Management of COVID-19 during the second wave at a tertiary care public hospital in Eastern India: An experience from the administrative control room

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ABSTRACT

Context: Though many arrangements had been made during the first wave, multiple complaints were reported regarding the arrangements made for COVID patients. The control room was set up as a 24 × 7 administrative coordination center to attend to issues after the initial setup of COVID units. **Aim:** To identify the major problems reported to the control room during the second wave of COVID-19 and find the related cause for the same. **Methods and Materials:** Issues reported to the control room were recorded from April to June (2021). The control room residents were asked to allocate each problem into six categories. Next, the residents allotted a frequency score to each of the problems depending on how regularly it was reported. Secondary data from various reports were also considered. **Statistical Analysis Used:** Data were analyzed using MS Excel software. **Results:** Various administrative issues were identified to be due to issues in communication and coordination (23%), policy and procedures (22%), human resource and training (16%), administration and implementation (15%), infrastructure (14%), and HMIS and IT (10%). **Conclusion:** Most frequent problems reported to the control room were related to infrastructure, policy implementation, and manpower training. After the initial implementation of new processes, there was a requirement for regular follow-up and coordination. This model of setting up an administrative control room and evidence-based approach will serve as a template for public hospitals to ensure coordination of hospital operations.

Keywords: Control room, COVID-19, hospital administration, hospital management, pandemic preparedness, second wave

Introduction

The novel coronavirus pandemic has spawned a healthcare crisis in the country that has further compounded underlying problems of the healthcare system in India. This kind of pandemic creates a sustained demand for healthcare infrastructure, support staff, and healthcare personnel that is often limited to developing countries.[1] In India, health is a state subject though it is on the concurrent list. The healthcare system consists of a combination of private sector and public sector hospitals with the public system providing up to secondary level healthcare, whereas tertiary level services are provided mostly by private hospitals that are concentrated in big cities. Public hospitals providing tertiary and quaternary level healthcare are limited.[2] Under this backdrop and with the crisis overcast by the pandemic, the hospital under consideration assumed tremendous importance as it is an institute of national importance set up by the central government in the state to bridge the gap in providing tertiary and quaternary level care to the public. This medical institute rose to the occasion and opened nearly 360 beds for

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coronavirus disease (COVID-19) patients including 70 intensive care unit (ICU) beds with ventilators. During the first wave of COVID-19, thousands of positive patients were treated in this institute, and during the second wave also, the institute is one of the prominent hospitals providing COVID care. The hospital has also been consistently attending to a huge load of non-COVID patients since the beginning of the pandemic.

To coordinate the various functions of the hospital and ensure seamless patient care, especially during the pandemic, there is a round-the-clock control room under the Department of Hospital Administration. This control room is manned by doctors trained in hospital administration and functions as the nerve center for complete hospital operations. Though conventionally, administrative issues in public sector hospitals are attended to by a Medical Superintendent who is primarily from a clinical background, it is the trained hospital administrators who consistently support this office and are critical for managing the operations of any modern-day medical institute.[3] Though the current study was performed at a tertiary care hospital, the main essence of this topic is to create awareness regarding hospital administration among all medical fraternity from tertiary care to primary care, and super specialists to general family physicians in their day-to-day activities and practice. The control room identifies the most crucial issues and tries to solve or mitigate them. The above concept is an example of an evidence-based approach very truly applicable to any hospital ranging from tertiary hospitals to primary care centers and even individual family physician clinics. This study attempted to find the challenges faced by the Hospital Administration Control Room in this apex tertiary care medical institute in relation to hospital operations during the recent second wave of COVID-19 and provide recommendations for possible remedial measures.

Materials and Methods

The control room is manned round the clock by resident doctors from the Department of Hospital Administration who are deployed in three shifts. The control room is the hub of administrative activities in the hospital. All issues reported to the control room were recorded in a register. They ensure the smooth functioning of the policies and guidelines of the hospital. In addition to resident hospital administrators, two M.D. residents from the Department of Community Medicine and Family Medicine were deployed for observership. Various problems reported to the control room from April to June (2021) were recorded. These issues were listed and the hospital administration residents were asked to allocate each problem to one of the categories mentioned below. These issues were divided into six categories: a) infrastructure and facility, b) policy and procedure, c) communication and coordination, d) administration and implementation, e) hospital management information system (HMIS) and information technology (IT), and f) human resource and training. Each problem could be allotted to more than one category if required. Depending upon how frequently residents faced these problems while on duty, they were asked to

allot a frequency score ranging from 1 (rarely) to 5 (frequently) to each of the problems listed. Based on the response from the residents, each problem was categorized and a frequency score was allotted [Table 1]. In addition to this, the hospital statistics relating to COVID-19 were collected from the various reports that were sent to the control room for information. Data were extracted from these reports to show the date wise demand for overall beds, ICU support, oxygen support, ventilators, manpower, etc., and how the hospital administration attended to this demand. Data were analyzed using Microsoft (MS) Excel software. IEC approval taken the Ref Number : T/IM-NF/Hos. Admin/20/42 date of IEC approval 16 June 2020.

