On the operational management of intensive care unit’s long term stays amid Covid-19

Sobre a gestão operacional das estadias de longo prazo da unidade de cuidados intensivos em entre Covid-19

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ABSTRACT
This paper analyzes the management situation, or its lack, in view of the problem of extrapolating hospitalizations to a long-term bed situation. For this understanding, we sought from the literature on hospital management the concepts for understanding its foundation and the typical problems faced in hospitals. It is concluded that the adequate training of the team in hospital management and in the adoption of the respective management recommendations constitute priority measures must be a priority so that the hospital administration can use predictive techniques in resource management of Intensive Care Unit during the pandemic that causes COVID-19.

Keywords: Long-stay Intensive Care Unit. Long-term care. COVID-19.

RESUMO
Este artigo analisa a situação da gestão, ou sua falta, tendo em vista o problema de extrapolar as internações para uma situação de leito de longo prazo. Para esse entendimento, buscamos a partir da literatura sobre gestão hospitalar os conceitos de compreensão de sua fundação e os problemas típicos enfrentados nos hospitais. Conclui-se que a adequada formação da equipe na gestão hospitalar e na adoção das respectivas recomendações de gestão devem ser prioritárias para que a administração hospitalar possa utilizar técnicas predictivas na gestão de recursos da Unidade de Terapia Intensiva durante a pandemia que causa o COVID-19.
1 INTRODUCTION

Inpatient hospital services make up the largest share of hospital costs in the world, reaching around 65% of the budget. Costs increase more when it comes to long-term beds, which causes serious budgetary problems for hospital managers (DA SILVA, 2018).

La Forgia and Couttolenc (2009; 4) classically maintain that "it is in the internal environment of hospital organizations that the influence of the external and organizational environments is observed, as it is in this environment that resources are converted into services". Therefore, the hospital manager must rely on resource management procedures and techniques, in addition to operational processes, seeking high performance and effectiveness in dealing with long-term hospitalizations.

An alternative found in the implantation of Long-Term Hospitals and their ICUs can serve as an aid in vacating beds and adapting patients in an environment destined to their reality, in accordance with the principles and guidelines of the Unified Health System - SUS: “Public actions and services health services and private contracted or contracted services that are part of the Unified Health System (SUS), are developed in accordance with the guidelines provided for in art. 198 of the Federal Constitution "(BRASIL, 1990).

As an alternative to containing the extrapolation of long-stay beds, there are rear beds, which may be in strategic hospital units or in other rear hospitals located in the health regions where strategic hospital units are located. However, these should be considered a priority for the COVID-19 pandemic, because in the current scenario, “the occupation of ICU beds can only be mitigated by increasing the supply of ICU beds by reallocating resources or installing new service units, considering all the dynamics that this process requires ”(DOS SANTOS SILVA et al, 2020).

This paper sought from the literature on hospital management the concepts for understanding and substantiating the typical problems faced in hospitals in order to analyze the management situation, or its lack, in view of the problem of extrapolating hospitalizations to a situation of long-term bed considering the COVID-19 pandemic.

This work was developed in the epistemological pole from the structuralist scientific logic and the hypothetical-deductive scientific logic; at the morphological pole by the structural modeling analysis framework; and in the technical center for the investigation of the comparative method and case study. Through the structuralist scientific logic, the methodology
for implementing the Long-Term Hospital was studied, focusing on the identification of causes and needs to be solved.

Through the hypothetical-deductive scientific logic, the Bibliographic Review, Data Collection and Compilation process was followed, for this reason, the necessary adjustments were made to the national legal aspects, and to the rules of the Ministry of Health and State and Municipal Secretariats of Cheers.

The structural modeling analysis framework had as main tool the Scielo search site and the universities' digital libraries using keywords such as: long-term hospital, elderly; in Portuguese.

The bibliography review occurred after reading the abstracts of the texts, and subsequently a record of those that served as a theoretical basis, having as anchors the Ministry of Health ordinances that govern the implantation of long-term hospitals, as well as registered cases in Brazil related to the causative pandemic of COVID-19.

2 THEORETICAL REFERENCE

Brazil currently has a total of 6,151 hospital establishments, of which 5,121 (83.25%) are general hospitals and 1,030 (16.75%) are considered specialized. The hospitals are distributed as follows within continental Brazil: 525 (8.54%) are in the North, 1,787 (29.05%) in the Northeast, 2,082 (33.85%) in the Southeast, 1,006 (16.35%) in the region Sul and 751 (12.21%) are in the Midwest region. As for the administrative nature, Brazil has 2,361 public hospitals (87 federal, 601 state and 1,655 municipal hospitals) and 3,790 private hospitals, as shown in Table 1 (CNES, 2017).

