SCREENING PRIORITY CRITERIA’S ROLE IN THE ADMISSION OF CRITICAL PATIENTS
PAPEL DOS CRITÉRIOS DE PRIORIDADE DE TRIAGEM NA ADMISSÃO DE PACIENTES CRÍTICOS
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ABSTRACT
Objective: to determine the average number of days the critical patient remained at the emergency room due to lack of vacancy in the intensive care unit, correlating difficulties and rewards for obtaining this bed. Method: this is a descriptive study, exploratory, with a quantitative approach, carried out in a public hospital in a coastal town of the state of Sao Paulo, Brazil. Data were collected from the medical records of 28 critically ill patients, by means of a questionnaire, and tabulated and analyzed using the software Microsoft Excel, version 2007. The study was approved by the Research Ethics Committee of Universidade do Vale do Paraiba (UNIVAP), under the Protocol H187/2010. Results: out of the 28 medical records evaluated, 26 patients were transferred to ICU and 2 evolved to death before getting the bed; all patients with 2 and 3 priority criteria were transferred. Conclusion: the classification by priorities shows to be very effective for screening patients with a possibility of obtaining the greatest benefits from intensive care support. Descriptors: Intensive Care; Mortality; Prognosis; Patient Selection.

RESUMO
Objetivo: determinar o número médio de dias que o paciente crítico permaneceu na sala de emergência por falta de vaga em unidade de terapia intensiva, correlacionando dificuldades e facilidades para a obtenção dessa vaga. Método: trata-se de estudo descritivo, exploratório, com abordagem quantitativa, realizado em hospital público de uma cidade litorânea do estado de São Paulo. Os dados foram coletados em 28 prontuários de pacientes críticos, por meio de um questionário, e tabulados e analisados com o programa Microsoft Excel, versão 2007. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da Universidade do Vale do Paraíba (UNIVAP), sob o Protocolo n. H187/2010. Resultados: dos 28 prontuários avaliados, 26 pacientes foram transferidos para UTI e 2 foram a óbito antes de obter a vaga; todos os pacientes com critério de prioridade 2 e 3 foram transferidos. Conclusão: a classificação por prioridades mostra-se muito eficaz na triagem de pacientes com possibilidade de obter maiores benefícios do suporte de terapia intensiva. Descritores: Terapia Intensiva; Mortalidade; Prognóstico; Seleção de Pacientes.

RESUMEN
Objetivo: determinar el número promedio de días que el paciente crítico se quedó en la sala de emergencia por falta de vacante en la unidad de cuidados intensivos, correlacionando dificultades y facilidades para la obtención de esa vacante. Método: esto es un estudio descritivo, exploratorio, con abordaje cuantitativo, realizado en un hospital público de una ciudad costera del estado de São Paulo, Brasil. Los datos fueron recogidos en 28 prontuarios de pacientes críticos, por medio de un cuestionario, y tabulados y analizados con el programa Microsoft Excel, versión 2007. El estudio fue aprobado por el Comité de Ética en Investigación de la Universidad do Vale do Paraíba (UNIVAP), bajo el Protocolo H187/2010. Resultados: de los 28 prontuarios evaluados, 26 pacientes fueron trasladados a la UCI y 2 murieron antes de obtener la vacante; todos los pacientes con criterio de prioridad 2 y 3 fueron trasladados. Conclusión: la clasificación por prioridades muestra muy eficiente en el triaje de pacientes con posibilidad de obtener mayores beneficios del soporte de cuidados intensivos. Descriptores: Cuidados Intensivos; Mortalidad; Pronóstico; Selección de Pacientes.

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INTRODUCTION

In the intensive care unit (ICU) patients undergoing a severe health status are treated by a qualified and specialized team, under the best conditions of efforts and activity coordination. This hospital unit has a specialized infrastructure, uninterrupted medical and nursing assistance, specific and precise equipment, and wide access to sophisticated diagnostic and therapeutic technologies.¹⁻⁵

A limited number of beds in the ICUs is usual in various European countries and even in the United States of America (USA). Similarly, in Brazil, there’re few intensive care beds available to meet the patients’ demand. Based on this assumption, the ICU beds should be made available to patients with a recovery potential. Thus, the availability of an ICU bed shouldn’t be the only criterion for admission to these units.⁶

The great demand of critical patients and the decreased financial resources aimed at the health services led to the need for a better distribution of intensive medical services. To this end, in recent decades, efforts have been undertaken and aimed at developing methods which objectively evaluate the severity of patients admitted to the ICUs.⁷

For establishing the criteria for admission to the ICU one proposed to assess the critical patient’s prognosis, determining whether patients will actually benefit from new therapeutic interventions and comparing the performance of different institutions with results of experimental studies. Above all, these measures should be taken with caution, since they should be applied to patients in an individualized way.⁷

There’s a high demand for critical patients, treated and monitored in the emergency room (ER) while waiting for a bed in an ICU, in a coastal town of the state of Sao Paulo, Brazil. Therefore, surveying data becomes indispensable, so that one proves the need for ICU or semi-intensive care beds.

