

## Recommendations for management of burn patients in context of COVID-19 pandemic

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### Author's Contribution

<sup>1</sup> Wrote all parts of letter on the basis of experience of management of burn patients at Rawalian burn center RMU during COVID-19 pandemic

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## Introduction

It has been reported from china that burn centers have the highest risk of COVID-19 infection.<sup>1</sup> The virus is highly contagious and damaging and mortality rate as high as 61.5% has been reported.<sup>2,3</sup> Burn patients have low level of immunity, lack skin barrier and are prone to infections. Due to these facts, they have less ability to fight against the corona virus, so surgical practices for management of burn patients should be modified to prevent the spread of infection and decrease mortality. Keeping these facts in mind, we adopted certain changes in the protocols for management of burn patients at Rawalian burn center, Rawalpindi Pakistan. We are presenting new recommendations which were followed at the burn center during COVID-19 pandemic. These are the first ever recommendations from any burn center of Pakistan since the start of recent pandemic. With help of literature search we identified risk factors for infection during the course of treatment of burn patients. These recommendations

include alterations in structural layout, administration procedures, burn patient care like the introduction of telemedicine, online appointment system and use of online messaging applications i.e., WhatsApp, staff training and strategies like online learning system to provide new knowledge regarding COVID-19 continuously. Issues of staff like over work, availability of personal protective equipment (PPEs), and their health-related anxiety and fear should be addressed properly for the prevention of burn out syndrome in them.

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## Recommendations

Different studies from different parts of the world have put forward recommendations for management of burn patients in the context of the prevailing COVID-19 pandemic based on their local experience. Ning Li et al<sup>4</sup> in their recent study shared Chinese management strategies for burn patients during COVID-19 pandemic. They discussed their strategy regarding administrative, environmental, personal and surgical management. They also discussed the management of personal protective supplies and mental health of health professionals. Another Chinese study by Siyuan Ma<sup>5</sup> provided experience of managing burn patients and suggested changes required for burn treatment. The Spanish Association of Surgeons has put forward its recommendations for surgical management of patients infected by COVID-19 after conducting a detailed review of literature and internet search of websites WHO, CDC, ECDC and bibliographic search of published material regarding burn management.<sup>6</sup>

To apply these recommendations for burn management during COVID-19 pandemic, based on our local experience at Rawalian burn center RMU Pakistan, a special management plan was made. These recommendations are the first of their kind during this

recent pandemic. They are different from routine recommendations for burn treatment as certain COVID-19 related changes in structure of burn center layout and its administration procedures have been suggested in them. Following are our burn management recommendations in context of COVID-19 pandemic.

### **1. Changes in burn center administration system:**

In Pakistan, tertiary care hospitals have emergency, inpatient and outpatient departments. "Rawalian burn center" receives its new cases mainly through the emergency department. In the context of the recent pandemic following changes are recommended in the administration system of a burn ward.

#### **a) Formation of epidemic control team:**

An epidemic control team should be made comprising of head of burn center, head nurse of the center, medical superintendent of the hospital or his representative, specialist from the pathology department and a member from infection control team of the hospital. A detailed policy according to WHO hospital emergency response checklist regarding epidemic control during all kinds of working in center should be developed and followed in true letter and spirit.<sup>7</sup>

#### **b) Staff training:**

All staff working in the center should be given training to deal with potentially infected patients. This training should comprise of two parts: Firstly, the knowledge about the disease should be provided by regular online classes and secondly the practical implication of this knowledge should be assessed to ensure that each staff member knows and applies it properly. Staff should know and practice the frequent hand washing and strictly wearing masks, goggles and face screens. This training can be done by watching videos and using internet and this should be a continuous and ongoing process.

### **2. Changes in burn ward layout:**

Outpatient, Inpatient, emergency department and burn ICU as recommended by number of Chinese studies<sup>8</sup> should be divided into clean area, potentially contaminated and contaminated area and these areas should be clearly demarcated by the signs of different

colors. New admissions should be kept in a separate area for 14 days and then shifted to the ordinary ward when they are clear. In this separate area, all standard operating procedures for handling COVID-19 positive patients should be followed. If the patient turns out to be COVID-19 positive then he/she should be shifted to the COVID-19 designated facility of the hospital for further management.

### **3. Disinfection policy:**

Burn ward should be sterilized with the help of a circulating air sterilizer three times a day and each time this should be done for 30 minutes. Central air conditioning should not be done for the risk of spreading the infection. An infrared burn treatment apparatus is recommended for keeping burn patients warm. 1000mg/l Chlorine containing solution or 75% alcohol solution is recommended for disinfecting the surfaces. The floor should be disinfected with 1000mg/l Chlorine containing solution by wiping or spraying method for at least 30 minutes. Air in public areas should be disinfected with acid peroxide and hydrogen peroxide by ultralow-capacity spray at least three times a day after evacuating the area.<sup>9</sup>

### **4. Admission policy:**

The most important of all is the admission policy for new burn patients. Only those patients should be admitted to the burn center who cannot be managed away from the hospital where as patients with minor burns should be given first aid treatment and further management should be continued at home with online consultation from the burn center. Local health facilities can be of help in this regard also. Follow up patients should take consultations online by using internet or telemedicine and should only come to hospital when absolutely necessary. Those patients who need to come to hospital should get an appointment through online system so that the patients do not have to gather and wait unnecessarily in OPD.

