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Strategic Approach to the Care of the Sars-CoV-2 Pandemic in a Hospital in Colombia

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Abstract

Introduction: The emergency nature of a pandemic implies an accelerated growth of the installed capacity for the care of patients in hospitals. The department of Antioquia in Colombia does not have enough hospital infrastructure to meet the excessive demand that could be generated. The Manuel Uribe Angel de Envigado Hospital (HMUA) makes a strategic planning to achieve the medical attention that will be required during the Sars-CoV2 pandemic.

Methods: Systematization of the experience of the MUA Hospital in the preparation of the Sars-cov2 pandemic, this is carried out in 4 phases between the months of February to November 2020.

Results: It is achieved by the time of the arrival of the Pandemic in Colombia, to have a growth of installed capacity in the emergency area of 40%, in the area of intensive care of 142% and adequacy of 68 hospital units to attend this type of patients. We maintained the quality standards and the risk of contagion was managed. Mortality outcomes in intensive care at the institution were lower than those reported regionally and globally.

Conclusion: A strategic response plan to Covid-19 and the adequate management of the risk of contagion, allowed to expand the installed capacity, to face the health emergency with quality standards. This article aims to be a guide for a future where the measures that were taken in the preparation of a third-level institution for the attention of the pandemic of the year 2020 are evidenced.

Keywords: Public Health; Pandemi; COVID-1; SARS-CoV2; Preparation

Introduction

The objective of this study is to systematize the experience in preparedness for the pandemic by the new coronavirus Sars-CoV2.

By January 2020 the whole world was looking forward to the advent of a pandemic by the new coronavirus Sars-CoV2 that was rapidly spreading from its origin in the city of Wuhan (China) to the rest of the world. The Manuel Uribe Angel Hospital is a regional hospital of a public nature, which is part of the network of hospitals that serve the metropolitan area of the Aburrá Valley, made up of Medellín and 9 other municipalities with a population of 3,900,000 inhabitants. According to the model that was developed during the month of June 2020, government entities built a plan to expand from 332 to a total of 1000 beds the capacity of critical care in this region [1-2].

As of February 2020, the COVID response commission is formed in the hospital, the integrated approach requires the planning, organization and participation of all levels of services, as a coordinating body for the management and decision-making related to the management of the health emergency and suspected or confirmed COVID-19 patients.

This article includes the account of the management carried out at the Manuel Uribe Ángel Hospital in Envigado, Colombia; to face the Covid-19 pandemic, while providing the usual services of attention to users not affected by it.

Methods

For the systematization of the experience of preparation for the pandemic, the concept of systematization was taken as the one proposed by Jara, who defines it as "the critical interpretation of one or more experiences, which, from its ordering and reconstruction, discovers or makes explicit the logic of the process lived, the factors that have intervened in said process, how they have related to each other, and why they have done so" [3-5].

This article makes a systematization of experiences about the measures taken by a local hospital in the department of Antioquia to face the health emergency of 2020. A collection of the measures implemented at the Manuel Uribe Ángel Hospital from February 2020 to the present was carried out and the measures taken by the hospital were divided into phases format.

The measures taken by all the different departments of the hospital for the realization of this article were reviewed, with the initial recommendations of the WHO, PAHO and the Ministry of Health and Social Protection of Colombia [1-4, 7-8].

Stages of systematization:

- Form the team responsible for systematizing the experience

- Pose the guiding question of systematization: What learnings and experiences were generated from the preparation for the pandemic
- Reconstruction of the experience
- Critical reflection: defining which group reflected on the experience

Results

The corresponding commission for the Covid-19 pandemic is formed, including the representation of all areas, representatives of the Committees on Infections, Emergencies and Disasters, Epidemiological Surveillance, Safety and Health at Work and the Institutional Committee on Management and Performance are merged.

In order to create projects to face the pandemic, two fundamental questions arise. How to expand the installed capacity, while maintaining the quality standards of the institution? What are the key actions?

