

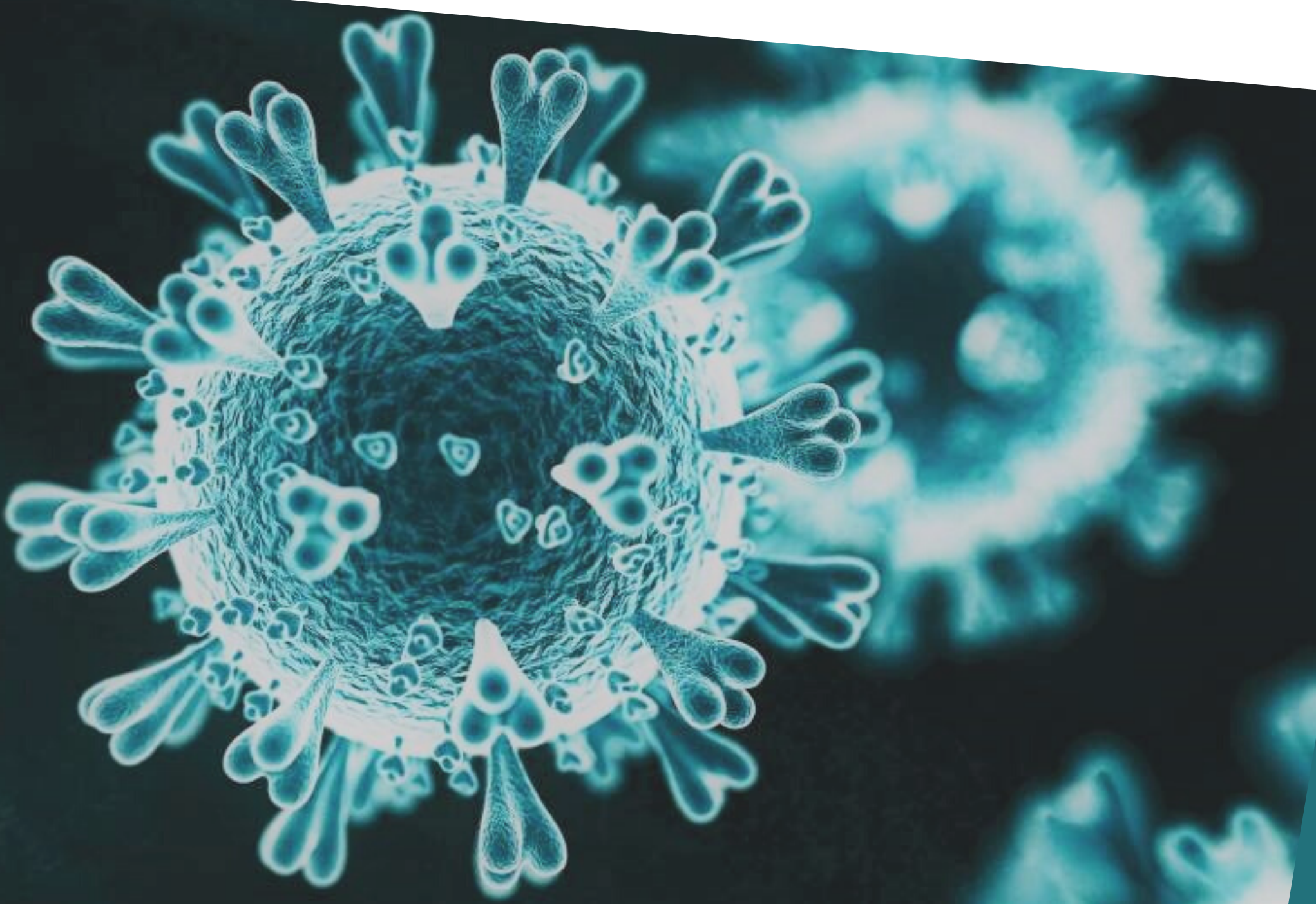


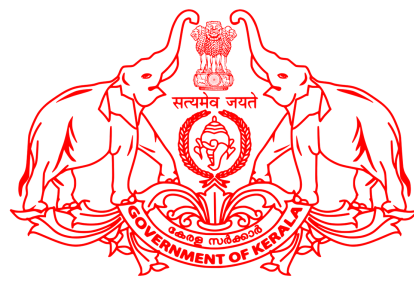
GOVERNMENT OF KERALA

COVID-19

REPORT OF THE EXPERT COMMITTEE ON STRATEGY FOR EASING LOCKDOWN RESTRICTIONS

6th April 2020





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6th APRIL 2020

Government Secretariat
Statue, M.G Road, Thiruvananthapuram- 695 001

kerala.gov.in

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Government of Kerala
Abstract

GAD- Covid-19- regulations to contain the Covid-19 pandemic- regulations post lock down –expert committee to formulate the guidelines-orders issued.

General Administration (Secret Section) Department
GO (Ms) No.62/2020/GAD Thiruvananthapuram, dated 04.04.2020

- Read: 1. Order no.40-3/2020-DM-I(A) dated 24.03.2020 of Ministry of Home Affairs, Government of India
2. GO (Rt) 49/2020/GAD dated 23.03.2020

ORDER

As per orders read above, Central and State Governments have enforced regulations, for a period up to 14th April-2020, in the form of Lock Down to contain the spread of Novel Corona Virus (Covid-19). Hon'ble Prime Minister has decide that an expert task force be constituted to advise on a strategy towards easing the Lock Down restrictions. He has asked the States to give their opinions on the way forward to prevent the spread of Covid-19.

Hence Government are pleased to constitute an expert committee, with following eminent personalities as members, to generate suggestions and to advise on the way forward until Covid-19 restrictions are eased.

1. Dr. K M Abraham (Convenor)
2. Padmasree Shri Adoor Gopalakrishnan
3. Shri Mammen Mathew
4. Shri M V Shreyams kumar,
5. Shri Mar Mathew Arakkal, Zero Malabar Bishop
6. Smt. Aruna Sundar Raj IAS (Rtd)
7. Shri Jacob Punnose, IPS (Rtd)
8. Adv B Raman Pillai
9. Shri Rajeev Sadanadan IAS (Rtd)

10. Dr. B. Iqbal
11. Dr. M V Pillai
12. Dr. Fasal Gafoor
13. Shri Murali Thummarukudi
14. Dr. Mridul Eapen
15. Dr. K A Kumar
16. Dr. Khadeeja Mumthas
17. Shri S Irudaya Rajan

The Committee will submit its report immediately to Government, preferably within three days.

(By Order of Governor)
K R Jyothishal
Principal Secretary

To

Additional Chief Secretary, Home & Vigilance Department
State Police Chief, Thiruvananthapuram
Principal Secretary, Revenue Department
Principal Secretary, LSG Department
Principal Secretary, Transport Department
Principal Secretary, Industries Department
Principal Secretary, Health Department
All Additional Chief Secretaries/ Principal Secretaries/ Secretaries
All District Collectors
All District Police Chiefs
All Heads of Departments
Private Secretary to Chief Minister
Private Secretary to all Ministers

