

# RMU & COVID-19



**RAWALPINDI MEDICAL UNIVERSITY**  
**Department of Infectious Diseases**

## **MESSAGE FROM HEALTH MINISTER, GOVT OF PUNJAB.**



**Prof. Dr. Yasmeen 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 this 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 the services of 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 FROM THE VICE CHANCELLOR RMU 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 its mettle at these most critical and challenging times. I would hugely appreciate their dedication and devotion to their duty and commend their whole hearted efforts in the fight against this pandemic.





**SPEAKER**

*Assembly Chamber  
Lahore*

D.O.No.PAP/Speaker/2020/  
Dated 11 December, 2020

My dear *Professor Dr Muhammad Umer, Assalam-o-Alaikum*

Subject: **APPRECIATION LETTER**

I hope this letter will find you in the best of health and spirit.

I have come to know through a letter received from Mrs Munira Yamin Satti, Member Provincial Assembly of the Punjab (W-346) Rawalpindi, who is currently admitted in Benazir Bhutto Hospital Rawalpindi due to COVID-19. I pray to ALLAH Almighty for her early recovery.

I am further pleased to hear that your team of Doctor's and Paramedical Staff under your able guidance are putting in all their professional experience and efforts for providing best possible treatment to the Hon'ble MPA and other COVID-19 patients. I personally feel that such a kindness towards humanity never goes unrewarded by ALLAH Almighty. I hope you will keep it up.

I, therefore, extend my heartfelt appreciation for your entire staff combating with COVID-19 pandemic.

May ALLAH Almighty keep us all in his protection, stay safe and healthy. Ameen.

**With best wishes and regards**

Your's sincerely

**(CH PARVEZ ELAHI)**

**Professor Dr Muhammad Umer**  
Vice Chancellor  
Rawalpindi Medical University  
Rawalpindi.

# **SECTION 1**

## **First Surge**

**24<sup>th</sup> March, 2020- July 2020**

## INTRODUCTION

The outbreak of corona virus initiated as pneumonia of unknown cause in December 2019 in Wuhan, China, which has been spread rapidly out of Wuhan to other countries <sup>(1)</sup>. On January 30, 2020, the World Health Organization (WHO) declared coronavirus outbreak as the sixth public health emergency of international concern (PHEIC), and on March 11, 2020, the WHO announced coronavirus as *pandemic*. Like other countries Coronavirus also affected people in Pakistan. Primary focus of this report is on the statistics of patients in first to fourth surges of COVID-19. The first case of coronavirus was reported from Karachi on February 26, 2020. Successively, the virus spreads into various regions nationwide and became an epidemic <sup>(2)</sup>. Its second surge initiated in October 2020 and continued till February 2021. The second surge then followed by third and then fourth spell of the COVID 19 virus. The fourth surge which began from July 2021 and still at its peak and the patient burden in Hospitals of the country increased too many folds.

This report is also presenting the comparison of all four surges of COVID-19 in Rawalpindi Region. Understanding the trajectory of COVID-19 case counts assists governments in responding to the impact of the pandemic. Given the highly infectious nature of the disease, an increasing number of new daily cases may overwhelm the healthcare system and prompt further restrictions on businesses and social gatherings <sup>(3)</sup>. Conversely, a decreasing number of new cases is a good sign but should be carefully monitored. Thus, the *turning points* in the new case counts are crucial to identify. Given the randomness of human behavior, however, turning points are difficult to predict and predictive modeling of COVID-19 requires frequent observation of real-time data. This report is written with a purpose to share and describe different statistics of patients in hospitals under the flag of RMU and allied hospitals of Rawalpindi.

## COVID-19 In RMU and Allied Hospitals

COVID-19 glazed on existing global challenges, is the biggest stress test that health system has even faced. Most of the world is still in the middle of this scorching COVID-19 experience with its multidimensional domino effects. COVID-19 has been ravaging the world, since the first reported case in Wuhan, China. Since then more than 16 million cases have been reported worldwide with over 3116444 deaths worldwide. Currently more than 10 million cases have recovered.

The disease entered in Pakistan in February 2020 through its neighboring country Iran and a case was detected in Karachi. In Rawalpindi the first case was reported on 24<sup>th</sup> March 2020, a student came from abroad tested positive at Benazir Bhutto Hospital, marking the starts of the pandemic in Rawalpindi. Since then more than 36000 suspected cases have been reported in the region, with pandemic still going on.

After the first wave the second wave of Covid-19 also initiated from October 2020 and declined in February 2021. After second surge the third surge also began from March 2021 which was followed by fourth surge and it is still at its peak and worse than the early surges.

In the beginning of first surge of COVID-19 it was initially decided that Benazir Bhutto Hospital (BBH) and Rawalpindi Institute of Urology (RIUT) would be major Corona Centers, with Benazir Bhutto Hospital hosting the first Flu Filter Clinic. Holy Family Hospital (HFH) and District Headquarters Hospital (DHQ) initially played a supporting role while continuing their normal functioning. However, as time passed, the number of patients increased and they too have been playing an equal role in management.



**RIU&T**  
**240 Beds**



**BBH**  
**196 Beds**



**HFH**  
**200 Beds**



**DHQ**  
**14 Beds**

## - Benazir Bhutto Hospital

After being declared the main corona hospital in Rawalpindi, BBH set aside a dedicated facility in their premises, which was located to one side as to not disturb the function of the rest of the hospitals. The challenge was to cater to a bunch of individuals, all of whom were potentially infected by the virus. The turnout of the patients proved to be overwhelming initially, partially attributing to the novelty of the disease and rapidly changing guidelines. However, decisions were made on the fly and accommodations were made on priority. The net result was a smooth function well-oiled machine, that despite receiving a huge number of patients managed to thrive in the situation.



