MANAGEMENT PROTOCOL FOR COVID-19

Government of West Bengal

Department of Health and Family Welfare

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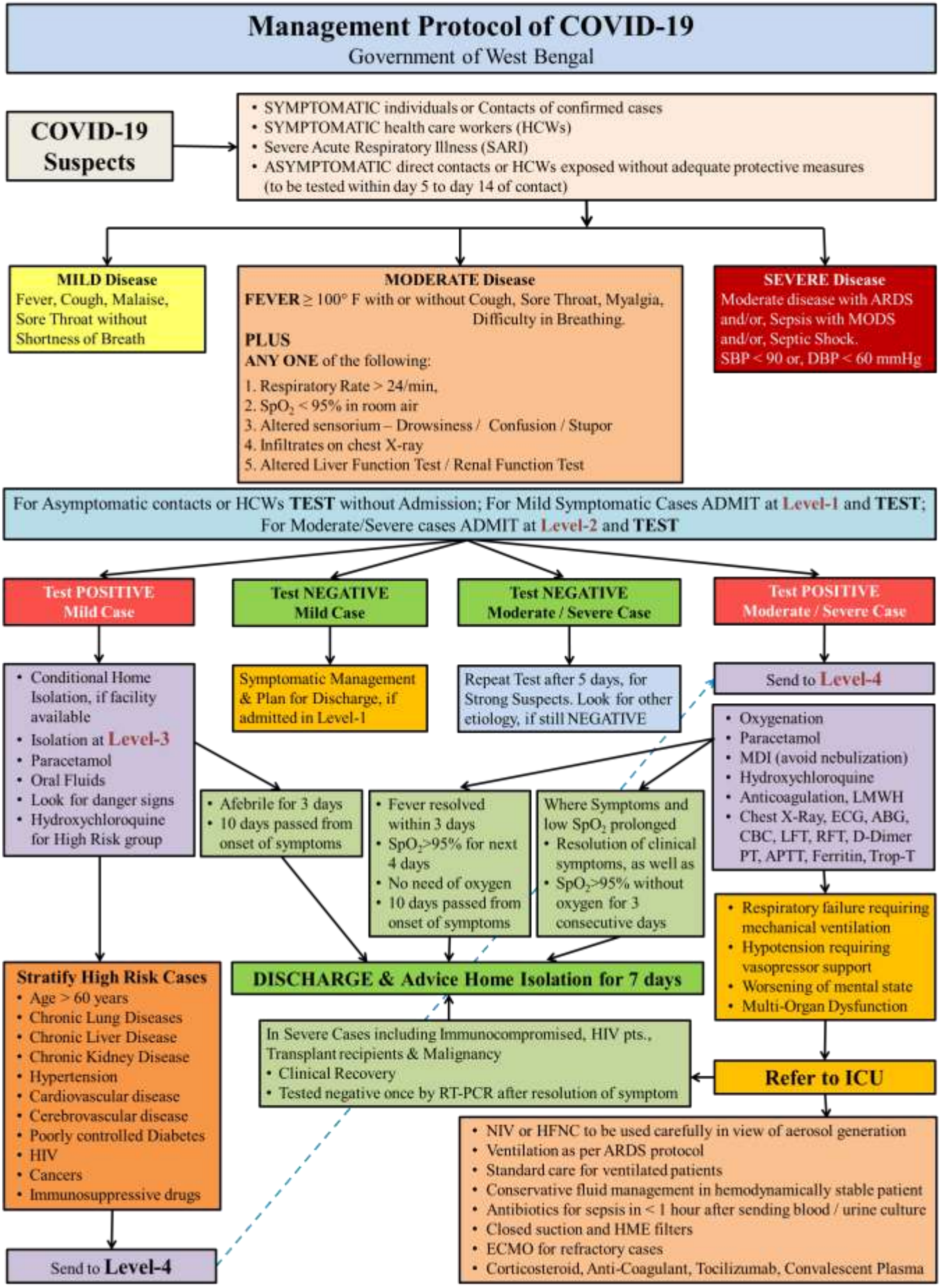
Management Protocol of COVID-19

Government of West Bengal



1.	**Hydroxychloroquine.** Dose : 400 mg BD on day one, then 400 mg OD x 4 days. Adverse Effects : Gastrointestinal, QT Prolongation in ECG. Contraindication : QTc >500 mSec, Myasthenia Gravis, Porphyria, Retinal Pathology, Epilepsy. Pregnancy is not a contraindication
2.	**Tocilizumab.** May be considered in Moderate / Severe cases, if IL-6 is more than 5 times of the Upper Limit of Normal (ULN). Recommended first dose is 400 mg (4 - 8 mg/kg) in 100 ml NS, over >1 hour. For patients with poor initial efficacy, an additional 400 mg can be repeated after 12 hours. Maximum number of administration is two times, and maximum single dose is 800 mg. Not recommended in patients with active hepatic disease or hepatic impairment with baseline ALT or AST >1.5 times of ULN
3.	**Corticosteroids.** Methylprednisolone 1- 2mg/kg/day or equivalent may be used for a short period of time of 3 to 5 days in patients with progressive worsening of oxygenation indicators, imaging and excessive activation of body's inflammatory response.
4.	**Anti-Coagulation.** Low Molecular Weight Heparin e.g. Enoxaparin 1mg/kg/day, SC, in moderate to severe patients with increased D-dimer level, P-time, APTT, or with features of DIC or Hypercoagulability, or in patients requiring DVT prophylaxis.
5.	**Convalescent Plasma Transfusion.** May be considered in Moderate / Severe cases, if there is progressive worsening of condition

Mandatory Monitoring:

- Body temperature at regular interval
- Pulse oximetry monitoring for SpO_2
- Vital Signs

Tests Required:

- CBC, Urea, Creatinine, LFT, Sugar, Na^+, K^+, Pulse Oximetry, ABG
- ECG at presentation. If initial QTc>450 mSecs, try to avoid quinolones/macrolides in them or monitor QTc closely
- Chest X Ray at presentation and then as needed
- Serum Ferritin, LDH, CRP, Trop-T, Lactate for assessment of prognosis in moderate to severe patients
- D-Dimer, P-Time, APTT, Platelet to assess the need for Anti-coagulants in moderate to severe patients
- Blood Culture, Urine Culture, Procalcitonin to assess the need for Antibiotics in moderate to severe patients

Discharge Criteria:

- Mild / Very Mild / Pre-symptomatic cases can be discharged after 10 days of symptom onset and no fever for 3 days
- Moderate cases whose symptoms resolve within 3 days and maintains SpO_2 above 95% for next 4 days can be discharged after 10 days of symptom onset if there is Absence of fever without Paracetamol, Resolution of breathlessness and No oxygen requirement
- Moderate to severe cases whose fever does not resolve within 3 days and demand of oxygen therapy continues can be discharged only after Resolution of clinical symptoms and ability to maintain oxygen saturation above 95% for 3 consecutive days
- Severe Cases (including Immunocompromised patients, HIV patients, Transplant recipients and Malignancy) can be discharged only after Clinical recovery and the patient's swab test becomes negative once by RT-PCR after resolution of symptoms

Follow Up:

- Home isolation for further 7 days after discharge
- Follow up after 2 weeks and 4 weeks, or as required in between

Chemoprophylaxis : Hydroxychloroquine Recommended for Chemoprophylaxis of COVID-19 (Dose as per ICMR Guidelines)

1. For Asymptomatic HCWs in the treatment of suspect and confirmed patients : Dose is 400 mg BDPC on day 1, followed by 400 mg once weekly for 7 weeks
2. For Asymptomatic household contacts of laboratory confirmed cases : Dose is 400 mg BDPC on day 1, followed by 400 mg once weekly for 3 weeks

Contraindications:

Children below 15 years, known case of Retinopathy and History of Hypersensitivity to Hydroxychloroquine

Key Considerations:

1. Drug to be used only under prescription of a Registered Medical Practitioner
2. Consult doctor in cases of drug reaction
3. All asymptomatic contacts should remain in home isolation.
4. Asymptomatic individuals showing symptoms should immediately seek medical advice

