

# COVID-19 MANAGEMENT

## VOL-II



DEPARTMENT OF INFECTIOUS DISEASES  
RAWALPINDI MEDICAL UNIVERSITY

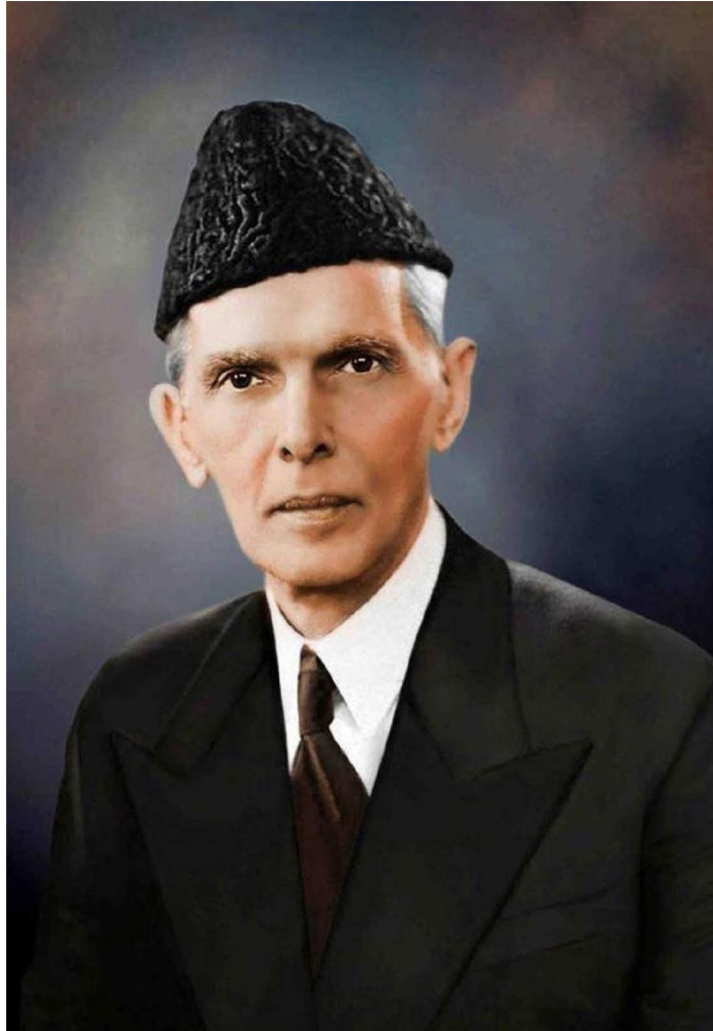


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**If you want to raise the prestige and greatness of Paksitan, you must not fall victim to any pressure but do your duty as servants of the people and the state, farelessly and honestly.**

**Quaid-e-Azam Muhammad Ali Jinnah  
Address to Civil Officers  
Peshawar, April 1948**

## Proclamation

The Department of Infectious Diseases, acknowledges the contribution of all the clinical Departments of RMU & Allied Hospitals, during the COVID-19 pandemic. We are grateful to the Department of Medicine, Critical Care, Pulmonology, Nephrology, Anesthesia and the Emergency Department for providing their support in terms of infrastructure and human resource. We also extend our gratitude to the department of Pathology & Radiology for the provision of their continuous services and support for the patients.

We also appreciate the contribution of Deans and Heads of all the departments for their benefaction and role during this pandemic. We acknowledge the vital role played by the Punjab Health Department, District Administration, 111 Brigade, 10 Corp, NCOC and NDMA, in providing valuable support, equipment and protective equipments.

Dealing with such a pandemic was not possible without the facilitation and contribution of all personnel, including Doctors, Nurses, Paramedics and support staff, working in such extreme conditions, since the onset of this pandemic. We are indebted to all those who stood by us during this difficult time.

May Allah bless us with his protective against these difficult times (Ameen).



Prof. Dr. Muhammad Umar  
Vice Chancellor  
RMU & Allied Hospitals, Rwp



Dr. Muhammad Mujeeb Khan  
Department of Infectious Diseases  
Rawalpindi Medical University



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**Message**  
**The Minister for Health**  
**Government of the Punjab**

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**Professor Dr. Yasmin Rashid**

In the difficult time of CORONA Pandemic, the health department of Punjab has performed outstandingly. As the adage goes “Desperate times need desperate measures”, they have performed their duties to the best of their capabilities and indeed they have gone an extra mile to deliver the best possible services. In fight against CORONA, performance of Medical staff from Rawalpindi Division has remained matchless and I greatly appreciate the efforts and acknowledge the heroes who have performed and are still rendering their services to humanity; putting their personal life at risk. It is indeed a supreme sacrifice at the altar of duty for which the nation will remain thankful for their sacrifices in the line of duty.

## Message The Vice Chancellor Rawalpindi Medical University & Allied Hospitals Rawalpindi



**Prof. Dr. Muhammad Umar (Sitara-e-Imtiaz)**  
MBBS, MCPS, FCPS, FRCP (Glasgow)  
FRCP (London), FACP (USA), AGAF (USA)

The Novel Corona Virus continues to threaten our way of life and its dynamic nature constantly challenges the limits of human capacity in every walk of life, may it be medical, educational or economy. Under these difficult and trying times, the medical and paramedical staff has proved to be the front-line soldiers to fight against this deadly virus. They sacrificed their lives to save others from this deadly virus. I am really proud of the entire medical staff of Rawalpindi Medical University and Allied Hospitals who, has stood the test of times and proved their mettle at these most critical and challenging times. I would hugely appreciate their dedication and devotion to their duty and commend their wholehearted efforts in the fight against this pandemic.

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**Message**  
**Medical Superintendent**  
**Holy Family Hospital, Rawalpindi**  
**Incharge RIUT**

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**Dr. Shazia Zeb**

**Acknowledging Our Team's Dedication and Hard Work during Covid-19 at Holy Family Hospital**

For last two years, our healthcare workers are working as frontline warriors in the fight against the novel corona virus disease (COVID-19) that has spread rapidly throughout the world. We acknowledge our team of dedicated professionals who are working day and night for the prevention, treatment and rehabilitation of the patients by working on the strategy of vaccination, spreading awareness and counseling of the treated patients for their physical and psychiatric well being.

Thank you for the sacrifices you make, every day and especially during this pandemic. Your dedication, commitment and courage deserve my deepest gratitude and admiration. Your service to patients is saving countless lives and making thousands of differences.

The same motivation will be carried throughout the battle against Covid-19 and Insha'Allah we will be able to go through will full obligation and loyalty.



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**Executive Summary**  
**The Head of Department**  
**Department of Infectious Diseases**  
**Holy Family Hospital, Rawalpindi**

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**Dr. Muhammad Mujeeb Khan**

Undoubtedly, the outbreak of COVID-19 has proved to be a nightmare for the entire world. Every Nation is putting up a brave fight against this deadly virus and Pakistan has left no stone unturned to control the spread this lethal epidemic. During the first wave, the spread of the disease; largely, remained under control throughout the country due to very strict and effective preventive measures introduced by the Government at National and Provincial levels. On August 7, National Coordination Committee (NCC) announced that COVID-19 pandemic had been controlled due to effective strategy and the country was declared open for resumption of normal life. By the grace of Almighty Allah, we have been able to manage the patients efficiently and effectively in Rawalpindi District.

The of 2<sup>nd</sup> wave of COVID-19 started gaining momentum in the country in August 2020 and the government officially announced the onset of second spell in Pakistan on October 28, 2020, after the daily death toll reached 750 in contrast to 400 to 500 a few weeks ago <sup>(4)</sup>. However, it was observed that the ratio of patients on ventilator during the first wave was less than the second wave. It was also noted that the death toll in second wave was also on the rise as compared to the first.

The third wave of COVID-19 started in March 2021. Third wave was more alarming as a different type of virus (called as British strain) was observed in the patients and the rate of infection was also higher than the previous strains. This was the reason that this wave was declared as more lethal than the previous ones. The fourth wave of Covid-19 began in July 2021 in the country. This wave had highest spread rate due to mutation of virus into another variant known as Delta variant.

It can be concluded that within a few months, the mortality rate and morbidity rate had reached unexpected high levels. The medical science was still trying to find effective treatment and vaccine to prevent this infection. The extreme situation was yet to occur. However, if we take effective preventive measures like self-isolation, it could save the entire community and the risk will decline immediately. This is a situation where everyone must take steps towards minimizing the risk by staying in the house and immobilizing themselves. The airborne, contact transmission can only be disinfected if proper hand washing protocols are followed and everyone carry out precautionary measures to save other individuals from this devastating virus. Pakistan has a tremendous potential in public health, but Covid-19 has jolted our economy and our workforce in hospital has decreased because of this pandemic. Perhaps the carelessness of the public is making this pandemic more deadly, and they are compromising not only their own life but also the lives of others as well.

### **Front liners**



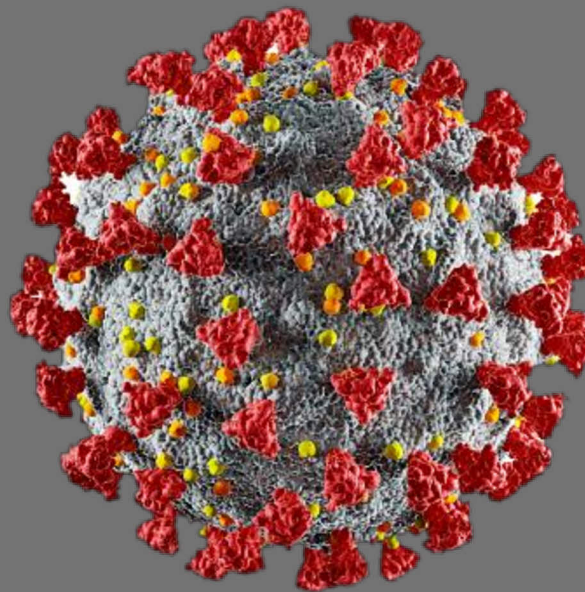
Prof. Muhammad Umar & Dr. Muhammad Mujeeb Khan With COVID-19 Team





**10 October 2020  
To  
February 2021**

# **COVID-19 SECOND SURGE**





The second peak was more of a surge, rather than a peak, with numbers skyrocketing within 17 days, as opposed to the 56 days to reach the first peak. This peak follows the Eid holidays and lifting of the lockdown. This may very well be the aftermath of the Eid shopping surge and lockdown. There are varieties of reason for the 2<sup>nd</sup> surge few of them are listed below:

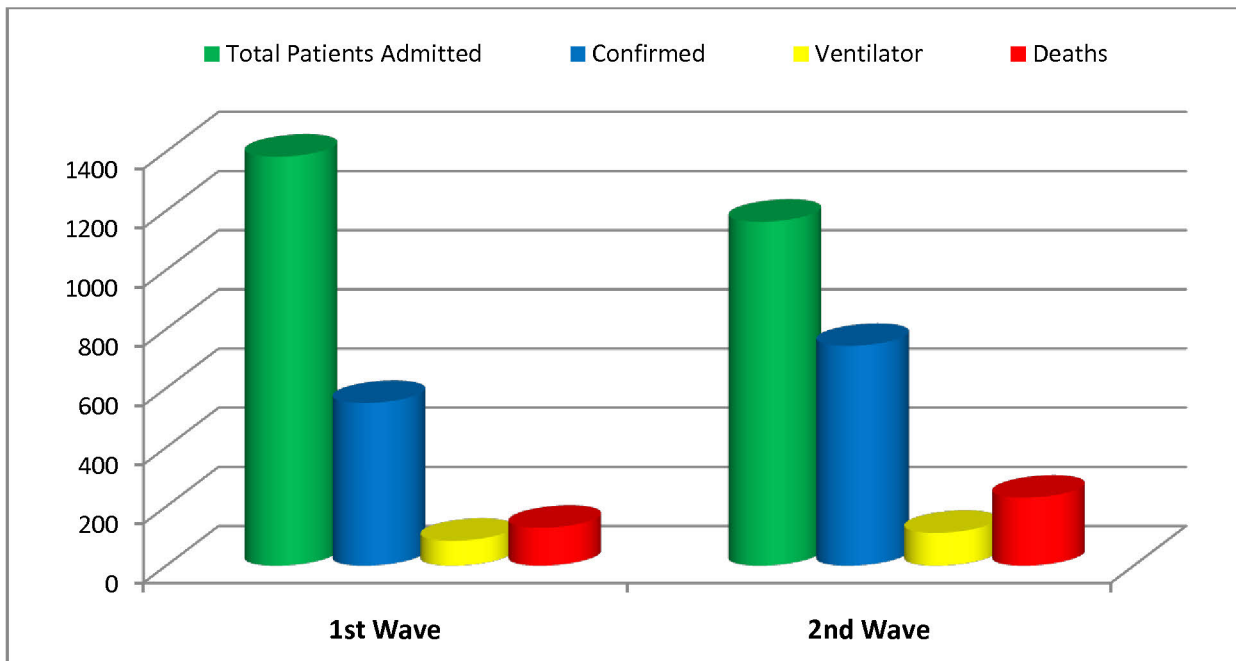
- Lack of a stringent policy and lockdown gamble paved the way for SARS-CoV-2 spread through social, political, religious and regular business activities, transport and tourism. Schools, colleges and universities were re-opened for regular activities across the country.
- The policy of smart lock down or mini lockdown proved to be less effective than the complete lock down.
- In first surge the admission of a COVID-19-positive patient in hospital was imposed by government which also controlled the spread of this virus.
- Precautionary measures were not being observed and there was very less emphasis on wearing of masks and hand sanitization
- COVID-19 SOPs were being neglected by the General public and the communities & neighborhood did not care for the pandemic.
- The weather also became favorable for the spread of virus.
- With the control on pandemic in first surge, there was very less information on main stream media and social media.
- The desensitization of public from drastic impacts of the spread of this virus also made the second wave more drastic.
- Rampant unemployment also contributed in increased pressure on the Government to lift restrictions.

The main distinguishing factor between this peak and previous peak was the number of critical patients, compared to stable patients. Following the lifting of the lockdown and the opening of shopping malls and trade centers, the transmission of the virus was at its peak and following EID, with everyone at their homes, entire families were affected at a single time. There was a wild rush in the markets, with very little or no SOP's being followed.



