

## Critical Preparedness, Readiness & Response Actions for COVID-19

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### ABSTRACT

India is facing the pandemic of coronavirus disease (COVID-19) just like the whole world. COVID-19 is a new disease that is distinct from other SARS, MERS, and influenza and is different with respect to community spread and severity. COVID-19 transmission from one person to another can be slowed or stopped and timely actions can save lives.

The pandemic is likely to progress and rigorous care needs to be taken to prevent the dilution of the standard of care. The High definition Units and Intensive care Units need to be strengthened with trained manpower and materials so that timely optimal health care is delivered. Division of responsibilities with accountability amongst the health care workers forms the backbone of any hospital. During this period, emergency management (medical and surgical) of non-COVID patients is continued without interruption and though elective procedures were initially restricted. People who are affected by COVID-19 deserve our support, compassion and kindness. In addition to protecting ourself we have to be supportive to others. Working together as one community can help to create solidarity in addressing COVID-19 together.

### Introduction :

India is facing the pandemic of corona virus disease (COVID-19) just like the whole world. Governments, policymakers, and healthcare institutions all over the world are apprehensive. The cases of COVID-19 are increasing day by day and a surge in cases is seen, as was expected after cessation of lockdown. COVID-19 is a new disease that is distinct from other SARS, MERS, and influenza. Although corona virus and influenza infections may present with similar symptoms, the virus responsible for COVID-19 is different with respect to community spread and severity.

Several countries have demonstrated that COVID-19 transmission from one person to another can be slowed or stopped and timely actions can save lives. The hospitals have to ensure the space, staff and supplies for managing the pandemic, keeping ready the emergency response systems; increasing capacity to trace, test and treat the patients; and to develop life-saving medical interventions.

Government Medical College, Nagpur, as one of the State Government Tertiary Care Hospital was identified and entrusted for care of the COVID patients. It entailed plans for strengthening the institute and human resources for the pandemic management. Some strategies were adopted for better preparedness to match and face the surge of this pandemic. We divided our policies under the following headings :

- Administration
- Organisation of hospital space
- Staff management
- Maintenance of Standard of Care and Specific COVID management
- Supplies
- Trade-of between usual care and pandemic care for non-COVID patients

### Administration

Various committees were constituted for policy making and handling of the pandemic patients in the institution. Multiple tasks were allotted to the committees including

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- Liaising with the Local, State, and National government authorities.
- Scientific Technical Committee for disseminating and updating the knowledge of clinical management of the pandemic situation as per WHO, ICMR and State Government - Medical Education and Drug Department guidelines.
- Training various strata of the Health Care Workers for delivering optimal services during the pandemic.
- Time table and manpower management committee for ICUs, High Definition Units, Emergency rooms and fever clinics. Duties were scheduled as per government guidelines involving various clinical, para-clinical and preclinical departments.
- Disseminating Guidelines and Standard Operating Protocols were prepared for triaging and establishing working patterns in the COVID hospital.
- Troubleshooting and exigency planning for taking quick remedial measures in the least possible time for unexpected situations.

### Organisation of Hospital Space

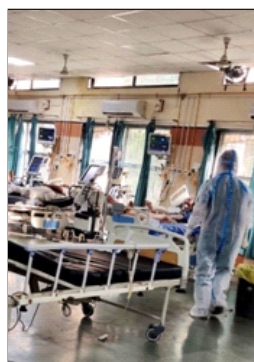
Due to the highly infectious nature of the disease, the patient care area was divided into two separate zones, the COVID Care Zone and the Non-COVID Care Zone. As with the onset of the lock down the incidence of Road Traffic Accidents had reduced, we immediately converted and dedicated the newly

constructed and fully equipped “Trauma Care Centre” into “COVID Hospital and Critical Care Centre” with separate entrance and exit facility for Health Care Workers and patients. Reserve ICU and HDU beds with central oxygen supply were created in one corner of the main building by vacating 6 wards and equipping the newly constructed ICU building. Separate blocks of ward 49 and Paying Ward were also retained for COVID patients. In total 600 beds were designated for the exigency.

