

## Review Article

### Role of Hospital Administration Department in Managing Covid-19 Pandemic in India

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#### **ABSTRACT:**

Covid-19, just few days back, was foreign to us and now spreading its routes well in India. Starting with one case and now with 35,000+ cases, the virus is trending right now in almost every part of the country. The irony is not much is known about this novel virus, hence mortality and morbidity across the globe is on a peak. Hospitals and other healthcare facilities play a critical role in national and local responses to emergencies, such as communicable disease epidemics. The healthcare professionals need to be protected against coronavirus so that they can save other people who are in critical stage of the illness. Various command teams need to be prepared for implementation of infection control and transmission measures. However, that deals with a lot of training for the hospital staff, as well coping with surge for the resources as well as designing appropriate containment strategies. It is a complex interplay between hospital administration and the government along with the country's population.

**Keywords:** pandemic, hospital administration, containment, coronavirus.

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#### **INTRODUCTION**

Hospital acquired infections (HAIs) is a major safety concern for both health care providers and the patients. Considering morbidity, mortality, increased length of stay and the cost, efforts should be made to make the hospitals as safe as possible by preventing such infections. No doubt, significant achievements have been made over the last six decades in the efforts to improve health standards such as life expectancy, child mortality and maternal mortality. Small pox and guinea worm, have been eradicated and there is hope that poliomyelitis will also be eradicated in near future. Nevertheless, problems are abounding. Malnutrition affects a large proportion of children. Changes in the lifestyle of the people are resulting in a dual disease burden. This emanates from the complexity of communicable and non-communicable

diseases in the rural and urban regions of the country. The occurrence of these disease patterns has impacted the healthcare infrastructure requirements resulting in heavy health outlays and infrastructural challenges for the government.<sup>1</sup> The overall scenario of health care in India is a mixture of remarkable achievements and failures. Over the last 60 years a vast network of healthcare services and infrastructure has been built up. Health care in India is basically urban area oriented, two-thirds of the hospitals are located in urban areas, and accounting for nearly four-fifths of the beds available, serving about 30 per cent of the total population. An estimated number of hospitals in the country is 13,692 with 5,96,203 beds available; of which, about 68 per cent hospitals with 80 per cent beds are located in the urban areas.<sup>2</sup>

## CORONAVIRUS PANDEMIC

Coronavirus disease 2019 (COVID-19) has turned out to be a dangerous pandemic currently and is a respiratory tract infection caused by a newly emergent coronavirus, that was first recognized in Wuhan, China, in December 2019. Genetic sequencing of the virus suggests that it is a beta-coronavirus closely linked to the SARS virus.<sup>3</sup> While most people with COVID-19 develop only mild or uncomplicated illness, approximately 14% develop severe disease that requires hospitalization and oxygen support, and 5% require admission to an intensive care unit. In severe cases, COVID-19 can be complicated by the acute respiratory distress syndrome (ARDS), sepsis and septic shock, multiorgan failure, including acute kidney injury and cardiac injury.<sup>4</sup> Older age and comorbid disease have been reported as risk factors for death, and recent multivariable analysis confirmed older age, higher Sequential Organ Failure Assessment (SOFA) score and d-dimer > 1 µg/L on admission were associated with higher mortality. This study also observed a median duration of viral RNA detection of 20.0 days (IQR 17.0–24.0) in survivors, but COVID-19 virus was detectable until death in non-survivors. The longest observed duration of viral shedding in survivors was 37 days.<sup>5</sup> The medical infrastructure in the country needs to be prepared for any possible influx of patients on account of COVID 19. Global pandemics of severe acute respiratory syndrome (SARS), influenza and Ebola, and the role of the Health care facility (HCF) as an epicentre and amplifier of outbreaks, have emphasized the importance of infection prevention and control (IPC). The 2018 Nipah virus outbreak in Kerala, and the death of a nurse who cared for an infected patient, has brought to the fore the urgent need to improve IPC practices and put in place effective IPC programmes both at the national as well as HCF levels.<sup>6</sup> HAIs can be prevented by breaking the epidemiological triad. The most effective way to prevent HAI is by introducing a barrier between the susceptible host and the infecting organism. Most HAIs can be prevented through readily available and relatively inexpensive strategies such as compliance with recommended infection prevention practices.<sup>6</sup> (Table 1) hospitals in India follow MoH & FW as well as WHO guidelines for pandemic which was updated in 2005.<sup>7</sup> (Table 2)

## HOSPITAL MANAGEMENT TO CONTAIN PANDEMIC BURDEN

A three-tier arrangement for managing suspect/confirmed cases will be implemented to decrease burden on the COVID Block/ hospital.