Forwarded / By order

Asst. Protocol Officer

PROFILE OF EXPERT COMMITTEE MEMBERS

1. Padma Vibhushan Adoor Gopalakrishnan	Filmmaker, Dada Saheb Phalke Awardee, National Award Winner (16 times), Padma Shri (1984)
2. Shri. Mammen Mathew	Chief Editor and Managing Director, Malayala Manorama
3. Shri. M.V. Shreyams Kumar	Chairman, Indian News Paper Society's (INS) Kerala Regional Committee & Joint Managing Director, Mathrubhumi
4. His Grace Mar Mathew Arackal	Bishop Emeritus, Diocese of Kanjirappally
5. Smt. Aruna Sundararajan, IAS (Rtd.)	Former Secretary, Department of Telecommunications, Government of India
6. Shri. Jacob Punnoose, IPS (Rtd.)	Former Director General of Police & State Police Chief, Kerala & Executive Director, Pushpagiri Medical College, Tiruvalla
7. Adv. Raman Pillai	Senior Advocate, High Court of Kerala
8. Shri. Rajeev Sadanandan, IAS (Rtd.)	Former Additional Chief Secretary, Health & Family Welfare Department, Government of Kerala & CEO, Health Systems Transformation Platform, New Delhi
9. Dr. B. Ekbal	Member, Kerala State Planning Board, Neurosurgeon, Public health activist and Academic & Chairperson, Expert Medical Committee for COVID Control
10. Dr. M. V. Pillai MD	Professor of Oncology at Thomas Jefferson University, Philadelphia & Senior Advisor to Global Virus Network
11. Dr. P. A. Fazal Ghafoor MD, DM	President, The Muslim Educational Society (MES) & Professor of Neurology MES Medical College, Perinthalmanna
12. Dr. Muralee Thummarukudy	Operations Manager, UN Environment Programme, Geneva, Switzerland
13. Dr. Mridul Eapen	Member, State Planning Board & Honorary Fellow, Centre for Development Studies
14. Dr. K.A Kumar	Professor of Psychiatry (Rtd.), Medical College, Thiruvananthapuram
15. Dr. Kadeeja Mumthaz	Vice Chairperson, Kerala Sahitya Academy, Doctor, Writer, Professor & Kerala Sahitya Academy Award Winner (2010)
16. Dr. Irudaya Rajan. S	Professor, Centre for Development Studies
17. Dr. K. M. Abraham CFA, IAS (Rtd.) (CONVENOR OF THE EXPERT COMMITTEE)	Former Chief Secretary to Government of Kerala & Former Whole Time Member of Securities and Exchange Board of India (SEBI) & Chairman (K-DISC) & Chief Executive Officer (KIIFB)

EXECUTIVE SUMMARY

1. The Expert Committee assessed that the time is not yet ripe for full withdrawal of the lock down on April 14th, 2020. The Committee recommends a withdrawal strategy that should be gradual, phased and calibrated to ensure that the case load is always kept below the (surge) capacity of the healthcare system to deal with it.
2. In this context, continuing to restrict large scale movement of people across international and state boundaries is critical and should not be considered unless and until the situation is under control in every state (State is the administrative unit where currently resources are shared without complaints and coherent policies can be administered)
3. The Committee, however, is cognizant that prolonged and stringent lockdown will lead to economic hardship, famine and law and order issues, which may in turn undermine both the lockdown and the health management objectives.
4. Therefore, a phased approach to withdrawal of the lockdown has been suggested in this Report. The unit for operationalizing such a phased approach is suggested to be a district which has defined boundaries as well as executive magistrate who have the authority to effectively enforce the measures of the phased lock down.
5. The country and the state should continue to ramp up preparatory work for the predicted and rapid rise of the COVID19 cases. It is to be expected that at least in some cities/states, the cases will exceed the local capacity. Protocol for assistance (between cities and states) should be prepared in advance to avoid creating unnecessary divisions at the height of the crisis.

6. While lockdown may be relaxed, the effort to ramp up production and procurement of test kits, ventilators, PPEs for healthcare personnel and masks should not be relaxed. There should be a national effort for this purpose and all available capacity, including adapted capacity in other industries, should be used. Central government should release funds for this and create a mechanism to distribute them on a need basis to avoid both state governments trying to outbid one another or creating supply side disruptions.
7. As different Indian states are expected to pass through the peak infection at different timings, it will be useful and important to establish a national co-ordination mechanism so that states could support one another with experience, expertise, equipment and finances.
8. Maintaining supply chains of essential goods and services is integral to the achieving both health and economic objectives and central government should ensure to establish effective coordination between states as well as logistics operators
9. Supporting agricultural sector, in production, marketing, storage and transport is absolutely essential for the country to tide over the crisis.
10. COVID19 crisis is forcefully taking India into the "online" world in a very rapid pace. Innovations and practices which would have needed years to achieve is being introduced in matter of weeks in education, judiciary, local business, telemedicine among others. We must ensure that such modern technological leaps are not lost when the lockdown is withdrawn as there are huge economic and efficiency gains attached to it.

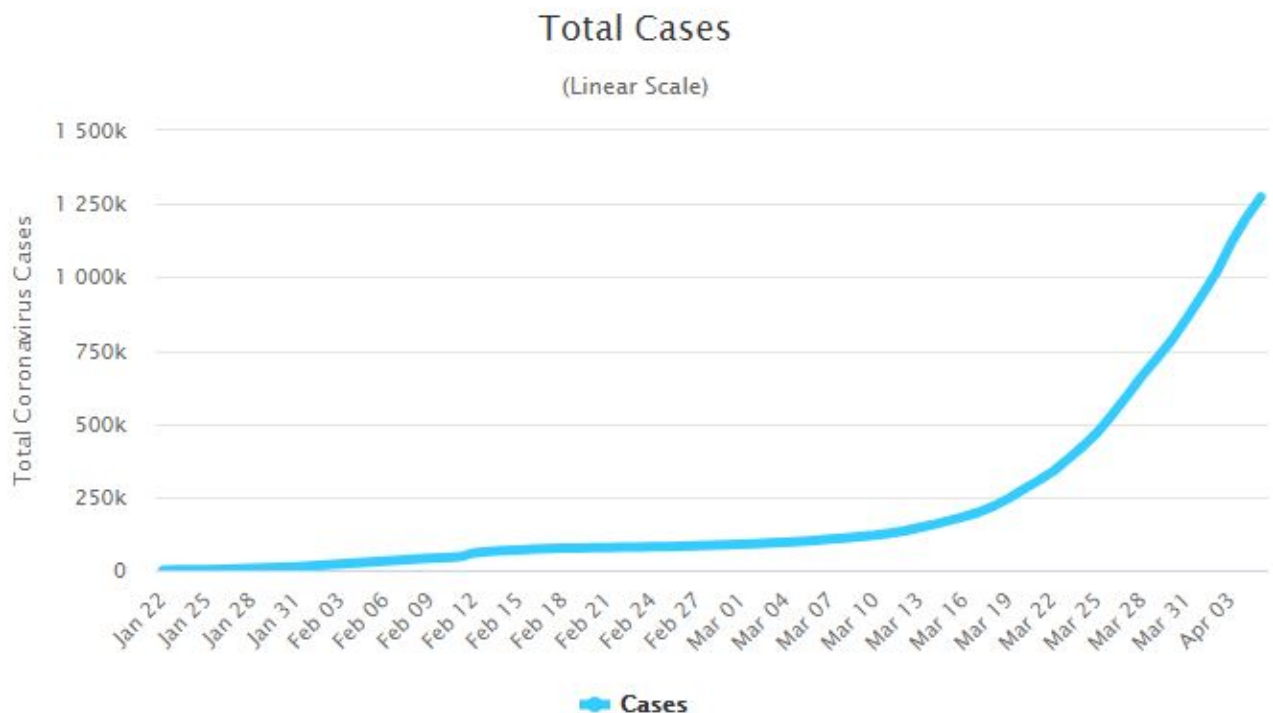
A PHASED LOCKDOWN REVERSAL STRATEGY FOR KERALA

