SOP for the functioning of the New Medicine Block as COVID Hospital

The current SOP is being made to guide:

a) The admission process of confirmed COVID 19 cases.
b) Triage of the COVID 19 patients and allotment of beds
c) Allotment of doctors in different areas of the COVID Hospital
d) Management of patients
e) Security management
f) Shifting of dead bodies

Introduction:

Due to the increasing numbers of COVID patients, the honorable Govt. of Odisha has decided to establish a 200 bedded dedicated Covid 19 hospital in the existing New Medicine Block as per Govt. order no. HFW MEII MISC 0102 2020 20034/H&FW/dated04.09.2020. The New Medicine Block will function in addition to the COVID screening, testing, and isolation facility established in the Ophthalmology Block and will be used only for admission and care of confirmed cases.

Reception of patient:

A reception counter will be established at the entrance hall of the New Medicine Block for facilitating triage and floor allotment of the COVID patients. The reception counter will be managed by 1 post-graduate student of Medicine/ Pulmonary Medicine and 1 house surgeon under the supervision of 1 Assistant Professor of the Dept. of Medicine. Patients with the requirement of dialysis will be managed in the Ophthalmology block by Dept of Nephrology for logistic reasons. Pediatric patients require attendants and hence the 2nd floor of Ophthalmologic Block (Cabin) will be earmarked for pediatric patients.

Registration/ Allotment of bed/ Movement of patient:

A registration counter and data entry room will be established on the ground floor. After reception and triage of the patient, the details of the patient will be registered in the COVID CONFIRMED CASE REGISTER. The patient will be allotted a COVID CONFIRMED CASE Registration number and a bed number. His telephone number along with the telephone number and name of one attendant will be recorded on the Bed Head Ticket. The registration counter will be managed by 2 staff nurses in each shift.

The room currently used as Museum, Dept of Medicine will be converted as the Data Entry Room where the records of admission and discharge will be maintained. This will

be managed by 2 data entry operators per shift. They will be provided with 2 computers, with an internet connection for communication with the COVID control room in the Superintendant office. The indent for the necessary items at the registration counter and data entry room will be under the Sister I/C ground floor.

After admission and registration, the bed head ticket will be carried by an appointed ward boy who will hand over the ticket to the concerned staff nurse in charge of the floor allotted. The ward boy will also guide the patient to his/her allotted floor and bed. During the whole process, social distancing and the use of PPE must be strictly ensured. All patients will be transported by a designated lift labeled "COVID LIFT" to minimize contamination of the stairways and verandahs.

The flowchart of communication and patient movement is shown in Annexure-II.

Transfer of patients from COVID Isolation Building

The Sister on-duty at the registration counteron the Ground floor will co-ordinate the transfer of confirmed cases as per the flowchart shown above. She is to ensure the shifting of not more than 5 patients at a time for the smooth functioning of the registration counter. She has to ensure that the triage of cases into mild, moderate, or severe has been done. Priority is to be given as per severity (severe > moderate > mild with co-morbidity > mild without co-morbidity). There will be 2 ward boys in each shift under the registration counter who will carry the bed head tickets from the registration counter to the Sister-I/c of the concerned floor and guide the patients to their allotted beds. They will also help patients who require a wheelchair or Stretcher for transfer.

After the transfer process, including bed allotment, is complete, the sister on duty (registration Counter) will inform the data entry operator. The data entry operator will compile the data and send it to the COVID Control room for informing appropriate Govt. authority and any other action as necessary.

PROVISION FOR TREATMENT OF EMERGENCY SITUATIONS DURING TRANSFER TO BE PROVIDED AT THE GROUND FLOOR (SUCH AS OXYGEN SUPPORT, ESTABLISHMENT OF IV LINE AND SALINE DRIP). Two beds will be kept reserved for this purpose in the triage area. The Sister I/C Ground floor will ensure separate availability of oxygen, IV set, Normal saline, and other drugs as necessary at the reception counter. In case of arrival of patients requiring emergency management, backup support will be provided by the doctors and staff of COVID Ward, Ground Floor.

Triage of COVID-19 patients (To be done in Isolation ward when mergers takes place)

The job of the screening team will be to assess the vitals of the patient received and triage him as a mild, moderate, or severe COVID patient (as per the latest guidelines issued by Government of India Ministry of Health and Family Welfare Directorate General of Health Services (EMR Division))and whether associated comorbidities are

present (Diabetes, Hypertension, Chronic Lung diseases, autoimmune diseases, others).The current guidelines (version 5 dated 3.7.2020) to be followed is attached in Annexure-IV.

Table 1: Classification of patients as mild, moderate or severe

Category	Clinical presentation	Clinical parameters
Mild	Patients with uncomplicated upper respiratory tract infection, may have mild symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache	Without evidence of breathlessness or Hypoxia (normal saturation).
Moderate	Pneumonia with no signs of severe disease	**Adolescent or adult** with presence of • Clinical features of dyspnea and/ or hypoxia, fever, cough, • Including SpO2<94% (range 90-94%) on room air, • Respiratory Rate ≥ 24 per minute. **A child** with the presence of • Clinical features of dyspnea and or hypoxia, fever, cough, • Including SpO2 <94% (range 90-94%) on room air, • Respiratory Rate of≥ 24 per minute. o Fast breathing (in breaths/min): ▪ < 2 months: ≥ 60; ▪ 2–11 months: ≥ 50; ▪ 1–5years: ≥ 40
Severe	Severe Pneumonia	**Adolescent or adult**: • Clinical signs of Pneumonia plus one of the following; • Respiratory rate >30 breaths/min, • Severe respiratory distress (SpO_2 <90% on room air).
	ARDS Sepsis Septic Shock	

NB: Adapted for H&FW guidelines, GOI.

The criteria for triage will be displayed via posters in the triage Counter.

The New Medicine Block is a 5 storied building with 5 floors including the ground floor. The various floors of the block will be segregated for the management of various categories of COVID patients as follows:

Table 2: Allotment of floors and a tentative number of beds as per the category of patients

Floor	Category of patients	Tentative no. of beds available
Ground	Moderate/ Severe cases (Female)	30
First (ICU block)	Severe cases	39 (14 existing plus 25 new ICU beds proposed and under construction)
Second	Moderate/ Severe (Male)	55
Third	**Part A (currently used as Destitute ward):**reserved for Health-care workers	20
	Part B (right-wing) Mild cases (female)	25
Fourth	Mild cases (male)	56

Depending on the category of patient, the screening doctor will inform the floor in-charge, allot bed no. and order the shifting of the patient.

