

CONTINGENCY MANAGEMENT FOR FUTURE  
PANDEMICS AND LESSONS FROM THE COVID-19  
PANDEMIC AT RUKMANI BIRLA HOSPITAL, JAIPUR.



Submitted by-

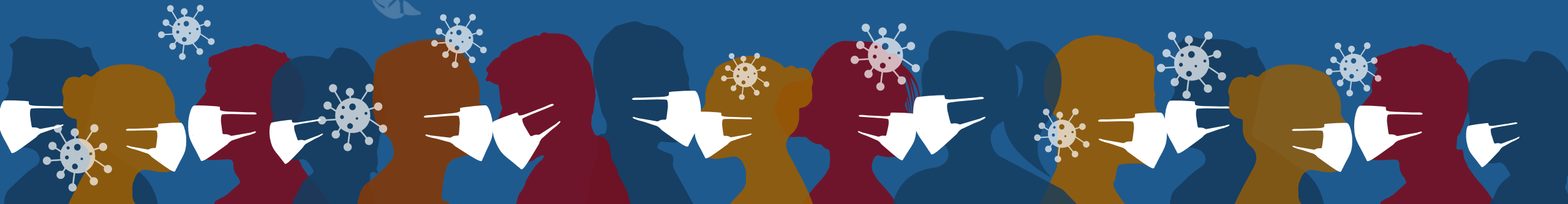
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# INTRODUCTION



- COVID-19 has hit the world hard. Undoubtedly it has changed our lives forever. It has left the world's healthcare system overwhelmed by the rise in cases and deaths. The world has seen how India is being ravaged by a second wave of the Covid-19 pandemic, which has accelerated beyond anywhere else in the world. From this time, we need to focus on the plans for such waves to come in future also. For these reasons it's important to have a contingency plan.
- The cycle of identification and monitoring of risks and vulnerabilities is called Contingency planning. It consists of analyzing the risks and implementations to mitigate the risks.
- The key factors to keep in mind are that contingency planning should be: Practical, Easy, Realistic, Feasible, Needs based, Efficient, Should be effectively operational, Regularly tested for its effectiveness, Monitored regularly and Updated if required.



# METHODOLOGY

## 01 Research Question

What is the importance of contingency planning, methods to achieve it and its implementation for future preparedness?

## 02 Research Objectives

- To identify the lessons learned from COVID-19 pandemic.
- To understand the importance of contingency planning.
- To formulate a contingency plan for second wave and future waves.

## 03 Materials and methods:

- Study design: Secondary research.
- Setting: Rukmani Birla Hospital, Jaipur.
- Duration of study: February 1<sup>st</sup> 2021 till 20<sup>th</sup> June 2021.
- Study method: The MOM's of CPC committee were studied. The current plan to tackle the second wave was evaluated and the plan for predicted third wave was formulated accordingly. This study is based on secondary research taking the guidelines of Government of Rajasthan and World Health Organization into consideration.
- Study population: All the IPD patients at Rukmani Birla Hospital, Jaipur, coming with or without any COVID related symptoms.
- Study approach: Qualitative assessment.



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at home**

# Lessons learned from COVID-19 pandemic



Effective and decisive bio-medical engineering which is a very crucial part of any pandemic.



Limited authorized testing facilities- The most developed cities in India and the national capital has seen at least 4 to 5 days of waiting to get a COVID test done. India needs to not only scale-up the testing systems but also provide abundant instrumentation and expertise required to perform COVID test.



Getting diagnostics facilities running to a scale that they can handle large number of samples are the major requirements.



Formulation and identification of available resources and strategies to promptly harness them.



Contingency planning to identify the facilities which can be effectively used as healthcare facilities in the time of emergency.



It is necessary to increase the ICU beds in the country in order to avoid the situations where patients are dying due to unavailability of beds and to prevent hospitals and health care facilities from being overwhelmed if any future waves come.



Planning for shelter hospitals for the cases with mild systems.



Safety and protection of health-care and all front-line workers.



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# Lessons learned from COVID-19 pandemic



Better availability of medical grade oxygen.



Increasing the number of ambulances and capping the prices for service.



Government should also engage the general population in management of crisis by voluntarily engagement in crisis management at least of the youth.



Health insurance programs to help people seek medical care without caring about the cost of treatment.



Improving 24\*7 teleconsultation to reduce the workload of doctors.



Governments globally should work together to form a contingency plan which can be activated at the time of need.



More budget should be allocated to research activities involving vaccine producers, medical workers.