I. INTRODUCTION

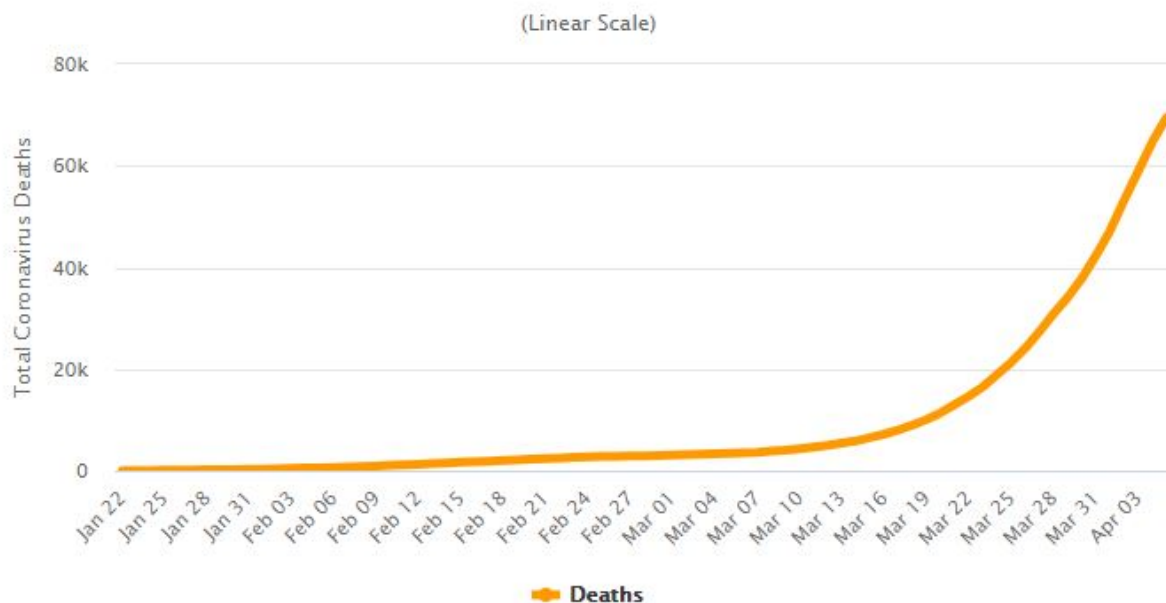
The COVID pandemic is an unprecedented public health crisis, unmatched in recent history. While there have been pandemics which have ravaged the globe and has resulted in the deaths of several millions, a pandemic of this spread, proportion and intensity is the first of its kind in a highly interconnected and globalised world. The pandemic has spread to 208 countries as on April 5, 2020. Already over 1.22 million people have been infected and the death toll has crossed 65,000. Globally a downward trend is nowhere in evidence, even though signs of hope are evident in some countries. Many locations also provide us with evidence of what works.

India – current status

In India alone, over 3550 people have been infected and the death toll has crossed 95. The charts below showing the total number of corona infections and deaths in India (source www.worldometers.info). Some experts have argued that given the low level of testing in India the numbers may have been undercounted.



Total Deaths



Kerala – current status

As on 5th April 2020, 256 people have been infected by the virus and are under treatment. The table below shows the district wise breakup of the persons under surveillance in hospitals as well as homes in different parts of the State. Thanks to the proactive action by the state government new, cases have shown a declining trend in recent days.

TABLE A					
STATUS OF PERSONS UNDER TREATMENT AND SURVEILLANCE (as on April 5, 2020)					
DISTRICT	UNDER SURVEILLANCE	UNDER HOME SURVEILLANCE	UNDER OBSERVATION IN HOSPITALS	FRESH HOSPITAL ADMISSIONS ON 5 th April 2020	POSITIVE CASES
Thiruvananthapuram	17748	17646	102	18	7
Kollam	12670	12661	9	3	6
Pathanamthitta	7697	7683	14	5	6
Idukki	3608	3600	8	0	2
Kottayam	3326	3324	2	0	0
Alappuzha	8502	8487	15	8	7
Ernakulam	1183	1142	41	9	15
Thrissur	14501	14463	38	6	10
Palakkad	18531	18502	29	6	7
Malappuram	16850	16694	156	61	12
Kozhikode	21934	21899	35	13	9
Wayanad	10906	10898	8	1	3
Kannur	10430	10343	87	15	34
Kasaragod	10731	10499	232	43	138
TOTAL	158617	157841	776	188	256

II. COVID: A SOCIO-ECONOMIC CHALLENGE AS MUCH AS AN EPIDEMIOLOGICAL ONE

1. SARS CoV 2, the virus causing the dreaded COVID disease is a new virus. There is no herd immunity, nor does it seem likely that there a vaccine in the offing for the next one and a half years. It has a Basic Reproduction number – the number of persons who will be infected by one infected person will be in the range of 2-3. For the infection to slow and eventually cease it must come down to less than one. Epidemiologists believe that this will not happen till at least 60% of the population is infected and cured. This is not likely to happen anytime soon. Therefore people must be informed that imposing of restrictions to bring down spread, easing them to ensure that livelihoods are not lost, re-imposing restrictions to bring the spread down might well be a cyclic process that will get repeated time and again over the next twelve months. In order to ensure predictability, it is better that the state Government and the nation acknowledge and plan for it.
2. The ideal scenario would be for the spread to be kept at a low level so that it stays below the surge capacity of the health system (the capacity of the system to handle patients more than what it is normally designed to manage). This has two components a) keeping the number of patients low b) improving capacity of the health system. Till now the focus has been on the first approach, using very restrictive strategies that have brought economy and life to a standstill and has hopefully made a dent on the epidemic. But this cannot be maintained further as the cure could be more expensive than the disease.
3. Any exit strategy would need to take into consideration the following key aspects at the national level and state level:
 - The likely trajectory of the epidemic over the next few weeks /months
 - The State's capacity to build up an effective and responsive healthcare system to deal with the epidemic in a few weeks or months
 - The actual impact on the economy and the financial system of the current total lockdown; and its continued extension by a few weeks/months; as well as its efficacy and above all sustainability
 - Specific impact on the poorest and most vulnerable sections given that they are likely to bear a disproportionate part of the costs
 - Financial capacity of the State to support the poorest sections; as well as the productive economic agents in the medium to long term in the event of continued total / partial lockdown
4. As far as the estimated trajectory of the disease is concerned, or indeed the efficacy of total lockdowns, there is no consensus yet. Experts have also pointed out that if one were to look at the number of fatalities, India may indeed have room for cautious optimism, compared to many countries. On the other hand, the severity of the loss of

livelihoods, large scale hunger and economic distress, which were existing prior to the lockdown, but have since been significantly accentuated, have been equally widely documented. Many scholars have also pointed out that concepts like 'total lockdown, social distancing' etc , as conventionally understood in the west may have far less effectiveness in a country like India, where density of population, crowded living conditions, and economic realities are very different. Hence policies/ social practices appropriate to India's realities may need to be evolved locally, rather than imposed wholesale from another context.

5. India has so far chosen a strategy of tracing contacts of persons who test positive, quarantining them and limited testing vs large scale testing and selective quarantine on the ground that the country does not have adequate testing capacity. While this may have been true in the initial period following the outbreak, further continuation of this strategy indefinitely would be unsustainable given the massive loss of livelihoods, suffering and economic collapse that has already been alluded to. The public health impact of the mass migration of lakhs of labourers pursuant to the lockdown and their plight in makeshift camps and clusters is as yet completely unknown.
6. As part of the State's policy for combating COVID-19, a desired goal would be to undertake state-wide vulnerability analysis and evolve innovative strategies for protecting the population. Given the near impossible task of eliminating the virus, a sound strategy would be to make people aware of the need for reducing viral load in order to get a milder disease by individual protection methods like working from home if possible, social distancing and hand hygiene and alleviate the current panic and inordinate fear of the infection.
7. The Committee realizes that the decision whether the lockdown should continue beyond 15th of April rests primarily on the Central Government. The Committee felt that it is not advisable to withdraw it fully, because of the steep six-fold increase of COVID infection cases during the lockdown so far.
8. It is in the light of the above considerations, that the Committee has framed the objectives of a lockdown withdrawal strategy for Kerala.

III. OBJECTIVES OF THE LOCKDOWN WITHDRAWAL STRATEGY:

The Committee identified the following as the objectives of the Lockdown withdrawal strategy and classified them into health related and non-health.