- (i) The mild cases will be kept in temporary makeshift hospital facilities by converting hotels/ hostel/ guest houses/ stadiums near a COVID-19 hospital. The existing quarantine facility may also be converted. This will be identified near an existing COVID hospital/ COVID block.
- (ii) Dedicated COVID-19 hospitals/dedicated blocks in large hospitals will be identified and

- operationalized. Moderate to severe cases, who require monitoring of their clinical status (patients with radiological evidence of pneumonia) will be admitted to COVID hospital.
- (iii) Some of the severe cases may progress respiratory failure and /or progress to multi-organ failure and hence critical care facility/ dialysis facility/ and Salvage therapy [Extra Corporeal Membrane Oxygenator (ECMO)] facility for managing the respiratory/renal complications/ multi-organ failure shall be required. If such facilities are not available in the containment zone, nearest tertiary care facility in Government / private sector needs to be identified, that becomes a part of the micro-plan.<sup>8</sup>

Health care associated infections among attending healthcare personnel are well documented in the current COVID-19 outbreak. There shall be strict adherence to IPC practices in all health facilities. IPC committees would be formed (if not already in place). The designated hospitals will ensure that all healthcare staff is trained in washing of hands, respiratory etiquettes, donning/doffing & proper disposal of PPEs and biomedical waste management. At all times doctors, nurses and para-medics working in the clinical areas will wear three layered surgical mask and gloves. The medical personnel working in isolation and critical care facilities where aerosolization is anticipated, will wear full complement of PPE (including N95 masks). The support staff engaged in cleaning and disinfection will also wear full complement of PPE. Environmental cleaning should be done twice daily and consist of damp dusting and floor mopping with Lysol or other phenolic disinfectants and cleaning of commonly touched surfaces with sodium hypochlorite solution.

## TREATMENT OF COVID-19 CASES

The hospitalized cases may require symptomatic treatment for fever. Paracetamol is the drug of choice. Suspect cases with co-morbid conditions, if any, will require appropriate management of co-morbid conditions. For patients with Severe Acute Respiratory Illness (SARI), having respiratory distress may require, pulse oximetry, oxygen therapy, non-invasive and invasive ventilator therapy. Detailed guidelines available on MoH & FW's website and updated from time to time, may be followed. Hydroxychloroquine has been recommended as chemoprophylaxis drug for use by asymptomatic healthcare workers managing COVID-19 cases and asymptomatic contacts of confirmed COVID-19 cases. A large quantity of bio-medical waste is expected to be generated from containment zone. Arrangement would also be required for such bio-medical waste (discarded PPEs, etc.), preferably by utilizing the bio-medical waste management services at the designated hospital.<sup>8</sup>

**Table 1- Strategies to prevent pandemics and nosocomial infections**

<b>STRATEGIES TO REDUCE HOSPITAL ACQUIRED INFECTIONS</b>
Hand hygiene
Appropriate use of personal protective equipment (PPE)
Following aseptic techniques stringently
Paying attention to established practices for cleaning and decontamination of soiled instruments, followed by either sterilization or high-level disinfection
Appropriate disposal of biomedical waste (BMW)
Appropriate cleaning and disinfection of the environment
Improving safety in operating rooms and other high-risk areas where the most vulnerable patients are housed and there is a high risk of exposure to infectious agents
Maintaining a safe working environment and safe work practice

**Table 2- Phasing various stages of the pandemic development/ progress according to these guidelines according to which hospitals in a country should operate**