Status of the Patient	COVID Hospital Levels
Suspected Mild Case, Not Yet Tested	Level 1
Suspected Moderate / Severe Case (SARI), Not Yet Tested	Level 2
Test Confirmed Mild Case	Level 3
Test Confirmed Moderate / Severe Case And Test Confirmed Mild Case with High Risk	Level 4

According to severity Level 1 and 2 are for COVID Suspects

According to severity Level 3 and 4 are for COVID Cases

Positive Cases and Not-yet-Tested Suspects Must Not Be Kept in the Same COVID Hospital Building

TOP SHEET FOR THE MANAGEMENT OF COVID-19 PATIENTS

PATIENT DETAILS

Name-	**Age-**	**Gender-**
Bed No.-	**Ward-**	**Date of Admission -**
Registration No.-	**Under-**	**Received By-**
Family Member Name-	**Relation-**	**Phone No.-**

TEST FOR COVID-19

Date	Method (RT-PCR / CB-NAAT / Other)	Test Center	Result

HIGH RISK FACTORS

Diabetes	Hypertension	IHD	COPD	Asthma
Chronic Kidney Disease	Chronic Liver Disease	HIV	Cancers	Cerebrovascular Disease
Immunosuppressive Drugs		Others		
Pregnancy	LMP	EDD		Fetal Status
List of Regular Medicines at Home				

PARAMETERS ON ADMISSION. DATE - TIME -

Temperature -	SpO_2 -	Pulse Rate -	BP -
Breathlessness (Nil / Mild / Moderate / Severe)		Respiration Rate -	
Sensorium (Conscious / Drowsy / Stupor / Coma)			

BASIC TESTS DONE ON ADMISSION

Chest X-Ray	Time-	Normal / Abnormal	Findings -
ECG	Time-	QTc	Other Findings -
Complete Hemogram		**LFT**	
Creatinine	**Sugar**	**Na^+**	**K^+**

Full Signature of Staff Nurse …….. Full Signature of Doctor ……..

REGULAR MONITORING CHART

Date -			**Day –** 1st / 2nd / 3rd / 4th / 5th / 6th /7th / 8th / 9th / 10th / ……	
	Morning	**Evening**	**Night**	**Observations**
Temperature				
Pulse				<100 / 100 - 120 / >120 per minute
Respiration				
BP				Syst <90, Diast <60 / Syst >100, Diast >70
Breathlessness				Nil / Mild / Moderate / Severe
SpO_2				>95% / 95 - 90% / <90%
Sensorium				Conscious / Drowsy / Stupor / Coma
Urine Output	ml	ml	ml	Total - ml in last 24 hours
Auscultation				Breath Sound / Crepitation / Rhonchi
Medicines Given				Home Medicines / Insulin
Signature **Staff Nurse**				Appetite / Could Take Food and Medicines
Signature **Doctor on Duty**				Stable / Worsening / Ventilation / Referral / Discharge / Death

REPORT CHART FOR MODERATE / SEVERE PATIENTS (With Date and Time)

Blood Counts	Hb%	TC	Neutrophil	Lymphocyte	Platelet	
Biochemistry	LFT	Urea	Creatinine	Sugar (F/PP/R)	Na^+	K^+
ABG	pH / PaO_2 / $PaCO_2$ / HCO_3			PaO_2 /FIO_2		
Other Tests	D-Dimer	P Time		APTT	CRP	
Other Tests	Ferritin	Trop-T				
Other Tests	Blood Culture	Urine Culture		Procalcitonin	Lactate	
Other Therapy	Antibiotics	Anti-Coagulant		Nor-Ad/ Dopamine	Corticosteroid	
Other Therapy	Tocilizumab	Covalesc. Plasma		Ventilation	NIPPV	

Full Signature of Staff Nurse …….. Full Signature of Doctor ……..

GENERAL PRINCIPLES

GENERAL PRINCIPLE FOR OUTDOOR SETTINGS IN ALL HOSPITALS

1. Screening of patients with fever and respiratory tract symptoms in dedicated fever clinics
2. All patients attending fever clinic must wear a face mask, or may be provided with a mask
3. Maintain more than one-meter distance from patient
4. Use appropriate PPE while seeing patients
5. Avoid face-to-face sitting with the patients

GENERAL PRINCIPLE FOR INDOOR SETTINGS IN COVID HOSPITALS

1. All patients Must Always wear a 3-layer surgical mask after admission
2. No family member will be allowed in patient areas to meet the patient
3. Patient will not be allowed to carry any phone/mobile inside the ward along with him/her
4. A designated help line will communicate patient relatives about the patient's condition
5. Separate lifts should be used to transport the patients
6. Patients should be placed in single rooms. If single rooms are not available, patients should be placed sufficiently apart. Distance between two beds should be more than one meter preferably 2 meters.
7. All the paper works, e.g. writing notes in BHT or Treatment Cards should be done in a separate area.
8. Avoid moving and transporting patients out of their room unless medically necessary
9. Clean Environmental surfaces with detergents and 1% Sodium Hypochlorite solution
10. Manage Laundry, Food Service, Utensils and Medical Waste with safe routine procedures

PROTECTIVE GEARS FOR THE HEALTH CARE WORKERS (HCWs)

1. **Health Care Workers (HCWs) should refrain from touching own Mouth, Nose or Eyes with potentially contaminated gloved or bare hands, and touching the surfaces**
2. **HCWs to Practise Hand Hygiene**
    - Before touching a patient
    - Before any clean or aseptic procedure is performed
    - After exposure to body fluid
    - After touching a patient, and after touching the patient's surroundings

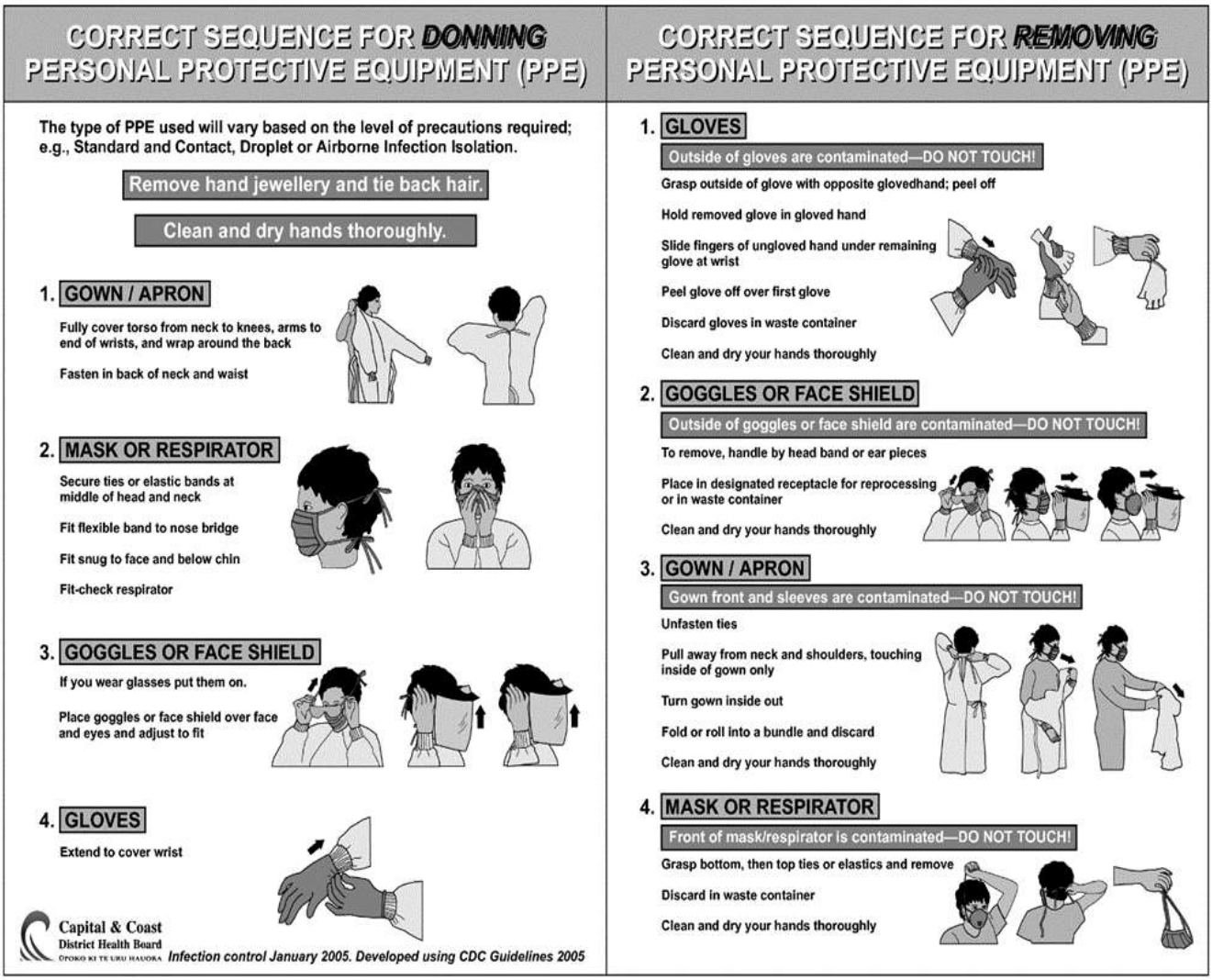
- Alcohol-based hand rub (ABHR) preferred if hands are not visibly soiled, Soap and water preferred when they are visibly soiled
- After examining each patient, they must wash their hands (with gloves on) with soap water or ABHR sanitisers