The strategies proposed for the resolution of these questions are as follows:

- Develop contagion protection strategies for staff, patients and visitors
- Determine the areas and resources needed for expansion zones
- Determine the required human resource
- Determine training needs
- Develop communication strategies
- Develop strategies to promote mental health
- Requirements of the logistics area, endowment and supplies for the attention of these areas of expansion
- Exchange experiences with countries currently facing the Pandemic

To develop the strategic plan in the institution, it is decided to carry out four phases that would be implemented over time. These are exposed to reconstruct the experience:

Phase 1: Preparation: February to March 2020

The first strategy was the preparation of didactic materials for an educational campaign on the SARS-COV 2 pandemic with emphasis on the importance of personal protection measures to avoid contagion. WHO guidelines for the appropriate use of personal protective items (PPE) and strategies for protection during risky activities are adopted. Videos are produced and disseminated and intensive workshops are held. This material allows for faster and more massive disclosure. It is shared with government agencies and videos and other audio-visual aids are used as support (Table 1).

Table1: Videos for staff training in covid 19.

Donning and Removing PPE	https://youtu.be/cbOkungMPm8
Sampling	https://youtu.be/phe11FfYck4
Intubation of a patient with Covid -19	https://youtu.be/ko4kfQ7-k8w
PPE removal	https://youtu.be/6Oz4-qcYwLs
Corpse packing	https://youtu.be/TR_YTAXqjO4

The use of mouth covers is mandatory in the facilities. The movement of people in the institution is restricted, visits and companions to patients are suspended, teleworking is promoted, even in the consultation area. Additionally, handwashing campaigns and routine cleaning of jobs are encouraged

In the common areas, the number of tables and chairs is reduced to promote social distancing, restricted areas are marked for the permanence of fewer people, such as elevators, waiting rooms, cafes, etc. Rest areas are expanded and staff feeding schedules are established in these areas.

The Hospital contracts transport service with pre-designed routes and protocols of use, which reduces the use of mass means of transport by staff, reducing the risk of contagion.

A hospital cleaning process is implemented throughout the Hospital, with a dual product for cleaning and disinfection in a single step, with reusable toilet elements, but with a single use in each room and these are subjected to a disinfection process.

Preparation begins for the increase in installed capacity in emergency areas, hospitalization and critical care.

Emergency area

A new area called the transition area is created that will be the site of first contact in the Hospital with patients with respiratory symptoms or suggestive of covid-19, for sampling and triage. An area close to the parking area, previously dedicated to physiotherapy, is adapted. There are adaptations made with double lock-type entrance door, bathroom for staff and independent patients, provision with oxygen sources and improvements in the natural ventilation of the area. A cabin-type area is adapted for sampling, reducing contact between staff and the patient during the procedure. With this strategy, the capacity of emergency care was expanded by 12 cubicles, and from this area they are transferred directly to Hospitalization if required.

This first phase and strategy allowed continuing the urgent care of patients with pathologies not related to Covid-19 in the usual emergency areas.

Intensive Care Area

At the beginning of the Pandemic, this area had 14 Adult Intensive Care Unit beds and 10 Adult Intermediate Care Unit beds. An increase of 20 critical care beds was made, for a total of 34. For phase 1, the special care unit is converted into 10 intensive care beds, for this mechanical ventilators were purchased and modifications are made to the air conditioning systems, so that they remain with negative pressure. This area was primarily dedicated to the care of patients with Covid-19 or under study. A training plan was carried out for new healthcare personnel, with the clinical practice guidelines in Covid-19 adopted by the assistance team, sedation guidelines adapted to the pandemic due to possible exhaustion of supplies, equipment

management, pronation strategies and supination of patients, use of personal protection elements among others. For the elaboration of these guidelines, the experience was exchanged with the NYU Langone Hospital in New York and with Hospitals of the Quirón Salud group in Spain.

A device was designed to cover the patient's head during intubation and stay in ventilation, which partially isolates the contamination that can be generated by leaks or secretions and allows the airway to be manipulated without direct exposure to the staff. This was developed by the engineering area, for all critical care beds (Image 1).

