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## Deployment of Neurosurgeons at the Warfront Against Coronavirus Disease of 2019 (COVID-19)

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■ **BACKGROUND:** The coronavirus disease 2019 (COVID-19) pandemic has taken the world by storm, especially the health care system. Medical practitioners of all specialties are being assigned to treat patients of COVID-19. In this article, two authors (T.V. and N.G.) from the Department of Neurosurgery who were deployed in the COVID-19 testing ward between April 25 and May 31, 2020 share their experience.

■ **METHODS:** A prospective observational study was conducted including all those who were admitted in this ward. The patients were studied according to their demographic profiles, diagnoses, admitting departments, travel history, and presence/absence of COVID-19—related symptoms. Relevant history regarding occupation, contact with patient with known COVID-19, and comorbid illness was noted. Those who tested positive for COVID-19 were studied further. The data from the institute's official record were updated until August 14, 2020.

■ **RESULTS:** During the study period, there were 256 admissions in the ward, of whom 148 (92 male, 56 female) were patients and 108 were patients' attendants/relatives. Most patients were admitted under the departments of internal medicine (33, 22.3%) and general surgery (19, 12.8%). Of 148 patients, 46 (31.1%) were admitted as they were planned for a surgery/intervention. Among 148 patients, 29 (19.6%) had history of travel to or were residents of a red zone, 4 (2.7%) had history of contact with a confirmed case of COVID-19, whereas 6 (4.1%) were health care workers. One hundred four patients (70.2%) showed no COVID-19—related symptoms. Thirty-four patients (22.9%) had associated comorbid conditions. Eight patients (5 male, 3 female)

with mean age of 37.6 years (range 4–69 years) tested positive for COVID-19.

■ **CONCLUSIONS:** The authors share their experience and their institute's protocol in various facets during this war against COVID-19 pandemic. Preadmission and presurgical testing of patients is important in preventing the spread of the disease amongst health care workers.

### INTRODUCTION

The ongoing coronavirus disease 2019 (COVID-19) pandemic has affected 213 countries and territories across the world, with a total of 21,100,485 confirmed cases as of August 14, 2020<sup>1</sup> and created a war-like situation with health care workers (HCWs) at the forefront. India reported its first case of COVID-19 on January 30, 2020.<sup>2</sup> Learning from the situation in the rest of the world, on March 25, 2020, the government of India announced an early lockdown in the country in 4 phases, which lasted until May 31, 2020.<sup>3</sup> This slowed the spread of the pandemic and gave the administration and hospitals time to prepare for the incoming tsunami of patients.<sup>4,5</sup> At the end of lockdown on June 1, 2020, the total number of cases in the country was 197,862.<sup>6</sup> The country was categorized into 3 different zones (“red zones,” “orange zones,” and “green zones”) based on the COVID-19 case load.<sup>7</sup> This categorization was dynamic in nature, based on the changing COVID-19 scenario in the country. Based on this categorization, services were resumed gradually in a phased manner. When the lockdown was eased on June 1, 2020, COVID-19 cases in the country started increasing more rapidly and reached 2,461,109 at the time of writing this article on August 14, 2020.<sup>8</sup>

#### Key words

- Coronavirus disease of 2019 (COVID-19)
- COVID-19 testing
- Neurosurgeons
- Pandemic

#### Abbreviations and Acronyms

**COVID-19:** Coronavirus disease 2019

**HCW:** Health care worker

**ICMR:** Indian Council of Medical Research

**ICU:** Intensive care unit

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Rishikesh is a town in Dehradun district, in the Himalayan state of Uttarakhand. Dehradun district has been categorized as an “orange zone.” The institute in Rishikesh, where the study was conducted, is a 960-bedded hospital with 105 intensive care unit (ICU) beds. With 276 attending faculty, 694 residents, and 1326 registered nurses, it is the major hospital providing tertiary medical care to the people of Uttarakhand and western Uttar Pradesh. In the pre-COVID-19 era, the institute had an overall outpatient volume of approximately 70,000 to 80,000 patients per month and a total of 28,949 surgeries were performed at the institute in 2019.

