LETTER TO THE EDITOR

Decentralizing COVID-19 care—Moving towards a COVID-19-capable healthcare system (CCHS)

1 | INTRODUCTION

Coronavirus disease has taken a huge toll over the world and will continue to do so for a while. Despite newer diagnostic and therapeutic options emerging daily, the resumption of healthcare facilities to pre-Covid normalcy still seems difficult. It has affected over 103 million people globally as on 4 February 2021 and has caused collateral damage in terms of indirectly affecting routine healthcare of non-Covid patients requiring medical attention. Resumption of routine and multispecialty healthcare which have been majorly stalled worldwide is necessary to combat the collateral damage. Efforts to upgrade the existing healthcare setup to become Covid-19-capable is a necessity of present times. Many innovative strategies to improve the healthcare system to handle such situations have been described in literature. Through this article we describe another such strategy which can be adapted at tertiary healthcare centres.

2 | PROBLEM STATEMENT

1. Compromised care of patients with comorbidities: Amidst the pandemic, care of chronically ill patients and non-Covid illness has been significantly compromised. Accessibility to healthcare facilities has become challenging amidst the scare of acquiring the infection, conversion of existing facilities into Covid-19 care areas and lockdown restraints. The strategy of empowering existing facilities with necessary infection prevention measures and making every medical specialty capable of providing Covid-19-related care in addition to care in the area of their expertise is necessary.

2. Need for multidisciplinary care: Covid-19 disease spectrum extends from mild asymptomatic to severe respiratory symptoms to a wide range of nonrespiratory symptoms. Patients can present with acute coronary syndrome, thromboembolic disease, ischaemic stroke, acute kidney injury and many more varied manifestations. These patients therefore require not just supportive care to treat Covid-19 related illness but also may demand definitive speciality care to resume to normal health. Latter may be delayed considering the staffing and infrastructure in Covid-19 centre. Healthcare personnel deployed in these areas have varied field of expertise making uniform care less plausible.

3. Nosocomial outbreaks: Rampant nosocomial spread of the virus is a possibility. With main focus being shifted to Covid-19 patient care thus diverting majority of healthcare resources, areas designated for non-Covid patients suffer inadequate staffing and infrastructure. Patients categorised as Covid-19 negative may be false negative. Hence, undue reliance on laboratory testing results leading to false sense of security and negligence or lack of stringent infection prevention measures might result in nosocomial outbreaks. Non-Covid areas may not be prepared to handle such an outbreak.

4. Resource intensive Covid-19 centres: In the early stage of pandemic quick measures were taken to setup Covid-19 patient care areas by diverting manpower and infrastructure from routine setup. Healthcare facilities need to
cater to PPE requirements, manpower training, infrastructural modifications and strict infection prevention measures to combat the pandemic. The process has been resource-intensive and penalised economies.  

5. Transport related issues: In places where Covid-19 centres are away from non-Covid centres, it would require interfacility transport of critically ill patients. This could sometimes lead to adverse events during transport in the form of loss of positive end-expiratory pressure which is very essential to maintain in patients with severe acute respiratory distress syndrome, oxygen system failure and accidental extubations. Interfacility transfer also carries risk of infection transmission to staff involved. Need for a standard transport plan and adequate infection prevention measures are thus necessary to curtail untoward events during transport.  

6. Medical education amidst pandemic: Budding healthcare personnel are experiencing difficulties in medical education considering cancelled clinical rotations in many setups. E-learning portals though appear to solve this issue to some extent, they fail to provide hands on practical knowledge and skills. A Covid-19 capable model can allow practical learning and alleviate anxiety of missed opportunities.

3 | WHAT DOES BECOMING COVID-19-CAPABLE MEAN?

In the present-day scenario, almost all patients reaching hospital facilities undergo Covid-19 testing before further treatment is initiated. If the patient is positive he is shifted to a designated Covid-19 patient care area and if the patient tests negative, he is shifted to non-Covid patient care area of desired departments. The Covid-19 patient care area is manned by a heterogeneous mix of doctors from various streams. Covid-19-related illness and ailments are managed but other specific issues requiring definitive intervention or multispeciality care might be compromised. The latter could be attributed to both lack of expertise of the working healthcare personnel as well as lack of infrastructure to cater to definitive interventions. Here we propose a model of ‘Covid-19 capable healthcare system (CCHS)’ where every patient care area of the existing healthcare facility will be strengthened to handle Covid-19 patients rather than emphasis on an additional Covid-19 care centre separate from the existing facility (Figure 1).