## COVID-19 Patients Holy Family Hospital (HFH)

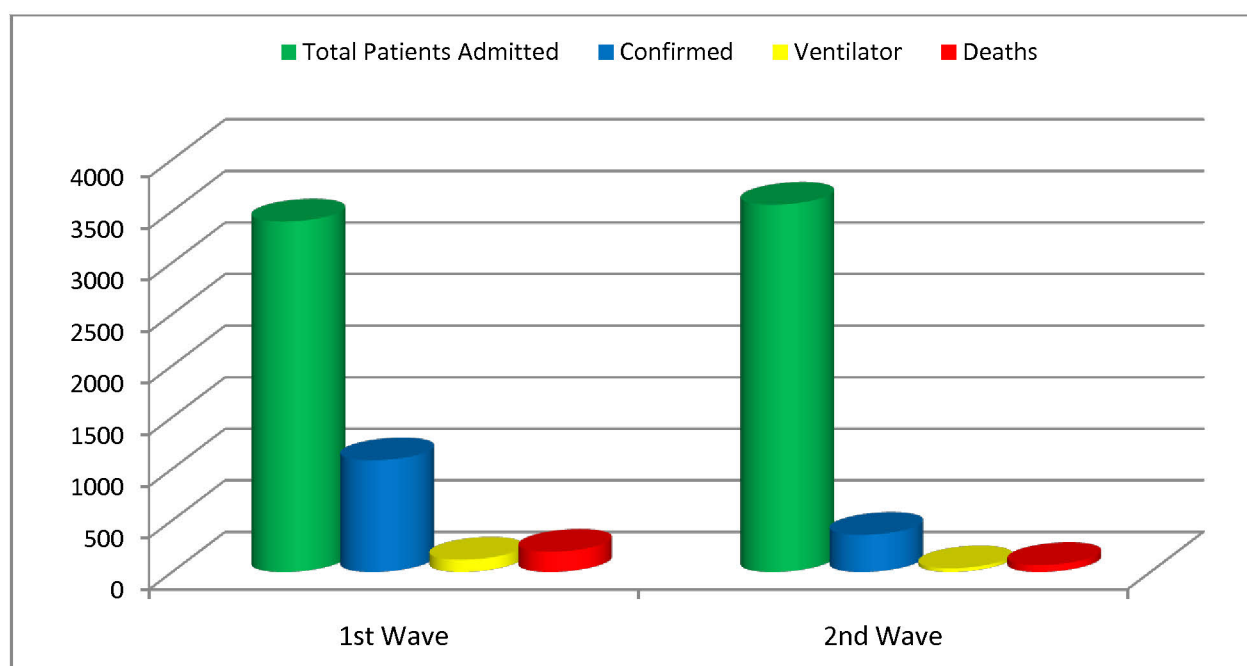
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave
<b>Total Patients Admitted</b>	<b>1383</b>	<b>1163</b>
<b>Confirmed</b>	<b>550</b>	<b>743</b>
<b>Ventilator</b>	<b>84</b>	<b>111</b>
<b>Deaths</b>	<b>128</b>	<b>230</b>



Holy family hospital catered for 1383 patients in first surge and 1163 patients were in second surge of COVID-19. A total of 2546 patients admitted in HFH and 1293 were confirmed COVID-19 cases, out of which 358 died.

## COVID-19 Patients Benazir Bhutto Hospital (BBH)

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave
<b>Total Patients Admitted</b>	<b>3399</b>	<b>3562</b>
<b>Confirmed</b>	<b>1083</b>	<b>360</b>
<b>Ventilator</b>	<b>119</b>	<b>35</b>
<b>Deaths</b>	<b>196</b>	<b>67</b>

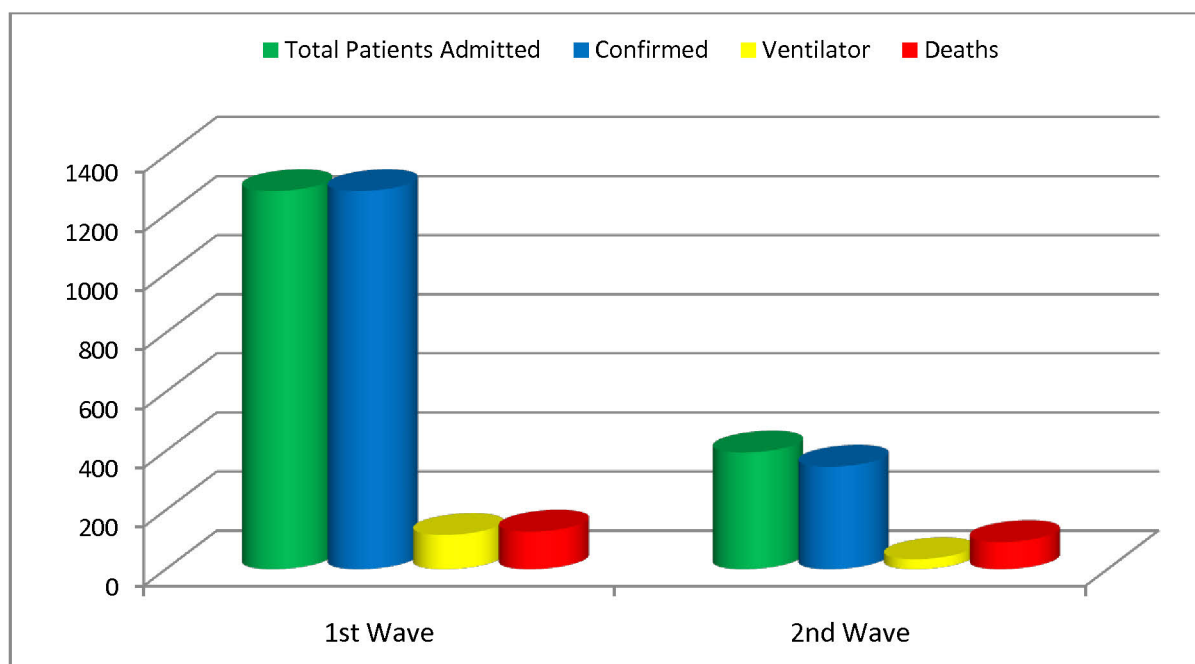


In first wave of COVID-19 BBH accommodated 3399 patients and in second surge 3562 patients. In BBH total 6961 patients were admitted and 1443 were confirmed COVID-19 cases, out of which 263 died.

## COVID-19 Patients

### Rawalpindi Institute of Urology and Transplantation (RIUT)

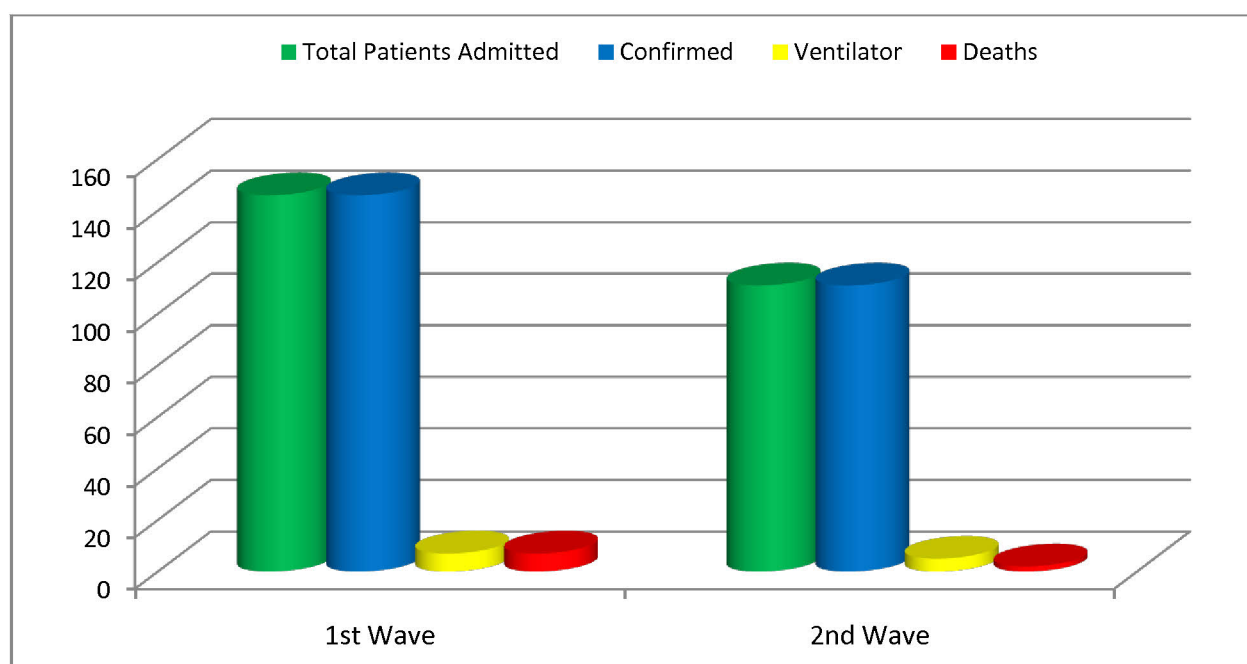
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave
Total Patients Admitted	1280	395
Confirmed	1280	347
Ventilator	116	34
Deaths	127	92



In RIUT 1280 patients were admitted in 1<sup>st</sup> wave and 395 patients in second wave. A total of 1675 patients admitted yet in RIUT in both surges and all were confirmed COVID-19 cases out of which 219 patients died.

## Covid-19 Patients District Head Quarter Hospital

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave
<b>Total Patients Admitted</b>	<b>146</b>	<b>111</b>
<b>Confirmed</b>	<b>146</b>	<b>111</b>
<b>Ventilator</b>	<b>07</b>	<b>05</b>
<b>Deaths</b>	<b>07</b>	<b>02</b>



DHQ Rawalpindi accommodated COVID-19 patients in first and second surge of COVID-19 and 257 patients were admitted and all were confirmed COVID-19 cases. Total 9 patients expired in DHQ hospital in two surges.



## Health Care Workers Affected by COVID-19

On the frontlines of this global crisis were healthcare workers (HCWs) with the substantial task of diagnosing and treating an exponentially growing number of acutely ill patients, often having to make critical decisions under physical and psychological pressure.<sup>7-8</sup> WHO defines health workers as 'all people engaged in actions whose primary intent is to enhance health'.<sup>9</sup> This encompasses doctors, nurses, midwives, paramedical staff, hospital administrators and support staff and community workers, all of whom now face the occupational risk of becoming infected with COVID-19, and at worst, even death. Globally a total of 152 888 infections and 1413 deaths were reported. Infections were mainly in women (71.6%, n=14 058) and nurses (38.6%, n=10 706), but deaths were mainly in men (70.8%, n=550) and doctors (51.4%, n=525)<sup>10</sup>. Like other countries, in Pakistan many health workers got infected in first and second surge and sacrificed their lives in this crucial fight. The health care workers of RMU and allied hospitals of Rawalpindi infected but luckily no one succumbed with this deadly virus and recovered.

### Health Care Workers Affected by Covid-19 in Allied Hospitals and RMU

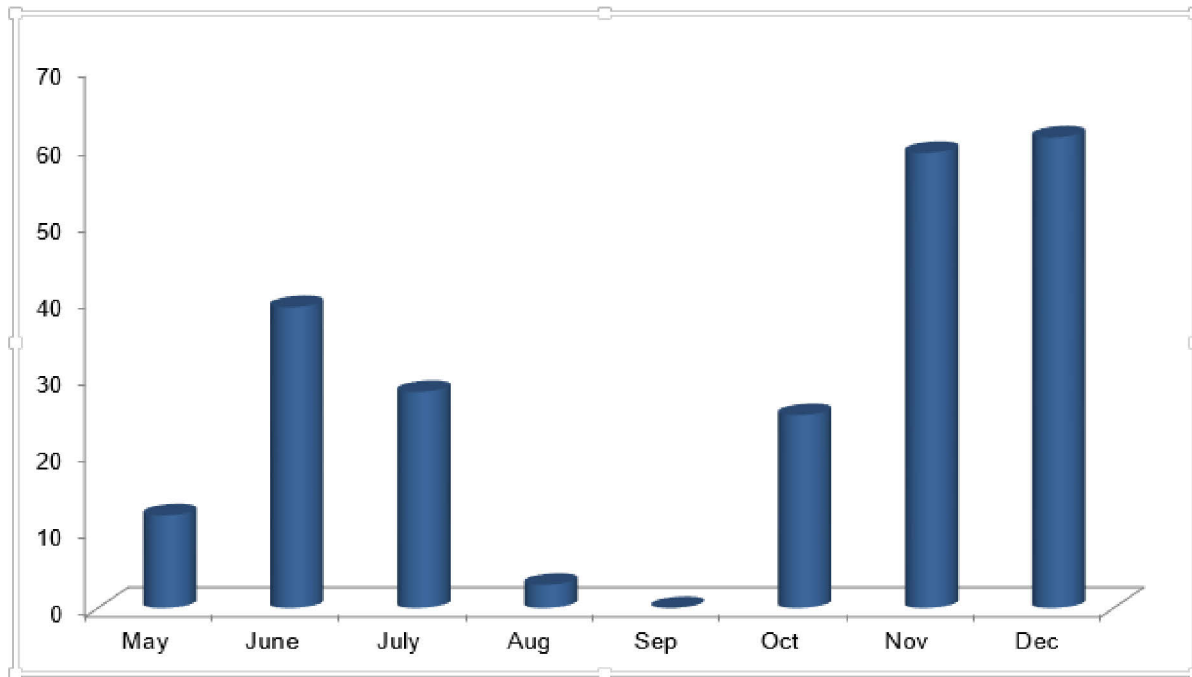
Hospital Name	Doctors			Nurses			Paramedical Staff			Other Staff		
COVID WAVE	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total
HFH	49	43	92	48	61	109	12	04	16	15	04	19
BBH	105	27	132	19	10	29	01	-	01	-	02	02
RIUT	07	-	07	25	09	34	05	-	05	25	09	34
DHQ	20	22	42	28	08	36	04	03	07	17	02	19
TOTAL	181	92	273	120	88	208	22	07	29	57	17	74

In RMU and Allied hospitals of Rawalpindi 275 doctors, 208 nurses, 29 paramedical staff and 74 people from other staff were affected by COVID-19.

## Dialysis of First and Second Surge

In RMU and Allied hospitals of Rawalpindi the dialysis facility was also provided to the patients of Covid-19 in wards.

### Dialysis of COVID-19 Patient in 1st & 2<sup>nd</sup> Surge

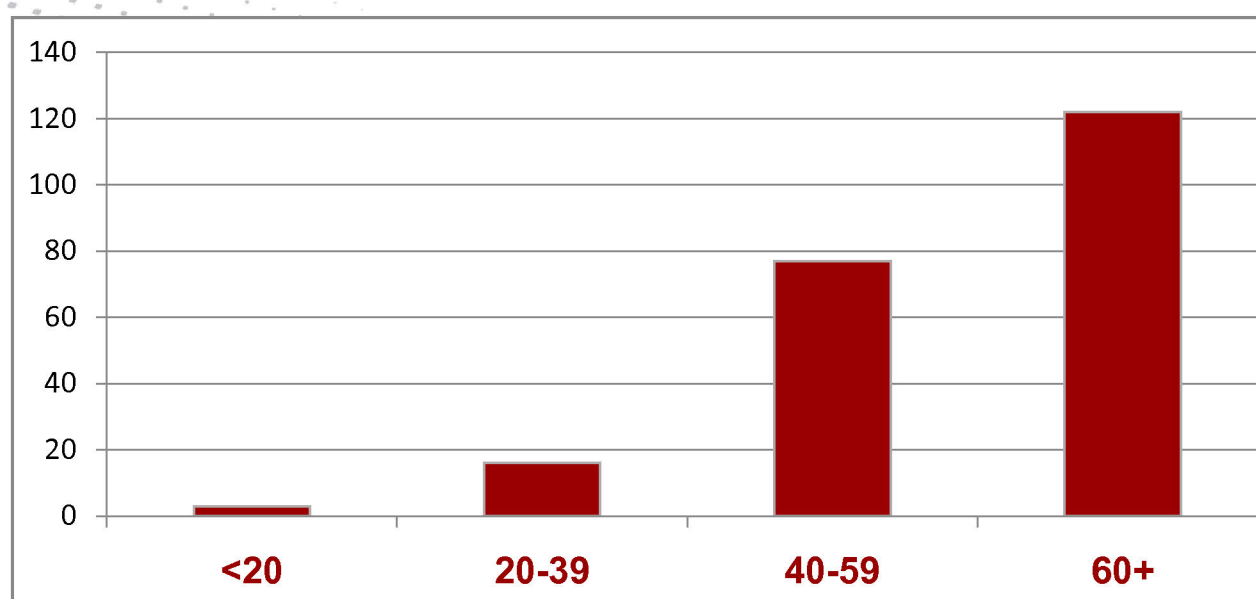


A bulk of patients with confirmed COVID-19 was also having complication of renal failure needing hemodialysis and it has also been observed that in first surge the dialysis patients were less in number as compared to Second surge.