3. **Full Set of PPE (Personal Protective Equipment) includes**
   - N-95 mask
   - Eye protection (Goggles) or facial protection (face shield)
   - Clean, non-sterile, coverall, long sleeved gown
   - Head Cover
   - Gloves
   - Shoe Cover
4. Donning and doffing of PPEs to be done in separate areas with separate entry and exit
5. **Identify donning and doffing areas in each floor with hand washing facilities**
6. **Advisory of Level of PPE in accordance with the level of Risk**

Area	HCW Category	Risk Level	Recommended PPE	Comment
• Triage Area in OPD • Doctors Chamber at OPD	• Doctor • Sister • Sanitary Staff	Moderate	N-95 Mask and Gloves	Aerosol Generating Procedure Not Allowed
• OPD	• Patient • Patient Party	Low	Triple Layer Medical Mask	Should Practice Hand Hygiene
• Emergency Depart Attending Non-SARI	• Doctor • Sister	Moderate	N-95 Mask and Gloves	Do
• Emergency Depart Attending SARI Pts.	• Doctor • Sister	High	Full Set of PPE	Aerosol Generating Procedure, only if absolutely needed
• Isolation Ward • COVID Ward	• Doctor • Sister	High	Full Set of PPE	Do
• Critical Care Unit	• Doctor • Sister • Technician	High	Full Set of PPE	Do
• Lift Service	• Liftman	Moderate	N-95 Mask and Gloves	Operating Lifts that Carry Patients

Area	HCW Category	Risk Level	Recommended PPE	Comment
• Laboratory	• Doctor • Technician	High	Full Set of PPE	Sample Collection & Transport & Testing
• Sanitation	• Sanitary Staff	Moderate	N-95 Mask and Gloves	Cleaning Surfaces, Floor and Changing Linen
• Mortuary • ICU	• Dead Body Handling Staff	Moderate	N-95 Mask and Gloves	Dead Body Handling
• Administration • Maintenance PWD	• Administrator • Accountant • Engineering	No Risk	No PPE	Administrative office Maintenance

CORRECT SEQUENCE OF DONNING AND DOFFING OF PPE

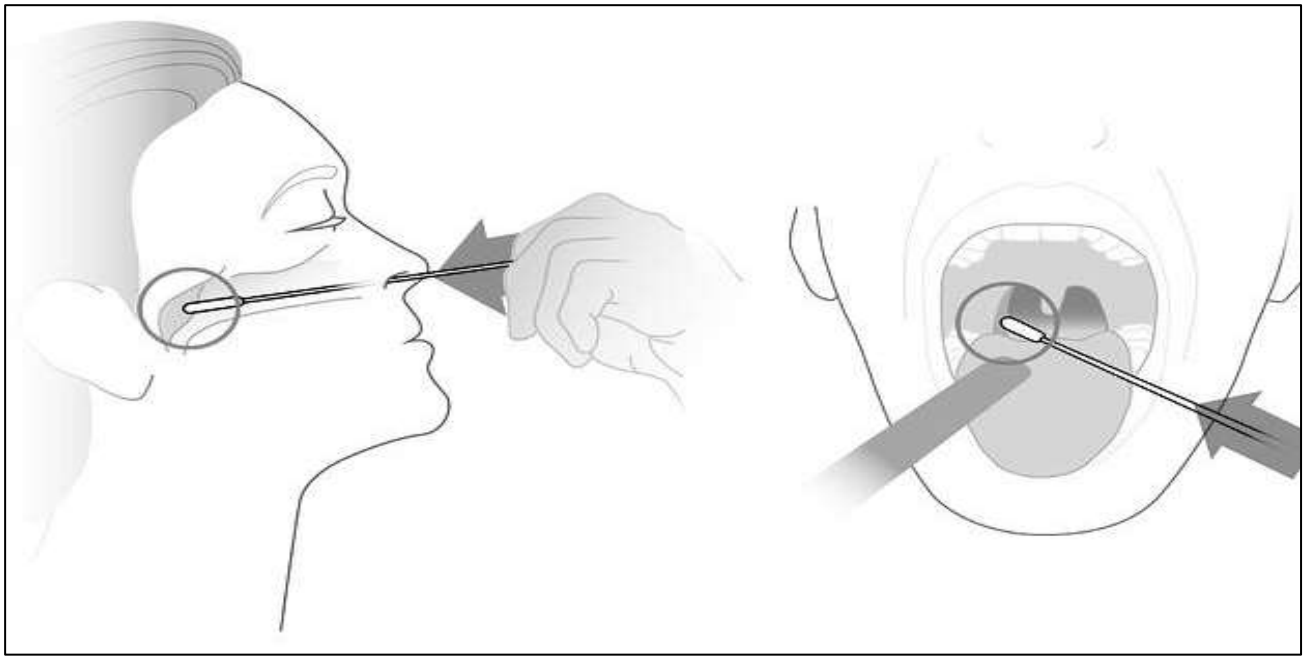


METHODS FOR SPECIMEN COLLECTION AND TRANSPORT

SPECIMEN COLLECTOR MUST WEAR FULL PPE

1. **Specimens Collection**

- **Nasopharyngeal Swab***:* Insert flexible wire shaft minitip swab through the nares parallel to the palate (not upwards) until resistance is encountered indicating contact with the nasopharynx.
  - Swab should reach the depth equal to distance from nostrils to outer opening of the ear.
  - Gently rub and roll the swab.
  - Leave swab in place for several seconds to absorb secretions.
  - Slowly remove swab while rotating it.
- **Oropharyngeal Swab** (Throat Swab): Insert swab into the
  - Posterior pharynx and tonsillar areas.
  - Rub swab over both tonsillar pillars and posterior oropharynx
  - Avoid touching the tongue, teeth, and gums.



2. **Storage**
   - Place swabs immediately into sterile tubes containing 2-3 mL of Viral Transport Media.
   - Store specimens at 2 - 8°C for up to 72 hours after collection.

3. **Transport**
   - Send the sample specimen in Viral Transport Media to Testing Centre immediately
   - If delayed, store specimens at 2-8°C, and transport overnight on ice pack.