- Pandemics, in any form, whether mild, moderate or severe, usually affect a large number of the population and require a multi-sectoral response over time.
- Preparing and planning for a pandemic is a continuous process. In order to avoid the grim losses seen during the second wave, it is important to have a contingency plan at place.
- The steps involved in contingency planning :
  1. Risk mitigation
  2. Risk analysis
  3. Risk Preparedness
  4. Contingency plan



**Importance  
of  
contingency  
planning**

# Contingency planning at Rukmani Birla Hospital, Jaipur

As per the 1<sup>st</sup> CPC meeting, the committee decided upon few points

Agenda of 1<sup>st</sup> CPC meeting:

- Discussion on novel coronavirus.
- Strategic preparedness and response plan
- Revision of COVID SOP's

Our COVID team will consist of 3 consultant doctors: -

- Dr. Sushil Kalra
- Dr. Puneet Gupta
- Dr. Rakesh Godara

COVID suspected and positive patients to be admitted under COVID team and not under any specific consultant.

**What do we do if previously negative IPD patient turns positive during their stay in the hospital: -?**

- CT scan of chest for any negative patient in whom symptoms are suspicious
- Patient will be shifted to second floor isolation ICU/ward as per requirement if positive findings present.

**Location to which any COVID positive patient will be shifted?**

- Primary consultants treating COVID patients to decide on the logistics.

**COVID-19**

## As per the 1<sup>st</sup> CPC meeting, the committee decided upon few points

### How is bed allotment to COVID positive patients going to be carried out?

#### General ward:

- All stable patients who are maintaining SpO2 levels can be admitted here and can be shifted out if needed.

#### Isolation ICU:

- Total 13 beds are there in Isolation ICU.
- Out of these 13 beds, two divisions were made- 7 beds in left and 6 beds in right.
- Left 7 beds- Patients who have low probability to come positive and who's RT PCR reported is awaited will be kept here.
- Right 6 beds- Patients who have higher probability to come positive will be kept here.

### What to do if we run short on COVID beds?

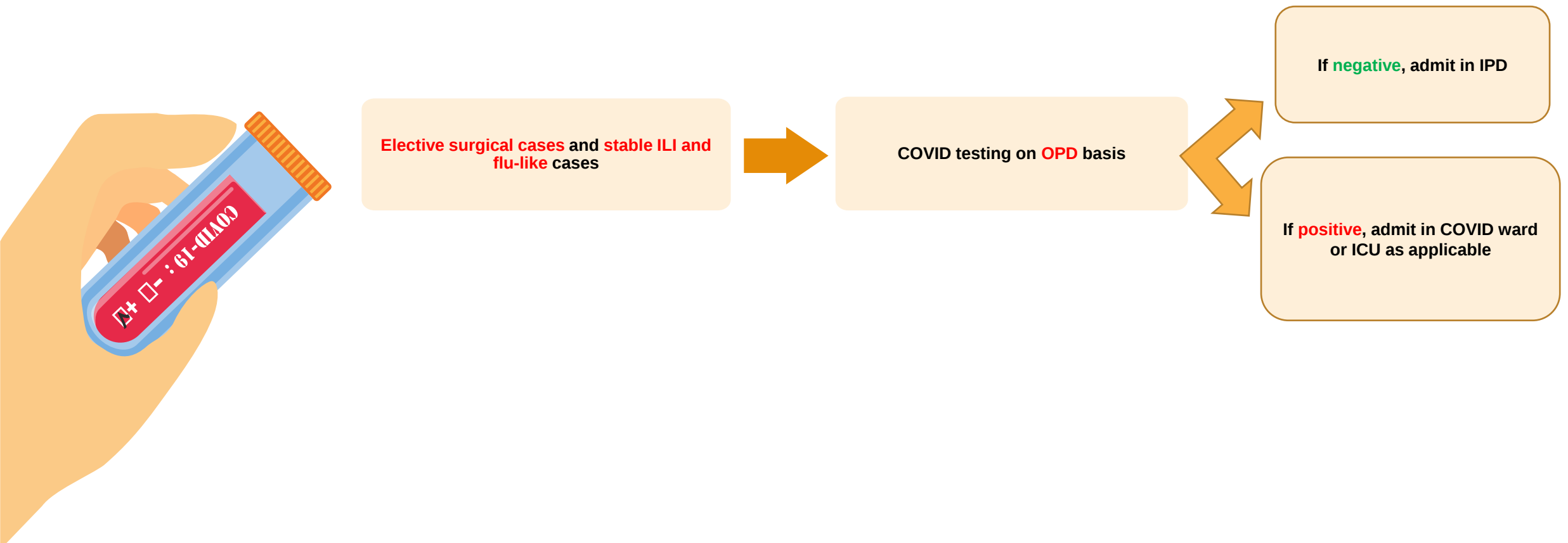
- In such cases, SICU will be opened and all COVID suspected patients will be kept here