Health related Objectives

1. Reduce spread of the COVID-19 virus
2. Minimise loss of healthcare professionals and maximize their safety and availability to continue the work
3. Increase case management capacity in existing hospitals and new hospitals
4. Increase testing to eliminate community spread
5. Ensure access to normal healthcare requirements of the population
6. Maintain normal healthcare capacity during the Corona period
7. Maintain public health initiatives (vaccinations, food/nutrition of children and pregnant/feeding mothers)

Non-Health related Objectives

8. Ensure access to food and other essentials
9. Maintain purchasing power of community
10. Ensure law and order
11. Maintain open communication and social cohesion
12. Re-establish livelihoods (opening of establishments etc.)
13. Increase livelihood opportunities, including creating new employment schemes
14. Facilitating return of migrant labour to their home states, without spreading disease
15. Facilitating arrival of non-resident Keralites without increasing disease spread
16. Improve public transport facilities without increasing disease spread

IV. MANAGEMENT OF COVID INSPECTION HOTSPOTS AND VULNERABLE POPULATION

Infection Hotspot Management

1. Currently Government through the Health and IT Departments, is developing a dynamic IT platform to more effectively capture and visually depict hotspots of COVID infection in a District. A Panchayat/Municipality/Corporation wise dashboard showing clusters of patient location will help Health Department to identify hotspots.
2. One classification criterion that can be used for defining a hotspot is as a cluster where there are five or more COVID infected persons OR 100 or more persons suspected of secondary contact (and under home isolation), within one panchayat or ward (in the case of a Municipality/City Corporation).
3. Government of Kerala is relying on field data provided by the Health Staff of the Department and the Hospitals where patients are being treated to capture the number of COVID infected persons and their status on a daily basis.
4. In addition, Government is also relying on the following datasets for analysis:
 1. e-Health data
 2. Vulnerability classification, panchayat wise assessment of comorbidity to establish individual vulnerability of a person (done as part of a WHO initiative)
 3. Cancer patient database – obtained from the cancer care hospitals in the State.
5. Special measures for the COVID infection hotspots recommended are:
 1. Cordoning off the entire Panchayat or ward(s) as the case may be and enforcing complete restriction of travel outside. While cordoning hotspots, it must be done along enforceable boundaries like rivers, bridges, roads etc. and not strictly along the duly notified boundary of the ward, as this might be difficult to administer.
 2. Blockade: in the event of complete blockade, police and supporting volunteers must be equipped and ready to render any emergency service or to resolve any emergency need. Preferably a senior designated police officer must be present 24 hours for the blockaded zone.
 3. Deploying additional police force in the hotspot boundary to ensure the strict enforcement of the lockdown.
 4. Delivery of essential commodities and food from community kitchen through the Voluntary Task Force.
 5. Increasing frequency of testing (RDT) adequately in the suspected hotspots.

6. In the case of any spikes in infections, arranging special measures for transport of suspected persons from the hotspots to infection wards or to special COVID hospitals (referred to below in the report).
7. All frontline workers to be provided with adequate supply of PPE and masks as medically found necessary.
8. Outreach immunisation in hotspots should be maintained in view of the risk of people in the area contracting other diseases which can potentially be even more deadly.
9. During the lockdown, drug distribution and testing for hypertension and diabetes patients and TB patients should be ensured

Vulnerable Population Management

6. The Government (Food and Civil Supplies and Social Justice Departments) has the Public Distribution Database as well as the Disability Census Database with it.
7. Based on it, it is possible to identify the following segments of vulnerable proportion. In terms of degree of vulnerability, the following categorisation, (not necessarily in the order of degree of vulnerability) is relevant:
 1. Population over age of 80 with comorbidity
 2. Population between 70-80 with comorbidity
 3. Disabled persons without locomotor ability
 4. Women aged over 60 living alone (currently estimated over 10,000)
 5. Persons requiring dialysis support.
 6. Transgender persons in need of support
 7. Patients under cancer care treatment
 8. Renal and liver transplanted patients
 9. Patients on immunosuppressants (steroids)
 10. HIV positive patients
11. Special measures recommended for the vulnerable sections listed above are:
 1. Visits of LSG representative to their houses daily or once in two days.
 2. Voluntary Workers from the Voluntary Corp formed already to be assigned for purchasing medicines and essentials to them, when there are none to help them.
 3. Increasing periodicity of visits Asha worker/health workers and reports
 4. Daily visits by Vayomithram workers of Kerala Social Security Mission (KSSM)
 5. Visit by community doctor/personal physician once in three days to monitor health parameters of vulnerable population

6. Outreach immunisation in hotspots should be ensured.
7. During the lockdown, drug distribution and testing for hypertension and diabetes patients and TB patients should be ensured

V. RECOMMENDED PHASING OF RESTRICTIONS FOR AREAS OUTSIDE COVID INFECTION HOTSPOTS

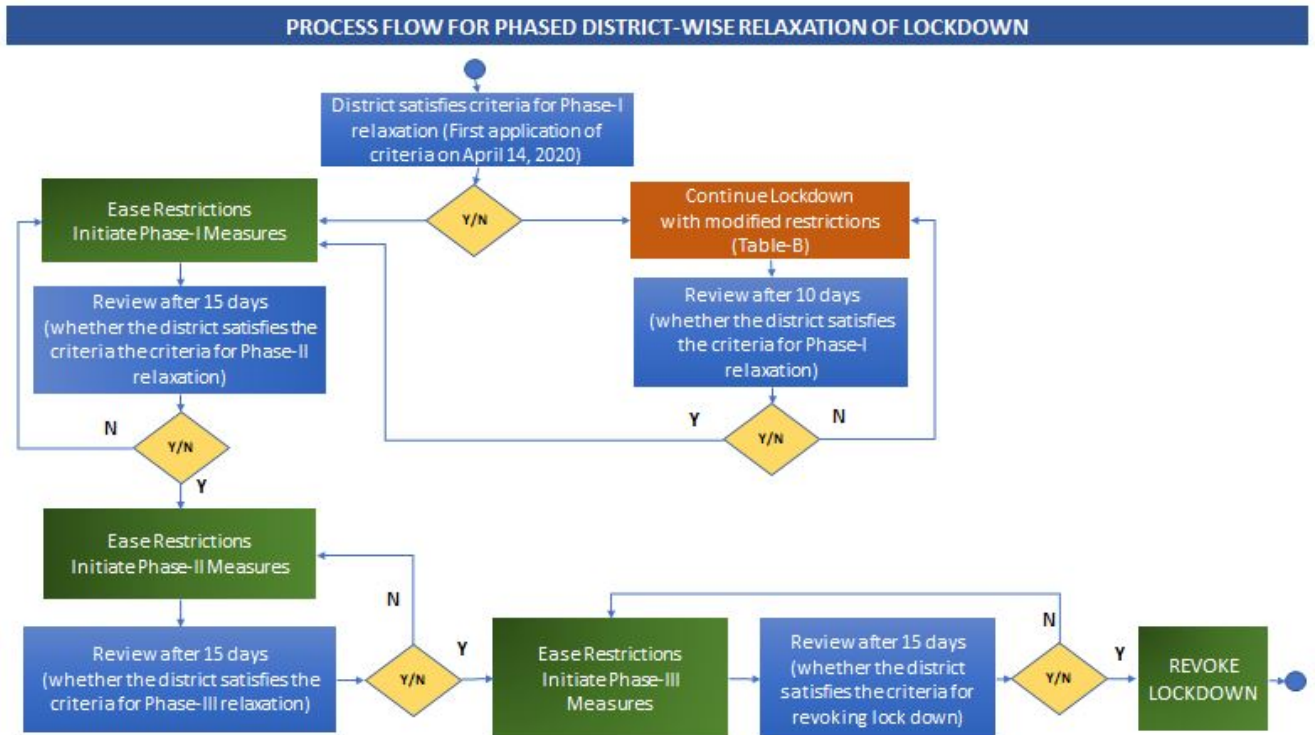
1. As referred to earlier, the Committee is in favour of a phased relaxation of the lockdown restrictions. Considering the irrefutable fact that the poor as well as businesses, large and small, are all equally affected very adversely, it is recommended that Government of India grant necessary authority and autonomy to the states to prevent economic collapse of different segments of the economy. This can be indexed to the surge capacity of the health system of the state and trends in incidence.
2. This Committee recommends that lockdown can be relaxed district-wise in three phases starting from the 15th of April 2020. A process flow for phased relaxation of restrictions may be seen in the chart below.
3. **However, it should be borne in mind, that the phased withdrawal is sustainable only if there is a steady recovery and decline in the number of cases leading to initial flattening of the infection curve and then gradual tapering of the curve to zero infection cases. Government should advise the people of the State that in the event of a resurgence, they should be ready and willing to undergo the rigors of a complete lockdown once again.**
4. The suggested criteria for phase-wise relaxation are given below:

Criteria for relaxation

Criteria for Phase I relaxation of lockdown.