Table 1 - Distribution of hospital establishments in Brazil, according to administrative nature, for the year 2016.

| Natureza Administrativa       | Brasil |
|------------------------------|--------|
| Federal                      | 87 (1,41%) |
| Estadual                     | 601 (9,80%) |
| Municipal                    | 1.655 (26,91%) |
| Empresa Pública ou Economia Mista | 18 (0,29%) |
| Filantrópicos                | 1.823 (29,64%) |
| Privados                     | 1.967 (31,98%) |
| Total                        | 6.151   |

FONTE: CNES (2017).
Considering Art. 2 of Ordinance 2.809 / GM / MS (BRASIL, 2012), Prolonged Care is organized in the following ways: Inpatient Unit in Prolonged Care as a service within a General or Specialized Hospital (UCP); or Hospital Specialized in Extended Care (HCP).

The Long-Term Hospital is characterized by the average length of stay exceeding thirty days for inpatients (Ministério da Saúde, 1983; 10). The UCP and HCP constitute an intermediate care strategy between hospital care of acute and chronic nature renewed and primary care, including home care, prior to the user's return to home (PT / GM 2.809, DE 7/12 / 2012).

The creation of an incentive for hospitals to provide long-term care beds to support urgent / emergency care must occur after agreement with managers (BRASIL, 2012). It is important to note that the Elderly Statute establishes in its first article: “Art. 1st - The Elderly Statute is established, aimed at regulating the rights guaranteed to people aged 60 or over (sixty) years.” (BRASIL, 2003).

Observing the epidemiological profile of the elderly with the predominance of chronic conditions, high mortality and morbidity, most of the elderly have diseases or organic disorders, which aggravates this problem.

For the purposes of this study, we conceptualize the following terms:

- Specialized Hospital for Extended Care (HCP): HCP is an intermediate care strategy between hospital care of acute and chronic nature renewed and primary care, including home care, prior to the user's return home;

- Prolonged Care: intended for users in a stable clinical situation, who need rehabilitation and / or adaptation to sequelae resulting from a clinical, surgical or traumatological process. Prolonged Care has as a general objective the clinical and functional recovery, assessment and comprehensive and intensive rehabilitation of the person with temporary or permanent loss of potentially recoverable autonomy, partially or totally, and who does not need hospital care in acute stage;

- Users in Situation of Loss of Autonomy: those with physical, functional, neurological and / or motor limitations, restricted to the bed, or in any clinical condition that indicates the need for long-term care.
2.1 SPECIALIZED HOSPITAL FOR EXTENDED CARE (HCP)

Hospitals compartmentalize and fragment the organizational model, creating serious problems of integration between sectors and their coordinated management. These problems gain scale of complexity due to the lack or overlap in the tasks performed by professionals in each operational process. Therefore, the clarity of the purpose that Extended Care has in the hospital (RAFFA, MALIK & PINOCHET, 2018) is fundamental, which in general are:

- develop a differentiated care system through the introduction of innovative interventions adapted to the new sociodemographic and epidemiological needs of the population;
- guarantee the reception, accessibility and humanization of user care;
- rehabilitate the user, partially or totally, promoting autonomy and functional independence, as well as the recovery of its sequelae;
- globally evaluate, through multidisciplinary action, the user's needs;
- encourage and support the adaptation of users to the disability and self-care learning;
- accompanying the user in a situation of dependency through a Therapeutic Plan, which should be the result of the discussion of a team case, with a view to returning home;
- promote the continuity of the user's follow-up after hospital discharge, in order to enable the diagnostic review, the reassessment of risks and the adequacy of conduct among the specialists involved;
- support the maintenance of the user's functional capacity, guaranteeing the necessary therapeutic care and psychosocial support;
- guide and support family members and caregivers, in partnership with primary care, including home care, for maintenance and co-responsibility of care in the progressive construction of autonomy and return to social life;
- seek comprehensive care;
- reduce the inadequate occupation of emergency beds and the Intensive Care Unit (ICU);
- to reduce recurrent hospitalizations caused by worsening of the clinical condition of home care users, and;
increase the turnover of the clinical rear beds for acute and chronic re-treated conditions.

