COVID 19: planning and execution of interstate patient transfers in Amazonas

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1 INTRODUCTION

In December 2019, after an infectious outbreak of an acute respiratory syndrome of zoonotic origin, a mutation of a coronaviruswas identified in Wuhan, China, giving rise to SARS-CoV-2 (WHO, 2020). This virus became the cause of COVID-19, whose speed of spread proved to be much faster than other viruses, leading the World Health Organization (WHO) to declare this disease a pandemic three months after its discovery, in March 2020.

In Manaus, the first cases of COVID-19 were identified in the first half of March 2020, according to the epidemiological bulletin of the Health Surveillance Foundation (FVS) (SES- AM, 2021). Two months after the first records, there were already a total of 9,410 cases in the capital of Amazonas and 7,771 cases in the other municipalities. The city of Manaus experienced the worst pandemic scenario in the whole country. The chaos in public health became evident in all social and digital media, where the situation of the affected families and the exorbitant number of daily deaths could be observed (WHO, 2020).

With an abrupt increase in deaths that worried managers and society as a whole, the Brazilian state of Amazonas and its capital Manaus, became the epicenter of the epidemic. In December 2020 and the first weeks of January 2021, a new wave of cases suddenly began to rise, causing the collapse of the health system due to lack of ward beds, ICU beds and oxygen (SES- AM, 2021).

Considering the increase in the rate of hospitalization in ICU beds in all age groups including the obstetric and pediatric population due to diseases related to COVID-19 in association with other respiratory syndromes, in the health care network of Amazonas. And also considering the dynamism of the evolution of the Pandemic and the need to expand back-up beds and the excessive use of oxygen to meet the needs of current consumption, the State Government in a pioneering way articulated with the Ministry of Health and the Ministry of Defense the need to carry out interstate air transfers of moderate and stable patients affected by COVID-19.

Aeromedical transportation is considered a modality of patient displacement used mainly when talking about patients in critical condition (SES- AM, 2021). Its origin goes back to remote times, mainly from the experiences of wars related to the need for rapid removal of the wounded during battles. In the military field, its history began in 1870, during the Franco-Prussian War, when wounded soldiers were removed using hot air balloons. The emergence of the First World War was the historical landmark of patient care by air (HERNANDEZ, 2021).

The aeromedical activity in Brazil began in the 1960s, when the Brazilian Air Force started the rescue of injured people from aeronautical accidents using helicopters. In the civil aviation situation, this type of care began with the company Petrobras, with the Emergency Rescue Group of the Fire Department of Rio de Janeiro and with the Air Patrol Radio Group of the Military Police of São Paulo (THOMAS *et al*., 1999).

The use of Aeromedical Transport on a large scale emerged in the early 1990s, due to the need presented by critically ill patients in search of better treatment and for the use of more advanced equipment, coupled with globalization, which facilitated access to this service in the health area (THOMAS *et al*, 1999).

However, from the considerations placed so far, the air transfers of moderate and stable patients affected by COVID-19 is considered an innovative practice, however, in no country or other state in Brazil, something similar of this proportion had been carried out in aeromedical evacuation of patients affected by this disease, so the city of Manaus is the protagonist of this milestone, which justifies the realization of the present study, in the search to present constructs that can subsidize a transformative practice, as well as to corroborate the visibility regarding the theme addressed.

2 OBJECTIVE

To describe the experience of the planning and execution team of interstate transfers of patients affected by Covid-19 in the city of Manaus, AM.

3 METHODOLOGY

This is a descriptive study, of the experience report type, which establishes steps for systematizing experiences (HOLIDAY, 2006). The systematization of experiences presumes as a foundation the dialectical methodological conception, where the historical-social reality is seen as a totality and by a historical process, and, therefore, is a product of the transforming and creative activity of human beings (HOLIDAY, 2006).