### Mortality Trends of Second Surge

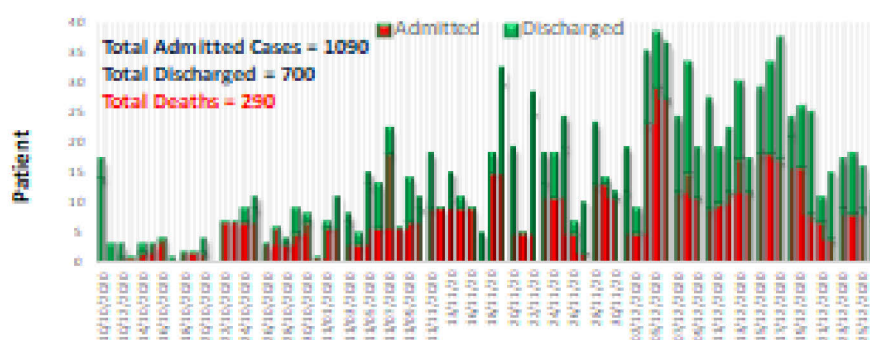
The pandemic of corona engulfed the lives of our loved ones massively. Many people lost their lives irrespective of their gender and age. During epidemic of COVID-19 year 2020 in RMU and allied hospitals of Rawalpindi 326 people lost their lives out of which 69% were males and 31% were females. Most of the patients who expired were above 60 years of age. It is also observed globally that chances of survival of infected reduced much in people with comorbidities<sup>11</sup>. Similarly in RMU and Allied Hospitals of Rawalpindi the ratio of deceased patients with of co morbidities was higher than the normal healthy individuals as 32% had history of hypertension, 22% had diabetes and 23 % had other illnesses.

## Patient's Trends in RMU and Allied Hospitals Rawalpindi in Second Surge of COVID-19

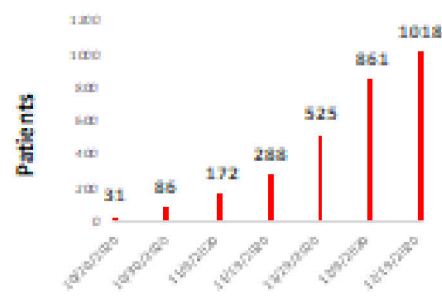


Age Wise Distribution

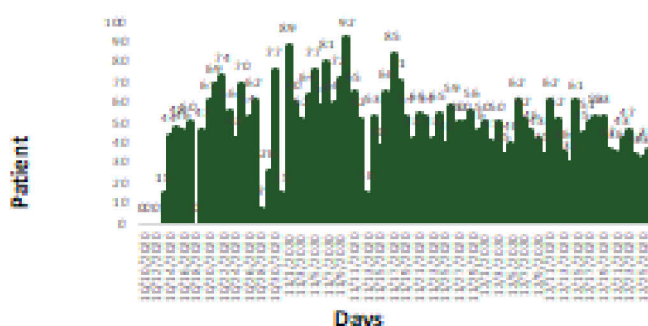
### RMU & Allied Hospitals Patients trend From 10<sup>th</sup> October 2020-26<sup>th</sup> December 2020



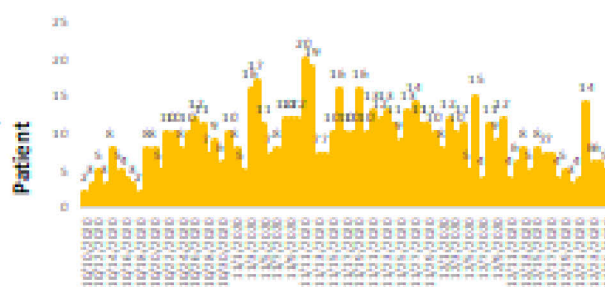
Cumulative Trend



Growth

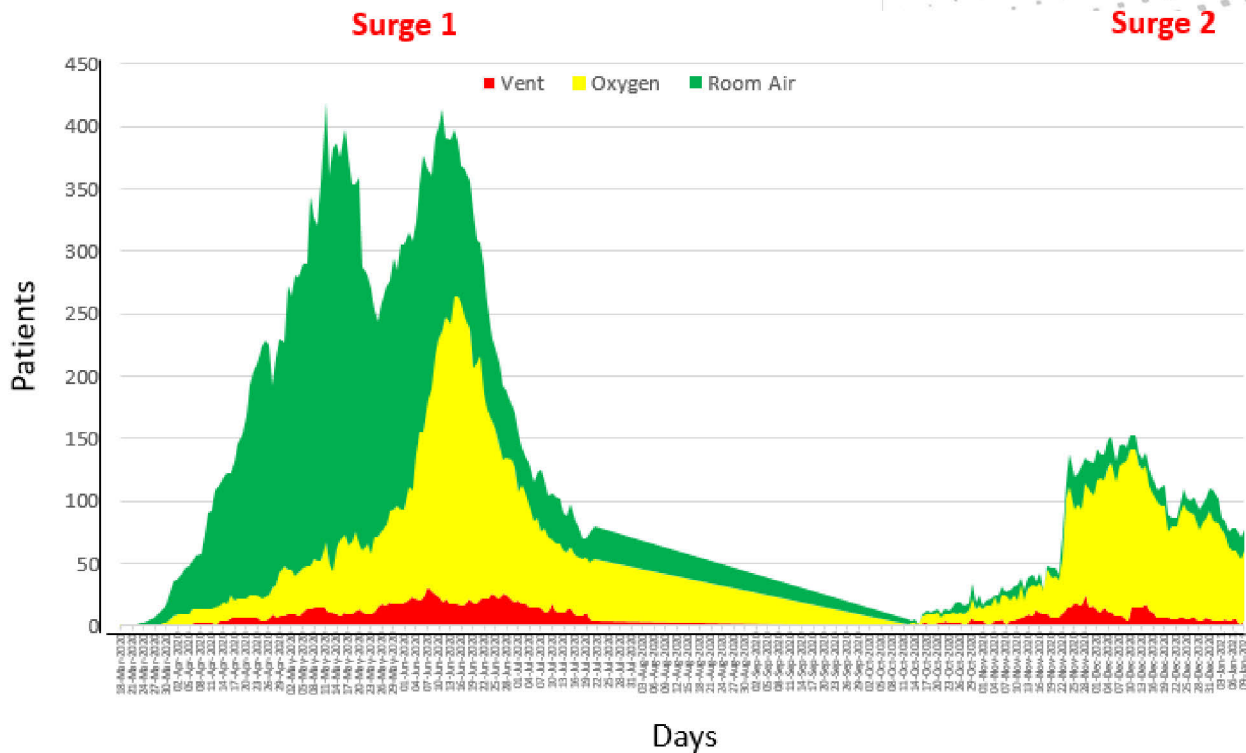


Flu Filter Clinic Patients



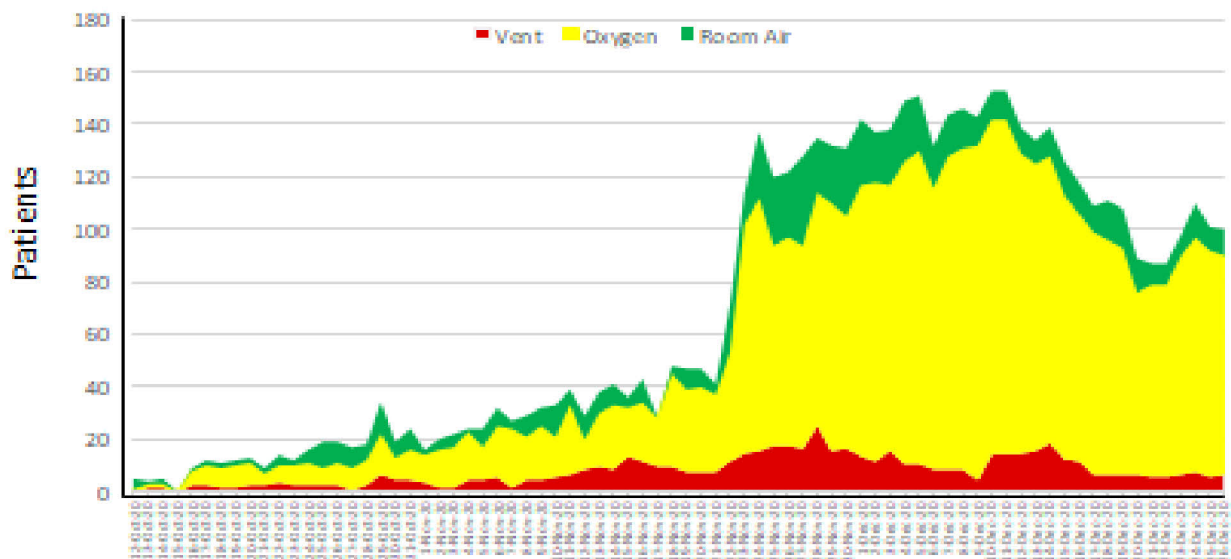
Suspected Patients

## Critical Status – 18 March 202



Comparison of Patients on Room Air, Ventilator and Oxygen Dependent in First and Second Surge

## Critical Status – 10/10/2020 – 26/12/2020



Current Admitted: 100





## **Patients on Room Air, Ventilator and Oxygen**

### **Patient Trend in Second Wave**

In the first wave of COVID-19 patients admitted in RMU & Allied Hospitals were more on room air and less patients were oxygen dependent. However in second surges an abrupt increase in oxygen dependent patients occurred. First, there were far less patients as compared to the first wave. Secondly, most of the patients were either on oxygen or on ventilator support. This could be pinned down on the fact that patients with mild symptoms preferred to home-isolate and are not reporting to the hospitals. Only those having severe symptoms are presenting to the hospitals and thus a spike in oxygen and ventilator support dependence is seen during the second wave of COVID-19.



COVID-19 Management Team Department of Infectious Diseases HFH



COVID-19 Management Team Benazir Bhutto Hospital, Rawalpindi

## Facilities Provided in RMU & Allied Hospitals

In the year of pandemic RMU and Allied Hospitals provided up to the mark facilities to the patients for the management of Covid-19 patients. Fully equipped Corona wards were provided to patients which included; Ventilators, BIPAP, C-PAP and expensive injections of Remdesivir. All the medicines were provided by government to the patients.

In RMU and Allied Hospitals many doctors, nurses and paramedical staffs were trained to manage Covid-19 patients. Moreover the training sessions and courses about the management of dengue fever and hand hygiene were also conducted. The trainings of donning and doffing were also conducted in RMU and Allied Hospitals for effective management of COVID-19. Although it was difficult to manage these trainings with overburdened wards and in epidemic situation throughout the year 2020, but the HOD's and senior doctors of along with the support of the worthy Vice Chancellor of RMU completed this difficult task.

The proper waste management and laundry of the infected sheets and other reusable stuff was also very challenging for the administration of RMU and Allied Hospitals. As the infection spread more with the contact of contaminated services therefore the cleaning and proper waste management is of tremendous importance to stop the spread of virus. For this reason, standard working methods were strictly followed which were created in accordance with the rules laid by The Government of Punjab.



Department of Infectious Diseases Holy Family Hospital, Rawalpindi



## Focus Group for COVID-19 Research RMU & Allied Hospitals

Novel Corona virus was a new virus for the whole world therefore the infection spread very fast and did not control. On such infections and viruses the research is very important. For this reason along with management of COVID-19 infection RMU and Allied Hospitals did not ignore this domain and is efficiently conducting different research projects which include:

- **Project 1:** To Study the Efficacy and safety of Sinovac Covid-19 vaccine; perspective from Rawalpindi Medical University. Available in Pakistan against Clinical COVID Infection
- **Project 2:** Reinfection of COVID-19 in Health care workers after Vaccination
- **Project 3:** Effect of remdesivir in moderate to severe Covid-19 infection
- **Project 4:** Association of HRCT scoring systems and clinical/ laboratory parameters with outcome in Covid-19 Pneumonia
- **Project 5:** Hyperglycemia as a predictor of severity in Covid-19 patients
- **Project 6:** Bravo trial. Vitamin D



Office of the Vice Chancellor  
**RAWALPINDI MEDICAL UNIVERSITY**  
RAWALPINDI

Ph. 0092-51-9290360  
Fax. 0092-51-9290519

Ph. 0092-51-9330060  
Fax. 0092-51-9330062

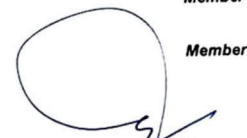
Ref 01/4774/RMU

Date 28-08-2021

### OFFICE ORDER

A Focus Group for Covid-19 Research in RMU is constituted comprising of the following officers for Research Projects related to Covid -19 infection in RMU/Allied Hospitals.

- |  |                      |
|--|----------------------|
| 1. <b>Prof. Fazal ur Rehman</b><br>Prof. of Medicine RMU                                   | <b>Patron</b>        |
| 2. <b>Dr. Muhammad Mueeb Khan</b><br>Associate Professor, Department of Infectious Disease | <b>Research Lead</b> |
| 3. <b>Dr. Najia Mehmood</b><br>Senior Registrar MU-II HFH                                  | <b>Member</b>        |
| 4. <b>Dr. Salmam Mushtaq</b><br>Senior Registrar MU-II HFH                                 | <b>Member</b>        |
| 5. <b>Dr. Sara Mustafa</b><br>Senior Registrar MU-I BBH                                    | <b>Member</b>        |
| 6. <b>Dr. Imran Arshad</b><br>Senior Registrar MU-II BBH                                   | <b>Member</b>        |
| 7. <b>Dr. Eiraj</b><br>Medical Officer RIUT  | <b>Member</b>        |
| 8. <b>Dr. Riya</b><br>Medical Officer RIUT   | <b>Member</b>        |

  
**Prof. Muhammad Umar**  
Vice Chancellor  
Rawalpindi Medical University  
Rawalpindi





Press Conference / Media Briefing



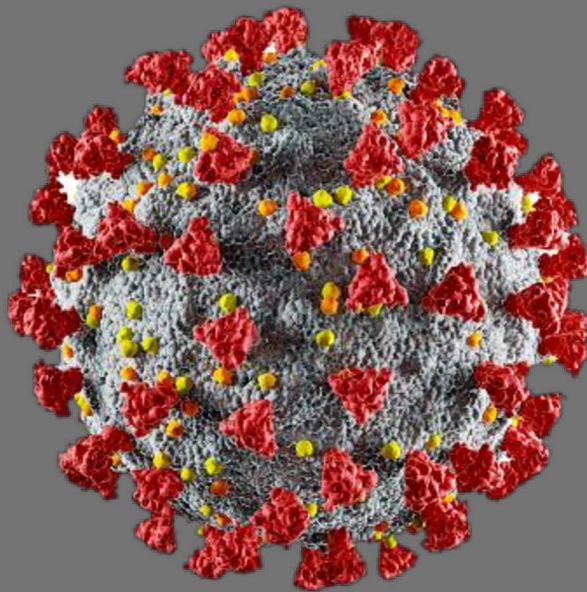
Professor Dr. Yasmin Rashid & Prof. Dr Muhammad Umar with Medical Superintendents of Allied Hospitals





1<sup>st</sup> March 2021  
To  
30<sup>th</sup> June 2021

# COVID-19 THIRD SURGE



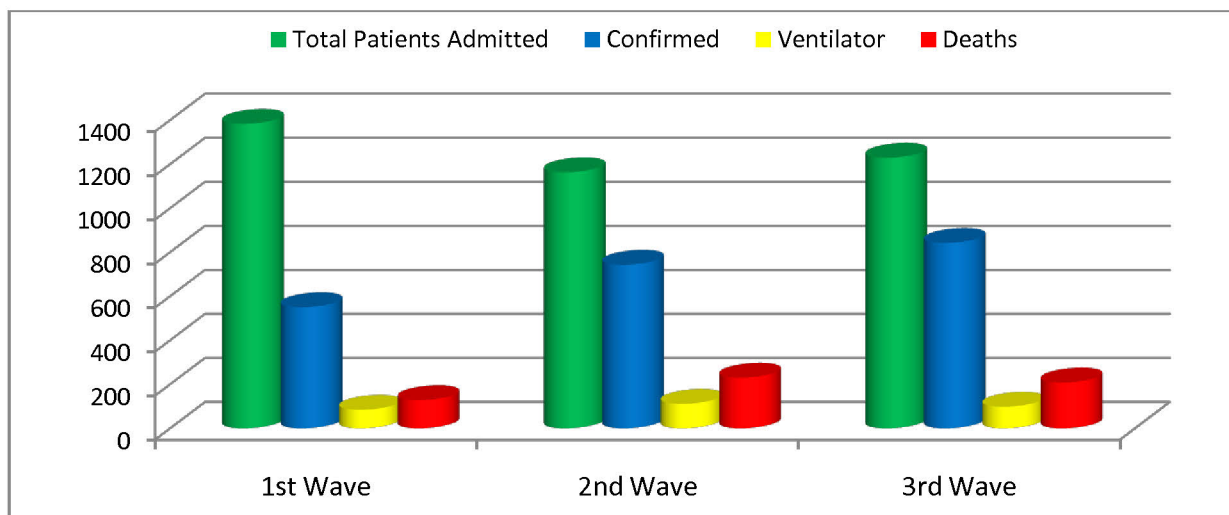


## Introduction

By the grace of almighty Allah, we were able to manage the patients efficiently and effectively in Rawalpindi District. The 2<sup>nd</sup> surge in Pakistan had started in August 2020 and the government announced a second spell of Covid-19 in Pakistan on October 28, 2020, when a daily increase in cases reached 750 compared to 400 to 500 a few weeks ago. However it has been observed that in first surge the percentage of patients on ventilator was less than the second surge. Similarly the percentage of expiries in second surge was more than the first surge. In March 2021 the third surge of COVID-19 was announced in the country as a fast increase in the positive COVID-19 cases was being observed on daily basis. This third surge was considered as the most drastic spell as compared to first two surges.