During admission of the patient the phone number of the patient and his/ her attendant is to be mentioned on top of the bed head ticket as indicated earlier.

Posting of Doctors on each floor

A pool of doctors will be created from all postgraduates of every Department (excluding Microbiology, Biochemistry, Transfusion Medicine, OBG, and Pediatrics). Similarly, a pool of Assistant professors and Associate Professors will be created for supervision. The various Departments have been classified as core Departments, allied medicine Departments, surgery and allied surgical Departments, para-clinical Departments and house surgeons (Annexure-I). Departments of Medicine, Pulmonary Medicine, and Anesthesia will be considered as core Departments. Other Departments will be hereby referred to as allied Departments. Departments with less than or equal to 3 faculty/ post-graduates will be excused from inclusion in the pool of doctors. The pool will be divided into 3 groups. The first group will work in the COVID hospital. When they go into quarantine, the second group will be posted. Similarly when the second group goes into quarantine, the third will be posted. After completion of the quarantine period, all doctors who are asymptomatic and have tested negative for COVID by RTPCR report will rejoin their respective departments for routine duty.

Pregnant/ lactating mothers and immune-compromised doctors need to apply for exclusion from the COVID pool. The decision to allow exclusion from COVID duty based on the immuno-compromised state will remain with the COVID committee.

The following table enlists the manpower required per shift in each section of the building and will be used as a guide for the roster preparation of doctors.

Table 3: Guidelines for allotment of doctors in various shifts in different sections of the COVID Hospital

Ground Floor (Triage section)				
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	**Supervision**
Resident	1 Medicine PG) 1 Allied PG 1 HS	1 Medicine PG 1 Allied PG 1 HS	1 Medicine PG 1 Allied PG 2 HS	1 Asst. Prof. of Dept of Medicine will supervise and take physical rounds twice daily. He/ She will also supervise the triage section.
Ground Floor (moderate case, Female) -30 Bed				
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	
Resident	1 PG Med 1 Allied PG 1 HS	1 PG Med 1 Allied PG 1 HS	1 PG Med 1 Allied PG 2 HS	
1st Floor (ICU) -14 Bed for severe				1 Asst. Prof. from the Dept. of Anesthesiology will supervise and take physical rounds twice daily
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	
Resident	1 SR (Med) + 1Anesthesia. Resident (JR3) 1 Cardiology 1 Pharmacist	1 SR (Med) + 1Anesthesia. Resident (JR3) 1 Cardiology 1 Pharmacist	1 SR (Med) + 1Anesthesia. Resident (JR3) 1 Cardiology 1 Pharmacist	
2nd Floor (moderate / Severe case) -55 Bed (male)				1 Asst. Prof. of dept of Medicine will supervise and take physical rounds twice daily
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	
Resident	1 PG Med 2 Allied PG 2 HS	1 PG Med 2 Allied PG 2 HS	1 PG Med 2 Allied PG 2 HS	
3rd Floor (reserved for Doctors and Nurses) (left wing) - 20 Bed Plus Female mild cases (right wing) - 25 beds				1 Asst. Prof. of Allied Branch will supervise and take physical rounds twice daily
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	
Resident	1 PG Med 1 Allied PG 2 HS	1 PG Med 1 Allied PG 2 HS	1 PG Med 1 Allied PG 2 HS	
4thFloor (Mild case) - 56 Bed (Male)				1 Asst. Prof. of Allied Branch will supervise and take physical rounds twice daily
Shift	**08 AM to 02 PM**	**02 PM to 10 PM**	**10 PM to 8 AM**	
Resident	2 Allied PG 2 HS	2 Allied PG 2 HS	2 Allied PG 2 HS	

NB: One Associate Professors of Department of Pulmonary Medicine will supervise the functioning of the ground floor and triage area. One Associate Professor of (Department of Anesthesia) will monitor the functioning of the ICU on first floor. One Associate Professor (Medicine) will supervise functioning of 2nd and 3rd floors. 1 Associate Professor (Allied) will supervise the functioning of the 4th floor. They will also take daily stock of the situation in their respective areas by discussing with the Assistant Professors in charge of the floorstwice dailyand submit status report to the In-Charge, COVID Hospital.

Table 4: Summary of requirement of doctors per month

Department	Designation	Per shift of 10 days	Per month
Medicine	Postgraduate student	12	36
	Senior resident	3	9
	Assistant Professor	2	6
	Associate Professor	-	1
Pulm Med	Associate Professor	-	1
Anesthesia	Postgraduate (JR3)	3	9
	Assistant Professor	1	3
	Associate Professor	-	1
Cardiology	Postgraduate	3	9
Allied Branches	Postgraduate	21	63
	Assistant Professor	2	6
	Associate Professor	-	1
House Surgeons	-	27	81
Total		47 (excluding HS)	145(excluding HS)

NB: The Associate Professors will be posted in the COVID Hospital for supervision of wards and ICU on rotation policy with duration of posting for 1 month.

Nursing/ Paramedic/ Security posting:

After discussion with the matron the following manpower is proposed for the COVID hospital in the New Medicine Block. The list includes the pool of staff required for each section (morning/ day/ night shifts). Shift-wise duty list will be further prepared by the matron.

Table 5: Nursing and paramedic requirement in COVID Hospital

Floor/ Section (beds)	Staff Nurse and I/C Sister	Group D Attendants + Oxygen attendant*	Cleaning staff	Security
Ground floor (moderate) 30 beds plus triage and registration counter	16+1	12	6	10 + 1 Police
First floor (ICU-39 beds)	40+1	12	9	3
Second floor (moderate) 55 beds	18+1	18	15	3
Third floor –Cabin (20 beds) plus ward (25 beds)	15+1	15	12	3
Fourth floor - mild (56 beds)	16+1	15	12	3

***There will be 2 group D staff on each floor dedicated to handling oxygen cylinders. At the change of every shift, they must check the availability of filled cylinders and report the sister**

I/C. The sister I/C/ sister-on-duty must ensure adequate oxygen back-up in each shift. Under no circumstance shall there be a shortage of oxygen back-up.