CASE DEFINITIONS

CASE DEFINITION OF CONFIRMED CASE

- A person with laboratory confirmed infection of COVID-19, by RT PCR irrespective of clinical signs and symptoms

CASE DEFINITION OF SUSPECT

- Patient with Fever + Acute Respiratory Illness e.g. Cough / Sore Throat / Respiratory Distress AND a history of travel in last 14 days to an area or territory, or a history of residence in an area or territory, which is reporting local transmission of COVID-19
- Patient with Acute Respiratory Illness who came in Contact with a Confirmed case within last 14 days
- Symptomatic Health Care Worker without any contact history with a Confirmed case
- Asymptomatic Health Care Worker or an asymptomatic close family member who came in Contact with a Confirmed case within last 14 days
- All Patients with Severe Acute Respiratory Illness (SARI)
- A case in whom the COVID-19 test report is inconclusive

CASE DEFINITION OF MILD DISEASE

FEVER ≥ 100° F with Cough, Sore Throat, Malaise, Myalgia, without Shortness of Breath

CASE DEFINITION OF MODERATE DISEASE

FEVER ≥ 100° F with or without Respiratory Symptoms - Cough, Sore Throat, Myalgia, Difficulty in Breathing

PLUS, ANY **ONE** of the following:

1. Respiratory Rate > 24/min,
2. SpO_2 < 95 % in room air
3. Altered Sensorium - Drowsiness / Confusion / Stupor
4. Infiltrates on Chest X-ray.
5. Altered Liver Function Test or Renal Function Test

CASE DEFINITION OF SEVERE DISEASE

Case with **Moderate Disease Plus ARDS / Acute Respiratory Failure** and/or, **Sepsis with Multi-Organ Dysfunction Syndrome** and/or, **Septic Shock**

ARDS

Adults	Children
• **Mild ARDS**: PaO_2/FiO_2 >200 - ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H_2O, or non-ventilated) • **Moderate ARDS**: PaO_2/FiO_2 >100 -≤ 200 mmHg (with PEEP ≥5 cm H_2O, or non-ventilated) • **Severe ARDS**: PaO_2/FiO_2 ≤ 100 mmHg (with PEEP ≥5 cm H_2O, or non-ventilated) • When PaO_2 is not available, SpO_2/FiO_2 ≤ 315 mmHg suggests ARDS (including in non-ventilated patients)	• Bi-PAP or CPAP ≥5 cm H_2O via full face mask: PaO_2/FiO_2 ≤ 300 or SpO_2/FiO_2 ≤264 • Mild ARDS (invasively ventilated): OI ≥ 4 - < 8 or, OSI ≥ 5 - < 7.5 • Moderate ARDS (invasively ventilated): OI ≥ 8 - < 16 or, OSI ≥ 7.5 - < 12.3 • Severe ARDS (invasively ventilated): OI ≥ 16 or, OSI ≥ 12.3 OI = Oxygenation Index and OSI = Oxygenation Index using SpO_2

SEPSIS : SOFA Score ≥ 2

Sepsis	SOFA (Total Score 0 – 24)
Life threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection	1. PaO_2-FiO_2 Ratio (Score 0 – 4)
	2. Platelet Count (Score 0 – 4)
	3. Bilirubin (Score 0 – 4)
	4. Glasgow Coma Scale (Score 0 – 4)
	5. MAP & Vasopressor Requirement (Score 0 – 4)
	6. Creatinine and / or Urine Output (Score 0 – 4)
	Sepsis = SOFA ≥ 2 (Baseline score to be assumed as Zero if data not available)

SEPTIC SHOCK

Adults	Children
Persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level > 2 mmol/L	Any Hypotension (SBP 2 SD below normal for age) **Or**, Any Two of the following :- 1. Altered mental state 2. Bradycardia or tachycardia (HR 160 bpm in infants and HR 150 bpm in children) 3. Prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses 4. Tachypnea 5. Mottled skin or petechial or purpuric rash 6. increased lactate 7. Oliguria 8. Hyperthermia or hypothermia.

TRIAGE

Cases	COVID Hospital Levels
Suspected Mild Case	**Level 1**
Suspected Moderate / Severe Case (SARI)	**Level 2**
Test Confirmed Mild Case	**Level 3**
Test Confirmed Moderate / Severe Case **AND** **Test Confirmed Mild Case with High Risk***	**Level 4**

* [Patients with Age > 60 years; Chronic Lung Diseases; Chronic Liver Disease; Chronic Kidney Disease; Hypertension; Cardiovascular Disease; Cerebrovascular Disease; Diabetes; HIV; Cancers; on Immunosuppressive drugs.]

A. According to severity Level 1 and Level 2 COVID Hospitals are for COVID Suspects

B. According to severity Level 3 and Level 4 COVID Hospitals are for COVID Cases

N.B.

Suspects and Positive Cases Must Not Be Kept in the Same COVID Hospital Building

Patient will be Transferred to Appropriate Level according to the Report and the Severity

MANAGEMENT OF MILD CASES

Following Parameters Should Be Observed By Doctor / Sister During Daily Rounds and Recorded Thrice Daily / On Worsening of Symptoms

1. **Temperature**
2. **SpO_2 (By Pulse Oximeter)**
3. **Blood Pressure**
4. **Sensorium (conscious, drowsy or stupor)**
5. **Pulse**
6. Respiratory Rate
7. Urine Output
8. Chest Examination - Breath sound, crepitations and rhonchi

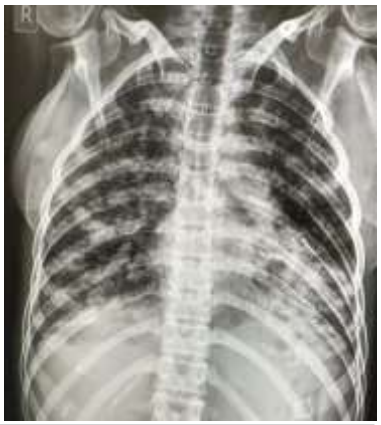
First Seven Features May Be Checked By The On Duty Sister.

First Five Parameters Are Essential and Must Be Recorded Time to Time in Each Shift and duly Recorded in the Top Sheet.

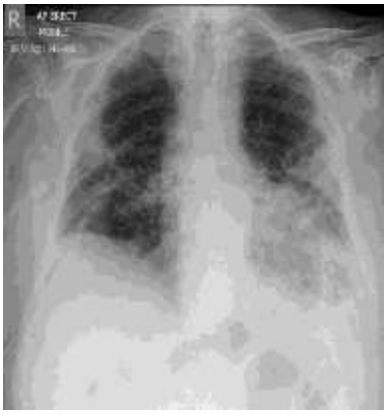
INVESTIGATIONS FOR MILD CASES

1. **Complete Hemogram**- common abnormalities are Leukopenia with Lymphocytopenia (On Admission and Daily)
2. **X-Ray Chest** PA view (On admission / every 3rd day/ at worsening of symptoms)

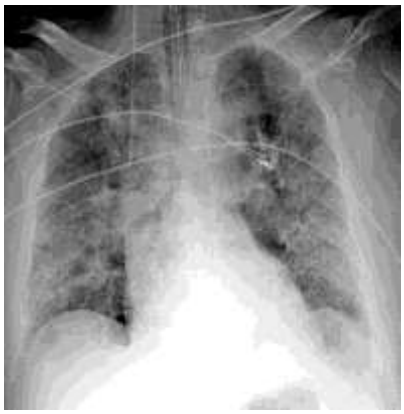
   Common X-Ray Chest findings
   - Bilateral / Unilateral / Patchy infiltrates
   - Ground Glass opacities
   - Interstitial Changes



