

## Proposed protocol for management of acute burn during COVID19 outbreak: An Indian Perspective

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### Abstract

The burn department of any hospital is an emergency department which faces serious threats for infection. As the burn patients have compromised immunity, any new patient admitted in the burn ward may be a potential source of COVID19. So, it becomes very necessary to manage the whole process including triage, admission, management of burn ICU (BICU), surgeries, physiotherapy, discharge and rehabilitation. COVID19 pandemic is presently affecting each and every country of the world including India. The epidemic was first reported from Wuhan in Hubei province of China in December 2019. The pandemic is caused by 2019-CoV. This paper proposes some strategies and suggestions regarding the effective management of burn patients at every stage based on our experiences (at UPUMS Hospital, Saifai).

**Keywords:** Burn in COVID19, COVID19, COVID19 outbreak

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### Introduction

COVID19 is a beta-genus Corona virus. The International Committee on Taxonomy of the viruses has classified it as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) and the WHO has named it COVID19. The virus has been shown to use the angiotensin-converting enzyme 2 (ACE2) receptor for cell entry[1]. It is responsible for the present pandemic which causes severe respiratory infection leading to corona virus pneumonia in quite good number of cases[2]. However, in a small proportion of cases, they can progress to a more severe and systemic disease characterized by the Acute Respiratory Distress Syndrome (ARDS), sepsis and septic shock, multiorgan failure, including acute renal injury and cardiac injury. It is even more severe in patients with coexistent chronic diseases. Health care workers are equally prone to COVID19 infection and we have to adopt such management strategies to treat burn patients and simultaneously protecting HCWs from contracting this dreaded infection. WHO (under International Health Regulations) has declared this outbreak as a "Public Health Emergency of International Concern" (PHEIC) on 30th January 2020. WHO subsequently declared COVID-19 a pandemic on 11th March, 2020[1]. The median incubation period is 5.1 days (range 2–14 days). The precise interval during which an individual with COVID-19 is infectious is still uncertain. As per the current evidence, the period of infectivity starts 2 days prior to onset of symptoms and lasts up to 8 days. The extent and role played by pre-clinical or asymptomatic infections in transmission still remains under investigation[3].

### Role of Telehealth Services

Telemedicine has an important role to play to avoid overcrowding at the hospitals by which burn clinicians can talk face to face with the patients and their relatives over various digital platforms and can give

important advices to the patients and their attendants. We suggest burn patients to stay at home and take treatment wherever possible, not advised to visit hospital so as to avoid potential exposure to infection. Other mechanisms to minimize encounter with health care workers is by self-monitoring using apps, use of helpline, web-applications, video-calls, etc[4]. Aarogya Setu and Chikitsa Setu apps are such useful mobile applications developed by government and everyone is advised to download and use these applications in their mobile devices. If cannot be managed at home, the patients are advised to visit nearby Community Health Center or a District Hospital and get their dressings changed and obtain further treatment advice.

In case of emergency or a critical situation patients must be shifted to hospital as soon as possible whenever admission is necessary.

### Triaging and Categorization

Triage is to be done at three stages L1 to L3. At L1 the patients and at least one attendant is quickly screened for a foreign visit in last 14 days, fever >37.3°C, contact with COVID19 positive person, symptoms suggestive of SARI (Fever cough, breathlessness for < 10 days), antibody test report and whether the patient is a health care worker. Depending on the assessment, registration slip is marked red (suspect) or green (non suspect) and the patient is quickly shifted to L2 where patient is managed by medical officer and send to L3 in case of red mark or to the burn ward in case it is marked green. In L3 the COVID19 test of the patient is done and depending on the test report the patient is either shifted to isolation ward of COVID19 hospital or to the BICU. The patients can be categorized according to emergent situation and urgency.

### Patients requiring urgent admission

The patients with major burns (10%TBSA) or having emergent situations like severe facial burns or inhalational injuries require urgent admission and surgical intervention if need be. It is advisable to keep surgical procedures at minimum and duration of surgery to be kept as much short as possible to minimize the possible exposure.

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Every attempt should be made to minimize hospital stay by discharging the patient at earliest possible occasion.

#### Non-operative cases

Those cases which do not have any serious injury or do not need any operative intervention, should be treated conservatively. They should be sorted out whether they require follow up visits. Unnecessary follow up visits can be avoided in this way thus reducing pressure on health care facilities.

#### Day care cases

Prioritization and case selection for day care surgery should be done. This will avoid unnecessary admission, reduce exposure and finally avoid burden on already stressed health care staff.

#### Patients requiring dressing

Patients not requiring admission may contact nearby hospital or clinic for dressing and may contact by telemedicine OPD.

Unnecessary crowding in the hospital premises should be minimized. Preferably, one attendant should be allowed with one patient and should be tested for COVID19. Hand washing corners to be established at the entrance of the hospital building.

#### Reorganization in view of COVID19

##### Ward administration

Strategic reorganization of available facilities should be done to control infection in the ward. Two hourly mopping of floor with 1% hypochlorite solution and frequent cleaning of high touch areas. Spray of disinfectant solution at least morning and evening over all high touch contact surfaces. Nobody is allowed to enter without proper SMS, staying inside the ward is just not allowed in any case.