## Rawalpindi Institute of Urology & Transplant

Rawalpindi Institute of Urology & Transplant, being built up from the ground was used only as a corona care center for positive patients. Setting up this new facility from scratch and with the pandemic looming overhead was no easy task and work was put in at all over of the day to make sure the hospital was ready to receive its first patient before the pandemic reached the region.



Since the pandemic started, the hospital would receive patients from the district government and the Allied Hospitals of RMU, before facilities were made in the hospitals to cater to the patients. The hospital has a dedicated team with a dedicated staff, running 2 ICUs parallelly. The hospital initially received the bulk of the patients and helped out greatly in managing the patients.

## Holy Family Hospital

Holy Family Hospital initially played a supporting role to RIU&T and BBH. During the pandemic, it dealt mostly with general patients of medicine, surgery etc. The hospital continued to offer indoor services during the pandemic. As time went on, with the initial surge almost filling the hospital to capacity, it was deemed necessary to increase the capacity of central oxygen beds and come up with a contingency plan, as the Allied Hospitals were near full capacity at one point. With the upgradations complete, Holy Family Hospital then managed COVID-19 patients in house, instead of referring to the field hospitals or RIU&T. The department of infectious diseases (DID) of Holy family hospital played the main leading role in managing the Pandemic in





all four surges and still the team of DID department is providing services to Covid-19 patients with limited resources.

Holy Family Hospital has a fully functional flu filter clinic, which functions 24/7. Laboratory facilities and imaging facilities are inhouse. Laboratory testing is also down in house.



**Health Secretaries visiting the Department of Infectious Diseases, Holy Family Hospital**

## **District Headquarters Hospital**

DHQ hospital was very supportive, with them running a very dedicated flu filter clinic and had a separated isolation ward. Facilities were spared for COVID-19 only and despite having a small setup for COVID-19, comparatively, contributed significantly to the battle. RIU&T dedicated an isolated HDU, equipped with 14 centrally supplied oxygen beds and 5 dedicated ventilators.



# **SECOND SURGE**

**10 October 2020-February 2021**

## **Causes of 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 very well may be the aftermath of the Eid shopping surge and lockdown. There are variety 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 increase the pressure of 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 center, 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 <sup>(6)</sup> .

**COVID-19 Patients- In Holy Family Hospital (HFH)**

<b>Indicator</b>	<b>1<sup>st</sup> Wave</b>	<b>2<sup>nd</sup> Wave</b>
<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 yet catered 1383 patients in first surge and 1163 patients in second surge of COVID 19. A total of 2546 patients admitted in HFH and 1293 were confirmed COVID-19 cases, out of which overall 358 died.

**COVID-19 Patients - in Benazir Bhutto Hospital (BBH)**



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

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

#### **COVID-19 Patients in Rawalpindi Institute of Urology and Transplantation (RIUT)**

<b>Indicator</b>	<b>1<sup>st</sup> Wave</b>	<b>2<sup>nd</sup> Wave</b>
<b>Total Patient Admitted</b>	1280	395
<b>Confirmed</b>	1280	347
<b>Ventilator</b>	116	34
<b>Death</b>	127	92

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

#### **COVID-19 Patients – in District Head Quarter Hospital (DHQ)**

<b>Indicator</b>	<b>1<sup>st</sup> wave</b>	<b>2<sup>nd</sup> Wave</b>
<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 admitted and all were confirmed COVID 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 are 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 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

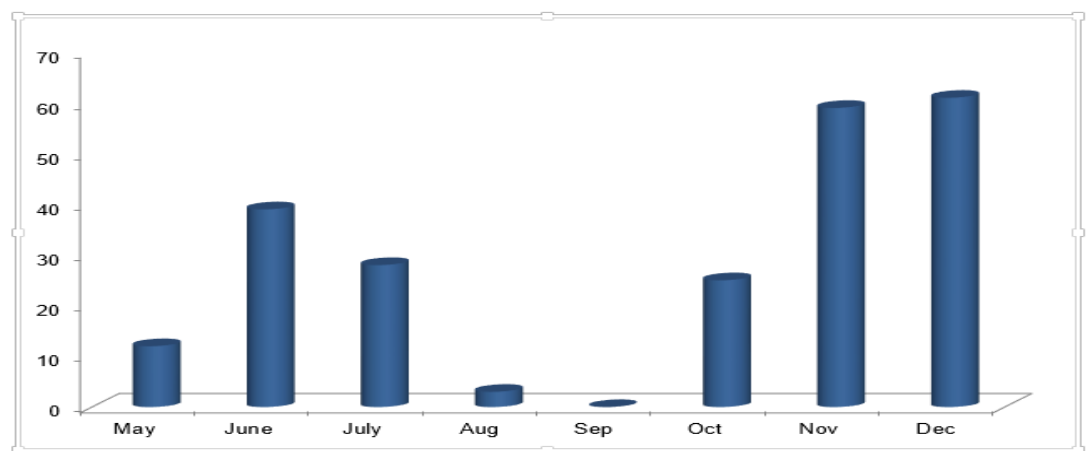
Hospital Name	Doctors			Nurses			Paramedical Staff			Other Staff		
COVID Wave	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total	1 <sup>st</sup>	2 <sup>nd</sup>	Total
HFH	49	43	92	48	61	109	12	04	16	15	4	19
BBH	105	27	132	19	10	29	1	-	1	0	2	2
RIUT	07	-	07	25	9	34	5	-	5	25	9	34
DHQ	20	22	44	28	08	36	4	3	7	17	02	19
<b>TOTAL</b>	<b>181</b>	<b>92</b>	<b>275</b>	<b>120</b>	<b>88</b>	<b>208</b>	<b>22</b>	<b>7</b>	<b>29</b>	<b>57</b>	<b>17</b>	<b>74</b>

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 is also given to the patients of Covid-19 in wards.