<b>Interpandemic period</b>	<ul style="list-style-type: none"> <li>• Assess availability of hospital beds</li> <li>• Develop infrastructure to augment critical care</li> <li>• Evolve infection control policies</li> <li>• Prepare biosafety and waste management protocol and implement them</li> </ul>
<b>Pandemic alert period</b>	<ul style="list-style-type: none"> <li>• Review hospital disaster manuals with special attention to manage critically ill patients</li> <li>• Conduct CME for all staff members</li> <li>• Pre test existing arrangements through mock drills</li> </ul>
<b>Phase 3</b> (human infection with a new pathogen but human to human transmission low/rare)	<ul style="list-style-type: none"> <li>• Cases should be reported to surveillance protocol</li> <li>• Create additional surge capacity to cope up with large scale morbidities.</li> <li>• Assess effectiveness of clinical management protocol</li> <li>• Review infection control measures and implement them stringently</li> </ul>
<b>Phase 4</b> (small clusters, localized spread)	<ul style="list-style-type: none"> <li>• Hospital systems to contain and reduce human to human transmission of virus</li> <li>• Limit morbidity and mortality</li> <li>• Cases should be reported to surveillance protocol</li> <li>• Assess effectiveness of clinical management protocol</li> <li>• Review infection control measures and implement them stringently</li> </ul>
<b>Phase 5</b> (large clusters but human to human transmission still limited but there is substantial pandemic risk)	<ul style="list-style-type: none"> <li>• Establish triage system</li> <li>• Ensure availability of adequate number of health professionals</li> <li>• Monitoring readiness for triage and treatment</li> <li>• Prevent nosocomial infection</li> <li>• Temporary hospitals and day care centers to handle pandemic and reduce the burden of main hospitals</li> <li>• PPEs, prophylaxis, skill update training of staff</li> <li>• Management of mass fatalities</li> <li>• Proper disinfection and waste management</li> </ul>
<b>Phase 6</b> (Increased and sustained transmission in general population)	<ul style="list-style-type: none"> <li>• Monitoring readiness for triage and treatment</li> <li>• Prevent nosocomial infection</li> <li>• Temporary hospitals and day care centers to handle pandemic and reduce the burden of main hospitals</li> <li>• PPEs, prophylaxis, skill update training of staff</li> <li>• Management of mass fatalities</li> <li>• Proper disinfection and waste management</li> </ul>
<b>Post- pandemic period</b>	<ul style="list-style-type: none"> <li>• Strengthen hospitals for any new pandemic</li> <li>• Review deficiencies, counter measures, effectiveness of treatment</li> <li>• Replenish consumables as well stockpile the necessary drugs</li> </ul>

## DISCUSSION

Hospitals and other healthcare facilities play a critical role in national and local responses to emergencies, such as communicable disease pandemics. Pandemics may overwhelm a hospital's capacity to deliver healthcare services. Human and material resources, including hospital space and medicines, may not be adequate to meet demand, particularly in the case of an epidemic or a pandemic lasting several weeks or months and particularly if concurrent emergencies are under way.<sup>9</sup> Integrating into the overall Hospital Emergency Risk Management Programme: - an ongoing assessment of risks from the interaction of possible hazards, community vulnerabilities and health system strengths and weaknesses; - risk reduction and emergency preparedness activities, such as emergency response planning, training and exercises; - early warning of hazards, including diseases, which may trigger activation of the Hospital Emergency Response Plan, including the Epidemic Sub-plan implementation of emergency response plans, including the Hospital Epidemic Subplan.<sup>10</sup> It also includes a commitment by the hospital or by the community (with hospital support) to undertake the preparedness activities required to reduce the risks associated with an emergency and to acquire the capacity needed for an effective emergency response as well as undertaking specific emergency preparedness activities to create or expand communication channels between health sector entities and communities. The health authorities need to develop as well as adapt emergency response plans, including the Hospital Epidemic Subplan, in such a way as to ensure continuity of clinical services critical to patients affected by an epidemic.<sup>9</sup> When a pandemic is being handled then a periodic reassessment and updating of the Hospital Emergency Risk Management Programme and its Emergency Response Plan to take into account new developments and lessons learned from previous exercises and emergencies as well as adapting and building on the hospital's capacity to cope not only with an epidemic but also with other forms of internal and external emergencies, such as mass casualty events, disasters from natural hazards, and fires, in such a way as to establish a single management system adapted to the risks likely to be faced in dealing with more than one type of emergency situation.<sup>11</sup> In an emergency or disaster, hospital staff are generally required to go beyond their routine day to-day roles and responsibilities and to take on tasks with which they are less familiar and which they will, in all probability, have to carry out in a stressful environment. To meet these new demands all staff members, irrespective of their hospital, departmental and individual duties, need to be involved in the emergency planning process so that they can distinguish between their routine and their emergency responsibilities and can better contribute to the

emergency response. They also need training in implementing risk reduction measures and the procedures and protocols called for in the Hospital Emergency Response Plan.<sup>9</sup> A hospital's Incident Action Plan is a document developed by the hospital's Incident Command Group. It is essentially an adaptation of the hospital's generic Emergency Response Plan (and of the specific Epidemic Sub-plan Plan) to the needs and circumstances of an ongoing emergency and is revised as the emergency and its parameters evolve. It specifies how the hospital should respond to an emergency. It designates who will be assigned to do what and provides estimates of the resources available and the additional resources needed to fulfil these assignments. It also provides a yardstick against which progress in achieving the hospital's response objectives can be measured.<sup>12</sup>

## CONCLUSION

Once a pandemic has started, establishing active surveillance of cases should be at top priority. It is imperative to make sure that the hospital's infection prevention and control policies are consistent with the presumed mode of transmission of the pandemic infection and with locally available resources. Reinforce standard infection control precautions and establish additional precautions for containment of coronavirus spread.

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