CENTRE FOR DISASTER MANAGEMENT

Centre for Disaster Management (CDM) is a research and training centre, and a unit of Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, Department of Personnel & Training (DoPT), Government of India. The CDM is a Nodal agency for training in Incident Command System (ICS). The Centre is involved in training officers belonging to the IAS and other Group-A civil services at induction as well as at Mid-Career level in various aspects of disaster management through classroom sessions, case studies, experience sharing presentations, panel discussions, workshops, mock drills. Apart from conducting training programmes on fire safety, search and rescue, IRS, DRR, DDMP, school safety, the centre is involved in various types of documentation and publication activities in terms of case studies, documentation of best practices, research papers, books and posters in national and international journals and developed course specific training materials in the area of Disaster and Emergency management and Science and Technology.

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COVID-19 GOVERNANCE IN INDIA

(A Special Issue under Disaster Governance in India Book Series)

Series - 3 (March, 2024)

Centre for Disaster Management (CDM)

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COVID-19

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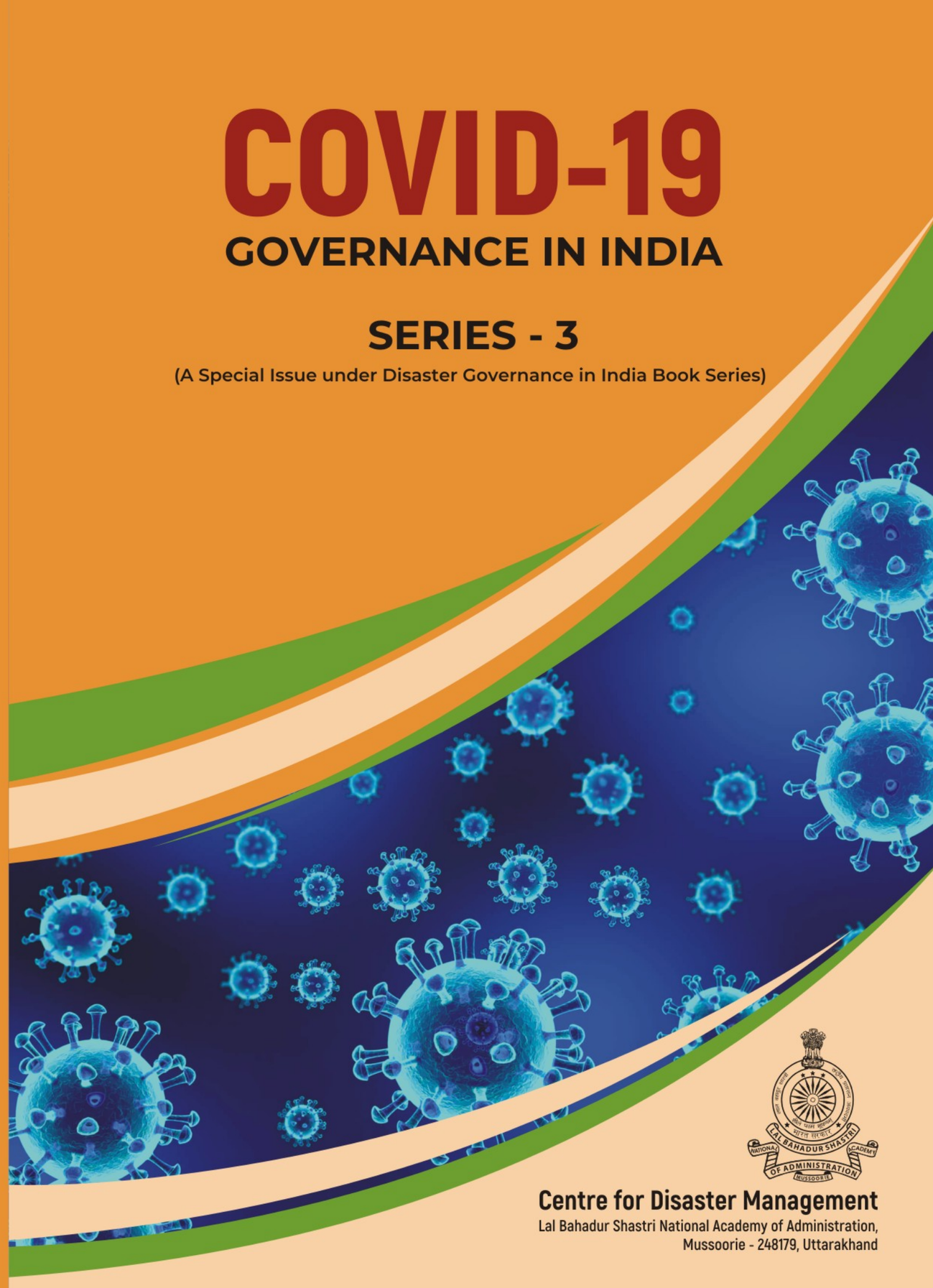

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DIRECTOR'S MESSAGE

Sriram Taranikanti, IAS
Director,
Lal Bahadur Shastri National Academy of Administration, Mussoorie

The unprecedented COVID-2019 crisis has underlined the criticality of effective response as never before. Responsiveness has emerged as a yardstick for measuring the success of Governments across the world in tackling this calamity. Adopting a multi-pronged cross-departmental approach, supported by the collective expertise and experience of specialists and frontline workers has become the need of the hour.

Needless to say, the crisis is far from over, and the road ahead is long and challenging. Although the strategic initiatives systematically taken in the past few years have placed us in an enviable position of being in significant control of the situation, massive challenges still remain and there is no room for complacency. Hence, to define the way forward more comprehensively, the importance of period feedback, analysis and interpretation of programmes, plans and policies to reassess their status from time to time, cannot be overstated.

As the world bravely battled against COVID-19, the gravest health crisis of times, we have seen a total paradigm shift in the way we live and work. The pandemic has led to the emergence of a new and radical construct of societal norms and governance. The country has adopted a cross-departmental approach in the formulation and implementation of the COVID-19 protocol geared towards engineering a sustainable ecosystem for co-existing alongside COVID-19. The country has set forth novel strategies curated to sensitize, motivate and inspire citizens to collaboratively combat the deadly virus, through virtual awareness platforms, digital campaigns and institutionalisation of health, educational, agriculture, industrial and employment operations both in the rural and urban areas.

The lockdown provided an opportunity to not only upgrade our level I, II and III COVID care facilities in the states and to stock up our supplies but also to forge new partnerships with the best health professionals from India and abroad to train our doctors on the latest protocols for COVID patient management. There have been a number of success stories, which all have contributed to our overall understanding of such kind of management, thus adding significantly to the learning process.

I would like to thank the Centre for Disaster Management, Lal Bahadur Shastri National Academy of Administration who have worked on those success stories and have been able to compile a special issue titled: COVID-19 Governance of India, Series-3. Hopefully, the document will be equally useful for both the trainees and the administrators in the field. I want to congratulate the CDM Team for this publication and also place on record my appreciation for the contribution made by the faculty & staff of CDM who contributed in various capacities for bringing out this book.

I would also urge all to go through this compilation carefully and add to the knowledge base.

(Sriram Taranikanti)

PREFACE

Abhiram G. Sankar, IAS
Director,
Centre for Disaster Management

The COVID Pandemic that gripped the entire world has underlined the criticality of effective response as never before and once again highlighted need of health facility preparedness. Responsiveness has emerged as a yardstick for measuring the success of Government across the world in tackling this calamity. Government of India's integrated, multi-pronged action plan of containment and development involving cross Departmental approach, supported by the collective expertise and experience of specialists as well as frontline workers, paid rich dividends.

As the world bravely battles against COVID, the gravest health crisis of times, we have seen a total paradigm shift in the way we live and work. This issue highlights emergence of a new and radial construct of societal norms and governance. The novel initiatives undertaken by various district administrations adopting a cross departmental approach in formulation and implementation of COVID-19 protocol geared towards engineering a sustainable ecosystem for co-existing with COVID. The articles also highlight, all-inclusive approach adopted by administration involving community has set forth novel strategies curated to sensitize, motivate and inspire citizens to collaboratively combat the deadly virus, through virtual awareness platforms, digital campaigns and institutionalisation of heath, educational, agriculture, industrial and employment operations both in the rural and urban area.

The COVID Pandemic provided an opportunity to not only upgrade our health care facilities in the states but also to forge new partnerships with the best health professionals from India and abroad, and to upgrade and modify our protocols for COVID like patient management.

Needless to say, similar crisis may recur in future also new variants have emerged challenging the medical and scientific fraternity, in more ways than one. The strategic initiatives we have systematically under taken in these past few years placed us in significant control of the situation.

I would like to thank the Centre for Disaster Management, Lal Bahadur Shastri National Academy of Administration who have been able to compile the best practices adopted by District Administrations, PSUs and Institutions in the form of a Special issue of COVID-19 Governance of in India, Series-3.

I would urge all of you to go through this compilation carefully and add to the knowledge base for disaster management in the country, and will be useful for both the trainees and the administrators in the field. I would like to congratulate CDM Team for publication at the opportunity time.

(Abhiram G. Sankar)

CONTENTS

Migrant Labour: Meeting a Humanitarian Crisis by Stepping Beyond Policing

Nisha James, IPS

Abstract

The paper outlines the challenges faced by Bangalore City Police to tackle non-policing related challenges in dealing with the migrant labour crisis in the backdrop of the lockdown, such as provision of rations and other essential goods and services much needed by the stranded labourers and how these challenges were met by effective utilization of the human resources of the Police Department supplemented by the resources raised from private enterprises and voluntary organisations and proper coordination with other concerned government departments.

Keywords: Migrant Labour, Ration, Menstrual Hygiene, Sanitation, Police

1.0 The Context

The lockdown was a very individuated experience for each of us. Aside from the personal circumstances, to a large extent, class determined how we fared through it. For those in the upper echelons of society, the difficulty lay perhaps in the loss of support one was accustomed to from domestic staff. So long as the Swiggy delivery was on time and there was no disruption of the WiFi, life was about as good as it had always been. For those in the middle ranks, concerns were largely centred on fighting off imminent unemployment and salvaging steadily diminishing savings. While these struggles are genuine indeed, they pale in comparison to the plight of the daily wager rudely awakening to the sudden news of the lockdown, unable to fathom from where the next day's morsel will come or how to flee to the refuge of the natal village.

As there was no end date to be anticipated for the lockdown, with each passing day it felt as if Bangalore, with a migrant labour population running into millions, was nothing short of a powder keg. The security implications were dire, the desperation was palpable.

The routine response for breach of public order - tear gas, lathi, water canon - was unlikely to contain the mayhem that was close at hand. Given that it was not a situation that could possibly be "policed", the only viable course of action for the police was to step beyond policing.

2.0 The Process

As it was a domain beyond the usual remit of the Police Department, a preliminary assessment of the contours of the situation was called for. In this direction, spot visits were undertaken to approximately 10 migrant labour camps and labour colonies across

the length and breadth of Bangalore city. Interacting with the residents - women, men and children - helped to gain a sense of what were their most urgent needs, as felt and expressed by them as well as needs evident from observing their living conditions. In addition, exchanges with local officials, both from the police and the municipal authorities, helped shed light on the ground-level difficulties in attending to their basic needs through the less-than-perfect service delivery mechanisms, further constrained in the context of the lockdown.

3.0 The Mechanism

To meet the needs of migrant labourers so identified, intervention was needed throughout Bangalore City. Hence, it was logical to co-opt jurisdictional police in the exercise. In the right law and order divisions of Bangalore City Police, a network of women police officers had been previously groomed to function as nodal points of contact for their particular divisions for administrative purposes. This same set of officers - of the rank of Police Sub-Inspector (PSI) in each of the divisions, along with the Inspector of the Woman Police Station - were deputed to identify major construction labour camps and labour colonies within their respective divisions. They were further instructed to in turn depute an Assistant Sub-Inspector (ASI) rank officer for each of the labour camps or labour colonies within their divisions.

With this set-up in place, the first exercise undertaken was to estimate how many ration kits with a full month's ration would be required for the persons / families resident in these labour camps and colonies. An ideal ration kit for one-month's supply was designed in consultation with colleagues from Kerala state, which was much feted for its efforts of maintaining proper food supply to the migrant labour population. The contents of the kit so designed were as under:

Sl. No.	Item	Quantity
1	Rice	5 kg
2	Atta	10 kg
3	Toor dal	2 kg
4	Green moong dal	1 kg
5	Yellow moong dal	1 kg
6	Oil	2 ltr
7	Salt	1 kg
8	Sugar	2 kg
9	Coriander powder	200 gm
10	Chilli powder	200 gm
11	Turmeric powder	100 gm
12	Sambar powder	200 gm

13	Jeera	200 gm
14	Tea	1 kg
15	Potato	2 kg
16	Onion	2 kg
17	Mango pickle	2 packs
18	Bath soap	2 packs
19	Dish washing soap	1 pack
20	Cloth washing soap	1 pack

Next, major suppliers of products required for the ration kits were identified and requested to supply the abovementioned ration kit at the best possible rate. With a clear projection of demand, contact was established with corporate entities and chambers of commerce to mobilize donations in kind for supplying ration to families of migrant labourers. Though most organizations were already making similar donations to the Labour Department, a significant number of companies and individual donors came forward for the charitable effort on account of their goodwill for the Police Department and their trust in the capacity of the police to deliver the goods to the beneficiaries without pilferage. Willing companies and donors were put in touch with supplier firms to work out the quantum of their contribution to this charitable effort to mobilize ration kits for distribution amongst migrant labour families in desperate need of sustenance. The payment for the ration kits were made directly to the supplying firms by the donating companies or individuals and delivery was made to the Commissioner of Police, Bangalore City, head office for further distribution.

It was critical to ensure complete transparency in the entire process of distribution to maintain the high level of trust of reposed in the Police Department. Hence, the same nodal women officers who assessed the requirement for ration were tasked with the distribution as well. All documentation was maintained in the form of signatures from the recipients and photographs of the distribution done on site at the labour camps and colonies.

Coverage of the relief effort in the press inspired more companies and individuals to come forward. Moreover, it further added to the positive perception amongst the public regarding the constructive role played by the Police Department during the pandemic, so much so that many of the officers and staff who were involved in the food distribution programme were feted as COVID warriors by various organizations.

4.0 Non-food Facilitation

4.1 Milk: Each migrant labour household was to receive half a litre of milk from the Bruhat Bengaluru Mahanagara Palike (BBMP). However, on ground, supply was found to be patchy. BBMP officials were supplying milk through public volunteers or through middlemen who enjoyed some position of authority within the labour camp or colony such as the rent collector for local landlord. It was found that the milk supply was not reaching the beneficiaries in a transparent and accountable fashion as the public volunteers engaged had often times some affiliation to one political party or the other, which would bear some impact on the systematic supply expected. Fair and equitable distribution was not being achieved due to the influence of such vested interests.

Another problem being faced on the ground level was of over-crowding during the milk distribution. BBMP staff expressed that whenever they would arrive at a labour camp to distribute the rationed milk, the labourers would surround the mandi, they would then be forced to request for police assistance during distribution to maintain order. In this context, since it was impossible to ensure proper social distancing, the whole purpose of the lockdown was being undermined.

This matter was discussed with the East Division in-charge nodal officer, Inspector Kathyayini Alwa, the local police inspector of Byapanahalli PS and the local BBMP Health Inspector Meenakshi S. They suggested that one woman from each household could be asked to queue up while maintaining proper social distancing during the milk distribution. To make it even more orderly, they suggested that a token system could be used, made simply out of chart paper bearing a serial number and the seal of local police station. This model was followed for Ward Number 57 in CV Raman Nagar with good results, as evident in the photo below.

4.2 Menstrual Hygiene: Most of the women interviewed at the labour camps and colonies were users of regular sanitary napkins. It was found that these women were facing difficulty in purchasing menstrual hygiene products during the lockdown as supplies were low in local stores. Also, since there was little or no money with the family, they were unable to purchase the products even if stock was available in the local shops. In the absence of proper menstrual hygiene products, the women were resorting to using cloth, which after use they were unable to dry out in the open also due to the cramped living conditions in the labour colonies, which was further impacting their health.

In order to remedy the situation, first a survey of the number of women requiring menstrual hygiene products was undertaken, which resulted in an estimate of around 30,000.Thereafter, major sanitary napkin manufacturers and voluntary organisations working in the field of menstrual hygiene were contacted to seek donation in kind under

CSR. This strategy proved to be fruitful as many of these manufacturers had excess stock on account of the lack of sales during the lockdown and the challenges with supply chain management.