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

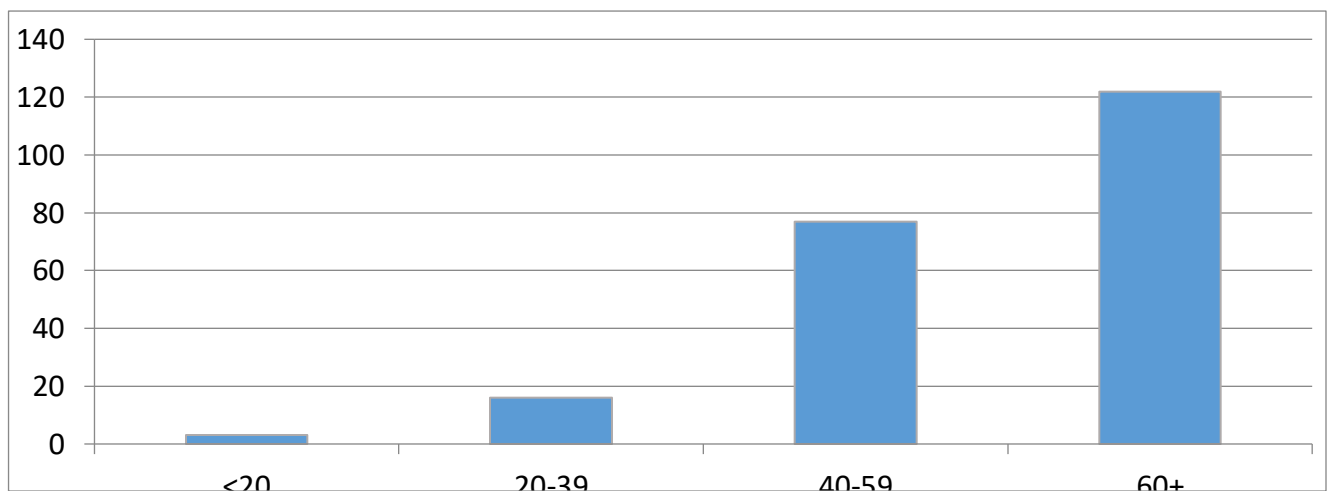


Majority patients with confirmed COVID-19 were also compromised of kidney and it has also been observed that in first surge the dialysis patient were less in number as compared to Second surge. In RMU and Allied Hospitals of Rawalpindi more patients were reported for dialysis in second surge.

### **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 with out of them 69% were males and 31% were females. Most of the patients 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 of comorbidities was higher than the normal healthy individuals as 32% had history of hypertension, 22% had diabetes and 23 % had other illnesses.

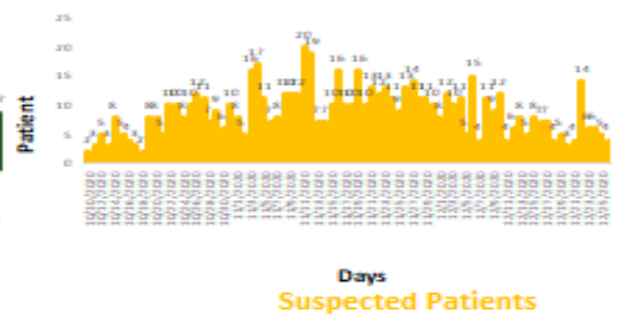
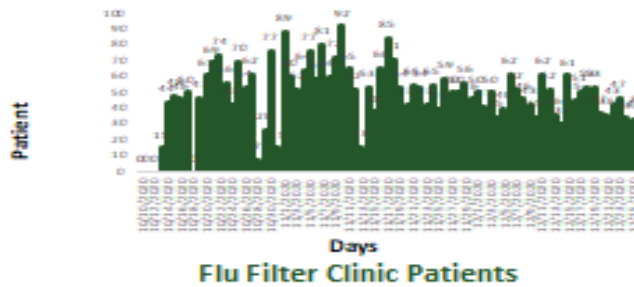
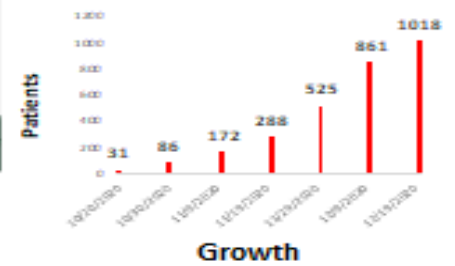
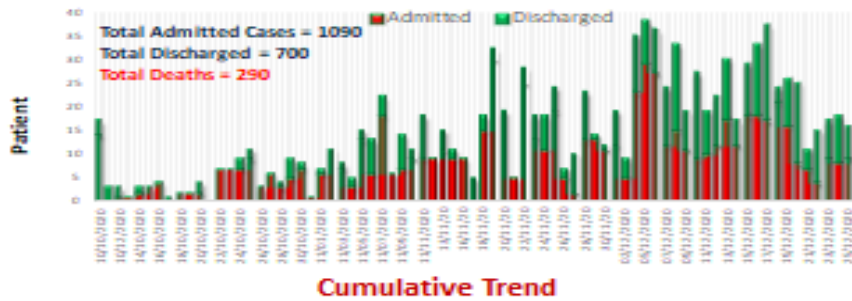
#### **Patient's trends in RMU and Allied hospitals Rawalpindi in second surge of COVID-19**



