

# Incidence of COVID-19 in random trauma patients at DHQ Teaching Hospital, Rawalpindi, measures to prevent its spread among patients and health care workers

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## Author's Contribution

<sup>1</sup> Conception of study

<sup>2,5</sup> Experimentation/Study conduction

<sup>1,2,3,4</sup> Analysis/Interpretation/Discussion

<sup>3</sup> Manuscript Writing

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## Abstract

**Background:** The objective of the study was to see the incidence of COVID-19 positive, in random trauma patients received in the emergency of abdomen or chest may be penetrating or blunt.

**Materials and Methods:** This study was conducted in the Accident and Emergency department of District Head Quarter Hospital, Rawalpindi. All trauma patients of abdomen or chest either penetrating or blunt admitted from 1-3-20 to 10-6-20 were included, irrespective of age, gender, comorbidities, and COVID-19 status at the time of admission to hospital. Also to see steps of preventive measures taken in the emergency department, operation theatres, and inwards.

**Results:** Total number of trauma patients received in the emergency department of District Headquarter Hospital Rawalpindi during this period was 163. Total male patients: 116. Total female patients:47. Penetrating injuries (firearm or stab wounds): 93. Blunt injuries: 70. All the penetrating injuries were operated as an emergency. Among blunt injuries, 51 were operated 19 were treated conservatively. Preoperatively none of the patients' COVID-19 test was performed because none of them showed any symptoms likely of COVID-19 such as chest infection, flue, malaise, or fever. After the second postoperative day, 12 of the patients developed respiratory distress and their COVID-19 test was sent. Out of 12 patients, 7 turned out to be COVID-19 positive. Other on the second or third postoperative day 7 patients had fever without chest symptoms and underwent COVID-19 testing. 3 turned out to be COVID-19 positive. So a total of 11 patients were found to be positive for COVID-19. The percentage became 6.7% which is quite high.

**Conclusion:** From this study, its clear in acute trauma patients where you can't go for the COVID-19 test even then we have to operate may be positive. So every trauma patient should have suspected COVID-19 positive and preventive measures should be taken starting from the emergency department till operation theatres.

**Keywords:** Trauma Patients, COVID-19, Preventive measures in an emergency, operation theaters, and ward.

## Introduction

The coronavirus infection (COVID-19) outbreak started in December 2019 in Wuhan, province of China and within months it involved the whole world.<sup>1</sup> COVID-19 has now been declared as a global pandemic by WHO as the infection has caused worldwide mortalities.<sup>2</sup> In this regard, all countries have developed special precautionary measures at the community level as well as inside the hospitals to stop the spread of COVID-19 but the exact source of transmission of COVID-19 has still not been recognized.<sup>3</sup> The clinical and radiological findings of COVID-19 patients are similar to the patients who present with other severe respiratory tract infections. The typical symptoms are cough, fever, myalgia, dyspnea, fatigue, weakness and generalized body-aches.<sup>4</sup>

Many of the patients who develop COVID-19 infection are asymptomatic and can easily transmit the disease to other people especially health care workers (HCWs).<sup>5</sup> HCWs are most vulnerable to get infected because they come across a variety of patients daily and many of them are asymptomatic carriers. The trauma patients are a diverse population with respect to infection rates, are often asymptomatic carriers, and can easily spread infections to HCWs because of their frequent contact with their wounds during dressings and general examination. In many of the trauma patient's infection is diagnosed during routine examination and while performing mandatory chest X-rays.<sup>6</sup> So management of trauma patients along with the prevention of the further spread of infection is one of the major concerns.

In the present study, we presented our experience at Accident and Emergency department and Surgical department of District Headquarter Hospital, Rawalpindi regarding the incidence of COVID-19 in patients presenting in surgical emergency and modification of protocols and policies to prevent the spread of COVID-19 infection among trauma patients and medical professionals involved in the handling of trauma patients.

