INTERIM REPORT TO THE GOVERNMENT OF KARNATAKA

June 2021

ABSTRACT

Recommendations from the High Level Expert Committee for Prevention and Management of COVID Wave-3 covering special requirements and various aspects of healthcare delivery.

Interim Report

Contents

High Level Expert Committee on COVID 3rd Wave

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Introduction

Severe Acute Respiratory Syndrome CoronaVirus-2 (SARS-CoV-2), which causes coronavirus disease (COVID-19), was first identified in December 2019 in Wuhan city, China, and subsequently spread to majority parts of the globe. On January 30th, 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern.

Globally, as of 17 June 2021, more than 176 million confirmed cases of COVID-19 have been reported to WHO including over 3.8 million deaths. India has seen more than 29 million cases and over 3.8 lakh deaths so far. The first case of the COVID-19 pandemic in Karnataka state in India was confirmed on 8 March 2020 and as of 17 June 2021, Karnataka has reported over 2.7 million confirmed cases and 33,434 deaths.

The Government of Karnataka has been responding to the challenges of this unprecedented pandemic admirably through a whole-of-Government approach, rapidly increasing the health infrastructure, mobilizing manpower, oxygen, drugs and logistics through concerted efforts. The months of April and May 2021 saw a huge surge in the number of cases and put huge burden on the health system throughout the state including the city of Bengaluru.

There have been reports in the media quoting researchers, mathematical modelers and public health experts regarding a possible 3rd wave hitting the country in the last quarter of 2021 and possibly affecting children in large numbers. The Honourable Chief Minister of Karnataka constituted a High-level Expert Committee of Experts from various disciplines of Medicine including Paediatrics to analyse the situation and recommend measures for the government to prepare for the upcoming surge.

Various sub-committees within the Expert Committee analysed the situation and shared recommendations as regards augmentation of Health Infrastructure including oxygen, manpower, capacity building process and putting standard operating procedures on managing the COVID-19 cases with focus on the paediatric age group, their nutritional support, psycho-social support, schooling, the Multisystem Inflammatory Syndrome in children (MIS-C) and post-COVID care. We have also reviewed and recommended the measures needed to improve the public health preparedness and response including testing and surveillance, vaccination, measures to improve public awareness and COVID appropriate behaviour as well as public-private partnership.

The existing facilities for adult COVID care need to be preserved and maintained with special emphasis on management of mucormycosis. The Committee strongly recommends clear segregation of adult and paediatric care. Any suggestions for improvement of adult care apart from that mentioned here will be extended in due course of time.

On behalf of the Expert Committee, I take this opportunity to thank the Government of Karnataka, the Hon'ble Chief Minister Sri B S Yediyurappa, Hon'ble Deputy Chief Minister Dr. C. N. Ashwath Narayan, and Hon'ble Minister for Health, Family Welfare and Medical Education Dr K Sudhakar, for providing us with this opportunity to serve the state. I also thank Sri Jawaid Akhtar, Additional Chief Secretary - Health, Dr Om Prakash Patil, Director Health

and Family Welfare Services, Dr P.G.Girish, Director Medical Education and the Member-Secretary of this Expert Committee and various other government officers for all the support throughout this process of consultation and report preparation.

I would also like to thank the previous Task Force members, the members of the Technical Advisory Committee and various Expert Committees for the guidance provided to the Government and the inputs shared with us. We also appreciate the contribution made by different experts from various fields and the associations especially IAP with whom we deliberated extensively.

I feel honoured to be leading such a diverse group of eminent experts and would like to thank all the esteemed members for spending valuable time and providing useful inputs for the preparation of this report.

This pandemic is far from over. I am hopeful that this interim report would be useful for the government in accelerating preparations and strengthening the health system for the future challenges.

Best wishes

Dr Devi Prasad Shetty
Chairman
High-Level Expert Committee for the prevention and management of COVID-19 Wave-3

A. Summary of Recommendations

1. Public Health Infrastructure

Additional Preparedness for COVID 3rd Wave (Paediatric)

- Projected number of paediatric patients in the 3rd wave is calculated based on total number of infections (1st and 2nd wave) (As per MOHF, Govt of India)
- We have estimated higher numbers to be on the safer side
- Level of Care defined as Level 1 for non-oxygen beds, Level 2 for oxygen beds and Level 3 as PICU/Ventilator beds
- Based on the estimated numbers, we have prepared list for procuring drugs including consumables
- Augmentation of Neonatal ICU/ SNCU, Paediatric ward beds, PICU /HDU beds at Taluk hospitals, district hospitals and medical colleges is proposed
- Manpower as per Govt order for recruiting including Doctors, nurses & paramedic staff is proposed
- Upgrading the existing SNCU/NICU, PICU, converting existing HDU to PICU, upgrading existing pediatric wards as HDU with piped central oxygen and suction facility so that in short notice can be converted to PICU in case of surge in pediatric cases.
- Setting up of exclusive Children's hospital of 250 beds with provision for 20 bed PICU/HDU/NICU in facilities like IGICH and in the backward districts like Chamrajanagar, Yadgiri, Chikballapur, Kolar, Chitradurga, Koppala and Haveri in the campus of district hospital/ Medical college.
- At District Level hospital: Additional provision of 10-25 bed (Level Three) PICU and 25- 50 bed HDU, 10- 20 bed NICU and remaining pediatric beds to be Central oxygen and suction.
- At Taluk level Hospital: 10-20 bed level 2 PICU with additional 20-50 bed HDU remaining beds are with oxygen facility.
- Earmarking of 10-20 percent of existing MICU/Ward beds for Children in case of surge of pediatric cases.

- **Creation of Stabilization units** within campus in major district Hospital/Medical colleges/Autonomous Institute with oxygen concentrators, doctors, nurses, etc. by creating a temporary structure with the help of sheets & iron rods which later can be repurposed for parking, patient attender waiting area or other utility.

Human Resources

1. Doctors – General Duty Medical Officer (permanent position)
   - Undertake a special drive to fill all vacant positions.
   - Create additional need-based positions.
   - Doctors who committed for rural duty as an obligation, who have completed internship (~3000) -- to be posted in government hospitals for short-term COVID care duty.
2. Doctors (contract position) -- to be hired on daily/weekly/monthly basis for creating a need-based pool. (in preparation for a surge)
3. Doctors - Specialists
   - Initiate a special drive to fill all vacancies at state-, district- and sub-district level positions.
   - Create additional positions based on need (*eg*. paediatricians at Taluk hospitals) – temporary or permanent position.
   - Enlist the support of Community Medicine Doctors' association (KACH and IAPSM-Karnataka Chapter)
4. Frontline health workers - ASHA workers, Junior Health Assistant (male & female)
   - Initiate a special drive to fill all vacancies against sanctioned positions.
5. As a long-term measure, also consider two-year diploma courses under National Board in taluk and district hospitals.
6. Recruitment of Asst. Professor in various departments like Paediatrics, General Medicine, Pulmonology, ENT, Anaesthesia, Radiology, etc. – direct recruitment.

Capacity Building

1. Triaging to be done by junior doctors with appropriate training across the state under the supervision of a senior doctor.
2. Take the help of volunteer paediatricians (numbering around 3,000 from IAP-Karnataka) for facilitation of Online consultations.

3. On a fast-track mode, train nurses in health facilities and frontline health workers (JHAs, ASHA workers, Anganawadi workers) to manage paediatric COVID patients (*eg*. RGUHS has a Crash Course for Nurses to manage children with COVID)

Governance & Infrastructure

- Incentivise the participation of health care personnel in COVID-related work such that appropriate certification, remuneration or future career progression is facilitated.
- Local infrastructure for doctors, nurses, paramedics, ambulance drivers, and support staff to be arranged.
- To publish the public and private hospitals where children with COVID are treated.

Recommendations for Upgrading Government Medical Colleges in Karnataka

- To setup state Centre of Excellence and an Expert Committee for MIS-C at Indira Gandhi Institute of Child Health, Bangalore
- Paediatric COVID-19 regional Centre of Excellence with 50 bed PICU, 100 bed HDU, 20 bed NICU, 20 bed SNCU at:
    - KIMS-Hubli,
    - Vajapayee Institute of Medical Sciences, Bangalore,
    - Gulbarga Institute of Medical Sciences, Kalburgi,
    - Hassan institute of Medical Sciences, Hassan,
    - Shivamogga Institute of Medical Sciences, Shivamogga.
- Recruitment of Assistant Professor in various autonomous institutes under various departments like
    - Paediatric Medicine, Neonatology and Sub-specialties
    - General Medicine
    - Anaesthesia
    - Radiology
    - Microbiology
    - Pathology
    - Otorhinolaryngology
    - Ophthalmology

  with a single window administrative clearance in all autonomous institutes under Medical Education Department, Government of Karnataka.
- All the beds in the hospital should be equipped with oxygen delivery facilities.

2. Vaccination

1. Strategy/Policy

- Create a State-level policy such that no hospital stocks unused vaccine beyond 10 days; it must be diverted to alternate vaccination centres by government or non-government medical bodies if vaccines are lying unutilised.
- Government must consider involving private sector for large scale free vaccination to prevent mass congregation outside the government hospitals which can become potential sites for COVID spread. Many of the private hospitals and clinics will be happy to vaccinate at the capped price of Rs. 150 per vaccine to be paid by the government and carry on with government's mission of free vaccination.
- War room should have real time data of available vaccine in every government and private hospitals in a transparent manner for efficient utilization of vaccine and prevent hoarding.
- Vaccination need not be restricted to fixed timings in large hospitals with adequate human resources; it may even be permitted nearly round-the-clock.
- Encourage companies to vaccinate employees and their families.
- Whole of community should be involved so as to complete vaccination within next 3-4 months.
- To quickly increase the vaccine pool, Central government should procure vaccine from Indian and foreign companies and distribute it to private hospitals at the cost price.
- Encourage Decentralization and PHC level microplanning to fast-track the coverage of general population with Covid-19 vaccines based on learnings from Polio and Measles Rubella campaign

2. Vaccination sites – consider the following to enhance number and reach:

- All medical facilities including Doctors' clinics especially paediatricians having cold chain, to be vaccination sites.
- Schools, *anganwadis*, wedding halls, Gram Panchayat offices *etc* especially to be included in rural areas.
- Mobile vaccination buses
- Jumbo vaccination centres in cities
- Consider special strategies (*eg* near-to-home) for difficult-to-reach populations
- Encourage NGOs to provide refreshment at the vaccination sites.

- Prioritization of vaccination in poor health infrastructure districts like Chamarajanagar, Yadagiri , Koppala, Haveri, Chitradurga, Chikballapur, Kolar, Bengaluru Rural

3.Vaccine Hesitancy

- Address through public awareness campaign, social media, etc.
- Enlist the support of School teachers and Gram panchayat task forces in rural areas
- Mobilize rural populations to PHC, Taluk hospital and district hospitals with support from NGOs and Gram Panchayat Task Force

4. Cold Chain efficacy

- Monitor cold chain at all levels right up to the recipient to ensure vaccine potency

5. Clinical Management and Adherence

- Manage AEFI (Adverse Event Following Immunization) effectively
- Strengthen existing AEFI surveillance system to improve reporting following COVID-19 vaccination
- Conduct regular causality assessment of all reported severe and serious AEFI cases and disseminate information to build community confidence
- Ensure second/follow-up/booster doses as appropriate to reduce drop-outs
- Adopt ring immunization, cocooning as appropriate

6 Routine Childhood immunisation

- Routine childhood immunisation needs to be strengthened so as not to lag behind
- When COVID vaccines are available for children, prioritise high-risk sub-groups

7 Software

- Improve COWIN portal efficiency to minimise glitches.
- Support Rural population in registering and slot booking in COWIN

8 Monitoring and Supervision

- Strengthen mechanism of supervision and monitoring of vaccination process through Government and Immunization partners
- Strengthen the vaccination progress review at District and Sub district level led by District Collector through Task Force mechanism

3. Oxygen

- **Demand and Supply**
  - The peak requirement in Karnataka was 1200 MTs. However, the daily requirement is between 600-800 MTs. Govt should identify definite source of O2 for peak requirement. All major O2 suppliers should be encouraged to store maximum capacity.
  - Every hospital should maintain oxygen stock of at least three days.

- **Piped bed-side oxygen supply**
  - All government hospital beds to have piped oxygen
  - Encourage all private hospitals to have significant percentage of beds with piped oxygen. They can borrow money @4% interest for 3 years under special COVID package from RBI. State government can give the hospitals some interest subsidy to use the beds for government referred patients.

- **Hospital Oxygen Sources**
  - ***Liquid Medical Oxygen (LMO)***
    - to be available in all Medical College hospitals and District Hospitals; increase the size of LMO plant in district hospitals, if already available
  - ***PSA plants***
    - to be installed in as many Taluk Hospitals as possible
    - encourage bigger private hospitals to have their own PSA plants
  - ***Oxygen cylinders***
    - Jumbo cylinders to be stationed in all Taluk Hospitals, CHCs and PHCs
  - ***Oxygen concentrators***
    - Reasonable number of 10-litre capacity concentrators placed in Taluk Hospitals.
    - Oxygen concentrators to be made available for discharged patients for temporary use at home (on returnable basis)
    - Oxygen concentrator bank (mobile pool) with donation from NGOs
    - Explore innovations (eg. O2 generator & concentrator from IISc) if in market.
- **Patient Safety**
  - Specify proper use of distilled water in oxygen delivery devices.
  - Convene and obtain opinion from group of experts on Mucormycosis / all secondary infections.

4. Clinical Care: Testing and Post-COVID Care in Children

Testing

In children, Nasopharyngeal and oropharyngeal swabs can be quite challenging. The procedure requires skills, can cause patient discomfort, often very painful and can be traumatic. Improper swabbing results in false negative results. Alternative methods have been proposed below along with conventional RTPCR testing.

- Conventional method: Nasopharyngeal & oropharyngeal swabs. Uncomfortable and not well accepted by children.
- Non-conventional method: Nasal swab and oropharyngeal swabs. Well accepted by children
- Gargle RT-PCR: This is a new method that is approved by ICMR.
- Salivary RT-PCR: Most comfortable and ideal for children

Antigen Detection Testing:

- Rapid Antigen Test (RAT)

Multi-system Inflammatory Syndrome in Children (MIS-C)

- Serious post-COVID complication requiring early recognition and immediate treatment; called MIS-N when seen in newborns (Multi-system Inflammatory Syndrome in Newborn)
- Special laboratory investigations required for management are: COVID antibodies, Serum ferritin, IL-6, LDH, Trop-T, D-Dimer, Procalcitonin, CRP- quantitative, Pro-BNP, Microbiological culture facility, and PT/aPTT – to be available in all district hospitals.
- Estimated requirement of drugs and bedside equipment (List attached)
- A **State Nodal Centre** (such as IGICH) linked with district nodal centres is recommended for rational utilization of limited resources such as IVIG and methylprednisolone; in addition, Paediatric Cardiology services also need to be strengthened.
- State level expert committee for MIS-C can be formed composed of Dr.G.V. Basavaraja, Dr. Jagadish Chinappa, Dr. Aravind Shenoi, Dr. Vinod Ratageri, Dr. Raghunath. C.N
- Setting up **of MIS-C Registry** to enable long-term follow-up of complications.
- Research Project on alternative for IVIG in case of unavailability of IVIG.

5. Public Awareness and Messaging

- Massive public education campaign covering all aspects – vaccination including vaccine hesitancy, facts about illness including early treatment seeking, countering rumors, superstitions, myths, fear, panic etc., safe practices, healthy behavioral patterns, psychosocial wellbeing, key helplines, resources, service availability and so on
- Through press, radio, TV, social media and other channels
- All private TV channels should be mandated to give 30 minutes between 5 PM and 10 PM for Govt approved programs.
- This is utilized for interviews, debates, phone-in programs, video messages, short messages etc.
- Professionally produced Short video clips to effectively communicate relevant messages – content production by Govt with the help of expert group
- Similarly, creation of short messages for wide disseminating
- Media experts can be hired to run this campaign.

