[1] Temp = Temperature (°C) [2] MAP = Mean Arterial Pressure (mmHg) [3] HR = Heart Rate (Beats Per Minute) [4] RR = Respiratory Rate (Breaths Per Minute) [5] pH = Arterial pH [6] Na ⁺ = Serum Sodium (mMol/L) [7] K ⁺ = Serum Potassium (mMol/L) [8] SC = Serum Creatinine (mg/100 ml) [9] HCT = Hematocrit (%) [10] WBC = White Blood Count (Total/Cubic mm in 1000's) [11] GCS = Glasgow Coma Score (15-Glasgow Coma Score) [12] HIOI/IC = History of severe organ insufficiency or immunocompromised [13] Date & ICU = Date of Admission & Type of ICU																		
The data used should be from the initial 24 hours in the ICU for new admission only, and the worst value (further from baseline/normal) should be used. History of severe organ insufficiency or immunocompromised (a) Yes, and non-operative or emergency post-operative patient (b) Yes, and elective post-operative patient (c) No																		

Who can be included?

Organ insufficiency or immunocompromised state must have been evident **prior** to this hospital admission and conform to the following criteria:
Liver – biopsy proven cirrhosis and documented portal hypertension; episodes of past upper GI bleeding attributed to portal hypertension; or prior episodes of hepatic failure/encephalopathy/coma.

Cardiovascular – New York Heart Association Class IV.

Respiratory – Chronic restrictive, obstructive, or vascular disease resulting in severe exercise restriction (i.e., unable to climb stairs or perform household duties; or documented chronic hypoxia, hypercapnia, secondary polycythemia, severe pulmonary hypertension (>40 mmHg), or respiratory dependency.

Renal – receiving chronic dialysis.

Immunocompromised – the patient has received therapy that suppresses resistance to infection (e.g., immunosuppression, chemotherapy, radiation, long term or recent high dose steroids, or has a disease that is sufficiently advanced to suppress resistance to infection, e.g., leukemia, lymphoma, AIDS).

Calculations

Total Acute physiology score (sum of all these 12 points)

Age points (years) ≤44=0; 45 to 54=2; 55 to 64=3; 65 to 74=5; ≥75=6

Chronic Health Points: If the patient has a history of severe organ system insufficiency or is immunocompromised as defined below, assign points as follows:

- 5 points for nonoperative or emergency postoperative patients
- 2 points for elective postoperative patients

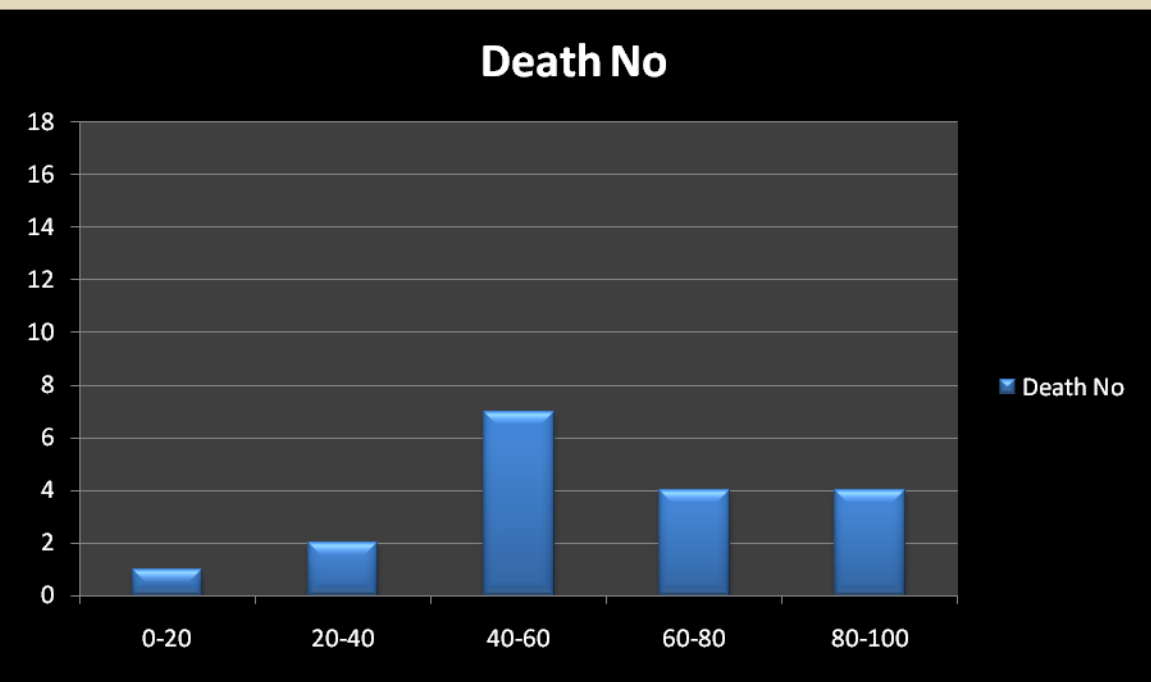
Interpretation Table

Score	Death Rate%
0-4	4
5-9	8
10-14	15
15-19	25
20-24	40
25-29	55
30-34	75
>34	85

Findings



This graph shows that predicted mortality rate of hospitals comes out to be 30% and observed mortality rate of hospital is 24% for these 75 Patients almost equal to that of predicted one.



This graph shows that Death rates are highest in the age group 40-60 i.e.7 followed by 60-80 and 80-100 age group i.e.4 followed 20-40 age group i.e. 2 and least in 0-2– only 1.

Suggestions

We can say that if we take apache scoring of these critical patients in first 24 hours (worst value) we can define a treatment procedure according to their scores and can reduce the risk of their mortality as analysis shows a direct association between Apache scoring and mortality rates.

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