With the installation of these beds, the ER which has only two beds won’t be overloaded and the number of transfers in ICU ambulances to referral hospitals will decrease, with the aim of improving care for the critical patient.

OBJECTIVES

- To establish the average number of days a critical patient waits for a bed in the ICU, at the emergency room of a hospital in a coastal town of the state of Sao Paulo.
- To correlate difficulties and rewards for obtaining a bed in the ICU with the criteria established in the literature.
- To correlate the clinical evolution with the final destination of the client waiting for a bed in the ICU.

METHOD

Paper developed from the monograph Destination of the critical patient from a coastal town of the state of Sao Paulo, presented to the Graduate Program in Critical Care/Cardiology Nursing of Universidade do Vale do Paraíba. São José dos Campos-SP, Brazil. 2011.

This is a prospective, descriptive, and exploratory study with a quantitative approach, carried out in a small public hospital, with 50 beds, in a coastal city of the state of Sao Paulo. It has an ER with only 2 beds, where emergency treatments are conducted; it lodges critical patients waiting for transfer to an ICU. The emergency services become limited due to the small capacity of this room, a problem which worsens when there’re critical patients waiting for a vacancy in the ICU.

The research project was approved by the Research Ethics Committee of Universidade do Vale do Paraíba (UNIVAP), under the Protocol H187/2010. It also obtained authorization from the head of the hospital for research in medical records, in compliance with the ethical issues for research involving human beings, established by the Resolution 196/96, from the National Health Council.

The research’s scope was divided into three stages: content validation and development of the instrument for collecting data from the medical records; instrument application; and analysis content.

For a relevant structuring in the study development, an instrument was prepared for data collection with closed and multiple choice questions, based on the scientific literature⁸⁻⁹, using the following descriptors in health sciences: “intensive care”; “mortality”; “prognosis”; and “patient selection”. Data were collected from the medical records of critical patients who were at the ER waiting for a vacancy in the ICU, within the period from December 2010 to April 2011, totaling 28 medical records. The critical patient’s classification, in accordance with the priority criteria, was performed by the physician.

For being included in this study, the elderly and adult critically ill patients had to stay at...
In a study conducted in the ER, patients were classified into 4 priority groups according to the ICU admission criteria. The patients were classified as follows:

- **Priority 1**: severe patient, unstable, requiring monitoring and intensive treatment that cannot be obtained outside the ICU;
- **Priority 2**: patients requiring invasive monitoring who may require immediate intervention;
- **Priority 3**: severe patients unstable, and with little recovery chance due to the primary disease or the acute problem's nature;
- **Priority 4**: in advance, had little or no benefit from admission to the ICU.

The study involved 28 patients, classified as follows:

<table>
<thead>
<tr>
<th>General sample (n = 28)</th>
<th>Priority 1 (n = 12)</th>
<th>Priority 2 (n = 14)</th>
<th>Priority 3** (n = 2)</th>
<th>Priority 4*** (n = 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Mean (SD)</td>
<td>61 ± 22.1</td>
<td>61 ± 13.4</td>
<td>64 ± 4.2</td>
<td>0</td>
</tr>
<tr>
<td>Length of stay Mean</td>
<td>1.9 ± 2.0</td>
<td>1.9 ± 1.3</td>
<td>3.0 ± 0</td>
<td>0</td>
</tr>
<tr>
<td>Percentile 25</td>
<td>2 ± 3.1</td>
<td>2 ± 1</td>
<td>3 ± 0</td>
<td>0</td>
</tr>
<tr>
<td>Percentile 75</td>
<td>71 ± 71</td>
<td>61 ± 55</td>
<td>64 ± 6</td>
<td>0</td>
</tr>
</tbody>
</table>

The average stay in the ER was 2 ± 1.6 days. The distribution of patients across priority groups was as follows:

- **Priority 1**: 12 patients (42.8%);
- **Priority 2**: 14 patients (50%);
- **Priority 3**: 2 patients (7.1%);
- **Priority 4**: 0 patients (0%).

