International Journal of Community Medicine and Public Health
Chugh LT et al. Int J Community Med Public Health. 2024 Feb;11(2):949-954
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20240290

0Short Communication

Establishing and streamlining the communication and coordination through emergency control room in a tertiary care hospital by upgrading the available resources in the pandemic of COVID-19

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Received: 24 November 2023
Revised: 15 January 2024
Accepted: 16 January 2024

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ABSTRACT

As the COVID-19 pandemic started, a tertiary care hospital of central Gujarat faced problems in developing communication and coordination between the doctors as there was a lack of emergency control room (ECR) set up. This article documents the process of establishing ECR using locally available resources. The department of Community Medicine (CM) was made in-charge of ECR. All information technology (IT) equipment were supplied by hospital administration as per the demand. Various challenges experienced by the staff of CM were discussed with the authorities and specialists from respective departments and quick intermediate solutions were adopted. In July-2020, ECR was established with IT support which accelerated the sharing of laboratory findings and patient details to the treating physician. Dedicated smart phones were assigned to each floor providing real time patient updates through Whatsapp groups and video calling feature was used to establish effective communication between patients and relatives. The hospital also collaborated with a local NGO that provided manpower to address queries at ECR. This study concludes that focusing on utilising local resources and manpower and training the available personnel to handle the problems in the best possible ways made the system work properly at the time of crisis.

Keywords: Emergency control room, Communication, Coordination, Resource poor setting, COVID-19

INTRODUCTION

A resource-poor setting is defined as an environment where the role of health care institutions to provide care for life-threatening diseases is limited by the availability of resources, including oxygen and trained staff.[1] A well-functioning health care system is fundamental to the achievement of universal coverage for health care but in resource-poor settings, primary care, basic emergency care, and public health systems remain underdeveloped leading to a large population living in lower middle income countries (LMICs) prone to suffering.[1]

India is the second most populated country in the world. The approximate population of Gujarat state alone is 71 million which is equal to that of the United Kingdom.[2,3] During a humanitarian crisis like the pandemic of COVID-19, shortcomings, and failures of health care systems in LMICs like India are bound to be exposed. In Gujarat, Sir Sayaji Rao General Hospital (S.S.G.H) is a tertiary care teaching hospital attached to Medical College Baroda. Along with three other government aided hospitals, S.S.G.H. was converted to a designated COVID-19 hospital in April 2020 with a total of 800 beds of which 275 were ICU beds. It is the largest multi-speciality referral hospital in Central Gujarat which roughly caters to 14.5 million population with teams of specialised doctors, residents, and nursing staff. Being a tertiary care hospital, it is adequately supplied with standard drugs and medical equipment.[4] But as the pandemic started, there was a lack

of coordination and communication between doctors who were suddenly dealing with a large number of patients and the authorities handling the resources available to treat them due to lack of appropriate information technological (IT) support. As the beds started filling up at a faster pace during May 2020, the need of the hour became to create and strengthen an emergency control room (ECR) that would be adept at performing the following functions: (a) to maintain a master list of all the patients being admitted in the hospital with their basic details, floors allotted and treatment being given; (b) to keep the doctors informed about the availability of beds at any point in time, in the out-patient department; (c) to keep the relatives of the patients informed about the current status, death, and discharge, solve their queries, counsel them and establish effective communication between the patients and the relatives as they were not allowed to meet the infected patients; and (d) to establish a patient referral system in the hospital setting and to coordinate the COVID-19 dead body disposal. All of this had to be done quickly but most importantly backed with strong IT support.

The objective of this process documentation is to explain setting up and streamlining of communication and coordination using locally available resources in the best possible ways and finding innovative solutions to troubleshoot problems in a tertiary care government hospital in LMICs. At the time of humanitarian crises such as the pandemic of COVID-19, the main objective of our hospital was to quickly set up an arrangement which could effectively serve as a bridge between the administration and general public.

This case study is based on the experiences of ECR in Sir Sayaji Rao General Hospital Vadodara.