1. **A District will qualify for Phase 1 relaxation of restrictions only if it satisfies the following criteria:**

- There has been not more than ONE new case in that district for the entire week prior to the date of review. (For the first review on April 14, 2020, the relevant period will be April 7-13, 2020)
- There has been **no increase more than 10%** of the number of persons under home surveillance in that District (base as on April 7, 2020) as on the date of review.
- There are no hotspots of COVID infection anywhere in the district as identified by the Health Department.



Criteria for Phase II relaxation of lockdown

2. A District will qualify for Phase II relaxation of restrictions at the time of **SECOND REVIEW** only if it satisfies the following criteria:

- There has not been more than **one** new case of COVID infection in that district the entire **fortnight** prior to the date of review.
- There has been **not more than 5% increase in** the number of persons under home surveillance in that District from the date of previous review.
- There are no COVID infection hotspots in the district.

Criteria for Phase III relaxation of lockdown

3. A District will qualify for Phase III relaxation of restrictions at the time of the **THIRD review** only if it satisfies the following criteria:

- There has been **no** new case of COVID infection in that district for the fortnight prior to the date of review.
- There has been **a decrease of more than 5%** of the number of persons under home surveillance in that District from the date of previous review.

- There are no hotspots of COVID infection anywhere in the district as identified by the Health Department.

Phasing of Restrictions

PHASE I RESTRICTIONS

1. No person shall travel outside the house without wearing **face masks**.
2. Anyone leaving his or her house will have to carry a valid piece of Identity (Aadhar, Passport Ration Card, Driving License etc.) to prove place of residence and explain purpose of travel.
3. Any establishment (private or public sector) operating shall mandatorily undertake proper measures of sanitation, providing masks and sanitisers, daily disposal of waste, provision of adequate supply of potable water as well as for cleaning purposes. Failure to do so will be tantamount to an offence under relevant provisions of the Epidemic Diseases Act, 1897 and Disaster Management Acts, 2005.
4. Occupancy of government vehicles should be restricted to two per vehicle excluding the driver and buses.
5. Buses/Vans carrying frontline care workers or other public servants should not exceed seating capacity of vehicle. All passengers shall wear masks while travelling.
6. Only one person per house will be allowed outside the house at a time for a specific purpose and for not more than 3 hours at a time (other than for exempted activities).
7. No person above 65 with any history of comorbidity (hypertension, diabetes) or undergoing any treatment for cancer or major ailments should be permitted movement outside house. However, where they have no assistance for meeting their household needs without leaving their house, they may obtain special passes under the existing mechanism, unless the assistance can be provided by volunteers, local bodies or palliative units. Comorbidity issues should be highlighted through communication campaigns.
8. Movement of private vehicles should be restricted with odd-even scheme in two groups for Monday, Wednesday and Friday and Tuesday, Thursday and Saturday.
9. There should be total clampdown on all vehicle movement during Sunday other than for critical services and emergency operations.
10. No gathering for any purpose more than 5 persons should be permitted.
11. No religious congregations to be permitted and all places of worship shall remain closed.
12. Government offices and banks may reopen with staggered 50 % roster-based attendance and follow a five-day week during the period of the restrictions.
13. Attendance at marriages and funerals should be restricted to 10 persons and that too only the nearest kith and kin may attend on such occasions.
14. Banks may follow 50% attendance but with normal work hours
15. Airline and rail movement for passengers into the State should be totally disallowed.

16. No entry of any person from outside the State during this phase other than what is permitted currently. Special checks should be done at the Kumily border where migrant labour cross over in search of employment in the plantations.
17. Total employees at any work site (other than Government Offices) shall be restricted to ten persons or 25% of staff strength whichever is higher. The owner of the establishment will be bound to observe this restriction. Failure to do so will be tantamount to an offence under relevant provisions of the Epidemic Diseases Act, 1897 and Disaster Management Acts, 2005.
18. Super Markets and Malls, Film Theatres, Bars, Conference Halls, and Centralised AC Rooms in hotels etc. with closed Air-Conditioning should not be permitted to be reopened.
19. Shops selling merchandise like Jewellery, Textiles, Electronics, Fancy ware should not be allowed to be opened during the first phase.

PHASE II RESTRICTIONS

1. Autos and Taxis may be allowed but restricted to total of one and three passengers respectively. The owners of the vehicles should ensure that hand sanitisers are kept in the vehicles and are made available to the passenger. All occupants in the vehicle should compulsorily wear masks.
2. Bus travel for short distance within a city or town may be permitted subject to a strict discipline of one person per seat only, without any standing passengers permitted and all passengers to compulsorily wear masks. Bus owners are required to provide hand sanitisers before allowing entry of passengers into buses.
3. Activities under NREGS to be allowed with protocols (use of cloth masks and sanitisers)
4. All Micro, Small and Medium Enterprises (MSME) shall be allowed to reopen with protocols (viz. use of cloth masks and sanitisers)
20. Small and Medium Enterprises or any private establishment employing more than 5 persons should ascertain that the employee does not have any of the symptoms associated with the COVID infection. The owner of the establishment will be bound to assist the employee suffering from fever or cough to visit the nearest health centre. Wilful omission on the part of the owner or the employee will be punishable under the relevant provisions of the Epidemic Diseases Act, 1897 and Disaster Management Acts, 2005.
5. Attendance at marriages and funerals shall be strictly restricted to 20 persons.
6. Total employees at any work site or private organisation shall be restricted to 20 persons or 25% of staff strength whichever is higher.
7. To ensure physical health, people may be permitted to walk for at least half an hour in the immediate vicinity (within a radius of 0.5 km) of their residence before 7.30 a.m. in the morning, keeping a safe distance of at least two meters from the nearest person.

PHASE III RESTRICTIONS

1. Inter-district bus transport may be allowed with 2/3rd capacity subject to observing social distance protocols such as compulsory face masks, hand sanitizers and no standing passenger policy etc.
2. Domestic flights for essential passengers, doctors, health workers, patients etc. may be permitted to be operated at 50% of the seating capacity of the vehicle. Aircrafts should be fully sanitised and the same recorded for subsequent official verification prior to each flight.
3. International air travel and travel from other parts of India by air **may not be allowed till full relaxation of lockdown restrictions** in the State. But where NRKs stranded in various countries, who are keen to return to Kerala return home in phases must be necessarily brought home by air, they should be examined under the following protocol:
 - a. All returnees should go through serological test for screening (where results are available in 5-10 minutes if positive and then moved to quarantine. A confirmatory RTPCR to rule in or rule out Corona should also be followed within a day or two. If they are asymptomatic and RTPCR negative they can be quarantined at home with Telemedicine / Tele-mentoring.
 - b. Till such time as such a protocol can be ensured, the returnees must be put on compulsory quarantine of 28 days at designated places viz., Corona Care Centres and not at their respective homes. For this purpose, selected hotel facilities can be converted into Corona Care Centres and NRKs to be shifted compulsorily to these centres. Depending upon their capacity to pay, they may be assigned to these Hotels converted into Corona Care Centres. House Keeping and Front Office staff in these hotels may be trained (crash course) on essentials of Para Medical services, while in quarantine.
 - c. However, NRIs who submit documentary evidence of COVID test done in the countries from where they come to India with relevant details and have tested negative, can be given free access and stay at home under surveillance for 14 days, if the test is as per specifications. The District Medical Officer shall certify the acceptability of the test conducted abroad. The District Administration shall keep track of all such cases.
4. Entry into the State may be allowed but all new entrants to the state should undergo 14-day home quarantine. Border Control procedures must be established jointly by Health and Police Departments. District Administration should institute special tracking mechanisms for monitoring their movements. Mobile positioning apps or where available, RFID bracelets may be used for this purpose.
5. Universities, Schools and Colleges shall be opened **ONLY** for the purpose of holding Examinations. Seating arrangements should follow the safe distance rule and halls should have adequate supply of hand sanitisers at entry points.
6. All IT companies may be allowed to open partially. Staff engaged in production and development of software applications should continue to work from home.