Image1: Head cover during intubation and stay with ventilator.

The hospital's intensive care unit continues to perform care with its 14 beds, including non-Covid-19 patients and epidemiologically recovered Covid-19 patients. Patients who require special care without infection by the Covid-19 virus are assigned to this area and are transferred and managed in the coronary unit that has 9 beds.

To reduce the impact on the mental health of patients and family members by restricting the accompaniment of patients in intensive care units, we developed an informative material through a video that explains to families what the facilities are like, and the procedures that the patient may require during. A new process of information to families is also implemented, coordinated by treating doctors in conjunction with the area of psychology, to deliver a telephone or video call report of the current situation of the patient and with emotional support to the family. This strategy was excellently accepted and freed up time for the medical group for patient care.

General hospitalization

It has 159 adult inpatile beds. It was planned to dedicate 62 beds to the care of the patient with Covid-19, in several phases. In phase 1, a floor is evacuated and adjustments are made by making a lock with a double entrance door that allowed to isolate the nursing work areas of the patient care area and prevent the free movement of people through the area. Vital signs monitors and video cameras were installed in each room to facilitate supervision and communication with patients and thus decrease the moments of contact between staff and patients.

Additionally, in this area, an operating room, recovery room, and newborn care were adapted for the care of childbirth or cesarean section of the obstetric patient with diagnosis or under study for Covid-19.

Food service:

The allowances will be delivered by the food assistant to the auxiliary nursing staff, who will finally be the people in charge of delivering the food to the patient. If there is food residues from patients, they must be inactivated and then disposed of as hospital waste. This service adapts the process to make the delivery of the 6 diets (portions of the day), in 3 moments, thus halving the moments of exposure of the staff.

Pharmaceutical service and logistics area

Preparation of projections and inventory monitoring, in order to guarantee the supply chain. They adapt areas for the storage and distribution of medicines and essential supplies for the management of patients with Covid-19. The auditorium was used to create a new cellar area.

As a preventive measure in the face of the global shortage of personal protection elements, a supplier is hired to make reusable personal protection elements, to have them as a reserve in case of exhaustion.

Engineering area

In this area, emphasis was placed on the reception, adaptation and training in the handling of new equipment. Adaptation of new areas, to ensure optimal ventilation and negative pressure in critical areas.

General measures for the management of waste generated by the care of patients due to the covid-19 virus

All personnel involved in internal waste management must know and comply with biosecurity standards and have the training to develop their activities in the hospital environment.

The supply and permanent use of Personal Protective Equipment (PPE) and continuous training must be ensured. Adapt and implement the sanitary route to ensure the lowest risk of contamination in the internal transfer of waste, have internal waste collection vehicles for exclusive use, complying with disinfection processes.

Phase 2: Addressing the pandemic and expanding capacity

Emergency:

It was added to the care of patient with Covid-19 or suspicion, an area dedicated to private medicine patient with 9 beds in independent cubicles and air systems with Hepa filters. For the care of the critical patient in the emergency room, 2 of the resuscitation cubicles that allow isolation of the patient were used. The rest of the service continues to attend urgent patients

not related to Covid-19, but with the same biosecurity measures.

By this time there are already 21 beds for Covid patient care in the emergency room.

Hospitalization

The model described in phase 1 is reproduced, for another 2 floors, achieving 62 beds for the attention of the pandemic.

Intensive care

Care was expanded to another 10 beds, with medical ventilation and monitoring equipment. A hospitalization area is used, which has infrastructure for intensive care. New care personnel were trained. By this time there are already 20 beds for covid care. The standard of critical patient care was modified, given the shortage of trained personnel in the environment (Table 2). Epidemiologically recovered patients with more than 21 days of hospitalization are transferred to the NON-COVID ICU to continue care.

Table2: Staffing standard for the ICU of Covid 19 patient.