As a response to COVID-19 pandemic, hospitals and medical institutions have had to adapt to the “new normal” by doing widespread COVID-19 testing,<sup>9</sup> switching from a physical outpatient department to telemedicine, and rescheduling of “non-emergent” surgeries.<sup>10</sup> Hospitals have been forced to ration materials and human resources. Hospital beds, ventilators, and monitors are being reserved for patients with COVID-19. Medical practitioners of all specialties as well as medical and nursing students are being called on to treat patients with COVID-19. Our institution was quick to respond to the pandemic, and since its onset in the country, various measures were taken to adapt to the situation.

#### Response at Our Institution

Various measures have been taken at our institute to contain the spread of COVID-19 and prevent the HCWs from contracting COVID-19: 1) out-station leaves of all physicians and HCWs were cancelled to prevent the community spread of COVID-19 as well as to keep maximum workforce available at the hospitals; 2) the surgical workflow including neurosurgery was changed dramatically by the cancellation of elective surgery cases in order to increase hospital capacity for future COVID-19 patients; 3) most nonemergency outpatient visits were attended to via telemedicine and very few in the newly established screening outpatient department; 4) all patients coming to the hospital were required to undergo thermal screening and asked for COVID-19-related history; 5) staffing was decreased in all departments to preserve work force and prevent fatigue; 6) all physical meetings in the hospital were either cancelled or replaced by virtual meetings; 7) remote work for clinical, resident, and support staff was authorized and implemented; 8) all visitors were restricted from our facilities; 9) every employee was required on site to wear face mask protection and to attest daily to symptom-free status; and 10) new virtual COVID-19-related educational programs were created for HCWs of all clinical and nonclinical departments to facilitate their deployment in common COVID-19 areas.

#### COVID-19 Testing at Our Institution

COVID-19 testing using reverse transcriptase-polymerase chain reaction from nasopharyngeal and oropharyngeal swabs began in our institute on March 30, 2020, according to the Indian Council of Medical Research (ICMR) protocol. Since April 25, 2020, all patients admitted to the hospital for a surgery/intervention are undergoing COVID-19 testing before the surgery/intervention. As any patient getting admitted in the hospital is potentially infected with COVID-19, since May 2, 2020, COVID-19 testing has been made a prerequisite for all patients getting admitted to the

hospital. Since the onset of COVID-19 pandemic, only one attendant/relative has been permitted to accompany 1 patient. From May 2, 2020 onwards, in response to the increasing number of patients in the state, COVID-19 testing has been made compulsory for patients' attendants/relatives as well because they are a potential source of infection in the non-COVID-19 areas of the hospital.

#### Dedicated COVID-19 Areas

Thus, the hospital was divided into COVID-19 and non-COVID-19 areas. Non-COVID-19 areas are meant for regular work of various specialties for patients who have been tested negative. COVID-19 areas are meant for suspect or confirmed cases of COVID-19 with separate areas for each. Although the scenario is ever-changing, with reallocation of more and more ward and ICU beds for patients with COVID-19, at present the COVID-19 area has a bed strength of 220 ward beds and 66 ICU beds.

Any patient admitted in the non-COVID-19 area has to undergo prior COVID-19 testing. In our hospital, we follow a policy to admit the patient in the COVID-19-suspect area while waiting for the results. This helps in preventing the risk of contracting infection from the general population after giving a sample, which would be there if the patient was allowed to leave the hospital after giving a sample. This would result in a “false-negative” result and a false sense of security among the HCWs. In the COVID-19 areas, wards/ICUs are designated where patients are tested for COVID-19 and admitted while waiting for the COVID-19 test results. As per the advice of the admitting department, the team posted here initiates the relevant management of these patients. Due to highly infectious nature of the virus, there is still a possibility of a patient previously negative for COVID-19 contracting COVID-19 infection while waiting in the ward for his or her test results. Therefore, attempts are made to get the test reports as soon as possible to keep the time spent by the patients in the COVID-19 area short.