7. Shopping malls/stores may be allowed to function with restriction of one person from a family going inside, limiting total number that can be in a store/shop at a time for ensuring one metre physical distance at least between customers. Cooperation of mall/store owners may be sought to encourage home delivery. Police/Health/Civil Supplies/Labour Department officers may make random visits to ensure this protocol.
8. A system of taking prior appointment through phone and online should be introduced so that shopkeepers can space the number of customers visiting the shop, taking into consideration the size of the shop such that social distancing is maintained and crowding inside or outside shop is regulated.
9. Hostel and residential facilities may be opened. The owners and the management to have full responsibility of preventing overcrowding, allowing for safe distance of at least one meter at all time between occupants and promptly ensuring that persons suffering from fever and symptoms visibly found in COVID patients are immediately taken to the nearest health centre. The risks for not complying with this stipulation shall solely be on the owner of the facility and wilful negligence in this regard will be punishable under the relevant provisions of the Epidemic Diseases Act, 1897 and Disaster Management Acts, 2005.
10. After the judicial courts opens after vacation, the following regulation may be suggested to the Hon. High Court, for their functioning:
 - a. Regular sitting in Quasi-Judicial bodies such as permanent Lok Adalath, Consumer Forum, Ombudsman can be reduced to once or twice in a week.
 - b. Filing of fresh cases in various Quasi-Judicial bodies can be done Online.
 - c. Video conference facility can be utilised in Sub Ordinates Courts at least in one of the Court Centres in every district. Necessary guidelines for this may be issued to District courts and other Subordinate Courts.
11. Online sale of liquor may be started by BEVCO.
12. Religious congregations in and outside mosques, temples, churches etc., large marriages, political meetings or conferences or cultural gatherings shall continue to be prohibited during this phase.

VI. NEW RELAXATIONS RECOMMENDED IN THE EXISTING LOCKDOWN GUIDELINES OF GOVERNMENT OF INDIA

1. In the light of the objectives identified above, the Committee proposes certain adjustments to the lockdown restrictions now in vogue that is deemed necessary at this stage. Most importantly, it is necessary to keep the supply chain for essential services and commodities uninterrupted to avoid shortage of essential goods and services.
2. Therefore, the Committee is of the view that there are certain activities that should be additionally permitted to maintain the supply chain of essential services and commodities and minimise hardships to people.
3. Table B shows an indicative list of such items: (This is in addition to the activities that are permitted currently.)

Table B	
1.	Agricultural operations in farms
2.	Supply of milk, vegetable, fruits etc.
3.	Rice and grain mills
4.	Fish and Cold chain units
5.	Local Markets for farm produce
6.	All provision stores selling grocery items/ provisions
7.	Local workshops, lathes, welding units
8.	Local Repair shops for electrical gadgets and machines
9.	Production Units for essential commodities (Factories and non-factory manufacturing units)
10.	Local Artisan Units (e.g. cobblers, tailors, laundry services, barbers, photostat shops operated by one person etc.)
11.	Cleaning and utility services for flats, apartments and residences in urban areas, including movement of domestic workers
12.	Takeaway / Parcel delivery of food packets from any restaurant, without any dine-in facility
13.	Parcel and transport services
14.	Domestic Helper and helper for personalised assistance to elderly/disabled

4. Movement of workers to these centres should be permitted on passes issued by the proprietor and uploaded on to the portal of the Kerala Police created for the purpose.

5. In the case of individual entrepreneurs/labourers, the beat/duty police officer may be authorized to issue a movement pass from the persons' home to any of the workplaces related to activities listed above, instead of having to apply formally to the District Police Office or Commissionerate as at present. Where a beat officer/duty police officer issues the pass, this may be uploaded through WhatsApp or through the portal created for the purpose to the immediate supervisory officer.
6. Any person travelling for the above permissible activities (customer/ buyer/ employee/ employer) should carry an Identity Card (copy of Aadhar, Ration Card, Passport etc.) showing his or her place of residence and explain the purpose of the visit to any police officer who might want to ascertain the reason for the travel.
7. No gathering of more than five people at a time within the facility offering such service should be permitted even for the activities listed in Table B.

VII. GENERAL MEASURES THAT SHOULD BE ENFORCED TILL JUNE 30, 2020

The following general measures are recommended for adoption, notwithstanding any satisfactory decrease in the number of new COVID infection cases, till June 30, 2020.

1. All persons permitted to come outside their house have to compulsorily wear a mask. Local Self Governments should ensure that 3-layer clothe masks are made available for this purpose. This in view of the recommendations from the Office of the Principal Scientific Advisor to GOI, vide “Masks for Curbing of SARS-CoV-2 Corona virus: March 30, 2020.”, the advice from World Health Organisation and Centres for Disease Control and Prevention.
2. If weddings are to be held the people concerned should get permission from the local body and an undertaking should be given that the function will not be attended by more than the minimum of 25 or the limit specified depending on the stage of the phasing down. People should be encouraged through a focused Communication Campaign to donate the money saved to the Chief Minister’s COVID Relief Fund. The gift can be publicized through the media to motivate others.
3. The epidemiological observations of the current global spread of COVID 19 are pointing to the fact that COVID spread more rapidly in air-conditioned closed spaces. Hence, air conditioning in all work areas including office spaces, personal cars, public transport should be disallowed. Air conditioners can be switched off unless medically necessary or needed for safe storage of perishable articles.

VIII. SPECIFIC INTERVENTIONS RECOMMENDED

1. Mobile Apps or Toll-Free Phone with Voice Activated Response to guide treatment seekers, should be developed and activated immediately.
2. Aggressive information campaign on sanitation measures should be launched. These should cover aspects of use of sanitizer, masks, self-quarantining procedures. They should be disseminated through all channels (TV, Radio, Print media, distribution of pamphlets etc.) and continued for next six months
3. Slums and hamlets and labour settlements where people crowd live, often under unhygienic conditions should become the hub of activities like enlightening them on personal hygiene, on distancing from each other and where necessary provide them with temporary accommodation for a period to prevent overcrowding. This interval could be used for a cleanliness drive observing necessary health protocols.
4. Government has created a Volunteer Corp, which is rendering yeoman service during this pandemic. The volunteers should also be trained to perform paramedical service amongst the poor and the under-privileged.
5. Those in the Volunteer Corp who have to render frontline service should be rewarded through a scheme of additional credits/points/marks while applying for employment. The private sector should also be encouraged to recognize the efforts of these brave hearts while employing people.
6. All persons in the Volunteer Corp should be issued Merit Certificates for creditworthy service and service of those who are assigned frontline duty should be specially recorded in these certificates.
7. As COVID spreads by human movement, people must also learn how to move without spreading or being a victim of COVID. Individuals must be persuaded and taught to defend themselves and others from the virus more effectively by modifying personal behaviour and by proper use of protective equipment, which will lessen the chance of spread of COVID. Strict personal regimen to stop traditional customs like shake-hand, embracing, fondling of children, pushing around without proper queuing etc by propaganda should be practiced for the next six months.
8. Using special powers or orders issued under the Epidemic Diseases Act, 1897 and Disaster Management Acts, 2005, COVID safety precautions that each individual must take (like mask, mask safety, hand wash, physical distances, non-crowding, hygiene standards etc) must be rigorously enforced. Support for this should be obtained through vigorous media publicity and popularized by vigorous campaign by the Volunteer Corps. Learning new habits in the post COVID era will not be a matter of choice, but of survival.

IX. HEALTH AND ALLIED SECTORS

Production, Use and popularization of Personal Protection Equipment, Masks, Sanitisers:

1. Government of India and the State Government should focus on maintaining adequate supply of masks and sanitisers.
2. A standard design of everyday wear masks may be approved by Government. Production may be encouraged on a 'special mission mode' using idle capacity in both public and private sector units, Kudumbashree, local tailors across the State.
3. Supply of more effective respirator masks satisfying NIOSH standards with filtration efficiency corresponding to equivalent of N95/KN95 or above should be initiated. While local units should be encouraged to produce in bulk, as these requirements will continue even after the corona virus epidemic, both Government of India and the State Government should make efforts to import these masks in very large volumes.
4. All frontline workers (health, police, community volunteers) should be provided with adequate supply respirator masks, replaced periodically to ensure their health. Under no circumstance should their health be compromised.