METHODS

The department of community medicine was made in-charge of ECR. Registers to document various issues faced by the admitted patients and their relatives, staff working in the COVID-19 hospital were maintained by the residents of community medicine working in the of ECR. These complaints were organized in themes and sub-themes and presented by the nodal officer of emergency control room in the meetings. The meetings were organised twice a week on regular basis. The issues were presented to the then officer on special duty (OSD) for COVID-19, Vadodara, the medical superintendent, the dean, specialists from various departments such as medicine, pediatrics, anesthesiology, microbiology and implementation of locally available resources in the best possible ways was done with the consensus. The focus was on adoption of quick intermediate solutions. Implementation of the discussed solutions were earnestly reviewed before the start of next meeting in presence of the dean, superintendent and HODs of various departments and issues that arose after implementation were also discussed in such meetings and were solved promptly. Logistics such as PCs and phones with data plan were requested and IT equipment including 3 computers and 10 smart-phones with active internet connection were supplied by hospital administration as per the demand. The ECR staff was working in 6 hourly shifts, round the clock to provide a seamless service.

RESULTS

A lot of challenges were faced but with the active involvement of faculties of the department of community medicine (PSM) in establishing the emergency control room innovative solutions were applied to reap satisfactory results which are described in the following table. All IT equipment, which include 3 computers and 10 smart phone sets with working data plan, were supplied by state government. All of them were managed by pulling the resources arranged by administration of the institute (Table 1).

Table 1: Problems identified at the ECR along with the solutions provided.

S. no.	Theme	Problems identified	Solutions applied
1	Linking of laboratory findings with patient details.	Laboratory findings and patient details were generated at different locations and due to lack of digital platform all the important information was not timely available with the treating physician.	PSM department accepted this challenge and created a master excel sheet containing all patient details, therefore converting available data into soft copy in the control room. Data of various laboratory tests were fetched from ICMR laboratory (COVID status), Microbiology and Biochemistry lab (basic blood investigations and prognostic indicators) and compiled into the master sheet at control room. The laboratory findings that were generated were communicated to the patient's family as well from the ECR. In this way an intermediate facility was created at control room which facilitated the data sharing for better management of patients.
2	Co-ordination and updating	There was no established communication network in the hospital due to which co-ordination between different floors and updating	To address this issue, dedicated smart phones were assigned to each floor and service area. Accordingly, floor wise 'WhatsApp' groups were created and any information uploaded on them was tracked down to phone

Continued.

S. no.	Theme	Problems identified	Solutions applied
	patient details	the status of patients shifting from one service area to another service area became difficult.	assigned to the Control Room. Medical interns posted on the floors were given the responsibility to update the new admissions, discharge, transfers (internal and external), DAMA (Discharge Against Medical Advice) and deaths. These updates were noted in the master excel sheet maintained at control room. Mode of ventilation was also updated real time. Thus, coordination and communication were quickly established ensuring real time updates.
3	Query solving	As ECR also served as help-desk, a large number of queries came every day. Due to crises of manpower, it was difficult to address each query individually.Enquiries came round the clock through audio calls as well as through people visiting the help desk. At first, the queries were noted down and later it was categorised for better response. These categories were about bed availability, health of patient, mode of ventilation, discharge plan etc. Sometimes queries of relatives of the patients were such that the treating doctor on the floor could only address and answer them. The patients also had food and water related needs that arose due to long duration of stay. The relatives brought home cooked foods and nutritious juices which had to be hand delivered to the patients in their wards. Similarly, due to huge workload, there was a delay in addressing the diaper change/catheter removal requests for which the patients' relatives lined up at the help desk.	Control room collaborated with a local NGO, 'Deepak Foundation' which supported by providing manpower to give response at the help desk. Staff from Deepak Foundation with the help of resident on duty effectively responded to all the enquiries related to bed availability, patient's COVID status, mode of ventilation etc., that were asked in person or through audio calls. Each category of queries was allotted to specific staff member, due to which it was possible to address them individually. They also provided basic counselling to the patients as well as the relatives. For doubts related to treatment and simultaneous care of pre-existing comorbidities, staff in the control room would talk to the intern posted on the floor, who would directly ask Medicine faculty in-charge. It was agreed in one of the review meetings to put more nursing assistants in the wards specifically to attend to patients' food and water needs and to coordinate diaper changes with class 4 workers. Their duty list and phone numbers were shared with the control room, nursing coordinator and class 4 supervisor. ECR staff was required to communicate with them for any such complaints and at the relative's end we had to counsel the patients to keep them satisfied. Thus, all queries were addressed individually with satisfaction.
4	Effective Communication between the patients and the relatives	As city started witnessing rise in cases, the stigma and confusion about this new disease started producing fear and paranoia in the minds of relatives whose patients were admitted in S.S.G. Hospital. As per Hospital Infection Control Committee, no other persons were allowed to enter designated COVID building and so, relatives collectively ended up visiting control room to know the status of the patient.	To address this unique problem, control room started conducting videocalls. The timings were 11 am to 1 pm in the morning and 4 pm to 6 pm in the evening. A register of all the calls conducted was also maintained. The calls were made via phones allotted in the control room to those on the respective floors. One telephonic service provider was identified for internet connections in all the smart phones. 'WhatsApp' video calling feature or 'Jio to Jio' free video calling feature were used to conduct the calls successfully. This helped in establishing effective communication between patients and relatives.
5	Establishing communication and coordination between the hospital and dead body disposal	A lot of deaths occurred because of COVID-19 throughout the day despite dedicated efforts from the treating doctors. A system was required to handover the dead bodies to the patient's relatives while following the specific guidelines of COVID-19 infected dead body management that could keep up with	After an infected person was declared dead by the in-charge treating medicine faculty, the doctor informed the patient's relative via call. The information was also passed on to the ECR via call through the intern on duty. A faculty from the department of Community Medicine was made the Nodal officer for dead body disposal. A separate WhatsApp group for dead body disposal was created in which real time updates of death, placing the body in leak-proof plastic body bag, arrival of relative with handover of dead body to them was done. All these activities were