This Covid Care Hospital included a “Presumptive Isolation ICU” admitting emergency suspect patients, ICU for critically ill COVID positive patients, High definition Units for COVID positive patients, and Isolation Wards for stable COVID positive patients. The COVID ICU complex was equipped with ventilators, ABG Machine and Dialysis Unit exclusively for COVID-19-positive critically ill patients. Trained Critical Care teams were assigned for ICU that are rotated as per the rotational policy. In addition to the patient care area, the COVID Care Hospital also includes investigation facilities including routine Biochemistry, Biomarker measurement, ECG, ABG and Radiology setup with portable “On bed” Xray provision, Ultrasound facility and Dedicated CT Scan Machine. The hospital is manned with adequate security services. The Wards, HDU and ICU have CCTV cameras in place and are remotely monitored from the central offices.



**Stand Alone COVID Hospital & Critical Care Centre  
GMC, NGP**



**Doctor in PPE at the ICU of COVID Hospital & Critical Care Centre  
GMC, NGP**



**Virtual Rounds of COVID Hospital & Critical Care Centre, GMC, NGP  
from the Dean's Chamber**

## Staff Management

Manpower remains a valuable commodity and needs to be valued and preserved.

Before being posted for COVID-19 duties. Orientation Programme is organised for the doctors including the resident staff, team leaders and overall in-charges introducing the pattern of working in the COVID hospital. The previous teams who have worked for COVID duties are invited for the orientation programme to guide the ongoing team, to give feed back of their experiences and to fill the lacunae if any. Anxieties are allayed and a session on “Art of living” is also carried out to boost the morale of doctors before going for the duties. Extra hands are provided to carry on the allotted work and reserve staff is kept to replace in case of exigency.

Division of Responsibilities and Ensuring Accountability.

According to skill mapping the following other sectors are identified

- Nursing Care
- Biomedical waste management
- Dead body management and handover
- Communication and coordination with government bodies such as a municipal corporation, state, and central health agencies by dedicated officers appointed by the hospital
- Staff accommodation and quarantine
- Food supply to staff and patients
- Writing working guidelines and standard operating procedures for medical and surgical departments to prevent Corona Virusinfection in non-COVID hospitalised patients
- Print, electronic, and social media management.

## Maintenance of Standard of Care

Since the pandemic is likely to progress and the ICU care is likely to migrate from conventional to contingency to crisis mode, precautions need to be taken to prevent the dilution of the standard of care. Government provides cashless benefit to all COVID -19 patients admitted, for respiratory failure irrespective of their financial status, till 31st July 2020 under the Mahatma Jyotiba Phule Jan Arogya Yojna (MPJAY).

To minimise the dilution, uniform protocols for ICU care are prepared, training imparted and practiced in advance, including protocols for drug administration, oxygenation, noninvasive ventilation, intubation, extubation protocols, sedation, ventilatory management, investigations, etc. Getting updated for newer modalities of treatment with antiviral drugs, Steroids, anticoagulants, monoclonal antibodies, plasma administration guidelines are constantly kept track of and implemented. These are implemented as a standard of care without any confusion.

National ICMR Trial on Plasma Therapy & WHO Solidarity Trial are also under way with patients getting benefit of the same. Special meetings held with the faculties to promote COVID Research in the institute. In total at present there are thirty ongoing COVID Research projects in various departments, with ten more in pipeline. Evening Video Conferencing with The DMER is held with participation of all Medical Colleges in the state discussing the status at various places and deciding changes and up-gradation of the treatment policies. Weekly Death Audit meetings are held with participation of all Head of Departments, where all the deaths of the week are reviewed.

Samples are collected after donning PPE. Nasal and oropharyngeal swabs collected with Dacron swabs and put in Viral transport media and sent to the Microbiology lab with temperature control as advocated by WHO. Updated ICMR guidelines for testing are followed,

Dedicated bins for segregation and disposal of biomedical waste generated in the ICU are stationed. Environmental cleaning and disinfection of the premises is done by the workers who are trained and fit to do so.

Dedicated COVID-19 Operation theatre is there in the premises to take care of surgical needs. Facility to take care of ANC patients with availability of space for conduction of labour and operation (Caeserian sections) is present. 6 ANC patients treated and 5 deliveries have been conducted till date including 3 LSCS; all being successfully discharged.