Through this effort, Bangalore City Police was able to mobilize two months' worth of supply of sanitary napkins for the women residing in the labour camps and colonies in the city. Women police inspectors and sub-inspectors who were appointed as nodal officers for each of the eight law and order divisions were engaged to distribute the sanitary napkins amongst the women at the labour camps. In this case as well, signatures were obtained from the beneficiaries and photographs were taken during the distribution to ensure accountability. Also, the contribution of the donor companies was duly acknowledged through the Bangalore City Police social media handles and through wide coverage in the press to encourage more such donors to come forward.

4.3 Sanitation: As far as the general conditions in the construction labour camps was concerned, there was wide disparity across the board. Amongst more than 10 labour camps that were visited, few were found to be very well maintained where common areas were kept clean and there were proper waste management practices also in place. On the other end of the spectrum, there were camps where waste was lying in heaps all around the periphery of the settlement.

Through discussion with one of the local BBMP health inspectors, it was learnt that BBMP waste collection vehicles were permitted to collect the segregated waste generated at the labour camp, provided the waste was brought up to the road as door to door collection is not permitted under the solid waste management rules. Hence, at one of the construction labour camps in Byapanahalli belonging to Vishal Builders, the local contractor was instructed to place two large bins for dry and wet waste at the premises and to entrust the staff member looking after camp cleanliness with the responsibility to ensure that waste was collected in a segregated manner from all the residents. This staff member would then hand over the segregated waste to the BBMP collection vehicle on the road every morning. This system was put into place effectively to ensure the waste generated at the labour camp was properly disposed and did not pose any hazard to the health of the residents.

However, the situation at labour colonies was found to be much more grim. These were sites where even the garbage of the surrounding residential areas was being dumped in a routine manner. And as per practice, the garbage generated within the camp was also being dumped by the residents on the periphery of the camp. All of the labour colonies visited had been established illegally on private land and were in existence since over a decade or more. Hence, none of them had any organised system of waste collection and were typically surrounded by garbage heaps all around, partly generated within the colony

and a greater part having originated in the residential pockets nearby. This was found to be a problem that could not be addressed by the Police Department. However, an associated problem due to the lack of sanitation was the prevalence of mosquitoes at such labour colonies.

At none of the labour camps or colonies visited was there any report of any fogging or disinfection activity having been undertaken by the BBMP. With the efforts of the local police, contractors at the construction labour camps were convinced to carry out fogging activity at regular intervals. Similarly, to address the same issue in established labour colonies the local police were directed to coordinate with the concerned jurisdictional BBMP health inspector to ensure fogging and disinfection was carried out on regular basis.

Also, most of the construction labour camps were found to have only some sort of makeshift bathrooms and toilets, those too inadequate in number and poorly maintained. This was not only an issue concerning the health of the inmates of the camp but also touched the safety of women and girls residing at these camps. At many places, there was no segregated toilet facility for women, only common bath and toilet facilities were in place which, with predominantly male population at the camps, put the women and girls at risk of sexual harassment and abuse. The situation in labour colonies was worse as toilet facilities were found to be largely non-existent as these colonies were settled on land under litigation. Since the land was under private ownership, the municipal authorities could not provide any such facilities under the rules and the landlords themselves had no interest beyond rent collection.

As an experiment, the local police inspector of Byapanahalli PS and the local BBMP health inspector were encouraged to convince the landlord at a major labour colony, established over a decade ago, to come forward to construct a small toilet complex with tapped water supply for the exclusive use of the women living in the colony. In the instant case, the landlord was found to be agreeable to the suggestion and within a few months' time the toilet complex was constructed and it was inaugurated by the eldest female resident of the colony. The experience at Byapanahalli demonstrated that a little interest on the part of the local government officials can go a long way to solve longstanding civic problems where due to certain constraints government funds cannot be utilized for the same.

4.4 Health: The BBMP had deputed Primary Health Centre (PHC) doctors, nurses and other medical staff ward-wise to provide check-ups to screen the local population for flu-like symptoms. However, when enquiries were made at the labour camps and colonies, very few of the camps were found to have been visited by the medical teams for such check-ups.

Given that the residents of these labour camps and colonies were subsisting on the bare minimum nutrition and were living in surroundings where hygiene standards were low at settlements where there was rampant dumping of garbage and little to no sanitation facilities, a minimum of one visit every week at each camp was considered the minimum necessarily to ensure residents had access to basic healthcare, especially in view of the ongoing pandemic. Hence, local police were instructed to coordinate with the concerned jurisdictional officers of the health department and the local BBMP health inspector to ensure that such weekly check-ups would be arranged.

4.5 Countering Misinformation: The inmates of the labour camps and colonies were poor illiterate migrant labourers hailing from north Karnataka or north India with limited access to genuine sources of news about current developments. It was found that they were easy prey to rumours and false information circulating on social media platforms. At all camps, when the labourers were enquired regarding their likely course of action if any inmate of the camp exhibited flu-like symptoms or if they received a misleading message on social media, most were unable to give any coherent answers. However, the local inspectors reported that they regularly visited the camps and made announcements using the public address system available in their vehicle.

It was clear that what was being attempted to be conveyed was not reaching the target audience as desired because the population at these camps numbered in the hundreds and in some labour colonies, in the thousands and it was not possible to reach the whole population of the camp with such sporadic announcements. There was a clearly felt need to establish a more formalized system of to-and-fro communication.

Since all the labour camps were have residents hailing from different states of the country or from different districts of the state, the local were instructed to identify a few responsive and responsible persons amongst each state or district group to route their communications.
For each labour camp, one ASI was nominated as a nodal officer by the local police. This ASI was then directed to create a WhatsApp group of such state and district representatives from the camp and use the group to convey important messages to them, preferably in their local language, as well as collect information about the camp inmates and camp conditions from them. This system helped to ensure an efficient flow of communication between the camp and the local police and administration.

5. Conclusion

With the sudden declaration of the lockdown in view of the COVID-19 contagion, the police were faced with a unique challenge. Their primary responsibility was to ensure that the public abides by the strict regulations on transportation and movement. In and of itself, this was an onerous task in a country with a population of a billion plus. However, this

responsibility could not be discharged without due regard to the real suffering of hapless migrant labourers struggling to secure their basic needs for sustenance in the absence of any means of livelihood. Being adept at crisis management, the police force rose to meet the challenge ably by marshalling resources from private sources as well as effectively coordinating their efforts with other concerned government departments to ensure timely relief to the migrant labourers, thereby diffusing a situation that had the potential to severely impact public peace and order. In so doing, the Police Department has provided an object lesson in how the much maligned bureaucracy of India can play a pivotal role during a crisis and garnered the goodwill of the people they are meant to serve.

The Malegaon Experience: Success Story of COVID 19 in Nashik, Maharashtra

Suraj Mandhare, IAS

1.0 Introduction

The corona frenzy started all over the country, Nashik was Corona free till the end of March as a result of some innovative measures taken from the very beginning. But on March 28, the first patient was found in Nashik and in the first week of April, five patients were found positive in Malegaon.

Figure 1: Malegaon City

Overall corona preparedness of the district was in place however, the number of patients in Malegaon increased rapidly from 100-200-300 to 500 in a few days and Malegaon became one of the cities with fast growing number of patients in the state. This became a matter of concern for the district administration. Therefore, I immediately gave priority to restructuring work to cope with this increasing number. An Emergency Operations Center was already working at the district level. In the same vein, an independent Emergency Operations Center was immediately set up at Malegaon. In a system of government, many tasks are performed at the same time and it involves many departments. Sometimes there is ambiguity about what one should do and some elements can avoid the work by taking advantage of it. In order to prevent this from

happening in the event of an emergency, first of all, I brought all the departments under one umbrella and decided on the long-term tasks of each of them and the responsibility for fulfillment was determined by dividing the long-term tasks into daily tasks. EOC helped all of them in getting an outline of their work and the quantitative and qualitative information of the work they were doing began to reach the headquarters every day through Telegram messages. All of us officers at the headquarters level were able to review that information properly and decide on the further course of action. Overall, the Emergency Operations Center proved to be very useful for Malegaon.

Considering the population and way of life in Malegaon, implementing lockdown in Malegaon was a very challenging task. As challenging as it was to provide police cover, it was necessary to provide proper facilities to the citizens and ensure that no inconvenience occurs during the month of Ramadan. In view of this, the containment zone was designed very appropriately considering the patient's residence. Special care was taken not to make these containment zones too large or too small. For all items like groceries, milk, medical services were fixed. Geotag photographs as well as videos of all these were taken from time to time. Volunteers were called in to coordinate. The supply of essential commodities has been very smooth during this long period.

Since corona management is an unprecedented task for the entire administrative system, many last minute decisions had to be taken. Nevertheless, future planning was being done through discussions and meticulous planning was being done for the district and Malegaon. A very efficient arrangement of information exchange was done digitally to see how the actual action took place as planned. It was mandatory to submit the completion report of the work assigned by the Emergency Operations Center to the Collector daily through Telegram. If an officer's work was found to be deficient in the report, a red mark was given on the screen shot of the report and it was sent to the coordinator in the evening so that it could be improved the next day. Thus from the beginning the daily control was maintained and gradually the number of red marks was reduced and finally it became the habit of all the officers to dispose of the day to day tasks.

Since Malegaon is about one hundred kilometers away from Nashik, it was natural to have a lack of resources there. Especially there was huge crunch of officers. Therefore, orders were issued to senior officers from the district level under the Disaster Management Act and they were sent to Malegaon. This included officials from Revenue, Health, Zilla Parishad. Mr. Pankaj Ashia as the Coordinator while Dr. Nikhil Sandane was sent to coordinate the hospital managment. Similarly, Dr. Govind Chaudhary, an elidemologist, was sent to Malegaon for special study and suggestion of remedies. Apart from him, Deputy Collector Shri Anturlikar, Tahsildar Shri Shri Avalkanthe, Additional Chief Executive Officer of Zilla Parishad Shri Ravindra Shinde and many other senior officers were sent to Malegaon with different responsibilities. The police department also

deployed several officers at Malegaon. All these officers did the proper planning and fulfillment of the responsibilities assigned to them.

The population and way of life in Malegaon is unique. Initially, there was a lot of misunderstanding in this area about the entire issue of corona. So citizens weren't even cooperating in surveys. It also had to face major hurdles in compiling information on sick patients and its unfortunate consequences had to be borne by some citizens. With this in mind, it was decided to gradually seek the cooperation of those who could influence the minds of the locals. For this, videos of local important people, especially religious leaders, medical professionals were recorded and disseminated through various media. As a result, citizens gradually started participating in all these measures. Swabs were taken during sehri or iftari as there were doubts about what happens while taking swabs during the fast of Ramadan. An additional X-ray facility was also set up at Malegaon to diagnose the disease.

The government also had a number of guidelines on how to treat Corona's patients. Accordingly, all procedures were being carried out in government hospitals. In some cases, corona symptoms were not seen or had very few symptoms. A combination of various treatment methods like homoeopathy, Allopathy Unani all were used as per the requirement. Even today, the cure rate in Malegaon is around 80 per cent, which is considered to be one of the highest in the country.

Since there were many misconceptions about Malegaon from the very beginning, what happened in this place, was exaggerated especially in social media. Most of the time, the picture was painted as if something bad had happened, even though nothing bad had happened. Therefore, in order to inform the public about what is really going on and to establish people's trust in the health system, I, as the District Collector, used to inform the newspapers, media, private channels about the current situation through video, audio or text messages. This method automatically stopped unauthorized information or rumors. Misconceptions used to be drawn from statistics also. Therefore, proper interpretation of information was also required. While giving basic information, I used to also analyze how that information should be interpreted. This included the effective use of information technology. It is important to keep the information up to date to make the right decision. Many times the system spends a lot of time on compiling information. Since it is unaffordable to spend such time in an emergency situation, a highly efficient system was set up through various IT tools to ensure that information does not have to be created by anyone separately and that information is automatically generated from work. So for any meeting or press or any other purpose, the system did not waste time in preparing any information separately. Information is constantly available on the computer and it is possible to make the right decision from time to time using this updated information.

The problem in Malegaon came to the forefront of the world so much that everyone's attention was drawn to it. At such a time, it was very important to have support from people's representatives. Therefore I kept constant touch with all representatives from the top most to local. All non-officials in the district were fully supportive. Hon Chief Secretary paid very personal attention towards each and every issue and extended all support to solve the problems whenever those were brought to notice. All secretaries were extending guidance and support constantly. Due to this overwhelming support, we could fearlessly handle the situation.

All government departments, all people's representatives and citizens were very active in this whole process. In particular, the administrative officials and the people's representatives put aside their all priorities and tried their best to deliver their best. Even when I was in charge of the whole district, I went to Malegaon almost every day in the last one and a half to two months. Even while in Nashik, I spent maximum time in dealing with issues pertaining to Malegaon only. Officers from all departments without worrying about their own comforts or even safety, worked effectively in containment zones and delivered their best.

The situation in Malegaon, which was once a major challenge, is now emerging as a success story due to all the above efforts. Corona management is a complex process but today situation seems to be under control with the great contribution of so many individuals only a few of them could be mentioned here. It is an indisputable credit of everyone who toiled day and night in Malegaon.

The only thing which I would like to underline through this article is that any calamity can be tackled well if the government and the citizens take it to heart!

2. 0 Malegaon success story to tackle COVID-19

- A town in Maharashtra's Nashik district known to have a long history of communal unrest and the textile town of Malegaon in north Maharashtra's Nashik district.
- One of the most densely populated towns in the country with 19,000 people per square kilometers. Once trouble spot has become a success story.
- Seek the help of religious leaders and medical professionals etc. who could influence the minds of the locals.
- Clerics, mosque loudspeakers roped in for COVID 19 fight.
- Recorded their videos which were disseminated through various platforms.
- Dedicated emergency operation Centre (E.O.C.). To tackle the crunch of officers, senior officials were sent to Malegaon under the Disaster Management Act. They included officials from Revenue, Health, Zilla Parishad departments.
- People's involvement.
- Good rapport with local people etc.

- Malegaon's success story proves how the administration, police and residents played 3
- Key roles in tackling the deadly disease. Revised Patient Discharge policy' released by the government.
- A parallel system including O2 concentrators.
- All the business establishments became functional and the life returned to normalcy.
- The 'Malegaon Pattern', the way in which the textile town fought COVID 19, is being cited as an example.
- Handling of Nashik city & district with right balance of enforcement and liberty to do business.
- "It can be summed up in one line -- move ahead leaving fear behind."

3.0 We are ready for second wave

Ventilator capacity has gone up from 20 to 250. Patient accommodation capacity gone up from 2000 to over 20000 Oxygen availability gone up from 35 metric ton per day to 50 MT All vital medicine procurement is over and supply is extremely streamlined. 5 All departments have learnt anything from the last experience and are perfectly in sync with each other. We can advise at this juncture that we should wind up CCC, as people can be isolated at their homes only. We should operate DCHC and DCH only to treat symptomatic patients. This will save huge expenses and also spare the medical staff.

Figure 2: Civil Supply

Figure 3: Lockdown Situation

Figure 4: Lockdown Situation

Figure 5: Meetings with HOD

	
Figure 6: Mobile Clinics	Figure 7: Private Hopsital in Service
	
Figure 8: Private Hospital in Service	Figure 9: Surveys

Cluster of Best Practices: Farrukhabad District Administration
Initiatives against COVID-19

Dr. Rajender Pensiya, IAS

1.0 For Initial 45 days of lockdown Farrukhabad was Corona Free

The district of Farrukhabad was one of such districts of Uttar Pradesh, in which the corona virus reached in the end. From March 23 to May 8, no COVID-19 patients were found in the district of Farrukhabad because 23 barricades were made here and was guarded 24x7 by a head of police and Pradhan on all day. The District Magistrate, SP and Chief Development Officer of the district also used to visit regularly and every person could enter the district, after thorough examination and according to the rules. A 24 x 7 COVID War Room was made in District Magistrate office. A Farrukhabad district was on 70th number district out of 75 districts where corona was found. The strategy adopted by the district administer in the first 45 days of the COVID-19, helped to keep the district corona free for the initial 45 days. Getting inspired by district administration around 80 lakhs rupees was donated in Chief Minister relief fund and Prime Ministration relief fund.