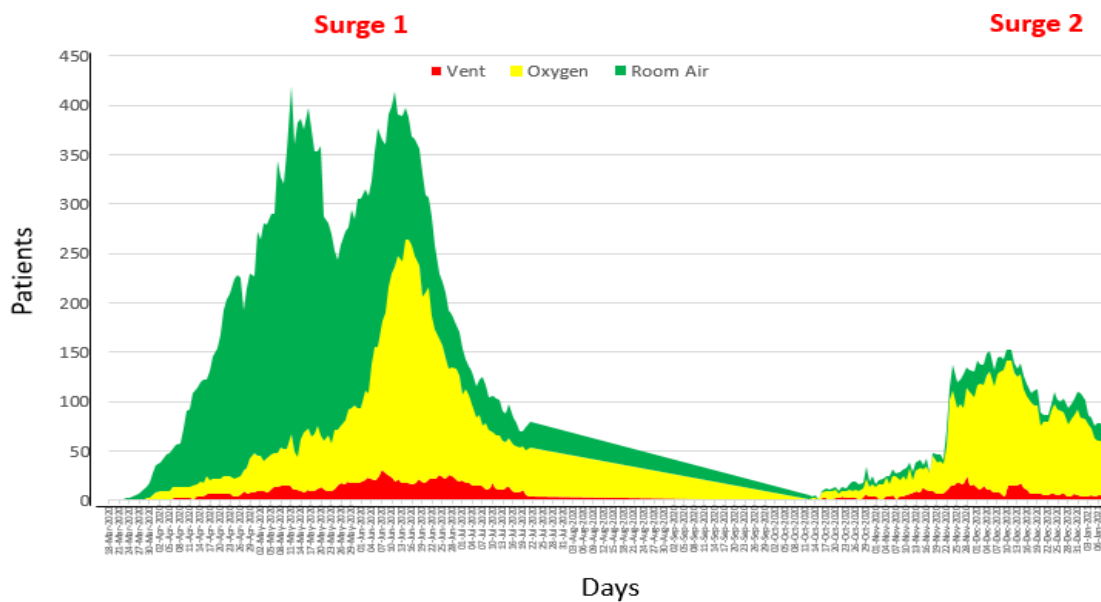




## RMU & Allied Hospitals Patients Trends From 10<sup>th</sup> October,2020 – 26<sup>th</sup> December,2020



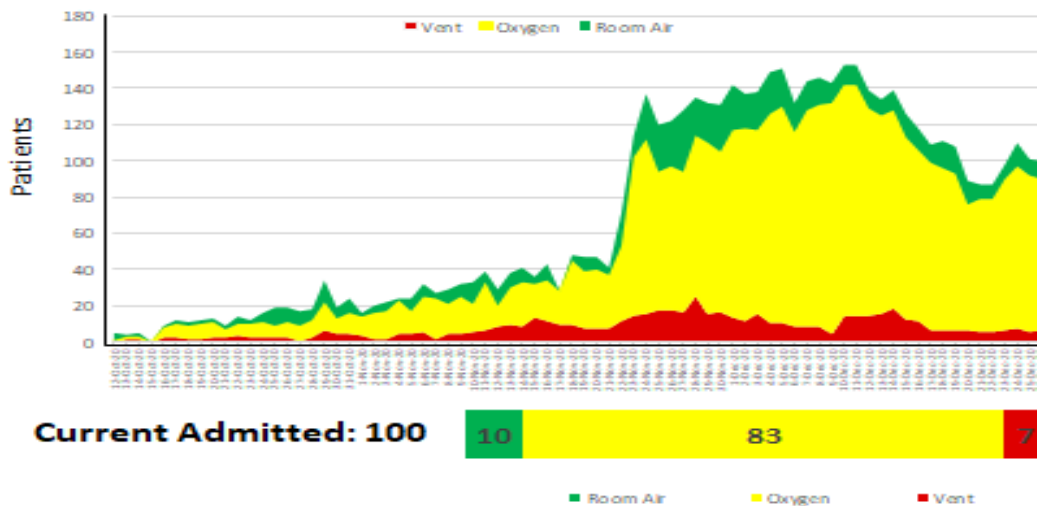
Critical Status – 18 March 2020 – 9 January 2021



## Comparison of Patients on Room Air, Ventilator and Oxygen Dependent in First and Second Wave.



**Critical Status — 10/10/2020 - 26/12/2020**



### Patients on Room Air, Ventilator and Oxygen Dependent in Second Wave.

First wave of COVID-19 patients admitted in allied hospitals and hospitals of RMU Rawalpindi were more on room air and less patients were oxygen dependent. However in second surge an abrupt increase in oxygen dependent patients occurred. First, there are far less patients as



**VC RMU Prof. DR Muhammad Umar and Head of Department DID DR. Muhammad Mujeeb visited the patients in COVID Ward HFH**

compared to the first wave. Secondly, most of the patients are either on oxygen or on ventilator support. This could be pinned down on the fact that patients with mild symptoms are preferring 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.

## Facilities Provided in RMU and Allied Hospitals

In the year of pandemic RMU and Allied hospitals provide 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 medicine and injections are 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 trainings 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 burdened 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 with the contact of contaminated services therefore the cleaning and waste management is proper waste management is of tremendous importance to stop the spread of virus. For this reason, standard working methods were created in accordance with the rules gave by Punjab Government and strictly followed. Psychological counseling of patients and their attendants is also done by clinical psychologist.

## Research

Novel Corona virus was a new virus for the whole world therefore the infection spread so fast and did not control. For 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 efficiently conducting different research projects which include:

- Use and Impact of injection Remdesivir on patients of COVID-19.
- Use and Impact of Tab. Ivermectin on patients of COVID-19.
- Psychological wellbeing and concerns of Attendants of critical Covid-19 patients.