Following the established systematization, the study describes the experience in four distinct moments that go through "The starting point" called "Planning interstate transfers of patients affected by Covid in the city of Manaus, Amazonas"; "The reconstruction of the lived process", defined as:

interstate transfers of patients affected by Covid in the city of Manaus, Amazonas; "The critical reflection", described as: The effectiveness of interstate transfers to reduce the waiting time of patients who remained hospitalized in beds of lesser complexity, in the hospitals of the municipalities and the capital, for beds of greater complexity with cases of COVID-19; and "The point of arrival", characterized as the execution of interstate transfers.

4 DEVELOPMENT

"The starting point" - Transfer planning

As a result of the international and national risk of COVID-19, in the State of Amazonas, in the city of Manaus, a series of actions were initiated from the emergency monitoring committee of the Amazonas Health Surveillance Foundation (FVS-AM), with the participation of the State and Municipal Health Secretariats, in addition to other related institutions, such as the construction of the State contingency plan with the objective of guiding coordinated action within the scope of the SUS, in response to the possible public health emergency. In this contingency plan, the State of Amazonas adopts emergency classification tools at three levels, following the same line used by the Health Surveillance Secretariat of the Brazilian Ministry of Health, with regard to preparation and response throughout the State, being proportional and restricted to the risks in force in the country.

In order to guide the coordinated action within the State of Amazonas, in response to the public health emergency, the Amazonas crisis committee was made official, being this a space for interinstitutional discussion of public policies and deliberative government decisions to face COVID-19 throughout Amazonas, with the participation of representatives of the State, Federal, Municipal Secretariat, Public Security Organs among other competent organs that corroborated the multidisciplinary working group.

Considering the high number of patients in need of day hospitalization for the treatment of COVID-19 where the state network already had a high occupancy rate of beds intended for this treatment.

Also considering that the Regulated Emergency Transfer System - SISTER presented a significant increase in the demand for transfers, which was much higher than the service capacity of the state health network and also that the transfer plan within the contingency plan started with 75% of the occupancy rate of the 5th phase of bed projection.

That said, on January 14, 2021, a decision was taken by the Intersectoral Committee, formed by the Government of the State of Amazonas, Ministry of Health (National SUS Force), Brazilian Air Force, Military Command of the Amazon and Pan American Health Organization - PAHO, regarding the strategy of carrying out interstate transfers to the other federative units in a location where there

was a balance in the bed occupancy rate for patients with COVID-19 , the mission being entitled operation life.

The strategy was articulated by the Ministry of Health, the National Council of Health Secretaries - CONASS, the National Council of Municipal Health Secretaries - CONASSEMS, the logistics of the Brazilian Air Force and the support of the State Government.

At that meeting, the clinical parameters for removal were established, medical criteria established as the need for patients to be ambulating, with their oxygen saturation greater than 92%, with a mild to moderate clinical profile, subsequently it was evidenced the need to prepare a consent form that would be delivered to patients who accepted to perform the transfer, as well as the need to prepare a *checklist* for checking equipment and materials daily during flights, as well as the creation of a form for the evolution of professionals on the health status of patients during the period of air transfer .

The number of patients per flight that would be transported was precisely defined, establishing the number of eighteen patients, this calculation took into account the amount of weight that would hold the aircraft, considering the weight and positioning of the patients, and the team inside the aircraft as well as the calculation of luggage and oxygen cylinders.

The number of multidisciplinary professionals who would work on each flight was established, with the team consisting of six health professionals (two doctors, four nursing technicians and two nurses) while the team of military crew members would be a total of four people (two pilots, one mechanic and one flight attendant).

Regarding oxygen therapy support to patients during the flight, it was necessary to calculate the consumption and oxygen cylinders per patient as well as their storage and fixation inside the aircraft per stretch traveled. The equipment and supplies that would be needed to equip the aircraft to support patients, as well as the removal of some seats from the aircraft to provide an area with a stretcher and equipment for medical emergency needs during the flight, required an *on-site* visit to the aircraft on January 14, 2021 and after the visit the necessary materials, equipment, medicines and supplies were provided.

