An updates of prediction of prognosis among the critically ill patients

An Essay
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Summary

For many critically ill patients, intensive care is undoubtedly life- saving and resumption of a normal lifestyle is to be expected. In the most seriously ill patients, however, immediate mortality rates are high; a significant number die soon after discharge from the intensive care unit, and the quality of life for some of those who do survive may be poor. Moreover, intensive care is expensive, particularly for those with the worst prognosis, and resources are limited.

Both for a human approach to the management of critically ill patients and to ensure that limited resources are used appropriately, it is necessary to

بسم الله الرحمن الرحيم

وَقُل رَّبِّ
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صدق الله العظيم

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LIST OF ABBREVIATIONS

Abbrev.	Meaning
AIDS	Acquired immunodeficiency syndrome
AIS	Abbreviated injury score
ALERT	Life threatening Events Recognition and Treatment
APACHE	Acute physiology and chronic health evaluation
APS	Acute Physiology Score
AUC	Area under the receiver operating characteristic curve
BP	Blood pressure
BUN	Blood urea nitrogen
CHE	Chronic health evaluation
CNS	Central nervous system
CPAP	Continues positive airway pressure
CRAMS	Circulation, Respiration, Abdomen/ thorax, Motor and Speech score
ENAS	European-North American Study
FiO2	Fraction of inspired oxygen
GCS	Glasgow Coma Scale
HR	Heart rate
ICU	Intensive care unit
INR	International normalized ratio
ISS	Injury severity score
LOD	Logistic Organ Dysfunction
MAP	Mean arterial pressure
MELD	Model for end-stage liver disease
MODS	Multiple Organs Dysfunction Score
MPM	Mortality Prediction Mode
MV	Mechanical ventilation

NIH	National Institutes of Health
ODIN	Organ Dysfunction and Infection System
OSF	Organ System Failure
PAR	Pressure-adjusted heart rate
PEEP	Positive end-expiratory pressure
RAND	Corporation of Research and Development
RAP	Right atrial (central venous) pressure
ROC	Receiver operating characteristic curve
RR	Respiratory rate
RTS	Revised trauma score
SAPS	Simplified acute physiology score
SBP	Systolic blood pressure
SOFA	Sequential Organ Failure Assessment
TIPS	Transjugular portosystemic intrahepatic shunt
TIS	Trauma Index Score
TISS	Therapeutic intervention scoring system
TRIOS	Three-Day Recalibrating ICU Out- comes
TRISS	Trauma Injury Severity Score
TS	Trauma scores
WBC	White blood count

التنبؤ بالحالة المرضية ومردودها بين المرضي ذوي الحالات الحرجة

رسالة مقدمة من الطبيب

مصطفى شعبان عبد الحميد احمد

بكالوريوس الطب والجراحة

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Introduction

Introduction

Quality of care is an important issue in the health care debate. There is an ever-increasing recognition of the wide variation in quality of care and its effect on outcome. Therefore, indicators to measure quality of care are increasingly being used and focus either on the outcome, the process or the structure of care. Until recently, Intensive Care Units (ICU) have focused mainly on outcome. Only recently process and structure indicators have been added to the registry. Such as the availability of numbers of critical care beds per 10,000 populations, patient-to-nurse ratio, the length of ICU stay and compliance with care bundles. Prediction models have been developed to perform case-mix adjustments on mortality rates, thereby enabling comparison of outcome between individual ICUs *(Keizer et al., 2002).*

The process of diagnosis and treatment of patients admitted to the ICUs is guidelines based. Using these scoring systems for the mortality prediction along with the guideline-based medicine, help to compare ICUs' performances using the available facilities, evaluating the result of new interventions, technologies and protocols; and determination of cost-effectiveness in any process; To reach this goal, it is important to choose a suitable index for measuring the probability of mortality and severity of illness for critically ill patients ***(Pronovost and Angus, 2001).***

The newer ICU prediction models, e.g. Acute Physiology and Chronic Health Evaluation (APACHE), Simplified Acute Physiology Score and Mortality Probability Model, have the potential to help decision makers, physicians, and patients to select treatment options and allocate resources despite their limitations, they have been used as benchmarks to evaluate ICU performance, and they highlight the structure and

process of care characteristics associated with the various levels in quality of care *(DePorter, 1997).*

The evaluation of severity of illness in the critically ill patient is made through the use of severity scores and prognostic models. Severity scores are instruments that aim at stratifying patients based on the severity of illness, assigning to each patient an increasing score as their severity of illness increases. Prognostic models, apart from their ability to stratify patients according to their severity, predict a certain outcome (usually the vital status at hospital discharge) based on a given set of prognostic variables and a certain modeling equation *(Moreno et al., 2005).*

Most critical care severity scores are calculated from the data obtained on the first day of ICU admission [e.g. the APACHE, the SAPS, and the mortality prediction model (MPM)]. Other scoring systems are repetitive and collect data sequentially throughout the duration of ICU stay or over the first

few days. Examples of repetitive systems are the SOFA and Multiple Organ Dysfunction Score (MODS). Both first day and sequential scoring systems can be further divided into subjective and objective scores. Subjective scores are produced by taking variables that have been agreed by a panel of experts, and then applying a numerical weighting to each variable to produce a subjective score *(Le Gall, 2005).*

Finally, all the scoring systems assess the severity of illness and the likelihood of in-hospital mortality. Of arguably more importance is the ability to predict outcome or morbidity after discharge from ICU *(Ridley, 1998).*