##### Controlling access to the burn ward

Only one attendant is allowed with adult patient, in case of pediatric patients two attendants may be allowed. No attendants should be allowed to stay inside the ward in any case. Changing the attendants should also not be allowed.

##### Burn ICU (BICU)

We consider air conditioning a double edged sword. On one side it provides comfort and on the other it a potential threat for spreading infection. The ideal situation is to keep every patient in a single room with dedicated air conditioning system either window or split units. In a ward with multiple patients, a separate area or a corner of the ward should be designated as a temporary quarantine area. All new patients should be kept in isolation for 5 days and preferably 14 days. [5]. If there are no symptoms of COVID19 infection the patient is treated as a non-COVID patient. In case of new symptoms, the patient is immediately transferred to COVID facility of the hospital. The distance between two beds is increased to not less than two meters.

##### Operating suits

All the scheduled and regular cases to be suspended till further, only emergent cases should be taken up in the operation room. Debridement wherever necessary is to be kept minimum and a conservative approach is to be adopted. Short surgeries should be preferred over lengthy surgeries to limit the exposure to a minimum. For the emergency or urgent surgeries, the surgery is done with taking all precautions as for Corona virus infection and a test sample is sent. After the test report is available, it is finally decided to shift the patient either to normal BICU or to the COVID facility [6].

##### Rehabilitation and Discharge

Discharge form the ward is planned well in advance so as to enable the physiotherapy team to train the patient about how to do physiotherapy. We recommend to provide pre recorded videos on CDs or memory cards or videos may be sent on online media.

##### Advice to patients/Relatives

We advice everyone for SMS i.e. Social distancing, Mask and respiratory hygiene, Sanitization of hands regularly by either soap and water or alcohol based sanitizers. They should not come and go very frequently out of the ward.

##### Advice for HCWs

Repeated training sessions for all ward staff by lectures, video presentations and practice sessions should be conducted at regular

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intervals and should be repeated regularly. Hand hygiene in all steps, gloves, respiratory hygiene using medical mask, cap, goggles, protective face shields and coverall PPE suits during surgeries and caring the positive patients as per guidelines HCQ Prophylaxis 400 mg BD day 1; thereafter 400 mg OD for next 4 days. For high risk exposure to positive patient 400 mg BD day 1; thereafter 400 mg OD for next 7 days. The drug should be taken under medical supervision [1]. Admit only one patient at a time. Only one attendant is allowed for one patient, in case of pediatric patients two attendants may be allowed depending of %TBSA involved. Patients attendants and relatives must wear mask, maintain social distancing and follow hand hygiene instructions. Any patient or their attendant are not allowed to stay inside the ward.

##### Disposal of dead bodies

Disposal of a dead body should be done taking all precautions adhering to standard guidelines and directions issued by the government from time to time.

##### Recommendations for biomedical waste (BMW) disposal

The BMW must be disposed off properly as per standard guidelines laid down by the government and no deviation should be permitted.

##### Conclusion

The disease has very short history but we know with certainty that it is highly contagious and can cause great damages to most organs leading to multiorgan failure. Though it affects mainly lungs but other organs like kidneys, heart and many other organs are not spared. The mortality rate of patients with severe lung infection can be as high as 61.5. These recommendations are based on present knowledge and experience at our hospital. As these suggestions are based on a very short experience and more and more information is accumulating very fast, these suggestions and information needs further evaluation and improvement. So we always refer to the latest government guidelines which are available on relevant government portals.

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##### References

1. National clinical protocol 13/06/20.; <https://www.mohfv.gov.in/pdf/ClinicalManagementProtocolforCOVID19dated13062020.pdf>
2. Juan P. Barret , Si Jack Chong , Nadia Depetris , Mark D. Fisher , Gaoming Luo , Naiem Moiemem , Tam Pham , Liang Qiao , Lucy Wibbenmeyer , Hajime Matsumura Burn center function during the COVID-19 pandemic: An international multi-center report of strategy and experience. Burns 2020, 46:1021-1035.
3. Enabling Delivery of Essential Health Services during the COVID 19 Outbreak: Guidance note <https://www.mohfv.gov.in/pdf/EssentialservicesduringCOVID19updated0411201.pdf>
4. Infection control in burn patients Authors: Joan Weber, RN, BSN, CIC Infection Control Coordinator, Shriners Burns Hospital, Boston, Massachusetts; Albert McManus PhD, Senior Scientist (retired), U.S. Army Institute of Surgical Research, San Antonio, Texas; Nursing Committee of the International Society for Burn Injuries <https://www.worldburn.org/documents/infectioncontrol.pdf>
5. Clinical guide for the management of acute burns patients during the coronavirus pandemic; [https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/Specialty-guide\\_Burns-and-coronavirus\\_V1\\_17-March.pdf](https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/Specialty-guide_Burns-and-coronavirus_V1_17-March.pdf)
6. Experience and suggestion of medical practices for burns during the outbreak of COVID-19; Siyuan Ma, Zhiqiang Yuan, Yizhi Peng, Jing Chen, Haisheng Li, Qizhi Luo, Huapei Song, Fei Xiang, Jianglin Tan, Junyi Zhou, Li Ning, Gaozhong Hu, Gaoming Luo; <https://doi.org/10.1016/j.burns.2020.03.014>