Efforts were made at district level to stop the spread of COVID: Guidelines to download Arogya Setu App were given in all types of offices. Testing facility was provided on the passenger vehicles, bus, auto entering the city. Those who were found positive were kept in the quarantine center set up in the district to prevent infection from spreading. Instructions to close all the crowded places in the district, including the closure of schools, sweet shop, hotels etc. so that rules of social distancing made by the government could be properly followed. Construction of handwash station was done at various location so that people can get handwash facility for free. Special camp was organized to spread awareness of epidemic hazards and its testing facilities to efficiently fight corona. An observation committee for public awareness campaign was formed. Awareness campaign was carried out through hoardings, wall paintings, posters on the main locations of the city. Sodium hypochloride was sprayed in the cities and villages as and when required in which about ten thousand liters of hypochloride was used. Proper distribution of dress, masks, gloves for the protection of the sanitation workers. Workers were registered with Nehru Yuva Kendra Sangathan. Aforesaid tasks were implemented by the district administration to prevent and control its spread. A strong corona warrior team was formed during the corona period to aware people. 16 Rapid response team were farmed to cover all the 1020 villages in the district. Quick response was done on every corona complaint.

2.0 Food and Mask Bank Established by Akanksha Samiti and District Administration: "An Effort for Feed in Need"

The Poor and needy population including daily wages workers are not able to move for making the earnings for their and family's survival due to lockdown in the country because of COVID 19. They were facing many difficulties in making arrangements for food materials like: Flour, Rice, Pulses, Potatos, Oil, Spices and other necessary items for cooking food and this group of poor, needy and daily wages workers were really in great need and they were really fighting for their survival in this tough time. A telegram group **"Zila Prashasan – Jeetega Farrukhabad – Jeetega Corona"** was made in which around 6600 were added so that help could reach all levels of the population.

District Magistrate and Chief Development Officer has initiated the effort for providing food to the needy population in COVID period. With the support of District Administration and Akanksha Samiti has established a Food Bank on 2nd April 2020 in Narendra Sareen School, Farrukhabad. Food Bank was open to receive the food materials from anyone who want to serve for the society and then Food Bank was providing the food to the persons who were really in need of food at that time.

Inauguration of Food Bank was done by the District Magistrate and dissemination and reiteration of Food Bank was done through social media and newspapers. Every group of population in district came forward for providing food packets and other necessary items on daily basis. Few people of the District donated the food packets and those food packets were distributed to the needy people based on information collected from COVID control room, magistrates field staff and some other reliable sources and this distribution of food packets was done with the help of Tehsildaar and Lekhpal. More than 6400 food packets were provided to the needy.

Dr. Rajni Sareen Social Worker supported in preparing face masks. Face Mask making regularly done by tailor in food bank and "Ghar – Ghar Mask Banao" program was launched in which approximately 22000 were made. Directions to conduct a massive drive to make masks at home was given. The masks prepared by Tailors were also distributed to the poor and needy people who were getting the food packet from the Food Bank. As per the need of that family food materials and masks were provided by the Food Bank.

Akanksha Samiti had distributed food packets in hospitals and slums to the needy and poor population. In winters, Akanksha Samiti distributed the blankets to the needy and poor population as well as the migrant labours.

3.0 Organizing Special Flu Camps

India was affected by the COVID-19 pandemic due to which people faced curfew and total lockdown. Common people were suffering from the disorders in general hospitals. General OPD of Private clinics were closed. Keeping this in mind the flue camp was organized at SN Degree College, Kaiyamganj in the district Farrukhabad. On 21.4.2020, after meeting with

IMA / NIMA hospitals, consent on free consultation was made, if a person voluntarily gave this registration fees then only it was taken which was rupees 50. All the amount that was collected as registration fees was later deposited in Chief Minister Relief Fund (153000). The number of doctors in the health department was not enough to carry out the work agreed upon by the chemist and association on free drug delivery during lockdown. And the infection by epidemic was quite large. To get rid of this problem, the flue camps were organized. Under these 8 private doctors of the district were instructed to work in one place so that during the epidemic, the people can get maximum health facilities. It provided facility to more than 23 thousand people in 98 days. Under this, free thermal screening handwash room, free drug delivery in the isolation ward was done. The result of all these efforts was that the people of the district got proper medical care. The benefits of the facility were received, and the guidelines of the government was properly followed. If such a camp can be organized from time to time, the group can get appropriate benefits.

4.0 The Work of Rejuvenation of Budi Ganga to Help Migrant Workers

The work of revival of Budi Ganga was being done under the MNREGA from May 2019 in the district of Farrukhabad. But the pace of work was very slow. It seemed that it would take two to three years to complete the work. This work was accelerated by the arrival of immigrant laborers in the district during the COVID epidemic where the total length of this river is 37.781 km, of which most of it was revamped by immigrant laborers during the revival of COVID where one And this work gained momentum, on the other hand, the immigrant laborers who came to the district got the wage work. Total 2400 labourers created 115000 labor days in which 2.15 crores were spent and 1.41 Lakh trees were planted along the river under Namami Gange Project so that the lifespan of the river can be increased, so that the soil erosion can be prevented, so that the riverbed is not filled with soil by this work where the old Ganga was revived. Got employment for living so that happiness in their life. So that the responsibility of the welfare state could also be fulfilled by this state. This work where the labour of the immigrant labourers got new life to the old Ganga. On the other hand, the ground water level of its flow area Gram-panchayats can be seen to increase by 1 meter. So that the farmers of these gram panchayats will get a direct benefit in agriculture. And the crop will also increase. Which will also increase the income of the farmers. Which will be helpful in self-sufficient India by the Prime Minister. But double the income planned by the Prime Minister. The scheme will also have an important role. Under this scheme where people found it very difficult to get work. The immigrants came to work in the district. The new life of the same river gave agriculture an opportunity to earn higher income to the high ground water level farmers. Under the scheme, workers were given fair pay for proper work. The same was taken care of their health. All labourers were provided with testing. Those who were positive were quarantine in pre-school and working workers. They were given masks, gloves and following of the regulations of proper social distancing which was created by the state government.

5.0 Employment through Production of Masks and Stitching of School Dresses

Corona global epidemic may have created a thousand crises but has also given us an opportunity for employment", says the women Self-Help Group like village Amethi Jadid development block Badpur district Didrukh of Farrukhabad. In the district, the Didis of this group have contributed significantly in fighting this epidemic by making masks on a large scale, while also increasing the income of their families. Due to the use of masks for everyone to protect against the corona virus, demand was high relative to the supply of masks. Most of the women of the groups knew sewing work, so it was not difficult for them to make masks, but during the COVID-19 epidemic, making masks was not a simple task either. Because shops were closed due to lockdown, there was a lot of difficulty in movement. Availability of cloth, yarn and machines as per requirement, providing market for sale of made masks was also not easy. Keeping in view the above odd situation, the group formulated an action plan. The group's sisters already had sewing machines, they were used. The cloth, yarn was made by the group with local vendor in collaboration with the district administration. The group's sisters produced a total of 62572 masks. Due to which the group received a total amount of Rs.1216296/-. The other side of this was to provide a market for masks made where they could be sold. In this work, under the direction of the District Magistrate and Chief Development Officer Farrukhabad, the Department of Health, Banks, Police, Prisons, Panchayatiraj, etc., along with the medical stores etc were sold the masks. In this way, the production of masks provided employment to the group's sisters at home, on the other hand, the women of the group and their skills were introduced to the outside world. The group which was limited to the village only. His discussion started at district level. Leader of the groups like Shyamlata and other were also honoured by giving a letter of appreciation for this work by the District Magistrate.

180364 School Dresses of Basic Education Department, stitched by women of the Self-Help Groups in the district, provides 02 sets uniform free of cost to all students studying in primary / pre-secondary schools and aided madrasas from class 01 to 08. This is a good livelihood opportunity for women of Self-Help Groups in which they can increase their income substantially by sewing school dress. For the academic session 2020-21, the district had set a target of 38785 school dress sewing by the mandate given by Government of Uttar Pradesh, relative to this, the target has been achieved 5 times more than the target set by 180364 school dress stitched by the district during the COVID-19 epidemic. It was not easy to obtain. In the work plan prepared under the direction of the Chief Development Officer, Farrukhabad, the women of the first group were given 15 days advanced training in all the development blocks of the district for tailoring work, for which trained cadre from nearby district Kannauj were employed as master trainers. Gaya who discharged his training duties with full efficiency. The 32 migrant workers who lived in remote metros used to do this work for their livelihood and returned to their villages in the wake of the Corona crisis, were also employed. The Chief Development Officer held regular meetings of officers / employees of Basic Education Department and NRLM for this

work, as a result, the women of the group were purchased by the School Management Committee of the standard set for sewing school dresses. Found on time. The groups received loans from the Revolving Fund issued by the Community Investment Fund as required by the women for sewing machines etc. Women stunned everyone with hard work and skill by stitching a record 180364 school dress in two months. As a remuneration for this work, they have received more than 1.5 crore. In the upcoming academic session 2020-21, women from self-help groups have made preparations for sewing 100 percent school dress under the district.

6.0 Touch Free Cost Free Hand Wash Station

To check the spread of COVID-19 the villagers of Samaspur Bhikhari (Samshabad, Farrukhabad) installed a very efficient and Zero Investment hand wash unit called, 'Touch Free Cost Free Hand Wash Station' by the leadership of DM and CDO Farrukhabad. This hand wash station is very easy to build in rural areas in which a plastic Can/Jar is fixed to a tree with a string attached to its opening, other end of the string is tied to a brick slightly touching the ground. As we step on the brick water comes out of the bottle/cane/Jar in a flesh. A soap is also tied to the tree along with the water storage unit. One can wash its hand without touching the hand wash unit. This concept of hand wash station become very popular in rural areas. Such type of hand wash stations one also built in Some Villages like Lalore, Tyor Khas (Samshabad, Farrukhabad)

7.0 The Hygiene Bank

Implementation of innovation: The Hygiene Bank / Sanitation Box has been decided by sitting with officials of Education Department, UNICEF representative and innovative teachers etc. Hygiene Bank / Sanitation Box has four parts (1) - Soap Bank (2) - Cook Hygiene Kit (3) - Personal (Physical) Hygiene Kit (4) - School Hygiene Kit

1. **Soap Bank: -** This part of Hygiene Bank In the soaps purchased and donated soaps from school development grant will be collected. By seeing this, the students can develop the feeling of washing hands with soap and the children can be motivated. In the present circumstances, its usefulness and significance have increased to protect the hands from corona infection.
2. **Cook Hygiene Kit: -** Use of this part of Hygiene Bank to keep the towels, cotton clothes etc. used while making aprin, gloves, caps and MDMs used by the cooks of the school. Is brought into
3. **Personal Hygiene: -** This part of Hygiene Bank will be used to protect the items (mirror, comb, nailcutter, towel, handkerchief, mask, oil and medical kit) used for physical hygiene in the students.
4. **Personal Hygiene Kit: -** This part of Hygiene Bank is used to keep the equipment used in cleaning the school such as wipers, brooms, dusters, etc.

The work of Hygiene Bank which was started for the schools in June 2019 proved to be a boon in the COVID pandemic, which collected sanitizer, soap, masks and other hygiene items. Most of the items consumed by immigrant workers, teachers, villagers etc.

8.0 Help of Quarantined Migrant Person's through their Skills

When the migrant workers were coming from outside, they were kept in the quarantine center in the schools. In Uttar Pradesh, there is a campaign for the Kayakalp of the schools under which all the schools were closed during COVID-19 Lockdown but there were some labourers who were mechanics, unskilled laborers, carpenters, electricians, etc., so they were given jobs in the same schools as required, and they did it with great pleasure. They could not believe that in the quarantine center they got employment.

COVID-19 Management

Best Practices from Ghaziabad

Asmita Lal, IAS

1.0 Abstract

This study examines the effectiveness of best practices incorporated by District Administration, Ghaziabad to control COVID-19 Pandemic and challenges linked to the pandemic. The Administration used model methods for surveillance, sampling, use of Integrated COVID Control and Command Centre, clinical management techniques, management of Human Resource and took steps to take care of mental health of workforce, patients and their family. These resulted in flattening the curve for case fatality rate in Ghaziabad significantly from 4.04 in June 2020 to 0.32 in December 2020 and 0 in January 2021.

Keywords: Case Fatality Rate CFR, COVID Surveillance, Mental Health, Ghaziabad, App based health in COVID

1.0 Introduction

COVID-19 pandemic is still not over and the extent and spread of this has been immense. Governments across the globe are struggling to manage the pandemic and so is India. Ghaziabad district due to its proximity to national capital experienced very early arrival of COVID-19 pandemic. This paper brings the best practices from Ghaziabad that helped in controlling the pandemic and could be useful for other districts and regions in handling the current or any future pandemic. The planning and preparation started in March 2020 when the pandemic started spreading in India and was executed as the first case arrived. At the planning stage following things were undertaken.

- A stock and preparedness analysis of physical infrastructure such as quarantine facilities, isolation beds, oxygen beds, ICU beds, ventilators, HFNC, BiPaps machines, oxygen supply was conducted. Also a system was put in place to do real time monitoring for physical infrastructure.
- Human Resource (Medical and Non-Medical) Mobilization- Each Additional Chief Medical Officer (CMO) and deputy CMO level officer was given specific tasks and responsibilities. All magistrates and incident commanders were given detailed portfolio for oversight at tehsil level. District level officers were appointed as sector magistrates to monitor surveillance and MOIC to plan and report per day of their HCW in the field tasked with surveillance.
- All private hospitals and medical practitioners were mapped according to their specialization to efficiently utilize the scarce resources in times of great need.
- Keeping in mind that government facilities could turn out to be inadequate, private hospitals were contacted and designated as dedicated COVID facility in the very initial stages. This proved very useful in hindsight as private facilities turned out to

be very useful in meeting the excessive demand for ICU beds. With this preparedness, Ghaziabad district was ready to face the challenges posed by the pandemic but there were additional things to be done.

This paper is divided into nine sections where each section would throw light on best practices of Ghaziabad district in various segments to manage and control COVID-19. Section 2.0 of the paper explains the surveillance that was put in place and Section 3.0 explains the sampling techniques for that. Section 4.0 explains in details about the clinical management techniques used and Section 5.0 explain the Ghaziabad's model of Integrated COVID Control and Command Centre (ICCCC) and its working. Section 6.0 is related to the protocols developed for non COVID hospital in the district. Section 7.0 gives information about campaign initiated to disseminate the true nature of the disease and pandemic. COVID19 brought serious mental issues for infected and non-infected. Section 8.0 delves into reasons for mental stress and various initiatives taken in Ghaziabad district to mitigate mental health issues. Section 9.0 gives the details regarding the monthly death from COVID 19 in Ghaziabad district which has been declining and reasons for mortality rate being in single digit in recent months. Section 10.0 concludes.

2.0 Surveillance

In management of COVID-19 pandemic, surveillance played a very significant role and the primary responsibility for the surveillance lies on the shoulders of the administration. The challenge before the administration to conduct effect surveillance was caused by the people behaviour as people can hide, misrepresent or mistake their symptoms for a common flu or ignorantly underestimate the gravity of the infection. Since the transmission of COVID-19 virus is rapid, early detection of infected is the key to contain the spread. To strengthen the surveillance system, an Integrated COVID Command and Control System was established at Vikas Bhawan with the purpose of monitoring all surveillance related activities (Paul 2020: 13). Further, to ease the surveillance, the geographical areas were categorized as Containment, non-containment zones, and densely populated residential areas where the virus could spread faster. Also, a priority list of vulnerable groups on the basis of age, pregnancy, co morbidity was created and this was separately monitored by District surveillance team, Control room as well as their respective departments. Daily report of all persons identified with ILI /SARI was sent to ICCS and it was ensured that samples are received within 24 hours. To capitalize the workforce of the local bodies such as Gram Panchayat, Nagar Nigam and workers such as ASHA and aanganwadi workers who are familiar with the locality and are aware of people living in their areas, *Nigrani Samiti* were established at the level of Local bodies which proved to be vital in stopping the spread of the virus. Another intervention at ground level was establishment of COVID-19 help desk and it was ensured that any ILI/SARI person identified at a COVID help desk must be made to connect with control room immediately to be sampled so that work spaces and other facilities are not risked. Additional CMO

responsible for registration of clinics and hospital was made responsible to liaison and monitoring the hospital and clinics so that any ILI/SARI individual is not sent with flu treatment but treated as suspected and sampled immediately. Drug inspectors were asked to provide information about people who took over the counter medicine for flu like symptoms such as azithromycin, paracetamol, ivermectin to the control room.