2.2 ELIGIBLE FOR HOSPITAL SPECIALIZED IN LONG-TERM CARE

From the review, it is noticed that, in general, the most common criteria to be admitted to HCP, the user must be in a stable clinical situation whose clinical picture has one of the following characteristics (ABREU, 2015):

- recovery from an acute process and / or recurrence from a chronic process;
- need for long-term care for rehabilitation and / or adaptation to sequelae resulting from a clinical, surgical or traumatological process; or
- partial or total permanent or temporary physical, motor or neurological functional dependence.

In addition to presenting at least one of these characteristics, the user eligible to be admitted to HCP must fit into at least one of the following clinical situations:

- users on respiratory support, such as non-invasive mechanical ventilation, oxygen therapy or bronchial hygiene;
- users undergoing prolonged venous antibiotic therapy, antifungal therapy, enteral or nasogastric diet therapy, carriers of other tubes and drains;
- users undergoing clinical and / or surgical procedures who are in recovery and need multidisciplinary follow-up, care and physical-functional rehabilitation;
- users in motor rehabilitation due to stroke, neuropathies, traumatic brain injury (TBI), traumatic subarachnoid hematoma (HSAT), spontaneous subarachnoid hematoma (HSAE) and spinal trauma (TRM);
- tracheostomized users undergoing decannulation;
- users who need dressings for pressure ulcers grade III and IV;
- users without other clinical complications after a laparotomy procedure; VIII - users with transitory walking or mobility disability;
- users with severe dysphagia awaiting gastrostomy (a procedure that the Unit will not perform); or
– terminal users, provided that their condition worsens, when they do not need intensive therapy.

However, users who have the following conditions are generally considered ineligible for admission to HCP:

– with episode of illness in acute or critical phase, in a clinically unstable condition;
– whose hospitalization objective is only the diagnostic evaluation; and
– who need care that can be provided at home and monitored by primary care teams, including home care.

3 DISCUSSION

The most common operational procedure for effecting hospitalization in HCP, consists of the user coming from (SILVA, 2016):

– various hospital and outpatient health units;
– outpatient rehabilitation units; and
– basic care, including home care, if it meets the eligibility criteria for this type of care established through regulated access protocols.

As for the hospitalization of the user in HCP, the following flow is generally observed (SILVA, 2016):

– hospitalization will be requested by one of the units of origin described in the previous article to the Regulation Center, the unit of origin being responsible for the user until the outcome of the request, even in the case of home care;
– the Regulation Center will search for the vacancy;
– Once the vacancy is obtained, the Regulation Center will inform the unit of origin of the user's destination;
– the Regulation Center and the unit of origin will indicate the most appropriate means of transport for the transfer of the user.
The problem studied in this article is very much the one that hospitals face in common beds that turn into long-term “pseudolites”, that is, the unfolding of non-compliance with the operational procedures initially planned and, therefore, the consequent extrapolation of hospitalization days. A study at the university hospital in Santa Maria exemplifies this situation in Table 2.

### Table 2: Mean extrapolation, in days, per patient hospitalized in a long-stay bed.

| Especialidade                  | n  | %     | Σ dias** SUS | Σ dias internação*** | Dias excedentes/paciente |
|-------------------------------|----|-------|-------------|---------------------|--------------------------|
| Cardiologia/Cirurgia Cardiovascular | 3  | 0,5   | 10          | 46                  | 12                       |
| Cirurgia de Cabeça e Pescoço   | 42 | 6,4   | 108         | 605                 | 12                       |
| Cirurgia Digestiva/Cirurgia do Aparelho Digestivo | 35 | 5,4   | 265         | 585                 | 9                        |
| Cirurgia Geral                | 177| 27,1  | 775         | 2604                | 10                       |
| Cirurgia Geral e Oncologia    | 5  | 0,8   | 19          | 33                  | 3                        |
| Cirurgia Oncológica           | 6  | 0,9   | 19          | 174                 | 26                       |
| Cirurgia Reparadora           | 2  | 0,3   | 7           | 79                  | 36                       |
| Cirurgia Torácica             | 33 | 5,0   | 165         | 366                 | 6                        |
| Cirurgia Vascular             | 54 | 8,3   | 199         | 664                 | 9                        |
| Clínica Médica                | 13 | 2,0   | 67          | 361                 | 23                       |
| Coloproctologia               | 36 | 5,5   | 247         | 611                 | 10                       |
| Hematologia                   | 3  | 0,5   | 7           | 54                  | 16                       |
| Neurologia/Neurocirurgia      | 3  | 0,5   | 33          | 71                  | 13                       |
| Ortopedia e Traumatologia     | 184| 28,1  | 921         | 3083                | 12                       |
| Urologia                      | 54 | 8,3   | 234         | 445                 | 4                        |
| Outros*                       | 4  | 0,6   | 14          | 83                  | 17                       |
| Total                         | 654| 100,0 | -           | -                   | -                        |

*Infectologia, Pneumologia.

