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Impact of the Transplant Acceleration Program (PAT-MA) Phase I on Transplant Indicators in Maranhão, Brazil: A Retrospective Study

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ABSTRACT

Introduction: In the context of public health, the efficiency of transplant programs is crucial to improving outcomes for patients on waiting lists. This study evaluated the impact of implementing the Transplant Acceleration Program (PAT-MA) at the Transplant Center of Maranhão, Brazil.

Objectives: The aim of this study was to assess the impact of PAT-MA implementation on key performance indicators of the Maranhão Transplant Center, with a focus on improving the organization and effectiveness of the regional transplant system through structured management methodology.

Methods: We conducted a retrospective observational study analyzing data from the Maranhão Transplant Center before and after the first phase of PAT-MA as a quality improvement initiative, comparing the years 2022 and 2023. The indicators collected included: number of transplants performed, waiting list size, notifications per million population, effective donors per million, organ transplants per million, corneal transplants per million, and number of active CIHDOTTs and OPOs.

Keywords: organ transplantation, quality improvement, management program, PAT-MA, health systems, Maranhão, Brazil.

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Impact of the Transplant Acceleration Program (PAT-MA) Phase I on Transplant Indicators in Maranhão, Brazil: A Retrospective Study

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Results: Following PAT-MA implementation, there was a reduction in the family refusal rate (from 67% to 63%), a decrease in the rate of cardiac arrests before procurement completion (from 28% to 26%), an increase in notifications per million (from 172 [24/million] to 327 [46/million]), effective donors per million (from

12 [1.7/million] to 28 [3.9/million]), organ transplants per million (from 27 [3.9/million] to 62 [8.7/million]), corneal transplants per million (from 133 [18.6/million] to 255 [35/million]), and number of active CIHDOTTs and OPOs (from 3/0 to 10/1). These findings demonstrate marked growth and improvement in the regional transplant system.

Conclusion: This study demonstrates that the implementation of the Transplant Acceleration Program (PAT-MA) had a positive impact on key performance indicators at the Maranhão Transplant Center. The results underscore the importance of strategic management approaches to optimize transplant program outcomes.

Keywords: organ transplantation, quality improvement, management program, PAT-MA, health systems, Maranhão, Brazil.

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I. INTRODUCTION

Organ transplantation is a vital component of modern public health, offering life-saving treatment for patients with end-stage organ failure. The effectiveness of transplantation programs directly influences patient survival rates, quality of life, and healthcare system efficiency, particularly for those awaiting transplantation. In

Brazil, regional disparities and operational challenges frequently hinder optimal transplant outcomes. To address these challenges, the State of Maranhão launched the Transplant Acceleration Program (PAT-MA) with the objective of reorganizing and enhancing the local transplant system through evidence-based management strategies.

II. OBJECTIVES

This study aimed to evaluate the impact of PAT-MA implementation on critical indicators within the Maranhão Transplant Center, specifically focusing on program organization, process effectiveness, and overall transplant system performance.

III. METHODS

A retrospective, comparative study was conducted using data collected from the Maranhão Transplant Center in the years immediately preceding (2022) and following (2023) the initial phase of PAT-MA implementation. PAT-MA was introduced as a comprehensive quality improvement program encompassing organizational restructuring, process optimization, and targeted professional training. The following indicators were analyzed:

- Number of transplants performed (organs and corneas).
- Size of the transplant waiting list.
- Number of notifications per million population
- Number of effective donors per million population.
- Number of organ transplants per million population.
- Number of corneal transplants per million population.
- Number of active Intra-Hospital Donation and Transplant Commissions (CIHDOTTs) and Organ Procurement Organizations (OPOs).
- Family refusal rates.
- Rate of cardiac arrests before organ procurement completion.

All data were collected and validated by the central transplant coordination team. Comparative analyses were performed using descriptive statistics.

IV. RESULTS

Following the implementation of PAT-MA, there was a notable improvement across all evaluated indicators. The family refusal rate decreased from 67% to 63%. The incidence of cardiac arrests before procurement completion declined from 28% to 26%. Notifications per million increased from 172 (24/million) to 327 (46/million). The number of effective donors per million rose from 12 (1.7/million) to 28 (3.9/million), while organ transplants per million grew from 27 (3.9/million) to 62 (8.7/million). Corneal transplants per million increased from 133 (18.6/million) to 255 (35/million). The number of active CIHDOTTs increased from 3 to 10, and active OPOs increased from 0 to 1.

These findings highlight the positive impact of PAT-MA on the organizational capacity and effectiveness of the regional transplant system.

V. DISCUSSION

The implementation of PAT-MA in Maranhão resulted in significant improvements in transplant activity and system indicators. The observed reduction in family refusal rates and cardiac arrests prior to procurement completion suggest enhanced donor management and family engagement processes. Substantial increases in donor and transplant rates per million population demonstrate the effectiveness of targeted quality improvement and organizational strategies. Expansion of active CIHDOTTs and OPOs reflects greater institutional engagement and operational reach.

VI. CONCLUSION

The Transplant Acceleration Program (PAT-MA) significantly improved key performance indicators of the Maranhão Transplant Center. These results reinforce the crucial role of structured management programs and continuous quality improvement strategies in optimizing transplant system outcomes. Further studies are warranted to assess the long-term sustainability of these improvements and their impact on patient outcomes across different regions.