


## Management of prescribed pharmacotherapeutic care: A strategy to minimize the impact of drug shortages in times of scarcity in the COVID-19 pandemic

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### **ABSTRACT**

The lack of medication shortages is considered a public health problem and represents an obstacle to ensuring access to pharmacotherapeutic treatment for patients. For episodes of shortages to be minimized and for the hospitalized patient to receive treatment, management strategies should be developed. The present study aims to describe the management of an indicator that monitors the care of the pharmacotherapeutic treatment prescribed to patients admitted to a hospital. This is an observational, descriptive, cross-sectional, and retrospective study on the management of pharmacy care indicators of the pharmacotherapeutic treatment prescribed to patients hospitalized in a public hospital in Fortaleza/Ceará. The indicator was implemented in May/2020 with consolidation and systematic management of its data from June/2020. A total of 334,114 prescriptions were met, and 32,658 were missing. The acceptance rate of pharmaceutical interventions related to supply in June/2020: was 54.3% and in May/2022: 100% (average: 90%  $\pm 11\%$ ). During the indicator: 0% rupture of class Z drugs (immediate impact and no substitute); 2% of class Y drugs (immediate impact and with substitute) and 98% of the drugs were class X (no immediate impact and more than one substitute). Daily monitoring is performed according to the XYZ curve, evaluating coverage time and purchases in progress. The management of an indicator to evaluate the attendance of the prescribed pharmacotherapeutic treatment with real-time decision-making, aligning logistics and clinic, made it possible to minimize the shortage of medicines in the COVID-19 pandemic and the current shortage of market input.

**Keywords:** Management Indicators, Health Information Management, Hospital Administration, Pharmacological Treatment, Hospital Pharmacy Service.

## **1 INTRODUCTION**

The COVID-19 pandemic, which began to spread globally in early 2020, has brought several challenges to the healthcare industry. In addition to the direct impact of infection by the virus, one of

the most urgent concerns was the shortage of essential medicines for the treatment of the disease and its aggravations. From the perspective of demand, such a problem occurs when it exceeds supply at any point in the supply chain, which may ultimately create a *stock-out* at the point of dispensation to the patient if it cannot be resolved promptly (MARTINS, 2021).

Among the main factors that contributed to the shortage, we can mention: increased demand for drugs used to treat the most severe patients, leading to a collapse in the pharmaceutical supply chain; interruption of production and distribution, mainly due to social isolation measures and *lockdown*, generating the interruption of several activities with reduction of the workforce and delays in the production and delivery of medicines; accumulation of pharmaceutical specialties, due to fear and uncertainty, people and institutions acquired huge quantities of medicines, depleting the stocks available to those who needed it (BARBIERI; MACHILINE, 2009).

All this directly affected public health, as this lack led to an increase in morbidity and mortality, especially in the most vulnerable groups of the population. In addition, it provided an overload of the SUS, increasing the length of hospitalization and reducing the effectiveness of the service.

To minimize this shortage, hospital institutions have sought collaborative efforts to strengthen the supply chain. In this context, the Pharmacy service stands out, which had to create strategies aimed at optimizing drug therapy, promoting adherence to treatment, and preventing drug-related problems (MRPs).

The pharmacy service plays an essential role within the hospital environment, being responsible for several functions that ensure the correct and safe use of medicines. One of its main attributions is the management of medicines, which involves the acquisition to receipt, passing storage, and distribution of pharmaceutical products within the hospital. This correct management is essential to ensure availability, avoiding problems such as lack or excess of inventory.

The dispensing of medicines is another function of the hospital pharmacy. Pharmacists are responsible for providing the prescribed drugs to inpatients, following medical prescriptions. In addition, they can also provide medications to the hospital's outpatient clinics and outpatient care programs. Another relevant activity is pharmacotherapeutic monitoring, in which pharmacists analyze prescriptions, identify possible drug interactions to ensure patient safety, and optimize therapeutic outcomes (PINHEIRO et al., 2022).

In addition to activities directly related to medicines, the hospital pharmacy also plays an educational and training role. Pharmacists provide up-to-date information about medications, guide healthcare professionals on their proper use, and offer training on medication delivery techniques. This contributes to the training of the team and the dissemination of good practices in the hospital environment (CABRAL et al., 2022).

The present study aims to describe the management of an indicator that monitors the care of the pharmacotherapeutic treatment prescribed to patients admitted to a hospital.

## **2 METHOD**

This is an observational, descriptive, cross-sectional, and retrospective study on the management of pharmacy care indicators of the pharmacotherapeutic treatment prescribed for patients hospitalized at the Leonardo da Vinci State Hospital in Fortaleza/Ceará. The study period was from June/2020 to May/2022. It will be described the implementation of the indicator, the systematic management, and the evaluation of the results of the period recorded in the Management Drive of the Pharmaceutical Care Center (NUASF) of the referred hospital.

In addition to compliance of the prescribed drugs, the supply was evaluated according to the criticality classification:

X (low criticality): faults do not cause stoppages; easy replacement; easy to obtain according to consumption;

Y (low criticality): faults cause stoppages; easy replacement; low consumption;

Y (high criticality): faults cause stoppages; difficult to replace or few substitutes;

Z (high criticality): faults cause stoppages; cannot be replaced.

The acceptance rate of pharmaceutical recommendations related to the replacement of missing drugs was also evaluated.