6. Re-opening Schools

Preamble

Task Force strongly recommends following the National guidelines which is already announced by the government. However, when the government decides to open the schools after consulting the stakeholders, they can consider the suggestions given by the Task Force.

- It is recommended to open schools physically to optimize learning, physical health, mental health and Nutritional aspects of children.
- Any further delay in school reopening may push children into malnutrition, child labour, child marriage, child trafficking, begging etc., making their condition further worse.
- The outreach programs and learning through remote modalities i.e. digital learning has achieved for less than the expected goals and also created large gaps in learning creating educational inequality.
- Indian Academy of Paediatrics opines that large number of children will be asymptomatic or mildly symptomatic.
- The possibility of schools being areas of large transmission has not been proved anywhere in the world.
- Decentralization of decision making on school opening up to School Development Monitoring Committee (SDMC)
- District level school safety review committee to be established.

7. Psycho-Social Support

Psycho-social support for the COVID infected and COVID affected children and families.

- Ultra-rapid online training for Health Care Workers on a massive scale covering understanding, preventing, detecting, and responding to psychosocial distress in children and families (blueprint of action plan for training will be provided)
- Post-training handholding of Health Care Workers by a network of experts (mental health, Paediatrics)
- Referral hospitals equipped to handle children and adults with severe mental disorders irrespective of covid status at every district
- Training of teachers to handle covid related mental health / psychosocial issues such as stress management in student community once the school's restart.
- Special support network for children with special needs / in difficult circumstances – institutionalized, orphaned, abandoned, street children, children with disabilities, pre-existing mental health problems and others.
- Incorporation of a brief training module on psycho-social care for grass-roots workers such as ASHA, Anganwadi workers, junior health supervisors
- Telemedicine services for children with mental health problems through Government approved experts using platforms such as e-*Sanjeevini*.

8. Training and Upskilling

Skill enhancing and training module for Healthcare Professionals. Training doctors, nurses & paramedics is the most essential component using well drafted modules (IMNCI, IAP)

1. Basic Course of Paediatric COVID-19 for:
    - MBBS Doctors, Interns, Paediatricians and other Specialty doctors.
    - Nurses and Paramedics
    - Anganwadi workers, ASHA workers, ANM and Gram Panchayat Task Force

2. Advanced Paediatric COVID-19 for:
    - Paediatricians
    - PICU consultants
    - Anesthetists
    - Interested other specialty specialists

3. Specialty Workshops:
    - Neonatal and Paediatric ventilation workshop (including HFNC and NIV)
    - USG and ECHO workshop
    - Procedure and monitoring workshop

4. Nursing Care in COVID-19

5. Training of Anganwadi and ASHA workers, Gram Panchayat Task Force

9. Public Health Preparedness, Readiness and Response Plan

Based on the learnings from the multiple surges seen in the past, it would be prudent to be ready with an efficient system to test , trace , treat and contain the cases both in adults and children

1. Surveillance and Testing of suspect Cases

- Continue the ongoing surveillance to detect suspected Covid-19 cases, strengthen the ILI / SARI Surveillance and accelerate testing as per the prevailing ICMR and state Govt guidelines.
- Improve Testing capacity up to PHC level to test adequate quantum with a target to keep the Test positivity Rate below 5% in all districts.
- Carry out periodic house to house survey by ASHA workers in districts with high positivity rate to identify and test suspected Covid cases
- Take steps to increase Laboratories for genomic sequencing in adults and children in Karnataka ; ensure testing of at least 5% of all the samples from high positivity districts (test positivity rate > 2%) in compliance with ICMR guideline

2. Contact Tracing and containment activities:

- Strengthen Contact tracing in all districts, involve Gram Panchayat Task Force in rural areas and NGOS, Resident welfare associations in Urban pockets
- Strengthen capacity to identify clusters early, investigate outbreaks and follow strict containment measures during non-surge period.
- Prepare Community Quarantine centres and Covid care centres for Children with Mother (caregiver); schools and community halls, Hostels run by WCD department may be used.

3. Isolation of Positive Cases:

- Encourage Home Isolation and support families for their daily needs through GP Task Force and Ward level committees
- Strengthen the existing Ward Level Triage centres in Urban areas and Primary Health Centre in rural areas for Triage and referral of confirmed Covid cases..

- Build capacity of Doctors/Nurses/ Field level health workers on early identification of signs and symptoms requiring hospitalization in children and SOP for treatment with support from IAP.

4. Public Health and Social Measures:

- Adjust Public health and social Measures based on the analysis of local level of transmission, capacity of health system to respond and other contextual factors.
- Avoid super spreader events like Mass gatherings , Religious events , Public Rallies etc. strictly till the end of this year
- Adopt graded and gradual approach while Unlocking from current / future Lock Downs
- Ensure Compliance to Covid appropriate behaviour including mandatory Mask Wearing by community
- Improve Communication strategy to bring in behaviour change and adherence to Covid appropriate behaviour.

5. District Level Expert Committee

- Constitute District level Technical Expert committee to review the data and guide Covid-19 response in the districts.

10. Sentinel Surveillance

- Systematic, timely, routine data collection from a representative subset of the population; done daily, year-round
- Its chief purpose is to function as an early warning system
- It is done by capturing trends in the population for epidemiological purposes (and is therefore different from case-finding which is for clinical treatment purposes)

1. Types of Surveillance

- Active Infection Surveillance -- from a subset of laboratories with quick turn-around-times for RT-PCR/rapid antigen results
- Disease Surveillance – from a subset of hospitals on Emergency Room visits for COVID or suspect COVID and hospital admissions and bed occupancy rates.
- Syndromic Surveillance for ILI/SARI/pneumonia -- from select fever clinics, schools and communities.
- Post-COVID MIS-C Surveillance
- Sero-surveillance (for sero-prevalence in the 0-18 year age-group)

2. Sentinel Sites

- Recruit Hospitals (public and private), Schools (government and private) and communities in all district headquarters (and preferably taluks) -- @ of 1 per 50,000 population in small towns and 1 per 2,00,000-3,00,000 population in larger cities

3. Data Collection, Analysis & Reporting

- Use simple, standard formats (for labs, diseases and syndromes) following standard Case Definitions (from WHO/ICMR/state govt)
- Collect information daily from microbiology lab, emergency/casualty room, IP/ICU admissions and fever clinics/schools and upload daily on to a common database
- Analyse data and generate Weekly Epidemiological Report (W.E.R) for state and district on: (1) Test positivity rate (2) ER visits (3) Hospital admissions (and bed occupancy) (4) ILI/SARI/pneumonia (5) MIS-C
- Undertake Predictive Analysis

11. Nutrition Recommendations for Children

Prevention and correction of malnutrition in children is essential to reduce the morbidity and mortality in children from any disease including COVID 19.

1. Adding a micronutrient powder to milk to children attending Anganwadi will help children in the 6 month-to-6 year age group get additional calories and supplement up to 50% of their vitamin and mineral requirements.
2. Anganwadi based supplementary nutrition program is an existing program which should be restarted at the earliest. If children cannot come to the Anganwadi then process of home delivery of ready to eat – nutrition bars, nutrition kit or *ladoos* may be considered.
3. Mid-day hot meal program in schools needs to be restarted and existing systems need to be strengthened. If school opening is delayed then home delivery of ready-to-eat nutrition bars, *ladoos* or fortified food needs to be considered.
4. Peripheral nutrition rehabilitation programs need to be started at taluka levels where children with severe malnutrition are treated with nutritional rehabilitation under the supervision of Zilla panchayat, existing NRC and Indian Academy of Paediatrics members.
5. Food fortification
    - It is recommended that the Govt explore food fortification of rice, *atta*, edible oil, salt and milk. Wheat flour and rice can be fortified with Folic acid, iron and vitamin B12. Salt can be fortified with iron along with iodine. Edible oil and milk can be fortified with vitamin A & vitamin D.

12. Formation of COVID Registry

1. Systematic data collection and analysis is needed to accurately understand the disease and its evolution in our state.
2. Data should be collected in four categories Neonatal (0-28 days), Paediatric (29 days-18 years), Adult (18 years +), and MIS-C (children 0-18 years)
3. A COVID registry under the aegis of Indian Institute of Science, Centre for Computational and Data Sciences, Director of Medical Education, and Rajiv Gandhi University of Health Sciences is recommended.
4. This registry will collect data retrospectively for 3 months and prospectively for 3 months from Indira Gandhi Institute of Child health, Bangalore Medical College & Research Centre, Mysore Medical College & Research Centre, Karnataka Institute of Medical Sciences, and Vijayanagar Institute of Medical Sciences.
5. Each COVID patient be allotted a unique identification number like the BU number allotted by BBMP. It will help track the disease and prevent duplication in the records.

13. Public-Private Partnerships to Manage COVID

Public private partnerships are a vital part of the Covid care response for children in the anticipated third wave.

The WHO and UNICEF are integral parts of the governmental response and will not be discussed.

Among the other private enterprises that can help mitigate any catastrophe regarding Covid in children could be divided into:

1. Professional organisations
2. Hospital groups,
3. Non-governmental agencies (NGO'S)
4. Corporates through CSR
5. Public at large

14. Care of Patients with Post-COVID Complications

Care of patients with Post-Covid complications among children and adults

The first and second phase of COVID-19 pandemic has affected a nearly 28 lakh persons in Karnataka so far. A high proportion of hospitalized COVID-19 patients have longstanding complications that include pulmonary insufficiency, neurological and psychiatric disability, cardiac and kidney dysfunction and others. To prepare for societal burden associated with post-covid long-term complications, the following steps should be taken:

- Establish a state-wide registry of hospitalized COVID-19 patients that will comprehensively evaluate outcomes using a uniform protocol.
- To create post-covid clinics that will determine the burden of post-covid complications and provide comprehensive functional rehabilitation.

RGUHS in collaboration with Medical colleges can plan and conduct training program for identifying and managing post-covid complications and also long covid issues.

15. Non-COVID Patient Care During COVID-19 Pandemic

As the COVID-19 pandemic continues, non-covid patients have been significantly affected due to reduced access especially to essential medical support. The following steps will need to be taken to prepare for this double burden of disease that health care systems will face in the coming months:

1. Develop a district-wise planned approach to provide continued care to COVID and non-COVID patients.
2. Augment health infrastructure in rural and urban areas to provide care to non-covid patients, to include non-Covid OPD services, ensuring manpower and supply of essential medication, designated separate areas and providing beds for non-Covid patients.
3. Telemedicine services to be scaled up and specialist services to continue to provide uninterrupted non-Covid care.
4. Implementation of feasible components of existing national programmes for non-communicable diseases, mental health, maternal and child health, tuberculosis, and others to continue uninterrupted.

16. Paediatric COVID Care Centres – 3rd Wave

These centres to be renamed as

Bala Araike Suraksha Kendra

This will make acceptance by parents without any stigma.

1. These centres should facilitate stay of both positive child and mother/female care givers.
2. There should be enough open space and play area available for free movement of child and care givers as children cannot be restrained inside the room.
3. There should be a scope for receiving home food to child if demanded.
4. To accommodate teenagers there should be separate male and female sections.
5. Safety, security, and child friendly environment is of paramount importance.
6. Strict triaging and fool proof system of choosing eligible child should be in place.

Lessons learnt during 1st and 2nd Wave in Covid Hospital Management

1. Increase the number of land line numbers (minimum 5, maximum 10), provide contact mobile numbers of all referral hospitals including district hospitals, medical colleges and ensure working staff 24x7.
2. To ensure protection to covid frontline workers police outposts should be set up near Taluk, District and referral hospitals including medical colleges. This will boost the morale of the corona warriors.
3. Strictly deal and enforce provisions of Karnataka Epidemic Disease Ordinance 2020 and Epidemic Diseases Act 1897 in cases of assault on health care workers as non-bailable offence.
4. Standard treatment protocols & guidelines to be implemented separately for OPD/IPD/Intensive Care Units.
5. Taluk & district task force/THO/DHO should ensure that it reaches all the grass root level Practictioners which prevents the misuse of medications.
6. Medications has to be delivered only after authentic prescription.
7. Government has to retain the pre-existing covid care centres where separate women & child especially teenagers (both girls/ boys) spacing should be considered.
8. Encourage donations in the form of thermometers/pulse oximeters from NGOs to CCC.

17. Inter-Facility Transport

1. Need to augment the existing facilities of transport at PHC, CHC, Taluka and district hospitals by augmenting ambulance services equipped with incubator, paediatric ventilator and other paediatric supportive care medicine.
2. Health Care Workers (HCW) should follow all standard SOP while transportation of a child.
3. Trained HCW (nurse / doctor) should accompany the child during transportation.
4. Train ambulance staff in infection control, handling of biomedical waste and care of Covid infected children.

B. Detailed Reports

1. Public Health Infrastructure

Human Resources

1. Doctors – General Duty Medical Officer (permanent position)
    - Undertake a special drive to fill all vacant positions.
    - Create additional need-based positions.
    - Doctors who committed for rural duty as an obligation, who have completed internship (~3000) -- to be posted in government hospitals for short-term COVID care duty.
2. Doctors (contract position) -- to be hired on daily/weekly/monthly basis for creating a need-based pool.
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Capacity Building

1. Triaging to be done by junior doctors with appropriate training across the state under the supervision of a senior doctor.
2. Take the help of volunteer paediatricians (numbering around 3,000 from IAP-Karnataka) for facilitation of Online consultations.

3. On a fast-track mode, train nurses in health facilities and frontline health workers (ANMs, ASHA workers, Anganawadi workers) to manage paediatric COVID patients (*eg*. RGUHS has a Crash Course for Nurses to manage children with COVID)

Governance & Infrastructure

1. Incentivise the participation of health care personnel in COVID-related work such that appropriate certification, remuneration or future career progression is facilitated.
2. Local infrastructure for doctors, nurses, paramedics, ambulance drivers, and support staff to be arranged.
3. To publish the public and private hospitals where children with COVID are treated.

Additional Preparedness for COVID 3rd Wave (Pediatric)

Estimate of medical infrastructure requirement for Children likely to be affected by the anticipated third wave of Covid 19 for State of Karnataka:

1. Estimated burden of COVID-19 in children

Among the total COVID-19 infections, children aged between 0-18years constituted around 8 to 10% during 1st and 2nd wave. Most of National and international data indicated that a maximum of 5-7% of such children requiring hospitalisation. However, a recent data from USA suggests that children in the age group of 12-17yers requires almost around 31% ICU admission and among them 5% needed invasive ventilation, but no deaths reported. To meet the surge in India, specially in Karnataka, we need to be ready for a little higher number to be requiring hospitalisation. The estimates for requirement for beds for Paediatric COVID care for various peak case numbers are calculated below. It will be desirable to have estimates for the additional capacity at hospital level/ at level of administrative units to ensure adequate projections and preparedness; this is important because the incidence of COVID is likely to be variable in different areas and also the peak in number of cases will also be at different time points.