Though pregnant women are not immunosuppressed in the classic sense but immunologic changes of pregnancy may induce a state of increased susceptibility to the virus (Jamieson 2006: 1638)]. It was ensured that their health conditions were monitored by utilising *Mahila Aarogya Samiti* in the district to ensure testing in the first trimester and a few days before their estimated time of delivery. Social welfare department through the control room monitored the elderly population by contacting the pensioners. Similarly, the social welfare department monitored the differently abled and the elderly population. The population was divided in such a manner that every 6th day the person is contacted by the respective departments. A door to door survey was started to identify any ILI/SARI cases by reaching them first. The priority was to bend the curve of increasing graph for COVID-19 cases in the district. Further, more boots were brought on the ground through Booth Level Officers and the election team proved to be of much utility as 3048 BLOs went for door to door surveillance to identify any ILI/SARI cases. Contact tracing was done upto 30 contacts according to state guidelines as it has the highest probability of finding COVID infected people. It is imperative to categorize them into high risk contacts and sample them on priority. Integrated COVID Command and Control System proved to be crucial in ensuring entire chain of events and streamlining all activities starting from monitoring surveillance teams and ensuring timely sampling, sending ambulances, relevant COVID facility allocation and admission, home isolation, connecting all COVID hospitals to ensure regular doctor visits.

3.0 Sampling of the Probable COVID-19 Virus Infected Persons

The need and importance of sampling, one that is not indiscriminate but is targeted and planned and which is cost effective cannot be overstated. Sampling is the first step towards knowing the magnitude of problem and how deep has it reached in the population and where do we stand vis-à-vis infrastructure and resources available with us. It is a great take off point to know where to move and how to move about overcoming the pandemic in area and vulnerable population under our jurisdiction. Random sampling also becomes important here because we have evidence that says that some people show minor symptoms or no symptoms at all but do play a role in transmission. It was made mandatory that all suspected persons identified during surveillance should be tested within 24 hours.

Some areas of surveillance where significant number of positive people and /or vulnerable population can be sampled are:-

- Voluntary Testing Option- people had the freedom to get tested in case they feel they have been infected or have mildest symptoms. It gives a sort of a "control" that adds to their psychological well-being.
- ILI/SARI identified by *Nigraani Samiti* that have many members and are all residents so they are first point of contact and can have valuable information about public health in the area if they are vigilant.
- Contact tracing within a day preferable by mobile teams so as to cover maximum number in a time, cost and labour effective manner.
- Door to door sampling of ILI/ SARI identified persons
- Priority sampling of elderly and patients with co morbidity as they run the risk of rapid deterioration of their health (Lithander 2020: 503].
- 100% testing in containment zones as infection could quickly transmit in the neighbourhood via common spaces and staff.
- By regular and random sampling of observation homes, child care institutions, leprosy home, old age homes as people at these places live in close proximity and the spread of infection can be rapid and can manifest in different ways.
- Miscellaneous and random testing in mandi, market and of delivery boys, house help, milk booths, rickshaw pullers etc., whose work profile demands dealing with multiple people and visiting multiple places in a day.
- Regular and random sampling of healthcare frontline workers and their elderly family members.
- Regular and random sampling of police as well as public grievance redressal machinery with maximum interface with the public.
- By setting up COVID help desks at the industries and regular roster wise sampling camps based on daily information of ILI/SARI cases.

3.1 Sampling method

We majorly implemented four methods for sample collection from the community:-

- ***Static Booths:*** Realising its utility and need, the first COVID sample booth was established in Ghaziabad. It helped in giving the discretion to persons with ILI/SARI symptoms to get them tested when they feel the need. It reduced stigma in society, helped in awareness generation. Also, it helped our healthcare workers to gather maximum sample with least risk. It remained indisputably a time, cost, and labour effective method.

- ***Mobile booth:*** It helped to cover people in a larger area, least risk for health care workers and was also used to disseminate information.

- ***Mobile teams***: It was used to test identified suspected persons in localities

- ***Testing Camps:*** It was not always convenient to get a large vulnerable population to the medical facility thus it became imperative that we reached them and have well publicized and planned camps at regular intervals for at risk people in offices, nagar nigam wards, slum area, gram panchayats, industrial areas, mills and factories.

Till 31 January 2021, a total of 7, 24,280 samples from Ghaziabad were tested in which 26,587 people have been tested positive. The test positivity Rate for Ghaziabad started with 5.3 percent and in January 2021, it came to its all-time low of 0.7 percent.

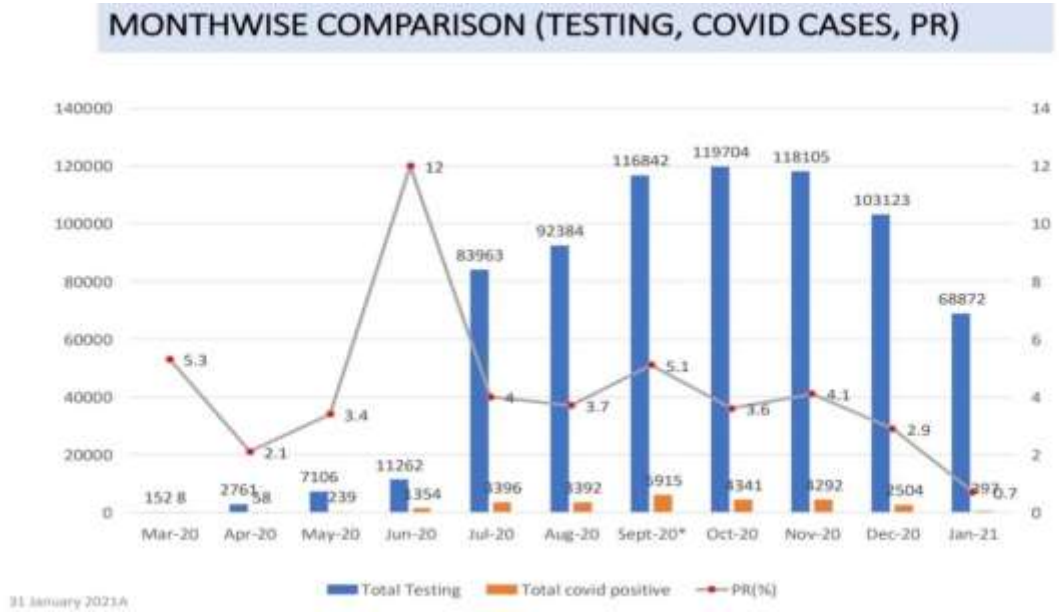

Figure 1– Month wise Comparison between Number of Testing, COVID Cases and Positivity Rate in Ghaziabad. The line indicating positivity rate takes s deep plunge as the lockdown in imposed in March 2020 and reaches its peak in June after several restrictions of lockdown were removed. With the advancements in testing capacity, the total testing increased in July and since then the test positivity rate declined.

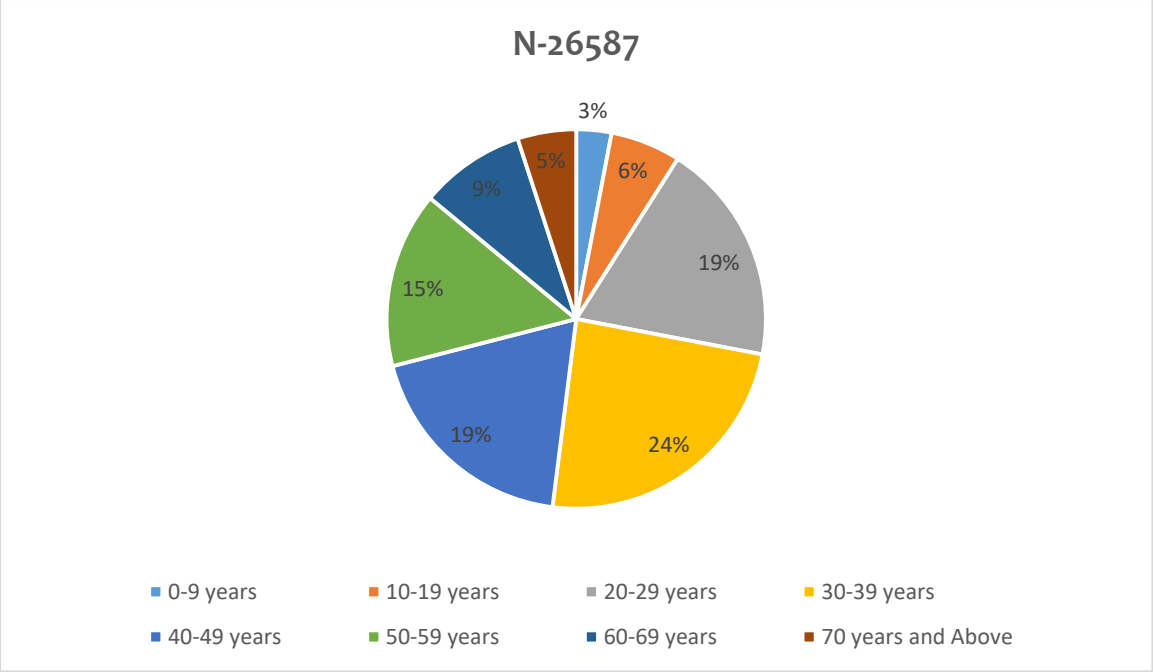

Figure 2 – Age wise Classification of COVID Cases in Ghaziabad. This indicates that people from three age groups between 20 years- 50 years were 62 percent of the total positive case and children below 10 years of age were only 3 percent of the total cases making them least vulnerable to the virus.

4.0 Clinical management

Clinical management was done in accordance with the guidelines by the Ministry of Health and Family Welfare and UP state Guidelines (MoHFW 2020: 5-6). Chest X ray at the time of admission was made crucial as the patient in a state of happy hypoxia does not express SARI symptoms immediately but only when the condition deteriorates considerably. Therefore, as a precautionary method, Chest X ray were important for detecting pneumonitis. Also, a senior doctor was made nodal officer and in charge of the COVID hospital for the following things:-

- Analyze HR gaps and availability and report.
- Analyze infrastructural availability and gaps and report.
- Case sheets were randomly and regularly verified as per prescribed treatment protocol by the nodal doctor in charge.

A magistrate / incident commander was made nodal for the COVID hospital in their area in order to support the hospital management as well as resolve practical issues arising at the hospital in a quick responsive manner. A reserve of Remdesivir, tocilizumab and other important useful medicines and injections was made available at every COVID hospital to save time in procuring one when needed. Continuous supply and back up of oxygen was also ensured. World over non-invasive methods of ventilation have been deemed successful, so early and all non-invasive ventilation techniques like BiPap machines, HFNC

were used thoroughly but also judiciously. However, Intubation was used as the last resort. A factor that helped in curbing Death in the district was that many private hospitals were transformed into dedicated COVID hospitals as explained earlier in for intake of L 3 level serious patients which led to proper care because of a better health care worker to patient ratio. It also reduced the burden on government run L3 hospital, as a result patient care improved.

Other important issues:

- Detailed Work distribution amongst all Add.CMO and Magistrates/ incident commanders and in the district.
- Drugs supply - monitor available stock and supply (remdesivir, tocilizumab including a check on pricing).
- Oxygen supply - buffer stock to be maintained, MOU were signed with manufacturers and suppliers.
- No identified ILI/ SARI patient was to be kept waiting for sampling beyond 24 hours.
- Prioritised sampling on the basis of health status, age, co morbidity etc.
- Mental health helpline number for all residents of the district.
- Plasma Bank was maintained of newly recovered, been symptomatic blood group wise.
- Regular infection prevention control verification in all COVID and non COVID hospitals as it has the potential to infect not just our healthcare workers and other patients but snowball into a catastrophe.

5.0 Monitoring through ICCCC

The Ghaziabad model of Integrated COVID control and command centre (ICCCC) has been much lauded for being instrumental in ensuring monitoring in a meticulous manner. At ICCCC, we compartmentalized each activity with dedicated teams with a supervisor. At ICCCC, monitoring was done at the following levels:-

- Monitoring of number of door to door surveillance team
- Monitoring Nigrani Samiti data
- Persons sampled
- Samples sent for testing.
- Rapid response team for home isolated patients
- Old age surveillance monitoring
- Monitoring of pregnant women surveillance and testing
- Monitoring of ILI/SARI identified persons at Medical store/ pharmacy and private hospitals.
- Monitoring doctor rounds, sanitation and food by linking all CCTV cameras of all COVID hospitals to control room.

Also following tasks were centralized and conducted via ICCCC for efficient utilization of resources

- Contacting positive cases for home isolation/ early admission on the basis of age, Co morbidity etc., verified by RRT (ensured with a medical kit)
- Allocation of facilities and simultaneous uploading on the portal
- Allocation of ambulance and portal entry
- Shifting of patients following as per their medical condition and route map.
- Shifting SARI, elderly, patient with co morbidity preferably L2 and L3 in close proximity.

6.0 District Non COVID hospital protocol

Non COVID hospitals had an increased responsibility since they were the first point of contact for all diseases. Non COVID hospitals were also at more risk than dedicated COVID facilities as they have a mix of patients coming to them and they need to screen them mandatorily before treatment. Also it was important to ensure that due to pending sampling results, treatment of serious patients were not be delayed and ought to be treated as COVID suspected. All these non COVID hospitals had to adhere to IPC protocol (World Health Organisation 2020: 1). Unless these protocols were followed it would put health care workers and other patients at risk. The main elements of the protocol are enumerated below:

- Adherence to Infection prevention and control protocols, followed by random verification by the dedicated team regularly.
- Holding area as well as a triage area for all non COVID hospitals was made functional and effective.
- Dedicated Facility for RAT sampling and trueNat test in all non COVID hospital
- Hospital were instructed to establish whether an arriving patent is COVID, non COVID, or suspected case while the patient is kept in holding area.
- It was instructed that incoming patients must be referred after establishing the status of COVID so that the next facility can be forewarned and treatment can begin at the earliest.
- If the patient arrives in a serious condition then they should be deemed as COVID suspected and treatment should begin immediately in triage till he/she stabilizes.
- In case of pregnant women, case monitoring was done since the first trimester with a COVID test, and once before the estimated time of delivery.
- Also, in case of emergency delivery ensure quick sampling. If suspected treat it as a COVID case, ensuring all protocols and begin treatment.

7.0 Information Dissemination: Focusing on "Early Detection is the key"

Information, Education and Communication activities invariably focus on early detection and assessment in COVID -19 that can be deemed to be the most important aspect as it

gives us time to not only reduce transmission by isolating the patient but also gives time for prompt early intervention. This helps in reduce CFR considerably by taking timely decisions on the patient's health by incorporating the co morbidity of the patient in their treatment as a COVID patient. The fact that the pandemic was unprecedented and unforeseen it became imperative that the administration raised awareness to the point that there is neither fear nor stigma in the society. It is close to a year that administration had been combating this pandemic and probably can't assess how long would it be in our lives or for that matter would it end up becoming a constant in our lives. It's important thereafter to equip the populace with the correct information that they need to stay vigilant for the presence of symptoms and stay safe by taking proper precautions, in the long run making each one join this war against the disease, it will make them resilient as a community as also protecting them from misinformation and various notions. Promoting right Information and its dissemination was ensured by sustained IEC activities in following ways:-

- Public announcement system was utilized to give useful content in all areas from authoritative sources.
- Posters and hoardings were put up enumerating control room numbers and symptoms at shops, resident welfare associations' lifts, clinics, institutions and offices.
- Resident Welfare Association was proactive in ensuring proper information transmission in the residents.
- FM radio can was utilised to reach people in the most remote places in local language to provide relevant healthcare information and to promote COVID appropriate behaviour change such as using masks and social distancing.
- Establishing hand washing units at all public places was done in rural areas of the district to get people in a habit of hand washing and hygiene.
- Disseminated the importance of mask and physical distancing in flattening the curve of COVID-19 disease.

8.0 Mental Health Interventions

COVID 19 is an unprecedented pandemic in our times. It is a cause for concern and anxiety for those diagnosed and more vulnerable to it or suspected of it. Besides the negative effects of the infection on the physiological well-being of individuals, it also brings the risk of psychological distress in people who are diagnosed with it, people who are more vulnerable to it, the healthcare professionals and other essential workers who are at the front line, fighting the disease from close proximity and the overall global and local societies. COVID 19 may not be as lethal for children and adolescent as to adults but it has caused psychological distress in the age group too (Suravi Patra 2020: 1015). Therefore, it becomes imperative to equip ourselves and the others with techniques and other tools to deal with the psychological tension and burden that the prevailing situation has brought upon us.