Chest X-ray showing bilateral lung opacities

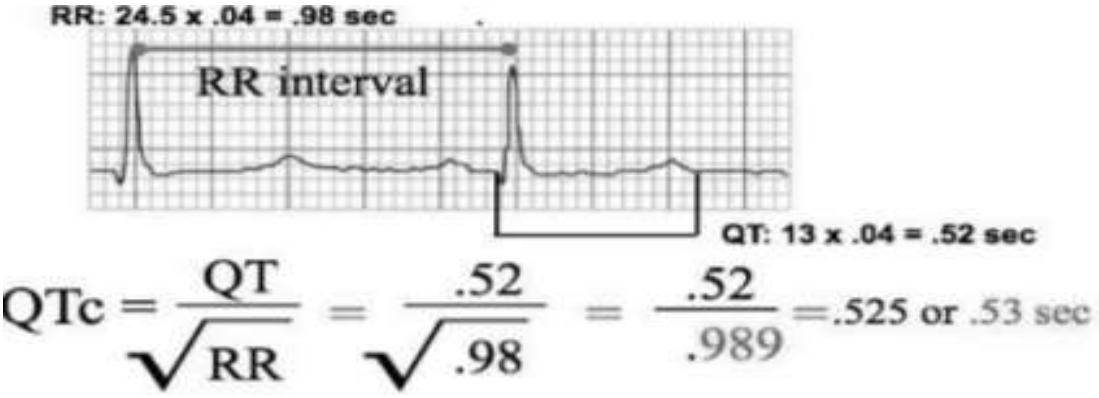


Chest X-ray showing extensive bilateral ground-glass opacities

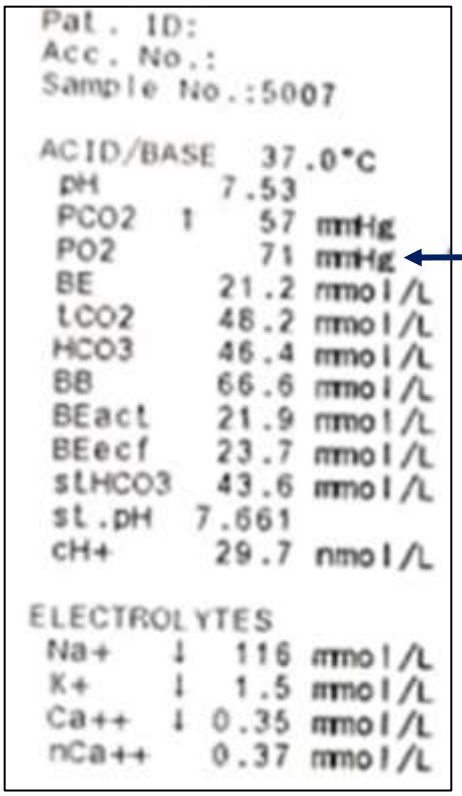


Chest X-ray showing bilateral, symmetrical peripheral consolidation with perihilar infiltrates

3. **LFT** - Raised Transaminases, Hyperbilirubinemia
   (Send on Admission / day 4 / day 7 / on Worsening)
4. **Serum Creatinine** - May be raised (Send on Admission / day 4 / day 7 / on Worsening)
5. **ECG** - To look for ST-T changes suggestive of Myocarditis changes and to look for QTc prolongation. Hydroxychloroquine is to be administered cautiously, if QTc is >450 mSecs, and to be avoided if >500 mSecs.
   (To be done on Admission / on Worsening of symptoms)



6. **ABG** : (To be done in moderately or severely ill patients / on Worsening of symptoms)
   Calculate PaO_2/FiO_2 Ratio to find the level of ARDS as described above.



Pat. ID:			
Acc. No.:			
Sample No.:5007			
ACID/BASE		37.0°C	
pH		7.53	
PCO2	↑	57	mmHg
PO2		71	mmHg
BE		21.2	mmol/L
tCO2		48.2	mmol/L
HCO3		46.4	mmol/L
BB		66.6	mmol/L
BEact		21.9	mmol/L
BEecf		23.7	mmol/L
stHCO3		43.6	mmol/L
st.pH		7.661	
cH+		29.7	nmol/L
ELECTROLYTES			
Na+	↓	116	mmol/L
K+	↓	1.5	mmol/L
Ca++	↓	0.35	mmol/L
nCa++		0.37	mmol/L

PaO_2 in this ABG is 71 (as shown)

FiO_2 is 0.24, as the was getting Oxygen @ 24% by Nasal Cannula

PaO_2/FiO_2 Ratio in this ABG Report is

71/0.24 = 295.8

Suggestive of mild ARDS

7. **Nasopharyngeal & Oropharyngeal Swabs for RT-PCR is not required to be repeated.**
   May be done only if the patient is admitted as a suspect and not yet tested before admission.

ESSENTIAL BASIC TESTS FOR MILD CASES ON ADMISSION AND ON WORSENING

Chest X-Ray, ECG, Complete Hemogram and Blood Biochemistry for Sugar, LFT, Creatinine

ESSENTIAL REGULAR MONITORING FOR MILD CASES AFTER ADMISSION

Temperature, SpO_2, Pulse, Blood Pressure, Sensorium

FEATURES FOR PROGRESSION FROM MILD DISEASE TO MODERATE DISEASE

1. **SpO_2 < 95% at Room Air**
2. **Stupor, Drowsiness or Confusion**
3. **SBP <90 mmHg, DBP <60 mmHg**
4. Respiratory Rate >24/min
5. HR >100/min
6. **Chest X-Ray showing Bilateral infiltrate / Unilateral infiltrate / Ground glass opacity**
7. ST-T changes in ECG suggestive of Myocarditis
8. Exacerbation of Comorbid Conditions

POOR PROGNOSTIC SIGNS

1. Neutrophil : Lymphocyte Ratio ≥ 3.13
2. Development of Acute Kidney Injury
3. Raised Bilirubin or Liver Enzymes
4. Infiltrates & Ground Glass opacities in Chest X-Ray
5. Type 1 Respiratory Failure in ABG or PaO_2/FiO_2 ratio <300
6. Hypotension
7. Features of Myocarditis (Trop-T positive)
8. Raised D-Dimer, Serum Ferritin, Lactate level (>2mmol/lit) or Procalcitonin

TREATMENT OF MILD CASES

Symptomatic Treatment

- Rest
- Paracetamol for FEVER
- Antitussive for COUGH
- ORS for DIARRHOEA
- Metered Dose Inhalers for MILD BREATHLESSNESS
- Plenty of Fluids
- Nutritious Diet

SPECIFIC TREATMENT FOR CASES IN HIGH RISK GROUP

- Tab. **Hydroxychloroquine** 400mg BD on Day 1, followed by 400 mg OD for 4 Days

HIGH RISK GROUP : Patients with

- Age > 60 years
- Chronic Lung Diseases
- Chronic Liver Disease
- Chronic Kidney Disease
- Hypertension
- Cardiovascular Disease
- Cerebrovascular Disease
- Diabetes
- HIV
- Cancers
- On Immunosuppressive drugs

WHEN TO REFER TO HIGHER FACILITY

Any patient developing **ANY ONE** of the following:

1. **SpO2 < 95% at Room Air**
2. **Confusion, Drowsiness**
3. **SBP <90 mmHg, DBP <60 mmHg**
4. **X-Ray Chest PA- showing Bilateral infiltrate / Unilateral infiltrate / Ground glass opacity**
5. **Deranged Liver or Kidney Function**

WHEN TO DISCHARGE

1. **Mild / Very Mild / Pre-symptomatic cases can be discharged after 10 days of symptom onset with no fever for at least 3 days**
2. Swab testing or Chest X-Ray is **not required** for discharge

FOLLOW UP

- **All patients must undergo strict Home Isolation for 7 days after discharge**
- Clinical Follow up at 14th day and 28th day

HOME ISOLATION OF VERY MILD, PRE-SYMPTOMATIC CASES

ELIGIBILITY CRITERIA FOR HOME ISOLATION

1. **Very mild symptomatic cases and pre-symptomatic or asymptomatic laboratory confirmed cases** as clinically assigned by the treating medical officer can opt for home isolation
2. Such cases **should have adequate facility at their residence for self-isolation** and also for quarantine of the family contacts
3. **A care giver should be available at their residence to provide care on 24 x7 basis**
4. **Care giver and all close contacts of such cases should take Hydroxychloroquine prophylaxis** as per protocol and as prescribed by the treating medical officer
5. A **communication link** between the caregiver and hospital for the entire duration is a prerequisite
6. The patient or caregiver will download **Arogya Setu App** from www.mygov.in/ aarogya-setuapp on their mobile and the mobile should remain active at all times through Bluetooth and Wi-Fi
7. The patient will **agree to monitor his health**. For further follow up by surveillance teams, patient and the care giver will **regularly inform** his health status to the District Surveillance Officer
8. The patient will give an **undertaking of self-isolation** (Annexure) and will follow the guidelines
9. In addition to the guidelines available at www.mohfw.gov.in/Guidelinesforhomequarantine.pdf, required instructions for the care giver and the patient as in Annexure II should be also followed

WHEN TO SEEK MEDICAL ATTENTION DURING HOME ISOLATION

Immediate medical attention must be sought if any of the following serious signs/symptoms develop:-

1. **Difficulty in breathing**
2. **Persistent pain or pressure in the chest**
3. **Mental confusion or inability to arouse**
4. **Developing bluish discolorations of lips/face**
5. Or as has been advised by the treating medical officer

WHEN TO DISCONTINUE HOME ISOLATION

Patient under home isolation will end home isolation

1. After 17 days from the onset of symptoms with at least 10 days from the remission of fever
2. After 17 days from the date of sampling for pre-symptomatic or asymptomatic cases
3. There is no need for swab testing by RT-PCR after the home isolation period is over

UNDERTAKING ON SELF-ISOLATION (Annexure I)

I …… S/W of ……., resident of …… being diagnosed as a confirmed/suspect case of COVID-19, do hereby voluntarily undertake to maintain strict self-isolation at all times for the prescribed period. During this period I shall monitor my health and those around me and interact with the assigned surveillance team/with the call center (1075), in case I suffer from any deteriorating symptoms or any of my close family contacts develops any symptoms consistent with COVID-19. I have been explained in detail about the precautions that I need to follow while I am under self-isolation. I am liable to be acted on under the prescribed law for any non-adherence to self-isolation protocol.