Karnataka Demand Data Analysis:

Total Population (2021 E)[1]	**70,259,592**	7.0 Cr
Age Grp: 0-18 Yrs (2021 E)[1]	**23,838,995**	1.5 Cr
% of Total Population	**34%**	

Highest New Cases per day in Karnataka for 2nd Wave[2]	**50,717**
Infection to Case Multiple from Serology Survey (Case to Infection Ratio 1:30)[3]	**20**
Peak Infections in Karnataka for 2nd Wave	**1,521,510**
% of Total Pop. Infected at 3rd Wave Peak (Extrapolated From 2nd Wave)	**2.2%**

Sources	Links
1- Research Data from ISI Researchers	
2- Karnataka Govt Media Bulletin	https://covid19.karnataka.gov.in/govt_bulletin/en
3- MedRxIv Journal**	https://www.medrxiv.org/content/10.1101/2020.12.04.20243949v1.full

The Projected Paediatric number based on Govt of India outline and IISC statistics are given below

Estimated - Based on GoI document (@12% of Total Infection)

A	Peak cases per day à	100000	**50000**
B	Estimated number of confirmed cases in < 20 yr* at peak of the wave **(@12% of A)**	12000	**6000**
C	Percentage of children needing admission	5	**5**
D	Numbers of children needing admission daily at peak of wave (5% of B)	600	**300**
D1	Numbers needing ward admission (60% of all admissions)	360	**180**
D2	Numbers needing HDU admission (25% of all admissions)	150	**75**
D3	Numbers needing ICU admission (15% of all admissions)	90	**45**
E	Average length of stay of admitted child (days)	10	**10**
F	Total Beds required for pediatric care for managing at the peak of the surge (D X E)	6000	**3000**
G	Total Ward Beds required for pediatric care for managing at the peak of the surge (D1 X E)	3600	**1800**
H	HDU beds required for pediatric care for managing severe disease at the peak of the surge (D2 X E)	1500	**750**
I	ICU beds required for pediatric care for managing severe disease at the peak of the surge (D3 X E)	900	**450**

Estimated - Based on GoI document (@15% of Total Infection)

A	Peak cases per day à	100000	**50000**
B	Estimated number of confirmed cases in < 20 yr* at peak of the wave **(@15% of A)**	15000	**7500**
C	Percentage of children needing admission	5	**5**
D	Numbers of children needing admission daily at peak of wave (5% of B)	750	**375**
D1	Numbers needing ward admission (60% of all admissions)	450	**225**
D2	Numbers needing HDU admission (25% of all admissions)	188	**94**
D3	Numbers needing ICU admission (15% of all admissions)	112	**56**
E	Average length of stay of admitted child (days)	10	**10**
F	Total Beds required for pediatric care for managing at the peak of the surge (D X E)	7500	**3750**
G	Total Ward Beds required for pediatric care for managing at the peak of the surge (D1 X E)	4500	**2250**
H	HDU beds required for pediatric care for managing severe disease at the peak of the surge (D2 X E)	1880	**940**
I	ICU beds required for pediatric care for managing severe disease at the peak of the surge (D3 X E)	1120	**560**

Estimated -Based on GoI document (@20% of Total Infection)

A	Peak cases per day à	100000	**50000**
B	Estimated number of confirmed cases in < 20 yr* at peak of the wave **(@20% of A)**	20000	**10000**
C	Percentage of children needing admission	5	**5**
D	Numbers of children needing admission daily at peak of wave (5% of B)	1000	**500**
D1	Numbers needing ward admission (60% of all admissions)	600	**300**
D2	Numbers needing HDU admission (25% of all admissions)	250	**125**
D3	Numbers needing ICU admission (15% of all admissions)	150	**75**
E	Average length of stay of admitted child (days)	10	**10**
F	Total Beds required for pediatric care for managing at the peak of the surge (D X E)	10000	**5000**
G	Total Ward Beds required for pediatric care for managing at the peak of the surge (D1 X E)	6000	**3000**
H	HDU beds required for pediatric care for managing severe disease at the peak of the surge (D2 X E)	2500	**1250**
I	ICU beds required for pediatric care for managing severe disease at the peak of the surge (D3 X E)	1500	**750**

- **Characteristics of Covid infection in Children (based on IISC)**

  - Covid disease in children is generally milder than that seen in older populations.
  - Based on the previous experience 80-85 % of children are likely to get asymptomatic or mild disease.
  - Most of these children can be managed at home with clear guidelines on home isolation

- About 15% of such children may not have facilities for home isolation and may need dedicated paediatric Covid care Centres (CCC)
- About 6% of children may need specialist care and close monitoring, they may need facilities for tele consultation to review their status frequently
- About 7% of children may need facilities that can provide supplemental oxygen and close monitoring
- About 2% of children may need paediatric intensive care facilities
- This is elucidated in Table II.

Table – II

Paediatric Population Covid Severity Distribution

% of Total Infections That Are Mild/ Asymptomatic[4]	**85%**
% of Total Infections That Require Healthcare Support Without Hospitalization [5]	**6%**
% of Total Infections That Require Some Form of Hospitalization Without ICU[6]	**7%**
% of Total Infections That Require ICU Beds[7]	**2%**
% of Mild Patients Requiring Isolation Beds in Covid Care Centres (CCCs)[8]	**15%**

4- New England Journal of Medicine	https://www.nejm.org/doi/full/10.1056/NEJMsb2005114
5- New England Journal of Medicine	https://www.nejm.org/doi/full/10.1056/NEJMsb2005115
6- New England Journal of Medicine	https://www.nejm.org/doi/full/10.1056/NEJMsb2005116
7- New England Journal of Medicine	https://www.nejm.org/doi/full/10.1056/NEJMsb2005117
8- Survey with Panel of Clinicians	

Scenario planning:

Based on these rough estimates it may be prudent to look at the following scenarios –

1. Worst-case scenario where the infection is particularly virulent and transmissible. Highest in terms of capacity requirement and maximum number of patients requiring medical intervention.
2. Best case scenario where the infection is milder and less transmissible. Lowest in terms of capacity requirement and minimum number of patients requiring medical intervention.
3. Moderate scenario falls between the worst and best case scenarios.

Table III -A, B and C give a rough forecast on the likely scenarios:

Table III-A: Moderate Case Scenario:

Moderate Scenario - Patient Type and Bed Requirement			
Mild/ Asymptomatic	85%	Hospital Beds	23,804
Moderate	6%	ICU/ HDU Beds	6,801
Severe	7%	CCC Beds	43,358
Critical	2%		
CCC Beds (% of Mild/ Asymptomatic)	15%		

Table III-B: Best Case Scenario:

Best Case Scenario - Patient Type and Bed Requirement			
Mild/ Asymptomatic	90%	Hospital Beds	13,602
Moderate	4%	ICU/ HDU Beds	6,801
Severe	4%	CCC Beds	30,605
Critical	2%		
CCC Beds (% of Mild/ Asymptomatic)	10%		

Table III-C: Worst Case Scenario:

Worst Case Scenario - Patient Type and Bed Requirement			
Mild/ Asymptomatic	80%	Hospital Beds	27,205
Moderate	8%	ICU/ HDU Beds	13,602
Severe	8%	CCC Beds	54,409
Critical	4%		
CCC Beds (% of Mild/ Asymptomatic)	20%		

District-wise Planning:

Moderate Estimate – Table IV-A:

S.No.	District Name	2020 0- 18 Yrs Pop. Est.[1]	Moderate Estimate - Pediatric Cases (0-18)			
			Covid 3rd Wave Peak Patient Count	Peak Hospital Bed Requirement	Peak ICU/ HDU Requirement	Peak COVID Care Centre Bed Requirement
1	Bagalkot	8,52,900	12,166	852	243	1,551
2	Bangalore	32,21,795	45,958	3,217	919	5,860
3	Bangalore Rural	3,59,205	5,124	359	102	653
4	Belgaum	20,01,176	28,546	1,998	571	3,640
5	Bellary	11,04,071	15,749	1,102	315	2,008
6	Bidar	7,86,476	11,219	785	224	1,430
7	Bijapur	10,02,391	14,299	1,001	286	1,823
8	Chamarajanagara	3,55,495	5,071	355	101	647
9	Chikkaballapura	4,80,649	6,856	480	137	874
10	Chikmagalur	3,91,685	5,587	391	112	712
11	Chitradurga	6,39,941	9,129	639	183	1,164
12	Dakshina Kannada	7,23,718	10,324	723	206	1,316
13	Davanagere	7,57,255	10,802	756	216	1,377
14	Dharwad	7,26,314	10,361	725	207	1,321
15	Gadag	4,37,726	6,244	437	125	796
16	Gulbarga	12,15,432	17,338	1,214	347	2,211
17	Hassan	5,98,583	8,539	598	171	1,089
18	Haveri	6,57,327	9,377	656	188	1,196
19	Kodagu	1,97,805	2,822	198	56	360
20	Kolar	6,03,551	8,610	603	172	1,098
21	Koppal	6,57,102	9,373	656	187	1,195
22	Mandya	6,16,445	8,793	616	176	1,121
23	Mysore	10,71,925	15,291	1,070	306	1,950
24	Raichur	9,19,631	13,118	918	262	1,673
25	Ramanagara	3,79,884	5,419	379	108	691
26	Shimoga	6,47,560	9,237	647	185	1,178
27	Tumakuru	9,48,423	13,529	947	271	1,725
28	Udupi	3,67,959	5,249	367	105	669
29	Uttara Kannada	5,19,335	7,408	519	148	945
30	Yadgir	5,97,236	8,519	596	170	1,086
Total		2,38,38,995	3,40,059	23,804	6,801	43,358

Most Conservative Estimates – Table IV-B:

S.No.	District Name	2020 0- 18 Yrs Pop. Est.[1]	Most Conservative Estimate - Pediatric Cases (0-18)			
			Covid 3rd Wave Peak Patient Count	Peak Hospital Bed Requirement	Peak ICU/ HDU Requirement	Peak COVID Care Centre Bed Requirement
1	Bagalkot	8,52,900	12,166	973	487	1,947
2	Bangalore	32,21,795	45,958	3,677	1,838	7,353
3	Bangalore Rural	3,59,205	5,124	410	205	820
4	Belgaum	20,01,176	28,546	2,284	1,142	4,567
5	Bellary	11,04,071	15,749	1,260	630	2,520
6	Bidar	7,86,476	11,219	898	449	1,795
7	Bijapur	10,02,391	14,299	1,144	572	2,288
8	Chamarajanagara	3,55,495	5,071	406	203	811
9	Chikkaballapura	4,80,649	6,856	549	274	1,097
10	Chikmagalur	3,91,685	5,587	447	223	894
11	Chitradurga	6,39,941	9,129	730	365	1,461
12	Dakshina Kannada	7,23,718	10,324	826	413	1,652
13	Davanagere	7,57,255	10,802	864	432	1,728
14	Dharwad	7,26,314	10,361	829	414	1,658
15	Gadag	4,37,726	6,244	500	250	999
16	Gulbarga	12,15,432	17,338	1,387	694	2,774
17	Hassan	5,98,583	8,539	683	342	1,366
18	Haveri	6,57,327	9,377	750	375	1,500
19	Kodagu	1,97,805	2,822	226	113	451
20	Kolar	6,03,551	8,610	689	344	1,378
21	Koppal	6,57,102	9,373	750	375	1,500
22	Mandya	6,16,445	8,793	703	352	1,407
23	Mysore	10,71,925	15,291	1,223	612	2,447
24	Raichur	9,19,631	13,118	1,049	525	2,099
25	Ramanagara	3,79,884	5,419	434	217	867
26	Shimoga	6,47,560	9,237	739	369	1,478
27	Tumakuru	9,48,423	13,529	1,082	541	2,165
28	Udupi	3,67,959	5,249	420	210	840
29	Uttara Kannada	5,19,335	7,408	593	296	1,185
30	Yadgir	5,97,236	8,519	682	341	1,363
Total		2,38,38,995	3,40,059	27,205	13,602	54,409

Least Conservative Estimate – Table IV-C:

S.No.	District Name	2020 0- 18 Yrs Pop. Est.[1]	Least Conservative Estimate - Pediatric Cases (0-18)			
			Covid 3rd Wave Peak Patient Count	Peak Hospital Bed Requirement	Peak ICU/ HDU Requirement	Peak COVID Care Centre Bed Requirement
1	Bagalkot	8,52,900	12,166	487	243	1,095
2	Bangalore	32,21,795	45,958	1,838	919	4,136
3	Bangalore Rural	3,59,205	5,124	205	102	461
4	Belgaum	20,01,176	28,546	1,142	571	2,569
5	Bellary	11,04,071	15,749	630	315	1,417
6	Bidar	7,86,476	11,219	449	224	1,010
7	Bijapur	10,02,391	14,299	572	286	1,287
8	Chamarajanagara	3,55,495	5,071	203	101	456
9	Chikkaballapura	4,80,649	6,856	274	137	617
10	Chikmagalur	3,91,685	5,587	223	112	503
11	Chitradurga	6,39,941	9,129	365	183	822
12	Dakshina Kannada	7,23,718	10,324	413	206	929
13	Davanagere	7,57,255	10,802	432	216	972
14	Dharwad	7,26,314	10,361	414	207	932
15	Gadag	4,37,726	6,244	250	125	562
16	Gulbarga	12,15,432	17,338	694	347	1,560
17	Hassan	5,98,583	8,539	342	171	768
18	Haveri	6,57,327	9,377	375	188	844
19	Kodagu	1,97,805	2,822	113	56	254
20	Kolar	6,03,551	8,610	344	172	775
21	Koppal	6,57,102	9,373	375	187	844
22	Mandya	6,16,445	8,793	352	176	791
23	Mysore	10,71,925	15,291	612	306	1,376
24	Raichur	9,19,631	13,118	525	262	1,181
25	Ramanagara	3,79,884	5,419	217	108	488
26	Shimoga	6,47,560	9,237	369	185	831
27	Tumakuru	9,48,423	13,529	541	271	1,218
28	Udupi	3,67,959	5,249	210	105	472
29	Uttara Kannada	5,19,335	7,408	296	148	667
30	Yadgir	5,97,236	8,519	341	170	767
Total		2,38,38,995	3,40,059	13,602	6,801	30,605

Onset, Rise, and Fall of the Wave:

- As is observed, in the current second wave the cases build up over a few weeks, reach a peak, plateau and decline.
- Resources will be needed, and stockpiles are necessary to combat a sudden surge in cases.
- Planning should take in to account the time of onset when cases in children start going up and plan for additional resources rapidly.
- Based on the above data the requirements of Equipment and supplies, space, staffing and strategy can be worked out for each district.

Table V:

Patient Type (0-18 Years)	Doctor Interactions in 14 day Period for 1 Patient	Doctor Interaction Daily Average for 1 Patient	Time/ Interaction (In Mins)	Total Number of Infected Patients at Peak	Total Time of Interactions for Patient Type Daily At Peak (In Mins)	Daily Working Mins For 1 FTE Physician (7 Hours Working)	No. of FTE Requirement for Total Time of Interactions
Mild/ Asymptomatic	2	0.14	5	2,45,693	1,75,495		
Moderate	3	0.21	10	20,404	43,722		
Severe	These patients will require management in an Hospital (Ward/ ICU) setting. We will need to apply a mode of Virtual Specialist Management under the care of Nurses/					420	596
Critical							
COVID Care Centres (CCCs)	2	0.14	5	43,358	30,970		
Total				**3,09,454**	**2,50,186**		

Phasing of resources may be done keeping in mind the rate of growth of infected patients in the 2nd Wave (As outlined in Table VI) –

Table VI:

Based on the 2nd Wave			
	7 - Day average of Daily Active Cases	% Change	% of peak values
15th March *	7,509		1.4%
31st March	22,757	203%	4.1%
15th April	71,256	213%	12.8%
30th April	2,93,288	312%	52.9%
15th May **	5,54,564	89%	100.0%

Phasing of resources for 3rd wave with the moderate scenario estimate and considering 0 – 18 years of age as target population shall be as outlined in Table VII

Table VII:

Demand For State Level (0 - 18)		W0	W2	W4	W6	W8
Total No. of CCC Beds	43,358	2,168	4,402	9,382	29,233	43,358
Total No. of Hospital Beds	23,804	1,190	2,417	5,151	16,050	23,804
Total No. of ICU/HDU Beds	6,801	340	691	1,472	4,586	6,801

Conclusion:

We need to consider preparedness for the possible 3rd wave in terms of

1. Demographics and population characteristics
2. Spectrum of Clinical presentation in children
3. Scenario planning
4. District wise microplanning
5. Characteristic pattern of the wave
6. Addressing requirements into Equipment and supplies/Space/Staff and strategy

Disclaimer

These projections do not include new-born babies with Covid and their care planning.

- **Augmentation of the Covid Care facilities for paediatric and neonatal care**

Appropriate tools for monitoring should be available (e.g., pulse oximeters with Paediatric and newborn size probes). Appropriate formulations of medications required for supportive care should be available. Adequately trained manpower (doctors and nurses) should be available for care of sick children (details below).

Common examples of anticipated care at different levels of care for Paediatric COVID patients are depicted in Table 1. These depend on the availability of specialist providers and the oxygen needs of the patient.