### COVID-19 Patients Holy Family Hospital (HFH) Rawalpindi

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
<b>Total Patients Admitted</b>	<b>1383</b>	<b>1163</b>	<b>1229</b>
<b>Confirmed</b>	<b>550</b>	<b>743</b>	<b>842</b>
<b>Ventilator</b>	<b>84</b>	<b>111</b>	<b>98</b>
<b>Deaths</b>	<b>128</b>	<b>230</b>	<b>208</b>

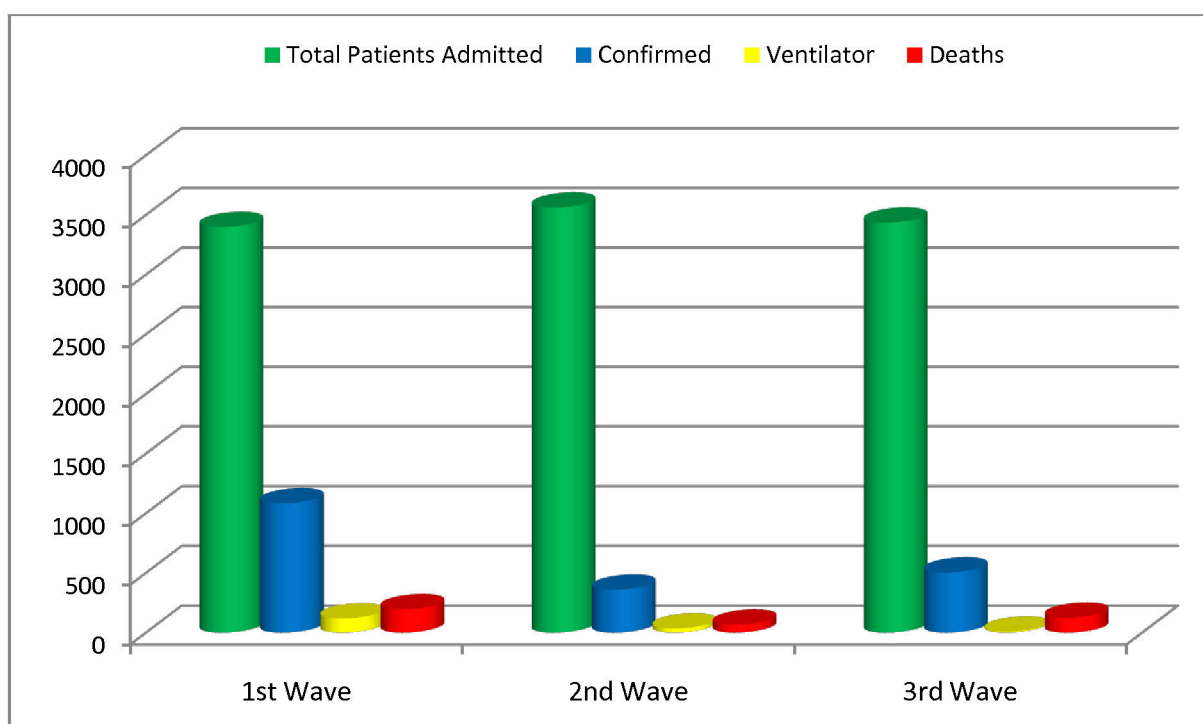


Holy family hospital efficiently accommodated COVID-19 patients in all three surges and 3775 patients were admitted in three surges out of which 566 expired.



## COVID-19 Patients Benazir Bhutto Hospital (BBH) Rawalpindi

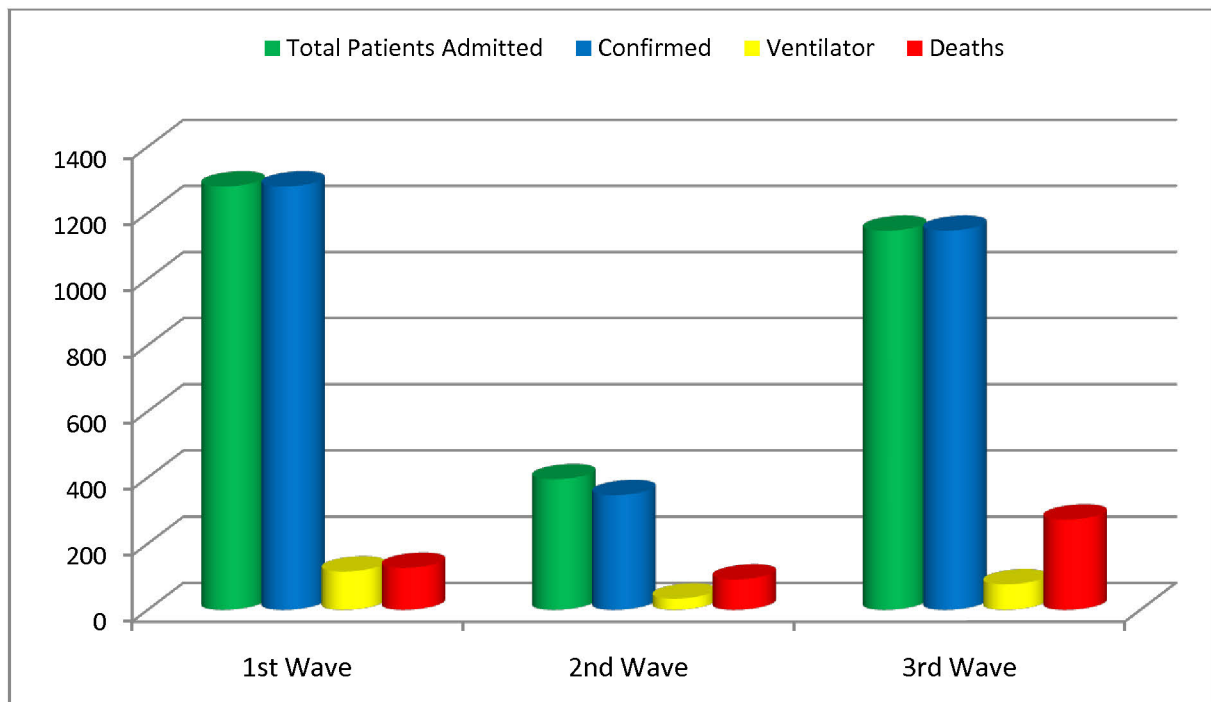
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
<b>Total Patients Admitted</b>	<b>3399</b>	<b>3562</b>	<b>3436</b>
<b>Confirmed</b>	<b>1083</b>	<b>360</b>	<b>504</b>
<b>Ventilator</b>	<b>119</b>	<b>35</b>	<b>09</b>
<b>Deaths</b>	<b>196</b>	<b>67</b>	<b>125</b>



BBH Rawalpindi also accommodated 10397 COVID-19 patients in three waves and out of them 1947 were confirmed. The number of expired patients in BBH with Covid-19 in three waves is 388.

## COVID-19 Patients Rawalpindi Institute Of Urology & Transplantation (RIUT)

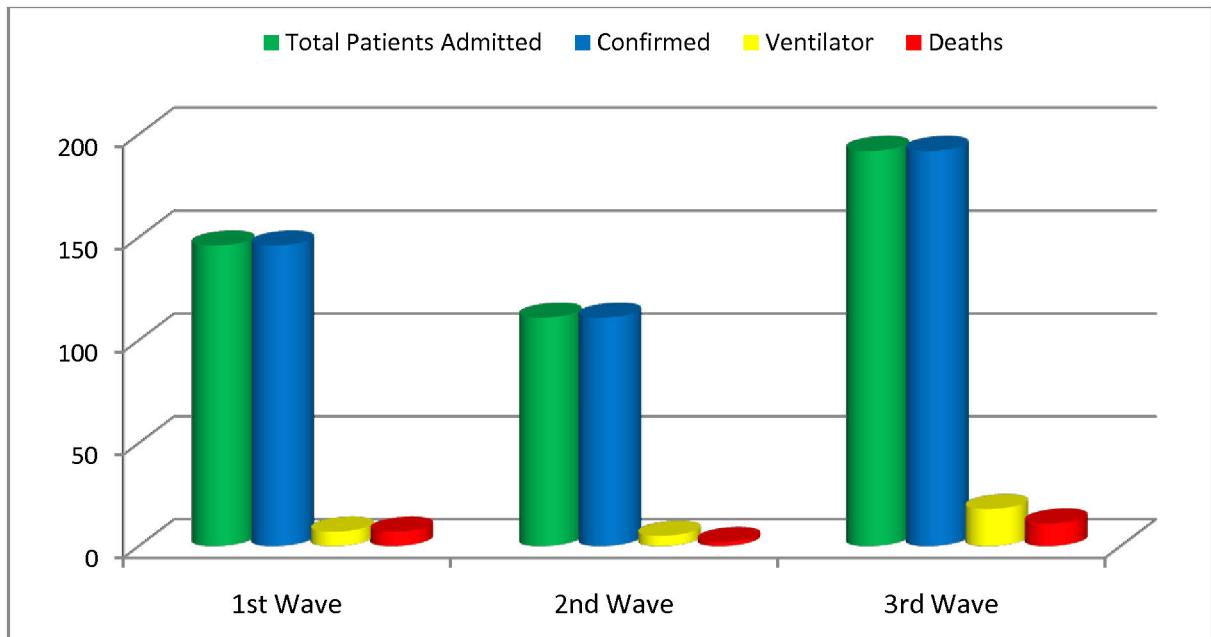
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
<b>Total Patients Admitted</b>	<b>1280</b>	<b>395</b>	<b>1146</b>
<b>Confirmed</b>	<b>1280</b>	<b>347</b>	<b>1146</b>
<b>Ventilator</b>	<b>116</b>	<b>34</b>	<b>77</b>
<b>Deaths</b>	<b>127</b>	<b>92</b>	<b>273</b>



In RIUT 1280 patients of COVID-19 were admitted in the 1<sup>st</sup> wave, 395 in the 2<sup>nd</sup> wave and 1146 in the 3<sup>rd</sup> wave. Overall RIUT accommodated 2821 confirmed Covid-19 patients till now out of which 492 deaths were reported in all three surges.

## COVID-19 Patients District Head Quarters Hospital (DHQ) Rawalpindi

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
<b>Total Patients Admitted</b>	<b>146</b>	<b>111</b>	<b>192</b>
<b>Confirmed</b>	<b>146</b>	<b>111</b>	<b>192</b>
<b>Ventilator</b>	<b>07</b>	<b>05</b>	<b>18</b>
<b>Deaths</b>	<b>07</b>	<b>02</b>	<b>11</b>



In the first wave DHQ Rawalpindi was a center for COVID-19 patients and 146 patients were admitted. In the second wave 111 patients admitted in DHQ and in third wave 192 patients were admitted. Overall 19 patients expired in 3 surges of Covid-19 in DHQ.

## Patient Load in RMU & Allied Hospital 2<sup>nd</sup> and 3<sup>rd</sup> Surge

Since the very beginning of COVID-19 pandemic RMU and Allied Hospitals have efficiently managed the patient load along with available resources and provided extraordinary services to humanity with full zest. Graphs given below mentioned a small picture of the patient load in RMU and Allied Hospital in the pandemic.

### RMU & Allied Hospitals – Patients Load

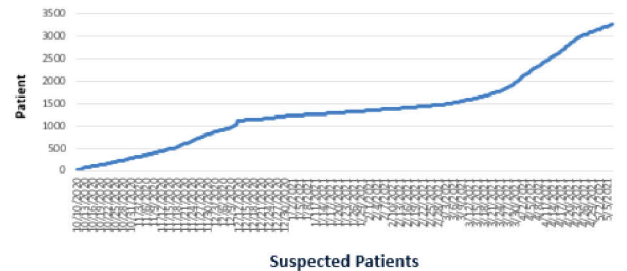
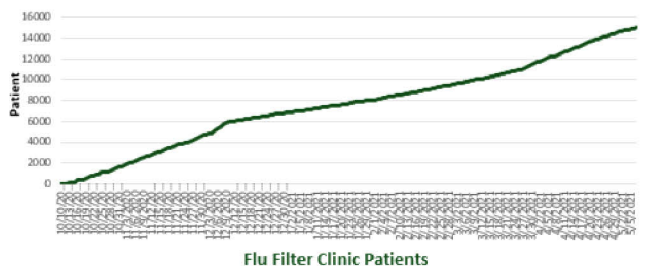
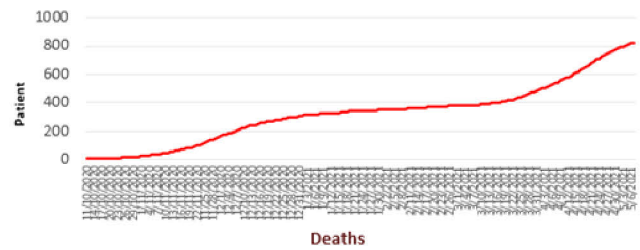
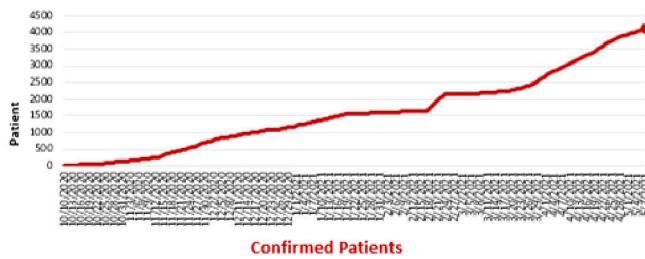
18 March 2020 – 7 May 2021