Signature_____ Date_____ Contact Number _____

MANAGEMENT OF MODERATE / SEVERE CASES

Same Parameters Like In Mild Cases Should Be Observed During Daily Rounds By Doctor / Sister And Recorded At Least Thrice A Day Or On Worsening Of Symptom

INVESTIGATIONS

All Routine Investigations Recommended for Mild Cases Have To Be Sent.

Additional Investigations for Moderate / Severe Cases Are As Following: -

1. Appropriate Cultures Blood / Urine (On Admission / on Worsening of symptoms)
2. For Diabetic patients - FBS, PPBS (as appropriate) [Laboratory / Glucometer]
3. Serum **Ferritin**
4. **Trop-T** / Quantitative Troponins (When Suggestive)
5. Procalcitonin (To rule out secondary infection) - May be normal or mildly elevated
6. CRP
7. LDH
8. **D-Dimer** / PT / INR / APTT / Fibrinogen / Platelets (To rule out DIC)
9. Nasopharyngeal Swab for H_1N_1 (To rule out Swine Flu)
10. CT Scan Chest (Non-contrast) - If Chest X ray inconclusive or negative and suspicion is high
11. USG Chest: Where expertise available, can be used, as it may help sparing CT scan for all

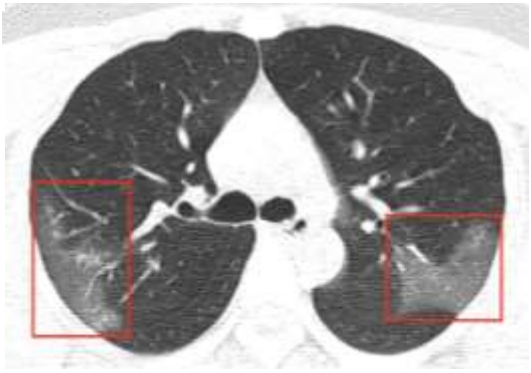
Primary Findings on CT

- Ground-glass Opacities (GGO): usually bilateral, subpleural, peripheral opacities.
- Crazy Paving Appearance (GGOs and inter-/intra-lobular septal thickening)
- Air Space Consolidation may be seen
- Broncho-vascular Thickening
- Traction Bronchiectasis may be present

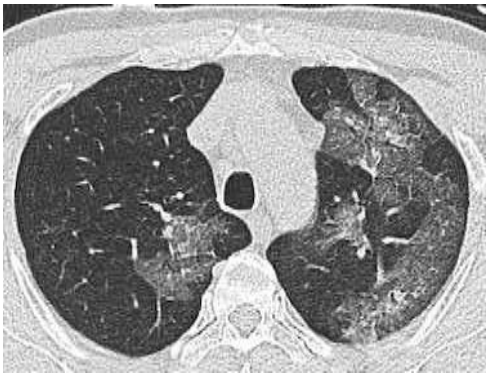
Temporal CT Changes

Four stages on CT have been described

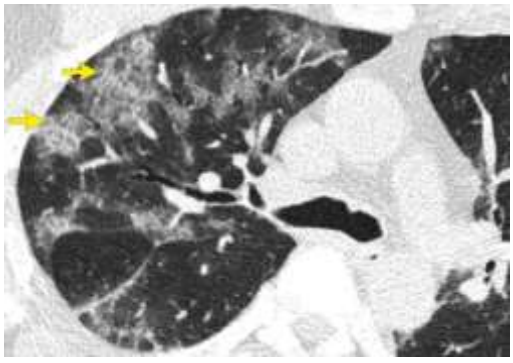
- Early / Initial Stage (0 - 4 days): Normal CT scan or GGO only
- Progressive Stage (5 - 8 days): Increased GGO and Crazy Paving Appearance
- Peak Stage (9 - 13 days): Consolidation
- Absorption Stage (>14 days): Abnormalities resolve at one month and beyond



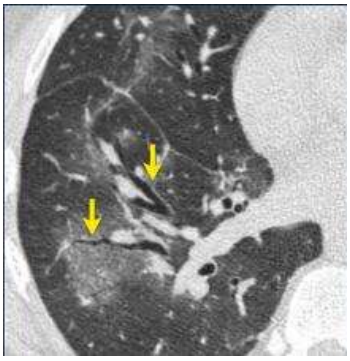
CT chest showing Bilateral Ground Glass Opacities (GGO) without Subpleural Sparing



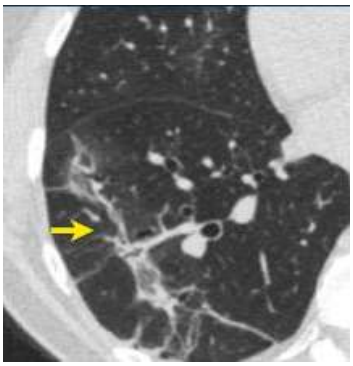
CT chest showing multifocal bilateral Ground-Glass Opacities with a posterior predominance.



CT chest showing thickened interlobular and intralobular lines with crazy paving appearance



CT chest showing bronchiectasis with a Ground Glass Opacities



CT chest showing sub-pleural bands and architectural distortion

INVESTIGATIONS TO PREDICT PROGRESSION

CBC

- Monitor lymphocyte count. Lymphopenia is a risk factor for progression to severe disease
- **Neutrophil Lymphocyte Ratio >3.13** is an independent risk factor for severe disease

CRP

- Elevated levels of CRP may be seen in moderate to severe disease.

Liver Function Test

- Raised Transaminases, Hyperbilirubinemia. Acute liver failure in severe cases

Renal Function Test

- Increased creatinine. Acute Kidney Injury in severe disease

LDH

- Elevated LDH levels seen in moderate to severe disease. Marker of Poor prognosis

Ferritin

- Markedly elevated Ferritin level predicts a poor outcome in patients with COVID-19

D-Dimer, P-Time, APTT

- D-dimer >1mcg/ml predicts poor prognosis at an early stage.
- Increased D-Dimer, P-Time, APTT are markers of DIC/ Hypercoagulability and bad prognosis
- Low Molecular Weight Heparin e.g. Enoxaparin 1mg/kg/day Subcutaneously may be considered in patients with very high D-dimer levels (> 6 times normal)

SALIENT POINTS IN MANAGEMENT

OXYGEN THERAPY

- Administer oxygen to all Severe Acute Respiratory Illness (SARI) patients and to patients with respiratory distress / hypoxemia / shock
- Start with nasal prongs @ 5L/min, or Simple Face Mask / Venturi Mask / Non-Rebreathing Mask @ 6-15L/min, as needed
- Titrate for target $SpO_2 \geq 95$ %
- Target SpO_2 after initial stabilization: 90-96%

INITIAL FLUID MANAGEMENT

- Conservative fluid strategy if no evidence of shock (0.9% saline / Ringer lactate)
- Cautious IV fluids
- Monitor for worsening of oxygenation during fluid therapy

SPECIFIC DRUG THERAPY FOR COVID-19

- **Tab. Hydroxychloroquine** 400mg BD on Day-1, followed by 400 mg OD on Day-2 to Day-5

Contraindications for Hydroxychloroquine:

1. Children below 12 years
2. QTc in ECG >500 mSec
3. Retinal Pathology
4. Drug Interactions
5. Myasthenia Gravis
6. Porphyria
7. Epilepsy

If initial QTc >450 mSec, perform basic biochemistry and ECG daily. Avoid Quinolones and Macrolides with Hydroxychloroquine, if possible. Monitor QTc closely if these are needed