Treatment and Discharge of patients

The treatment and discharge of patients will be done as per the latest guidelines issued by the Government of India Ministry of Health and Family Welfare Directorate General of Health Services (EMR Division). The current protocol of management is attached as annexure-IV. Under extraordinary situations, other therapy may be given as per the expert opinion of the team of treating doctors in consultation with the In-Charge and COVID Nodal Officer, SCBMCH. The latest treatment protocol will be displayed via posters in the duty room of doctors and nursing staff.

Pulse oxymeter, Infrared thermometer, Glucometer

Each ward (including ICU) and the the triage center will be provided with 3 numbers of pulse oxymeter, infrared thermometer and glucometer for screening and monitoring of patients. The respective sisters I/C will ensure the instruments are in order, adequate numbers of battery are present for replacement as and when necessary. They will also ensure indent of adequate numbers of glucometer strips for monitoring diabetes.

Oxygen Supply

Oxygen therapy is a vital part of the management of moderate to severe COVID patients. The ground floor with 30 beds and 2nd floor with 55 beds of the COVID Isolation Building is reserved for moderate cases of COVID and severe cases waiting vacancy in the ICU. The oxygen supply of the ICU is to be supplied from the central oxygen supply by dedicated pipes. Due to lack of dedicated central oxygen supply via oxygen pipes to the ground floor and 2nd floor it will depend on oxygen supply via Jumbo Oxygen Cylinders. During high flow oxygen therapy, a Jumbo Oxygen Cylinder lasts between 4-6 hours. Therefore, to ensure uninterrupted oxygen supply to patients admitted in these 2 floors at full occupancy of beds, around 300 Jumbo oxygen cylinders may be necessary depending on patient load. The supply of Oxygen should at all point of time be more than the demand. The daily admission and consumption of oxygen cylinders will be monitored by the Sister-I/C and Chief Supervising Medical Officer to anticipate increased demand and notify the Hospital administrators for necessary action.

Monitoring and Expert advice:

The library in the old medicine block will be used by the In-Charge and Associate Professors (I/C wards and ICU) to hold video-meetings with Floor-I/C Assistant Professors, on-duty doctors, and staff sisters to take stock of daily patient management at least twice a day They will guide patient management and take decisions on difficult issues concerning treatment. They will also discuss other issues arising in the health care delivery system and resolve the matter in consultation with the hospital administrators/authorities.

Inter-departmental calls

In any case of emergency for the need of interdepartmental consultation in the COVID isolation ward, the indoor RP/RS (Asst Prof) of the concerned department of that day may be consulted over the phone. Physical consultation is to be done only when the issue cannot be solved over the telephone. Each department must prepare a list of doctors who will be responsible for attending inter-departmental calls.

Infection prevention and control practices (IPC)

During administration of health care, it is very important to protect health care workers from getting infected. To minimize the risk the infection prevention and control practices guidelines issued by the Government of India will be followed.

Table 6: Infection prevention control practices

At triage	Provide suspect patient a triple layer surgical mask and direct patient to separate area, an isolation room if available. Keep at least 1meter distance between suspected patients and other patients. Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform hand hygiene after contact with respiratory secretions
Apply standard precautions	Apply standard precautions according to risk assessment for all patients,atalltimes,whenprovidinganydiagnosticandcareservices. Standard precautions include hand hygiene and the use of personal protective equipment (PPE) when risk of splashes or in contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include appropriate patient placement; prevention of needle- stick or sharps injury; safe waste management; cleaning and disinfection of equipment;andcleaningoftheenvironment.Bestpracticesforsafely managing health care waste should befollowed.
Apply droplet precautions	Droplet precautions prevent large droplet transmission of respiratory viruses.Useatriplelayersurgicalmaskifworkingwithin1-2metersof the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiologicalriskfactors,withaspatialseparation.Whenproviding care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients weartriplelayer surgical masks when outside their

	rooms
Apply contact precautions	Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (triple layer surgical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposableordedicatedequipment(e.g.stethoscopes,bloodpressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that healthcareworkersrefrainfromtouchingtheireyes,nose,andmouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform handhygiene.
Apply airborne precautions when performing anaerosol generating procedure	Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95). (The scheduled fit test should not be confused with user seal check before each use.) Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures,meaningnegativepressureroomswithminimumof12air changesperhouroratleast160liters/second/patientinfacilitieswith natural ventilation. Avoid the presence of unnecessary individuals in the room. Care for the patient in the same type of room after mechanical ventilationcommences. Because of uncertainty around the potential for aerosolization, high- flow nasal oxygen (HFNO), NIV, including bubble CPAP, should be used with airborne precautions until further evaluation of safety can be completed. There is insufficient evidence to classify nebulizer therapy as an aerosol-generating procedure that is associated with transmission of COVID-19. More research is needed.

<u>Healthcare worker facilities</u>

- Designated PPE donning/ doffing areas for doctors and nursing staff on each floor will be earmarked.

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- Doctors and Nurses will use the duty room for donning. Separate donning area for class D will be earmarked. 2 doffing areas will be earmarked for each floor.
- The security personnel will wear gloves, an N95 mask, a face shield, and a plastic apron during duty.
- Proper disposable of PPE and biomedical waste facility on each floor will be arranged by the Bio-Medical waste disposal management system under the supervision of the Hospital Manager.
- Separate duty room for all doctors and nursing staff
- Separate and clean toilet facilities for patients and healthcare workers.
- Drinking water arrangements for patients and healthcare workers on each floor.

Security: Should be strictly enforced at the COVID Hospital

a) Security staff requirement as mentioned in the above table
b) No attendants will be allowed inside the COVID Hospital.
c) Mobile use for video call and video recording shall be strictly prohibited.
d) The casual movement of patients, especially inter-ward movement isto be strictly prohibited by the vigilant security
e) The entry point into each ward shall remain locked and guarded by security. The entry will only be opened during a shift change for the movement of healthcare personnel, during the transfer of patients, movement of indent supplies and diet, and transfer of dead bodies.
f) Additional police personnel from the Police Outpost within the SCB Medical Campus at the entry-point to supervise the function of the security and for urgent police backup in case of any untoward situation.
g) **CCTV needs to be installed at the entrance, corridors, and wards of each floor for security purposes.**
h) Security lapse will be dealt with punitive action by the authorities

Intercom:

Intercom facility needs to be established with call points at the registration counter, data entry operator, duty rooms of each floor. The Intercom facility will help in speedy communication for information regarding bed status, transfer of patients, and other urgent actions. The Hospital Manager will supervise the floor arrangement and make necessary arrangements for the same. This needs urgent attention.