Examples of type of Care vis-à-vis type of facility

Level 2 Care

● Oxygen requirement up to 5 L/min to maintain oxygen saturation>95% with stable vital parameters

● Oxygen by face mask or nasal prongs or oxy-hood

● Monitoring by Medical doctor with a remote on-callPaediatrician / Internal medicine specialist

Level 3 Care

● Oxygen requirement >5 L/min and/or unstable vitals

● Requisite backup (Lab, Radiology, Blood bank services etc) tomaintain 24X7 ICU Care

● High flow oxygen: Non rebreathing masks, Highflow nasal cannula

● Non invasive ventilation: Bubble CPAP, BiPAP

● Mechanical Ventilation,

● Monitoring under supervision of Paediatrician/Intensivist

- **Provisions to allow parent/ family member to stay with the child**

All Paediatric covid care facilities should have provision for the stay of a parent/ care-giver with the child. This could be an adult family member who also has mild COVID/ asymptomatic infection, or one who has previously recovered from COVID. In case the caregiver is COVID negative, he/she still may be allowed to be with the child, after due counselling, appropriate consent and providing them with appropriate PPE (esp. a good fitting N95/ FFP2 mask)

4. Augmenting bed capacity for Neonatal and Paediatric care in urban, peri urban and rural area

1. 1.The existing covid facilities and Special Neonatal Care units (SNCUs) should be augmented; the numbers of beds available should be enhanced by at least 10%. These facilities should have provisions to allow the parents to be with the child; separate areas could be earmarked within the covid facilities for children and their parents.
2. These augmented facilities should have adequate provision for oxygen supplies, Paediatric specific respiratory support devices, monitoring equipment for children,

Paediatric formulations. Adequate number of trained manpower for managing Paediatric cases should be made available.

3. Standalone Paediatric hospitals should create areas dedicated for Paediatric covid care.
4. For managing MIS-C, the existing Paediatric facilities within various hospitals need strengthening for HDU/ ICU care.
5. If the surge is excessive and the capacity of covid facilities is overwhelmed, then use of general beds/ wards/ ICUs in hospitals may be considered.
6. Pandemics like COVID-19 may affect us at any point of time. Thus, parallelly we also need to strengthen our existing health facilities particularly DH and secondary care facilities for provision of assured non-COVID-19 critical care.
7. This is also to flag here that any strengthening in the facility will only be able to respond adequately if it is properly linked with community-based home care. Lesson from the present pandemic has clearly indicated reactions by the public, rushing to the facilities, seeking care for the cases which could have been well managed at home and this may have resulted in denial of certain services for those who actually needed the admission. It is therefore also proposed that every district should have a COVID control room under the guidance of paediatrician and physician so that focus on adequate IEC, reassurance for community and home-based management particularly for mild cases is properly disseminated and assured to the people.

Equipment

Medical equipment plays a significant role in patient care in COVID Hospitals. All the necessary equipment to provide clinical, support and other services should be ensured. Additional equipment, if required, can be procured to provide the full range of services being offered at the facility. Before initiating procurement of any equipment, facility wise gap

analysis is a must. A systematic and robust programme for bio-medical equipment maintenance and monitoring should be in place with dedicated responsible people.

Annexure – 1: Equipment for PHC/CHC/Taluk/District Hospitals in Karnataka for Paediatric COVID Patient Care

Sl. No.	Equipment For Paediatric department	PHC	CHC	Taluk Hospital	District Hospital
1	Ventilator- Neonatal and Paediatric	-	-	-	10
2	Portable X ray	-	-	-	1
3	Portable ECG		1	1	2
4	ABG machine				1
5	Oto-Opthalmoscope				1
6	Glucometer with strips	1	1	2	5
7	Portable ultrasound				1
8	ICU COTS with beds				20
9	Defibrillator/cardiovertor				1
10	Crash cart	1	1	2	5
11	Shifting trolly with oxygen cylinders	2	2	2	3
12	Multimodal monitoring with following				10
13	Electronic weighing machine -Infant &child	1	1	1	2
14	Infusion pumps		5	5	20
15	Syringe pumps		5	5	25
16	Computer with memory and printing facility			1	1
17	PaediatricAmbu Bag (all size-250-500-750ml) & Masks-(00,0,1,2)	1	2	2	5
18	Laryngoscope all sizes (curved and straight blades)	1	1	1	5
19	General sterile trays (instrument set) and sets			2	2
20	Infrared Thermometer	5	5	10	10
21	Wheel chair	1	1	2	3
22	Procedure stool			2	5

23	Clocks	1	1	1	1
24	HFNC			2	20
25	Bubal CPAP				10
26	Suction Machine-both Electrical/Foot-operated	1	1	2	5
27	Refrigerator	1	1	1	2
28	Bed side Screen	1	2	2	5
29	NIV				2
30	Cupboard/Almirah	A	2	2	4
31	Open Medicine Rack		1	1	2
32	Nebuliser	1	1	1	5
33	Blood Bank				1
34	Oxygen Generator-PSA			1	1
35	Pulse Oximetry	2	5	5	10
36	Finger Pulse Oximeter	5	10	10	20
37	Radiant Warmer	1	2	5	10
38	Measuring tape	1	2	2	5
39	NIBP with all cuff sizes	1	2	2	3
40	Torch	2	3	3	3
41	X ray View box	1	1	2	4
42	Table & chairs		2	2	2
43	Transport Ventilator				1

Note :

- Jumbo Oxygen cylinders and Oxygen concentrators – Depending upon local demand.
- **Stabilisation Unit:** Establishing a temporary care centre within the existing major hospital campus with 10-20% of bed capacity equipped with oxygen concentrator, nursing staff and doctor. (the setup can later be used for patient waiting area / parking / other hospital-based utility)

Annexure – 2: Additional Manpower requirement

Sl No	Positions	PHC	CHC	Taluk Hospital	District Hospital
1	GDMO	1	1	1	4
2	Paediatrician			1	4
3	Registrar/Resident				6
4	Anaesthetist				4
5	Microbiologist				1
6	Pathologist				1
7	Bio Medical engineer				1
4	Nursing Staff	1	2	6	20
5	Group D	1	2	2	6
6	Security	1	1	4	6

Annexure – 3:

Additional Equipment and Manpower for Paediatric Departments in Medical Colleges

Sl No	Equipment For Paediatric dept	Medical College with no PG intake	Medical College with PG intake less than 10 per year	Medical College with PG intake 10-20 per year	Medical College with PG intake more 20 per year
1	ICU COTS with beds	10	15	20	25
2	Ventilator-Neonatal-Paediatric-Adult	10	15	20	25
3	Transport Ventilator	1	1	1	1
4	Multisystem Monitor	10	15	20	25
5	Pulse Oximeter	20	30	30	30
6	Finger Pulse Oximeter	25	30	30	30
7	Infusion pumps	20	20	25	30
8	Syringe pumps	25	30	40	50
9	Shifting trolley with oxygen cylinders	2	3	4	4
11	HFNC	5	5	10	10
12	Bubble CPAP	10	10	10	10
13	NIV	2	2	2	2
14	Paediatric Ambu Bag (all size-250-500-750ml), Masks-(00,0,1,2)	5	5	5	5
15	Laryngoscope all sizes (curved and straight blades)	3	3	5	5
16	Laryngeal Mask Airway different sizes	10	10	10	10
17	Oxygen hood-Neonate/Infant	10	15	20	25
18	Suction Machine-both Electrical/Foot-operated.	5	5	5	5
19	Radiant warmer	10	10	10	10
20	Phototherapy	5	5	5	5
21	Crash cart	4	4	6	6
22	Defibrillator/cardiovertor	1	1	1	1
23	NIBP with all cuff sizes	5	5	5	5
24	Portable X ray	1	1	1	1
25	Portable ECG	1	1	1	2
26	Portable ultrasound	1	1	1	1
27	ABG machine	1	1	1	1
28	General sterile trays (instrument set) and sets for:	5	5	5	5
29	Infrared Thermometer	10	15	20	25
30	Oto-Opthalmoscope	1	1	1	1

31	Glucometer with strips	2	2	2	2
32	Electronic weighing machine- Infant & child	2	2	2	2
33	Computer with memory and printing facility	1	1	1	1
34	Wheel chair	2	2	2	4
35	Procedure stool	5	5	5	5
36	Clocks	1	1	1	1
37	Refrigerator	2	2	2	4
38	Bed side Screen	5	5	5	5
39	Cupboard/Almirah	4	4	8	10
40	Open Medicine Rack	5	5	8	8
41	Nebuliser	5	5	5	5
42	X ray View box	3	3	5	5
43	Table & chairs	5	5	8	10
44	Measuring tape	1	1	1	2
45	Torch	2	3	3	3
46	Blood Bank	1	1	1	1
47	RTPCR Machine with setup	1	1	1	1

Sl No	Additional Manpower as New Recruitment	Medical College with no PG intake	Medical College with PG intake less than 10 per year	Medical College with PG intake 10-20 per year	Medical College with PG intake more 20 per year
1	Assistant Professor of Paediatrics	2	2	4	6
2	Senior Registrar	15	15	15	25
3	Nursing staff	20	30	40	50
4	Group D	5	5	8	10
5	Security	6	6	8	10

Annexure 4:

List of Facilities Available for PICU / HDU / NICU at Various Hospitals in Karnataka

- Upgrading the existing SNCU/NICU, PICU, converting existing HDU to PICU, upgrading existing pediatric wards as HDU with piped central oxygen and suction facility so that in short notice can be converted to PICU in case of surge in pediatric cases.

- Setting up of exclusive Children hospital of 250 bedded with provision for 20 bed PICU/HDU/NICU in like IGICH in the backward districts like Chamrajanagar, Yadgiri, Chikballapur, Kolar, Chitradurga, Koppala and Haveri in the campus of district hospital/ Medical college.

- At District Level hospital: Additional provision of 10-25 bed (Level Three) PICU and 25- 50 bed HDU, 10- 20 bed NICU and remaining pediatric beds to be Central oxygen and suction.

- At Taluk level Hospital: 10-20 bed level 2 PICU with additional 20-50 bed HDU remaining beds are with oxygen facility.

- Earmarking of 10-20 percent of existing MICU/Ward beds for Children in case of surge of pediatric cases.

- **Creation of Stabilization units within campus** in major district Hospital/Medical colleges/Autonomous Institute with oxygen concentrators, doctors, Nurses, etc. by creating a temporary structure with the help of sheets & Iron rods which later can be utilized for parking, patient attender waiting area can be repurposed any other utility.

- **List of Government Medical College Hospitals in Bangalore**

SL NO	NAME OF THE HOSPITAL	Addl. PICU	Addl. HDU	Addl. NICU	Existing - PICU/HDU/NICU
1	IGICH	35	75	10	35/67/32
2	VANIVILAS CHILDRENS HOSPITAL	35	50	20	12/31/82
3	ATAL BIHARI VAJPAYEE MEDICAL COLLEGE	50	100	20	13/00/25
4	ESI MEDICAL COLLEGE, RAJAJINAGAR	20	50	20	Requires direction from State Government
5	RAJEEV GANDHI INSTITUTE OF CHEST DISEASES	20	50		Older children & adolescent can be treated in case of Surge / Emergency
6	K C GENERAL HOSPITAL	20	50	10	00/10/10

7	JAYANAGAR GENERAL HOSPITAL	20	50	10	00/10/10
8	ESI-HOSPITAL INDRANAGAR	20	50	20	
9	ISOLATION HOSPITAL OLD MADRAS ROAD	20	50	10	00/00/00
10	C V RAMAN HOSPITAL	10	20	10	00/00/10
11	YALAHANKA GENERAL HOSPITAL	10	25	10	00/00/00
12	KG HALLI, CHC	-	20	10	00/00/00
13	KENGERI , CHC	-	20	10	00/00/00
14	K R PURAM GENERAL HOSPITAL	-	20	10	00/00/00
15	BBMP MATERNAL HOSPITALS	10. Level-2	20	10	
16	COMMAND HOSPITAL	10	50	20	
17	GHOUSIA HOSPITAL			20	

Requirement of Drugs and consumables:

The required drugs with number of vials based on projected numbers are shown in Annexure 3 shows the required drugs and quantity of consumables.

Annexure 4-A: Required Drugs for Paediatric Covid-19 (For 52089-65110 cases)

Drugs*	**Assuming 20%**	**Assuming 25%**
Remdesivir**		
Aspirin	25000 strips	30000 strips
Dexona	489000 vials (4mg vials)	500000 4mg vials
Enoxaparin	60mg/pfs(417 vials)	60mg/pfs(450 vials)
Amphotrecin B	400 vials	500 vials

*Assuming 25kg

**An expert committee compromising 3 to 4 senior faculty member in each institute should be made for approving the drug as per prevailing government of India guidelines for children aged 0-18years

Annexure 4-B: Common supportive Drugs Required for Managing Paediatric COVID

Drugs	20.00%	25.00%
IV ANTIMICROBIALS		
CO-AMOXICLAV	50000 VIALS	60000 VIALS
CEFTRIAXONE	26040 VIALS	32550 VIALS
PIPTAZ	4000 VIALS	4800 VIALS
MEROPENEM	2000 VIALS	2400 VIALS
VANCOMYCIN	4000 VIALS	4800 VIALS
ORS	1.5 LAKHS	1.8 LAKHS
INJ. PANTOP	1800	2000
TAB ZINC 50 MG	1 LAKH STRIPS	1.3 LAKHS STRIPS
TAB VITAMIN C	7 LAKHS STRIPS	8.9 LAKHS
TAB RANITIDNE	50,000 STRIPS	60000
TAB PARACETAMOL 500MG	15 LAKHS TABLETS	18 LAKHS
TAB AMOXICLAV	50,000 TABLETS	60,000 TABLETS
TAB AZEE 250MG	52000 STRIPS	65,000 STRIPS
SYP MULTIVITAMIN	1,04,000 BOTTLES	1,30,000
VITAMIN D3 DROPS (400IU/ML)	52000	65000
BUDESONIDE MDI with spacer	3000	4000
SEDATIVES		
INJ FENTANYL	15600 VIALS	19500 VIALS
INJ MIDAZOLAM	12000 VIALS	19000 VIALS
INJ LORAZEPAM	12000 VIALS	19000 VIALS
INJ ATROPINE	1000 VIALS	

Additional drug requirements:
Inotrope/vasoactive drugs**:** Milrinone, Adrenaline, Noradrenaline, Vasopressin
Sedation/Analgesia: Midazolam, Fentanyl, Morphine
Antimicrobials: Ceftriaxone, Liposomal Amphotericin B

Annexure 4-C: Consumables

O2 Mask/Nasal cannula	150000	160000
NRM mask	30000	35000
High flow nasal cannula	150000	160000
Paediatric circuit		
IVF	NS – 50000 DNS- 100000	NS-77000 DNS-140000
MV	52089 bottles	60000 bottles

Other Consumables:
Non rebreathing masks of infant and paediatric sizes, Noninvasive ventilation mask, NIV circuit, cuffed and uncuffed endotracheal tubes of all sizes, invasive ventilator circuit, Closed suction catheters, Heat moisture exchanger with viral filters, paediatric BP cuffs, paediatric HMEs Syringe infusion pumps, monitors

Annexure 4-D: List of Consumables	
Glove box	2000
Sterilium	1000
Sterile glove	25000
Nebukit	1000
Oxygen mask	1000
Nasal prongs	1000
NRBM mask	500
ET tube	
No 4	100
No 4.5	100
No 5	100
No 5.5	100
No 6	100
Nasopharyngeal airway No 1,No 2	100 each
Under pad	10000
Diaper	4000 packet
Suction catheter No 10,8,6	5000 each
Normal saline 100ml	30000
Sterile water 500ml	5000
IV set	10000
Ventilatory circuit Paediatric	100

Bed bath towel	5000
Foley catheter size 6,8,10,12	250 each
Urometer	1000
Xylocaine gely	1000
Sterile water 100ml	5
Central line CVP catheter 4.5,5.5	250 each
Inj heparin 25,000 and 50000 IU	1 each
IV canula No 26	100
No 24G	750
20G	250
22G	1000
Tegaderm Paediatric	5
Micropore plasty	500
Dynaplast	2 box
Blade no 11	100
Scissor	100

- For neonates with COVID – drugs and consumables should be as per list in existing SNCUs/ NICUs and the stock of should be enhanced by at least 50%

2 Vaccination

1. **Strategy/Policy**

- Create a State-level policy such that no hospital stocks unused vaccine beyond 10 days; it must be diverted to alternate vaccination centres by government or non-government medical bodies if vaccines are lying unutilised.
- Government must consider involving private sector for large scale free vaccination to prevent mass congregation outside the government hospitals which can become potential sites for COVID spread. Many of the private hospitals and clinics will be happy to vaccinate at the capped price of Rs. 150 per vaccine to be paid by the government and carry on with government's mission of free vaccination.
- War room should have real time data of available vaccine in every government and private hospitals in a transparent manner for efficient utilization of vaccine and prevent hoarding.
- Vaccination need not be restricted to fixed timings in large hospitals with adequate human resources; it may even be permitted nearly round-the-clock.
- Encourage companies to vaccinate employees and their families.
- Unless the vaccination effort becomes the community affair, we will not be able to reach complete vaccination in next 3-4 months.
- To quickly increase the vaccine pool, Central government should procure vaccine from Indian and foreign companies and distribute it to private hospitals at the cost price.
- Encourage Decentralization and PHC level microplanning to fast track the coverage of general population with Covid-19 vaccines based on learnings from Polio and Measles Rubella Campaign

2. **Vaccination sites** – consider the following to enhance number and reach:

- Doctors clinics, including paediatricians having cold chain, to be vaccination sites
- Schools, *anganwadis*, wedding halls, Gram Panchayat offices *etc* especially to be included in rural areas
- Mobile vaccination buses
- Jumbo vaccination centres in cities
- Consider special strategies (*eg* near-to-home) for difficult-to-reach populations
- Encourage NGOs to provide refreshment at the vaccination sites.