Hospital Name	Flu Filter Clinic	Total Suspects	Total Confirmed Admitted	Suspects Admitted	Total Discharged	Death
<b>RIUT/Corona Hospital</b>	0	0	2,179	0	1,754	350
<b>Benazir Bhutto Hospital</b>	23,452	4,772	2,985	591	2,570	358
<b>Holy Family Hospital</b>	18,488	3,083	1,984	1,148	1,418	512
<b>District Headquarters Hosp.</b>	2,833	475	162	1	144	13
<b>Red Crescent Field Hospital</b>	0	0	190	0	187	3
<b>Total</b>	<b>44,773</b>	<b>8,330</b>	<b>7,500</b>	<b>1,740</b>	<b>6,073</b>	<b>1236</b>

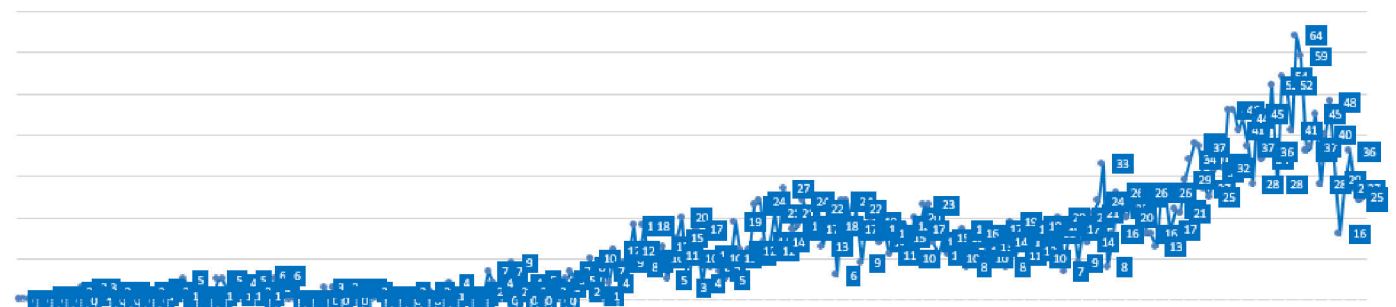
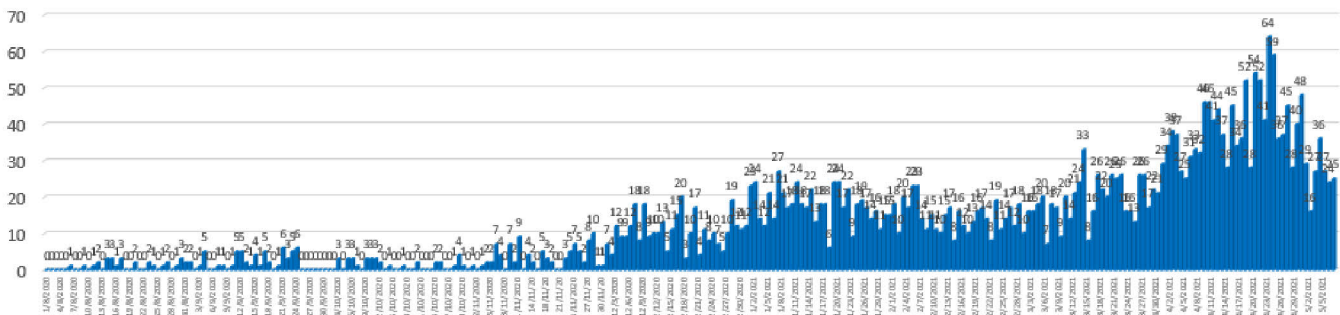
RMU and Allied Hospitals of Rawalpindi managed a huge number of patients in flu filter clinics i.e 44773 out of which 7500 patients were confirmed and 1236 patients expired. This number is increasing further until unless the pandemic is over. The administrative bodies and staff of all these hospitals are dedicated to fight against this deadly virus and try to save maximum number of patients from the jaws of death.



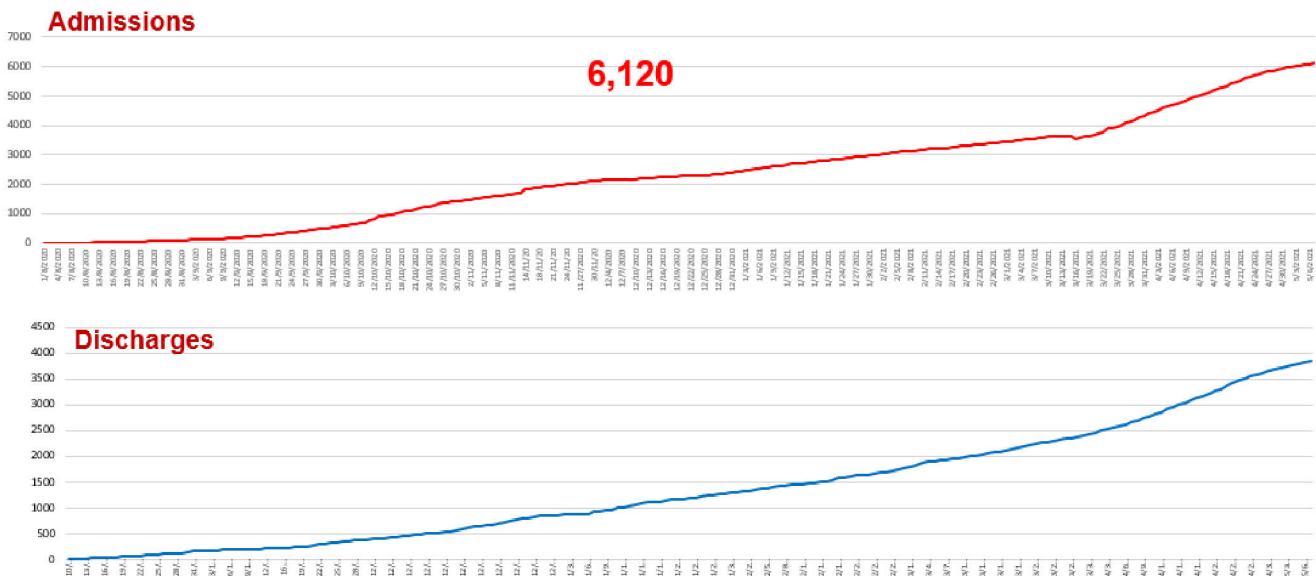
## Patients Trend From 10/10/2020 – 7/5/2021



## Discharge Trend of COVID-19 Patients 10<sup>th</sup> Oct 2020 to 07<sup>th</sup> May 2021



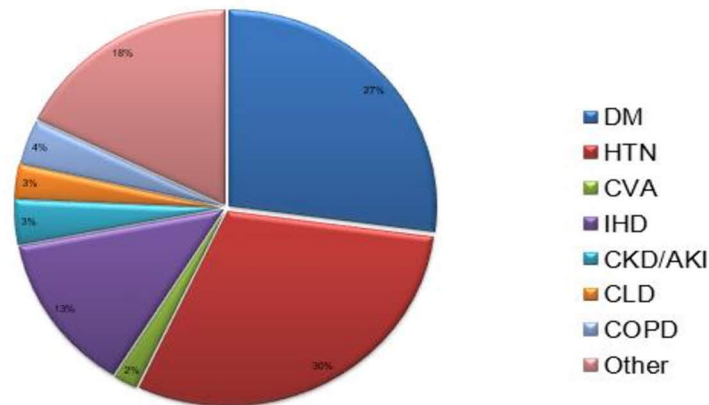
## Admission & Discharge Patients Trends From 10/10/2020 – 07/05/2021



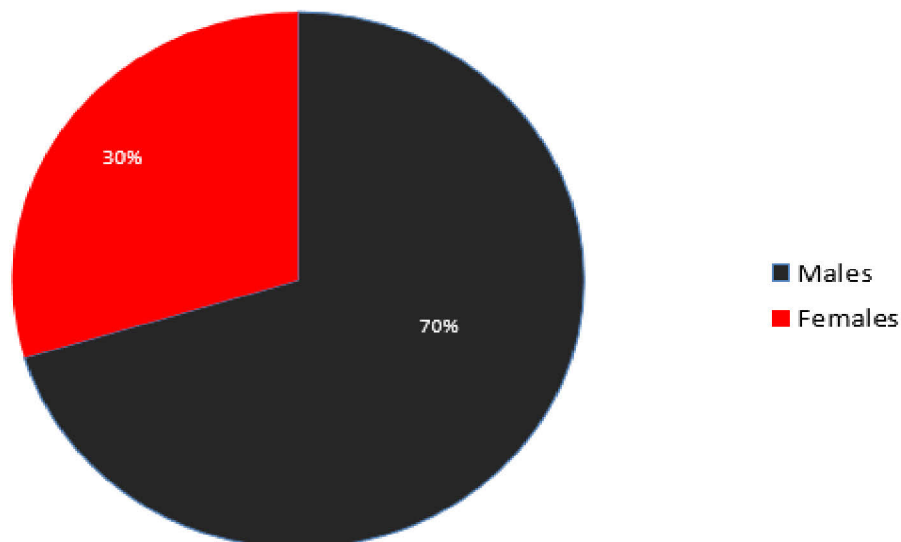
Overall the above mentioned patient trends have shown that the number of discharged patients is greater than the seriously ill and deceased patients. Therefore it can be concluded that the rate of patient's recovery is higher than the expiries and critical patients. However it is also a fact that the increase in patient burden may have resulted in shortage of healthcare facilities which may increase the critical status of patients and even the expiries. Therefore to follow the SOP's is inevitable to save more lives.

## Mortality Trend in 2<sup>nd</sup> and 3<sup>rd</sup> Surge of Covid-19 RMU & Allied Hospitals

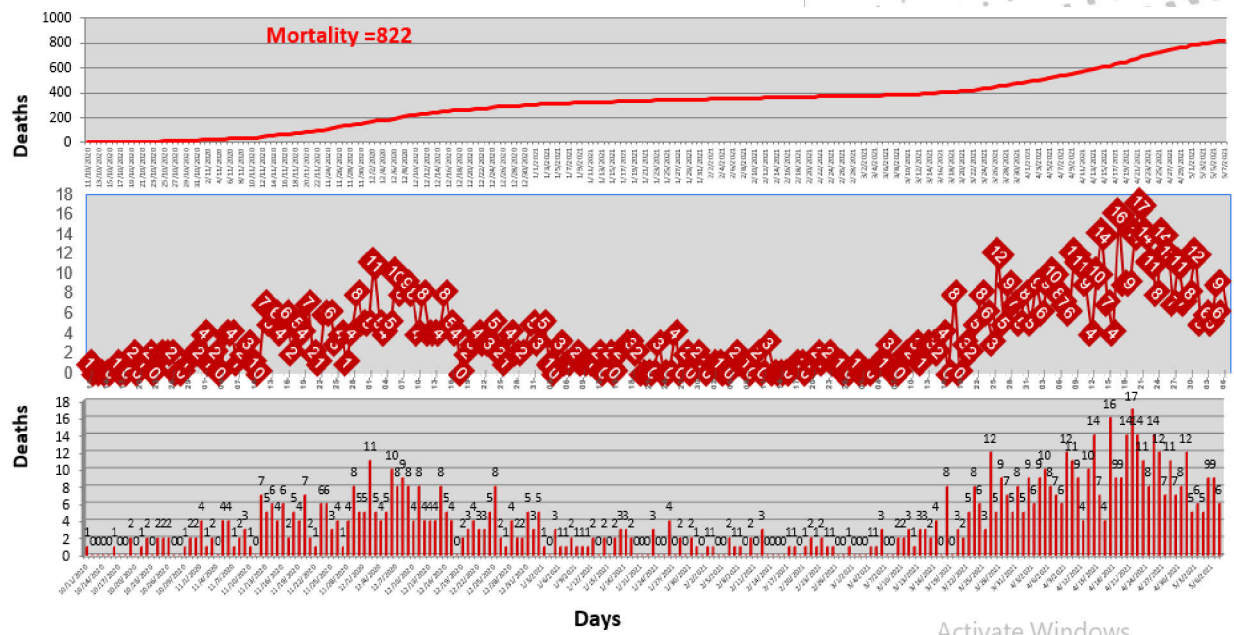
In RMU and Allied Hospitals number of confirmed patients in third wave was more than the 2<sup>nd</sup> wave. Moreover the percentage of patient's expiries was also more than the first two waves.



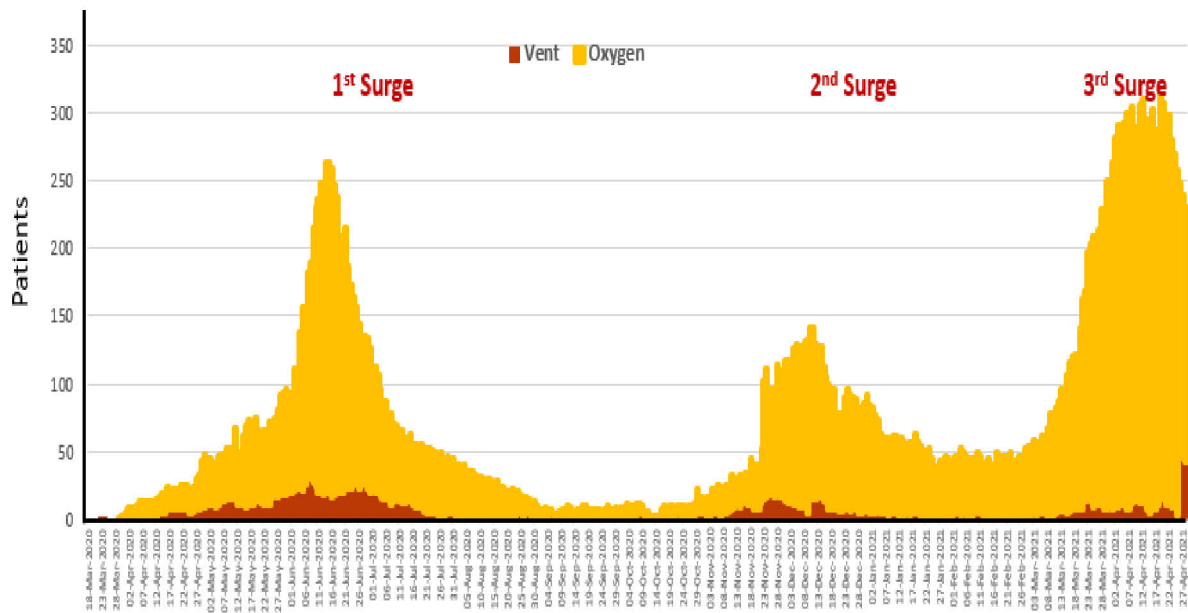
It was also found that patients with other ailments or patients with co morbidities were on high risk and more number of patients expired with co morbidities. Majority of the patients with HTN, DM, IHD and CKD were at high risk and chances of recovery reduced among them.



Gender wise distribution of expired patients presented a higher trend of expiries among males compared to females expired. Most probably the possible explanation lies in the culture of our country where full females usually remain inside their homes and males spend more time outside for their job and other chores therefore the chances to get an infection of COVID-19 increased in men.