**COVID-19**

# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

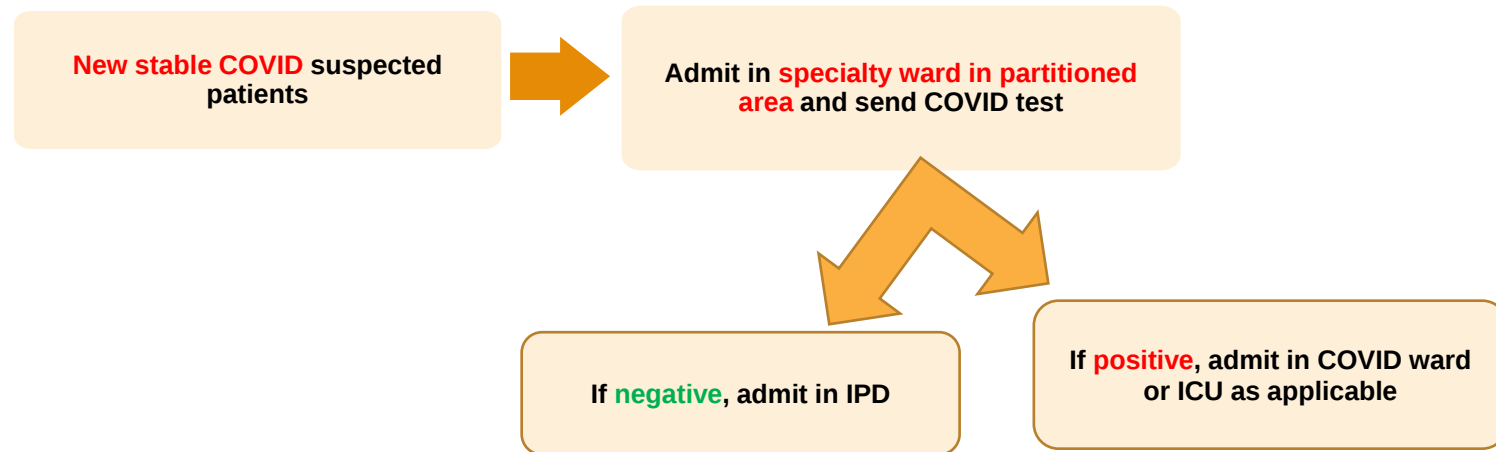
## Admission criteria for elective cases



# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## Admission criteria for surgery cases



# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## Admission criteria for COVID positive cases to General Ward

COVID positive stable patient



Admit in general ward subject to bed availability

COVID positive patient for step down  
from Isolation ICU



Transfer to general ward subject to bed availability



After the start of second wave of coronavirus, 16<sup>th</sup> CPC meeting was held on 7<sup>th</sup> April 2021. The points discussed in this meeting are as follows

- 1 Bed should be kept vacant in ER for any cardiac or neuro case
- Red color band will be used on COVID suspected/positive patients and green for COVID negative patients.
- TAT for the RT PCR reports to be reduced by looking up for more out-sourced labs
- Emergency OT can be used as for any emergency surgery without awaiting COVID report.
- There is no need for weekly or monthly COVID testing for dialysis or cath lab patients.
- Rukmani Birla Hospital is having 5 floors amongst which we have dedicated our SICU (1<sup>st</sup> floor), General Ward (2<sup>nd</sup> floor), HDU (2<sup>nd</sup> floor), Holding area (2<sup>nd</sup> floor), and entire 5<sup>th</sup> floor for COVID-19 patients.
- ICCU (1<sup>st</sup> floor) and MICU (1<sup>st</sup> floor) have been kept for treating post-COVID patients.