- Prioritization of vaccination in poor health infrastructure districts like Chamarajanagar, Yadagiri , Koppala, Haveri, Chitradurga, Chikballapur, Kolar, Bengaluru Rural

3. Vaccine Hesitancy

- Address through public awareness campaign, social media, etc.
- Enlist the support of School teachers and Gram panchayat task forces in rural areas
- Mobilize rural populations to PHC, Taluk hospital and district hospitals with support from NGOs and Gram Panchayat Task Force

4. Cold Chain efficacy

- Monitor cold chain at all levels right up to the recipient to ensure vaccine potency

5. Clinical Management and Adherence

- Manage AEFI (Adverse Event Following Immunization) effectively
- Strengthen existing AEFI surveillance system to improve reporting following Coid-19 vaccination
- Conduct regular causality assessment of all reported severe and serious AEFI cases and disseminate information to build community confidence
- Ensure second/follow-up/booster doses as appropriate to reduce drop-outs
- Adopt ring immunization, cocooning as appropriate

6. Childhood immunisation

- Routine childhood immunisation needs to be strengthened so as not to lag behind
- When COVID vaccines are available for children, prioritise high-risk sub-groups

7. Software

- Improve COWIN portal efficiency to minimise glitches.
- Support Rural population in registering and slot booking in COWIN

8. Monitoring and Supervision

- Strengthen mechanism of supervision and monitoring of vaccination process through Government and Immunization partners
- Strengthen the vaccination progress review at District and Sub district level led by District Collector through Task Force mechanism

3 Oxygen

1. Demand and Supply

- The peak requirement in Karnataka was 1200 MTs. However, the daily requirement in Karnataka is between 600-800 MTs. Government should identify definite source of oxygen for peak requirement.
- All the major oxygen suppliers should be encouraged to store maximum capacity.
- 25% of oxygen to be kept as reserve.

2. Piped bed-side oxygen supply

- All government hospital beds to have piped oxygen
- Encourage all private hospitals to have significant percentage of beds with piped oxygen. They can borrow money @4% interest for 3 years under special COVID package from RBI. State government can give the hospitals some interest subsidy to use the beds for government referred patients.

3. Hospital Oxygen Sources

- **Liquid Medical Oxygen (LMO)**
  - to be available in all Medical College hospitals and District Hospitals; increase the size of LMO plant in district hospitals, if already available

- **PSA plants**
  - to be installed in as many Taluk Hospitals as possible
  - encourage bigger private hospitals to have their own PSA plants

- **Mobile oxygen PSA**
  - Both mobile pressure swing adsorption and vacuum PSA can be installed at any place where it is difficult to deliver or produce oxygen.
  - It can produce 40L/minute and 2400L/ hour
  - It can be transported to any place where we envisage a rise in cases according to survey pattern.

    Advantages

    1. Easily portable

2. Low cost and maintenance compared to in-house plants

- **Oxygen cylinders**
    - Jumbo cylinders to be stationed in all Taluk Hospitals, CHCs and PHCs

- **Oxygen concentrators**
    - Reasonable number of Oxygen concentrators of 10 litre capacity to be placed in Taluk Hospitals
    - Oxygen concentrators to be made available for discharged patients for temporary use at home (on returnable basis)
    - Oxygen concentrator bank (mobile pool) with donation from NGOs
    - Explore innovations (such as oxygen generator and concentrator from IISc) if already in market

- **Patient Safety**
- Specify proper use of distilled water in oxygen delivery devices.
- Convene and obtain opinion from group of experts on Mucormycosis / all secondary infections.

- **Clinical Care: Testing and Post-COVID Care in Children**

Testing

In children Nasopharyngeal and oropharyngeal swabs can be quite challenging. The procedure requires skills, can cause patient discomfort, often very painful and can be traumatic. Improper swabbing results in false negative results. Alternative methods have been proposed below along with conventional RTPCR testing.

- Conventional Method: Nasopharyngeal & oropharyngeal swabs

  Disadvantages:

  1. Need PPE, separate space, skilled person.
  2. Long turnaround time
  3. Painful and traumatic procedure
  4. Poorly tolerated by children

- Non-conventional Method: Nasal swab and oropharyngeal swab
  Well accepted by children

  Disadvantage:

  1. Need PPE, separate space, skilled person.
  2. Long turnaround time
  3. Painful and traumatic procedure
  4. Poorly tolerated by children

- Gargle RT-PCR: New Method Approved by ICMR

  1. Less contact with health personnel
  2. Time saving/independent test
  3. Well accepted by children

- Salivary RT-PCR:

  1. Very promising with good results
  2. ICMR validated but NOT approved
  3. Promising results overseas
  4. Very much suitable for Paediatric age group.

Antigen Detection Testing

- Rapid Antigen Test (RAT)

Paediatric Post COVID-19 care

Children who have suffered from severe COVID-19 infection especially those who have needed invasive ventilation will need enhanced care on follow up.

- Post discharge complications:
- Infections (pneumonia, invasive fungal infections including mucormycosis)
- Thromboembolism,
- Progressive fibrosis and
- Hypoxemia
- MIS-C

Since children have good regenerative capacity the likelihood of persistent pulmonary dysfunction and need for home oxygen therapy is likely to be less.

Recommendations

1. A pulse oximeter should be given to the patient at discharge with advice about how the saturation should be monitored.
2. Advice about warning signs which include development of fever, persistent drop in oxygen saturation, increased cough or breathlessness, chest pain, headache/ jaw pain / tooth pain / nasal blockage.
3. Provision for home oxygen therapy in those that need it and emergency contact number in case of exhaustion of oxygen supply or malfunction of concentrator
4. Emergency contact number in case of warning signs
5. Vaccination: Influenza and pneumococcal vaccination may be considered
6. Nutrition: Ensure balanced diet during recovery
7. Psycho-social Support: Parents and other family members involvement in caring the child is very essential

Agencies: IAP, Women and Child Welfare Department, Govt of Karnataka

Multi-system Inflammatory Syndrome in Children (MIS-C)

- Serious post-COVID complication requiring early recognition and immediate treatment; called MIS-N when seen in newborns (Multi-system Inflammatory Syndrome in Newborn)

- Special laboratory investigations required for management are: COVID antibodies, Serum ferritin, IL-6, LDH, Trop-T, D-Dimer, Procalcitonin, CRP- quantitative, Pro-BNP, Microbiological culture facility, and PT/aPTT – to be available in all district hospitals.

- Estimated requirement of drugs and bedside equipment.

Drugs	Strength	Quantity
IVIG	5g	5,000 bottles
Methyl Prednisolone	500mg	12,000 vials
Enoxaparin	60mg	2,000 vials
Tocilizumab		25 vials
Equipment		**Quantity**
Bedside USG with ECHO with Teleconnectivity		20 machines

1. Prioritize use of IVIG for children with MIS-C for whom it is life-saving.
2. A **State Nodal Centre** (such as IGICH) linked with district nodal centres is recommended for rational utilization of limited resources such as IVIG and methylprednisolone; in addition, Paediatric Cardiology services also need to be strengthened.
3. State level expert committee for MIS-C can be formed composed of Dr.G.V. Basavaraja, Dr. Jagadish Chinappa, Dr. Aravind Shenoi, Dr. Vinod Ratageri, Dr. Raghunath. C.N
4. Setting up **of MIS-C Registry** to enable long-term follow-up of complications.
5. Research Project on alternative for IVIG in case of unavailability of IVIG.

<u>Recommendations for Upgrading Government Medical Colleges in Karnataka</u>

1. To setup state Centre of Excellence for MIS-C at Indira Gandhi Institute of Child Health, Bangalore
2. Paediatric COVID-19 regional Centre of Excellence with 50 bed PICU, 100 bed HDU, 20 bed NICU, 20 bed SNCU at:
    1.KIMS-Hubli,
    2.Vajapayee Institute of Medical Sciences, Bangalore,
    3.Gulbarga Institute of Medical Sciences, Kalburgi,
    4.Hassan institute of Medical Sciences, Hassan,
    5.Shivamogga Institute of Medical Sciences, Shivamogga.

3 Recruitment of Assistant Professor in various autonomous institutes under various departments like
    1.Paediatric Medicine, Neonatology and Sub-specialties
    2.General Medicine
    3.Anaesthesia
    4.Radiology

5.Microbiology
6.Pathology
7.Otorhinolaryngology
8.Ophthalmology

with a single window administrative clearance in all autonomous institutes under Medical Education Department, Government of Karnataka.

4. All the beds in the hospital should be equipped with oxygen delivery facilities and the beds should be large enough to use for adults as well as children.

Manpower

1. **Short term**
   - Starting 1month courses(Online) on COVID-19

2. **Long term**

1. Combination fellowship (One year course) ie paediatric intensive care plus infectious disease
2. **Single window administrative clearance** from Government of Karnataka including FD clearance
3. One time doubling of fellowship Seats of PICU/NICU/Anaesthesia/Critical care/Pulmonology/ENT/Paediatric emergency medicine along Paediatric Infectious diseases offered by RGUHS.
4. Reserving 50% seats in Fellowship courses in RGUHS in Government Institution for Inservice Candidates
5. Starting of fellowship courses in PICU / NICU / Anaesthesia / Critical care / Pulmonology / ENT / Paediatric emergency medicine along Paediatric Infectious diseases offered by RGUHS in 4 old Government Medical colleges **(BMC, MMC, KIMS, VIMS) and IGICH**
6. Starting Nursing Paediatric/Neonatal Critical Care Fellowship programme

5. Public Awareness and Messaging

- **General messages on all medium**

Propagating positive messages	Reducing misinformation
• Facts about Covid 19 infections • Do's and don't's in Covid 19 infection • Facts about vaccination • Do's and don't's in vaccination • Facts about immune boosters and other food • Facts of healthy behaviour • Positive psychological messages	• Reducing misinformation with authentic messages from GoK or public figure with credible information provided by GoK • Alleviate panic about beds, oxygen and other key elements by credible information.

- **Other key messages**

- Print or publish key messages in two languages looking at preferences of the community like Belgavi both Kannada and Marathi, ie all border districts to have both Kannada and predominant local dialect
- Print or publish key websites containing information accessible by all, key helplines and key resources.

- **Who and through whom?**

Through already existing information or information that we assimilate over the course of pandemic working in tandem with both who and whom.

Who

- Government of India (GoI)
- Government of Karanataka (GoK)
- Ministry of information and broadcasting (GoK)
- Ministry of Electronics information technology (GoK)
- Ministry of information and public relation (GoK)

Whom

- Radio
- Television (both private and public)
- Social media with GoK authenticity
- Print (Both print media and hoardings)
- Involving Indian academy of paediatrics (Karnataka chapter) digital and print media

- **Radio**

- Short messages (about virus, spread of virus, real time information about mutants and its infectivity)
- Facts and myths (Virus, vaccination, food)
- Do's and Don't's in public spaces

- Include people of social stature to propagate credible information provided by GoK.

- **Television (both private and public), endorsed by GoK**

- Short messages (about virus, spread of virus, real time information about mutants and its infectivity)
- Short videos (Hand washing, technique of wearing masks, testing, home isolation/quarantine, etc)
- Facts and myths (Virus, vaccination, food, etc)
- Do's and Don't's in public spaces ie common mistakes made by people of pulling the mask down before talking, spitting in public spaces
- Include people of social stature to propagate credible information.
- All public and private channels should be mandated to give 30 minutes of primetime to air GOK approved messages, ie short messages, videos and interview and debates.

- **Social media**

- Use social media influencers with significant followers with credible information endorsed by GOK (Like cine actors, comedians, famous politician, Doctors)
- Use paid social media advertising to reach as many as possible with authentic information.

- **Print (Both print media and hoardings)**

- Have all newspapers and other print mediums to print information that is readily available about the virus, spread of it, why we need masks, steps of handwashing.
- Psychosocial wellbeing.
- Resources available – Key helplines, information on testing, information on early testing
- Hoardings similar to political campaigns containing key information.

6. Reopening Schools

Guidelines on School Reopening

With the unprecedented Covid-19 (in two waves) pandemic and the resultant school closures children all over the state are undergoing lot of educational, psychosocial and physical problems. There is an urgent need to offer scientific and definitive guidance for school reopening as anymore delay in achieving near normalization of schooling will be more detrimental than the covid-19 itself. The loss of formal learning in covid pandemic background is almost 50% of the expected academic learning. This is more so in disadvantaged and marginalized children as observed by expert task force of Indian Academy of Paediatrics. The school closure has resulted in stress, anxiety, depression among the children and their families. The catastrophe of the covid-19 pandemic has jeopardized the lives of children in general and their mental health, nutrition, education and joyful childhood in the last 14 months. It is pertinent to understand that the education is the fundamental right of a child. Any further delay in school reopening may push children into malnutrition, child labor, child marriage, child trafficking, begging etc., making their condition further worst.

The outreach programs and learning through remote modalities i.e. digital learning has achieved for less than the expected goals and also created large gaps in learning. This has created educational inequality across large sections of society. In addition to this the digital learning has imposed lot of psychosocial stress among children and their families. The socialization, nutrition and physical well being are also grossly dented among children.

The situational decisions taken during I and II wave have taught us lot of lessons. The programs like “Vidyagama” and conduct of SSLC and PUC examinations in the previous academic year has boosted our confidence in making an attempt to reopen schools. On this basis many schools were opened during January to March 2021.

Indian Academy of Paediatrics a professional organization of academicians and practicing Paediatricians opine as follows:

Pandemics tend to occur in waves and each wave causes large number of cases. Eventually most of the population may get immune by asymptomatic or symptomatic infections. Over time disease may die out or may become endemic in the community with low transmission rates. Though there is a possibility of III wave it is difficult to predict timing and severity and possible predominance in Paediatric age group. It also says children are as susceptible as adults and old individuals to develop infection but not severe diseases. The latest survey showed that the percentage of infected children in the age group of 10 to 17 years was around 25% the same

as adults. It is highly unlikely that the III wave will predominantly or exclusively affect children. Almost 90% of infection in children are mild / asymptomatic and incidence of severe disease is not high in children. The MISC (Multisystem Inflammatory Syndrome of Children) as a complication occurs in 1 to 2 children per 1,00,000 population and few of them may be severe. However, if diagnosed early MISC is a treatable condition with a good outcome. Added to this most children suffering from MISC cannot transmit the infection to others as this occurs 2-6 weeks after covid-19 infections.With all these positive notes, yet we need to be prepared for possible surge in Paediatric population with an expectation of more sick children getting admitted.