The rights of patients and visitors were modified according to the pandemic law and the same included in the consent for ICU admission.

- The dedicated area for resting and refreshment are earmarked within the COVID hospital premises itself for the health care workers.
- Restricted visitor entry in the COVID Wards & ICU. No stay policy for relatives in the isolation wards, with provision of stay of one relative in the premises outside the isolation area. A help desk created where up-to-date information regarding the patients clinical condition is furnished on phone or in person.
- The utilisation of modern modes of communication like WhatsApp, video conferencing for the patient, and relative counselling is increased. During the sessions information regarding the patient is imparted and emotions are also addressed.

#### Use of Social Media for Connectivity

All the stakeholders within the hospital such as departmental heads and task force for COVID-19 management are connected all the time through dedicated WhatsApp groups. Close communication with the seniors and authorities on a day to day basis is promoted through videoconferencing to strengthen and update the care provided to the patients. Meticulously updated day-to-day admission, discharges, condition / categories of the patients, other administrative problems, policies, progress and new research findings are shared on the groups and via e-mails with the district and state authorities.

#### Duties and Rotation Policy

Duties are allocated in a centralised manner giving equal chances to everyone. We divided our staff including doctors, nurses, ground staff in several groups. Each group is being rotated in the COVID-19 care area depending upon their skills, i.e. in ICU, HDU, isolation wards. Each team works in the COVID care area for 2 week, followed by 1 week off as a cooling time. Other teams during the same period work in the non-COVID-19 care area.

#### Motivation

The positive attitude of HCWs is enhanced to prevent dropouts. This is done by regular interaction and motivation by the seniors in the hospital. The seniors also contribute to the patient care by virtual rounds of the COVID patient through video conferencing with patients and “On duty” doctors. Evening Prayers are arranged every day in the COVID wards to boost the morale of the staff and the patients. Accommodation is arranged for the health care workers during the duty period in the hospital or designated hotel with comfortable stay and food facility. This helps to keep the staff grounded and feel cared for and valued. This became evident when nurses, and doctors came to acknowledge regarding the comfortable arrangements made for them after finishing their period of Covid posting.



**Evening Prayers with COVID Positive Patients in Isolation Wards of COVID Hospital GMC, NGP**

#### Staff Management and Empowerment

Issues related to human resources is addressed by the hospital management and staff is empowered for better handling of the stressful situation. HCWs including senior consultants with age more than 60 years, those on immunosuppressive therapy or having multiple comorbidities were not included in the onsite COVID-19 team & were included in the administrative team.

#### Healthcare Worker Chemoprophylaxis

Chemoprophylaxis with hydroxychloroquine tablets was advised to all willing HCWs dealing with COVID-19 cases as per the recommendations of the Indian Council of Medical Research (ICMR).

**Expansion of workforce :** As per the surge in patient number, additional wards and staff is deployed to handle the additional work load.

### **Sanitization and Isolation**

Clean scrubs and PPEs are provided to all staff working during their duty hours in the campus. Separate donning - doffing, shower facility with separate entrance and exit points to the wards are provided.

### **Surveillance of HCW**

Self-reporting of fever and respiratory symptoms is encouraged among all staff members.

### **Education and Simulation**

Training with education and simulation of the scenarios that are likely to be faced, help to improve confidence and actual care delivery in the crisis. Keeping this in mind, we are repeatedly taking education and simulation workshops for different levels of hospital staff including-

- Techniques of donning and doffing of personal protective equipment (PPE)
- Hand hygiene techniques
- N95 mask wearing and seal check
- Role-playing of an airway assistant in various hospital scenarios that could be encountered in COVID19 ICUs, e.g., cardiopulmonary resuscitation, patient transport, intubations using video laryngoscopes, and accidental ex-tubation. Checklists is prepared for preparation of drugs and equipment trolley for various procedures like intubation, central line, Foleys, etc. to minimize staff movement during procedures and enhance efficiency.

**Avoidance of Cross-contamination and Infection among HCWs**

Healthcare workers' health is of prime importance as it may affect the health as well as the morale of other HCWs too. Infection of HCWs during the pandemic will lead to a serious loss to the hospital, in terms of loss of manpower and also affect the morale of others. Therefore, utmost precautions are taken to encourage social distancing at workplace. Strong emphasis is given on Masks, donning doffing

techniques and hand hygiene. Health care workers working in Non Covid areas are also instructed to follow Universal precautions - wearing N95 masks, shield and gloves, so that unintended contacts are prevented and uncalled for quarantine of the precious manpower is avoided.