IF THERE IS PROGRESSIVE WORSENING OF CONDITION

- **Tocilizumab.** May be considered in Moderate / Severe cases, if IL-6 is more than 5 times of the Upper Limit of Normal (ULN). Recommended first dose is 400 mg (4 - 8 mg/kg) in 100 ml NS, over >1 hour. For patients with poor initial efficacy, an additional 400 mg can be repeated after 12 hours. Maximum number of administrations is two times, and maximum single dose is 800 mg. Not recommended in patients with active hepatic disease or hepatic impairment with baseline ALT or AST >1.5 times of ULN
- **Therapeutic Plasma Exchange** May be considered in Moderate / Severe cases, if there is progressive worsening of condition

ANTICOAGULATION

- Low Molecular Weight Heparin e.g. Enoxaparin 1mg/kg/day, Subcutaneously, in moderate to severe patients with marked elevation of D-dimer level, P-time and APTT, which suggest the presence of DIC or Hypercoagulability, or in patients requiring venous thromboembolism (VTE) prophylaxis, unless there is a contraindication

GLUCOCORTICOIDS

- For patients with progressive deterioration of oxygenation indicators, imaging and excessive activation of body's inflammatory response, glucocorticoids can be used for a short period of time of 3 to 5 days. Dose not to exceed the equivalent of Methylprednisolone 1- 2mg/kg/day

EMPIRIC ANTIMICROBIALS

- To add antimicrobials to all patients as early as possible, preferably within the first hour
- Broad Spectrum 3rd generation Cephalosporine / Piperacillin Tazobactam / Carbapenem / with or without Aminoglycosides may be selected
- Azithromycin may be added to cover atypical organisms
- Choose drugs to cover all suspected bacteria and influenza (Oseltamivir when suspected)
- Try to send blood cultures before starting antimicrobials; do not delay antimicrobials waiting to send cultures
- De-escalate or stop based on microbiology results or clinical judgment or Procalcitonin

CONTINUATION OF CHRONIC MEDICATIONS

- **ACE inhibitor /ARB**: Should be continued, if there is no hypotension or any contraindication
- **Statins**: To be continued as same dose
- **Insulin**: To be continued as per blood sugar
- **Immunomodulators**: Decisions to be individualized for prednisolone, biologics and others

MONITORING

- Monitor vital signs, SpO_2 and/or PaO_2 at regular intervals (every 2 hourly or on worsening)
- Check whether tolerating oxygen therapy → Do not delay intubation if worsening
- If **High Flow Nasal Cannula (HFNC)** is available, can consider a short trial of HFNC in selected patients under close monitoring on worsening of oxygenation. Decrease flow, if possible, to restrict aerosol generation → Do not delay intubation if worsening
- If HFNC not available, can consider a short Non-invasive Positive Pressure Ventilation (NIPPV) trial in selected patients under close monitoring. (Be careful about leaks, as high flow of NIPPV increases aerosol generation. Full face mask / helmet interface preferred) → Do not delay intubation if worsening
- Airborne precautions must during HFNC / NIPPV / Endotracheal intubation
- MDI with spacer preferred to nebulizers, if possible
- CBC / LFT / RFT / portable Chest X-ray / ECG / Lactate / Procalcitonin (every day)
- ABG 6 hourly or more frequently if needed
- D dimer, LDH, Ferritin on admission and on alternate days
- Early detection of myocardial involvement by Troponins, NT-proBNP and Echocardiography
- Other investigations as decided by treating team

AEROSOL GENERATING PROCEDURES

- Intubation, Extubation, Use of T piece or any other open circuit
- High Flow Nasal Cannula (HFNC), Non-Invasive Positive Pressure Ventilation, Bag Masking
- Open Suctioning
- Bronchoscopy, Tracheostomy
- Cardio-Pulmonary Resuscitation (CPR)
- Nebulisation

ADDRESS COMORBIDITIES

- Tailor management according to comorbidities

MANAGEMENT IN CRITICAL CARE UNIT

CRITERIA OF CRITICAL CARE UNIT ADMISSION

1. Requiring Mechanical Ventilation
2. Hypotension Requiring Vasopressor Support
3. Worsening Mental Status
4. Multi-Organ Dysfunction Syndrome (MODS)

WHEN TO INTUBATE

1. Features of respiratory fatigue with increased work of breathing and worsening respiratory parameters indicating respiratory failure
2. Haemodynamic instability
3. Altered sensorium with a threatened airway

Although intubation decision should be individualized, keep a low threshold for intubation.

HOW TO INTUBATE

- Full complement of PPE with face shield
- Ensure scene safety & check readiness of all essential drugs & equipment prior to procedure
- Most experienced team member to intubate
- Complete airway assessment prior to procedure
- Hemodynamic evaluation & optimization, if needed, prior to procedure
- Use Heat and Moisture Exchanger (HME) filter + Bacterial-viral filter in every oxygenation interface (Face Mask, Circuit, Endotracheal Tube (ETT), Catheter Mount, Laryngeal Mask Airway (LMA))
- Use closed system suctioning
- Pre-oxygenation with 100% oxygen
- Rapid sequence intubation using induction agent (Propofol or Etomidate) and muscle relaxant (Succinylcholine or Rocuronium)
- Limit bag mask ventilation unless unavoidable
- Apply cricoid pressure only in case of ongoing regurgitation
- Use video laryngoscope with separate screen, if available
- In anticipated difficult airway, anaesthesiologist may be called to intubate
- In unanticipated difficult airway, use LMA and simultaneously call for expert help

- Clamp ETT during unavoidable disconnections
- Use end-tidal CO_2 and CXR to confirm correct position of ETT
- After intubation, appropriate cleaning and disinfection of equipment and environment is mandatory

COVID-19 AND ACUTE RESPIRATORY FAILURE : INVASIVE MECHANICAL VENTILATION

- **Initial Mode:** Volume Control (can use Pressure Control, if Tidal Volume goals are met)
- **Initial Settings**
  - Tidal Volume (VT): 6ml/kg Predicted Body Weight (PBW)
  - Rate: to match baseline Minute Ventilation (not > 35)

PBW= In Males: 50 + 2.3 (Height in inches – 60);

In Females: 45.5 + 2.3 (Height in inches – 60)

- **Tidal Volume Adjustment:**
  - Check Plateau Pressure (Pplat)
  - Plateau Pressure Goal ≤ 30 cm H_2O
  - If Pplat > 30: decrease VT by 1ml/kg steps to minimum 4ml / kg
  - If breath stacking (auto PEEP) or severe dyspnea occurs, may increase VT to 7-8 ml / kg, if Pplat remains ≤ 30

Set PEEP according to PEEP-FiO_2 tables to achieve Oxygenation Goal (PaO_2 55 - 80 mmHg / *preferably* SpO_2 90 - 96%)

Lower PEEP-Higher FiO_2 Combinations: (Start with minimum value for a given FiO_2)

FiO_2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
PEEP	5	5-8	8-10	10	10-14	14	14-18	18-24

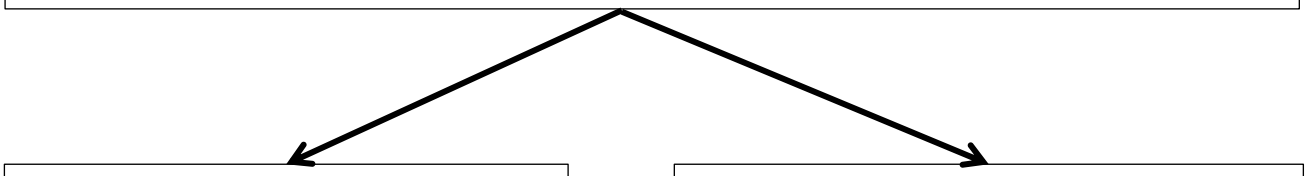
Higher PEEP- Lower FiO_2 Combinations:

FiO_2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5
PEEP	5	8	10	12	14	14	16	16	18
FiO_2	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.0	
PEEP	20	20	20	20	22	22	22	24	