Continued.

S. no.	Theme	Problems identified	Solutions applied
	team and death audit team	the rate at which deaths occurred in our tertiary care hospital.	supervised by the Nodal officer. Class 4 workers were appointed to coordinate the above activities along with arranging hospital ambulance for cremation or burial. ECR informed the death audit committee about the COVID-19-related death so that audits may be completed promptly and without omission.

DISCUSSION

This article discusses the establishment of an ECR in a tertiary care hospital in central Gujarat, India, to improve communication and coordination among doctors, staff members, patients and their families during the COVID-19 pandemic. The department of community medicine was in charge of the ECR, which was established with the help of the hospital administration and local NGO. Dedicated smartphones with active internet connection were assigned to each floor, and video calling was used to communicate with patients and relatives. The hospital also trained its available personnel to handle the problems in the best possible ways.

Generation and maintenance of master excel sheet with real time updates strengthened record keeping system during the ever-changing time of the pandemic. Data visualisation, trend generation and data forecasting became possible with the maintenance of data of patients admitted in the hospital in master excel sheet. New admissions, discharge, transfers (internal and external), discharge against medical advice (DAMA) and deaths were updated real-time in the master excel sheet. It also helped in maintaining a record of vacant COVID beds demarcated as ICU beds with and without ventilator, non-ICU beds with oxygen supply and beds for mild symptomatic cases which was essential to communicate bed availability at the time patients were referred from other districts. Reports were generated from this data to understand the trend as and when required by higher authorities. Communication with the media was also done confidently because of true and updated data. The event of death was timely notified to the dead body disposal committee.

The challenge that was faced was with regards to overburden of updating the data as there were different software at district, state and national level which were not internally linked.

Open and transparent communication is essential for maintaining the well-being of patients, facilitating coordinated efforts among hospital departments, and promoting a unified and informed response to the unique challenges presented by a pandemic in a tertiary care setting. Effective communication ensures that accurate and timely information about the patients' conditions, treatment plans, and any changes in protocols are conveyed to both patients and their families, fostering trust and understanding. It enables seamless coordination among different hospital departments, allowing for a cohesive response to the challenges posed by the pandemic. Clear communication with hospital leadership, such as the superintendent and dean, facilitates efficient decision-making and resource allocation. Additionally, regular updates and information dissemination among staff members help maintain morale, ensure adherence to safety protocols, and enhance overall preparedness to address the evolving situation.

Establishing communication between patients and their families was crucial during the pandemic for several reasons. With stringent visitation restrictions in place, direct contact between patients and their loved ones was often limited, leading to increased anxiety and emotional distress. Effective communication channels, such as video calls and regular updates from healthcare providers through 24×7 audio calls, played a vital role in keeping families informed about the patients' conditions, treatment plans, and overall well-being. This not only provided emotional support to patients but also reassured families during a challenging time and improved mental health. Clear communication fostered trust, addressed misconceptions, and ensured a human-centred approach, connecting patients and families despite physical distance during the pandemic.

Providing a balanced diet, especially home-made food and changing diapers timely for patients admitted to a COVID hospital offered several benefits. A balanced diet supported the overall health and immune function of patients, aiding in the recovery process and helping them better cope with the illness.

Additionally, changing diapers in a timely manner is essential for hygiene, preventing skin irritation, and minimizing the risk of secondary infections. Both practices contribute to the overall well-being of patients, promoting comfort, faster recovery, and reducing complications during their stay in the hospital. Thus, special efforts taken to fast-track both processes were worth the efforts.