**COVID-19**

# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## CURRENT NON-COVID ADMISSIONS PROTOCOL

Low probability of COVID-19 (No COVID like symptoms)



RTPCR report negative within last 72 hours



Direct admission to  
non-COVID Ward/ICU

## POST COVID PATIENTS ADMISSIONS PROTOCOL

At least 2 COVID negative reports with at least 48 hours gap and latest report should be within last 72 hours



Patient shifted to  
Ward/ICU as per  
the patient  
condition



# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## NON-COVID EMERGENCY

Patient admitted to ER Daycare on non-COVID bed

In-house RT-PCR is done along with HRCT

HRCT Positive

Treated as other COVID patients

HRCT Negative

Cardiac patient shifted to ICCU and receives separate nursing care

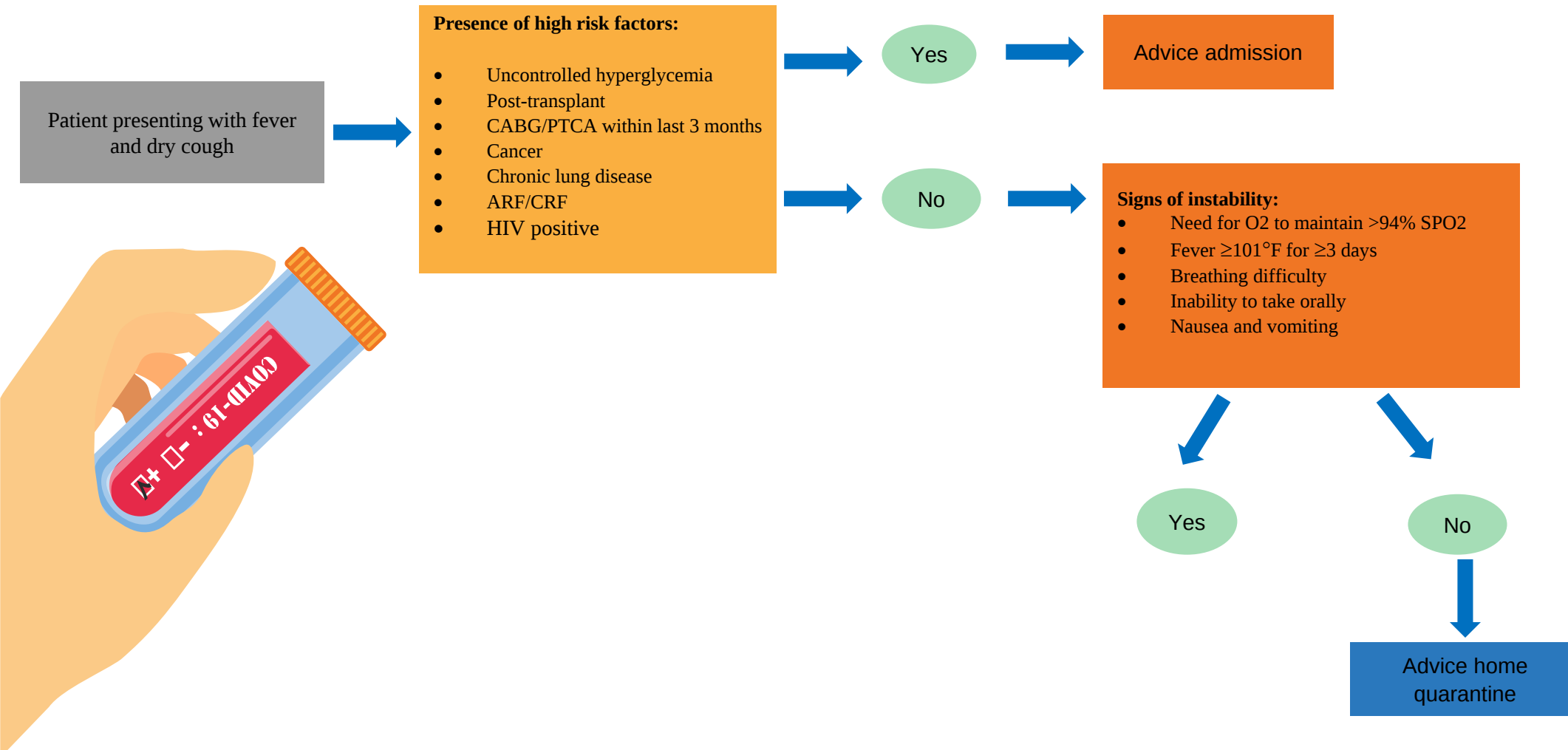
Non-cardiac patient shifted to ER Daycare after procedure and waits for RTPCR report



# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## Current criteria for admission in General Ward



# Contingency planning at Rukmani Birla Hospital, Jaipur

COVID-19

## Admission criteria for ICU

### Admission Criteria for COVID-ICU

Evidence of impending cytokine storm  
Signs of respiratory failure, abnormal ABG  
>5L of O2 required to maintain >94% SPO2  
Hemodynamically unstable  
Any patient who needs HFNC, BiPAP or Mechanical Ventilation

## Shift out Criteria from COVID-ICU

### Shift Out Criteria from COVID-ICU

Evidence of diminishing cytokine storm  
Two negative RT-PCR tests at least 48 hours apart  
<5L O2 requirement to maintain >94% saturation  
Prolonged stability even if on higher flow oxygen  
Low possibility of return to ICU  
Obvious clinical improvement as documented by the Treating Doctor





## Facilities made for patients and attendants coming for RT-PCR

### **Shaded waiting area for COVID-19 patients-**

To provide relief to COVID suspected patients waiting for consultation/ billing and thereby reduce crowding at the ER billing counter.