So, for this reason, as part of our psychological crises intervention, district Ghaziabad, had a team of trained mental health professionals to supplement the efforts of the health care community to allay the fears, distress, myths and other possible cognitive distortions surrounding the same. It was recognized that, patients undergoing treatment had many apprehensions and misinformation which led to resistance in getting treatment initially. Patients were also non-cooperative with health care professionals. Many patients had depressive symptoms and news of instances of suicide and vandalism was observed. Following reasons led to increased stress among people.

- Frustration due to confinement, lack of routine and social contact
- Fear of Social stigma and victim-blaming
- Ambiguity regarding the disease and its future
- Fear of loss of work and job

8.1 Intervention for Mental Health Support

We provided all the information to give a firm understanding of the disease. This was important for disputing myths and/or dealing with apprehension surrounding the disease and cleared all doubts regarding the same. The employment of psycho-education techniques helped in reducing anxiety and harmful behaviour towards self and others. We ensured the provision of continuous and regular supply of essentials such as food, masks, sanitizers, soaps, mosquito coil, sanitary napkins, medicines for pre-existing ailments such as diabetes, blood pressure etc. Attempts were made to set a routine by serving food at fixed intervals so as to maintain the circadian rhythm, which has implications for psychological well-being. We also introduced evidenced based psychological therapies such as Cognitive Behaviour Therapy, Rational Emotive Therapy, Narrative therapy and solution- focused therapies to deal with the psychological stress, anxieties, and depressive moods and dispute any existing cognitive distortions that may deteriorate their mental health. We also organised support groups (while maintaining prescribes physical distancing) which was useful during quarantine period to help people in processing the prevailing situation and the negative effects of it which they all were going through collectively. It helped curbing the loneliness that comes with isolation and may help the individuals in the process of catharsis, reflection, sharing and supporting each other. Individual counselling was provided to those who exhibit serious symptoms and extreme negative affect due to their condition. We also established a dedicated mental health helpline number 0120-4155313 (official) for the individuals to access mental health care whenever they would feel extremely distressed and would like to refer to the professional for help.

8.2 Implications

- Psychological interaction with those quarantined and isolated provided the administration with information that would help in understanding their

experiences which in turn help the administration in improving and revising the planning and implementation.

- De-stigmatization and humanization of those suffering from the disease or are suspected of it and are in quarantine
- It also highlights the issue of psychological crises that is a by-product during a pandemic. This also equips the stakeholders to timely intervene as we can see from reported instances of suicide and vandalism.
- Since there is a strong evidence based co-relation between mental health and immunity, addressing mental health issues led to better physical and mental state to fight the disease.

The role of mental health is just as crucial in fighting this pandemic. The aforementioned interventions strive to envision health in a holistic manner and hence deal with it holistically. It prepares the community to fight better the novel coronavirus disease. The same team also contacted persons with COVID in either facility or home isolation to enquire about their well-being and mental health, all the issues flagged were addressed through counselling and the administration as and when required.

9.0 App Based Health Services: Ghaziabad Tele Upchaar App

Telemedicine is the delivery of health care services by health care professionals using information and communication technology. The practice of telemedicine was still in its nascent stages in India and less pervasive in Uttar Pradesh. But in the wake of COVID- 19, to avoid the spread of the virus, it became a viable option to seek medical care for routine ailments without having to visit the hospital. As Telemedicine provides convenient and cost-effective medical care, a platform was need of the hour which could provide Virtual Care to reduce spread of the virus as avoiding exposure is the best way to prevent infections. For this purpose an app called Tele Upchaar was formulated in district Ghaziabad.

This app helped in bringing medical care practitioners of the district across specialisations in contact with patients in the urban and rural parts of the district on a single network. It ensured Availability, Accessibility and Affordability of quality health care. It increase it utility and viability, the app had interface in the local language as well and has a very simple interface to cater to the needs of rural and semi urban populace as well.

In the first phase, in association with the IMA, 90 doctors in the district volunteered to offer medical care along with 17 government doctors. Also all those doctors who were exempted to practice during COVID -19 were encouraged to register for telemedicine. With more than 1400 downloads and a user rating of 4.2 stars, the Ghaziabad Tele Upchaar App facilitated 2405 calls of patients across Ghaziabad. The patients shared their issues with doctors on audio, video, text depending on the convenience of the patient and the felt

need for diagnosis. In these tough times, All the doctors rendered their services without any charges and to provide better care, a feedback mechanism was also developed were the patients were also called randomly by the nodal officer for verification and to get a feedback on their satisfaction. Doctors reported the number of patients that they have treated each day.

Impacts brought by the app –

- As no public transport available, so individual did not struggle to visit a medical facility and they are received quality medical care in the comfort of their homes.
- Transmission of Medical infection which was inevitable was curbed due to virtual care facilities.
- Physicians attended to more patients.
- It furthers the cause of telemedicine in making it mainstream because that is the future.

Post lockdown the Tele upchaar app can be scaled up and transformed into a more refined and permanent feature of medical care in the district. As the population increases telemedicine can prove to be time, cost, energy effective as the individual need not visit physically and end up saving fuel/time, invariably being ecologically and economically smart.

10.0 COVID Death

When the pandemic is over, no one will remember the exact number of individuals who were infected with COVID but they will certainly remember the lives that were lost in this pandemic. It is particularly heart rending to not be able to touch your loved one before their onward journey from this world. Hence, it was our onus to mitigate death rate and help the populace to cope with bereavement from this unforeseen circumstance.

Figure 3- A month wise comparison between the COVID death and Case Fatality Rate from COVID in Ghaziabad district. The red line indicates the case fatality rate in Ghaziabad which reached its peak in June 2020 and started declining since July and in January 2021, Ghaziabad achieved zero case fatality rate.

The death rate picked in June and after that it has been in single digit. The decision to rope in Private hospitals as dedicated COVID hospitals was a beneficial one that proved of extreme utility as they not only supplemented the COVID treatment of patients by providing a large pool of regular and ICU beds but also because of the improved healthcare worker to patient ratio they offered better care in the district. The pressure on govt. Level 3 facility was released and that improved their treatment and outcomes as well. As on date there are thirteen such hospitals in the district. It was noticed that if the death occurs a day or two after admission it can be deemed to be a surveillance failure, that by the time the case came to the facility it was too late to salvage.

But had the surveillance teams been more proactive the case could have been identified sooner and therefore handled better. Whereas, in case of the death a week post admission indicates gaps and laxity in the treatment protocol. Death at home isolation level may point towards the failure of the RRT team that has not monitored their health status diligently, it had to be strengthened in order to avoid negative outcomes. To reduced death rates, death audits were ensured. After a surge that left many dead in the district of Ghaziabad, the pandemic was controlled very quickly in Ghaziabad. The case fatality rate which measured the proportion of cases of a specified condition that are fatal in a specified time (Spychalski 2020: 774), decreased for Ghaziabad significantly from 4.04 in June 2020 to 0 in January 2021.

10.1 Death Audit

- Each and every case is an opportunity to understand the circumstances and involved many factors for us to learn and improve our case management system continuously.
- The reason for every death was analyzed by a specialized internal committee and in peculiar cases (young, without co morbidity) by an external committee of doctors.
- It involved collecting accurate information and routine clinical data regarding the case management system in place.
- It helped us to have different outcomes in similar cases and in avoiding adverse outcomes at all costs.
- It also helped us to prove to the bereaved family that the patient's life was important.
- Helped the administration in identifying life-saving interventions and reforms at hospital level and as a result improved (lowered) our CFR.

11.0 Conclusion

The occurrence of COVID was sudden and Ghaziabad was arguably the first few districts to be impacted in the state and with its apocalyptic nature it led to a crises, being vigilant

and consistent in our efforts was crucial. A system was created that flagged even minor issues whenever observed. All nodal officials for various tasks and hospitals had to invariably be vigilant. It seems like COVID would stay for some time and it is imperative to incorporate and realize all COVID protocols as part of the core work. Moreover, the human resource available at the district level has to be meticulously planned in order to manage to the best of its capacity. The administration and clinical management should go hand in hand to spearhead this war against mankind.

Since the entire world has had its first interface with COVID; administratively, it becomes crucial for the field officers to observe the predisposition of the disease and it's management; learn from the experience and propose solutions for implementation as also to alter strategies wherever needed. Needless to say a Multi-pronged dynamic approach is the need of the hour. It is of utmost significance as it has the ability to influence and give inputs at state level so that long term planning can be formulated to contain COVID. To conclude, the public needs to be equipped with the correct information by sustained IEC activities, gain their confidence and to evoke their intellectual and emotional insight in order to assist the administration. It is a privilege to be a part of public service at this juncture of crises and be able to literally save lives. It has given us the invaluable experience that will certainly hold in good stead throughout the career in times of crises.

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Governance Mechanism –Response to COVID 19 by District Administration, Unnao

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Abstract

To ensure the safety of residents of Unnao from COVID -19 ,steps were taken to ensure reach of district administration to everyone through daily testings ,contact tracings, surveilance; daily survey of all households along with regular calls to every patient and monitoring through google sheets ;daily interactions & special separate helplines to cater the specific needs of people; daily visits of containment zones/COVID centres by officials; regular supply of essential goods through naveen mandi, local haats ; social and awareness drive; & campaigns to boost the morale of corona warriors were some of the measures undertaken in Unnao during this pandemic threat..

Keywords: Operation of Industries, Aawareness Drive, Mission Raksha Ke Sath Suraksha, Community Kitchen, Tele-Medicine, Lessons learnt

1.0 Introduction

Situated between administrative capital Lucknow and industrial capital Kanpur, district Unnao occupies an area of 458.9 sq.km with a population of 31,08,367 as per census report of 2011. Divided into six tehsils, sixteen blocks and 1043 gram panchayats, economy of Unnao is mainly agro based. It is also known as being the cartel of traditional zari-zardoji art along with huge no of technologically advanced leather industries.

Since joining in the capacity of district collector on 24thfebruary 2020,it was my primary objective to get acquainted with the geographical , social and administrative scenario of the district .While I was on job to develop a clear cut vision , an altogether new situation of COVID crisis arose .Now ,it was my greatest responsibility to ensure a familiarity with everyone, to ensure a smooth operation of the administrative machinery along with ensuring medical, door step supply of ration ,other essential goods to all. Unnao being a predominantly industrial area, smooth operation of industries was also a big task.

At the time of commencement of lockdown, there was a feeling of panic all around. People were still unaware of the seriousness of the COVID infection. Rumors were largely in air about possible outcomes of this new disease. Due to suddenly declared lockdown, economic activities were stopped all of a sudden .People were instructed to remain in their houses. Timely supply of all essential goods via doorstep delivery to all the households was a major challenge. To trace and quarantine the people ,who had come from abroad and metro cities and who could be a possible carrier of infection was also a big challenge

.people had suddenly become panicked .To arouse a feeling of protection and safety among them ,to ensure proper monitoring and establishment of a regularized medical system was a diehard need of the hour .To ensure movement of people and goods cargo was yet another requirement and last but not the least ,keeping the warriors of various government departments ,who were also facing this type of situation for the first time, free from various types of apprehensions ,was also a major responsibility .

At that time , being the officer at front, it was expected from district magistrate to work in all the directions ,to keep a check on infection spread ,to make the people aware about the possible causes of infection along with check measures ,to ensure law and order in that emergency situation ,to ensure doorstep delivery of essential goods ,to ensure that no one is left out during ration distribution and no one is left hungry or shelter less. To keep the borders of the district safe from the possible influx of migrants was quite a big task.

At the same time , to keep the administrative depts. in line, to ensure that their regular functioning and assigned goals are not disturbed and are done as usual ,to ensure that all the assigned targets are achieved within the stipulated time was also a priority . Lastly to restore the faith of people and to revive their lost confidence was the biggest challenge.

2.0 Key prospects of the Mission/Project

2.1 The project has been operational from 25th March 2020. The following are the themes adopted to counter the challenges.

- To get in touch with each and every one.
- To ensure that no one is left out or is deprived.
- To ensure that administrative system is fully functional with a feeling of safety amongst officers and employees as well.
- To start the work on a multi-tasking platform involving participation of each and every one.

2.2 Process followed for deployment/implementation/Steps taken to keep a check on infection spread

- Team 11 constituted under the chairmanship of District Magistrate and regular meeting held at 11.00 am to get an impulse of problems being faced by public and govt. depts. followed by detailed discussion to implement a genuine solution.
- Regular discussions maintained with representatives of industrial, medical and vyapar mandal to ensure that their problems are immediately sorted out.
- Nodal officers were given the task to manage different projects undertaken with a regular revision from 8 pm onwards by district collector.

- Integrated relief control room established at collectorate to address the grievances of public and regular visit done by district collector at 11.00 pm daily to monitor the status.
- A unique initiative adopted in Unnao during pandemic was monitoring through google sheets.
- For it village samitis and ward samitis were constituted and door to door survey was held daily to get an impulse of problems being faced by villagers or people in town areas.
- Monitoring of daily samples taken, admission of positive cases, contact tracing, home isolation methods was done through google sheets method.
- All the positive cases ,whether they were in home isolation or in facility services were called on phone daily to monitor their condition and for feedback on given medical facilities to ensure immediate redressal.
- Survey report of each town /village of all the sixteen blocks was uploaded on google sheets daily.
- Monitoring of the same was done daily by district magistrate at 9.00 pm to ensure that no health or ration related or any other problem is being faced by anyone in the district.
- Two COVID Care L-1 hospitals, one 100 beds L-2 hospital and one COVID care centre were established.
- L2 hospital was established with 5 venilators and HFNC facility. Dialysis facility of positive patients was also added later on.
- 24 x 7 arrangement of ten ambulances of 108 services and 04 ambulances of ALS ensured to immediately attend the needy people.
- Door to door surveillance done between 24th to 31st July and covered 8,54,023 people
- A total of 3,10,169 COVID tests have been conducted in district having 1,21,322 RTPCR, 1,69,081 Antigen tests and 1730 truenat tests at district hospital till 6th Jan 2021 followed by contact tracing and testing of all the positive cases found.
- Regular meeting with doctors and inspection of L1 and L2 done by District Magistrate to boost the morale of frontline warriors, patients and quarantined people along with ensuring that proper facilities are being given to the patients and the people kept in isolation there.
- During lockdown, it was decided to give topmost priority to the qualitative solution of complaints, received both offline as well as online'
- To ensure the qualitative solution of complaints received on IGRS Portal, E-district manager was given the task to ensure that no grievance received on IGRS Portal is left unattended by any department.
- Weekly review of the same was done by district magistrate to ensure positive regulated disposal of each grievance received within time.

- Mass sanitization and cleanliness drive launched with the help of 1786 sanitary workers in rural areas and more than 700 workers in Nagar palikas.
- More than 100 times sanitization of district hospital, L1 and L2 hospitals were done by Fire services department during lockdown period to nullify the effect of pathogens.
- Daily sanitization of each nook and corner ensured, status updated on google sheets and daily review done at 9.00 pm by District Magistrate to ensure that no area is left un-cleaned /non-sanitized.
- Sanitary kits, masks and soaps gifted to sanitary workers with thanks note to acknowledge their role in this crucial time and to boost the morale as well.