4 | STRUCTURE AND FUNCTIONING

In a ‘CCHS’, patient care can be catered to by: Tele-triaging, Emergency room triaging, Emergency department, Out-patient department (OPD) triage area, OPD services, Inpatient services by departmental wards and intensive care units (Figure 2). This is almost like patient care pathways in pre-Covid era but with added measures to contain infection transmission.

a. Tele-triaging—Patients can be triaged as those requiring hospital visit or home care based on tele-triage portal. Those requiring hospital visit can be advised to visit hospital triage facility.

b. Hospital triage facility—Hospital triage facility will be the first point of medical contact where patients can be assessed and categorised as being stable or unstable based on the vital signs on arrival and brief history. Those patients who are stable and not requiring immediate interventions can be referred to out-patient facility while those unstable need to be immediately rushed to the emergency room for further management.

c. Emergency department—All unstable patients or those requiring immediate interventions reach the emergency room. Initial resuscitation and stabilisation if necessary, can be done in this area. Here, patients could be further categorised based on Covid-19-related symptom history and point of care rapid antigen testing. Those who test positive on rapid antigen testing or those who present to healthcare facility with a positive report from authorised laboratory, can be deemed as ‘Covid-19 positive’ and shifted to designated Covid-19 positive patient care area in the emergency. Those who test negative on rapid antigen testing but have symptoms consistent with Covid-19 can be termed as ‘Covid-19 suspects’ and be shifted to suspected COVID patient care area in the
FIGURE 1 Comparison between existing and proposed Covid-19 capable healthcare system (CCHS) [Colour figure can be viewed at wileyonlinelibrary.com]
emergency. These subset of patients require further testing using RT-PCR. In patients who test negative on rapid antigen test and have no Covid-19 related symptomatology, will also need a RT-PCR. Those who test negative on RT-PCR can be shifted to Covid-19 negative patient care area.

d. **OPD triaging**—Stable patients reaching OPD triage facility can be categorised as Covid-19 positive, Covid-19 negative or Covid-19 suspects based on clinical history and point of care antigen testing. They can be then shifted to designated OPD rooms.

e. **OPD services**—Existing OPD rooms could be modified into three strata to cater to three subsets of patients reaching the OPD from triage room. Covid-19 positive patients could be attended in designated Covid-19 positive areas which are essentially isolation rooms. Similarly, suspects and negative patients could be attended to in separate designated areas with no mixing of patients, thereby reducing transmission. Those requiring inpatient care can be shifted to departmental wards and those not requiring inpatient care can be discharged with standard infection prevention advice.

f. **Departmental wards**—Wards and ICUs of all departments/medical specialities need to have three specific areas to cater to Covid-19 positive, Covid-19 suspect and Covid-19 negative patients. In this manner all patients are admitted under their respective departments and obtain definitive care for their baseline illness as well as supportive care for Covid-19 per se.

g. **Covid-19 helpline and on call team**—A 24 h round the clock multidisciplinary team mainly involving anaesthetists and physicians would be available on call and on floor to cater to difficulties faced by other departments in managing Covid-19 patients. A ready referral institutional guideline will also be made available.
5 | INFECTION PREVENTION MEASURES

Standard infection prevention measures as per national guidelines need to be implemented promptly and reviewed regularly.\textsuperscript{14,15} On arrival at healthcare facility all patient and patient attenders need to be provided with face masks. Social distancing needs to be maintained at all patient care facilities. Isolation rooms with adequate air exchanges and specific negative pressure rooms with HEPA filters to care for Covid-19 positive patients and to perform aerosol generating procedures need to be setup. Personal protective equipment to all healthcare workers needs to be emphasised upon.

6 | ADVANTAGES

This proposed model of making existing healthcare setups Covid-19-capable, would lead to better holistic patient care. It would let specialists do what they know best and save patients requiring definitive care. The hampered and stalled routine healthcare services could slowly resume to normalcy with a ‘CCHS’ model. Delayed presentations and increasing mortalities due to chronic illness have been noted and can be curbed to some extent by resuming routine services. Nosocomial outbreaks may still occur but in the model being proposed here every patient care area will be self-sufficient to handle Covid-19-related illness.

7 | LIMITATIONS

Designating various patient care areas in the already existent inpatient wards, to cater to Covid-19 positive, negative and suspected patients may not be feasible. Need for separate isolation rooms, improving infection control would require many infrastructural changes to the existing setup. The cohorting of patients as infected, suspects or negative though reduces cross transmission, is not fool proof. Lack of a highly sensitive screening test which could rule out diagnosis makes cohorting challenging.

8 | CONCLUSION

Increasing number of cases everyday and an unpredictable trajectory of the pandemic course demands a new normalcy. Elective procedures and care of chronically ill patients cannot be halted forever. A strategy to strengthen existing healthcare system to become ‘Covid-19 capable’ is the need of the hour. The proposed model is ‘pandemic resilient’. It can be used in future pandemics with minor modifications based on the nature of pandemic. It has far-fetched implications to regulators and policymakers to make our healthcare system be prepared to deal with future pandemics with minimal disruption to normalcy.

KEYWORDS
COVID-19, COVID-19-capable healthcare system (CCHS)

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CONFLICT OF INTEREST
The authors declare that there are no conflict of interests.
DATA AVAILABILITY STATEMENT
Data sharing not applicable – the article describes entirely theoretical research.

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