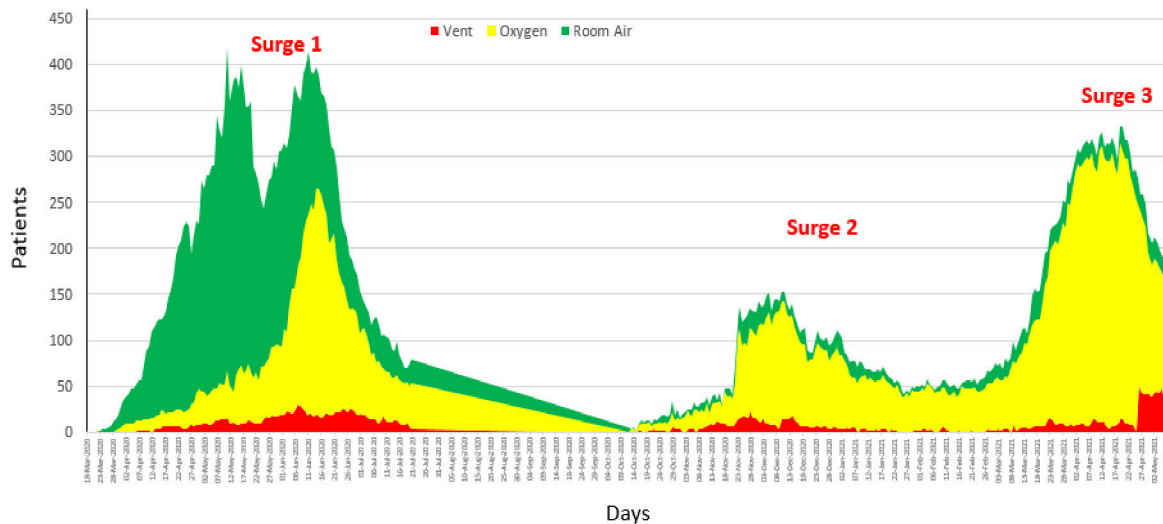
**Mortalities Trends**  
10<sup>th</sup> Oct 2020 – 07<sup>th</sup> May 2021



**Critical Patient Status on Oxygen and Ventilator**  
1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Surge of COVID-19



## Critical Status – 18<sup>th</sup> March 2020 – 07<sup>th</sup> May 2021



The graph illustrates the trends of Covid-19 in different surges. In the first surge of Covid-19, as we can see, patients admitted in allied hospitals and RMU Rawalpindi are more on room air and less patients were oxygen dependent. However, in the second and third surges of Covid-19, an abrupt increase in patients with oxygen dependency was observed. This is because during the first surge of Covid-19, every positive patient had to report to hospital and there was no clear stated policy of home isolation from the government. However, during the second and third surges, as the burden on hospital significantly increased and patients were advised home isolation, only those patients who were critically ill or not maintaining their oxygen saturation at home were advised to admit in hospital for better clinical management and treatment, and thus a spike in oxygen and ventilator support was raised. It has also been observed that due to huge information available on COVID-19, patients are resorting to self-medication and are treating themselves by staying at home. Therefore, a sharp curve of oxygen-dependent patients has been observed in the third surge of Covid-19 in hospitals. However, people have become more fearful and they are reluctant to come to hospital. Only critical patients are reporting to hospital when things go beyond their capacity, which significantly increased the mortality rate.

## Causes of Third Surge of COVID -19

Pakistan is fighting with the third surge of COVID-19 and there are multiple reasons that this third wave is more drastic and larger than the previous two surges. A very prominent cause of this third surge is the British strain as reported by the Government officials that this British variant is relatively more contagious and deadlier variant seems to be a major cause for the sudden and sharp increase in the spread of the disease. Secondly the general public is not strictly following the SOP's for wearing masks and having distance. In last two months the wedding season was at its peak and the indoor and outdoor weddings in Pakistan increased the spread of this virus because SOP's were neglected by the public. In this surge government did not apply any kind of lockdown to the citizens for strict implementation of SOP'S. People are also fatigued because of this prolonged pandemic and therefore they have been desensitized about the drastic impacts of this deadly virus and not following the SOP's. Another important factor is the vaccination of COVID-19 which has been started since February 2021 in Pakistan. The false beliefs of the people about the purpose and effectiveness of vaccination also increased the number of cases because after vaccination people considered that they are now safe and they did not follow the SOP's, They stop wearing masks regularly which is completely wrong as this vaccination is just to increase the immunity against virus which will reduce the severity of symptoms of COVID-19. Therefore there is a need to increase the awareness of people about the purpose and function of the vaccination.



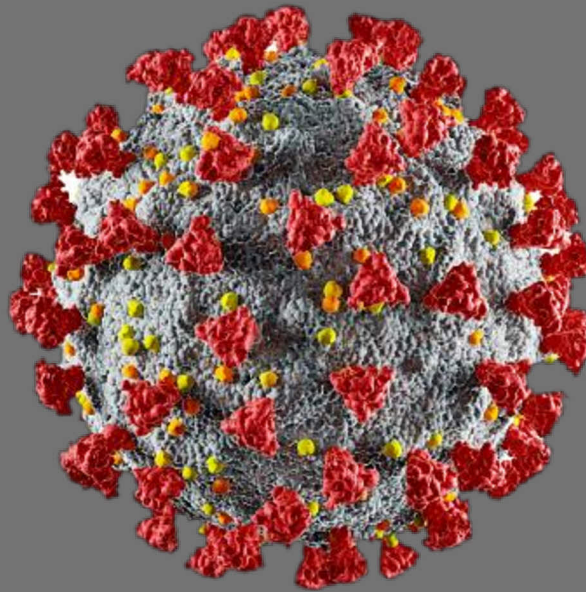
Prof. M. Umar Vice Chancellor RMU & Allied Hospitals &  
Associate Professor Dr. Mujeeb Khan Counseling the COVID Patients





1<sup>ST</sup> July, 2021  
To  
30<sup>th</sup> Nov 2021

# COVID-19 FOURTH SURGE





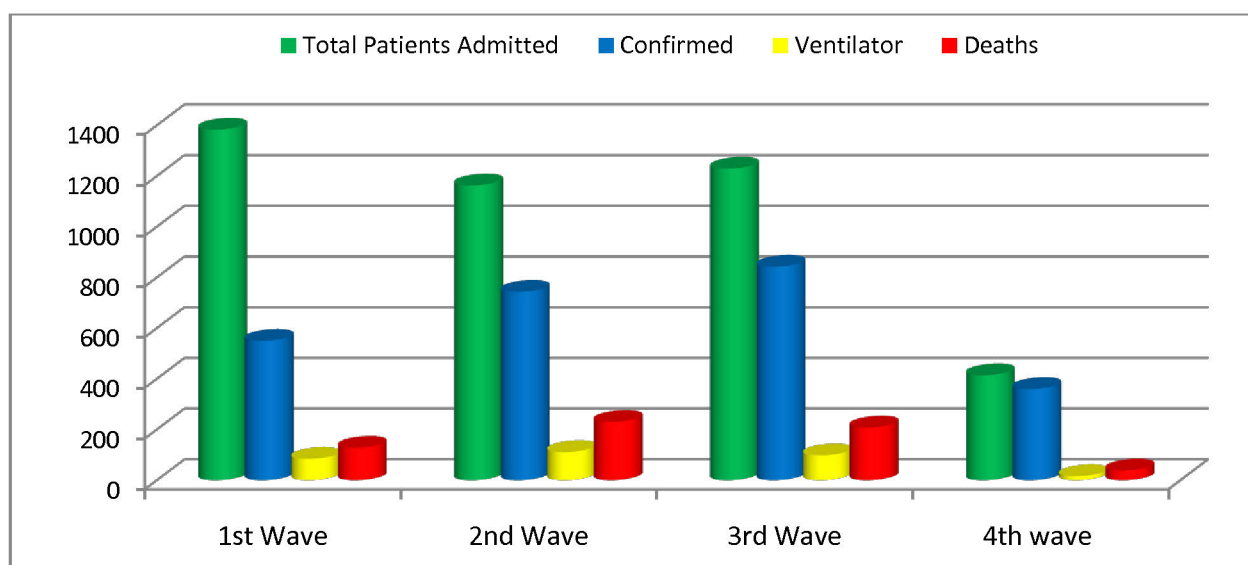


## Introduction

In Pakistan during the third surge of Covid-19 the vaccination of the citizens had started quickly but because of mutant variants of corona virus the forth spell of Covid-19 began in Pakistan since 1<sup>st</sup> July 2021. By the grace of Almighty Allah, we were able to manage the patients efficiently and effectively in Rawalpindi District. However it was observed that in first surge the percentage of patients on ventilator was less than the second surge. Similarly the percentage of expiries in second surge was more than the first surge. In third surge the rate of expiries were more than the previous two surges and in fourth surge the rate of spread of virus was very quick. This fourth surge was most drastic spell as compared to first three surges because of higher spread rate of delta variant.

### Covid-19 Patients Holy Family Hospital (HFH) Rawalpindi

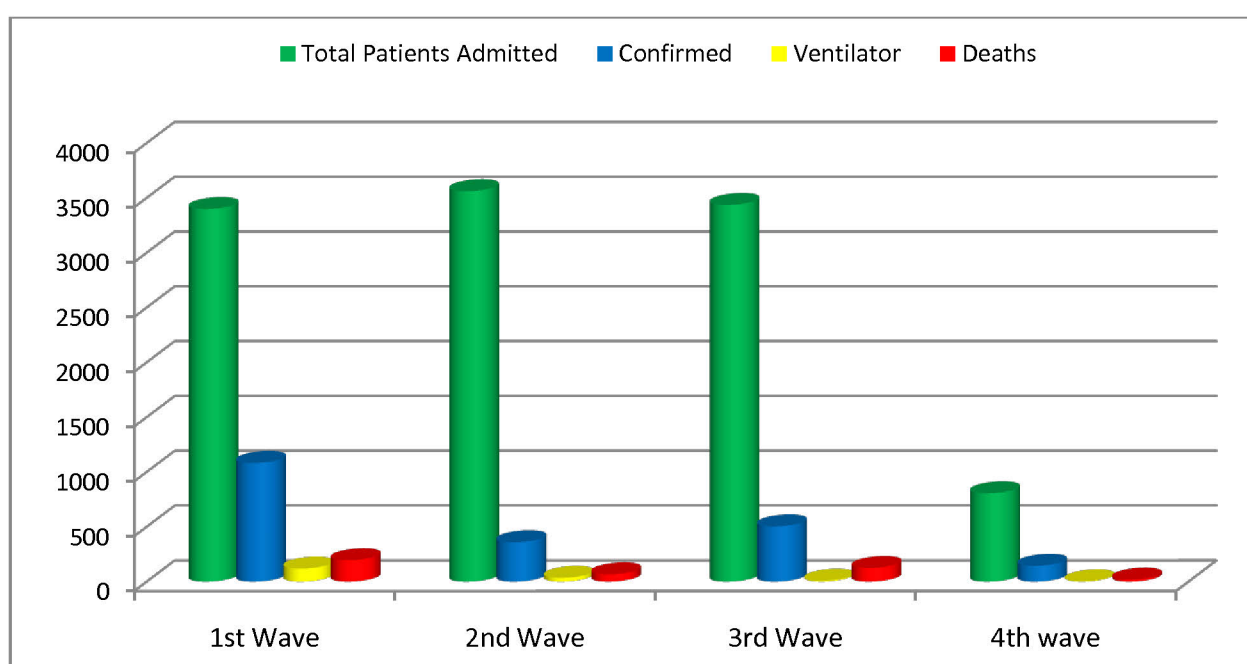
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
<b>Total Patients Admitted</b>	<b>1383</b>	<b>1163</b>	<b>1229</b>	<b>1194</b>	<b>4969</b>
<b>Confirmed</b>	<b>550</b>	<b>743</b>	<b>842</b>	<b>864</b>	<b>2999</b>
<b>Ventilator</b>	<b>84</b>	<b>111</b>	<b>98</b>	<b>45</b>	<b>338</b>
<b>Deaths</b>	<b>128</b>	<b>230</b>	<b>208</b>	<b>158</b>	<b>724</b>



Holy family hospital efficiently accommodated COVID-19 patients in all four surges and 4189 patients were admitted in four surges out of which 604 expired.

## COVID-19 Patients Benazir Bhutto Hospital (BBH) Rawalpindi

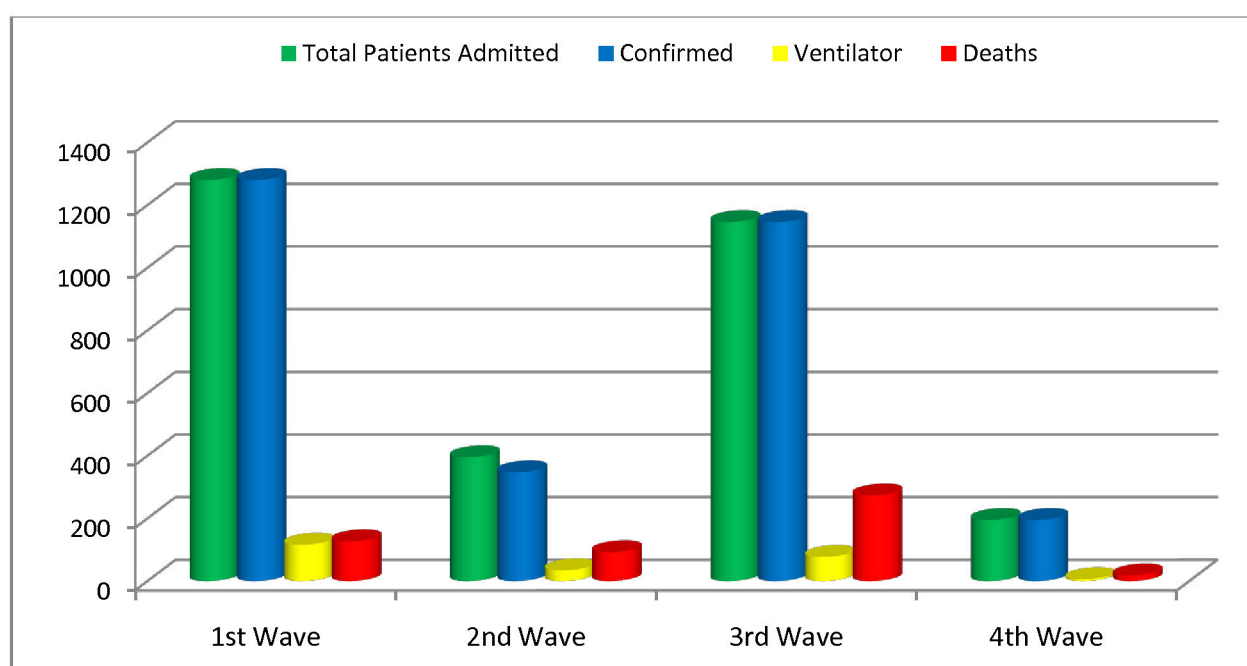
	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
<b>Total Patients Admitted</b>	<b>3399</b>	<b>3562</b>	<b>3436</b>	<b>806</b>	<b>11203</b>
<b>Confirmed</b>	<b>1083</b>	<b>360</b>	<b>504</b>	<b>145</b>	<b>2092</b>
<b>Ventilator</b>	<b>119</b>	<b>35</b>	<b>9</b>	<b>4</b>	<b>167</b>
<b>Deaths</b>	<b>196</b>	<b>67</b>	<b>125</b>	<b>19</b>	<b>407</b>



BBH Rawalpindi also accommodated 11203 COVID-19 patients in four waves and out of them 2092 were confirmed. The number of expired patients in BBH with Covid-19 in four waves was 407.