2.3 Unique initiatives undertaken

a) Gali-Ki-Dukan

- Door step supply of all essential goods was ensured through Naveen mandi in city and local haats of pariyar, jamuka, varugaon, methitikur and auras.
- It was felt that, besides essential goods, some other things were required by citizens, particularly the younger ones. Procuring of the same was not possible due to ongoing lockdown.
- "Gali ki dukan" App was launched with the help of NIC to ensure home delivery to the people as per their choice with an add-on to their essential needs.

b) Operation of industries

- Being pre-dominantly an industrial area, operation of industries was one of the major tasks in Unnao during the lockdown.
- On an average, there are 600 SMEs in Unnao with more than 1 lac labourers employed in them, the no of micro units being counted in thousands.
- In an effort to ensure smooth operation of the industries in Unnao during lockdown as par the guidelines issued by GoUP and Ministry of Home Affairs, City Magistrate and Assistant Commissioner Industries were given the task to process each and every application received to run the industry on the very same day and monitoring of the same was done by district magistrate at 8.00 pm daily to see that no problem is left unaddressed.
- Special meetings were conducted with industrial fraternity on 11th may and Udyog Bandhu held on 25th may to ensure smooth operation of industries as per the guidelines issued by GoI and GoUP from time to time.. Most probably, Unnao alone is having this honour of conducting Udyog Bandhu in May 2020 in UP.
- On the basis of the feedback of the entrepreneurs and disposal of applications received offline as well as on Nivesh Mitra portal, Unnao is getting the honour of 1st rank in EASE OF BUSINESS RANKING of UP since MAY 2020 continuously

c) Sakhi Helpline

- To provide a platform to the ladies to share their problems without hesitation, Sakhi helpline no 7839855520 launched in district during the lockdown in which total ladies staff was given the task to talk to the complainants.
- More than 274 ladies were rescued from domestic violence through this service during the lockdown.
- More than 2000 ladies were given sanitary napkins and other objects as needed by them during the lockdown. This was a unique initiative of Unnao.

d) Social contact and awareness drive

- To acquaint the masses with the importance of sanitization and social distancing measures, all the NGOs of Unnao were clubbed under one umbrella during the lockdown, regular meetings were organized to make people, living in far off rural areas of the district , aware about precautionary measures against infection spread and safety. Mission hand sanitization, Mission cleanliness drive were operated successfully during the lockdown /unlock stages and are still being operated. For it, a mother NGO has been identified and each of the NGOs has been assigned a specific area to make people aware about COVID safety measures.

e) Mission Raksha Ke Sath Suraksha

- An immediate need was being felt to make people more aware about the use of facemasks.
- As the festival of Raksha Bandhan was to be observed shortly, so a special "Raksha ke Sath Surksha" mission was launched in Unnao on 20th July.
- On this occasion, special packs, each having one mask and one Rakhi were gifted to corona warriors with a pledge to always use facemask as a mean of real security shield and they were requested to spread this message to their families and friends as well.
- These special packs were also given to NGOs with a request to spread this message of encouraging use of facemasks.
- In an effort to promote local artisans, special Zari Rakhis were procured from them to give a boost to one district one product scheme of the district.

f) On The Migrants front

- A total of 35,125 migrants passed the district on feet.
- A total of 47440 migrants came to the district via train and 14696 migrants via buses and 1434 from abroad, of which 15986 belonged to the district. The residents were given proper check-up and quarantine facilities.

- For remaining migrants, complete care was taken to provide lunch packets, water bottles, sanitizers, shoes, slippers and other essential goods as per their needs before.
- 53,732 migrants returned to the district during lockdown of which nearly 43 thousands were in age group of 18 to 60 years.
- A total of 419 quarantine centres were established in the district where screening /quarantine of 53732 migrants were done.
- A total of 25756 quarantined persons were given ration kits @ 1250/- kit.
- Skill mapping was done for all the migrants and efforts made to recruit them in industries in May and June itself where approximately 500 migrants obtained jobs in industries and received offer letters at the time of their relieving from the quarantine centres.
- More than 14 thousands have been covered under MNREGA, 2950 in SHGs, 3000 in direct financing from banks, 500 in industries and approx. 1000 have been covered in various skill training programmes by various departments.
- During the phase of mass movement of migrants on roads during the month of May 2020, besides providing food /ration to them via govt. system, various help centres were established and foods packets /water bottles were given to them to provide an immediate relief. During mass migration of migrants, a very pathetic condition was witnessed sometimes when people were seen walking barefooted. Shoes and slippers were provided to the migrants in various relief camps after arranging them via CSR

g) Garib Kalyan Rojgar Abhiyan

- During quarantine period, an effort was undertaken to utilize the potential of migrants as per their interest and skill.
- Migrant workers quarantined in Narayanpur Primary school were given paints and brushes to see that they do not get bored during quarantine period. They utilized this opportunity to decorate the school, which ultimately led to the launching of scheme – Garib Kalyan Rojgar Abhiyan by Hon'ble Prime Minister on 20th June. In his address to the nation, Hon'ble PM has acknowledged Unnao as the pioneer of Garib Kalyan Rojgar Abhiyan.

h) Mobile ATM Facility

- During lockdown period, some sort of feedbacks were received that people were facing lack of cash availability during this period.
- IN an effort to give relief to people, Mobile ATM facility was introduced in the district. This facility helped people to get money at their doorsteps during lockdown.

i) **Tele-medicine facility**

- As OPD was kept closed for general patients during the lockdown, an urgent need was being felt to provide medical consultations to the needy people without their stepping out of home.
- This need led to the launching of telemedicine facility which helped people in getting medical consultations from expert doctors; both govt. as well as private practitioners.

j) **Ayush Kadha**

- An immediate need was also being felt to encourage use of kadha as an immunity booster amongst people.
- Launching of special Ayush kadha, formulated by Ayush doctors of the district, was done by district magistrate on 6th July in collectorate, Unnao.
- Special stalls were set up in collectorate, Vikas Bhawan, Kanpur Lucknow byepass and other important places to promote use of kadha amongst people instead of beverages

k) **Community Kitchens**

- Community kitchens were established in all town areas including the Annapurna temple in Sadar area and Ganga-ghat also.
- On the whole, a total of 57 community kitchens were established in the district.
- These community kitchens were operated with the help of social workers and through corporate social responsibility initiative of the industries.
- Approx. one thousand to fifteen hundred people obtained food packets from these community kitchens daily, particularly the migrants passing by road. Lunch packets, water bottles and Shoes and slippers were also given to migrants passing the district through trains and buses.

2.3 Details of the coverage of the targeted population

The population targeted consisted of the whole district and was divided into two categories –i.e. Rural and Urban to ensure that no one is left out and immediate help is obtained by each and every one. For it two sub committees were constituted under the chairmanship of chief development officer and city magistrate respectively. Chief development officer was given the responsibility of rural areas .This subcommittee constituted additional district magistrate (F/R), all the sub divisional magistrates, circle officers, block development officers and executive officers, nagarpalikas.

Second subcommittee was constituted under the chairmanship of city magistrate and was given the task to look into the needs and grievances of people living in urban areas. Sub divisional magistrates and block development officers were given the responsibility to ensure proper quarantine of each and every person coming from outside the district .village monitoring committees were constituted in each village and ASHA workers were instructed to do household survey, so that all the migrants, who had returned without

prior information, could be quarantined and medical facilities could be accorded to them. Conclusively, it could be said that total population of the district was covered in this anti COVID drive.

A. **Pre deployment scenario:** When lockdown was announced, it was an altogether new situation for the public, and, to some extent, for the administration as well. The major challenges before the administration were:
    - To save people from COVID -19 infection spread and to make them aware.
    - To prevent mass panic, as lockdown was declared all of a sudden and many rumours were in air after declaration of COVID 19 as pandemic by WHO on 11th march 2020.
    - To make people aware about the realities of various rumours and to clarify the control measures to them
    - All the economic activates had suddenly come to a standstill .To ensure immediate and regular supply of all essential items to the public and to regenerate the feeling of safety and security among them was a big task.
    - To ensure cleanliness and sanitization of each nook and corner of the district was urgently required.
    - To recognize /quarantine those People who had come to district on their own from metro cities or abroad and who could be possible carrier of this disease but somehow were hiding the information from the administration was need of the time.
    - Unorganized small entrepreneurs, especially street vendors had suddenly started facing the danger of survival. To ensure that these get proper rationing and other facilities was a big task.
    - To ensure food and shelter for homeless people.
    - Unfortunately, staff members of different departments were also in a fix that how to maintain balance between family health and official responsibilities.

B. **Post deployment scenario:** After following the steps mentioned above, after organizing mass awareness programs , after ensuring speedy redressal of the problems of the people , entrepreneurs ,social activists and others ,it seems that people now know about all possible causes of infection and its possible remedies .It was ensured that each and every official talks to the public ,subordinate staff and various complainants in a very cordial and polite manner to listen to their agonies ,to their viewpoints and ensures immediate redressal. As a result, it now seems that people are now more administration friendly .they can meet /call over phone to the district magistrate himself at any time to convey their problems and to get the solution.

2.4 Potential for replicability

- People working in different departments, now have become accustomed to immediately solve all the problems as soon as these are received. Public, now is more close to the district administration .Industries are now running at a smooth pace .Home delivery system has proved so flawless in the district that ,now ,there is demand to run a parallel system in the district.

- Livelihood measures, adopted in the district have motivated the migrants to work and stay in the district and work for the upliftment of the society. Smooth operation of industries has encouraged entrepreneurs to work for the upliftment of the society, district and local people, especially the migrants. GARIB KALYAN ROJGAR ABHIYAN has given a new impetus to livelihood measure in Unnao.

- Enrolment of migrants in various training programs have encouraged the artisans/labourers to stay back in the district and start their own work, which ultimately is proving beneficial in strengthening the economy of the district.

- Sakhi helpline, a totally women run helpline has encouraged and given a platform to the ladies to share their personal problems and needs with the lady officials without hesitation so that they might get needed help with a full guarantee to their privacy.

2.5 Achievements

- 1st rank in ease of business ranking of UP for seven consecutive months since May 2020.
- 1st rank in IGRS ranking of the state along with three other districts for two months.
- Mission "Parali do, khad lo" launched for the first time in Unnao.
- Acknowledged as the pioneer of **Garib Kalyan Rojgar Abhiyan** by Hon'ble PM
- The Skoch Award Winner-Established in 2003 and counted amongst topmost civilian honour of the country, Skoch Group has ranked the work of district administration Unnao amongst topmost noteworthy projects undertaken in the country during lockdown. District administration is honoured with an order- of-merit certificate in good governance category and order-of –merit and silver award in response to COVID category.

2.6 Lessons learnt

Immediate monitoring and solution of any problem, not only ensures relief to the applicant, but also paves the path of progress by creating a qualitatively positive environment.







शिकायत निस्तारण में जिला सूबे में अव्वल










अपना शहर





ATM



Telemedicine in India

PMO India | Report Card's Post
PMO India | Report Card
Aman Sharma
UP Govt has started procuring stubble from farmers. Nearly 5000 quintals of stubble procured by Govt this year for cattle fodder — farmers are given cow dung in return. Seems an innovative solution to stubble fires & pollution



Policy Brief on Rapid Data Driven COVID-19 Response in Karnataka
A Case Study of Kalaburagi

Dr. Akash Shankar, IAS

Abstract

In many ways, fighting COVID-19 is like fighting wildfire. Wildfires are difficult to predict, spread quickly, and force a rapid response by concentrating limited resources to control damage. Failure in early stages often leads to devastating results, forcing a draining, lengthy firefighting at great cost. But to make the right decisions on time, and to implement actionable insights across multiple stakeholders, a strong data foundation for data integration, analysis and sharing is critical. The Partnership between Karnataka State Government and Palantir Technologies showcases a model collaboration framework for establishing a scalable, data-driven crisis response platform that has been rapidly deployed as the digital backbone of public health policy operations in the region.

Keywords: COVID-19, Public health policy, Public-Private Partnerships (PPP), Karnataka, Data Platform(s)

1.0 Why does a data-driven response matter in a pandemic?

As of February 2021, COVID-19 has claimed more than 2.2 million lives worldwide (Google News Statistics from composite sources, Feb. 2021). With unprecedented speed of infection, this outbreak forces policy makers to act swiftly and decisively than ever before. The challenge entails the coordinated management of limited medical supplies and finite response capacity to conduct key operations of public health surveillance and socio-economic relief. Evidently, drawing quantitative insights from data to complement qualitative assessment is vital to the success of a pandemic response (Juliet Bedford *et al*., Nature 2019: 130). However, this is often more complex in practice than in theory.

2.0 Why is a data-driven response difficult to implement?

In practice, a data-driven response during crisis is difficult to implement for several reasons. First, many legacy systems collect and store data in disparate sources, placing roadblocks to integrated data analysis and efficient data sharing (Barthell, E.N *et al*., Disparate systems, disparate data: integration, interfaces, and standards in emergency medicine information technology. Academic Emergency Medicine 2004: 1143). Also, the public sector often lacks a strong data foundation that can process real-time information from the ground in this volatile situation or securely share massive volumes of data for collaboration. Finally, public health data platform and workflows must respect the privacy of individuals (Mooney *et al*., Big data in public health: terminology, machine learning, and

privacy. Annual review of public health, 2018:101). Therefore, drawing actionable insights from data by harnessing technology and subject matter expertise while ensuring data security often require long lead times for data system deployment and staff training that could take years. This policy brief aims to offer a collaborative framework for policy makers and health professionals to rapidly implement data driven decisions based on a unique partnership case from Karnataka.

3.0 The Case of Kalaburagi

Kalaburagi (Gulbarga) is the 2nd largest district in Karnataka with a total area of 10954 sq. km and a population of 25,66,326 (5th in the state). During the lockdown, Kalaburagi received a sudden influx of migrants looking for jobs, compounding the difficulty of public health operations. As COVID-19 can have more serious implications on vulnerable age groups, demographic profiles and influx tracing are critical data components of decision making. Moreover, social distancing and lockdown policies took a heavy socio-economic toll on the local community (The Employment Situation—News Release Bureau of Labor Statistics, U.S. Department of Labour, 2020). Policymakers and medical experts of Kalaburagi district needed insights from data for public health operations and to take stock of the socio-economic impact. In the face of these challenges, the State of Karnataka and Palantir Technologies rapidly deployed a data foundation that harnesses the best of both worlds—advanced data technology from the private sector and the subject matter expertise of public officials and medical professionals. Experiences from this unique Public-Private Partnership (PPP) yielded a model that helped the Karnataka State government in better analysing the situation, improving response times, planning and deploying resources, monitoring the spread of COVID, and preparing for socio-economic recovery.

Challenges faced by Karnataka Administrators

- Wide area coverage: As the 7th largest state in India, Karnataka is 191,791 sq. km in geographical size with a population of 64 million.
- Maintaining order and fighting disinformation: Scarce resources and disinformation added to the challenge. Karnataka officials needed to build trust and provide the correct information to the community.
- Inflow of Migration: The migrant labour influx added challenges to contact tracing and monitoring as well as supplying food and essential supplies for the roughly 50,000 migrants under institutional quarantine.
- Disparate data systems: Data was scattered around multiple disaggregated systems. Data collection and analysis in the legacy system was nearly impossible.
- Logistical challenges: In a remote working environment, the collation and acquisition of data, as well as user training and upskilling had to be done online, without physical presence of technology providers onsite.

4.0 In-Migration and Incoming Challenges!

The sudden influx of migration added an enormous administrative and public health burden to Karnataka. This flow disrupted contact tracing, which is important in countering COVID-19, as well as social distancing and personal hygiene management efforts, which are the most viable options for prevention (Park, Young Joon, *et al*. "Contact tracing during coronavirus disease outbreak, South Korea, 2020." Emerging infectious diseases 26.10. 2020:2467). Absence of irrigation facilities and industries, consistent drought, poverty, and illiteracy forced people to migrate to Mumbai, Pune and Bengaluru in search of jobs. This specially has affected the districts of Kalaburagi and Yadgir from where hundreds of thousands of people have gone out in search of livelihood. When the country opted for a complete lockdown, there was chaos everywhere and it was more so evident in the district of Kalaburagi.

This was because Kalaburagi was already on the map for registering the nation's first COVID-19 death. The influx of migrants as soon as lockdown was announced into Kalaburagi proved to be an added strain on the district. In the first few days itself after the announcement of lock down, as many as 41,423 migrants entered Kalaburagi through the sealed borders and they were put on institutional quarantine.

5.0 Data-Driven Collaboration for Crisis Control

5.1 A Race against the Clock: Karnataka was suffering as one of the most impacted regions in India. As of June 2020, Kalaburagi district had seen two major waves of COVID-19. The government needed an accurate understanding of the evolving situation on the ground to save more lives. In turn, the creation of a strong data foundation was necessary to provide dynamic situational awareness to decision makers, enabling precise, informed decisions for the judicious use of resources. Key stakeholders in the setup of a rapid data-driven COVID-19 response in Karnataka were the Policy Makers, Regional Administrators, Medical Professionals, and Technology Solutions Providers. Each had respective strengths and roles in this undertaking. Policy Makers had the strategic vision, experience, and leadership over resources. Their role was to drive the innovation and allocate resources effectively. Regional Administrators had high resolution understanding of their areas of responsibility, and in charge of implementing policy and overseeing the region's public health operations and disseminating information. Medical Professionals in the forefront of the crisis response had medical expertise and knowledge of the ground situation. Technology Solutions providers contributed the technical expertise and were tasked to rapidly deploy the data platform in which all stakeholders could collaborate effectively. Finally, the support team with their frontline reach provided operational actions and served as data edges (see Table 1).