"Reconstruction of the lived process" - Transfers

In view of the observed scenario, the team's work began, in which the definition of each sphere was essential for the effective execution of the air transportation of these patients affected by COVID-19. Establishing the procedures related to health care made it possible to compose work packages with tasks and deliveries established with those responsible and deadlines.

The act of developing health planning is essential for the organization of processes and directly influences the effectiveness of the activities that will be developed, involving among other factors.

The technical organization was subdivided according to the committee meeting. The Ministry of Health was responsible for surveying the beds available in the network of the State Health Departments, Municipal Health Departments and the network of Brazilian Hospital Services Companies - EBSERH, it was also responsible for defining the location for patient transfers, for communicating with the technical landing teams, for the reception teams at the destination, for refueling the cylinders in the States that would receive the patients, in addition to welcoming the health team and the military team at the destination. destination.

The duties performed by the Brazilian Air Force were aimed at receiving the letter with a request for transfer and destination of the patients, carrying out the logistics of preparing two C-99 aircraft with their respective teams for the flight, refueling the aircraft, coordinating the ground support acting on boarding and disembarking and directing the ambulances to enter and exit the runway head, check at the time of boarding the list with the names of passengers and aeromedical crew, store the luggage of the patients inside the aircraft in a specific compartment, carry out the transfer of patients and staff, conduct the aircraft for takeoff, landing at the destination and return to the Manaus air base and finally perform the decontamination of the aircraft and crew preparing the aircraft for the next boarding.

The competence of the technical team of the State Government, the Amazonas State and Municipality Secretariat, the Health Surveillance Foundation started from the beginning of the planning process, construction of technical notes, control of boarding and return of patients, preparation of the aircraft with take-off and landing times, discussion of internal and external regulatory flow together with the Ministry of Health and the other States that offered beds to Amazonas.

The work process of each component of the technical team responsible for transfers from the Amazonas State Health Department was simultaneous and synchronized. The assignments developed began with the capture of patients with definition of clinical parameters and application of the consent form for boarding in hospitals and public emergency rooms in the State, then the list of those who were fit for transfer in the regulatory system was forwarded, and simultaneously delivered to the team responsible for moving patients to the aircraft (ambulances).

However, a waiting list with patients suitable for transfers was also carried out so that if any of the patients who were traveling by land had any complications and could not board one of these waiting patients would replace him and with this we could obtain the largest number of patients inside the aircraft respecting the maximum capacity of eighteen patients as previously established.

After these patients were captured by the team in the units, subsequent to the insertion of these patients in the regulation system and the organization of their medical records (consent form, medical evolution sheet, copy of the identification document) prepared for the transfers, the ambulances were

activated to move the patients to the Manaus air base where the aircraft prepared for the air transfer of these patients was located.

Concomitantly, the preparation of the scale with the multidisciplinary team was carried out, the scale was prepared by a person in charge who performed prior to the flights. These professionals were volunteers with experience in the intensive care unit and working in the Mobile Emergency Care Service (SAMU).

The flights took place at scheduled times twice a day, prior to each flight the ground team composed of four professional nurses carried out the organization of the aircraft with the composition and organization of the oxygen cylinders in the aircraft, with the assembly of emergency equipment such as defibrillator and mechanical ventilator that remained in loading and were only positioned inside the aircraft on average an hour and a half before takeoff. takeoff. The team carried out the placement of materials, personal protective equipment, medicines, for the team of professionals who were going to carry out the transfers. Preparation took place in both aircraft, although only one took off at different times, usually one in the morning and the other in the afternoon.

The nurses and technicians arrived on the established date, one hour before boarding, they checked the materials and equipment through the checklist contained in the aircraft, assisted in boarding, monitored during the flight with the completion of the on-board evolution and monitored the disembarkation of each patient at the established destination and finally organized all material and equipment for return.