The National coordinator for IAP Screen time and digital wellness and consultant Adolescent Health Specialist Dr.Preethi Galagali has following opinions:

School closures have multiple adverse effects on the learning outcomes, school attendance, physical and psychosocial health and nutritional status of children. International and national organizations like WHO, UNICEF, CDC, Indian Academy of Paediatrics and American Academy of Paediatrics have recommended reopening of schools at the earliest in areas where the community transmission of covid-19 is low. i.e. during the window periods between two waves. Current data indicates that children and adolescents are less susceptible to covid-19 than adults and do not appear to significantly drive transmission to adults.

Decision to open schools could be decentralized at the district level and school level under SDMC/Local Authorityrather than state level. In rural areas due to digital divide and lack of access to online education it is recommended that school be reopened at the earliest following SOP of government of India and Indian Academy of Paediatric guidelines with classes preferably being conducted outdoors with strict adherence to SMS and ventilation protocols.

*Covid vaccination of teachers and other staff, people around school and college going children i.e. parents and transport staff and also students above 18 years can get vaccination at the earliest. This will reduce even minimum transmission in schools and colleges***.**

Hence the decision to open schools physically need not be postponed as most children will be mildly symptomatic and as most adults have already suffered or vaccinated or possibly get exposed to disease even otherwise, the transmission risk from child to adult has least significance quantitatively. The possibility of schools being areas of large transmission has not been proved anywhere in the world.

RECOMMENDATIONS:

Hence it is recommended to open schools as guided below to optimize learning, physical health, mental health and nutritional aspects of children. As a preparation to open school the following are of immediate need.

1. Opening of administration wing along with teachers as soon as lockdown is lifted may o facilitate the preparations needed for sanitization and cleaning of school premises and also reorient staff for new standard operating protocols to maintain covid appropriate behavior at school.

2. Ring immunization of all adults around children on war footing i.e. parents and family members, school staff, transport vehicle staff, boarding staff etc., during this window period.
3. It is advisable to consider staff of the school both Government and Private as Corona Warriors and extend insurance facilities.
4. It is advised to provide Covid-19 health insurance up to Rs.2,00,000/- to all children attending school physically.
5. Utilizing one-month preparatory phase to connect with children and parents through online means and telephonic conversation. In small villages teachers can visit houses and connect to children and parents to re-establish inclination to schooling.
6. All decisions about reopening of the schools should be decentralized and should be taken by the local authorities at district, taluka and village levels through SDMC (School Development and Monitoring Committee) as per the broader guidelines laid down by the government. The modalities can be fine tuned to meet the demands of various schools by local authorities. The bottom line shall be physical reopening of schools as much as possible.
7. After physical reopening of schools and colleges there should be periodic review of local situations by local competent authorities. A district level review committee can be formed including members from departments of health and education, teachers, school management (SDMC) etc., and parent groups to look into the situations.

SCHOOL REOPENING

1. GOVERNMENT AND AIDED SCHOOLS:

1. All government and aided schools in rural areas, smaller towns and bigger towns to be opened as most schools under government sector have no space constrains to follow standard operating protocols as per SMS and ventilation requirements. If any school through its SDMC finds any difficulty in opening schools the issue needs to be addressed and solved by district authoritiesat the earliest.
2. All government and aided schools shall be prepared to accept at least 10% increase in admissions as many children may shift from private to government due to economic constraints. The department of education should prepare a roadmap to accommodate these children with necessary support system.

3. After adequate precautions schools can be opened when case positivity rate in most districts due to II wave would decline to below 5% for the preceding two weeks.
4. Awareness drive on physical distancing, mask, sanitization and good ventilation of the premises should be on going and effective in all schools.
5. The day to day trouble shooting needs to happen locally taking clues from broader state guidelines. It is very appropriate to decentralize decision making to meet the local needs.
6. The nutritional supplementation programs at school to be continued as existing.

2. PRIVATE SCHOOLS:

1. All private schools in rural areas and smaller towns to be opened along with government schools as stated above.
2. In bigger towns and district centers private schools with adequate space and playground to be opened along with government schools.
3. If there is space constraints in few private schools of bigger towns, decision to open schools needs to be taken by school authorities in consultation with parents association / groups with final approval by district authorities. The consultation with parents who are the primary stakeholders is mandatory. In case school and district administration decide not to open school fully due to difficulties to follow SMS and ventilation protocols due to space constraints only, hybrid approach of learning can be entertained i.e. amalgamation of both physical and digital learning. In the process all the students need to participate on rotation basis in physical schooling and remote learning. The technical and gadgetry procurement shall be the responsibility of the school.
4. The curriculum in schools shall be full and complete as existing without any truncation, however teachers can adopt different preferential approach and prioritize teaching. The total learning is essential to complete the academic requirements and progress to next grade. However, evaluation system can be relaxed depending upon level of delivery and teaching in a given school due to various covid related constraints.
5. The norms and standards prescribed under the Right of Children to Free and Compulsory Education Act 2009 need to be implemented for both infrastructure and academic standards.

3. Opening of Colleges:

1. The similar pattern can be applied to colleges also with required changes to accommodate the academic terms. The ways and means of starting colleges remain same as suggested for Government, Aided and Private schools accordingly.
2. The standard operating protocols to reopen the schools and colleges is attached as Annexure -I at the end of the document.

7. Psycho-Social Support

Background

Children under 18 years are de considered a vulnerable population and are sensitive to ongoing adversities in their own life, in the family and in the society. Experience in the last 1 year since the onset of covid pandemic has shown that there has been major disruption in children's lives because of a variety of factors - school closure, stress of online education, social deprivation, fears and apprehensions about infection, disruption of family routines, illness in the family, isolation, economic hardship in family, domestic violence and so on. All these have proven to be major stressors affecting they mental health, manifesting as behavioral, emotional, and other stress related conditions. Added to this, the recent phenomenon of children themselves being infected in the second wave, hospitalization, multiple family members being affected, death of near and dear ones and so on has resulted a bigger threat to their mental health and well-being. Several experts all over the world have noted this and emphasized on the need to address the issue of protecting children's mental health and provided early, accessible, appropriate mental health care for them. This report suggests an approach that will benefit covid-infected children.

- **Strategies**

1. Ultra-rapid Training of health care workers (HCW's) –Doctors, nurses and other support staff - to understand, recognize and respond to distressed children.
2. Post-training handholding of Health Care Workers
3. Referral hospitals for children & adults with moderate / severe mental health issues
4. Training of teachers
5. Training of grass-roots level workers
6. Special support network for children in difficult circumstances
7. Telemedicine services

1. Ultra-rapid training

Goals of training

- Awareness and sensitization of psychological issues
- Build child friendly environs and Inculcate child friendly practices in clinical care
- Learn to communicate well with children of different ages and backgrounds
- Recognize psychological distress and provide psychological first aid in children
- Provide psychological support to mothers / other parent figures
- Know when and where to refer
- How to take care of themselves - personal coping and stress management

Detailed Content / curriculum of training program

- Introduction: What the training is about – learning objectives
- Basic concepts of child mental health
- Stress, vulnerability and resilience
- Psychological response of covid infected children – case examples
    - 8-year-old girl in home isolation who coped well
    - 10-year-old boy in home isolation who got very scared and sleepless
    - 5-year-old boy in CCC who ask a lot of intelligent questions about covid
    - 6-year-old girl who stopped talking and eating in a covid hospital
    - 15-year-old boy in covid care centre who would shout and scream
    - 8-year-old girl in covid hospital who continuously pleads to see her mother
- More about symptoms of distress and their recognition
- Management - creating child friendly spaces and communication patterns
- Management - recognizing and responding to distress
    - basic counseling techniques
    - psychological first-aid
- Management – working with parents
- Management – children in different treatment settings
    - Home isolation
    - Covid care centers
    - Covid hospitals
- When to seek professional help / refer
- How to take care of yourselves – personal stress and coping in HCW's
- Management in Special situations
    - Children with pre-existing mental health problems
    - Children whose parents are very ill
    - Children who have lost their near and dear ones
    - Covid in Childcare institutions
    - Children with disabilities

2. Post-training hand-holding

This will be Provided by a network of experienced mental health professionals / Paediatricians who will do handholding of HCW's in difficult scenarios – this can be through telephone call, online video consultation. A group of experts will be set up for each district who will be available to HCW's round the clock. The contact details of the experts will be widely publicized so that any HCW can contact the teem any time.

3. **Referral services**

   Referral hospitals equipped to handle children and adults with severe mental disorders irrespective of covid status at every district will be identified and necessary preparations in trems of infrastructure and human resource will be put in place

4. **Training of teachers**

   Training of teachers to handle covid related mental health / psychosocial issues such as stress management in student community once the schools restart will be undertaken. This will be done in collaboration with Education Dept.

5. **Training of grass-roots level workers**

   Incorporation of a brief training module focusing on awareness, sensitization and simple skills of psycho-social care for grass-roots workers such as ASHA, Anganwadi workers, junior health supervisors will; be done.

6. **Special support network for children in difficult circumstances**

   For institutionalized, orphaned, abandoned, street children and others.

7. **Telemedicine service**s

   For children with mental health problems through Government approved experts using platforms such as e-Sanjeevini.

Implementing agencies

Ministry of Health and family welfare, DMHP program, Ministry Medical Education, Ministry of Women and Child Development, other concerned ministries, IAP Karnataka, NIMHANS, IPS (KB), and other professional associations - a core team / working group to be established with representations from all these agencies.

8. Training and Upskilling

Skill enhancing and training module for Healthcare Professionals

1. Basic Course of Paediatric COVID-19 for:

    - MBBS Doctors, Interns, Paediatricians and other Specialty doctors.
    - Nurses and Paramedics
    - Anganwadi workers, ASHA workers, ANM and Gram Panchayat Task Force

2. Advanced Paediatric COVID-19 for:

    - Paediatricians
    - PICU consultants
    - Anesthetists
    - Interested other specialty specialists

3. Specialty Workshops:

    - Neonatal and Paediatric ventilation workshop (including HFNC and NIV)
    - USG and ECHO workshop
    - Procedure and monitoring workshop

4. Nursing Care in COVID-19

5. Training of Anganwadi and ASHA workers, Gram Panchayat Task Force

Duration of the courses:

1. **One-day training course**
    - Basic course of paediatric COVID19
    - Advanced Paediatric COVID19
    - Specialty work shops
    - Nursing care in COVID 19
    - Training of Anganwadi &ASHA workers, Gram panchayat task force

2. **3-month Bridge Course**
   For NICU, PICU Registrars and Fellows

3. **3-month Course**
   Paediatric Nurses (Ward, NICU, PICU)

9. Public Health Preparedness, Readiness and Response Plan

Based on the learnings from the multiple surges seen in the past, it would be prudent to be ready with an efficient system to test , trace , treat and contain the cases both in adults and children

1. Surveillance and Testing of suspect Cases

- Continue the ongoing surveillance to detect Covid-19 cases and strengthen the ILI / SARI Surveillance supported by IDSP.
- Testing for suspected Covid-19 adult cases must continue as per the prevailing ICMR and state Govt guidelines focused on
    - All ILI , SARI and other suspected Covid-19 cases
    - Symptomatic contacts of confirmed cases
    - Asymptomatic contacts of confirmed cases on day 0 and day 7
    - International travellers without RT PCR negative reports etc.
- Improve Testing capacity up to PHC level to test adequate quantum with a target to keep the Test positivity Rate below 5% in all districts.
- Take steps to improve the laboratory turnaround time and share RT-PCR test results within 24 hours to minimize spread of infection in community.
- Accelerate community level and workplace testing through use of Rapid Antigen Test as per recent guidance by ICMR.
- Carry out periodic house to house survey by ASHA workers in districts with high positivity rate to identify and test suspected Covid cases
- For Children, syndromic approach for Suspect cases need to be in place. Modify the suspect Covid-19 case definition to Include additional symptoms like Diarrhoea, vomiting, abdominal pain OR Poor feeding in an infant, loss of taste or smell (>8 year) OR Rash, conjunctival congestion, mucositis, shock in addition to the usual ILI symptoms
- Involve paediatricians to actively report ILI and other suspected cases of COVID19 in children to the existing ILI/SARI surveillance . Ensure follow up of such cases for early testing and treatment.
- Consider using Mobile testing teams in urban areas tagged to clinics and small nursing homes that do not have their own in-house set up for COVID19 testing.
- Take steps to train Swab Collectors and support staff to collect swabs from younger children efficiently adopting accurate methodology.
- Ensure Home Quarantine of children along with parents / care taker till results are available to minimize the potential spread of infection
- Take steps to increase Laboratories for genomic sequencing in adults and children in Karnataka.
- 5% of all the samples from high positivity districts (test positivity rate > 2%) should be sent for genomic sequencing in compliance with ICMR guideline

- Expand genome sequencing to include samples in the following indications
    - Cases from super spreader events
    - Proven cases of re-infections
    - Cluster of cases in children
    - Infection after vaccination (breakthrough infections)
    - Cases from international travellers

2. **Contact Tracing and containment activities:**

- Contact tracing helps in reducing the transmission and detecting cases early; strengthen this in all districts
- Apart from ASHA and AWWs , involve Teachers and Village level committee members in rural areas and NGOs, Volunteers and Resident welfare associations in Urban localities for contact tracing.
- Put in place mechanism for regular Capacity building of contact tracing teams, analyze the contact tracing data, review at sub district level and intervene as per need.
- Strengthen capacity to identify clusters early , investigate outbreak and follow strict containment measures during non-surge period.
- Continue containment zone and micro containment measures as per GOI guidelines
- Prepare Community Quarantine centres and Covid care centres for Children with Mother (caregiver) ; schools and community halls , Hostels run by WCD department may be used.

3. Isolation of Positive Cases:

- Activate and continue to scale up surge plans for health facilities, community facilities and home care for children
- Encourage Home Isolation and support families for their daily needs through GP Task Force and Ward level committees
- Considering the probable surge, create more Covid care centres for children and caregiver (Parent)
- Strengthen the existing Ward Level Triage centres in Urban areas and Primary Health Centre in rural areas for Triage and referral of confirmed Covid cases..
- Develop and release triaging SOPs for children infected with COVID19 as well as SOP for treatment with support from Indian Academy of Paediatrics.
- Build capacity of Doctors/Nurses/ Field level health workers on early identification of signs and symptoms requiring hospitalization in children with support from IAP.
- Mental health counselling and psycho social support for parents and adolescent children would be needed with progress of pandemic, strengthen the District Mental health programme with NIMHANS as the nodal agency. Teachers from education department can be roped in for grassroot level support.

4. **Public Health and Social Measures**:

- Adjust Public health and social Measures based on the analysis of local level of transmission, capacity of health system to respond and other contextual factors
- Avoid super spreader events like Mass gatherings , Religious events , Public Rallies etc. strictly till the end of this year
- Adopt graded approach while Unlocking from current / future Lock Downs
- Ensure Compliance to Covid appropriate behaviour including mandatory Mask Wearing by community
- Improve Communication strategy to bring in behaviour change and adherence to Covid appropriate behaviour ; elaborated further in Public messaging section.

5. **Post COVID Recovery OPD Centres**

- Should be developed at Taluka /Zone level for early identification and management of post COVID complications including MIS-C in children.
- Plan for starting Sentinel surveillance of MIS-C in large specialized paediatric hospitals in Government and private sector.

6. **District Level Expert Committee**:

- Constitute District level Technical Expert committee to look into the data and guide Covid-19 response in the districts . Include Paediatricians, Public health specialists, Microbiologists, Physicians, Pulmonologists , Gynaecologists , District Surveillance Officer (DSO) and WHO Surveillance Medical Officer (SMO) in this committee to support the district Collector in ensuring preparedness and response.

7. Essential Health Services

- Continue to monitor delivery of Essential Health Services at community and facility level, identify barriers to access and anticipate restoring suspended services based on changing need.