Most transferred patients corresponded to the criterion of priority 1 (60.7%). It's worth noting that the patients transferred to an ICU were prioritized based on the criteria for admission, with priority 1 having a higher average and lower dispersion in the distribution. The classification criterion of priority 1 evolved to death while waiting for a bed in the ICU. Only 2 patients (7.2%) belonging to the priority 3 group were transferred to an ICU.

The predominant age group, in absolute number, of critical patients waiting for a vacancy in the ICU was 60 to 79 years; the individuals were predominantly male, which amounted to 71.5% of the beds requested.

The vast majority of critical patients who needed a bed in the ICU consisted of people who live in the town (73.5%). Besides, most of them was transferred to beds from SUS (25.5%), leaving only 28.7% of transfers to beds provided by health insurance companies or private institutions. A total of 92.8% patients was transferred. It's worth stressing that the 2 (7.2%) patients who weren't transferred evolved to death.

For all priority criteria, the patients who live in the town prevailed, and the percentage of patients who don't live in the town was higher for the criterion of priority 1, corresponding to 21.4% of patients.
In a broader way, the consciousness level among the population studied in the period of stay in the ER corresponds to 54% of conscious, 25% of sedated, 14% of torpor, and only 7% of unconscious.

Regarding the oxygen therapy system, it was found that 46% used O₂ catheter and 32% used invasive mechanical ventilation. Continuous nebulization and spontaneous respiration accounted for 11% each.

Cardiocerebrovascular diseases corresponded to the main diagnoses evidenced in the study, totaling 46.4%. The most frequently evidenced diagnoses were acute myocardial infarction (25.0%), stroke (21.4%), and traumatic brain injury (14.3%). The use of non-invasive ventilation was also more frequent, accounting for 67.9% of cases. It’s worth highlighting that invasive ventilation became necessary only in patients with criterion of priority 1, represented by 32.1% of cases.

### DISCUSSION

A study carried out in Rio de Janeiro shows that the non-admission of elderly patients > 70 years was frequent, especially those with chronic diseases and metastatic neoplasia. The same didn’t occur in this study, given that advanced age was frequent, as well as admission to the ICU. One stresses that the only 2 non-transferred patients belonged to priority 1.

In elderly patients, previous functional status and severity of acute illness is better than age itself for predicting mortality in the ICU. Besides, one can’t ignore that there’s a worsening in the quality of life of these patients after admission to the ICU. Another study, carried out in Sao Paulo, showed a long waiting for admission to the ICU, which reached a median of 12 days (5-26). The waiting for admission to the ICU found in this study was much shorter, reaching a median of 2 days (1-8).

It’s important to emphasize that the studies described show populations and very different physical spaces and such a long waiting as that identified in the study conducted in São Paulo, not viable for emergency treatments since, in this study, there’s only one ER with two beds. Therefore, when providing critical care for a long time for these patients, there would be no bed to assist other patients who entered the hospital.

In this waiting period for a vacancy in the ICU, in which the client often fails to be assisted by a specialized multiprofessional team, there may be a worsening in the clinical condition. Besides, a delay in ICU admission may contribute to the onset of sepsis, dysfunction of multiple organs and systems, decreasing the probability of reversing the condition, even with the complex multidisciplinary treatment, specialized and technological, used in the therapy at the ICU services.

The waiting time for admission to the ICU predicts mortality, in other words, the higher this time, the greater the mortality. This delay in admission causes delayed diagnosis and treatment of those who need intensive care and it reflects the shortage of intensive therapy beds. In an Israeli study, the researchers observed that survival was higher in patients who obtained their admission to the ICU within the first three days of worsening in the clinical condition. This improved survival suggests the existence of a
critical opportunity window for patients to benefit from intensive care.14

Another study identified as main diagnoses for requesting admission to the ICU acute renal failure (37.7%), chronic obstructive pulmonary disease (24.5%), and liver cirrhosis (23.8%).5 Although their diagnostic findings hasn’t been specified, according to the priority classification criteria, a great discrepancy with this study shows up, with regard to the diagnoses, since cardiocerebrovascular diseases were frequently found.