## COVID-19 Patients Rawalpindi Institute of Urology & Transplantation (RIUT)

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
<b>Total Patients Admitted</b>	<b>1280</b>	<b>395</b>	<b>1146</b>	<b>195</b>	<b>3016</b>
<b>Confirmed</b>	<b>1280</b>	<b>347</b>	<b>1146</b>	<b>195</b>	<b>3016</b>
<b>Ventilator</b>	<b>116</b>	<b>34</b>	<b>77</b>	<b>06</b>	<b>233</b>
<b>Deaths</b>	<b>127</b>	<b>92</b>	<b>273</b>	<b>18</b>	<b>510</b>

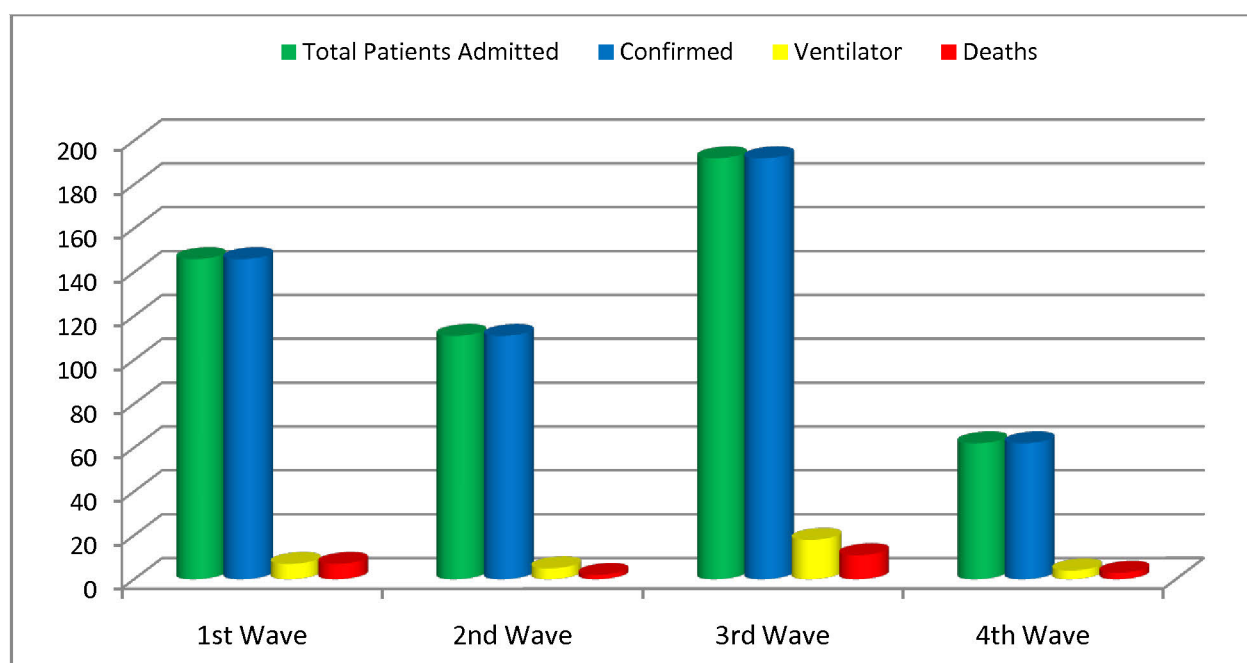


Overall RIUT accommodated 3016 confirmed Covid-19 patients and 510 deaths were reported in all four surges.



## COVID-19 Patients District Head Quarters Hospital (DHQ) Rawalpindi

	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
<b>Total Patients Admitted</b>	<b>146</b>	<b>111</b>	<b>192</b>	<b>62</b>	<b>511</b>
<b>Confirmed</b>	<b>146</b>	<b>111</b>	<b>192</b>	<b>62</b>	<b>511</b>
<b>Ventilator</b>	<b>07</b>	<b>05</b>	<b>18</b>	<b>04</b>	<b>34</b>
<b>Deaths</b>	<b>07</b>	<b>02</b>	<b>11</b>	<b>03</b>	<b>23</b>



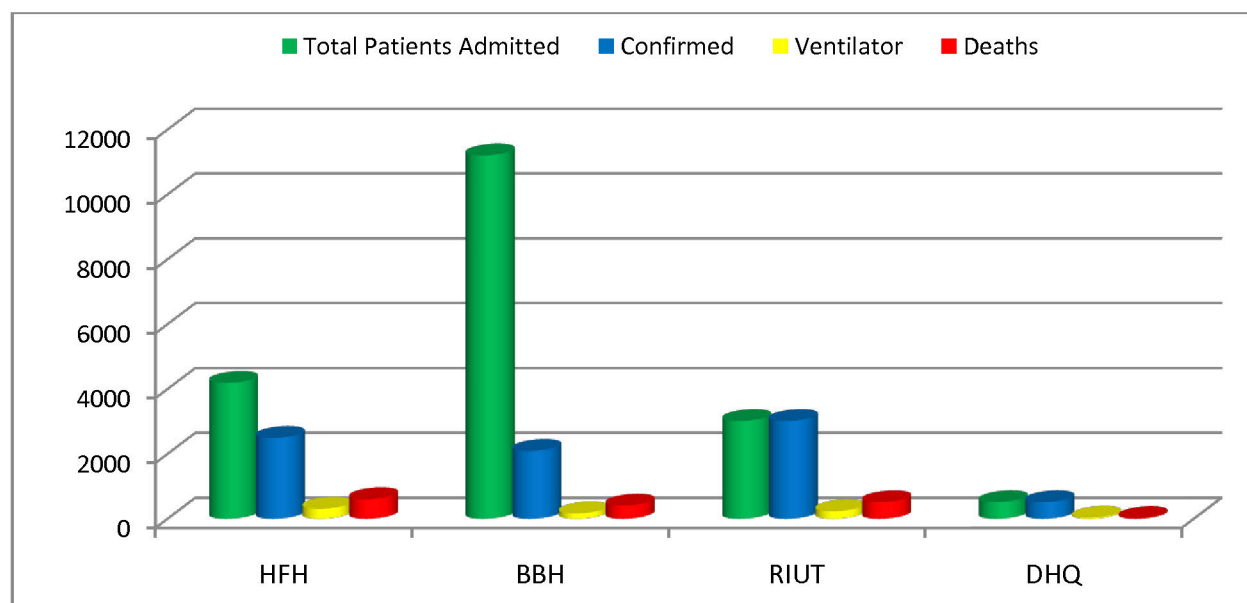
In fourth wave 62 patients were admitted in DHQ and overall 511 confirmed patients of Covid-19 were admitted in DHQ. Overall 23 patients died in four surges of Covid-19 in DHQ.

## Comparison of 4 Surges of COVID-19 RMU & Allied Hospitals Rawalpindi

Hospital	Patients Admitted				Confirmed				Ventilator				Deaths			
WAVES	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
HFH	1383	1163	1229	1194	550	743	842	864	84	111	98	45	128	230	208	158
BBH	3399	3562	3436	806	1083	360	504	145	119	35	09	04	196	67	125	19
RIUT	1280	395	1146	195	1280	395	1146	195	116	34	77	06	127	92	273	18
DHQ	146	111	192	62	146	111	192	62	07	05	18	04	07	02	11	03
TOTAL	6208	5231	6003	2257	3059	1609	2684	1266	326	185	202	59	458	391	671	198
Percentage									5.25%	3.53%	3.36%	2.03%	7.38%	7.47%	10.28%	5.28%

### GRAND TOTAL

	Total Patients Admitted	Confirmed	Ventilator	Deaths
HFH	4969	2999	338	724
BBH	11203	2092	167	407
RIUT	3016	3016	233	510
DHQ	511	511	34	23
Grand Total	18,919	8,114	743	1,544



## **Causes of Fourth Surge of COVID-19**

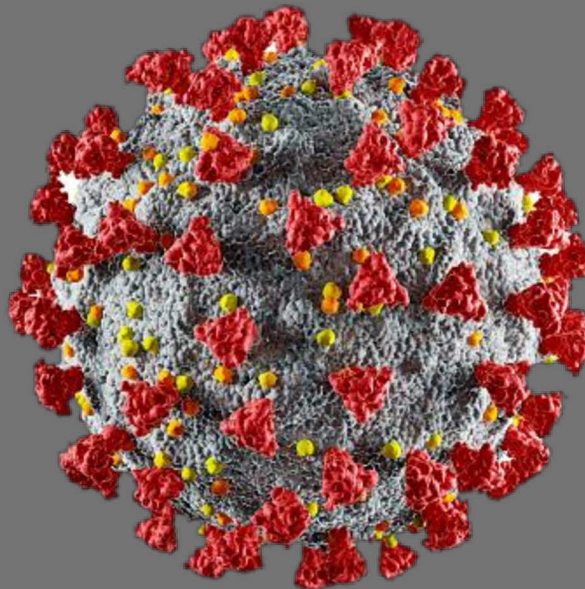
Fourth surge of Covid-19 initiated in Pakistan in July 2021 and this surge is still continued to effect large number of people. There were certain reasons of this fourth spell of Covid-19 in Pakistan.

- The emergence of Indian Delta variant in Rawalpindi had exposed the mismanagement at the international airports where the Covid-19infected people were arriving from abroad, creating a potential danger of transmission to the local population. The reporting of Delta cases showed that the health facilities/counters manned at the airports were not properly screening the international passengers.
- The higher spread rate of Delta Variant increased the number of Covid-19 confirmed patients day by day.
- Slow pace of vaccination of Covid-19 was also a cause of the fourth spell of Covid-19. Moreover the less effectiveness of vaccination for delta variant was also another cause of the spread.
- Lack of strict lockdown and gatherings paved the way for SARS-CoV-2 spread through social, political, religious and regular business activities, transport and tourism. Schools, colleges and universities were re-opened for regular activities across the country.
- The policy of smart lock down or mini lockdown proved to be less effective than the complete lock down.
- Precautionary measures were not being observed and there was very less emphasis on wearing of masks and hand sanitization
- COVID-19 SOPs were being neglected by the General public and the communities, neighborhood did not care for the pandemic
- The desensitization of public from drastic impacts of the spread of this virus also made this wave more drastic.



2<sup>nd</sup> December 2021  
To  
Till date

# COVID-19 FIFTH SURGE







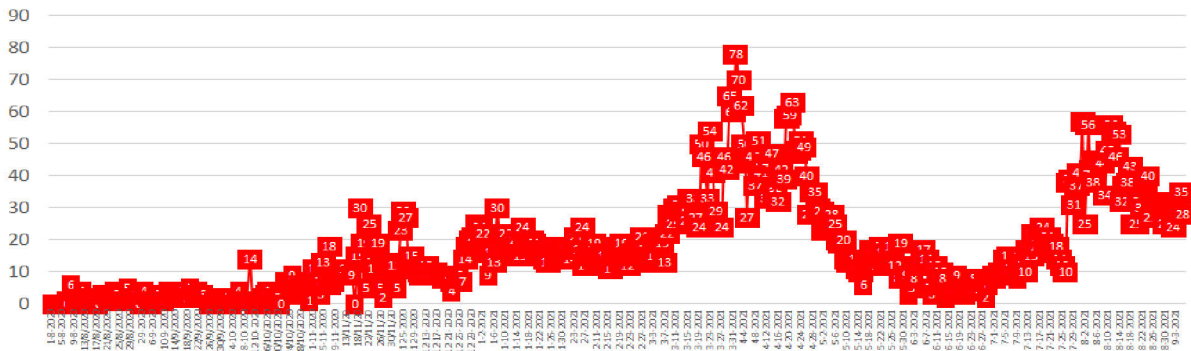
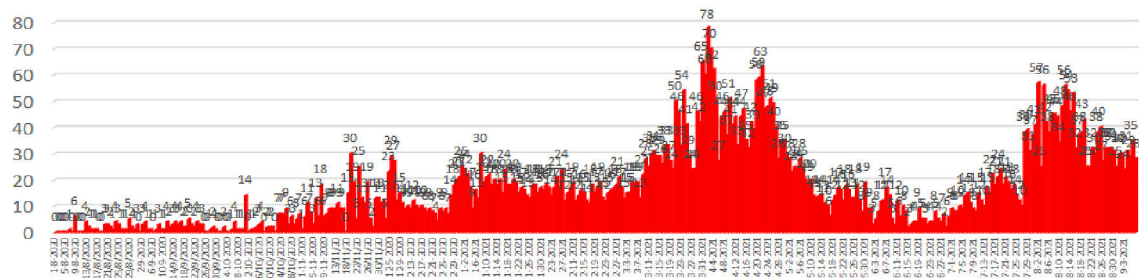
## Introduction

Omicron a variant of SARS-COV-2 having 50 points mutations was feared to be more contagious, deadly and more devastating on immune system of humans compared to previous variants therefore WHO declared it as a variant of concern (VOC).

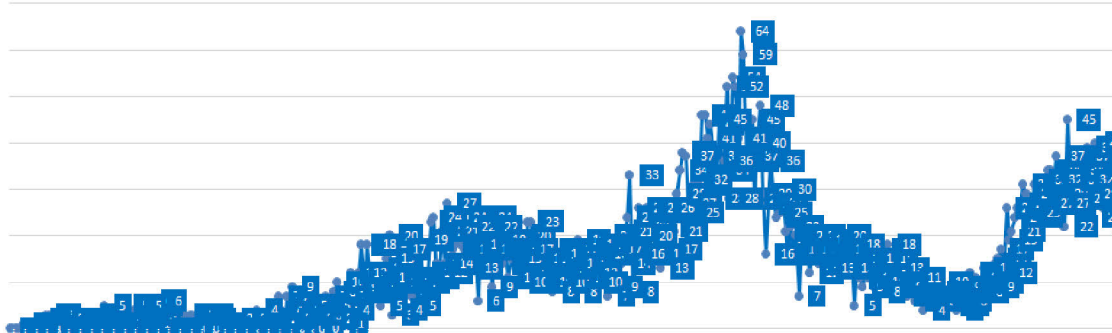
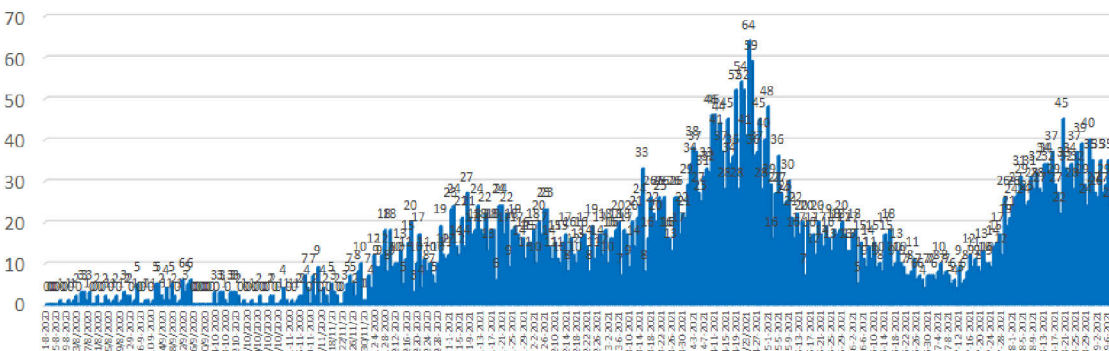
Pakistan faced the fifth COVID-19 wave from 2<sup>nd</sup> Dec 2021 to March 2022. This wave turned out to be relatively milder and short lived. It has a rapid peak and a rapid decline factors contributing to this include continuation of practicing hygiene measure by public like social distancing use of masks, hand hygiene and COVID-19 mass vaccination programme.

The health machinery of Pakistan was this time more vigilant and proactive to deal with and contain this bug. Although this variant spread more faster than its already known variants in the community it turned out to be a milder form of virus and did not create a panic among the people and health system compared to previous surges of COVID-19, the incubation period in this surge was increased however the symptoms duration was short and recovery was fast. The most prevalent symptom during this surge were related to nose including post nasal drip. The Rawalpindi medical university and allied hospitals very efficiently and effectively managed the COVID-19 patients during this surge also.

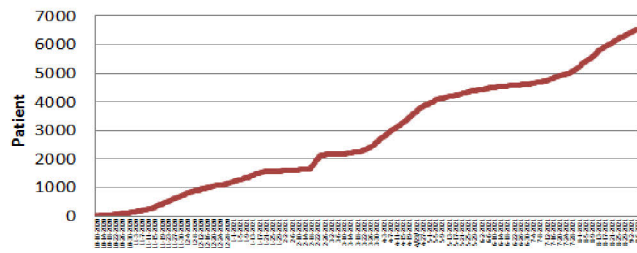
A total of 2798 patients reported to COVID-19 OPD, out of which 602 patients were admitted and 135 were expired as confirmed case to COVID-19.