Despite all efforts, the patients are usually admitted for 1–2 days here while waiting for their COVID-19 test results. This duration depends on the time taken by the virology laboratory, which has to cater to a large caseload. If the patient tests negative for COVID-19, he/she is shifted to the non-COVID-19 area for further management by the respective specialty, whereas in case of a COVID-19-positive test, he/she is shifted to wards/ICUs designated for patients confirmed as having COVID-19 and managed there for at least 14 days until they test negative. The shifting is done as soon as the test results are available to avoid unnecessary stay in the COVID-19 testing ward.

#### Quarantine Protocol at Our Institute

In case of a positive test result, all asymptomatic HCWs and other patients and attendants/relatives who had been in contact with the patient with COVID-19 are considered suspected for COVID-19. All the patients and attendants/relatives who had been in contact with this COVID-19-positive patient are quarantined in designated isolation rooms in the COVID-19 area. They are tested for COVID-19 after 5–10 days and shifted to non-COVID-19 area after 2 weeks if the COVID-19 test is negative.

For HCWs who had been in contact with the patients with COVID-19, the protocol is different, as they are relatively protected due to adequate use of personal protective equipment. All HCWs

with a possible history of exposure are assessed for the degree of exposure as per Ministry of Health and Family Welfare guidelines and categorized into low-risk and high-risk exposure. Those identified as low-risk contacts are allowed to resume work. Those identified as high-risk are advised quarantine and tested once for COVID-19 between day 5 and 10. They are allowed to return to work on day 14 if the report tests negative and they are symptomatic. During this duration, they are asked to quarantine themselves in a separate room with attached washroom facility at home, provided they follow the quarantine rules strictly by avoiding contact with their family members and others. If conditions at home do not allow the HCW to follow quarantine rules strictly (e.g., space constraints, young children at home, etc.), then the HCW is quarantined in institutional facility as per government rules.

If the HCW develops COVID-19–related symptoms, he/she is asked to self-isolate at home for 10 days. COVID-19 testing for symptomatic HCW is done on day 1 and he/she is assessed for symptoms on day 10. If symptoms have resolved and COVID-19 test report is negative, then he/she is allowed to resume work on day 10. If still symptomatic, a repeat COVID-19 test is advised and managed accordingly. If the HCW tests positive, then he/she is admitted in the COVID-19–positive area and tested for Covid-19 on day 7 and day 14 like other patients positive for COVID-19. In a recent change in guidelines of Uttarakhand state health department, all asymptomatic COVID-19–positive patients/HCWs have been allowed home isolation with strict instructions to avoid exposure to other family members.<sup>11</sup>

### Rotation Policy in Departments

In response to the pandemic, faculty and residents of various departments were divided into 5 teams: 1 for non–COVID-19 areas, 1 for COVID-19 areas, 1 team was re-deployed in COVID-19 areas for general duties, 1 team was assigned academic duties, and another team was told to be available in case members of the first 3 teams were to go on quarantine. Those HCWs who were older than 60 years of age or had comorbidities that would put them at a greater risk of getting affected with COVID-19 were preferably kept in the team on academic duties.

The Department of Neurosurgery at our institution has 8 attending neurosurgeons and 11 neurosurgery residents. As per the policy of redeployment of various specialists/super-specialists in COVID-19 areas, 2 authors (T.V. and N.G.) from the neurosurgery department were deployed in COVID-19 testing ward between April 25 and May 31, 2020. Coincidentally, May 31, 2020 was also the last day of the nationwide complete lockdown in the country.

### METHODS

A prospective observational study was conducted from April 25 to May 31, 2020, including all those who were admitted into this COVID-19 testing ward. The admissions to this ward initially included only surgical patients, but after the change in hospital policy on May 2, 2020, various patients planned for admission and patients' attendants/relatives also were admitted to this ward for COVID-19 testing. The admissions were divided into patients proper and attendants/relatives. The patients were studied

according to their demographic profiles, diagnoses, admitting departments, travel history to a red zone, and presence/absence of COVID-19–related symptoms. Relevant occupation history, history of contact with a known COVID-19 patient, and history of any comorbid illness was noted. Those who tested positive for COVID-19 were studied further.