Table 1. Key Stakeholders in Karnataka's Data-Driven COVID-19 Response

Stakeholders	Strengths	Role

Policy Maker • Mr. Kapil Mohan, IAS (Additional Chief Secretary)	Strategic vision, leadership experience	• Executive central leadership • Resource allocation • Decisions on priorities
Regional Administrators • Mr. Sharath, IAS (then District Collector) • Mrs. Jyotsna Vijaya Vasireddi, IAS (current District Collector) • Dr. Raja, IAS (District CEO)	High resolution situational awareness of the region	• Public health ops oversight • Local information dissemination
Public Health Administrators • Dr. Gopal, IAS • Dr. Akash, IAS	Medical expertise and knowledge of ground situation	• Extend medical knowledge to ensure effective ground work
Technology Solution Providers • Palantir Engineers • Mr. Pramod (NIC) • Prof. Ambresh, Prof. Sudhir (VTU Faculty) • ATI Staff	Technical expertise	• Deploy data platform • User Training
Support team • NIC team • Local volunteers from VTU	Frontline reach	• Near real-time data collection and ingestion

The goal was to build a data foundation that would allow decision makers to:

- Accurately understand the evolving situation on the ground at a local, state, regional and national level.
- Save lives by timely allocating resources to the places that most need them.
- Make differentiated social distancing policy decisions across the country based on accurate assessments and reliable predictive models based on the best and most recent data.
- Ensure the platform and workflows respect the privacy of individuals while enabling the mission-critical work of health professionals and building trust in the community.

5.2 Intervention Strategy- PPP based Data Foundation for Collaboration: Through the PPP with the Karnataka Government, Palantir Technologies provided a pro-bono COVID-19 Rapid Response Platform (RRP) for Kalaburagi district based on its proven data platform already in use by government agencies for their COVID-19 responses (UK National Health Service, US Centers for Disease Control). The RRP served as the digital backbone of the COVID-19 response effort in Kalaburagi district, delivering several benefits to augment the effectiveness of decision making and efficiency of public health operations. Data-based collaboration through the RRP unlocked immediate access to response strategies that were previously unavailable across short-, medium-, and long- term timeframes. The first step for the RRP was to establish a Common Operating Picture (COP) that provides key functionality for real-time pandemic awareness.

Traits of an effective Rapid Response Data Platform (RRP)

- **Flexibility:** Platform is able to process data in a large variety of forms, formats and sources.
- **Speed:** Enables rapid data integrations across central, state, and private entities in a few days that would otherwise take many months, so that decision-makers don't lose valuable time.
- **Accuracy:** In a rapidly evolving crisis, paper records and spreadsheets quickly become outdated. Data across the platform automatically refreshes as underlying data sources update, with a complete record of all historical versions.
- **Openness:** Using open standards, Indian national champions and technology leaders can plug their capabilities into the platform in order to deliver cutting edge capability in AI (Artificial intelligence) and machine learning (ML) to better inform decision making.
- **Security:** Robust security and privacy controls, strict access control measures, encryption in transit, and comprehensive audit capabilities.

5.3 Short term strategies - Health Geography: Geographical data is closely related to epidemiology (Dummer, T.J., Health geography: supporting public health policy and planning. 2008: 1178). Through mapping out the health geography, RRP enables the organization and implementation of effective local response tactics. For example, the District Command Centre powered by the RRP is a one-stop shop which provides powerful visualization tools in customizable dashboards.

The District Command Centre is fundamental to the data-driven response (see Figure 1). It detects and manages all cases without losing control of chains of transmission through disease spread data management. This generates tactical insights from geographical and demographic analyses of at-risk and infected population, predicts evolution of spread based on statistical methods and historical spread rates, and provides patient

management across the district's healthcare infrastructure. Patient Management tools allow granular insight into transmission points and chains while protecting privacy of the patient by using pseudonymised data from the government stakeholders even prior to entry in the RRP, ensuring that privacy is guaranteed from the data source provider much before even reaching the platform.

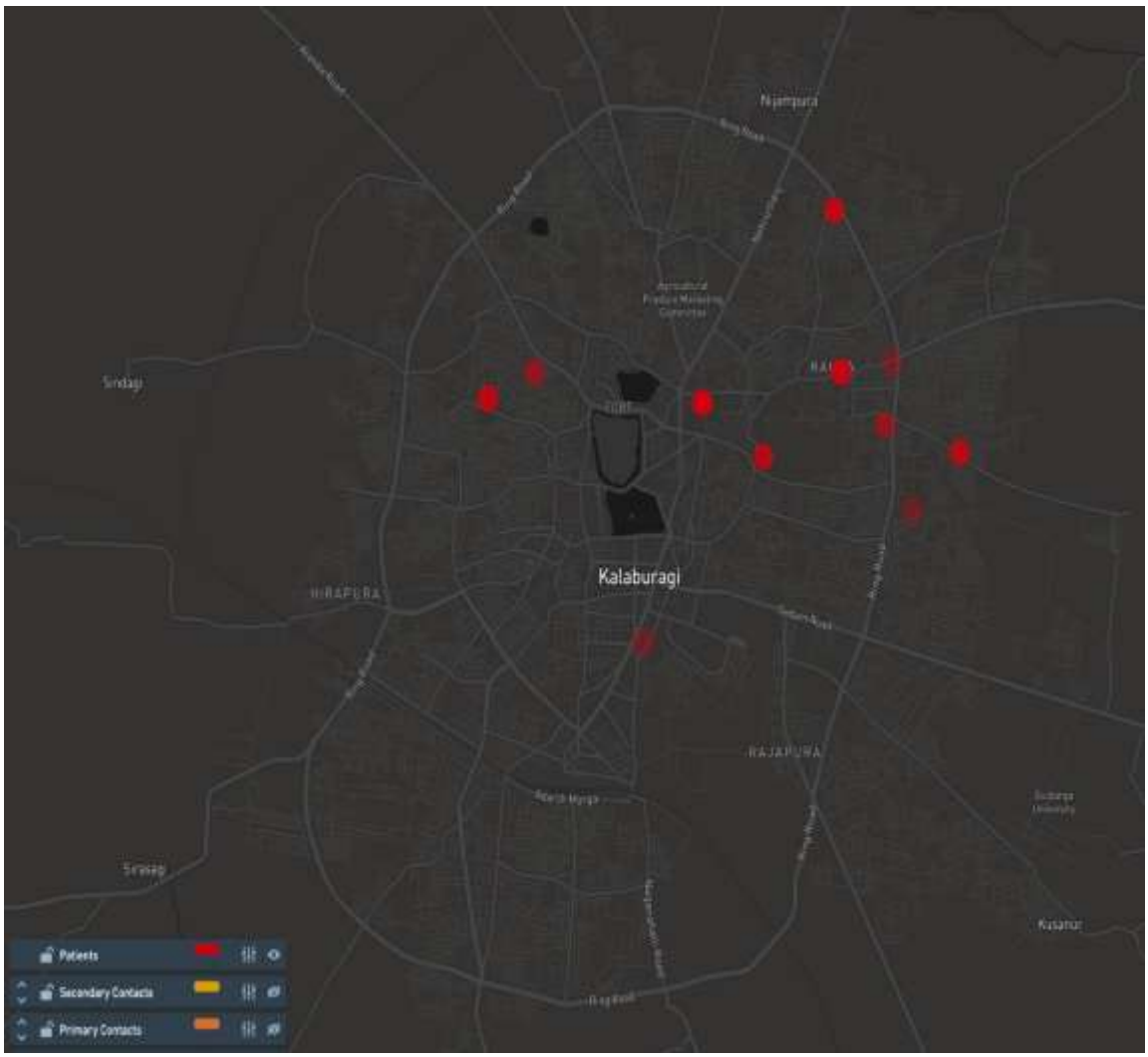

Figure 1. District Command Centre: Patient Hotspots

These tools strengthen the local resilience, turning the district into reliable units of planning in the next phase (see Figure 2 and 3). Such rapid improvements were made possible through the speed of deployment. Three elements determine this critical speed. First, the technology must provide an open, out-of-the box tools that does not require extensive development durations. Second, the interface tool must be easy to use. If the tools are difficult to manipulate, it will not only impact the time required to train users, but also the scope of the actual use of such tools. Finally, and most importantly, all stakeholders need to adopt a forward-thinking attitude to absorb the new technology and incorporate it into day-to-day operations.

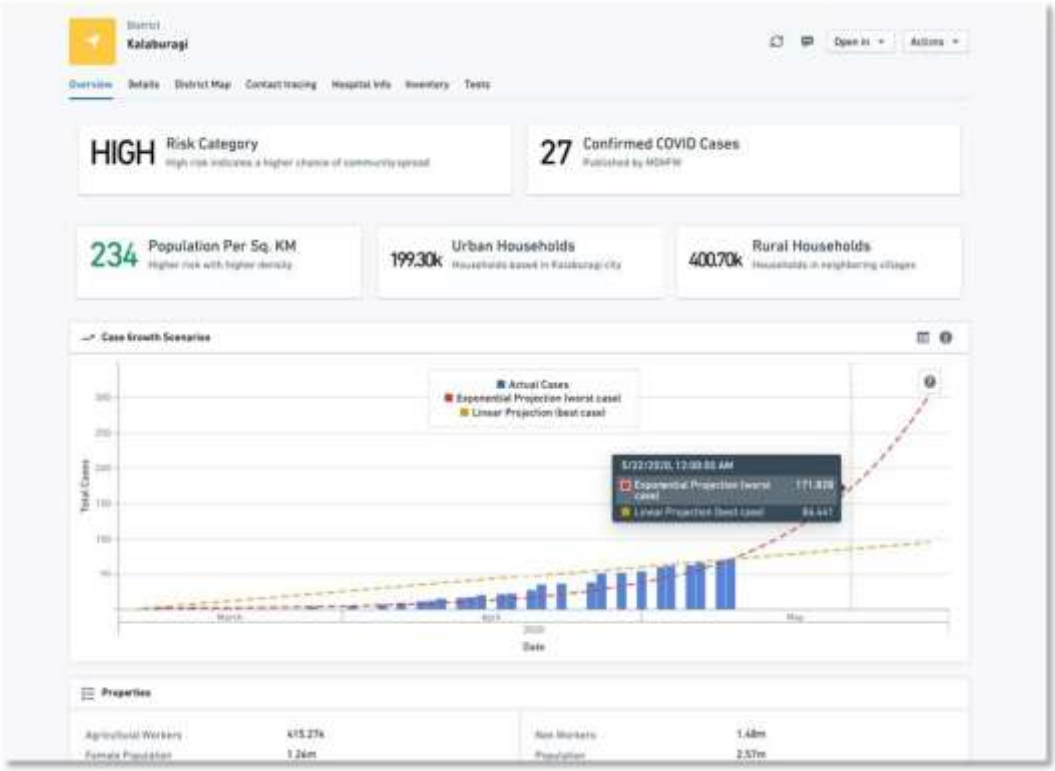

Figure 2. Virtual District Command Centre: Overview Screen

Figure 3. District Command Centre: Disease Vectors

5.3 Medium term strategies - Trend Analysis and Socio-economic recovery: In a longer timeframe, RRP provides increasing insights that evolve with the duration of use. Based on accrued recorded data and demographic analysis, RRP users can draw insights into recognizable patterns of mortality, discover correlations between infection rates and specific demographic characteristics, and build projection models to better prepare for the future (see Figure 4). As more data is collected and analysed, the platform accrues new analyses and perspectives, and the user base becomes more confident and proficient. New medium-term strategies can then emerge through trend analysis and allows the crisis response effort to project the future with clarity.

Figure 4. Mortality rate by age groups

Predictions based on data can also help formulate qualitative judgment on formulating effective socio-economic recovery policies, concentrate resources on more vulnerable groups to provide added protection, and act pre-emptively for a potential surge in infection rates. (see Figure 5).

This is determined by the degree of flexibility of the data platform, which allows users to expand their usage, empowers them to identify new patterns from their expertise, and to support them to proactively define and add customizable workflows. Two essential

organizational elements must be in play as well. First, the active participation of the user bases (Kalaburagi district informatics officer and the data team developed their own website after seeing and getting inspired from Palantir software) to explore and expand the RRP's capabilities. Second, the strong and enduring support from the leadership to foster this culture of data-driven creativity.

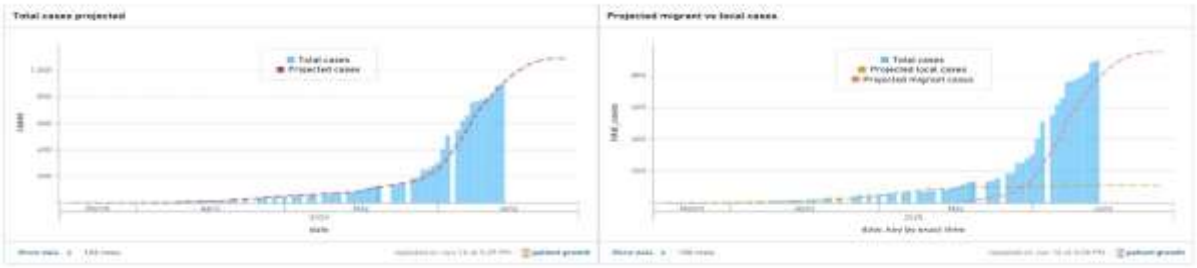

Figure 5. Projection model: The curve seems to be flattening overall

Through the RRP, the Kalaburagi district team was able to map out correlations between each of the 6 socio-economic indicators (Population density, percentage increase in demand for work, literacy rate, percentage of urban households, unemployment rate, and percentage of Population over 40) and the number of COVID-19 cases. Overlaying aggregated correlations on the Ministry of Health (MOHFW) open source data, the team modeled a 'Vulnerability Index' by district, a quantitative indicator to augment the qualitative evaluation for decision makers. Utilising the Vulnerability Index, Regional Administrators could plan and prioritize resources to target the most susceptible regions based on socio-economic modelling. (See Figure 6)

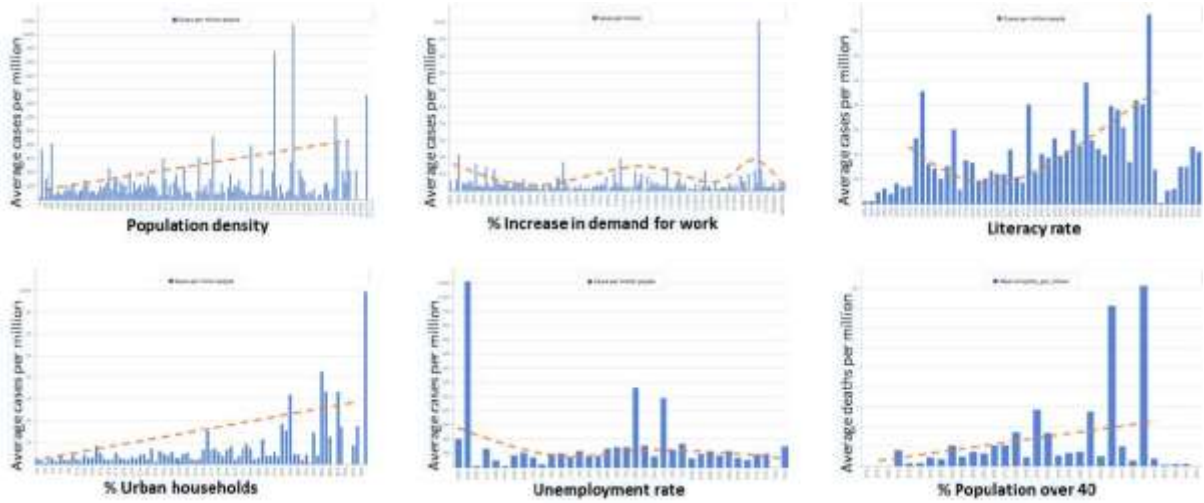

Figure 6. Socio-economic analysis of Kalaburagi COVID -19 cases

The secondary data which was readily available about the socio-economic necessities helped the administration in making timely arrangements required for recovery. For instance, the data pointing out the total number of people below the poverty line was readily available for immediate intervention. As the time and learning progressed,

gathering of primary data ensured and long-term policy interventions could also be planned. For instance, the total number of frontline workers and healthcare professionals had gradually been gathered over the course of COVID-19 management period and was made available immediately after the announcement of the vaccination drive.

5.4 Long term strategies - Predictive Analysis and Scalability: Ultimately, RRP can provide access to viable long-term strategies for broader applications. As the curve flattens, the focal point of crisis control will gradually shift toward vaccine distribution and reinforced preparedness for potential epidemics in the future.