Observations and Results

Twelve ICU beds and 16 ward beds were allocated for COVID-19 management after settling issues related to the first wave. However, with the onset of the second wave in mid-April 2021, the demand for beds for admitting patients increased suddenly within a week. The hospital had to reallocate resources for COVID-19 management and increase the number of beds in ICUs and wards for COVID-19 patients. The hospital had also made a special procurement of additional ventilators to meet this huge requirement for ICU beds. Additional manpower had to be diverted toward exclusive COVID-19 duty. The services for non-COVID patients had to be pruned to cater to this additional demand. The availability of dedicated COVID-19 beds had to be increased from 28 to about 300 beds in mid-May 2021 [Figure 1]. Similarly, the demand for ICU beds rose and the capacity was increased from 12 to 70 ICU beds by June, the first week [Figure 2]. It can be noted from the data that the demand
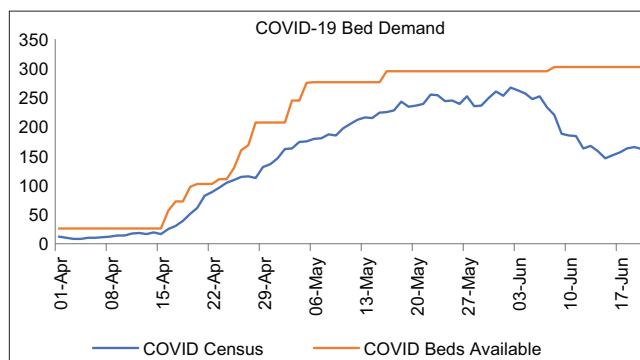

Figure 1: Stepwise increase in dedicated COVID-19 general ward beds

Table 1: Frequency score of most common issues	
Problem faced	**Frequency score**
Demand for COVID-19 beds from the public	5
Delay in the transport of COVID-19 patients	4.8
Regular treatment updates to relatives of COVID-19 patients	4.8
Delay in shifting of COVID-19-positive dead bodies	4.6
Lack of basic communication information in COVID-19 wards and ICU	4.3
Long turnaround time in RT-PCR reporting	4
Malfunctioning of HMIS	3.8

for ICU and ventilator beds had been rising consistently even when the second wave begins to flatten [Figure 3]. However, the demand for oxygen-equipped beds increased up to June and thereafter it began to decline [Figure 4].

A total of 248 problems were listed that were frequently reported to the control room. On analysis of various problems, the respondents felt that these problems had arisen due to underlying issues in the six broad categories mentioned earlier. The problems were allocated to the six categories. The respondents weighed the underlying reasons for various problems [Figure 5].

It was observed that *infrastructure and facility* (Cat-1) issues were attributable to 14% of the problems being reported to the control room during the second wave of this pandemic between April and June 2021. Similarly, issues in clarity of *policy and procedure* (Cat-2) are responsible for 22% of reported problems. It was observed that poor *communication and coordination* (Cat-3) among the various stakeholders attributed to the majority (23%) of the problems reported. Underlying issues due to limitations in *administration and implementation* (Cat-4) attributed to 15% of problems. Similarly, *HMIS and IT* issues (Cat-5) were the reasons for 10% of the problems,

whereas 16% of the problems were attributed to limitations in *human resources and training* (Cat-6).

Depending on the frequency score allotted by the respondents, the most frequent issues being dealt with by the control room are as below:

Discussion and Recommendations

During a crisis scenario, various units of a hospital need to function in a synchronized manner to deliver the best care output possible. Accordingly, good interpersonal communication and good intra-departmental coordination as well as collaboration are imperative.[4-6] The hospital administration control room serves this purpose and it is functional 24 has the main hub center to coordinate administrative issues. Joynt *et al.*[7] in their chapter about the management of influenza pandemic or mass casualty events (MCE) have also recommended the establishment of a centralized control unit to enable coordination and communication between various stakeholders. The hospital authority also recommends the establishment of standard operating procedures regarding resource allocation, manpower re-allotment, equipment, and physical space to enable smooth
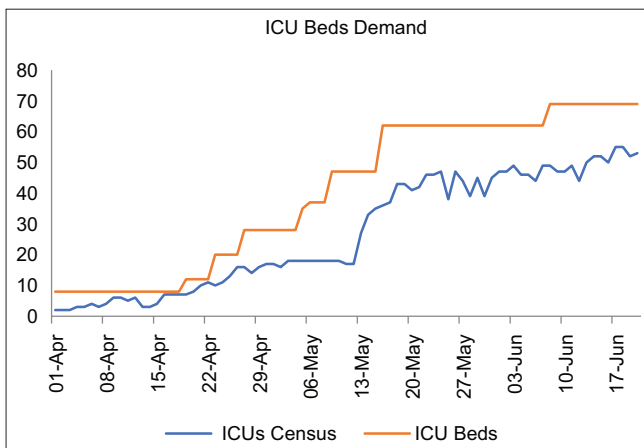