The medical team on boarding performed a new screening of these patients, a doctor remained on the runway near the aircraft and evaluated each patient in their respective ambulance positioned near the aircraft, and the patient wasable to board. Inside the aircraft the other doctor remained monitoring their accommodation and after the entry of all patients the second doctor was positioned inside the aircraft to monitor the transfers.

According to the medical evaluation, the patient was accompanied by the team until his accommodation inside the aircraft and the ambulance was positioned in the back area for departure together with the other ambulances. This need occurred due to the fact that during boarding the oxygen cylinders used were those of the ambulance and the patients were only coupled to the aircraft cylinders with three patients remaining to complete the boarding.

The purpose of continuing to use the ambulance cylinders until the take-off was to consume the least amount of oxygen from the aircraft on the ground, so that the patient had a more than satisfactory margin for transportation. And the need for ambulances to remain near the aircraft was due to the fact that some patient could have some hemodynamic instability still on the ground and the ambulance was prepared to return with this patient to the hospital of origin.

At the end of the boarding all cylinders and masks were returned to their respective ambulances and they left the recoil area towards the exit after positioning the aircraft at the head of the runway prepared for takeoff. The doctor who remained on the runway evaluating the patients returned to the aircraft and the boarding was finalized and the ground team positioned in the prepared pullback area. Patients who were evaluated and who were not fit according to the evaluation of the doctor who was in the triage due to some instability in ground transportation, immediately returned to the hospital of origin.

"Critical reflection" - effectiveness

In the scenario of the COVID-19 pandemic, where the state of Amazonas played a leading role in the interstate transfers of patients affected by the disease, as the main limiting factor in the experience, we observed at the beginning of the process the resistance of some patients in accepting the removal, even after all the explanation and security transmitted by the professionals responsible for capturing these patients in the health units, the fear of the new, of the disease, of being away from their relatives in another state after all the boarding was done only by the patient without the presence of a companion was an initial factor that caused a certain resistance in acceptance by these patients.

However, as the transfers occurred, the work of the teams within the hospital units and the dissemination of information positively from the media regarding the technical organization, the profile of patients, biosafety, regulation and psychosocial support, patients began to accept more quickly and with this we achieved an effectiveness in the transfers, successfully completing the delegated mission.

Another limiting factor is the insecurity of the technical team involved in planning and execution during the first take-off, the unprecedented ends up generating anxiety, fear, after all, it is notorious that the expected benefits need to exceed the inherent risks.

However, this experience enabled the acquisition of knowledge on how to plan and organize an event of such magnitude, especially extramural situations. However, none of this compared to the condition of providing health care to the population at a time of such vulnerability.

"The point of arrival" - Implementation

In view of the proposed objective, teamwork, organization and planning is a fundamental practice for success which, being a new dynamic and complex process, requires cohesive and coordinated rapid actions.

In this sense, the technical organization was fundamental for the execution of interstate transfers, even with planning in a period of less than 24 hours until the first flight took off with the first patients transferred to the first State.

During the period from January 15, 2021 to February 6, 2021, 559 patients were transferred to 18 states that received patients from the State of Amazonas, within this number 468 patients were discharged from hospital and 91 patients died, with the exception that during all transfers no patient during boarding, during the flight and upon disembarkation died.

All follow-up, monitoring, information to family members, return transfer of discharged patients and deaths was the responsibility of the Amazonas State Government, under the monitoring of the Amazonas State Health Secretariat.

5 FINAL CONSIDERATIONS

It was observed the extreme importance that the organization of actions of this nature is planned and executed with teamwork and in a multidisciplinary way. This being an indispensable factor for the achievement of idealized goals and objectives to be achieved, highlighting then that the execution of the transfers, managed to achieve the objective of corroborating the reduction of morbidity and mortality caused by the new coronavirus, in addition to reducing the waiting time of patients who remained hospitalized in beds of less complexity, in the hospitals of the municipalities and the capital, for beds of greater complexity as well as maintaining the functioning of the health services workforce.

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