The World Health Organization (WHO) predicts that among circulatory diseases, heart failure is one of the priorities with regard to the issue need for attention worldwide. Despite all advances in medicine, the prevalence of this disease has increased in the last 5 decades and mortality may exceed 50% in five years, from the time of diagnosis.15

Cardiocerebrovascular diseases correspond to a high number of hospitalizations in Brazil and worldwide, making heart failure the leading cause of hospitalization among cardiovascular diseases. This finding corresponds to more than 30% of hospitalizations and 33% of spending on cardiocirculatory diseases, making it the leading cause of hospitalization in patients > 65 years in hospitals from SUS. This statistical data corresponds to twice the number of hospitalizations due to stroke, corroborating the clinical findings of this research, which make acute myocardial infarction and stroke the leading causes of request for a bed in the ICU in the town under study.15-17

A study conducted in Sao Paulo shows the admission of patients to the ICU with regard to priorities 1, 2, 3, and 4, respectively, for: clinical cases – 72.9% for priority 1, 9.3% for priority 2, 100% for priority 3, and 89.5% for priority 4; visualizing this way, the elective surgical cases would be, respectively, 2.5%, 90.2%, 0%, and 10.5%; and the emergency surgical cases would be 24.6%, 0.5%, 0%, and 0%.13 There’s no way to compare elective and emergency surgeries to this study, because these, conducted at the study site, required no later request for admission to the ICU during the study period. Regarding the clinical findings of the study from the state of Sao Paulo, one can state they were statistically more relevant, decreasing in the criteria of priority 3, 4, 1, and 2. However, in this study, these results decreased as follows: 1, 2, 3, and 4, leading one to believe that the diagnostic findings which prevailed in the study concerned had reduced recovery chances, contrary to this study, in which prevailed those who had high recovery chances.

Regarding the consciousness level, most patients in torpor corresponded to the criterion of priority 2, with 10.7%. The conscious, unconscious, and sedated patients prevail on priority 1, with 32.1, 7.2, and 25% of cases, respectively. These data allow us to infer that the priority 2, because it involves chronic patients, results in a slower worsening of the clinical condition than in the cases of priority 1, in which the event occurs, more frequently, in an acute way.

In another study carried out in Sao Paulo, invasive mechanical ventilation was required according to the priority 1, 2, 3, and 4, representing, respectively, 66.7%, 29.1%, 76.9%, and 64.7 %. Patients who were in a coma according to the criterion of priority 1, 2, 3, and 4 represent 25.4%, 3.5%, 30.8%, and 35.3%, respectively.12 These data are similar to those of this study, in which one refers to milder consciousness levels and need for invasive mechanical ventilation for the criterion of priority 2.

Vasoactive drugs and thrombolytic agents were more frequently used in the criterion of priority 1, representing 10.7% and 21.5% of cases, respectively, something which corroborates most diagnosis of this classification criterion. Nitrates were also used (3.6%) for the criteria of priorities 1 and 3.

The data relating to high use of a thrombolytic agent are consistent with the literary findings with regard to acute myocardial infarction.12-14 Above all, one regards acute myocardial infarction as a major cause of severity nowadays, and 80% of these events occur in patients > 65 years, a fact which differs from this study, that evidenced a population affected by acute myocardial infarction, with a median age of 61 years.15

A study carried out in the database DataSUS, in order to identify characteristics of hospitalizations due to ischemic heart diseases, showed that patients with cardiovascular disease stay hospitalized on average from 5 to 8 days. It’s observed that most patients in this study remained in priority 1, waiting for a bed in the ICU for about 2 dias.16

In a study carried out in Rio de Janeiro, the use of vasopressors was needed in 83.8% of patients waiting for a bed in the ICU.4 Another study reveals that the use of vasoactive drugs was classified according to the criteria of priority 1 (46.2%), 2 (16.7%), 3 (42.3%), and 4 (35.3%).11
According to the American handbook for admission to intensive care, there’s a specific criteria for the patient’s admission to the ICU, termed “substantial benefit". When examining patients after bone marrow transplantation admitted to the ICUs, it was evidenced that the need for mechanical ventilation ostensibly reflects on the rate of discharge from the ICU, about 3.8% versus 81.3% of those who didn’t need this support.

During the conduction of this study it was observed that there are few relevant studies covering the criteria for admission to the ICU. An inadequate screening can provide a quick transfer or an eternal waiting. Studies examining the objective criteria and the benefits for admission to an ICU should be encouraged to improve the use of these resources, which are still scarce.

**CONCLUSION**

The average number of days a critical patient waited for a bed in the ICU was 2 days. The two patients who failed to transfer and evolved to death belonged to the criterion of priority 1. Perhaps, if vacancy the ICU had been available in time for the transfer, this reality could be different. This fact doesn’t corroborate the literary findings, in which the criteria of priority 3 and 4 end up requiring more time for obtaining a bed and higher death rates.

Decisions regarding the criteria for making a bed in the ICU available are very complex and challenging, so that the whole team should have this perception, allocating vacancies to those who really can benefit from them. Objective criteria, guided by the classification by priorities, suggest themselves to be very efficient and they contribute to improve the use of available resources.

**REFERENCES**