# **THIRD SURGE**

**1<sup>st</sup> March 2021 to 30<sup>th</sup> June 2021**

## **INTRODUCTION**

By the grace of almighty Allah, we able to managed 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. In March 2021 the third surge of COVID-19 announced in country as a fast increase in the positive COVID cases observed on

daily bases. This third surge is still at its peak and considered most drastic spell as compared to first two surges.

**COVID-19 Patients- In Holy Family Hospital (HFH) Rawalpindi**

<b>Indicator</b>	<b>1<sup>st</sup> Wave</b>	<b>2<sup>nd</sup> Wave</b>	<b>3<sup>rd</sup> Wave</b>
<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 are admitted in three surges out of which 566 expired.

**COVID-19 Patients- In Benazir Bhutto Hospital (BBH) Rawalpindi**

Indicator	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
<b>Total Patients Admitted</b>	3399	3562	3436
<b>Confirmed</b>	1083	360	504
<b>Ventilator</b>	119	35	9
<b>Deaths</b>	196	67	125

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- In Rawalpindi Institute of Urology & Transplantation (RIUT)**

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

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

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



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

In first wave DHQ Rawalpindi was a center for COVID-19 patients and admitted 146 patients. I 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 Burden in RMU and Allied Hospital in 2<sup>nd</sup> and 3<sup>rd</sup> Surge

Since very beginning of COVID-19 pandemic RMU and Allied Hospitals are efficiently managing the patient burden along with limited resources and provide extraordinary services to humanity with full zest. Graphs given below mentioned a small picture of the patient burden in RMU and allied Hospital in the pandemic till now and it is continued.

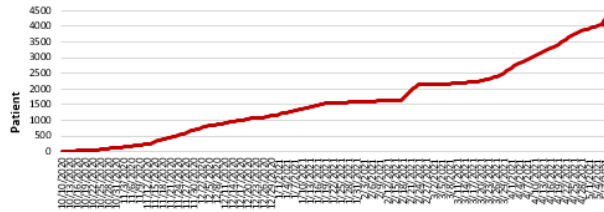
### RMU & Allied Hospitals – Patient Burden 18<sup>th</sup> March 2020 – 7 May 2021

Hospital Name	Flu Filter Clinic	Total Suspects	Total Confirmed Admitted	Suspects Admitted	Total Discharged	Death
RIUT/Corona Hospital	0	0	2,179	0	1,754	350
Benazir Bhutto Hospital	23,452	4,772	2,985	591	2,570	358
Holy Family Hospital	18,488	3,083	1,984	1,148	1,418	512
District Headquarters Hosp.	2,833	475	162	1	144	13
Red Crescent Field Hospital	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>

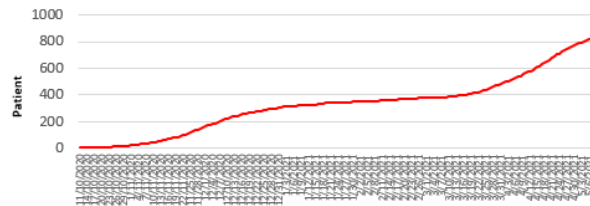
RMU and Allied Hospitals of Rawalpindi managed a huge number of patients in flu filter clinics i.e 44773 out of which 7500 patients were confirmed and 1236 patients are expired. This number is increasing further until unless the pandemic is over. The administrative bodies and staff of all these hospitals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

# Patients Trends

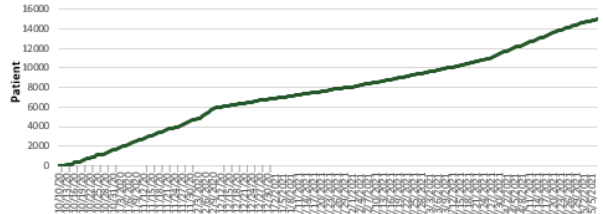
From 10/10/20 – 7/5/2021



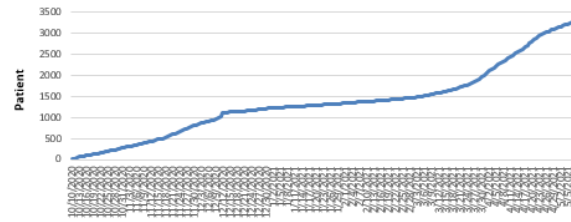
Confirmed Patients



Deaths



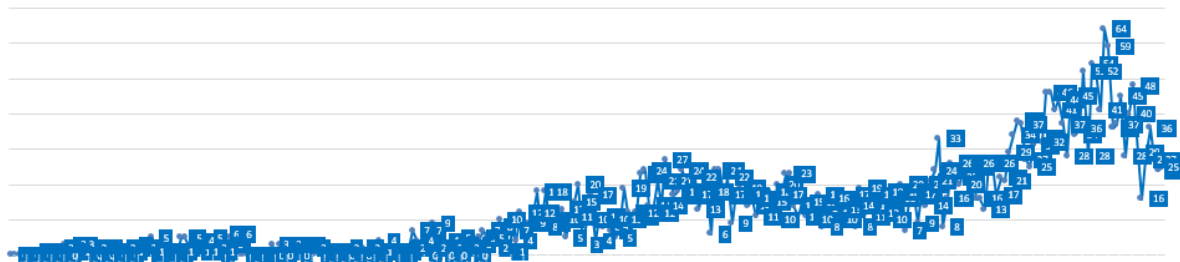
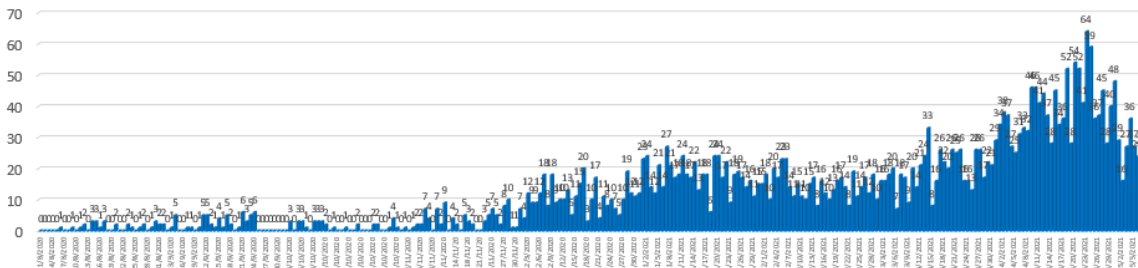
Flu Filter Clinic Patients