Sampling and investigation

Patients admitted will undergo routine blood tests (CBC, ESR, CRP-quantitative, LFT, KFT, and Blood sugar as and when needed). Select patients, as per severity, will undergo serial testing as deemed necessary by the treating physician. Special tests such as serum procalcitonin, serum

ferritin and D-dimerwill be ordered for severe patients and in moderate patientssuspected to be progressing to cytokine storm. The departments of biochemistry and hematology will be directed to arrange necessary provisions for the same.

The forms for investigations will be filled by the house surgeons under the direction and supervision of Post-graduates / senior residents. Sampling and labeling will be done by the staff nurse. All the investigations will be entered in an investigation register. The ward boy will carry the register and the samples to the respective departments for investigation. Subsequently, the ward boys of respective wards will also collect the reports and deliver to the sister on duty (COVID wards) who will attach the reports in the patient files.

Facility for conducting Arterial Blood Gas (ABG) analysis must be made available in the ICU.Two ABG machines need to be provided in the COVID Hospital ICU.

Imaging, ECG,and 2D-Echocardiography:

The department of radiology maybe instructed to arrange a facility for radiograph, CT scan, and USG when necessary. ECG machines needto be provided in each ward. An appointed technician for ECG in each shift needs to be appointed. The department of cardiology maybe instructed to arrange a facility for the Echocardiography, if necessary, of COVID patients with cardiac issues.

MEDICINES:

Adequate stock of all essential medicines and medicines for emergency use needs to be stocked in each floor. The sister-in –charge will check and indent medicines 2 days in advance to avoid exigencies

Diet:

The sister I/C of each ward will ensure timely submission of diet requisition. To avoid contact, the photograph of the diet register duly filled may be sent over WhatsApp. The diet provider will be instructed to provide a packaged diet and water (with floor/ bed labeling) per shift in the earmarked space on the ground floor. The ward boys will receive the diet and water and distribute it to the patients.

Duration of posting and quarantine

Health-care workers (doctors/ nurses/ paramedics) posted in COVID hospital must work for 10 days per roster followed by a period of quarantine for 6 days. During this period they have to stay in the COVID quarantine as assigned by the authorities.They will be tested for COVID by RT-PCR on day 6 of quarantine or on day 1 of symptoms whichever is earlier. During this period of 16 days (10 days duty + 6 days quarantine), the healthcare workers will not be allowed to leave

the premises of the Hospital. Incase of healthcare workers wishing for home quarantine or in emergencies, the concerned person has to intimate the In-Charge of COVIDquarantine Centre, and COVID Nodal Officer, take permission and sign an undertaking. Such a person must oblige by reporting for COVID testing on the fixed date or earlier if symptomatic and continue to stay in strict home isolation until intimation of a negative COVID report.

Public Address System:

No attendants will be allowed inside the COVID hospital. A public address system will be usedon the ground floor which will be managed by the nursing staff of the registration counter. In case attendants of any patient are required, the names of the patient and attendant will be announced over the microphone, or called over telephone, and the attendant can contact the registration counter for further necessary action.

Dead Body Management:

A team of two personnel (hospital management staff) will be appointed as the COVID DEAD BODY MANAGEMENT TEAM. The team will be informed in case of the unfortunate demise of any patient. Under their supervision, the dead body of the patient will be shifted to a designated dead body room.Two class IV employees will be employed per shift in the building for the transport of the dead body.The team will function under the direct control of the COVID control room.

The Sister on duty will also inform the Registration counter and the data entry room for updating data and bed status.

Attendance register and Work Certificate:

The attendance register of each ward will be maintained with the sister I/C of the respective ward. The photograph of the attendance register will be submitted daily to the, In-Charge, COVID Hospital and COVID Nodal officer, SCBMCH, who in turn will forward it to the Dean, SCBMCH. The work certificates of the doctors (for the period of duty and quarantine mentioned separately and clearly) will be submitted by the COVID NODAL officer to the Dean, SCBMCH on the 14thth of each month for further action.

Annexure -1

Categorization of Residents based on parent departments

Category A: Core Departments

1. Department of Anaesthesiology and Critical care
2. Department of Medicine
3. Department of Pulmonary Medicine
4. Department of Geriatric Medicine
5. Department of Emergency Medicine

Category B:Clinical Specialities who are already running ICU/HDU

A. Medical Specialities

1. Department of Cardiology
2. Department of Gastroenterology
3. Department of Neurology
4. Department of Nephrology
5. Department of Paediatrics
6. Department of Medical Oncology
7. Department of Hematology

B. Surgical Specialities

1. Department of GI Surgery
2. Department of Neurosurgery
3. Department of CTVS
4. Department of ENT
5. Department of Paediatric Surgery
6. Department of Surgical Disciplines
7. Department of Surgical Oncology
8. Department of Burns and Plastic Surgery

Category C: Other Clinical Specialities with a clinical post-graduation but not currently running ICU/HDU:

A. Medical Specialities

1. Department of Endocrinology
2. Department of Rheumatology
3. Department of Obstetrics and Gynaecology
4. Department of Radiotherapy / Radiation Oncology

B. Surgical Specialities

1. Department of Orthopedics
2. Department of Urology

Category D: All Other Clinical Specialities with limited responsibility for critically sick patients

1. Department of Dermatology
2. Department of Ophthalmology
3. Department of PMR
4. Department of Psychiatry
5. Centre for Community Medicine

6. Department of Transfusion Medicine

Category E: All medically trained (MBBS) residents from Pre- and Para-Clinical departments

1. Anatomy
2. Physiology
3. Biochemistry
4. Biophysics
5. Pathology
6. Microbiology
7. Forensic Medicine
8. Pharmacology
9. Lab Medicine
10. Nuclear Medicine
11. Radio-diagnosis