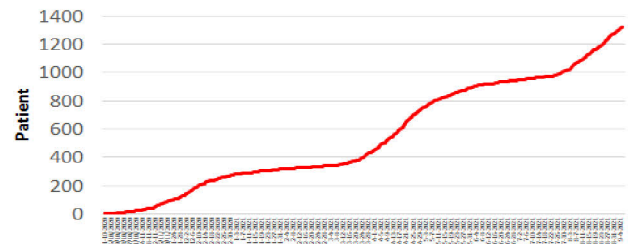
Admission Trends of COVID-19 Confirmed Patients  
10<sup>th</sup> Oct 2020 to 04 April 2022



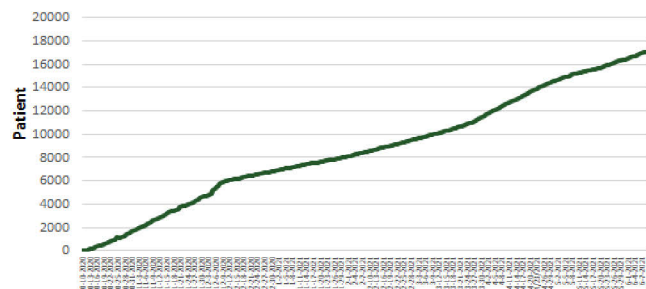
Discharge Trend of COVID-19 Patients 10<sup>th</sup> Oct 2020 to 04<sup>th</sup> April 2022



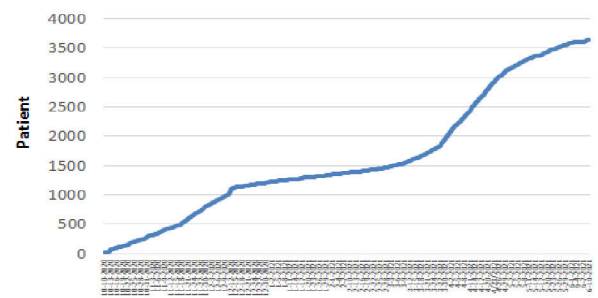
**Confirmed Patients**



**Deaths**

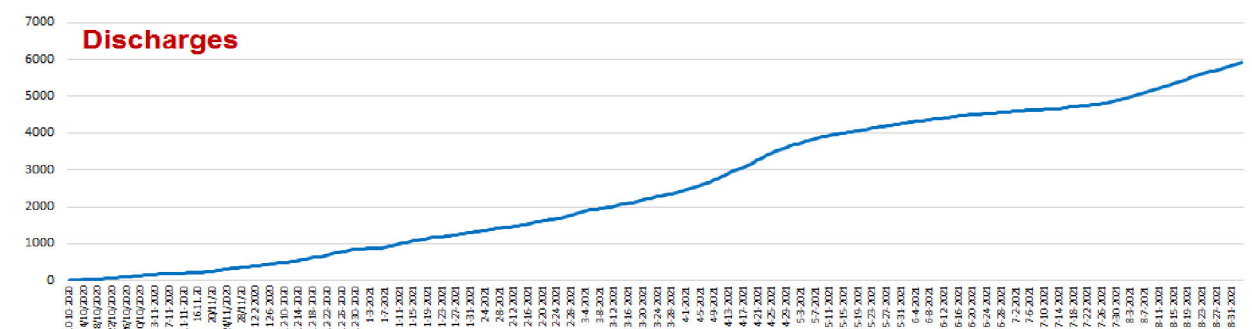
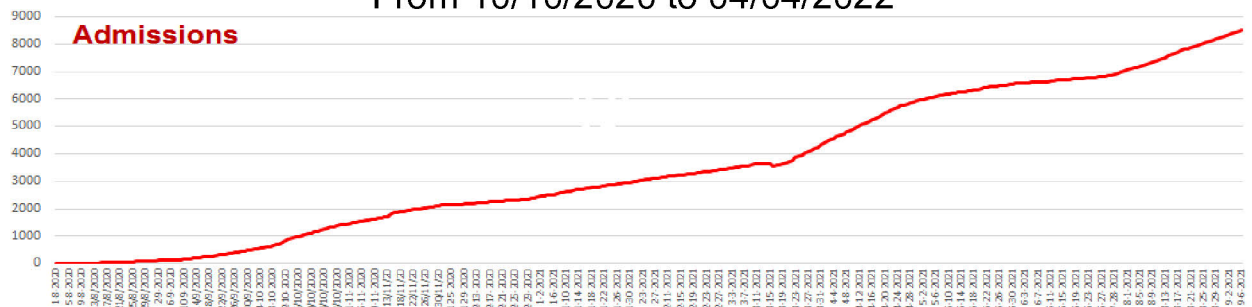


**Flu Filter Clinic Patients**



**Suspected Patients**

## Patients Trends From 10/10/2020 to 04/04/2022

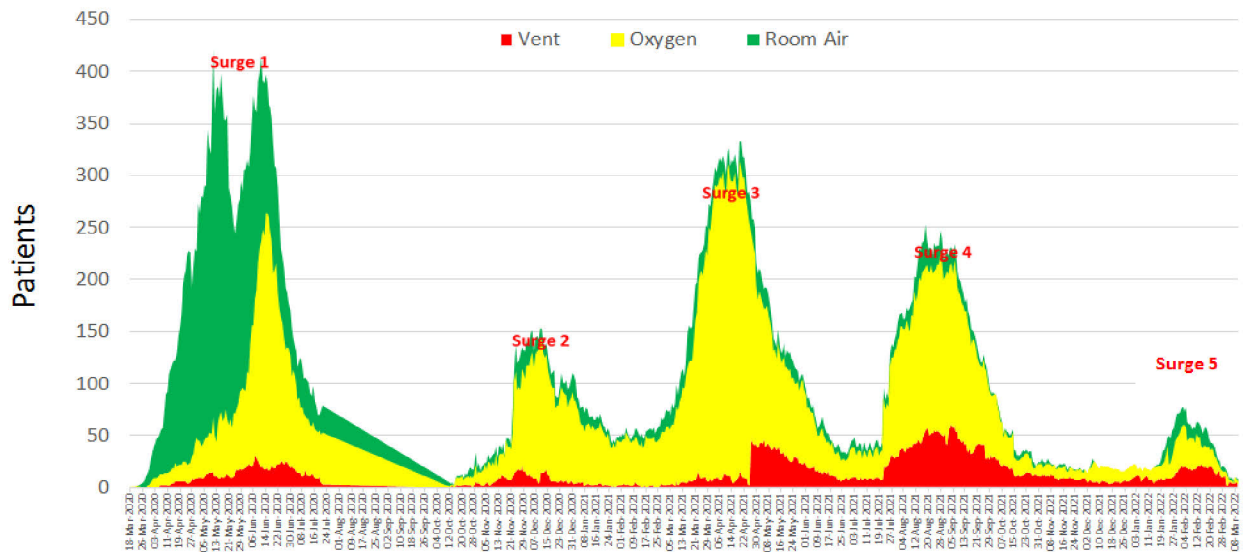


## Admission & Discharge Patients Trends From 10/10/2020 to 04/04/2022



## Critical Status

10/10/2020 to 04/04/2022



### COMPARISON OF 5 SURGES OF COVID-19 IN RMU AND ALLIED HOSPITALS OF RAWALPINDI

Hospital	Patients Admitted					Confirmed					Ventilator				
WAVES	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
HFH	1383	1163	1229	1194	158	550	743	842	864	156	84	111	98	45	09
BBH	3399	3562	3436	806		1083	360	504	145		119	35	09	04	
RIUT	1280	395	1146	195	444	1280	395	1146	195	283	116	34	77	06	-
DHQ	146	111	192	62		146	111	192	62		07	05	18	04	
TOTAL	6208	5231	6003	2257	602	3059	1609	2684	1266	439	326	185	202	59	09
Percent Age											5.25%	3.53%	3.36%	2.03%	

### Deaths

1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
128	230	208	158	23
196	67	125	19	
127	92	273	18	112
07	02	11	03	
458	391	671	198	135
7.38%	7.47%	10.28%	5.28%	

## Conclusions

1. Fifth wave of COVID started around third week of November 2021 and reached its peak in first week of December 2021 attaining surge rate on 2<sup>nd</sup> December 2021.

Patients' data for this stage is reflected as under: -

- a. Total Patients - 602
- b. Mortality - 135

2. Analysis of this data reveals that this wave did not affect the general population as seriously as the second and third waves. Reasons for this are as under: -

- a. **Effective Vaccination Campaign.** Government of Pakistan had initiated COVID Vaccination Campaign in March 2021. Initially, the response was not very encouraging due to different apprehensions prevailing in the population. However, with a very effective persuasive advertising campaign through national media to motivate the population coupled with stringent measures/restrictions imposed by every government, the mass vaccination proved to be a huge success. This helped in reducing the number of cases in this fifth wave.
- b. **Compliance to the Protective Measure.** Although it took time for the people to get used to the protective measure like wearing face mask and keeping safe distance, the response from public had improved considerably and people were complying with these protective measures. This also helped us in reducing the number of COVID cases.
- c. **Herd Immunity.** It is strongly believed that in addition to the above-mentioned factors, the general population had achieved the herd immunity which also helped in reduced number of cases.

3. Despite a weak COVID threat during the fifth wave, we pray to Allah Almighty to protect our nation from this disease. We also pray to Almighty Allah to grant us courage to put up a brave fight against this menace.

## Summary

Covid-19 proved to be a nightmare for the whole world. Almost every country of the world fought against the pandemic of Covid-19. Pakistan also fought well against this deadly virus. By and Large, the spread of pandemic remained under control throughout the country in first surge due to very effective rigid measures introduced by the Government at National and Provincial levels. In a meeting of the National Coordination Committee (NCC) on August 7, it was announced that COVID-19 pandemic had been controlled due to effective strategy and the country was declared open for routine. By the grace of almighty Allah, we were able to manage the patients efficiently and effectively in Rawalpindi District. The 2<sup>nd</sup> surge in Pakistan has started in August 2020 and the government announced a second spell of Covid-19 in Pakistan on October 28, 2020, when a daily increase in cases reached 750 compared to 400 to 500 a few weeks ago <sup>(4)</sup>. However it has been observed that in first surge the percentage of patients on ventilator was less than the second surge. Similarly the percentage of expiries in second surge is more than the first surge and it is still continued. After second surge the third surge of COVID-19 also started from March 2021. Third wave was more dangerous as the spread rate of this British strain was higher than the previous strains. This is the reason that this surge is called more drastic because of higher rate of spread and expiries. The fourth surge of Covid-19 also began since 1<sup>st</sup> July 2021 in Pakistan. This wave has highest spread rate because of delta variant and still at its peak.

It can be concluded that within a few months, the mortality rate and morbidity rate has reached unexpected levels. The clinicians are working to invent treatments and vaccine to prevent this infection. The extreme situation is yet to occur. However, if we take one step toward self-isolation, it could save the entire community and the risk will decline immediately. This is a situation where each individual has to take steps toward minimizing the risk by staying in the house and immobilizing themselves. The airborne, contact transmission can only be disinfected if proper hand washing protocols are followed and each individual carry out precautionary measures to safe other individuals from this debilitating virus. Pakistan has a tremendous potential in public health but this Covid-19 has shook our economy and our workforce in hospital is decreased because of this pandemic. Perhaps the desensitization of public is making this pandemic more badly and they are compromising their own life and even the lives of others too.



Prof. Dr Muhammad Umar VC RMU & Dr. Muhammad Mujeeb Khan  
Assuring the functional Equipment in COVID-19 Ward







## Lessons Learnt

The Covid-19 pandemic lays our lives bare and forces us to appreciate our most essential needs and our highest values. It is said that every disaster left us with some lessons same is in the case of this pandemic that we learned different lessons from it. Managing the epidemic/pandemic is an art. Current pandemic has shown loop holes in our healthcare infrastructure. Covid-19 pandemic has revealed a vast sea of hidden and benevolence in our community around the world. It has led to countless acts of selfless heroism in hospitals and medical facilities. It has definitely impelled us to use our greatest strength to serve our greatest purpose, suddenly giving our lives new inspiring meanings. It forces us to appreciate the true value of many people whose roles in society tend to be undervalued: the nurses, the hospital orderlies, the people sitting at the checkout counters in supermarkets, the delivery personnel, the many nameless strangers who suddenly offer help to the old and vulnerable. This is a fundamental problem that will never go away. All we can do is be aware of it, remain vigilant, adjust our narratives to the magnitude of the challenges we face, and continually adapt our institutions of multilevel governance accordingly.

Covid-19 highlighted the need for vigilance, for new narratives and reformed governance institutions. This pandemic also highlighted the need of efficient and well developed health system. While it is essential to cut waste within health systems, this pandemic highlights the need to have adequate capacity to address and tackle a crisis. It is also a reminder of the strategic importance of publicly accountable health systems, underpinned by investment in people and technologies. We need to test the responsiveness and resilience of health systems and make changes and improvements based on the results. This pandemic unveiled many underlying issues we have been facing long especially health disparities and ongoing divestment in our public health system. There must be urgent action taken to address these challenges, as well as ongoing commitment to address them long term, so that lessons are not forgotten.



COVID-19 Management Team meeting with Commissioner Rawalpindi





## COVID-19 Vaccination

In the start of 2021 government of Pakistan started vaccination of Covid-19 for health professionals in Pakistan. In hospitals of RMU, vaccination centers were established in Holy Family Hospital and Benazir Bhutto Hospital. Later on vaccination has also been started in DHQ hospital Rawalpindi. All these vaccination centers are efficiently and quickly vaccinating the health professionals and citizens. Vaccines which are administered in RMU and allied hospitals include Sinopharm, Sinovac, Astrazenca, Pfizer, Cansino and Pakvac in HFH total 35095 vaccines are administered to health professionals and general public.

In RMU and Allied hospitals of Rawalpindi total 4000 doctors, 982 nurses and 2784 other health professionals are vaccinated and it is still continued.



Vice Chancellor RMU & Allied Hospitals Prof. Muhammad Umar visiting the Vaccination Center of HFH, Rawalpindi



راولپنڈی میڈیکل یونیورسٹی کے الائیڈ ہسپتالوں میں کرونا کے مریضوں اور آکسیجن کے بارے میں پروفیسر محمد عمر، وائس چانسلر راولپنڈی میڈیکل یونیورسٹی الائیڈ ہسپتالوں کے میڈیکل سپرائنٹنڈنٹ اور پروفیسروں کے ہمراہ انتظامات کا جائزہ لیتے ہوئے۔



Symposium on Covid-19 at Rawalpindi Medical University & Allied Hospitals Rawalpindi





## World Health Organization- Pakistan

5 hrs •



WHO Representative in Pakistan, Dr Palitha Mahipala visited Holy Family Hospital, [#Rawalpindi](#) to promote the Public & Social Health Measures to prevent the spread of COVID-19 virus. Vice-Chancellor, Muhammad Umar welcomed Dr Mahipala & WHO team.

WR, Dr Palitha Mahipala & WHO team distributed face masks & IEC material among hospital staff, patients & their relatives in the outpatient department to encourage the people to continue following the COVID-19 precautionary & preventive health measures despite the low number of [#COVID-19](#) cases in the country.

Join our fight to end the COVID-19 pandemic!



WHO Representative in Pakistan Dr Palitha Mahipala visiting Holy Family Hospital Rawalpindi





Chairman CEAG Dr. Shoukat Mehmood Visiting Department of Infectious Diseases Holy Family Hospital Rawalpindi



Dr Ahmed Javaid Qazi Secretary Health SHC&ME visiting Department of Infectious Diseases Holy Family Hospital, Rawalpindi



Inauguration of Dedicated Covid-19 ICU at Department of Infectious Diseases Holy Family Hospital, Rawalpindi by Interior Minister Sheikh Rasheed Ahmed



Department of Infectious Diseases with Pakistan Medical Commission



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