Till June 30' 2020, the hospital had cared for 677 COVID-19 patients, including 6 HCWs. The 4 nursing staff and 2 class four servants were asymptomatic & they were successfully discharged.

Admissions of the suspected patients were strictly done in designated areas avoiding any mixing up with other non-suspect patients. All patients admitted to the hospital were given a mask to cover the nose and face compulsorily. Patients tested negative in the presumptive ICU are immediately shifted to non-COVID area.

### **Preparing Death Protocol**

Disposal of patients brought dead to the emergency room is done based on guidelines issued by ICMR, Nagpur Municipal Corporation, and State Government rules. Paperwork included Form C, Death form, information to government authorities, body preparation, and disposal with Municipal authorities.

### **Supplies**

The need assessment is carried out to identify essential equipments, medications, and other supplies that would be needed for the care of COVID-19 patients. Special attention is given to ensure adequate supply by daily updating the stock list of the same as given below.

Inventory of existing medical and other equipments is carried out including :

- Ventilators - Invasive, Non invasive & ABG Machines.
- Defibrillators, ECG Machines, Monitors.
- Glucometers, Pulse oximeters, Syringe Pumps, Video Laryngoscopes
- Backup power supply
- Oxygen supplies
- Critical drugs including Antiviral medications, Anticoagulant injections, Steroids, Antibiotics,

Sedatives, etc are all well stocked up.

- Specific requirements like PPE, N95 filtering face piece respirator (FFR), etc. identified by the pharmacy.

Emergency procurement of equipment - A dedicated team is established for the maintenance and procurement of equipment / drugs / sanitisers based on the projected requirement. Liaison is carried with various government, private agencies, and other hospitals for procurement of medical supplies.

### Overcoming the Resource Limitations

Considering the possibility of indiscriminate use of nasal and oropharyngeal swabs for even non-suspect patients admitted to the hospital for other reasons, ICMR protocol for testing policy has been adopted and changed as per changing guidelines. Preparation on for Antigen testing and surveillance using antibody testing as ICMR guidelines in pipeline.

For extended use and reuse of N95 mask in the emergency room, screening area, fever clinic, ICU, and isolation wards : We encouraged the practice of issuing five masks to health care workers and promoted using them consecutively on 5 days and then recirculate them for at-least 4 uses. The PPE, Gloves and FFR are the backbone of the safety of HCWs during patient management. Appropriate PPE is made available in high-risk situations and All FFRs used during the aerosol procedures are discarded and not reused.

High touch surface areas in the hospital are cleaned regularly many times by day by a team with hypochlorite spray. Social distancing is strictly followed in the hospital and offices.

### Trade-of between usual care and pandemic care for non-COVID patients

Cessation of Routine Non-urgent Work - All non-urgent and elective procedures were initially restricted but later on opened up with all due precautions and testing. Emergency management (medical and surgical) of non-COVID patients is continued without interruption by non-COVID teams, e.g., for acute stroke, acute coronary syndrome, surgical emergencies, poisonings etc.

### Conclusion

COVID-19 has and is likely to affect people in many geographical locations. When referring to people with COVID-19, we have to be empathetic to all those who are affected. People who are affected by COVID-19 have not done anything wrong, and they deserve our support, compassion and kindness. In addition to protecting ourself we have to be supportive to others. Assisting others in their time of need can benefit both the person receiving support and the helper. Working together as one community can help to create solidarity in addressing COVID-19 together.

### Important Links :

1. <http://www.dmer.org/new/MEDD%20Compendium%204th%20Edition%20Volume%201.pdf>
2. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/hcp-hospital-checklist.html>
3. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/strategies-and-plans>
4. [https://www.icmr.gov.in/pdf/covid/techdoc/EC\\_Guidance\\_COVID19\\_06052020.pdf](https://www.icmr.gov.in/pdf/covid/techdoc/EC_Guidance_COVID19_06052020.pdf)