Special COVID Hospitals:

5. Health Department should realistically assess the number of infections in the event of a resurgence of the COVID infections.
6. Identified hospitals under Government and private sector, should be designated as Special COVID Hospitals to be ready in case of a resurgence of the pandemic.
7. In the case of a large anticipated resurgence of the epidemic marriage and conventional halls should be converted quickly as health facility. The Health department should draw up a contingency plan for this.

Rapid Diagnostic Testing (RDT):

8. Community Sero Surveillance for Community Health Assessment should be initiated in all states, through sentinel sites, to assess the community dissemination of COVID. A model survey protocol may be prepared by ICMR which can be modified by states according to their requirements.
9. Government should ensure and place orders immediately and procured enough quantity of RDT kits, at 100% over and above currently assessed requirements.
10. For the next three months, RDT should be made available free of cost to anyone who needs the testing.
11. Rapid Diagnostic Testing of Health Care Workers and First Responders (Police, Supply Chain Workers Community Volunteers) should be accelerated and should be given utmost priority.

Testing frontline workers:

12. Front line workers may be tested for antibodies indicating immunity. Starting with health workers this can be repeated for all core sectors, eventually covering the entire working population. Persons who have the antibodies can be cleared to get back to work immediately. This would reduce the risk to the uninfected and also remove the stigma and fear associated with the disease. This will help the State to free up human resources for an increasing number of tasks.

Nuclear/Molecular Tests

13. A few Indian companies have developed a 'Point of Care' viral testing devices. The Indian Council of Medical Research (ICMR) should immediately grant permission to such companies to market their products.

Telemedicine:

14. The Board of Governors (Medical Council of India) has published the Telemedicine Practice Guidelines (Enabling Registered Medical Practitioners to Provide Healthcare Using Telemedicine). Doctors belonging to various specialties should make use of this Guideline to manage cases being treated by them and new cases that do not require hospital visit or admission.
15. Government of Kerala has already commissioned a software platform for facilitating telemedicine. Indian Medical Association (IMA) should be requested to encourage doctors to register in this platform. The availability of such systems should then be advertised and popularised through print, visual and radio channels.
16. Other channels like Project ECHO and other currently available telemedicine platforms should be utilised to the maximum extent possible during this period.

Optimum of use of private health care facilities:

17. All private hospitals shall be directed to ensure the service of at least a doctor and an OP for consulting patients with normal upper respiratory complaints, fever and other mild diseases. Only suspicious cases need to be recommended to Government hospitals having proper testing facilities.
18. Surgeries in Government as well as private hospitals, which are not critical may be postponed for the time being.

Mental Health:

19. Experience has shown that quarantines and isolation has lasting psychological impact on persons subjected to it. Anxiety, insomnia and depression are the most common ones. The aged and children are more vulnerable. This needs monitoring in homes and communities, counselling in care centres, and providing clinical care for indicated cases.

20. Kerala had developed some techniques to deal with Post-traumatic stress disorder after the tsunami and used it during Okhi and the 2018 floods. Online counselling was also done during the Nipah endemic. The State should augment the capacity at the District Mental Health Programme and pool counsellors from the social justice, education and health departments) to identify and handle the mental health issues that will arise from the epidemic.
21. The Kerala Chapter of Indian Psychiatric Society has already initiated steps in this regard. The State of Kerala has an extensive well distributed network of Psychiatrists, Clinical Psychologists and Social Workers under Health Service and Medical Education Departments. A focused program can be initiated using their services.

Capacity building:

22. The number of persons who will need to manage cases, especially to provide supplementary oxygen to patients who need it may far exceed availability of persons with expertise in critical care. Therefore, an online course must be hosted on the government sites to build capacity of health workers to manage COVID patients. Hands on training to complement the online courses may be arranged with the help of hospital and professional associations.

X. STRATEGIES FOR AN ECONOMIC REVIVAL

Both Government of India and the Reserve Bank of India have announced several fiscal and monetary measures. But given the scale of economic devastation that is happening, these measures are grossly inadequate, and their effect is likely to be mildly salutary only. The following immediate measures are recommended for implementation by the Union Government.

Special COVID investment package

1. The Union Government should formulate a special COVID package to the tune of 10% of GDP, over and above the expenditure announced in the budget. Conventional textbook principles of deficit control should not be allowed to come in the way of a bold step like this. The package should also focus on massive investments in health, production facilities for drug production, setting up vast network of advanced testing facilities, production facilities for ventilators, PPE and lifesaving equipment, relevant to equip the nation to face such endemics and finance related R&D through research institutions.

Extending substantial line of credit to State Governments

2. It is the States and the Local Self Governments that are in the forefront of action bearing the brunt of this pandemic. Allowing the States to advance the borrowing programme for the year or nominal increases in Ways and Means Advances (WMA) or in the State's share of the Distress Relief Fund are of course desirable at this junction. But these measures will not in itself help the country tide over this economic impasse. Public finance concerns have led to conferring a certain kind of unwritten sanctity to the notion of '3 per cent' of GDP as the limit of borrowing permitted to the State and Central Governments. Manufacturing industries, which account for the bulk of private sector borrowing will be struggling through a major portion of the next fiscal to dispose of its finished goods, inventories and work in progress. That given, it is very unlikely they will display any pronounced appetite for fresh debt soon. To keep the economy rolling, States must be allowed to fill that gap as well. Therefore, States should be allowed to borrow up to 5 per cent of their share of the GDP for the fiscal years 2020-21 and 2021-22.

Special package for MSMEs

3. With the current lockdown situation in the country, the manufacturing and services sector will take several months to recover. MSMEs have by now depleted their working capital lines considerably to keep themselves afloat during the interim. This erosion is likely to paralyze and prolong a recovery. Studies have shown that the working capital gap – even prior to the COVID pandemic - had been widening very significantly since 2015. Today MSMEs account for over 6% of the manufacturing GDP and nearly 25% of the service sector GDP employing around 12 crores of people. It is necessary to extend a strong and easily accessible lifeline to them. Government of India should support a credit line for working capital through the banking system. The

facility should be with a moratorium of one year and repayable over ten years at interest rate of 4 per cent to help them face their most serious existential challenge.

4. India has nearly 1.25 crore businesses registered under GST. Except for the businesses transacting in essential commodities and essential services, many of them have now come to a grinding halt. In the GSTN network, monthly data is filed through the GSTR-1 and GSTR-3B. The business wise assessment of turnover is possible. Declared turnover might fall short of the actual transactions – but nevertheless is still the best and most reliable indicator to assess financial need. Based on the average turnover over for the last twelve months, a credit line for businesses should be designed. Business should be able to avail of a concessional line of credit not exceeding 20 per cent of this computed turnover at the same accessible tenor and interest rate as discussed above. For both these lines of credit, the loan should be processed online to avoid the usual cumbersome delay and the loan proceeds should be deposited to the bank account instantaneously.
5. Banks may be directed to extend working capital cash credit loans to all current MUDRA loan borrowers and farmers who have Kisan Credit Cards with a default guarantee cover that should be extended by the Union Government.
6. A one-time withdrawal of six months equivalent to the contribution of any worker to his or her EPFO account should be permitted immediately.

Deferment of financial obligations under the Law of Contracts

7. Singapore has already enacted a legislation to defer contractual obligations under their laws governing contracts to ensure smooth business transactions. The Union Government may consider making necessary amendments to the Indian Contract Act, 1972 for a smooth restoration of business operations after the shutdown period and during the same.

XI. MEASURES FOR LIVELIHOOD REVIVAL

Saving lives and saving the economy must both be prime considerations during the lockdown. While surviving the virus, Governments must prevent an economic breakdown, individually and collectively. While the threat of the virus must be taken seriously, it is imperative that we also think of bold and imaginative strategies by which economic activity can be locally revived so as not to seriously compromise the lives and wellbeing of the poor. This should include assistance packages for both poor individuals and seriously affected segments of economy like agriculture, fishing, tourism, hotels, health, shops etc.

Special loan facility for Jan Dhan Card holders

1. The official statistics of the Ministry of Financial Services show, that as on date, there are nearly 23 crore accounts covered under the Pradhan Manthri Jan Dhan Yojana (PMJDY). Out of this there are 2.1 crore accounts from persons in Kerala which includes 33.54 lakh women account holders. An overdraft facility of up to Rs.15000 may be extended to all PMJDY bank account holders.