## **Segregation of COVID OPD Consultation Chambers and Sample Collection Room-**

To segregate suspected and COVID positive patients from non COVID patients. We have created separate COVID OPD & sample collection area.

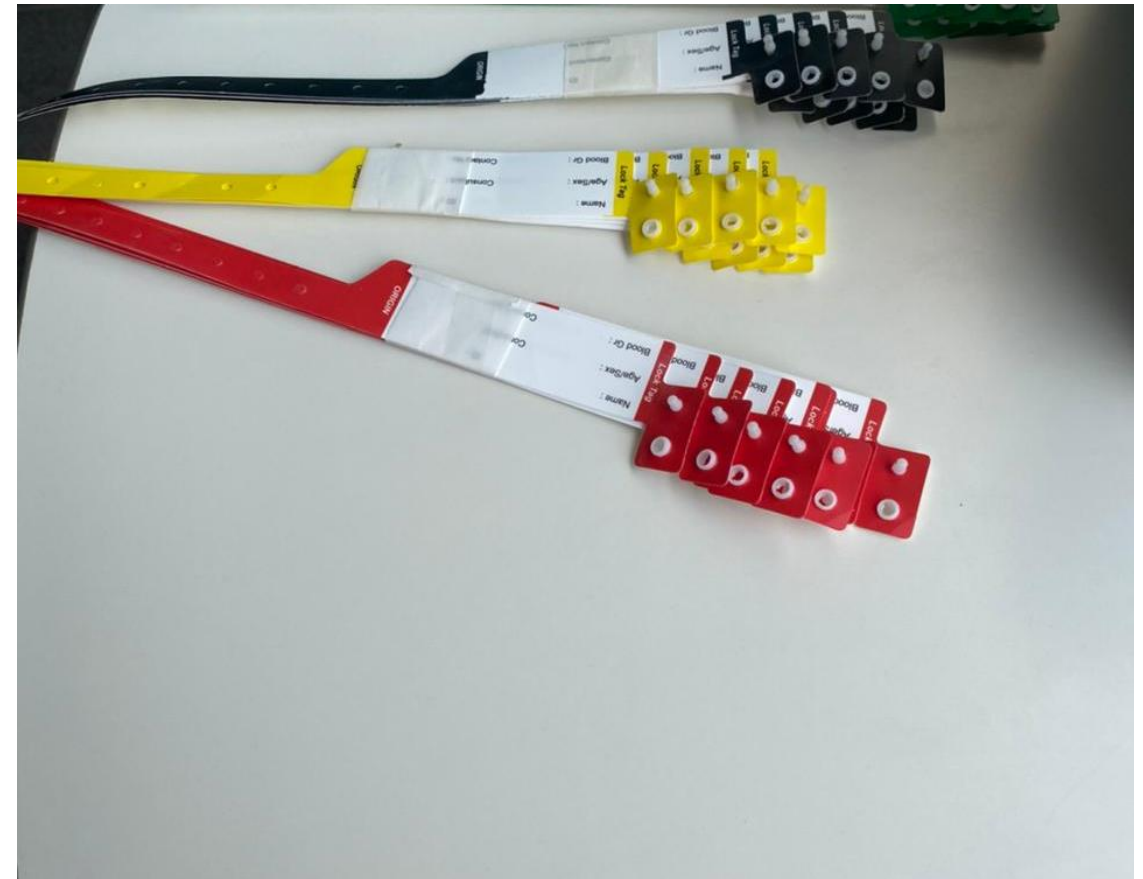




**Additional OPD Billing Counter for COVID Patients**

## **Providing Bands at Entrance checking for patient segregation-**

While checking vitals at entrance, our nursing put a band on wrist of every visitor, whether it is patient or his/ her attendant. If vitals are Ok, then green band is put on and they are allowed to enter and visit to their consultant. In case if their temperature is high or if they have any symptoms than red band is put on their wrist and they are asked to consult our physician.