The model explained in detail above proved to be an essential process to establish communication and coordination within a tertiary care government hospital in low- and middle-income country (LMIC) by utilizing locally available resources effectively. This model can be adopted in any such setting by not just by Community Medicine specialists but by doctors from other specialities, staff nurses, staff of charitable trusts or NGOs with the involvement of class 4 workers. Pandita et al in their study conducted in tertiary care hospital in North East India

documents that the hospital management's proactive role, quick decision making, and prompt implementation of decisions were observed in every activity along with regular review meeting with the Medical Superintendent and Director proved to be extremely useful in undertaking pandemic response measures in the shortest possible time. In order to ensure proper coordination of various activities to manage the COVID-19 pandemic, official communications, expert guidelines of hospital preparedness, decisions made in core committee meetings, and official orders and circulars were ensured to be communicated to all stakeholders.[5]

Our setting also shares the same experience. Prompt problem solving and provision of required IT devices and manpower in addition to regular review meeting with Officer on special duty (OSD) for COVID-19, Superintendent, Dean and specialists from various departments such as medicine, paediatrics, anaesthesiology, microbiology proved to be crucial for rapid response.

Griffin et al in their article give a practical guide to dealing with hospital preparedness for COVID-19 experienced in New York Presbyterian hospital. They highlight that as ICU space rapidly expanded, a broad number of caregivers were involved in taking care of critically ill patients with COVID-19, frequent formal and informal communication amongst all groups has been critical.

For solving the above issue, distribution of informal guidelines outlining caring for critically ill patients with COVID-19, secure sharing of electronic file and regular e-mail updates provide clinicians with instant access to the most recent hospital information and guidelines. In their setting, each patient room had a dedicated smart phone with a charger so that staff personnel inside the room can contact additional workers outside the room without doffing their PPE.

To address the limitations in visitation of COVID-19 patient's family members, a few patient surrogates are designated to communicate with the treating doctors. In addition, each family member received a second supportive call from a member of the palliative care team. Every day, the palliative care team evaluated potential surrogates by discussing cases with each COVID-19 unit. The staff used video conferencing to allow loved ones to see and communicate with their dying family member in case visitation in PPE kit was not allowed in the event of approaching death.[6]

In our setting as well, control room was the intermediate facility which was created to facilitate quick and convenient data sharing to various caregivers through excel sheets and WhatsApp groups for better management of patients.

In our hospital also each floor and service area were assigned dedicated smart phones with creation of floor-specific 'WhatsApp' groups to establish real-time and smooth communication.

In our hospital, treatment-related questions from patients' family were handled by arranging calls with the in-charge medicine faculty member coordinated by control room staff and the staff in the ICU. Communication between the patients and the relatives was established through video calls conducted from Control Room twice a day where the patients could interact with their loved ones on a daily basis.

In our hospital, patient's relatives' queries related to treatment were addressed by coordinating calls with staff in the control room to the intern posted on the floor, who would directly ask medicine faculty in-charge.

In a study published by Carenzo et al addressing hospital surge capacity in a tertiary emergency referral centre in Italy highlights the use of tablets for awake patients to communicate with their relatives who were not allowed to enter the unit and who were themselves either self-isolated or admitted to hospital which is similar to our findings.[7]

Shrestha et al suggested in his study that visitors should be managed and communication with family members should be planned ahead of time. And that an impending event of disaster necessitated the development and testing of a coordinating mechanism between various departments, treating doctors and staff members.[8]

CONCLUSION

Focussing on utilising local resources and manpower that are available in the best possible ways, and training the required personnel to handle the problems upgrades the available resources and helps in dealing efficiently with any public health challenge.

Recommendations

In many hospitals in India, the task of managing and maintaining the location and outcome of admitted patients is done manually. In times of crises like the pandemic of COVID-19, the manual method becomes insufficient leading to systemic collapse. Thus, setting up an ECR backed with IT support to streamline communication and coordination in any health setting might help in a humanitarian crisis situation. It is also equally important to maintain and regularly supervise the IT support system.

With minimal cost, communication can be established for crisis situations by innovative ideas as described. These experiences and ideas can be used in similar resource-poor settings to manage humanitarian crises whenever needed.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Chugh LT, Chawada BL, Patel SV. Establishing and streamlining the communication and coordination through emergency control room in a tertiary care hospital by upgrading the available resources in the pandemic of COVID-19. Int J Community Med Public Health 2024;11:949-54.