Category F: House Surgeons

Facilities will be categorized based on the characteristics of the patients who willbe attended there, and the management decisions which will need to beimplemented. In brief, the three levels of health facilities will be:

Level A: Screening areas

Level B: Facility for non-critically ill hospitalized patients

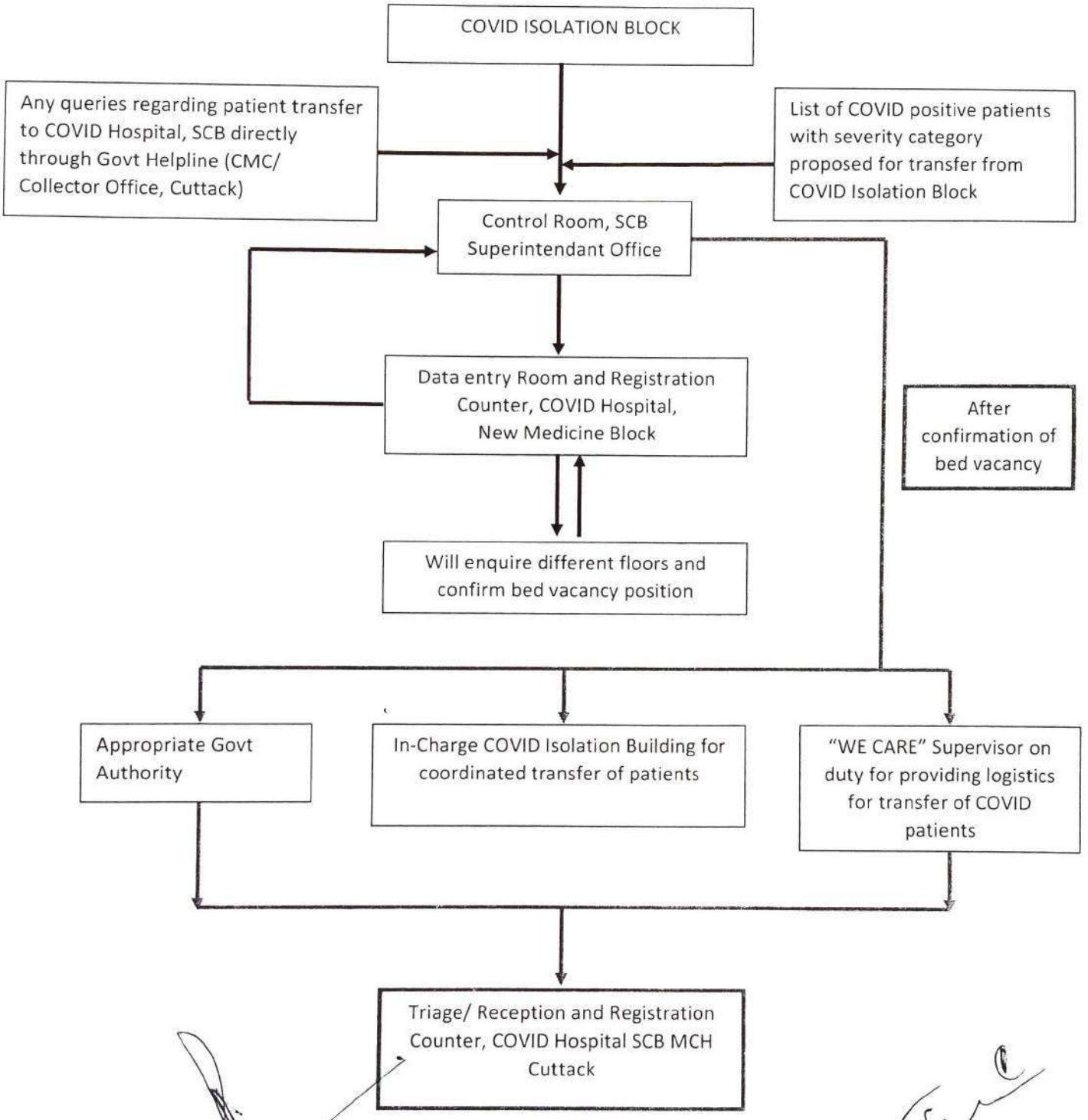
Level C: Facility for critically ill hospitalized patients

Team constitution for each level of health facility will be as follows:

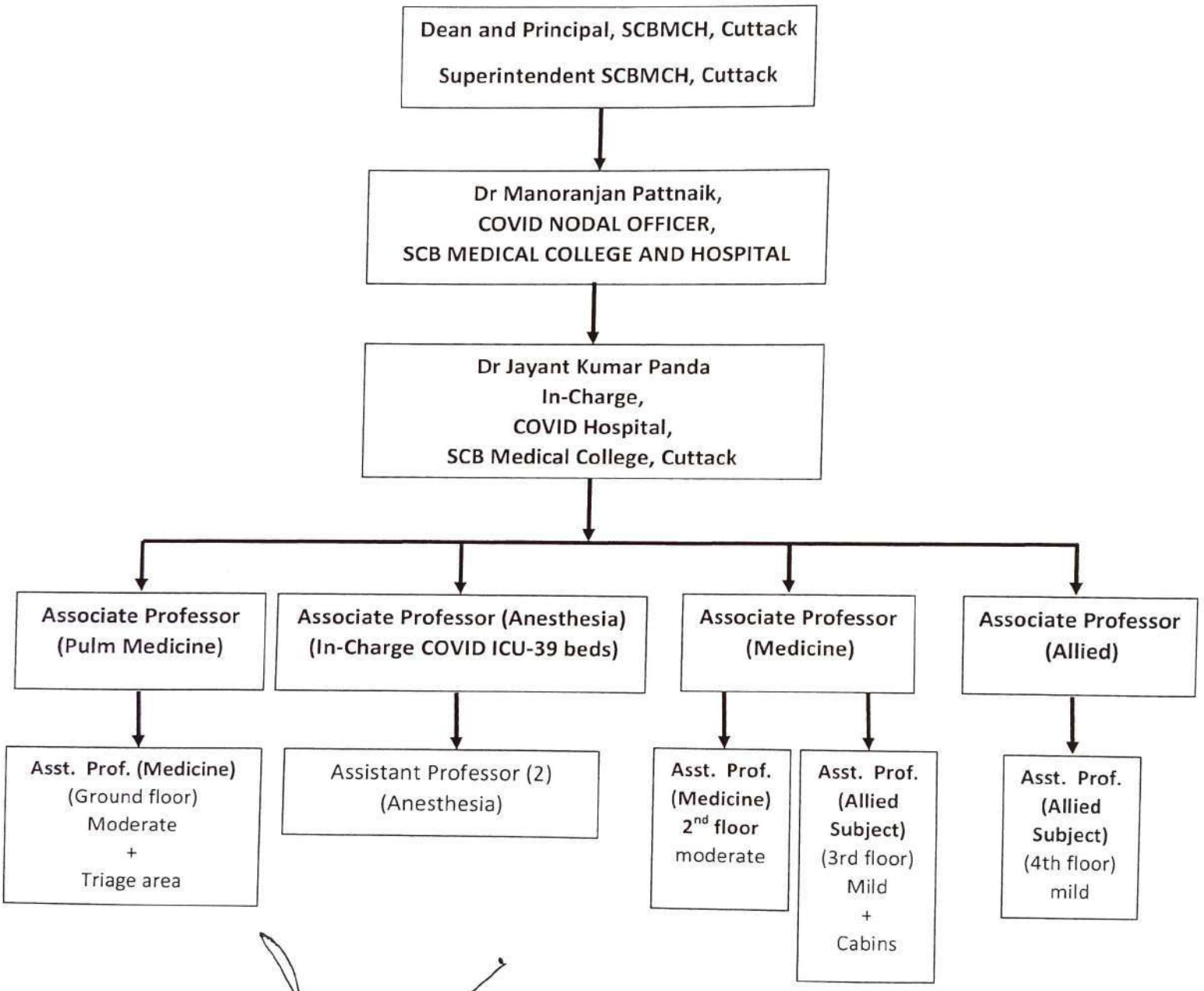
Level	Team Leader	Team Constituent
A (Screening)	B or C	C/D/F
B (Non-critically ill)	A or B	C/D
C (Critically ill)	Only A and B	

Category E residents can be posted at any Level of health facility, primarily for coordination activities.

Annexure II: Algorithm of transfer of patients from COVID Isolation building to COVID Hospital



Annexure III: Supervision of COVID HOSPITAL, SCBMCH, Cuttack.



Annexure IV: Management of COVID-19: symptomatictreatment

Government of India Ministry of Health and Family Welfare Directorate General of Health Services (EMR Division) Guidelines version 5 (3.7.2020)

Management of MildCases

Detailedclinicalhistory will be takenincludingthatofco-morbidities.Patient will be followedupdaily for temperature, vitals and Oxygen saturation (SpO_2).

Mild COVID-19 cases may be given:

1. Symptomatic treatment such as antipyretic (Paracetamol) for fever and pain, anti-tussives for cough
2. Adequate nutrition and appropriate hydration to be ensured.
3. Tab Hydroxychloroquine (HCQ) may be considered for any of those having high risk features for severe disease (such as age> 60 years; Hypertension, diabetes, chronic lung/kidney/ liver disease, cerebrovascular disease and obesity) under strict medical supervision.
4. Avoid HCQ in patients with underlying cardiac disease, history of unexplained syncope or QT prolongation (> 480ms).

Management of ModerateCases

The defining clinical assessment parameters are Respiratory Rate of more than or equal to 24 per minute and oxygen saturation (SpO_2) of less than 94% on room air (range90-94%).

The patient will undergo detailed clinical history including co-morbid conditions, measurementofvitalsigns,Oxygensaturation(SpO_2)andradiologicalexaminationofChest X-ray, Complete Blood Count and other investigations asindicated.

Antibioticsshouldnotbeprescribedroutinelyunlessthereis clinical suspicionofabacterial infection.

Clinical Management of Moderate cases

1. Symptomatic treatment such as antipyretic (Paracetamol) for fever and pain, anti-tussives forcough
2. Adequate hydration to beensured
3. OxygenSupport:

- Target SpO_2: 92-96% (88-92% in patients withCOPD)
- Thedeviceforadministeringoxygen(nasalprongs,mask,ormaskswithbreathing/ non-rebreathing reservoir bag) depends upon the increasing requirement of oxygentherapy.IfHFNCorsimplenasalcannulaisused,N95maskshouldbeapplied overit.
- Awake proning may be used as a rescue therapy. (Protocol atAnnexure-I)

Criteria to be fulfilled	Avoid proning
• Patients with oxygen requirement of>4L • Normal mentalstatus • Able to self-prone or change position with minimal assistance	• Hemodynamicinstability • Close monitoring notpossible

Patients will undergo a rotational change in position from prone to lying on each side to sitting up. Typical protocols include 30–120 minutes in prone position, followed by 30– 120 minutes in left lateral decubitus, right lateral decubitus, and upright sitting position.

- All patients should have daily 12-leadECG

4. Anticoagulation
   - Prophylactic dose of UFH or LMWH (e.g., enoxaparin 40 mg per daySC)
     *Contraindications: End stage renal disease, active bleeding, emergency surgery
     **Consider unfractionated heparin in ESRD
5. Corticosteroids
   - ConsiderIV methylprednisolone 0.5to1mg/kgORDexamethasone0.1to0.2mg/kg for 3 days (preferably within 48 hours of admission or if oxygen requirement is increasing and if inflammatory markers are increased). Review the duration of administration as per clinicalresponse.
6. Anti-virals
   - May consider investigational therapies such as Remdesivir (under EUA); Convalescent Plasma (Off label use) as detailed below.
7. Control of co-morbidcondition
8. Follow up CRP, D-dimer & Ferritin every 48-72 hourly (if available); CBC with differential count, Absolute Lymphocyte count, KFT/LFTdaily
9. Monitorfor:
   - Increased work of breathing (use of accessory muscles)
   - Hemodynamicinstability

- Increase in oxygenrequirement

FewpatientswithCOVID-19experienceasecondarybacterialinfection.Conside piric antibiotic therapy as per local antibiogram and guidelines in older peo mmune compromised patients, and children < 5 years of age.