# Supply chain management

COVID-19

01

## Management of oxygen supply:

Oxygen is a very crucial part in the treatment of patients with moderate to severe COVID infection. In the second wave of COVID-19, we have seen a drastic shortage of oxygen in the whole country. With more and more number of patients requiring oxygen support of their survival it was becoming very difficult to manage the supply of oxygen. The oxygen for industrial use was also diverted towards only medical use. Many tones of oxygen were imported from different countries to meet the increasing demand.

Rukmani Birla Hospital is having its own oxygen generator plant purchased from AIROX, Pune.

It has a capacity to fill 88 D- type cylinders per day with an oxygen purity of 93% to 95% whereas purity required by a patient is 90%-100%. During COVID-19 second wave, the average requirement of oxygen from the ICU's was increased up to 180 cylinders per day. We managed to fill 88 cylinders via our oxygen generator and rest were filled by some out-sourced agencies like Ankur gas agency to meet the requirement.



# Supply chain management

COVID-19

02

## Management of Remdesivir

A handover register was maintained and 4 nursing supervisors were made responsible to get it filled and signed by the patient attendant during handover of remdesivir.

In cases where patient attendant was anxious about his/her patient receiving the dose without any failure and miscommunication, the attendant was allowed inside the ICU's with following proper COVID protocol and the dose was administered in front of them.

On the other hand, in cases where the relative didn't go inside the ward, the empty vial of remdesivir was shown.

All the empty vials were collected and kept in a separate disposable bag and were shown to the nodal officer (assigned by the Government) for verification before final disposal.



# Supply chain management

COVID-19

03

## Management of other anti-viral and essential drugs for the treatment of COVID-19

A huge shortage of fabiflu, mederol, Fentanyl, Dolo and other drugs used for the treatment of positive patients, was seen during the second wave. Alternative drugs were used in their places as the increasing demand couldn't be met.



04

### **Management of plasma and other blood-coagulants**

RBH has its own blood bank and is permitted for whole human blood IP and blood components and plateletpheresis and is well equipped.

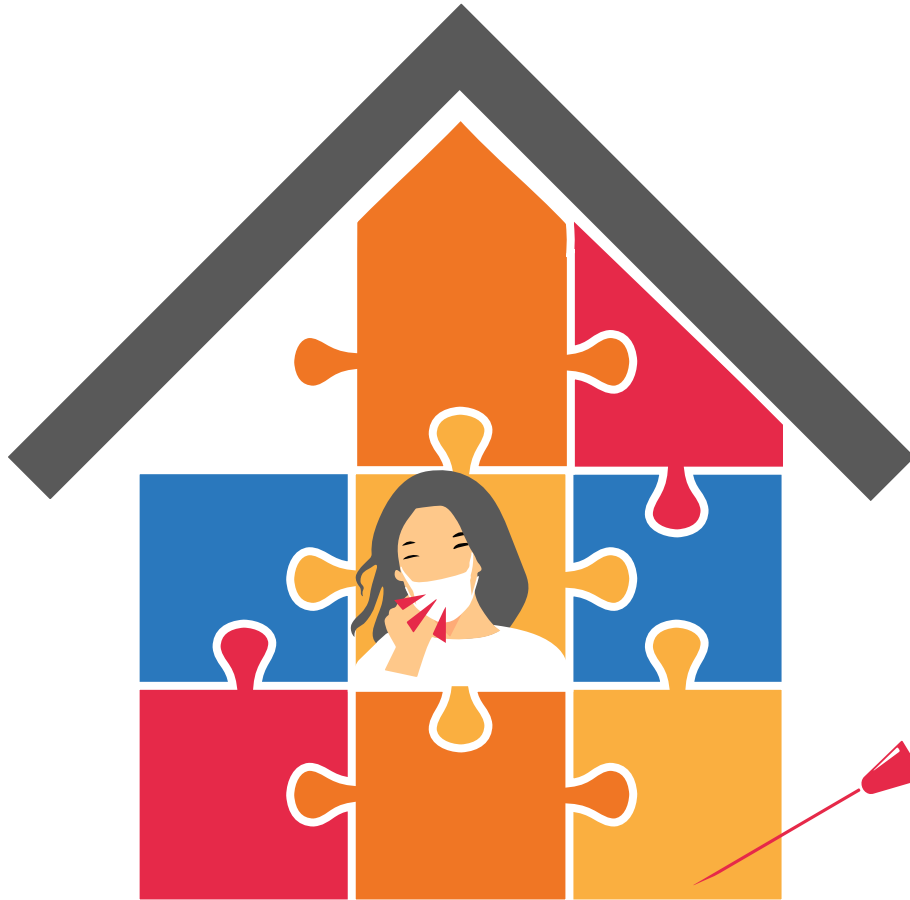
An application was sent to the Government of Rajasthan for granting the permission of plasmapheresis in its license in order to collect convalescent plasma from the donors who have recovered from COVID-19 for further management of COVID patients.