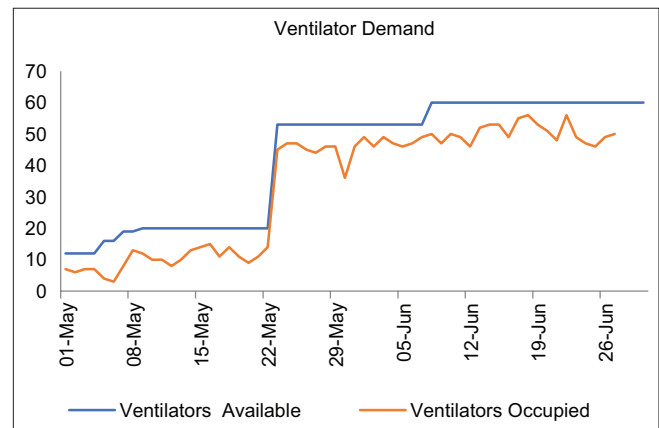**Figure 2:** Stepwise increase in ICU beds

Figure 4: Stepwise increase in oxygen beds for COVID-19 patients against demand

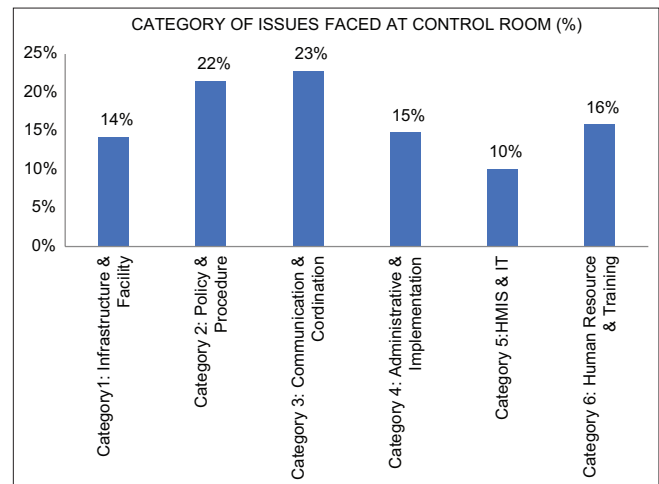**Figure 3:** Increase in ventilator demand for COVID-19 patients

Figure 5: Percentage wise attribution of issues to different categories

operations during an emergency situation. They also go on to state that creating policies and procedures would not be enough and there needs to be on-ground training and clarity in the assignment of responsibilities. Similar observations were observed in this study. It is noted that most of the problems reported to the control room of the hospital under study were attributed to communications and coordination (33%), policy and procedure (25%), and human resource and training (21%). Thus, it may be inferred that more efforts are needed to be incorporated for ensuring better coordination and communication among stakeholders. Secondly, better implementation of policies through widespread training is an absolute requirement. This is also supported by Weaver *et al.*[8] who state that there is moderate- to high-quality evidence to suggest that team training can positively impact the healthcare team process and patient outcomes. The observations also reveal that 14% of the problems were attributable to HMIS and IT, and frequent malfunctioning of the HMIS was one of the most common problems reported. Alotaibi *et al.*[9] stated that health information systems and robust IT infrastructure can help in improving healthcare quality and safety and therefore the healthcare organization must be selective in the technologies they adapt and invest in. The importance of IT in healthcare is further supported by the observation of Yamin *et al.*[10] who stated that healthcare is now heavily dependent on software applications and access to real-time data and utilities is necessary for the process of delivering patient care. The hospital authority also agreed that without proper IT applications, healthcare will be limited, compromised, and prone to major problems. Proper management of human resources is critical to provide high-quality healthcare and this becomes even more important at the time of a crisis.[11] This study observed that there was inadequate training for doctors in using HMIS and other documentation. This is further aggravated by the fact that there was the rotation of doctors to COVID units every 2 weeks and the fresh batch was not confident in this desk work. Interactive training methods and mock drills should be adopted to train healthcare manpower in this type of scenario.[12]

Corrective Action by Hospital for Common Problems Reported to the Control Room

Increase in COVID-19 patients and continuous demand for beds

An entire block comprising six floors was identified for COVID patients. Each floor had a ward comprising 30 beds. Patients in these wards were discharged or relocated to other areas of the hospital.[13] The OPDs were closed to limit the admission of non-COVID patients, though emergency admission continued. These beds were converted to COVID wards one after another. Additional ICU beds and ventilators were also added in a phased manner by reallocation of resources. Hospital administration reviewed the bed capacity daily and expanded the facility accordingly.