Closemonitoringofpatientswithmoderate COVID-19isrequiredforsignsorsyn ns of disease progression.

Management of Severe Cases

Early supportive therapy andmonitoring

1. Symptomatic treatment with paracetamol and antitussives tocontinue
2. Oxygenation: Give supplemental oxygen therapy immediately to p nts with SevereCovidandrespiratorydistress,hypoxaemia,orshock:Initiateoxyge rapy at 5 L/min and titrate flow rates to reach target $SpO_2 \geq 90\%$ in non-pre nt adults and$SpO_2 \geq 92$-96%inpregnantpatients.All areas where patients with S re Covid are cared for should be equipped with pulse oximeters, functio oxygen systems and disposable, single- use, oxygen-delivering interfaces (n. cannula, simple face mask, and mask with reservoir bag). Use contact preca ns when handling contaminated oxygen interfaces of patients with COVID –19.
3. Use conservative fluid management in patients with Severe Covid w there is no evidence of shock.
4. Anticoagulation: High prophylactic dose of UFH/ LMWH (e.g. enoxapa 0 mg BD SC) if not at high risk ofbleeding.

   *Contraindications: End stage renal disease, active bleeding, emergen urgery

   ** Consider unfractionated heparin in ESRD
5. Corticosteroids:IVMethylprednisolone1-2mg/kgorDexamethasone0.2 ng/kg for 5-7days
6. Investigationaltherapy:Tocilizumab(OffLabel)AntiIL-6therapymaybeco ered as detailed below.

Management of hypoxemic respiratory failure andARDS

Recognizeseverehypoxemicrespiratoryfailurewhenapatientwithrespirator tress is failing standard oxygen therapy. Patients may continue to have increa work of breathing or hypoxemia even when oxygen is delivered via a face mask v reservoir bag(flowratesof10-15L/min,whichistypicallytheminimumflowrequiredton ain bag inflation; FiO2 0.60-0.95). Hypoxemic respiratory failure in ARDS comr y results from intrapulmonary ventilation- perfusion mismatch or shunt and usu ly requires mechanicalventilation.

Lung protective ventilation strategy by ARDS net protocol:

N. Pani

- Tidal volume 6ml/kg, RR 15-35/min, PEEP 5-15cm H2O; target platea pressure < 30cm H2O, target SpO2 88-95% and/or PaO255-80mmHg

Prone ventilation to be considered when there is refractory hypoxemia PaO2/FiO2 ratio <150 with FiO2> 0.6 with PEEP > 5cm H2O.

High – Flow Nasal Cannula oxygenation (HFNO) or non – invasive mechanical ventilation:

When respiratory distress and/or hypoxemia of the patient cannot be alleviated after receiving standard oxygen therapy, high – flow nasal cannula oxygen therapy or non – invasive ventilation can be considered. Compared to standard oxygen therapy, HFNO reducestheneedforintubation.Patientswithhypercapnia(exacerbationofobstructive lung disease, cardiogenic pulmonary edema), hemodynamic instability, multi-organ failure, or abnormal mental status should generally not receive HFNO, although emergingdatasuggestthatHFNOmaybesafeinpatientswithmild-moderateandnon-worsening hypercapnia. Patients receiving HFNO should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1hr).

NIV: setting - PS 5-15 cmH2O adjusted to tidal volume of 5-7 ml/kg and PEEP 5-10 cm H2O and FiO2 @ 0.5 -1.0 titrated to target SpO2> 94%.

There have been concerns raised about generation of aerosols while using HFNO and NIV.However,recent publication suggestthatnewerHFNOandNIVsystemswithgood interface fitting do not create widespread dispersion of exhaled air and therefore should be associated with low risk of airborne transmission. If conditions do not improve or even get worse within a short time (1 – 2 hours), tracheal intubation and invasive mechanical ventilation should be used in a timelymanner.

- Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions. Patients with ARDS, especially youngchildrenorthosewhoareobeseorpregnant,mayde-saturatequicklyduringintubation.Pre-oxygenate with 100% FiO2 for 5 minutes, via a face mask with reservoir bag, bag-valvemask,HFNO,orNIV.Rapidsequenceintubationisappropriateafteranairway assessment that identifies no signs of difficultintubation.
- Implementmechanicalventilationusinglowertidalvolumes(4–8ml/kgpredicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH2O). This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggestedforpatientswithsepsis-inducedrespiratoryfailure.Theinitialtidalvolumeis 6ml/kgPBW;tidalvolumeup to8ml/kgPBWisallowedifundesirablesideeffectsoccur (e.g.dys-synchrony,pH<7.15).HypercapnialspermittedifmeetingthepHgoalof7.30-7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets.

- In patients with severe ARDS, prone ventilation for 16-18 hours per day is recommended but requires sufficient human resources and expertise to be performed safely.

- In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested. PEEP titration requires consideration of benefits (reducing atelect trauma andimprovingalveolarrecruitment)vs.risks(end-inspiratoryoverdistensionleadingto lung injury and higher pulmonary vascular resistance). Tables are available to guide PEEP titration based on the FiO_2 required to maintain SpO_2. In patients with moderate- severe ARDS (PaO_2/FiO_2<150), neuromuscular blockade by continuous infusion should not be routinely used.

- In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation. ECLS should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for COVID – 19patients.

- Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis. Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example, transfer to a transportventilator).

Management of septicshock

- Recognize septic shock in adults when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg AND lactateis>2mmol/L,inabsenceofhypovolemia.
- In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock. Standard care includes early recognition and the following treatments within 1 hour of recognition: antimicrobial therapy and fluid loading and vasopressors forhypotension.Theuseofcentralvenousandarterialcathetersshouldbebasedonresource availability and individual patient needs.

- Inresuscitationfromsepticshockinadults,giveatleast30ml/kgofisotoniccrystalloid in adults in the first 3 hours. Do not use hypotonic crystalloids, starches, or gelatins forresuscitation.

- Fluidresuscitationmayleadtovolumeoverload,includingrespiratoryfailure.Ifthereis no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary edema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available.