Special scheme for PMJDY Account holders for purchase of essential commodities

2. The registration database of GSTN should be cloned and linked to the PMJDY Account. Every PMJDY Account holder should be able to access purchases of essential commodities or medicines (not supplied through the Public Distribution System) from any shop registered in the GSTN network to the tune of Rs.5,000 per month for the next six months. The shops should use a simple method of identity verification of the beneficiary, like the account details or the Aadhar number, where available, to permit purchases from this account. The amount should be credited by Government of India with an interest of 12% to the business account of the registered business by Government within 30 days. This arrangement digitally mimics the food stamp system that was adopted by some countries following the World War. Designing of such a system and testing it out can be done well within the next fortnight. But time is of the essence.

Distribution of agricultural inputs to prevent supply-side breakdowns

3. A very crucial measure that will help maintain the food supply lines from drying up is to intervene on the supply side effectively. Given that, that the recovery of the economy to some normalcy will take some more time, it is only prudent to massively step up supply of all planting inputs including vegetable seedlings, fruit tree saplings and fish seedlings into rural India along with the necessary input supplements by way of fertilizers and pesticides, if we have to avert widespread shortages across the country, down the next few months. The State Governments should take the initiative in designing the interventions specific to each state and the regions within it.

Procurement channels for local produce of farmers

4. The State Governments should open procurement channels for farm produce from the rural farms and homesteads along the length and breadth of the country. Most States have by now, built excellent state networks of agriculture, horticulture, fisheries and dairy institutions. These should be marshalled into action immediately. Vegetables, fruits and fish produced in rural India should be purchased at fair minimum support prices and should be channelled into the markets in identified centres of consumption. This will go a long way in ensuring that the food supply chain in the country is undisturbed.

Sector revival plans

5. Both the Union and State Governments should assess the damage caused to various sectors of the economy due to the lockdown, and prepare short, medium, and long-term economic revival plans for each sector. These plans should be addressing the following key aspects:
 - a. Women
 - b. Scheduled Castes and Scheduled Tribes
 - c. Transgenders

Special Economic Package for Migrant labour

6. It is estimated that India has 14 crore inter-state migrants who live outside their states. Given the extent of deprivation and isolation from the COVID pandemic that was observed among migrant labourers through the country, there should be safeguards at the national level that should be put in place by the Union Government.
7. Kerala has 30 lakh inter-state migrants (between 20-30 per cent work force). The State Government should devise a special economic package for them focusing on housing, health and their welfare.
8. Immediate efforts should be taken register all migrants (who are forced to be in Kerala due to the lockdown and for those who left Kerala before the lockdown) after the lockdown restrictions are withdrawn. A comprehensive Kerala Migration Survey should be undertaken immediately after normalcy is restored for more effective policy formulation for this category in the State.

Direct Cash Transfers

9. Direct cash transfers must be made to workers/citizens as was done in through Welfare Fund Boards in different sectors. These transfers should continue post lockdown period for the next six months. Kerala has already announced a special package of Rs.2000 cr. through Kudumbashree.
10. Government of India should allow a lumpsum release of three months equivalent of benefits under the schemes now being implemented for old age, disabled, woman headed households, and other marginalised groups.

Wage Subsidy Scheme for the MSME Sector

11. Government of India should devise a wage subsidy scheme to protect employment. The extent of subsidy should be higher for MSMEs which employ women more than 50% of its strength.

XII. DIRECTIONS FOR FUTURE HEALTH RESEARCH

Papers from other countries show that it has been possible to identify, retrospectively, bio markers that predict prognosis of epidemics. They may differ for India or even between states. The State Governments should initiate data collection and research to collect and analyse case sheets and laboratory test results from the different COVID hospitals in the state and collate them to see if there are distinctive patterns of the disease progression. This will help the State's preparedness for meeting the challenges of such epidemics in the future.

As part of the lockdown reversal strategy, Government of India should formulate schemes and allocate funds for the following research study.

1. Sero -epidemiological Study

All states should be encouraged to initiate Sero-Prevalence study of COVID to understand the community spread of the disease and also to formulate appropriate state health system policies. A model study protocol may be prepared by MHRD/ICMR and published.

2. Gene Sequencing

A few research institutes have already started sequencing of SARS-CoV-2 virus. This is necessary for contact tracing, development of vaccine, anti-virals and basic science research on the virus. Government of India should encourage and help all laboratories and research institutes to initiate Gene Sequencing of the virus. ICMR may monitor the Gene Sequencing being done by various institutes and laboratories and any requirement or hurdles may be addressed and solved. India must share the genome sequencing on international fora established for sharing genomic information to facilitate development of vaccines and pharmaceuticals.

3. Solidarity Trial of WHO and Cuban Interferon

GOI should encourage and help state governments to join the Solidarity Trial of WHO (testing for drugs including Interferon Beta along with a few anti-virals) and also Interferon Alpha genetically engineered by Cuban Biotechnology firms.

4. Drug Trials

GOI/ICMR encourage research institutes to evaluate Repurposed drugs. (I.e. a drug development strategy predicated on the reuse of existing licensed drugs for new medical application) including natural products for therapy of COVID 19.

5. Convalescent Serum based research

ICMR should also encourage research to try Passive Immunization with plasma derived from convalescing patients who have completely recovered from COVID 19. Another suggested research that can be tried is to clone B Cells from such patients to make therapeutic anti bodies.

6. Antigen Testing

Currently the testing for COVID is confined to Viral and Antibody Testing only. Attempts are being made by institutions like Sree Chithra Thirunal Institute of Science and Technology, Kerala to develop an Antigen Test for COVID. This should be encouraged with funding and other requirements.

7. Use of Ayush Medicines.

Efficacy of Ayush medicines should be tried out through a well-designed clinical using volunteers who provide informed consent as experimental and non-users as control groups. This will help the estimation of the efficacy of Ayush drugs against no treatment, treatment with anti virals etc.

XIII. DIGITAL TECHNOLOGY FOR EPIDEMIC OUTBREAK PREDICTIONS AND FORECASTS

1. The COVID pandemic has given Government many new insights into epidemic control. One among these new perspectives is the need for effective use of modern digital technology in epidemic control. Today Machine Learning (ML) and Artificial Intelligence (AI) technologies are being extensively used in predicting epidemic outbreaks around the world and monitoring them. The data used for this comes mostly from satellites, health agency sources, historical information available on the internet, real time social media exchanges, apart from other sources. Techniques like Support Vector Machines (SVMs), Artificial Neural Networks (ANNs) and Logistic regression (LR) can be effectively used for this.
2. Both the Union Government and the State Government should invest substantially in ML and AI based research. This will greatly help the defence systems of Government to deal with situations like the present COVID pandemic more effectively in the future.

XIV. ONE HEALTH APPROACH

COVID 19 is a zoonotic disease, a disease transmitted to human being probably from bats even though there is no agreement now on that. There are large number of Zoonotic diseases mostly viral increasing all over the world due to deforestation, large scale migration, massive international travel and climate change. Considering this global situation many countries have started implementing the One Health Concept to protect bringing Human, Animal and Environmental Health by a comprehensive all-inclusive integrated approach. GOI should also take the initiative to follow the One Health Concept by establishing appropriate institutional framework.

XV. CONCLUSION

The COVID 19 situation has evolved continuously since its beginning. Many initial orthodoxies have been revised, new learning has come to light and strategies are being continuously revised. Many of the above recommendations may soon be dated. The only constant appears to be prevention efforts through distancing, good surveillance including testing, and good supportive care to save the lives of acute cases. If we invest in these basic ingredients our response will have the essential elements needed to succeed.

The set of recommendations contained in this Report seeks to combine a cautious and imaginative response to the crisis that Kerala is going through, while at the same time emphasising a bold and significant plan for securing the future of our people.



GOVERNMENT OF KERALA

**REPORT OF THE EXPERT COMMITTEE
ON STRATEGY FOR EASING
LOCKDOWN RESTRICTIONS**

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