	Usual adult ICU standard	Standard Uci in Pandemic
Trained general practitioner	zero	1 for every 10 patients 24 hours
Intensive Care Physician	1 for every 7 patients 24 hours	1 for every 10 patients in the morning, 1 for every 20 patients in the afternoons and evenings
Professional nurse	1 for every 7 patients 24 hours	1 for every 6.6 patients 12 hours a day and 1 for every 10 patients at night.
Nursing assistant	1 for every 2 patients 24 hours	1 for every 2 patients 24 hours
Respiratory therapist	1 for every 14 patients 24 hours	1 for every 10 patients day and 1 for every 20 patients night
Physiotherapist	1 for every 14 patients 12 hours a day	1 for every 20 patients 12 hours a day
Nutritionist	1 for every 14 patients 12 hours	1 for every 20 patients day

Phase 3: Projected during the months of October and November 2020.

This phase will be carried out, only in case of exceeding the installed capacity of intensive care units in the city. It is proposed to attend 2 patients in each operating room, for a total of 8 more patients. Monitoring and mechanical ventilation donated by state agencies are obtained. Training is done to the group of anesthesiologists and nurses for the management of Covid-19 patients. To date of publication, patient care at this stage has not been activated. If urgent surgeries are activated, they are transferred to the area of cardiovascular and hemodynamic surgery.

Phase 4: Established in case of exceeding the installed capacity of the region.

If the installed capacity of emergency care and hospitalization in the city and Valle de aburrá is exceeded, this phase will be activated, with hospital care for oxygen therapy and medical management, in a first-class hospital, adjacent to the main hospital. Old hospitalization areas were updated, gas and ventilation networks were modernized, basic beds were equipped and video monitoring systems were installed. To date, its use has not been activated.

Reflections:

What was the biggest difficulty in preparing for the pandemic?

Adherence to protocols by staff, due to the lack of confidence in personal protection elements since they had a bombardment of information through the media and networks with different strategy and innovations. This confidence was regained with the continuous training programs.

The exhaustion of supplies for deep and conscious sedation forced to rethink established protocols and to use drugs of very long half-lives, which increased the days of stay of patients, the incidence of delirium and agitation and dependence on ventilation, with the consequences of this that is physical conditioning and higher incidence of infections.

The fatigue and anguish of the staff, which leads them to increase the number of disabilities, which makes it difficult to maintain the standard of staff -patient. This topic has been addressed by several authors, in one of the articles strategies are suggested to face the emotional burden linked to the Covid-19 pandemic among health personnel [9].

One of the great problems occurs in terms of the mental health not only of the general population but also of the personnel in the area of health who are under the pressure of excessive work, with critical patients and the risk of contagion and social discrimination. The hospital creates a psychological consultation to give support, the staff is periodically evaluated and mindfulness training is done.

Significant learning:

Multiple learnings were obtained from all the preparation, among them; Teamwork, coordinated with government entities, with adequate anticipation and knowing how to adapt to the demands of the pandemic, allowed to face the pandemic with adequate resources and care protocols was identified as a fundamental pillar. Have advance solutions to possible setbacks and complications of both the patient and the care staff.

Conclusion

Rapid decision-making and structuring a plan have been of great importance in managing the coronavirus pandemic. In this article we can show how all areas of the hospital adapted to the new and demanding situation that the whole world is experiencing. This timely preparation has allowed the Hospital to attend more than 1000 patients with a diagnosis of Covid 19,

and although the standard of personnel for care was modified, it has been possible to have quality care, this is possibly achieved by being a single pathology, which allows standardizing care processes, making training more focused and reinforcing the groups of personnel that have the greatest impact on care. Until October 30 The HMUA Hospital had a mortality of 17% due to Covid-19. It has presented a low incidence of contagion among personnel most exposed as respiratory therapy and intensivist doctors. This publication aims to tell the sequence of activities planned and developed in the attention of the pandemic of the year 2020, so that it serves as a reference in the preparation of hospitals for future pandemics or health emergencies.

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