10. Sentinel Surveillance

Description and Purposes

- Systematic, timely, routine data collection from a representative subset of the population
- It has to be done daily, year-round
- It is aimed at capturing trends in the population for epidemiological purposes (and is not aimed at catching all cases which is to be done by active case-finding separately)
- Purpose is to plan for surge capacity, anticipate challenges and potential disruptions to existing infrastructures, to forecast demand, make decisions on lockdown and unlocking, *etc*

Types of Surveillance

1. Active Infection Surveillance (Hospital-based)
    a. Test Positivity Rate (Hospital-based) – RT-PCR/Antigen/GenExpert
2. Disease Surveillance (Hospital-based)
    a. Emergency Room visits for COVID or suspect COVID
    b. Hospital admissions for COVID/ suspect COVID (and bed occupancy)
3. Syndromic Surveillance (Primary-care based -- fever-clinic/school/community-based)
    a. Surveillance for ILI/SARI/pneumonia as per WHO Case Definitions
4. Post-COVID MIS-C Surveillance (Hospital-based)
5. Sero-surveillance (for sero-prevalence in the 0-18 year age-group) [detailed notes with design options and sample size calculations are shown in box below]

Sentinel Sites

- Hospitals in all district headquarters (and preferably taluks) -- @ of 1 per 50,000 population in small towns and 1 per 2,00,000-3,00,000 population in larger cities
- At least 1 hospital from govt sector and 1 from private sector in each district headquarters [with additional sites from medical college/teaching hospitals, corporate hospitals/nursing homes in larger cities]
- Criteria for labs: those with quick turn-around-time for test results
- Criteria for hospitals: those with information from Emergency/Casualty room and In-patient wards/ICUs

- Criteria for fever-clinics/schools: those with information on symptom documentation (and may be testing of symptomatics)

Data Collection, Analysis & Reporting

- On standard formats (for labs, diseases and syndromes)
- Follow standard Case Definitions (WHO/ICMR/state govt)
- Collect information daily from microbiology lab, emergency/casualty room, IP/ICU admissions and fever clinics/schools
- Upload daily on to a common database
- Data analysis
- Weekly Epidemiological Report (W.E.R) generation for state and each district on:
    - Test positivity – current and % weekly change
    - ER visits – current and % weekly change
    - Hospital admissions (and bed occupancy) – current and % weekly change
    - ILI/SARI/pneumonia – current and % weekly change
    - MIS-C – current and % weekly change
- Undertake Predictive Analysis to say when the surge might happen (to help with arriving at lockdown decision, etc.) or when to unlock.

Detailed notes for Sero-surveillance study in children

To consider one of following two options:

Option 1 (if field study is possible; and before start of childhood vaccination):

Study Design: Community-based Cross-sectional survey

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Expected prevalence	25%	25%	20%	20%
Precision	25%	20%	20%	20%
Design effect	2	2.5	2	2.5
Sample size* - for each region or district	500	750	800	1000

* to try and get roughly equal numbers in the 0-9 and 10-18 yr age-groups

So will require about 500-1000 children to be studied throug a multi-stage sampling study including every district

It is possible to out-source this to organisations that have experience in blood-based field epidemiology studies (such as in hard-to-reach HIV groups in the past, such as KHPT, etc)

Option 2 (if field study is not possible and before arrival of childhood vaccination):

Study Design: Hospital-based surveillance

Try and undertake opportunistic COVID sero-surveillance study (unlinked anonymous testing without consenting) of residual serum of children admitted in hospitals for other conditions – on roughly say about 5-10 children per week per hospital per town

Needs ethical approval from IRB

11. Nutrition Recommendations

1. **Providing multi nutrient supplementation to children in 6 months to 6-year group along with milk along with school children as part of Ksheera Bhagya.**

The simple, easy, reachable and scalable nutritional support for children especially for those who are mild to moderately malnourished is to reintroduce Ksheera Bhagya program. Along with milk, supplementation of micronutrient supplements will achieve the twin objectives of calorie and vitamin supplementation.

Target age group: Children 6 months to 6 years of age

Outcome/ Impact: Prevention of malnutrition in well-nourished children. Children with mild to moderate malnutrition will not slip into severe malnutrition.

Process: Milk powder needs to be procured from Karnataka Milk Federation and distributed through existing channels to schools and ALSO to anganwadis through the Integrated Child Development Scheme run by department of Women and Child development.

Ksheer Bhagya program which distributes free milk to school children should be extended to include anganwadi children should be reactivated with the provision of adding micronutrient fortifier to the milk before distribution.

Personnel – Anganwadi and ASHA workers – who are already part of the ICDS program under the Dept of Women and Child development to be involved. School teachers who are already involved under Ksheer Bhagya to be reactivated.

Agencies that can possibly be involved:

NGOs –

1. Sathya Sai Annapoorna Trust
2. Admya Chaitanya
3. Jain International
4. Deshpande Foundation
5. Akshaya Patra Foundation under ISKCON
6. Karnataka Health Promotion Trust
7. Karnataka Comprehensive Nutritional Mission
8. Red Cross Society etc.

Professional Organisations

Indian Academy of Paediatrics

Infant and Young Child Feeding (IYCF) chapter of Indian Academy of Paediatrics

Example of Successful program

Chikaballapur district- Divine Mother and Child Program- Sai Sure

2. Anganwadi based supplementary nutrition programme

The anganwadis already have a supplementary nutrition program for young children. This needs to be reactivated and if the lockdown continues then home delivery of cooked food, nutritional bars, ladoos or a ready to eat nutritional food needs to be worked out. Otherwise the routine supplementary nutrition programs should be restarted.

Target age group : 6 mo – 6 years

Outcome: Maintenance of normal nutrition, prevention of mild and moderate malnutrition.

Agencies: Anganwadi workers Department of Women and child development, Asha workers under department of Health

Suggested NGOs that can possibly be involved:

1. Sathya Sai Annapoorna Trust
2. Admya Chaitanya
3. Jain International
4. Deshpande foundation
5. Akshaya Patra Foundation under ISKCON
6. Karnataka Health Promotion Trust
7. Karnataka Comprehensive nutritional mission
8. Red Cross Society Etc.

Systems: Reactivation of the existing Supplementary nutrition program. Re-working the process of home delivery of cooked food.

3. Mid-day hot meal programme

This is an ongoing program which is run by the Rural Development and Panchayat Raj, Health department and Education department along with food and civil supplies and Consumer affairs department. This program needs to be restarted on a war footing after the lockdown is lifted. However, as school opening is likely to be slow and in phased manner, alternative methods of providing hot cooked food, or nutritional bars at the doorstep needs to be explored.

Target age group: 6 – 12 years school aged children

Outcome: prevention of malnutrition, and rehabilitation of mild and moderate malnutrition in children

Personnel – The Chief Executive officer Zilla Panchayat, Education department officer and Executive officer Taluk Panchayath along with the Anganwadi and ASHA workers – who are already part of the ICDS program under the Dept of Women and Child development to be

involved. School teachers who are already involved under Mid day meal program to be reactivated.

Agencies that can possibly be involved:

NGOs –

1. Sathya Sai Annapoorna Trust
2. Admya Chaitanya
3. Jain International
4. Deshpande foundation
5. Akshaya Patra Foundation under ISKCON

Etc.

Systems

The Mid day meal program is a ongoing program which needs to be re-activated as the schools open. If the school opening is delayed then home delivery of cooked hot meals under the Zilla Panchayat office may be explored

4. Peripheral Nutritional Rehabilitation Centres

Nutritional rehabilitation Centres have been set up in medical colleges under National rural Health Mission (NRHM) and are aimed at treatment of Severe acute malnutrition (SAM) in children. In view of the lockdown and subsequent downturn in the economy children's nutrition is likely to have been adversely affected and the number of children with SAM is likely to have risen.

Target Age group : 6 months – 6 year age group children

Outcome : Treatment and nutritional rehabilitation of severely malnourished children before the third wave of COVID. Catch up growth in 2-3 months

Personnel & systems: Decentralization of Nutritional Rehabilitation centers in each district and manage severely malnourished children. The process can be initiated immediately under C.E.O. of Zilla Panchayath during this window period between II Wave and predicted or possible III wave. For professional help, the Paediatricians in private sector among members of Indian Academy of Paediatrics can be roped in along with government doctors. The modalities of decentralization of Nutritional Rehabilitation Centers (NRC) can be worked out on war footing basis under Zilla Panchayath and Women and child welfare ministry. By doing this the catchup growth can be achieved within two to three months.

Professional Organisations

Indian Academy of Paediatrics

Infant and Young Child Feeding (IYCF) chapter of Indian Academy of Paediatrics

Example of Successful program: Ballari district

5. Food fortification

It is recommended that the Govt explore food fortification of rice, atta, edible oil, salt and milk. Wheat flour and rice can be fortified with Folic acid, iron and vitamin B12. Salt can be fortified with iron along with iodine. Edible oil and milk can be fortified with vitamin A & vitamin D. This can be done as per the guidelines of Food Fortification Resource Centre set up by Food Safety & Standards Authority of India (FSSAI).

Programs	Micronutrients with milk	Anganwadi based supplementary nutrition	Mid- day hot meal	Peripheral Nutritional Rehabilitation centres
Target age group	6 mo – 6years	6 mo- 6years	5-12 years	6 months – 5 years
problem	Normal, Mild to moderate malnutrition			Severe malnutrition
Agencies	Ksheer Bhagya KMF Anganwadis - ICDS	Anganwadi workers ASHA workers	Zilla Panchayath Officer Education officer School teachers	Under supervision Zilla Panchyath under women and child welfare dept
NGOs	Sathya Sai Annapoorna trust Admya Chaitanya Jain International Deshpande foundation Akshay patra Foundation under ISKCON, etc....			
Systems	Ksheer Bhagya + Addition of micronutrients	Reactivation of existing systems	Reactivation of existing systems	Reactivation of existing systems
Examples of successful program	Chikballapur,			Ballari

12. Formation of COVID Registry

Two waves of COVID-19 have swept the country and it is the need of the hour to collect data and analyse in depth to understand, prognosticate and predict the course of disease in the patients of our country. RGUHS is joining hands with IISc to form a registry which will prospectively and retrospectively collect data from patients admitted to the 4 oldest medical colleges and Indira Gandhi Institute of Child Health. The registry would have four components to collect data from adults (18 years and above), children (29 days to 18years) neonates (0-28 days age) and MIS - C (Multisystem Inflammatory Syndrome in Children). Data would be collected from existing case sheets for the retrospective database and from discharge summaries for the prospective database. The data would be entered into a predesigned Excel sheet and then transferred to the Indian Institute of Science database. The Department of Computational and Data Science in Indian Institute of Science will employ the methods of machine learning for in-depth analysis of this data should help us prepare for the third wave of the pandemic. Specifically the data should help us predict which patients are likely to worsen and require ICU, and which sub-populations are likely to recover well. This would help the government allocate resources appropriately

Target population: Adult, Paediatric & neonatal populations of patients admitted with moderate to severe COVID 19 infection to four large medical college hospitals and Indira Gandhi Institute of Child health.

Institutions

1. Indira Gandhi Institute of Child health
2. Bangalore Medical College and Research Centre
3. Mysore Medical College and Research Centre
4. Karnataka Institute of Medical Sciences, Hubbali
5. Vijayanagara Institute of Medical Sciences, Ballari

Outcome/ Impact: Accurate profiling of disease in hospitalized patients with ability to predict and prognosticate outcomes

Process: preparation of pre-designed data collection forms. Ethical clearance from the independent ethics Committees of the 4 institutions involved.

Phase 1: Data will be collected retrospectively from the case records of the patients admitted with moderate to severe COVID 19 in the afore mentioned hospitals. The data would be collected in a predesigned questionnaire and fed into an Excel sheet, and transferred via a link to the Centre for Computational & Data sciences, Indian Institute of Science, Bengaluru. The data would be analysed using standard statistical and epidemiological methodology to understand disease profile.

Phase 2: Based on retrospective data collected above an effort will be made to collect the data prospectively and monitor the progress of the disease into the third and subsequent waves of the disease.

Personnel required – data entry operators 8 per centre to be involved in retrospective for 3 months and prospective data collection for next 3 months.

Agencies to be involved:

1. Director of Medical Education
2. 4 major medical colleges as above and IGICH
3. Centre for Computational and Data Science, Indian Institute of Science, Bangalore.

A **unique identification number** like the BU number should be allotted to each patient from Karnataka which can be used to tag the reports, treatment, medical records etc. of the patient.

13. Public-Private Partnerships to Manage COVID

Public private partnerships are a vital part of the Covid care response for children in the anticipated third wave.

The WHO and UNICEF are integral parts of the governmental response and will not be discussed.

Among the other private enterprises that can help mitigate any catastrophe regarding Covid in children could be divided into:

1. Professional organisations
2. Hospital groups,
3. Non-governmental agencies (NGO'S)
4. Corporates through CSR
5. Public at large

1. Professional Organisations.

There are large number of professional organisations which have the capability of delivering quality healthcare to children.

The Indian Academy of Paediatrics in Karnataka (IAP -K) has about 2950 members spread across all districts of Karnataka. They can be invaluable in provision of primary, secondary and tertiary care and help with psychosocial counselling, nutritional rehabilitation, vaccinations and expert opinions on decision on school opening and many other areas. (Annexure 1 -has details of services that can be provided).

The Indian Medical Association (IMA) has a widespread presence of its members and can aid in healthcare of not only adults but older children.

Maternal and child health are intertwined and FOGSI can help with provision of new-born care in many districts.

The National Neonatologist forum has a Karnataka chapter which is also widely represented and can be invaluable in provision of health care to new-borns.

In addition to these there are the General Practitioners Association, the Community health group the Microbiology Association, Radiology group, and Nursing groups can lend support to the response.

2. Hospital groups

There are many private hospitals and medical colleges widely distributed in Karnataka where quality paediatric care is being provided. Many of them have state of art tertiary care neonatal and paediatric ICUs and will contribute significantly to the provision of state of art care for sick children.

In addition to this there are many trust hospitals, charitable hospitals and AYUSH Hospital which could be included in the covid response.

3. Non-Government Organisations (NGOs)

There are about 3,225 Non-Government Organisations working in Karnataka.

They represent national, international, and state-level organisations.

They will be invaluable in providing much of the support that is required for provision of healthcare.

Examples of these are SOS Children's Village, CRY, Operation Shanti etc.

4. Corporates through CSR

Corporate Social Responsibility potential in Karnataka is to the tune of Rs. 1,000 crores/year. If a significant part of these is channelled to fund improvement of primary secondary and tertiary care of children, we could have a significant impact on children.

The government has already set up a consortium headed by Ms Geetanjali Kirloskar to identify the CSR funds which could be used to strengthen the medical education and health sectors of the state.

Some of the other corporates who have been doing yeoman service towards the cause of children or the Infosys foundation, Wipro foundation, Tara child protection, Portea, Biocon foundation Child fund India and many more.

5. Public at Large and Philanthropists

Suffering of children is always an emotional issue. There are many private individuals and philanthropists who will be keen to support the Govt response to the Covid pandemic.

There must be an agency to optimise the collection, storing and distributing the resources in the most just and equitable way.

In conclusion it is a unique opportunity to bring all the private players to help the government mitigate the likely impact of Covid in children.

ANNEXURE-II: ROLE OF INDIAN ACADEMY OF PAEDIATRICS

14. Care of Patients with Post-COVID Complications

The first and second phase of COVID-19 pandemic has affected a nearly 28 lakh persons in Karnataka so far. A high proportion of hospitalized COVID-19 patients show persistence of symptoms even after the acute phase. Chronic pulmonary insufficiency, neurological and psychiatric disability, nutritional disorders, cardiac dysfunction, fatigue, chronic renal diseases, and arthritis among others, cause high levels of disability with significant socioeconomic burden to society. It is important to provide multidisciplinary rehabilitation services to enable recovery of these patients and re-integration into society. It is further imperative to determine long-term outcomes of COVID-19 patients since significant uncertainty remains regarding the novel COVID-19 infection.