## **3 RESULTS AND DISCUSSION**

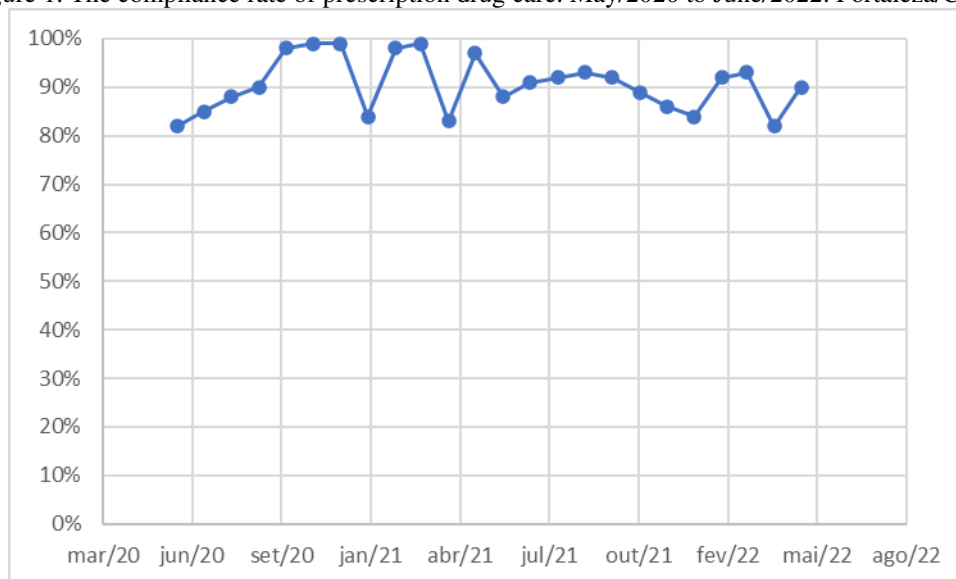
The Hospital Pharmacy Service within a hospital has characteristics of support through logistical and care activities when performing the clinical management of the use of medicines. In times of the COVID-19 pandemic, these activities must be well implemented and integrated. Mainly, concerning the supply and protocol options with substitutes that offer patients the same clinical outcome, sustainable and with less cost impact, knowing the market restrictions and the adjustments in drug prices. In addition, the profile of critically ill patients requires pharmacists to be integrated into the multidisciplinary team.

The indicator was implemented in May/2020 with consolidation and systematic management of its data from June/2020. The management of the indicator relates the number of prescriptions met by the NUSAF without lack of any medication with the number of prescriptions met. The number of prescriptions that were not completely met is signaled and the XYZ criticality of the drugs that were in a situation of shortage is evaluated.

The strategies to minimize these ruptures were adopted through the interventions of the Prescription Analysis Center and Clinical Pharmacy, meetings to define conduct with the hospital management, and daily huddles with pharmacists. That is, in the management are developed actions in real-time to ensure the appropriate treatment for hospitalized patients.

A total of 334,114 prescriptions were met, and 32,658 were missing. In June/2020 the compliance rate of the service was 82% and in May/2022 90% (average: 91%  $\pm$ 5%) (Graph 1).

Figure 1. The compliance rate of prescription drug care. May/2020 to June/2022. Fortaleza/Ceará.



The acceptance rate of pharmaceutical interventions related to supply in June/2020: was 54.3% and in May/2022: 100% (average: 90%  $\pm$ 11%).

During the indicator: 0% rupture of class Z drugs (immediate impact and no substitute); 2% of class Y drugs (immediate impact and surrogate) and 98% of drugs were class X (no immediate impact and more than one substitute). Daily monitoring is performed according to the XYZ curve, evaluating coverage time and purchases in progress.

#### 4 CONCLUSION

The management of an indicator to evaluate the attendance of the prescribed pharmacotherapeutic treatment with real-time decision-making, aligning logistics and clinic, made it possible to minimize the shortage of medicines in the COVID-19 pandemic and the current shortage of market input. In addition to the correlation with the criticality of the medications, it helped in the decision-making of the protocols with the available options and their effectiveness and the analysis of the indicator by the team reinforced the adherence to the conducts.

## REFERENCES

BARBIERI, J. C.; MACHILINE. C. Logística Hospitalar: Teoria e Prática. 2ª Edição. São Paulo: Editora Saraiva. 2009.

CABRAL, A. S. et al. A importância do farmacêutico na gestão da farmácia hospitalar. Rev Inic Cient Ext [Internet]. 14º de março de 2022 [citado 2º de junho de 2023];5(1):765-77. Disponível em: <https://revistasfacesa.senaaires.com.br/index.php/iniciacao-cientifica/article/view/343>. Acesso em: 28 mai. 2023.

MARTINS, Bruna Cristina Cardoso. Assistência Farmacêutica na COVID-19. In: SEVERINO, Rafaela Neres. Manual de Condutas Multidisciplinares no Atendimento Hospitalar ao Paciente Covid-19. Fortaleza: Universidade Estadual do Ceará, 2021. p. 274.

PINHEIRO , T. de A.; BRITO , A. de O.; CAZAL, R. de C.; RODRIGUES , K. O.; ALMEIDA, A. C. G. de; OLIVEIRA , L. B. Medication management and logistics amid the COVID-19 pandemic: a systematic review. Research, Society and Development, [S. l.], v. 11, n. 16, p. e160111638209, 2022. DOI: 10.33448/rsd-v11i16.38209. Disponível em: <https://rsdjournal.org/index.php/rsd/article/view/38209>. Acesso em: 28 mai. 2023.