The data regarding the total number of COVID-19 tests performed, confirmed COVID-19 patients, and patients managed at the institute were further updated till August 14, 2020 from the institute's official record.

### Statistical Analysis

The data was analyzed using IBM Statistical Package for Social Sciences (SPSS, Version 25.0, IBM Corp., Armonk, New York, USA). Continuous variables were expressed as mean  $\pm$  standard deviation and range.

### RESULTS

Between April 25 and May 31, 2020, there were 256 admissions in this ward, of which, 148 (92 male, 56 female) were patients and 108 (86 males, 22 females) were patients' attendants/relatives (Table 1). The average age of the patients admitted was 40.07 years  $\pm$  17.88 (range 4–78 years). Most patients were admitted under the departments of internal medicine (33, 22.3%) and general surgery (19, 12.8%) (Figure 1). Of the total 148 patients, 46 (31.1%) were admitted as they were planned for a surgery/intervention. Four tests (2.7%) were done postoperatively, as these surgeries could not wait for the result of the COVID-19 test. Nine tests (6.1%) were done as a repeat test in view of interventional radiology protocols, whereas 4 tests (2.7%) were done for oncology-related patients (Table 1). Of the 46 patients who were planned for surgery/intervention, 33 eventually underwent the intervention. These included 2 neurosurgery patients who were planned for surgeries, of which only one was eventually operated.

Among 148 patients, 29 (19.6%) had history of travel to or were residents of a red zone, whereas 4 (2.7%) had history of contact with a confirmed case of COVID-19. Six (4.1%) were HCWs. Four patients (2.7%) had confirmed pregnancies. One hundred four (70.2%) admitted patients showed no COVID-19–related symptom, whereas 44 (29.8%) complained of various symptoms known to be associated with COVID-19. Thirty-four patients (22.9%) had associated comorbid conditions (Table 2).

Eight patients (5.4%) (5 male, 3 female) with mean age of 37.6 years (range 4–69 years) tested positive for COVID-19. Of these, one patient (12.5%) was older than 65 years old. One had history of fever whereas the other 7 had no symptoms related to COVID-19. Of the 8 patients who were positive for COVID-19, 1 patient (12.5%) had history of travel to a red zone. None of these patients with confirmed COVID-19 were HCWs or had history of contact with a patient with confirmed COVID-19. Three of the patients positive for COVID-19 had comorbid illness (Table 3). All these patients with confirmed COVID-19 were shifted to the areas dedicated for patients with confirmed COVID-19. When we compared the COVID-19 test results with the symptoms, 30 patients had fever, of whom only 1 was found to be positive for COVID-19, whereas there were 18 patients with cough, 16 patients

**Table 1.** Details of Admissions in the Ward

	Number (%)
Total admissions	256
Attendants/relatives of patients	108 (42.2%)
Patients	148 (57.8%)
Planned for surgery/intervention	46 (31.1%)
Surgery	30 (20.3%)
Intervention	12 (8.1%)
Endoscopy	3 (2.0%)
Dialysis	1 (0.7%)
Postoperatively (emergency surgery)	4 (2.7%)
Repeat test in view of interventional radiology protocol	9 (6.1%)
Oncology-related	4 (2.7%)
Radiotherapy	2 (1.4%)
Metastatic workup	2 (1.4%)
No plan for surgery/intervention/oncology	85 (57.4%)

with dyspnea, and 5 patients with diarrhea, who all tested negative for COVID-19.