To prepare for societal burden associated with post-covid long-term complications, the following steps should be taken:

- Establish a state-wide registry of hospitalized COVID-19 patients that will comprehensively evaluate outcomes using a uniform protocol. A model can be developed in a single centre and then implemented across the state

- To create post-covid clinics that will determine the burden of post-covid complications and provide care and comprehensive functional rehabilitation.

    - These clinics can be outpatient-based services with a multidisciplinary team consisting of physicians, physiotherapists, psychologists and specialists' referrals.
    - To develop expert guided treatment protocols to rehabilitate post-covid syndrome.
    - To provide caregiver education and support for patients with severe residual disability.

RGUHS in collaboration with Medical colleges can plan and conduct training program for identifying and managing post-covid complications and also long covid issues.

15. Non-COVID Patient Care During Third Wave

Care of non-covid patients during COVID-19 pandemic

As the COVID-19 pandemic continues, existing resources have been required to be diverted to address the pandemic. As a result of this, non-covid patients [those with other communicable and non-communicable diseases] have been significantly affected due to reduced access especially to essential medical support. It is envisaged that during the coming months the healthcare system will have to address the double burden of disease: both covid and non-covid diseases.

The following steps will need to be taken to prepare for this double burden:

- Develop a district-wise planned approach to provide continued care to COVID and Non-COVID patients.

- Augment health infrastructure in rural areas to provide care to non-covid patients.
    - Establish and ensure non-covid OPD services at all levels, both public and private.
    - In rural areas PHCs, CHCs and taluka hospitals to be prepared to provide care to both covid and non-covid patients. This involves:
        - Filling staff posts on a priority basis, with financial incentives.
        - Procurement and ensuring uninterrupted supply of essential medications.
        - Designating separate areas for covid and non-covid patients.
        - Providing adequate number of beds for patients with non-covid diseases.

- Community health workers such as ASHA workers should resume non-covid care and routine activities.

- The existing telemedicine network to be scaled up to facilitate access to care of non-covid patients.

- Implementation of feasible components of existing national programmes for non-communicable diseases, mental health, maternal and child health, tuberculosis and others to continue uninterrupted.

- Hospitals [both public and private] should continue to be divided into non-covid and covid dedicated facilities to ensure that services to non-covid patients remain uninterrupted.

- Specialist services for non-covid care to continue at full capacity in referral hospitals with appropriate infection prevention measures in place.

16. Paediatric COVID Care Centers – 3rd Wave

These centres to be renamed as

Bala Araike Suraksha Kendra

This will make acceptance by parents without any stigma.

1. These centres should facilitate stay of both positive child and mother/female care givers.
2. There should be enough open space and play area available for free movement of child and care givers as children cannot be restrained inside the room.
3. There should be a scope for receiving home food to child if demanded.
4. To accommodate teenagers there should be separate male and female sections.
5. Safety, security, and child friendly environment is of paramount importance.
6. Strict triaging and fool proof system of choosing eligible child should be in place.

Lessons learnt during 1st and 2nd Wave in Covid Hospital Management

1. Increase the number of land line numbers (minimum 5, maximum 10), provide contact mobile numbers of all referral hospitals including district hospitals, medical colleges and ensure working staff 24x7.
2. To ensure protection to covid frontline workers police outposts should be set up near Taluk, District and referral hospitals including medical colleges. This will boost the morale of the corona warriors.
3. Strictly deal and enforce provisions of Karnataka Epidemic Disease Ordinance 2020 and Epidemic Diseases (Amendment) Act 2020 in cases of assault on health care workers as non-bailable offence.
4. Standard treatment protocols & guidelines to be implemented separately for OPD/IPD/Intensive Care Units.
5. Taluk & district task force/THO/DHO should ensure that it reaches all the grass root level Practitioners which prevents the misuse of medications.
6. Medications must be delivered only after authentic prescription.
7. Government must retain the pre-existing covid care centres where separate women & child especially teenagers (both girls/ boys) spacing should be considered.
8. Encourage donations in the form of thermometers/pulse oximeters from NGOs to CCC.

17. Inter-Facility Transport

The guidelines for inter-facility transport-transfer of children will ensure their safe clinical care as well as make sure that the clinical and the transport teams are sufficiently protected from SARS-COV2.

Transport of patients

AMBULANCES:

2 types of ambulances: ALS (with ventilator) and BLS (without ventilators)

Strict adherence to cleaning and decontamination protocols to be followed before it is used for non -COVID purposes.

Each facility should make a list of all ambulances available in locality and empanel them to be used whenever required.

Ambulance should be equipped with basic equipment and drugs in anticipation of any medical emergency en route.

- Stretcher trolley with IV stands
- Vital sign monitor (pulse oximeter, ECG and NIBP)
- Airway securing devices (laryngoscope (blades of appropriate size) ET tubes different size), LMA, Oropharyngeal airway, suction apparatus with suction catheter)
- Ventilation (ventimask with O2 flow meter, nasal prongs, AMBU bags, Hood box)
- Circulation (IV cannulas and tapes to fix, IV fluids (NS, RL, 10%D)
- Emergency drugs: Adrenaline, Lorazepam, Phenytoin, Hydrocortisone, Atropine, 25%D, Phenobarbitone, salbutamol respiratory solution
- Nebulizer, Glucometer, tapes to fix tubes, triple layered mask, hand sanitizer.
- Transport incubator for neonatal transport.

Protection of Personnel:

- HCW providing clinical care during transport: PPE, N95 mask, double gloves.
- For drivers and technicians: gown, surgical mask and gloves.
- For patients (>5y) not requiring ventilator support, accompanying care giver: surgical mask.

Procedure:

- Communicate with higher level referral hospital, ensure availability of bed and inform about condition of child.
- HCW with appropriate PPE shall assess the condition of child and stabilize the child and contact the higher facility for facility preparedness and readiness.

Measurement on Board:

- Measure vitals (including SpO2) and stabilize the patient accordingly.
- Supplemental oxygen therapy if required to given through hood, then prongs (to maintain SpO2>90%)
- Avoid all Aerosol Generating Procedures (AGP) should be avoided, unless absolutely needed for patient care
- If child is transported on ventilator, follow ventilator management protocols provided HCW is trained or assisted by doctor well versed in ventilator management.
- In event of cardiac arrest in an intubated and mechanically ventilated patient**: Do not** disconnect Ventilator. Start CPR and increase FiO2 to 100%. Check ventilator tubing for proper connection. Early detection and proper treatment of potentially reversible causes during CPR, is very important.

Handing over patient:

- On reaching Hospital, HCW will hand over the child and give details of any intervention done during transport.

- HCW will then doff as per protocol, followed by hand washing
- Transport staff should put on new PPE prior to return journey and doff after reaching back

- Biomedical Waste to be disposed off in biohazard bag. Bag should be sprayed inside and outside (after use) with Sodium hypochlorite (1%) and disposed at their destination hospital. hand washing should be performed after the procedure.

- Equipment should be cleaned and sterilized as per facility protocol.

Disinfection of ambulance:

- All surfaces that are contaminated during patient care should be thoroughly cleaned and disinfected using 1% sodium hypochlorite solution.
- Clean and disinfect reusable patient care equipment with alcohol-based rub.

Training of ambulance staff

All the staff of the ambulances eg the driver, technicians should undergo training in:

- Basic knowledge of what COVID-19 infection
- General principles of infection control
- Donning and Doffing of PPE.

ANNEXURES

ANNEXURE – I : REOPENING SCHOOLS

(AS PER INDIAN ACADEMY OF PAEDIATRICS GUIDELINES)

As per WHO, the school reopening should be undertaken in a stepwise manner starting with policy making infrastructural changes and manpower training. The process has to be individualized for every school and standard operating Protocols (SOP) should be in place before the school reopens.

1. Preparatory Phase (before the students are called)

Policymaking: The school administration should designate responsible staff members(s) to define and execute standard opening protocols in consultation with SDMC / Members, keeping in tandem with the local administration guidelines. The policy should mandatorily include redressing the curriculum. Curtailing the school hours, staggering the students and disinfection and hygiene protocols. The school reopening should mainly aim for school connectedness, psychosocial well-being and stress-free learning o the children. Adequate staff including a counsellor and a medical nurse should be recruited. Staff above 60 and those with co-morbidities should be adjusted in work from home mode. All the staff of the school should have Arogya Sethu App downloaded.

Infrastructural changes:

- The entire school premises should be thoroughly cleaned and sanitized. New hygiene rules should be displayed in pictorial and child friendly manner in the premises.
- All the rooms including classrooms, staff rooms, libraries etc., should be airy and well ventilated. Furniture should be arranged with adequate spacing.
- Toilet facilities and free flowing potable water should be made amply available.
- A sick room should be identified and kept ready with basic medicines and personal protection equipment.
- SDMC and its members need to be involved in all stages.

Capacity building of staff, parents and students:

Authentic scientific information regarding COVID-19 (symptoms, physical distancing, proper wearing of a mask, hand sanitation, coughing and sneezing etiquettes and refraining from touching eyes, nose, mouth and face) should be circulated with all staff members, parents and students using mails, telephonic calls, letters, pamphlets etc. All should be well informed about the new standard operating protocols. The Cluster Resource Centre (CRC), Block Resource Centre (BRC) and District Institute of Education and Training (DIET) centers need to be involved to spread the awareness.

The schools should encourage completing the routine vaccination of children. Those suffering from chronic illnesses like diabetes, asthma etc., and those on regular medications should be advised to consult their physicians before resuming the school.

II. IMPLEMENTING PHASE:

Measures for physical distancing in classroom and beyond:

- School should open in batches with elder students joining first. If there is space constraints the students should be divided and called in different batches, in different shifts alternate days and in staggered times.
- The classrooms should be kept ventilated by opening the doors and windows and air conditioners should be put off. Outdoor spaces like school ground should preferably be utilized to conduct classes.
- A distance of at least 1 meter should be strictly maintained between any two individuals in the school premises.
- Children should bring minimal commodities like stationary, wristwatches, mobiles etc. and be discouraged from sharing the same.
- Visitors should be restricted. Communication with parents should be carried out digitally.

Co-curricular activities:

Group activities and team sports, National Cadet Corps (NCC), Scouts, cultural and scientific meets etc., should be discouraged. Individually played non-contact games like badminton, athletics etc. and art activities like drawing, painting, dancing, may be allowed ensuring all safety precautions. Swimming pools should not be opened.

Precautions during commute:

Respiratory, hand hygiene and physical distancing measures should be adhered during the commute. The transport vehicles should be well ventilated. The driver and the staff should wear masks and face shields. They should not belong to the high-risk category for COVID-19. Drop and pick up in personal vehicles by parents (and not by elderly co morbid care takers) should be encouraged. For older students, bicycles should be encouraged.

Maintaining sanitization and hygiene:

- School buildings and classrooms, gyms, sports centers, toilets etc. should be cleaned and sanitized at regular intervals and in between the two shifts.
- Foot-operated hand sanitization equipment with 70% alcohol-based sanitizer, foot-operated covered dust beans, soap, water, masks of suitable sizes etc., should be available appropriately at various places like classrooms, toilets, gym, sports centers etc., Students and staff should be encouraged to use them frequently.
- Three layered cotton masks should be compulsory for all students, teachers, all school employees and visitors. Mask donning and doffing and other mask manners should be thoroughly taught to all staff members and students. Children below five should be assisted and watched carefully (for breathing difficulties) while using mask.
- Spitting should be strictly banned and signage for the same displayed.

Screening and management of the sick:

- Those with body temperature raised beyond 37.3°C or 99.4^0 or those who report a history of fever or 'feeling feverish' in the previous 24 hours should be denied entry in the school and referred for medical care. If some student or employee falls ill during school time, he/she should be isolated in the sick room having support staff equipped with adequate PPE.
- The testing for COVID-19 should be undertaken in every suspected individual who has attended the school. like one who is suffering from the classical symptoms of fever, cough and breathlessness, a close contact of a positive case, or fitting in any other criteria as per the norms laid down by the local health authority.
- Should a student / staff / visitor be positive SARS-Covid-2, the government authorities should be informed, and he be asked to stay away from school for at least 14 days. Resuming the school should necessitate a fitness certificate from a registered practitioner.
- The school officials should extend full cooperation to the Government protocols like contact tracing, testing, isolation, disinfection etc.,
- Discrimination against Covid-2 positive staff / students should be discouraged, and they should be dealt with empathy.

ANNEXURE II: Role of Indian Academy of Paediatricians

Public-Private Partnerships with IAP

A pivotal role of the Indian Academy of Paediatrics Karnataka chapter in the government response to the anticipated third wave of Covid 19.

There have been various reports from experts in the nodal organisations predicting a third wave likely to be more significant in children.

When the 3rd wave comes it has also been speculated that most of the children are likely to have a minor degree of illness, however, the main concerns will be related to anxiety of the parents which will certainly need to be addressed satisfactorily.

Apart from this, recognizing such of those children with moderate and severe illness and directing them to available facilities will be most essential. IAP Karnataka with its 3000 members distributed all over the state can play a major role in these essential areas of concern apart from other issues as enumerated below.

In anticipation of this expected third wave. Most governments are gearing up their response to take care of children in their respective states.

It is a matter of great importance that the government of Karnataka has proactively addressed this problem in multiple domains.

At a meeting held two weeks back the Central body of the Indian Academy of Paediatrics Karnataka chapter chaired by Dr Ashok Datar, President and Dr Amaresh Patil, Secretary, pledged to assist the government's effort in all aspects.

The body has expertise in training, advocacy and advisory roles in matters of Child health.

Various sub committees have been formed which are.

Liasoning with the government and its agencies at both the taluka district and state levels.

Triaging, virtual consultation and training through Step One and other digital platforms has already begun.

Teleconsultation

IAP has partnered with Ministry of the women and Child-health to monitor and provide teleconsultation to thousands of children stationed at Child Care Institutes (CCI)across the country.

IAP Karnataka will be providing Tele medicine services as a social initiative to thousands of children across 178 CCIs.

Standard operating practises (SOPS) for all aspects of Covid care will be updated from time to time based on the national and state guidelines.

Capacity building and training of nurses and Asha workers is envisaged.

A resource committee to raise assistance for the needy and planning to use the existing resources optimally is another important activity

A war room in Bangalore and at all district has headquarters is also planned to help manage emergencies

Media committee which will formulate and post effective messages that go out to the public has already been put in place.

A psychosocial committee which will investigate the psychological issues which are prevalent in all segments of the population especially in parents and children will be addressed.

A digital team will address the social media messages and act as a repository for the data that is generated by other committees.

The Micro planning committee will address requirements at each district and liaison with government agencies to deliver the best possible care.

In addition to this special attention has been paid to the development of intensive care units in the district hospital and planning the involvement of private paediatric intensive care units.

Nutrition Aspects

IAP Bellary and IAP Vijayanagar have partnered with District Administration of Bellary, Vijayanagar and Koppal districts to look after Severe Acute Malnutrition (SAM) children immediately to improve their nutritional status of these SAM children and their mothers before the impending 3rd wave.

Malnutrition will be a challenge in children.

Structured Training by BPNI (modules approved WHO; UNICEF and Govt of India) of 7 days TOT has been done for 30 districts of Karnataka by SIHFW District Training Centres Govt of Karnataka. 150 Middle Level Trainers and 11,800 frontline workers have been trained but need refresher courses.

Skills training courses by National trainers of IYCF through IAP is one of the most strategic way to tackle Malnutrition - SAM and nutrition related issues in children.

Bengaluru

The City requires a good coordination between IAP Bengaluru (Dr. Mallikarjun H. B, Dr. Geetha Patil and Dr. Priya Shivalli) along with BBMP, hospitals which come under BBMP, Health and family welfare department, medical education, ESI, Private hospital organisation, PHANA (Private hospital, nursing home association) and women and child welfare department.

While these have been planned at to assist the government in its initiative, they are not exclusive. Any other requirement in terms of paediatric expertise will be offered by the paediatricians belonging to the Indian Academy of Paediatrics.

The Indian academy of Paediatrics, Karnataka is committed to delivering the best possible care for the children of our state and assisting the efforts of our government.