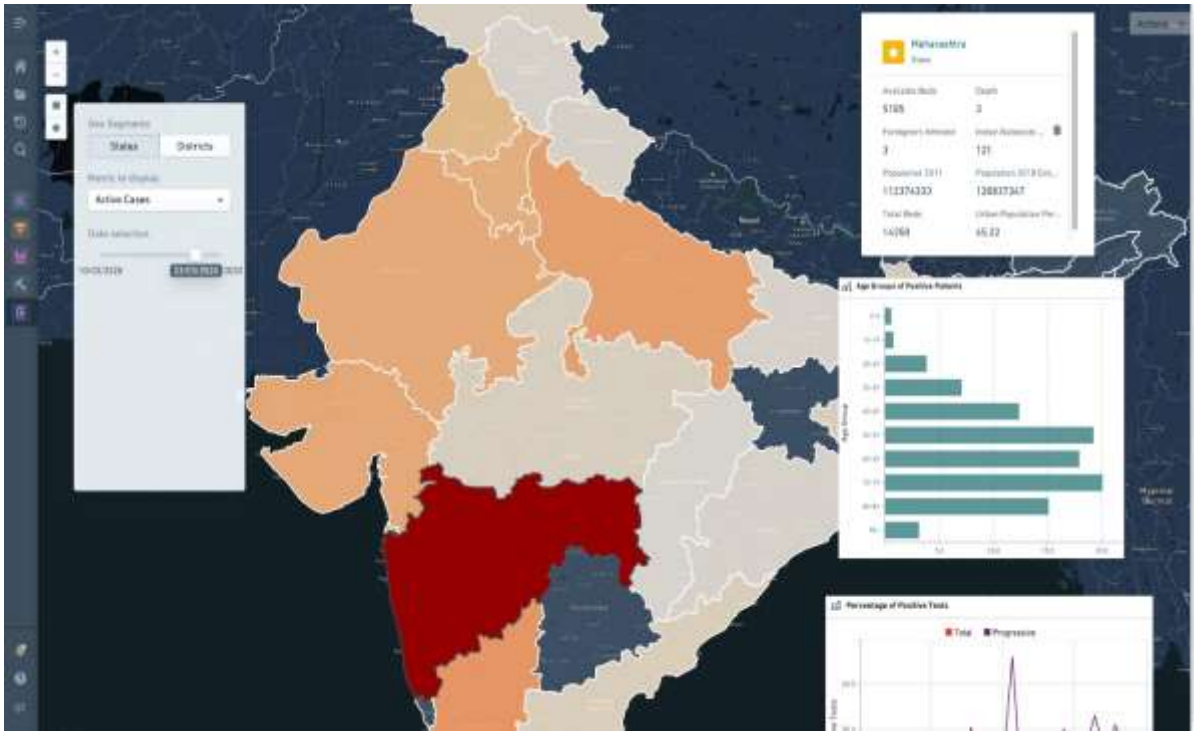

Figure 7. The Rapid Response Platform (RRP) can be scaled to a national level

RRP can be leveraged at scale to orchestrate a nationwide vaccination plan, quickly identifying and tracking priority needs for vaccines. This scalability can be utilized in other areas, such as evaluating the risks associated with lockdown controls, and the socio-economic impact thereof. Built on a strong data foundation, the lessons learned from the COVID-19 response will continue to reside within the platform as successful workflows that could be scaled up beyond regional limitations (see Figure 7). The outcome of these long-term strategies depends on the technical scalability of the data platform and the government leadership's willingness to embrace new technology in the public health domain.

6.0 Privacy Protection and Access Controls

One of the most challenging aspects of public health management, the protection of privacy and secure access to sensitive data must be ensured. The Kalaburagi team used

pseudonymized data only from source to understand the trends and regional hotspot, under strong access controls to provide privacy protection for all medical data by default. This meant that the RRP system had a built-in system which allowed only authorized users to access and use data only for appropriate purposes with measures in-place to prevent entry of any personal identifiable information (see Figure 8).

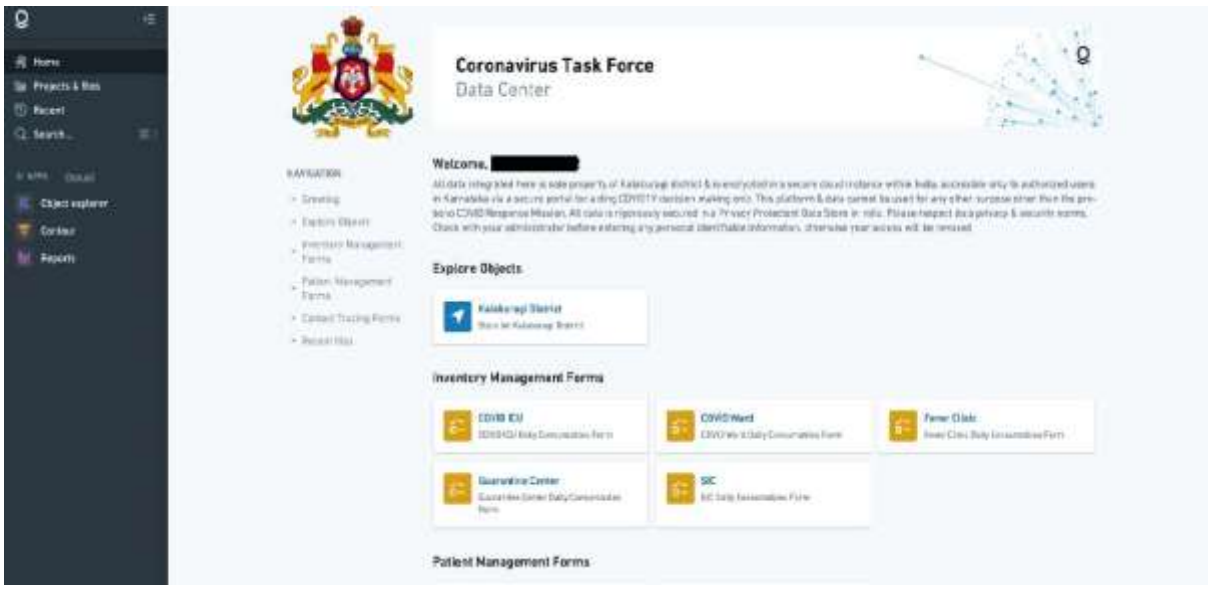

Figure 8. Privacy protection and Access Controls

7.0 Results: Use Cases

From the following workflow examples of data-driven crisis response selected from the Kalaburagi district use case, we can observe how the PPP framework has performed in practice. It is a coordinated effort of swift organizational transformation and rapid technological development. The Kalaburagi medical response team used data from the RRP to inform the public of the status of the availability of the number of ICU beds in the official district NIC portal, by processing the continuous update of live data from regional hospitals. To build a strong data foundation to support the RRP, daily review meetings were conducted for a continuous six-month duration. Through these efforts, the response team was able to capture and store necessary data online for contingency and future needs. The RRP was leveraged to efficiently carry out testing operations. As a result, the total number of Reverse Transcription - Polymerase Chain Reaction (RT-PCR) tests that were done was second only to Bangalore in absolute numbers. This helped in identifying and rapidly quarantining positive cases (see Figure 9).

To facilitate the foundations of data-driven response, the medical response team set up a war-room in the district. Officers-in-charge played a major role in constantly and continuously coordinating with the dissemination of information from bottom to the district level and from the district to the top level. A core committee, which included the top officers of the district, the deans and directors of all the four medical colleges and the

representatives of different associations of doctors, was created. There were daily meetings which used to take place where sensitive and strategic decisions with the help of sound medical expertise were taken. Efficiency of communication was at the core of data-driven collaboration and leadership (Nicola, M *et al.*, Health policy and leadership models during the COVID-19 pandemic-review article. International Journal of Surgery, 2020).

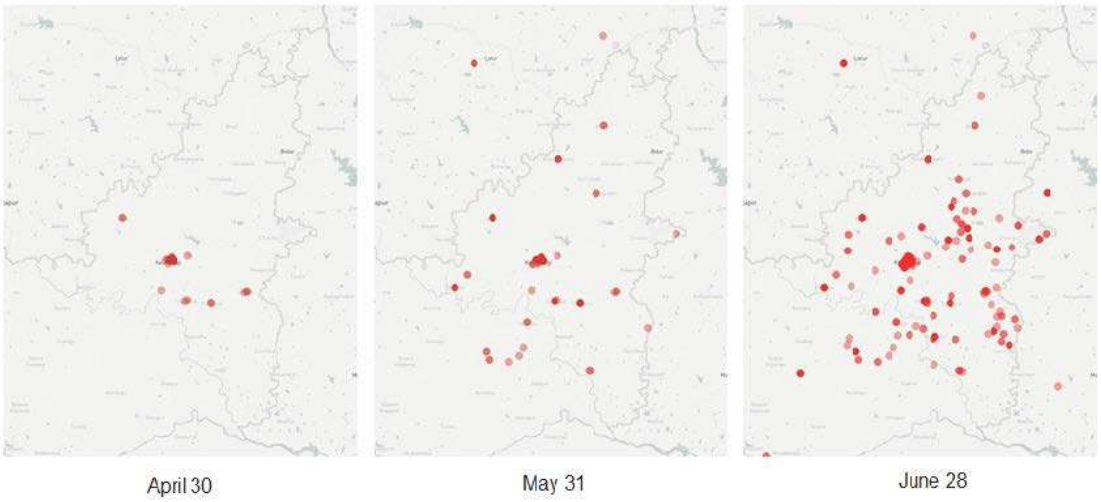

Figure 9. Geographical timeline of case growth

Drawing insight from successful previous workflow models for COVID-19 response, technology solution providers rapidly set up a disease management dashboard based on pseudonymized data provided from the government. This helped senior leaders and regional directors to commit to accurate and decisive actions. Even stakeholders with limited access to technology and connectivity were able to contribute to data collection and data asset creation through existing modules. Finally, geographical and temporal views of patient hotspots, population density, police stations, hospitals and other key indicators aided in the war-room operational decision making.

The success of Kalaburagi's data-driven rapid crisis response system was the result of a deep partnership among all the stakeholders. The key elements of this framework are the rapidly deployable and expandable technology, data expertise of the private partner, commitment from government leadership, as well as the organizational know-how and subject matter expertise of the Karnataka government and the medical response team.

Rapid Response Platform (RRP) Deployment Timeline in Karnataka

Weeks within deployment since April 2020, RRP becomes an integral part of COVID-19 response.

- Week 1: Set up Common Operating Picture (COP) of the state with views of state, districts and hospitals. Integrated data from open sources (Census data, MOHFW, NIC, data.gov).

- Week 2-3: Scope and build hospital inventory and PPE management workflows.
- Week 4: Trained local volunteers via NIC to collect high-fidelity data from medical centres, scrub sensitive components and plug into RRP's inventory module.
- Week 5: Built disease management use-cases to enhance district-level common operating picture, aiding local administration in setting-up preventive measures.
- Week 6: Data collection teams now integrate data based on disease vector and spread.
- Week 7: Data Foundation established as the primary reporting tool for the district's COVID-19 War Room, providing up-to-date information on medical readiness, geo hotspots and projections.

8.0 Policy Evaluation & Recommendation

The use of data can significantly enhance the efficacy and efficiency of public health policy. However, despite the importance of data-based cooperation in public health policy making, the modern data landscape is highly heterogenous, limiting the potential of valuable data assets. Government officials and medical professionals need to overcome the barriers to access and sharing of big data to realize their policy goals (Mählmann L, Reumann *et al*., Public Health Genomics. 2017: 315).

Table 2. Benefits and risks of various digitalization approaches

In-house development		**Systems Integrator**	**Hire/train Staff**	**Piecemeal procurement**	**PPP Collaboration**
Benefits	Build software for highly customized uses	Easy to control acquisition process. Ease of training	Acquire or develop human resources that understand the organization's workflows	Select and buy necessary functions	Flexibility Directly address the most important and difficult issues
Risks	Low openness hinders data sharing and access. Creates data silos.	Long lead times for implementation. Expensive costs for unnecessary functionalities.	No guarantee on quality or time.	Fragmented systems, compatibility issues	Requires strong mutual trust essential between partners. Organizational commitment

	No guarantee on delivery time.				and willingness to adapt critical to the success of PPP.

Therefore, public health officials need to upscale their data capabilities for the public good. Private-Public Partnerships is one of several ways to build data capabilities within public organizations. Governments can combine and choose among alternatives ranging from developing their bespoke software internally, training or hiring data experts, purchasing software from Systems Integrators or by piecemeal. Each approach offers unique benefits and disadvantages (see Table 2).

The PPP model from Kalaburagi captures important characteristics of a successful data-driven collaboration framework in the face of an unprecedented pandemic. The resulting platform (RRP) from this partnership has provided new and effective intervention strategies across short- and medium-term timeframes, and has potential to carry over its long-term potential at scale. In the short-term (April 2020-July 2020), the RRP enabled a Common Operating Picture, and quickly enabled data-driven decision making to support frontline crisis relief efforts with instant and autonomous collaboration. This meant that delegation was possible without losing oversight. Through data-backed delegation, local administrators and medical response teams were able to take the initiative in crisis control in their respective field of operations. The huge initial challenge in logistics was overcome by leveraging technology and good resource mobilisation. The success of short-term strategies compounded, consolidating a stable logistical structure that carried many benefits into the future.

In the medium term (July 2020-now), more impactful strategies, especially in operational logistics were implemented. Fuelled by the success in the early stages, the Kalaburagi team realized a sharp fall in the number of cases since July for six months. Enhanced operational workflows were now put in place. Particularly, the creation of robust response workflows systemized in the infrastructure such as new testing mechanisms were applied. Increasing number of private medical services were amalgamated with the public service mechanism. The RRP had created and stabilized a resilient network of the different healthcare providing systems. Logistical achievements crystalized through the successful medium-term strategies further reinforced the vital coordination of efforts from the administrative machinery. There were hundreds of test samples transported from different parts of the district to the main testing centres located in the district headquarters. Stabilized logistics operations facilitated Kalaburagi's response to the daunting challenge streamlining the mobilisation of food and other necessities for approximately 100,000 migrants under

institutional quarantine. What helped the district sail through this huge administrative challenge was the repository of the data of all the government owned and government supported institutions and related structures that we had. Also, various departments rose to the occasion and coordination between them was ensured at the ground level.

Interview: Dr. Akash Shankar, IAS
(Medical Professional turned Administrator at Kalaburagi)

"From the experience through the first three months into the battle against COVID-19, we learned enough to decentralize the system of information sharing from district headquarters to the level of blocks and primary health centres. The entire system had learned the value of technology and utilisation of online platforms for sharing vital information which was never seen in the past in our district. The administration by now had complete confidence and relied upon the acumen and capacity of the field level workers and low rank officials for technology-based interventions."

The PPP collaboration framework provided a two-way channel for a vibrant public sector - private sector communication and learning. The resulting RRP was flexible and expandable for the district informatics officer and data team to develop their own website based on their inspirations from existing use cases of Palantir software. Mutual trust in the strong partnership was evident in the technology providers' respect toward the strength and resilience of district administrators and their ability to absorb new technologies in resource planning and monitoring the spread of the corona virus in the region. These factors have optimized the role of technology in analysing and improving the qualitative analysis and response in Karnataka. The lessons learned from the PPP collaborative framework that led to the rapid deployment and wide usage of the RRP provides potential for a wider application beyond the region's success.

PPP teamwork in Action: Addressing the challenges of Karnataka

- **Wide area coverage:** Tight-knit collaboration among all stakeholders through COP. Powerful visualisation tools such as geo hot spots and disease spread monitoring.
- **Maintaining order and fighting disinformation:** Commitment to data transparency and strong Communication. Data-backed vulnerability index to identify priorities. Built-in privacy protection and access controls to foster trust in data usage.
- **Inflow of Migration:** Efficient resource allocation and monitoring backed by data analysis.
- **Disparate data systems:** Data integration and federated searches supported by robust data lineage.
- **Logistical challenges:** Implementing new workflows and data-driven delegation providing autonomy and efficiency for decision making and edge responses.

9.0 Conclusion

The experience from COVID-19 has proven that actionable insights from data is a vital element in effective epidemic response. An integrated, collaborative data foundation is a prerequisite to gaining these insights from fragmented data streams in the public health domain.

Karnataka's PPP framework provides evidence that a strong partnership can deliver these essential tools rapidly, through the combination of scalable and flexible data technology, expertise in data platforms and medical subject matters, and organizational commitment from policy makers. A successful data collaboration framework provides not only short-term benefits but also greater medium-term and long-term strategic options and better preparedness for posterity.

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