The permission was approved on 5<sup>th</sup> May 2021 and RBH has its own plasma bank now.



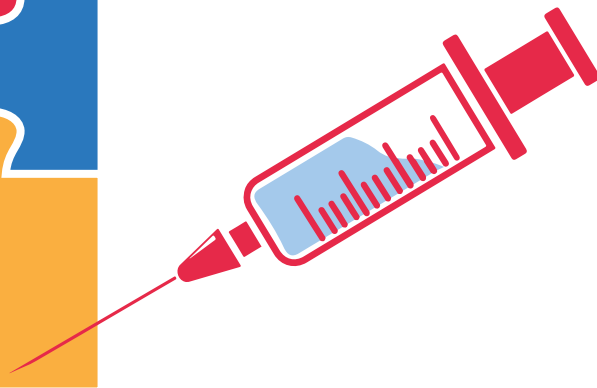
# Preparation for third wave of COVID-19

COVID-19



We, at Rukmani Birla Hospitals, Jaipur, intend to prepare for third wave of COVID-19 which is predicted to hit the kids the most by evaluating the current readiness and analyzing the gaps and filling them within a period of 6 weeks.

We plan to convert our SICU on 1<sup>st</sup> floor to PICU. It is having 9 beds out of which 5 beds will be utilized as ventilator beds and rest 4 as non-ventilator beds with oxygen support. A draft plan has been made in which we have identified the current gaps and we plan to work on this within a time frame of 6 weeks.



# Conclusion

COVID-19

The novel coronavirus has spread a shockwave through hospitals and healthcare systems all over the globe. A pandemic of this huge scale with such rapid progression has definitely outshined the insufficiencies in healthcare systems. Just when Indians thought that the virus has gone away after almost a year of gloom and doom, a new second wave roared back and we were caught unaware.

When the pandemic hit for the first time, Governments all over the world implemented rigorous measures to tackle its spread. In India, the first wave began in March, 2020 and peaked around September 2020. This time India has experienced a 4 times rise in the COVID infections as well as mortalities. Thinking that the monstrous virus has left, many of us rushed to reclaim our pre-COVID lifestyles. The guards were lowered and social-distancing norms were violated while the virus was still furious and was mutating.

The outcomes of this are playing out in front of our eyes. The crematoria and hospitals are over-burdened. This time the virus has affected rural population as well as children.

According to data, during the second wave 54.5% of hospital admissions have required oxygen support. This marked a 13.4-percentage-point increase from the peak during September and November of first wave.

Since we were not prepared for the second wave we have seen devastation all over India. Here comes the role of contingency planning.

A contingency plan helps an organization to plan for any upcoming unforeseen event in a way that the organization can return to its normal functioning as soon as possible without much disruption. The contingency plan should protect resources while minimizing inconveniences for patients, customers and the organization. The variation in supply and demand that occurs as part of any event often creates problems that contingency plans can deal. The practice knows these events happen with some frequency.

# Recommendations

COVID-19

Rukmani Birla hospital, Jaipur is one of the leading healthcare institutions in Rajasthan. We were able to manage the second wave somehow. But, a proper plan should be at place for further such waves.

1. We only have 1 oxygen generator plant, which was unable to meet the oxygen demand during the second wave. I would recommend that we should start planning to purchase one more generator or we can have MOU with any leading gas agency.
2. The process for remdesivir was not uniform and had many confusions. A proper flow should be planned in which we can decide that how will we procure remdesivir and who will be responsible for its distribution to the patient. A system should be made to ensure the family of the patient that his/her loved one is under proper care and in good hands.
3. A dedicated person should be given responsibility to monitor the admission process of all COVID patients.
4. A team should be made responsible for bed allotment during third wave.
5. Our HMIS should be able to give real time and accurate information regarding the COVID positive IPD patients.
6. The billing team should do audits of the bills of COVID patients in order to keep a check that we adhere to the treatment guidelines set by Government of Rajasthan.
7. Dedicated ICU in-charges should be there along with a team of JR's and SR's to meet the extra care required by the ICU patients.

# Implementation of Recommendations

COVID-19

We are already in discussion with AIROX for procurement of 1 PSA plant to tackle further waves.