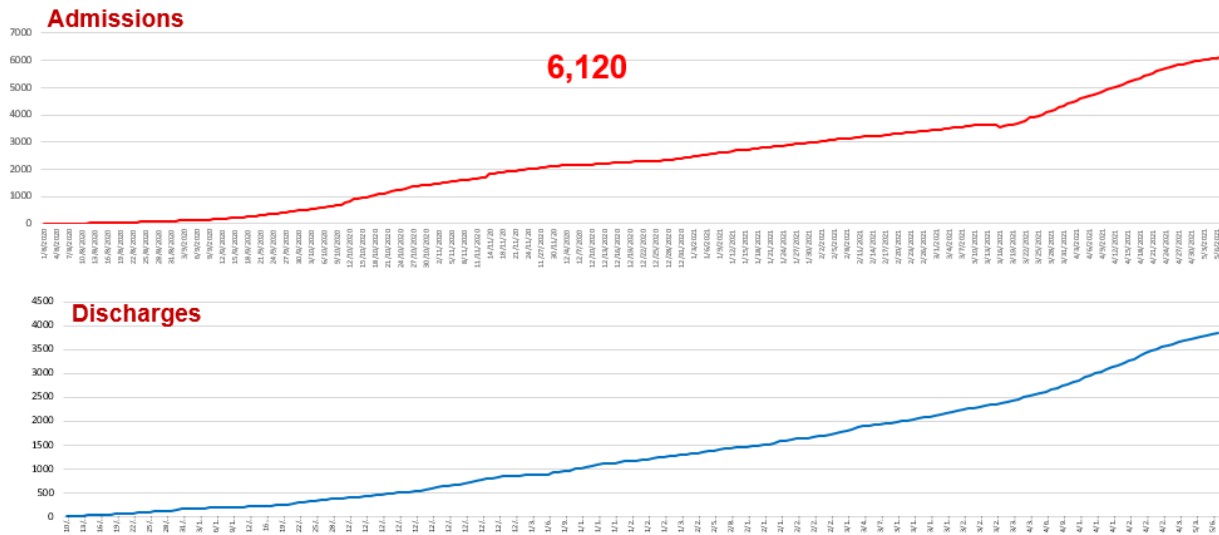
Suspected Patients

## DISCHARGED TREND OF COVID-19 PATIENTS

10<sup>th</sup> Oct 2020 to 7 May 2021



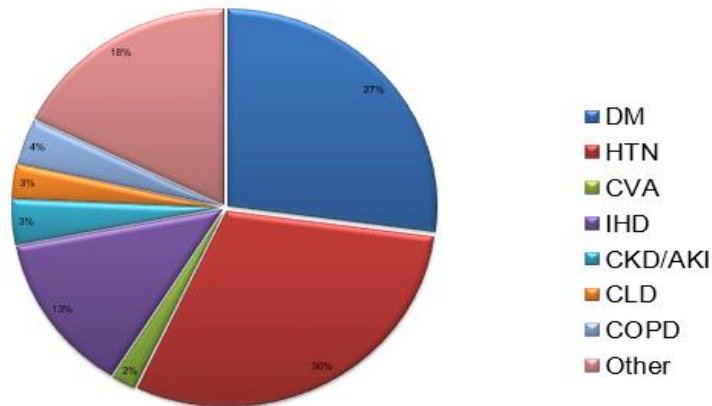
From 10/10/20 – 07/05/2021



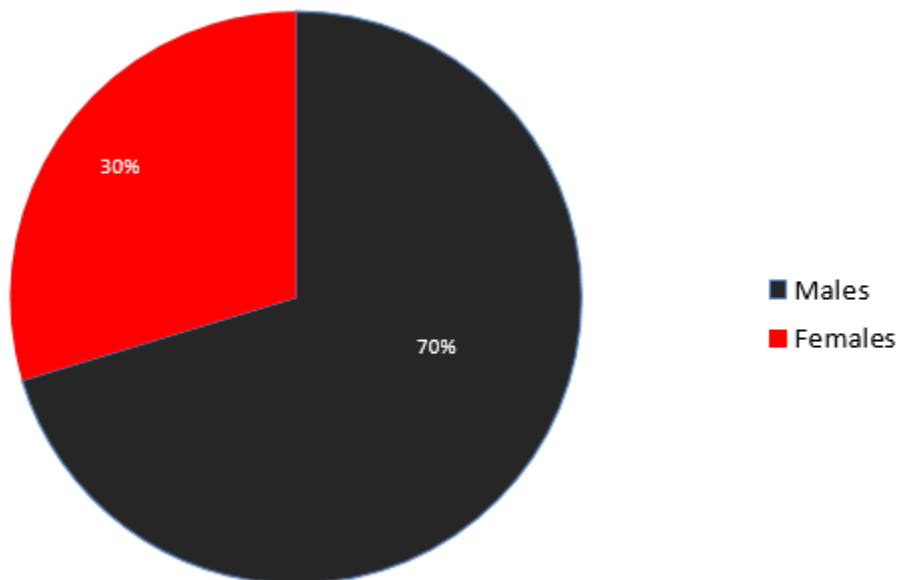
Overall the above mentioned patient trends have shown that the number of discharge patients is greater than the seriously ill and deceased patients. Therefore it can be concluded that rate of patients recovery is higher than the expiries and critical patients. However it is also a fact that the increase in patient burden may resulted in shortage of healthcare facilities which may increase in critical status of patients and even in 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 in RMU and Allied Hospitals