Delay in transportation of COVID-19 patients

Three special teams in full PPEs, comprising a nursing officer and three hospital attendants were made available around the clock.

A senior nursing officer manned the call center and deployed the teams wherever transport of COVID patients was required. This team was provided with their own set of transport equipment and a sanitary attendant followed the team and disinfected the area after the patient transfer. Dedicated routes were planned for transport purposes. A security personnel usually led the team in a non-COVID area to clear the bystanders.[14]

Periodic status update to attendants of patients

The families of critically ill COVID-19 patients underwent extreme stress because they were cut off from their loved ones and this was aggravated by the fact that it was difficult to get to know the condition of their patient.[15] The senior consultants briefed the attendants after the rounds; however, the attendants expected updates more frequently. For facilitating this, multiple intercom telephones were installed in a dedicated waiting area outside the COVID areas. The attendants could speak to the doctors inside the COVID wards/ICU during a designated time slot and receive updates about their patients. In addition to the use of the mobile app and WhatsApp calls, the brief status of the patient was displayed on the hospital website on a daily basis. Attendants could access this information by logging in through their unique identity numbers. The nursing personnel also called the attendants daily and updated the condition of the patient over the telephone once a day.

Handling of COVID-19 dead bodies

A separate team of mortuary attendants was created to transport COVID-positive dead bodies from the patient care area. In addition to this, virtual training was given to resident doctors in completing formalities. A poster depicting step by step process to complete the formalities was created and put up at every nursing desk to act as a visual guide to residents. The standard operating procedure (SOP) for handling and transfer of dead bodies was created by the COVID-19 task force and circulated among all.

Improvement of communication and coordination

To segregate the COVID and non-COVID areas, new admission and billing counters had to be set up. Due to this, reallocation of resources some locations lacked proper intercom connectivity; new intercom telephones were installed where possible and additional mobile phones were provided to the staff. A directory of important telephone/intercom numbers related to COVID was made and circulated virtually among all staff deployed in COVID areas. Different human resource (HR) issues were dealt with by the Human Resources Department (HRD) Cell by conducting necessary training sessions.

Long turnaround time for Reverse Transcription-Polymerase Chain Reaction (RT-PCR) testing

To attend to emergency cases, a separate Gene-Xpert equipment was made available. All cases requiring urgent COVID status for immediate medical intervention were catered to by this machine.

Frequent HMIS malfunction

This problem was partly due to user issues and partly due to software problems. A dedicated helpline for IT was started and the staff was available round the clock in the hospital to resolve any IT problems either in person or by remote access.

This evidence-based approach was practiced in this study to find the most critical issues. Some issues could be corrected some could not, but we made a note of them and tried to find the most suitable solution. Vigorous research is the only means of providing scientific evidence.[16] This concept could be utilized by any type of organization, especially healthcare organizations, which are service-oriented industries to find evidence-based most crucial problems. It is also applicable not only to tertiary care hospitals but also to primary care or even individualized care setup. Even family physicians too will appreciate the need for hospital administration as a specialty essential for the proper functioning of any services, be it individual care or organizational care setup. The said approach is not only suitable for the management of the COVID-19 pandemic but could be thought of for any day-to-day simple issues as well as for any future problems. The control room will act as the medium for both doctors and patients to give holistic care in the future.

Conclusion

This study has brought out the various administrative issues reported to the administrative control room of the hospital under study and identified issues in communication and coordination (23%), policy and procedures (22%), human resource and training (16%), administration and implementation (15%), infrastructure (14%), and HMIS and IT (10%). However, the most frequent problems reported to the control room are due to infrastructure, policy implementation, and manpower training. Corrective actions have been taken to mitigate these issues, but further research is required in this field to know their sustainability and effectiveness, as there is always scope for the rectification of an error and further improvement.

Key message

All large more than 500 bedded public hospitals must have an administrative control room to handle hospital operation related issues specially during any crisis situation.

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Conflicts of interest

There are no conflicts of interest.

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