Procurement of Remdesivir is under the control of Drug controller, Rajasthan. According to the GOR policy, admission and remdesivir requirement form of every patient is filled and sent to Drug control office, Jaipur. The required quantity is then supplied by them to the hospital.

A senior manager from Medical Admin Department has been assigned the responsibility to lead the bed allotment and admission process in coordination with nursing supervisors.

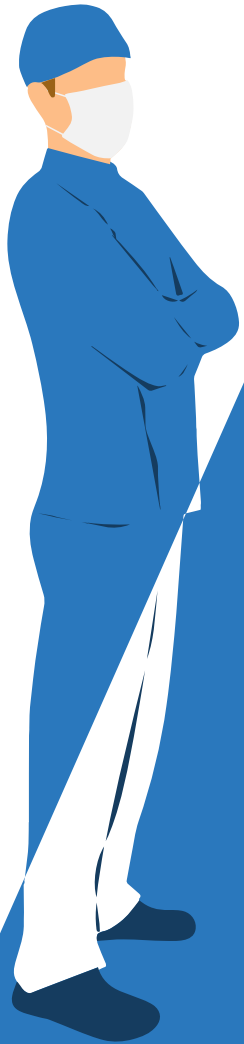
We are also planning to launch a new HMIS software in coming month. After its launch, the planning for a dedicated COVID dashboard will be done in co-ordination with our IT team.

JR's and SR's will be pulled out from their respective departments according to the frequency and load of third wave.

# Limitations and strengths of this study

COVID-19

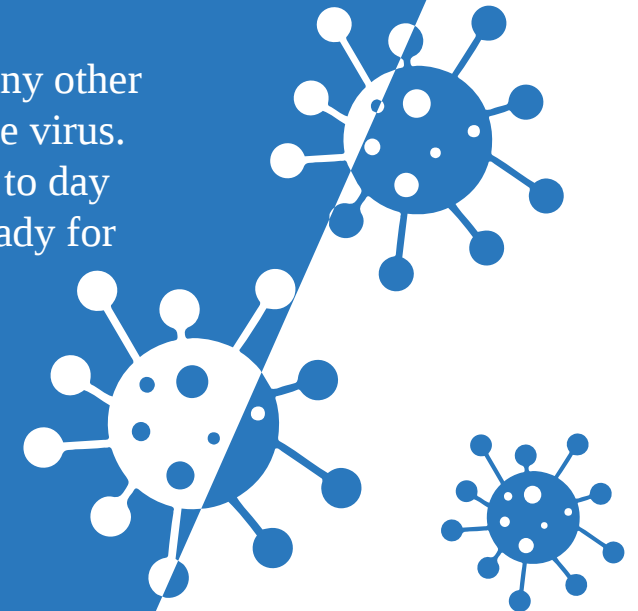
- The exponential increase in India's COVID infections over the past 2 months has swamped the health care system, we have seen patients dying in ambulances gasping for oxygen outside hospitals. The crematoriums were overwhelmed like never seen before.
- The basic medicines and supplies were drained. The dire shortage of oxygen has been a major challenge in many big states as well. Many hospitals were seen tweeting and making appeals on social media that they have stopped taking any further admissions due to the shortage of oxygen.
- All this happened because we were not prepared and there was no coordination among the states.
- The intensity to which the coronavirus second wave peaked was unpredictable and similarly nobody knows when and how will the further waves come and how much preparation will be enough. This is probably one of the limitations of this study.
- The strengths of the study are the second wave has given us an idea about the loopholes in our healthcare system and it has also in some way made the general population more aware that further waves may come and we should keep following the COVID appropriate behavior till the vaccination of all is covered. The gaps which were seen during the second wave should be filled and a proper contingency plan should be kept in place by the Government of India which could be activated anytime when required.



A contingency plan helps an organization to plan for any upcoming unforeseen event in a way that the organization can return to its normal functioning as soon as possible without much disruption. The contingency plan should protect resources while minimizing inconveniences for patients, customers and the organization. The variation in supply and demand that occurs as part of the any event often creates problems that contingency plans can deal. The practice knows these events happen with some frequency.

Due to the second wave of COVID-19, our healthcare system was unable to admit any Non-Covid patients. The operation theaters were non-operational at many hospitals due to inability to maintain the much needed oxygen to operate any OT.

Many patients turning up to the hospitals to seek clinical care for any other disease (Other than COVID), were ultimately tested positive for the virus. To avoid such circumstances in future and to keep the normal day to day functioning of the hospitals, we should keep a contingency plan ready for the future pandemics which can be activated at the time of need.





THANK YOU