**Somatório da média de permanência padronizada pelo SUS de todos os procedimentos por especialidade.

***Somatório dos dias de internação de todos os pacientes por especialidade.

Source: OLIVEIRA, 2015

The study by Oliveira (2015) pointed out that about 85% of the patients monitored exceeded the hospitalization period indicated by SUS, totaling 6,773 days more than the period indicated.

This situation generates budgetary pressure on hospitals, as observed by Nied (2018; 1), who maintains that “the processes of regionalization and expansion of Primary Health Care produced movements that tended the HPPs to assume a new role that overlaps the old ones and
leads them to compete with primary care since they do not operate medium and high complexity structures.

This worsens their financial situation and restricts their offers and productivity, overburdening and burdening municipal management. “In the COVID-19 pandemic, knowledge of the medical-assistive arsenal in Brazil is essential for the rational use of ICU beds and lung ventilators. Associated with the regions with the highest probability of demand, determined by the profile of mortality from causes that increase the lethality of the virus, what we observed is a worrying situation regarding the response of health services” (MOREIRA, 2020).

In summary, HPPs fulfill a symbolic social function in their territories, but not a health function. Valuing this social expression of the hospital in the territory, there is a discussion of new models of techno-assistance that result in new institutional designs that resolve the real demands of the territories and the network.”

3.1 THE ALTERNATIVE OF THE REAR BEDS

The rear beds are those used to refer patients of intermediate complexity evaluated by the various emergency services and regulated by SAMU, and in accordance with the principles and guidelines of the Unified Health System - SUS.

“Public health actions and services and private contracted or contracted services that are part of the Unified Health System (SUS), are developed in accordance with the guidelines provided for in art. 198 of the Federal Constitution” (BRAZIL, 1990)

Patients with a hemodynamically stable clinical picture, with no imminent risk of death, and with no possibility of discharge at the time of referral are understood to be of intermediate complexity. However, patients should not, a priori, be referred who, even within the criteria mentioned above, need surgical procedures.

The Instruction Manual of the Urgency and Emergency Care Network in SUS (BRASIL, 2013b), points out and explains its components and regulations, including hospital doors, as well as the rear beds.

As found by Sá (2017; 1) “overcrowding is a serious public health problem, and needs health management policies at the clinic that act in an integrated way in the health care lines through arrangements, devices and other connected tools can intervene as action strategies that facilitate the reduction of excess people in the emergency service “. 
Access regulation is the most important tool for managing the health system. Therefore, the role of managers is essential in ensuring a smooth flow of work aimed at the care networks, providing awareness of professionals and the population in relation to the management of the distribution of beds, vacancies, inclusion, counter-reference, management of team, highlighting members of medicine, nursing and other professionals (MARTIN, 2019).

It is important to make a survival analysis using the Kaplan-Meier Method in order to adjust the patient flow and bed turnover by the good size of the service. Survival analysis uses conditional probability; that is, the probability of surviving until time t, given that the subject was alive at the beginning of a specified time interval (FERREIRA, 2016).

An important study by HEISLER (2013) on the implementation of the Kanban system in a hospital emergency system aimed at qualifying care management, sought to optimize the back beds based on the monitoring and risk reclassification of patients under observation / hospitalized at each 12 hours, using the Emergency Severity Index 4.0 Risk Classification protocol. This allowed the reallocation of patients by severity and by specialty, facilitating consultations, managing and scheduling transfers and adjusting the needs for care intensity in long-stay beds.

4 CONCLUSION

The hospital as a finalistic institution aims at resolving the disease through treatment with reduced permanence in a hospitalization situation. As the hospital evolves managerially, through the training of its employees, budgetary risks decrease. It recycles its human resources, considerably increasing the costs of these resources, making hospitalizations for prolonged periods unfeasible from a financial point of view.

Comprehensive care can only be obtained through a network. There may be some degree of “focused” comprehensiveness when a team, in a health service, through a good articulation of its practices, is able to listen and meet, in the best possible way, the health needs brought by the service user.

It is concluded that a suboptimal alternative found in the implantation of Long-Term Hospitals and their ICUs can serve as an aid in vacating beds and adapting patients in an environment destined to their reality, using a management system, amid COVID-19 pandemic. Kanban can be properly used for this purpose, since these rear beds may be in strategic hospital units or in other rear hospitals located in the health regions where the strategic hospital units are located.
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