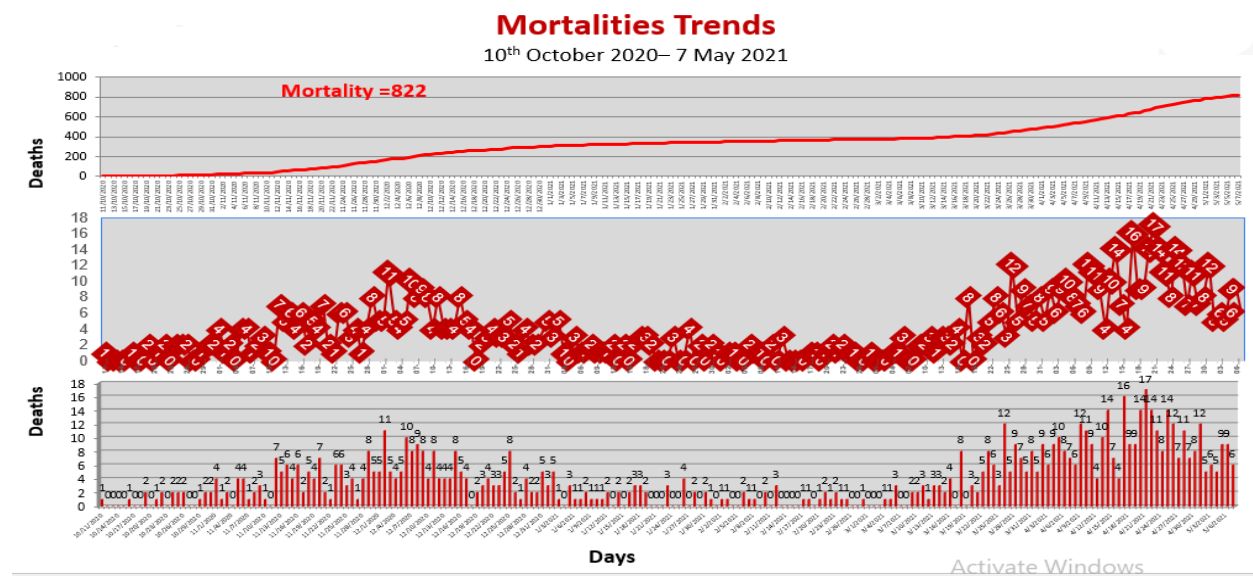
In RMU and allied hospitals number of confirmed patients in third wave is more than the 2<sup>nd</sup> wave. Moreover the percentage of patient's expiries are also more than the first two waves.



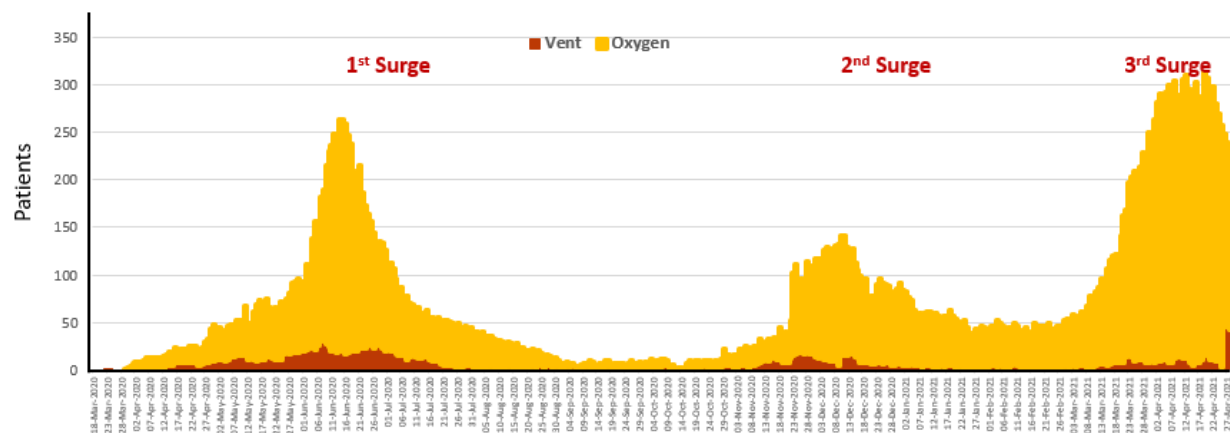
It is also found that patients with other ailments or patients with comorbidities were on high risk and more number of patients expired with comorbidities. Majority patients with HTN, DM, IHD and CKD are on high risk and chances of recovery reduced among them.