## Materials and Methods

This observational, prospective study was conducted at the Accident and Emergency department of District Head Quarter Hospital, Rawalpindi. All trauma patients admitted over a period of three months starting from 1-3-20 to 10-6-20 with penetrating and

blunt injuries of abdomen or chest were included irrespective of age, gender, comorbidities, and COVID-19 status at the time of admission to hospital.

None of the patients' COVID-19 test was performed at the time of hospital admission because none of them showed any symptoms likely of COVID-19. Patient safety and healthcare safety was assured. All the healthcare workers were wearing personal protective kits in an emergency. Patients were made to wear masks. Attendants were kept at a safe distance. In operation theatres too, safety measures were taken keeping in mind the patients may be COVID-19 positive. Anesthetists also took safety measures including masks, goggles, and face shields. The theatre staff was also wearing masks.

A total of 163 patients were studied. Patients were observed and followed up in the post-operative or post-admission period for 15 days. Nasal swab for PCR was sent as soon as a patient developed any symptoms of COVID-19 such as flue, fever, cough, chest discomfort, dyspnea, myalgia, or malaise. The patient was kept in complete isolation until the report of PCR arrived. A single physician and nurse went to see the patient fully equipped in PPE. Nasal swab PCR of HCW and other people were also sent who were exposed to the particular patient within the past 14 days.

## Results

The total number of trauma patients received in the emergency department of District Headquarter Hospital Rawalpindi during this period was 163. Gender distribution of the patients reported has been explained in Table 1.

Nature of the injuries reported has been described in Table 2.

**Table 1. Gender distribution of the patients**

<i>Total Number of Patients</i>	163
Males	116
Females	47

**Table 2. Nature of the Injuries**

<i>Nature of the Injury</i>	
Penetrating Injuries (Firearm / Stab wounds)	93
Blunt injuries	70

All the penetrating injuries were operated as an emergency. Among blunt injuries, 51 were operated 19 were treated conservatively. Most of the patients recovered uneventfully. On the second postoperative day, 12 of the patients developed respiratory distress and their COVID-19 test was sent. Out of 12 patients, 7 turned out to be COVID-19 positive. After the third postoperative day, 7 of our patients had fever non-settling without chest symptoms and underwent COVID-19 testing. Out of which 3 patients turned out to be COVID-19 positive. So, a total of 11 patients were found to be positive for COVID-19. The percentage of positivity in this randomized study is 6.7%.

In light of our results, it is evident that all the 11 patients were symptomless at the time of their presentation in an emergency. So it is quite obvious that in this situation of a global pandemic, we should consider every patient as COVID-19 positive until proven otherwise.

We can halt elective surgeries but we have to manage acute trauma patients. So, safety measures should be taken starting from the trauma room, operation theatres, and then in ICU and wards to prevent further spread.

## Discussion

In the light of above-mentioned results, it is evident that in this situation of global pandemic every patient should be considered as COVID-19 positive unless proven otherwise. The continuously increasing number of patients in our country is an alarm so adequate measures should be taken in time to prevent the spread of disease among health care professionals and other COVID-19 negative patients by asymptomatic carriers presenting to emergency for some other cause. We can halt elective surgeries but we have to manage acute trauma patients. So, safety measures should be taken starting from the trauma room, operation theatres, and then in ICU and wards to prevent further spread.

To stop the spread of infection in our center we have made a few modifications in our trauma center protocols and policies.

### 1. Basic Modifications in Trauma Center to Handle COVID-19 patients:

For maximum utilization of resources and to accommodate maximum patients with a minimum spread of infection to non-infected patients and HCWs, several modifications are made in trauma care.