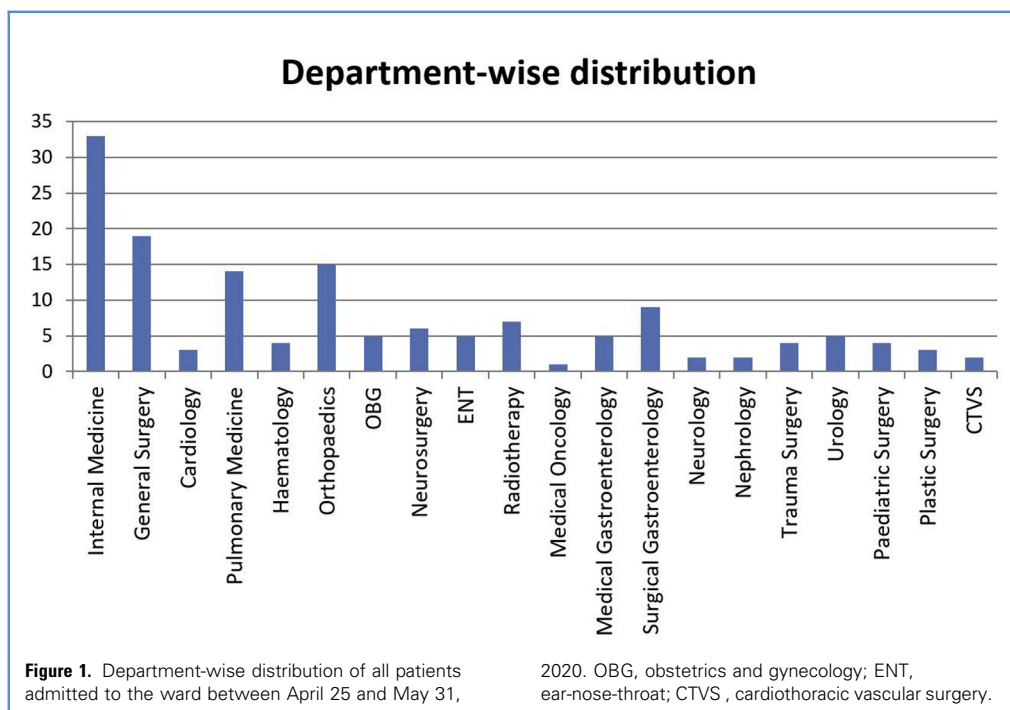
None of the 108 patients' attendants/relatives admitted in the ward had COVID-19–related symptoms and 16 (14.8%) came from the red zones. All of them tested negative for COVID-19. All 6 HCWs who were tested in the ward tested negative for COVID-19. Also, no HCW posted for duty in this ward contracted COVID-19 during the study period. Due to adequate use of personal

protective equipment, no HCW was quarantined due to exposure while discharging their duties in the COVID-19 testing ward. However, 2 residents posted in this ward were quarantined on 2 separate occasions. This was because in their previous posting, these residents had come in contact with certain patients, who later tested positive for COVID-19.

#### Situation Since Easing the Lockdown (June 1, 2020)

Since easing the lockdown on June 1, 2020, the situation has changed a lot both in the country and our institute. On June 1, 2020, the country had a total of 197,862 patients with COVID-19, whereas the state of Uttarakhand had 958 patients.<sup>6</sup> Since the beginning, in addition to the samples taken from the institute, our virology laboratory is catering to the needs of other surrounding hospitals as well. Until May 31, 2020, a total of 7887 (4015 from our institute) COVID-19 tests had been done at our institute, of which 233 samples (75 from our institute) were positive for COVID-19.

At the time of writing this article on August 14, 2020, the country has a total number of 2,461,109 patients with COVID-19, whereas the state of Uttarakhand has 11,302 patients.<sup>8</sup> The total number of COVID-19 tests being done in ICMR-accredited laboratories across the country on the last day, i.e., August 13, 2020, was 848,728 and newly diagnosed cases were 7973.<sup>8</sup> Similarly, the hospital is also managing a greater number of patients with COVID-19 as compared with May 31, 2020. The number of beds for COVID-19 testing have increased by roughly 3 times since the time of study. A total number of 34,431 COVID-19 tests (1342 from the institute) have been done at our hospital, of which 1564 (721 from the institute) were positive for COVID-19. Excluding the repeat samples, there were 500 patients from our institute, of which, 320 patients have recovered and 50 died. At present, there are 130 active patients undergoing treatment at the hospital. The