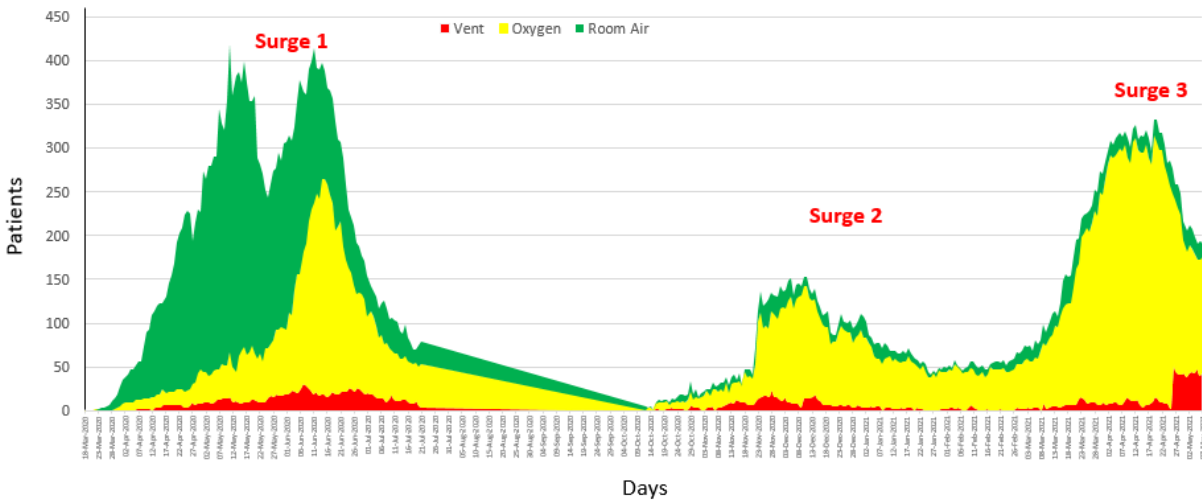
Gender wise distribution of expired patients presented a higher trend of expiries among males and less females are expired with this deadly virus. Most probably the possible explanation lies in the culture of our country as more females live in homes and males remain outside their homes for their jobs and other chores therefore the chances to get an infection of COVID-19 increased in men.



### Critical Patient Status on Oxygen and Ventilator In 1<sup>st</sup>, 2<sup>nd</sup> And 3<sup>rd</sup> Surge Of COVID-19



## Critical Status – 18 March 2020 – 7 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 surge 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 surge, 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 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 SOPs for wearing masks and having distance. In the 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 SOOP'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.

## **4<sup>TH</sup> SURGE**

**1<sup>st</sup> July, 2021 to till date**

## INTRODUCTION

In Pakistan during third surge of Covid-19 the vaccination of the citizens had been 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 able to managed the patients efficiently and effectively in Rawalpindi District. 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. In third surge the rate of expiries were more than the previous two surges and in fourth surge the rate of spread of virus is very quick. This fourth surge is still at its peak and considered most drastic spell as compared to first three surges because of higher spread rate of delta variant.

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

Indicator	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
Total Patients Admitted	1383	1163	1229	414	4189
Confirmed	550	743	842	360	2495
Ventilator	84	111	98	16	309
Deaths	128	230	208	38	604

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

**COVID-19 Patients- In Benazir Bhutto Hospital (BBH) Rawalpindi**

Indicator	1 <sup>st</sup> Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave	4 <sup>th</sup> Wave	Total
Total Patients Admitted	3399	3562	3436	806	11203
Confirmed	1083	360	504	145	2092
Ventilator	119	35	9	04	167
Deaths	196	67	125	19	407

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 is 407.

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

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

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

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

Indicator	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>	146	111	192	62	511
<b>Confirmed</b>	146	111	192	62	511
<b>Ventilator</b>	07	05	18	04	34
<b>Deaths</b>	07	02	11	03	23

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

### Comparison of 4 surges of Covid-19 in RMU and Allied Hospitals of Rawalpindi

Hospital	Patients Admitted				Confirmed				Ventilator				Deaths			
	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	414	550	743	842	360	84	111	98	16	128	230	208	38
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
Grand Total	6208	5231	6003	1477	3059	1609	2684	762	326	185	202	30	458	391	617	78
Percentage									5.25 %	3.53 %	3.36 %	2.03 %	7.38 %	7.47 %	10.28 %	5.28 %

### Grand Total

Hospital Name	Patients admitted	Confirmed	Ventilator	Deaths
HFH	4189	2495	309	604
BBH	11203	2092	167	407
RIUT	3016	3016	233	510
DHQ	511	511	34	23
<b>Grand Total</b>	<b>18919</b>	<b>8114</b>	<b>743</b>	<b>1544</b>

### Causes of Fourth Surge of Covid-19

Fourth surge of Covid-19 initiated in Pakistan till 1<sup>st</sup> July 2021 and this surge is still continued to effect large number of people. There are 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-infected 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 increasing the Covid-19 confirmed patients day by day.



- Slow pace of vaccination of Covid-19 is also a cause of the fourth spell of Covid-19. Moreover the less effectiveness of vaccination for delta variant is 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.

## Summary

Covid-19 is a nightmare for the whole world, no doubt. Almost every country of the world is fighting against the pandemic of Covid-19. Pakistan also fight 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 introduce 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 able to managed 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.

## **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 see off hidden and benevolence in our community around the world. It has led to countless act of selfless heroism in hospitals an 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 Vaccination**

Recently government of Pakistan has started vaccination of Covid-19 for health professionals in Pakistan. In hospitals of RMU, vaccination centers are 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.

In RMU and Allied hospitals of Rawalpindi total 4000 doctors, 982 nurses and 2784 other health professionals are vaccinated. The citizens are also vaccinated against COVID-19 and total 5589 citizens are vaccinated yet and it is still continued.



**Vice Chancellor RMU 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 سپرائنڈنٹ اور پروفیسروں کے ہمراہ انتظامات کا جائزہ لیتے ہوئے۔





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