We have increased the ICU capacity and have dedicated one ICU for COVID-19 positive trauma and surgical patients and the other ICU is dedicated to the non-surgical COVID-19 patients. To fulfill this, trauma patients are stratified for potential risk of COVID-19 and are categorized into three groups, (1) **Low-Risk Group**; patients having no cough, fever, dyspnea, and no other clinical sign of COVID-19. (2) **Intermediate Risk Group**: patients who don't have clinical symptoms but have findings of respiratory tract infections on radiological and chest examination. (3) **High-Risk Group**: patients having all of the above-said findings such as cough, fever, dyspnea, and radiological evidence of COVID-19.

Patients with low risk are kept in clean COVID-19 free ICU, while those of intermediate are kept in quarantine ICU where further investigations are done to rule out infection. High-risk cases are directly sent to the COVID-19 ICU. This strategy has helped a lot to easily identify and look after high-risk patients. All necessary precautions are taken before seeing these patients.

### 2. Maintenance of Constant Communication:

To maintain communication between the HCWs managing trauma patients a WhatsApp group has been created for in-time communication. Daily patients' reports with their names and hospital registration numbers are uploaded in the group to discuss further management and to update about the patients' recovery. The consultants carefully observe all the investigations and order the working physician and surgeons regarding further management of the patients.

### 3. Trauma Care Modifications:

For the safety of HCWs, every patient presenting in the emergency should be considered as a positive case of COVID-19 until proven negative. So all the HCWs working in an emergency should wear PPEs, and if the patient is found to have any COVID-19 symptom, a face mask should be placed on the patient's face as well. If the patient is irresponsive and cannot give history, it is recommended to get a chest X-rays and nasal swab PCR for COVID-19 to confirm the diagnosis.

The number of staff in the trauma bay is kept minimal. In our practice, a resident doctor is always available for an initial assessment. A senior registrar and a staff nurse are available in a room near the bay area for secondary examination and to perform procedures such as vascular access and to provide medications.

All the remaining team members are advised not to come near the patients until its very necessary.

Immediate action is taken by all the team members if the attending physician declares an emergency.

#### **4. Airway Management Protocol:**

It has been made necessary by all the trauma teams to carefully assess the need for intubation or thoracotomy. If intubation or thoracotomy is needed a two HCW wearing full PPEs (that have not been used before to check any other patient) with all necessary instruments will do the procedure.

#### **5. Operating Room Modifications:**

All the elective cases of trauma have been delayed until the COVID-19 pandemic comes under control. In the case of surgery, history is taken for symptoms of COVID-19 and even if asymptomatic, the COVID-19 test of the patient is obtained and the patient is operated only if the test is negative. Elective surgery is performed only in negative cases. In case of an emergency procedure, we have made a policy that during intubation only the anesthetist wearing full PPEs will be inside the ORs will only 1 assistant and all the remaining team will stay outside the OR until the airway is secured, as there have been reports of aerosolization during intubation.<sup>7, 8</sup> So after securing an airway, all the staff is advised not to go inside for at least 15 minutes so that the aerosols get grounded. The entire team must wear N95 masks and face shields during the operation.

Laparoscopic procedures are found to create aerosolization during pneumoperitoneum creation,<sup>9</sup> so because of following the guidelines of the Canadian Association of General Surgeons and American Society of Gastrointestinal and Endoscopic Surgeons we have withdrawn the use of laparoscopy and have adopted open surgical procedures and the use of cautery is minimized to reduce the risk of aerosolization.<sup>10,11</sup>

modifications made in the trauma unit, will not only help in early stratification and proper allocation of the patients but will reduce the risk of spread of infection to HCWs also.

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## Conclusion

From this study it's clear in acute trauma patients where you can't go for the COVID-19 test, even then we have to operate, patients may be positive. So every trauma patient should be suspected COVID-19 positive and preventive measures should be taken starting from the emergency department till operation theatres. The current COVID-19 pandemic has raised a huge issue of the safety of HCWs and the patients. In regions where there is a high incidence of infection, there is a need for modification of various hospital protocols to keep the smooth flow of patients with minimum chances of infection spread. Our