**Table 2.** Relevant History Related to COVID-19 in 148 Patients Admitted to the Ward

	Number (%)
Travel to "red" zone	29 (19.6%)
Contact with COVID-19—positive patient	4 (2.7%)
Health care workers	6 (4.1%)
COVID-19—related symptoms	44 (29.8%)
Fever	30 (20.3%)
Cough	18 (12.1%)
Dyspnea	16 (10.8%)
Diarrhea	5 (3.4%)
Loss of smell/taste	0
Comorbid conditions	34 (22.9%)
Hypertension	16 (10.8%)
Diabetes mellitus	9 (6.1%)
Coronary artery disease	2 (1.4%)
Chronic obstructive pulmonary disease (COPD)	2 (1.4%)
Tuberculosis	2 (1.4%)
Malignancy	1 (0.7%)
Viral hepatitis	3 (2.1%)
Miscellaneous	18 (12.2%)
COVID-19, coronavirus disease 2019.	

relatively high proportion of death in patients with COVID-19 in the institute is because being the only major government tertiary care center in the area, we cater to relatively sicker patients, whereas the less-sick patients are attended by community health

**Table 3.** Details of Patients for Positive COVID-19 ( $n = 8$ )

Mean age, y	37.6
Age range, y	4–69
Age <65 y	7 (87.5%)
Age ≥65 y	1 (12.5%)
Male:female	5:3
Symptoms of COVID-19	1 (12.5%)
Travel to red zone	1 (12.5%)
Contact with a COVID-19—positive patient	0 (0%)
Health care worker	0 (0%)
Comorbid illness	3 (37.5%)
Diabetes and hypertension	1 (12.5%)
Diabetes	1 (12.5%)
Anemia	1 (12.5%)
COVID-19, coronavirus disease 2019.	

care centers. There has been a total of 3511 admissions under various departments in the institute from June 1 to July 31, 2020.

The facility of serum antibody tests (IgM/IgG) is being planned in the institute to provide plasma therapy for COVID-19 patients. ICMR does not include these tests in its protocol for COVID-19 testing for diagnosis and largely considers it useful to check sero-prevalence in the community.<sup>12,13</sup> Therefore, these tests will not be used routinely for COVID-19 testing in patients and HCWs at our institute.

### Department of Neurosurgery

At the neurosurgery department, there has been a major change in the operative volume and spectrum due to the ongoing pandemic. The authors analyzed our department data between March 25 and May 31, 2020 and compared with the same time period last year.<sup>10,14</sup> We observed that during these 10 weeks of pandemic in 2020, only 53 surgeries were performed compared with 111 during the same period last year, representing a decrease of 52.2%. The majority of cancelled/postponed cases were "routine/nonemergent." In total, 11.3% patients operated during COVID-19 pandemic were nonemergent surgeries compared with 57.5% in the pre-COVID-19 era ( $P = 0.000$ ). The proportion of spinal cases decreased from 27.9% to 11.3% during the COVID-19 pandemic ( $P = 0.043$ ).

On 2 separate occasions while doing non-COVID-19 duties, many attending neurosurgeons, residents, and nurses from our department were exposed to certain patients whose COVID-19 status was later reported as positive. As per our institute protocol, all these HCWs had to be quarantined and get themselves tested, with one attending neurosurgeon testing positive. Fortunately, his symptoms were mild, and he was able to resume work after making a complete recovery and completing 14 days' quarantine as per protocol. The quarantine of these HCWs resulted in reshuffling of the complete duty roster, and this is where the 5-team policy described previously proved useful. Despite many HCWs being quarantined simultaneously, the neurosurgery services at our institute never stopped.

### DISCUSSION

We have presented the response of our institute and neurosurgery department during the COVID-19 pandemic by documenting the various measures taken. Our report also aims to highlight the policy of rotation and deployment being followed by attending faculty and residents of various departments including neurosurgery. In a nationwide survey conducted on neurosurgery residents between May 7 and 16, 2020, the authors found that almost half had been posted in COVID-19—related duties.<sup>15</sup> Most neurosurgeons and neurosurgery residents in the country are working with reduced staffing as per rotation policy.<sup>15,16</sup> We shared our experience in the hope that it will provide useful insights to our fellow neurosurgeons and other HCWs who are being posted in COVID-19—related duties.