### **5. Receiving new patient in emergency:**

In the emergency department all new patients should be screened for COVID-19 in an area designated for this purpose preferably near the entrance of the emergency department. All staff working in the emergency department should follow standard guidelines for dealing

COVID-19 patients. If the patient turns out to be positive, then that patient should be shifted to COVID-19 management facility for further treatment by the multidisciplinary team of that hospital. Negative patients should receive the treatment according to the routine management plan but those patients who are admitted in the inpatient department should be kept in the quarantine area of burn ward for 14 days before moving to the general burn ward.

#### **6. Guidelines for operative procedures on COVID-19 positive patients:**

Following guidelines should be followed while operating upon COVID-19 positive burn patients.

- a) After following all routine standard SOPs for surgical patients, informed consent should be taken in writing with a specific note that it cannot be signed because of the risk of spreading infection.
- b) PPE Donning/Doffing sequence should be followed properly by the surgical team.
- c) Checklists should be designed and used for all procedures on COVID-19 positive burn patients.
- d) A separate operating room along with all required equipment should be designated for surgery of COVID-19 positive burn patients only away from the routine operation theatre complex.
- e) A route for safe transfer of positive patients from the designated treatment facility to the operating room should be planned.<sup>10</sup>
- f) Medical personnel traffic and their movements should be limited to minimal in the operating room to minimize the risk of contamination.
- g) The number of health personnel involved in procedures that generate an aerosol should be kept to the minimum possible.
- h) For incisions, electronic scalpel/cautery is recommended.
- i) Instruments should be passed in a tray not by hand.
- j) All unused drugs and disposable instruments should be discarded immediately after the procedure.
- k) Operating room including all surfaces and anesthesia machine should be properly cleaned

for a minimum of one hour between the procedures.

- l) Hydrogen peroxide vaporization is recommended for decontamination of the operation theatre.
- m) Elective surgery for the burn patients should be stopped during the pandemic.
- n) Only the emergency surgery for burn patients should be done after screening tests like CBC and CT scan lung.
- o) Health personnel involved in tracheal intubation and other procedures which generate an aerosol need to work with double preventive standards according to WHO guidelines.<sup>11</sup>
- p) For procedures generating an aerosol, air isolation is recommended.

#### **7. Management of traffic in and out of burn ward:**

There should be separate entry and exit doors for staff, patients and their attendants in order to reduce overcrowding. Screening with a non-contact temperature measuring device like a laser thermal gun should be done at entry points. Frequent use of hand sanitizers should be done at entry points and in ward. All people entering the ward must be disinfected by antiseptic spray at the entry points. Only one attendant per patient should be allowed in the ward who must wear the mask and take standard protective measures. Doctors should try to maintain a distance of one meter from the attendants while talking to them. Suspected patients and attendants should be shifted to COVID-19 treatment facility of the hospital.

#### **8. Protection of health personnel in burn ward:**

As advised by specialized health care department of Punjab and other international institutions like china national protection plan<sup>12</sup> the layered method of protection must be used for health care personnel. Staff at places like outpatient department and burn ward should use primary protection where as for the staff at high risk areas (i.e. where there is direct contact with suspected and confirm COVID-19 cases), secondary and tertiary level protection should be used. Proper and effective use and availability of personal protective equipment (PPEs) must be ensured. Value of hand hygiene must be emphasized with the provision of proper knowledge and training to the staff.<sup>8</sup>

### 9. Recommendations regarding diet of burn patients:

Burn patients require high caloric protein diet for healing of their wounds, which becomes even more vital during COVID-19 pandemic. High protein diet with the addition of essential vitamins should be provided to burn patients and they should be encouraged to drink adequate water. Patients and their attendants should not be allowed to bring or order food from outside rather hospital cafeteria should be allowed to deliver food following the standard SOPs.

### 10. Dealing with psychological issues of burn patients:

As COVID-19 positive burn patients need to be isolated this may produce psychological disturbances like anxiety, loneliness, fear, and sleep disorders. So psychological assessment of these patients must be done to provide remedy for their issues. These patients also need more emotional support by the caring staff. Necessary and accurate information regarding their condition must be provided to them for their mental wellbeing to reduce their anxiety and stress. The same is true for quarantined health personnel, they should feel a sense of ownership by their institution. Their institution must remain in touch with them providing both medical and economic help thus reducing their stress and promoting mental health.

### 11. Preventing burnout syndrome in health personnel of burn center:

This is a very important issue in the context of the COVID-19 ongoing pandemic. Assessment for symptoms of burnout among health personnel should be done and appropriate measures should be taken to address the risk factors such as over work, fear and anxiety leading to its development.<sup>13</sup>

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