- Crystalloids include normal saline and Ringer's lactate. Determine need for additional fluid boluses (250-1000 ml in adults or 10-20 ml/kg in children) based on clinical response and improvement of perfusion targets. Perfusion targets include MAP (>65

mmHg or age- appropriate targets in children), urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), and improvement of skin mottling, capillary refill, level of consciousness, and lactate. Consider dynamic indices of volume responsiveness to guide volume administration beyond initial resuscitation based on local resources and experience. These indices include passive leg raising test, fluid challenges with serial strokevolumemeasurements,orvariationsinsystolicpressure,pulsepressure,inferiorvenacavasize,orstrokevolumeinresponsetochangesinintrathoracicpressureduring mechanicalventilation.

- Administer vasopressors when shock persists during or after fluid resuscitation. The initialbloodpressuretargetisMAP≥65mmHginadultsandage-appropriatetargetsin children.
- If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseousneedles.
- If signs of poor perfusion and cardiac dysfunction persist despite achieving MAPtarget with fluids and vasopressors, consider an inotrope such asdobutamine.

Other therapeutic measures

For patients with progressive deterioration of oxygenation indicators, rapid worsening on imaging and excessive activation of the body's inflammatory response, glucocorticoids can be used for a short period of time (3 to 5 days). It is recommended that dose should not exceed the equivalent of Methylprednisolone 1 – 2mg/kg/day OR Dexamethasone 0.2-0.4 mg/kg/day. Note that a larger dose of glucocorticoid will delay the removal of coronavirus due to immunosuppressive effects.

ProphylacticdoseofUFHorLMWH(e.g.,enoxaparin40mgperdaySC)shouldbegivenfor anti-coagulation. Control of co-morbid conditions should be ensured.

For pregnant severe cases, consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential. Patients often sufferfrom anxiety and fear and they should be supported by psychological counseling.

InvestigationalTherapies

Atpresent,useofthesetherapies isbasedonalimitedavailableevidence.Asthesituation evolves, and when more data become available, the evidence will be accordingly incorporated, and recommendation upgraded. Further, use of these drugs is subjected to limited availability in the country as of now. Currently, these drugs should only be used in a defined subgroup of patients:

1. **Remdesivir** (under Emergency Use Authorization) may be considered in patients with

moderate disease (those on oxygen) with none of the following contraindications:

- AST/ALT > 5 times Upper limit of normal(ULN)
- Severe renal impairment (i.e.,< 30ml/min/m^2 or need forhemodialysis)
- Pregnancy or lactating females
- Children (< 12 years of age)

Dose: 200 mg IV on day 1 followed by 100 mg IV daily for 4 days (total 5 days)

2. **Convalescent plasma** (Off Label) may be considered in patients with moderate disease who are not improving (oxygen requirement is progressively increasing) despiteuseofsteroids.Specialprerequisiteswhileconsideringconvalescentplasma include:
   - ABO compatibility and cross matching of the donorplasma
   - Neutralizing titer of donor plasma should be above the specific threshold (if the latter is not available, plasma IgG titer (against S-protein RBD) above 1:640 should beused)
   - Recipient should be closely monitored for several hours post transfusion for any transfusion related adverseevents
   - Use should be avoided in patients with IgA deficiency or immunoglobulin allergy
   - **Dose**:Doseisvariablerangingfrom4to13ml/kg(usually200mlsingledosegiven slowly over not less than 2hours

3. **Tocilizumab** (Off Label) may be considered in patients with moderate disease with progressively increasing oxygen requirements and in mechanically ventilated patients not improving despite use of steroids. Long term safety data in COVID 19 remains largely unknown. Special considerations before its use include:
   - Presence of raised inflammatory markers (e.g., CRP, Ferritin,IL-6)
   - Patients should be carefully monitored post Tocilizumab for secondary infections and neutropenia
   - The drug is contraindicated in PLHIV, those with active infections (systemic bacterial/fungal), Tuberculosis, active hepatitis, ANC < 2000/mm^3 and Platelet count < 1,00,000/mm^3
   - **Dose:** 8mg/kg (maximum 800 mg at one time) given slowly in 100 ml NS over 1 hour; dose can be repeated once after 12 to 24 hours if needed

Prevention of complications

Implement the following interventions (Table 3) to prevent complications associated with critical illness. These interventions are based on Surviving Sepsis or other guidelines, and are generally limited to feasible recommendations based on high quality evidence.

Table: Prevention of complications

Reduce days of invasive mechanical ventilation	• Useweaningprotocolsthatincludedailyassessmentforreadinessto breathespontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator associated pneumonia	• Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45º) • Use a closed suctioning system; periodically drain and discard condensate intubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged butnotroutinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7days
Reduce incidence of venous thromboembolism	• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compressiondevices).
Reduce incidence of catheter related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure Ulcers	• Turn patient every twohours
Reduce Incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within24-48 hours ofadmission) • Administer histamine-2 receptor blockers or proton-pumpinhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation ≥ 48 hours, coagulopathy, renal replacement therapy, liver disease, multiple co-morbidities, and higher organ failurescore

Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to doso

Early self-proning in awake, non-intubated patients

- Any COVID-19 patient with respiratory embarrassment severe enough to be admitted to the hospital may be considered for rotation and earlyself-proning.
- Care must be taken to not disrupt the flow of oxygen during patientrotation
- Typical protocols include 30–120 minutes in prone position, followed by 30–120 minutes in left lateral decubitus, right lateral decubitus, and upright sitting position *(Caputo ND, Strayer RJ, Levitan R. Academic Emergency Medicine2020;27:375–378)*

Requirements for safe prone positioning in ARDS

- Pre-oxygenate the patient with FiO21.0
- Secure the endotracheal tube and arterial and central venous catheters
- Adequate number of staff to assist in the turn and to monitor theturn
- Supplies to turn (pads for bed, sheet, protection for thepatient)
- Knowledge of howto perform the turn as well as how to supine the patient in case of anemergency

Contraindications to prone ventilation

- Spinal instability requires specialcare
- Intra cranial pressure may increase onturning
- Rapidly return to supine in case of CPR or defibrillation

When to startproning?

- P/Fratio<150whilebeingventilatedwithFiO2>0.6andPEEP>5cmH2O.

When to stopproning?

- When P/F exceeds 150 on FiO2 $\geq$ 0.6 and $\geq$ 6 PEEP

What portion of the day should patients be keptprone?