From our experience in the COVID-19 testing ward, a few key points should be discussed. As observed in our study, 7 of 8 patients positive for COVID-19 were asymptomatic. The rapid increase in the number of COVID-19 cases despite various preventive measures taken by the government can be attributed to the high

infectivity of the disease as well as asymptomatic and pre-symptomatic transmission.<sup>17-20</sup> Another important observation was that 22.9% of patients in our study had associated comorbid conditions. Three patients (37.5%) who were COVID-19 positive had comorbid conditions and 1 patient (12.5%) was aged older than 65 years. Associated comorbid conditions and old age are associated with poor prognosis, greater need for ICU care, invasive ventilation, and death.<sup>21</sup>

It has been observed that the impact of COVID-19 has been comparatively milder in India and Asia than the Western world. According to a recent study, the COVID-19-related deaths per million population for India and China is 3, 5 for South Korea and Indonesia, 6 for Pakistan, 7 for Japan, and less than 1 for Thailand. In contrast, there were about 100 COVID-19-related deaths per million population in Germany, about 180 in Canada, nearly 300 in the United States and more than 500 in Britain, Italy, and Spain.<sup>9,22</sup> This marked difference can be explained by different genetics and immune system responses, regional contrasts in obesity levels, and general health, apart from the quick reaction time to the crisis in many of these Asian countries.<sup>22</sup> In addition, coronavirus stains prevalent in India and China also appear to be less virulent than the ones isolated from Italy, Spain, and United States.<sup>23</sup>

Due to high risk of dissemination of COVID-19 infection, elective surgeries are being cancelled/postponed worldwide and therefore, surgeries performed have drastically reduced. An estimated 28,404,603 surgeries will be either postponed or cancelled during the peak 12 weeks of the ongoing COVID-19 pandemic worldwide. It would take a median of 45 weeks to clear the backlog due to the pandemic, even after increasing the surgical volume by 20% post-pandemic.<sup>24</sup> The neurosurgery department at our institute is facing a similar decrease in surgical volume and according to our estimate, it would take us about 26.4 weeks to clear the backlog due to the cases cancelled in 10 weeks due to the pandemic.<sup>10</sup>

There is an urgent need to resume surgeries with the necessary precautions and with proper COVID-19 testing before hospital admission for any surgery/interventional procedure.<sup>16</sup> Establishing

this ward for COVID-19 testing can be considered the right step in this direction. In a survey conducted by the authors, a lot of discrepancy was noted in the need of preoperative tests being done before various neurosurgical procedures.<sup>16</sup> Preadmission and presurgical COVID-19 testing is an important step to protect the surgical and anesthesia teams, as well as other patients in the hospital. There is also a lot of confusion among the HCWs regarding the number of tests required. With sensitivity of 71% for the available antigen reverse transcriptase-polymerase chain reaction tests,<sup>25</sup> the false negative-rate of the test is 29%. If 2 and 3 tests are done consecutively, the false negative-rate still stands at 8.41% and 2.44% respectively.<sup>16</sup> Given the highly infectious nature of COVID-19,<sup>26</sup> even these apparently low figures of false-negative results pose a threat to the HCWs. This observation made us change our policy to doing one COVID-19 test before admitting any patient to the hospital and doing another COVID-19 test before surgery/procedure to decrease the chances of transmission from patients with false-negative results. Such proper evidence-based guidelines for COVID-19 testing will go a long way to ensure the safety of health care professionals.

## CONCLUSIONS

We have shared our experience in COVID-19 duties and also discussed our institute's protocol in various facets during this war against COVID-19 pandemic in the hope that our colleagues from around the world find it useful. Preadmission and presurgical testing of patients is important in preventing the spread of the disease among HCWs.

## CRedit AUTHORSHIP CONTRIBUTION STATEMENT

**Tejas Venkataram:** Data curation, Formal analysis, Writing - original draft. **Nishant Goyal:** Conceptualization, Methodology, Visualization, Supervision, Writing - original draft, Writing - review & editing. **Deepjyoti Kalita:** Data curation. **Yogesh Bahurupi:** Formal analysis. **Gangotri:** Writing - original draft, Data curation. **Saravanan Sadhasivam:** Writing - review & editing. **Suresh K. Sharma:** Writing - review & editing.

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