STRATEGY

- Higher PEEP (> 10) in moderate to severe ARDS
- Lower PEEP (≤ 10) in mild ARDS and "Non-ARDS like" severe pneumonia
- Continue with higher PEEP, if PEEP responsive (Recruiters) and with lower PEEP, if PEEP non-responsive (Non-recruiters)

  PEEP Responsive (Recruiters) : Keeping FiO_2 unchanged, *usually* oxygenation improves with increase in PEEP with minimal / no drop in mean arterial pressure, minimal / no rise in $PaCO_2$ and minimal / no rise in driving pressure)
- Try to keep Pplat ≤ 30 and Driving Pressure (Pplat – PEEP) <15
- **Conservative Fluid Management** in absence of tissue hypoperfusion. Avoid hypervolemia

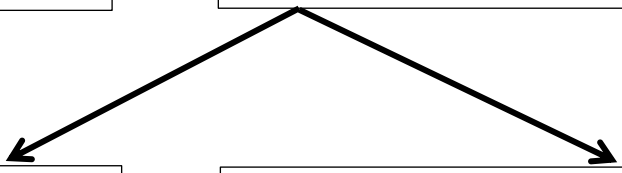


Oxygenation Improving

- Reduce PEEP and FiO_2 gradually
- Shift to a partial assist / spontaneous mode, if tolerated
- Plan for protocolized liberation from ventilation (weaning)
- Smooth extubation with strict airborne precautions including N95 masks with eye protection or equivalent

Oxygen Not Improving

- Search for the reasons of failure and address them
- Ensure conservative fluid management
- Treat patient-ventilator dys-synchrony, if any
- Shift Volume limited mode to pressure limited mode
- Search for complications of disease and of ventilation



Oxygen Improving

- Optimize and persist with above mentioned approaches till patient is ready for liberation from ventilation

Oxygen Not Improving

- If acceptable gas exchanges not achievable without incurring Pplat > 30, consider rescue therapies, (vide below)

RESCUE THERAPIES

Prone Ventilation

- Most preferred rescue therapy
- Consider in $PaO_2/FiO_2 < 150$ with a $FiO_2 \geq 0.6$ and PEEP ≥ 5 or $PaO_2:FiO_2 \leq 100$ with a $PaO_2 \leq 60$ despite optimization of ventilator settings on FiO_2 of 1
- Consider early proning (within the first 36 hours)
- 12-16 hours / day
- Always check for contraindications and complications

Recruitment Maneuvers

- Consider in PEEP responsive patients
- Preferred method: Sustained high-pressure inflation (35-40 cm H_2O of CPAP for 40 seconds)
- Avoid staircase manoeuvres ((Incremental PEEP)
- Avoid routine use of recruitment manoeuvres

Neuromuscular Blockers

- Consider continuous infusion for up to 48 hrs in case of persistently high plateau pressures or severe dyssynchrony
- Can use intermittent boluses to facilitate lung protective ventilation, if needed

Pulmonary Vasodilators

- If available, a trial of inhaled prostacyclin or Nitric oxide may be considered, if other rescue strategies have failed

ECMO (Extracorporeal Membrane Oxygenation)

- Consider veno-venous (VV) ECMO, if available, only in selected patients, with refractory hypoxemia despite optimizing ventilation, proning and using other rescue therapies
- Referral to ECMO Centre may be needed

Ventilator Precautions / Maintenance

- Fresh ventilator circuit for every new patient
- HME with Bacterial-Viral filter to be fitted in circuits
- Tubing and HME with Bacterial-Viral filters to change every 48 hours or when visibly soiled
- Use closed suction and avoid routine suctioning
- Avoid unnecessary disconnections. Clamp ET Tube for unavoidable disconnections
- Avoid nebulisations in intubated patients. Use inline MDI instead
- Use standby mode prior to disconnecting the ventilator from the patient to avoid mucus dispersion from the circuit

- Use an inspiratory bacterial and viral filter to assure non-contamination of the internal ventilator gas path
- Protect the expiratory valve with a hydrophobic bacterial filter
- Daily surface cleaning of ventilator during and after usage with disinfectant must.

REPRESENTATIVE STARTING VENTILATOR SETTINGS

	Volume Control	**Pressure Control**
Tidal Volume	4 - 8 ml / kg PBW	
Inspiratory Pressure		15 cmH_20 (Target VT: 4 - 8 ml/kg)
Rate	14 -18	14 -18
Flow (L/min)	20 -30	
Flow Pattern	Decelerating	Decelerating (default)
Inspiratory Time (Ti)		1 - 1.5 secs
I : E Ratio		1 : 1.5 to 1:3
FiO_2	1 (decrease subsequently) Target SpO_2: preferably 90-96%	1 (decrease subsequently) Target SpO_2: preferably 90-96%
PEEP (cm H_2O)	5-10 Target SpO_2 : preferably 90 - 96% Target PaO_2 : 55 - 80mmHg *For subsequent adjustments: Follow PEEP-FiO_2 tables*	5-10 Target SpO_2 : preferably 90 - 96% Target PaO_2 : 55 - 80 mmHg *For subsequent adjustments: Follow PEEP-FiO_2 tables*
Trigger Sensitivity (Pressure/Flow)	1-4	1-4
Inspiratory Pause	0-0.3 seconds	

COVID-19 AND SHOCK : HEMODYNAMIC SUPPORT

FLUID THERAPY

Strategy of Acute Resuscitation:

- Individualize, monitoring tissue perfusion
- Conservative strategy preferred to liberal
- Try to avoid hypervolemia

Choice of Fluids

- Buffered / balanced crystalloids
- Avoid Hydroxy Ethyl Starch (HES) / Dextran / Gelatine / Routine use of Albumin

Assess Fluid Responsiveness, Whenever Possible

- Use dynamic parameters, for assessing preload responsiveness (e.g. Passive Leg Raising), as feasible

VASOACTIVE AGENTS

- Vasopressor of Choice : Noradrenaline (Vasopressin / Adrenaline if Nor-Ad not available)
- Second line vasopressor: Add Vasopressin
- Mean Arterial Pressure Target : 60 - 65 mm Hg
- Add dobutamine in presence of cardiac dysfunction & persistent hypoperfusion despite fluids and noradrenaline
- Avoid dopamine
- Refractory shock despite fluids & vasopressors: Add IV Hydrocortisone (200mg/day as continuous infusion / intermittent doses)

COVID-19 AND RENAL FAILURE : RENAL REPLACEMENT THERAPY

Indications of Dialysis in Acute Kidney Injury (AKI)

- Volume overload
- Severe metabolic acidosis
- Refractory hyperkalemia
- Uremic encephalopathy
- Uremic pericarditis

STRATEGY

- All modalities of renal replacement therapy can be used depending on clinical status
- Bedside dialysis should be preferred. Portable RO water in a tank may be used, if needed.
- Acute peritoneal dialysis can be tried in selected patients where hemodialysis facility is not available.
- Use of cytokine removal therapies not recommended

COVID-19 AND VENOUS THROMBOEMBOLISM : PROPHYLAXIS

- Routine pharmacologic venous thromboembolism (VTE) prophylaxis is warranted, preferably with low molecular weight heparin, unless there is a contraindication (e.g., bleeding, severe thrombocytopenia).
- Use of more aggressive VTE prophylaxis in the form of increased intensity of a pharmacologic agent or the addition of a mechanical device may be assessed on an individual basis and can be reconsidered as additional data emerge.

COVID-19 AND CARDIAC ARREST: CARDIOPULMONARY RESUSCITATION

- In the event of a cardiac arrest, cardiopulmonary resuscitation should proceed with all members of the team wearing full PPE and N95 mask.
- Practicing a test run of a COVID-19 patient's cardiac arrest is prudent.
- Bag-mask ventilation should be avoided (if feasible) and the ventilator can be used instead to deliver a respiratory rate of 10 beats per minute.
- "Crashes" should be avoided by close monitoring and anticipation. Aim for an elective, unhurried intubation
- Meaningful outcome in refractory critical illness and multiple organ failure is <5%: Assess futility of treatment early

COVID-19 AND OTHER ISSUES FOR INTENSIVE CARE SET UP

- Enteral nutrition
- Glycemic control
- Prevention of hospital acquired infections (VAP, CRBSI, CAUTI).
- Appropriate cultures to be sent. Care for invasive lines and change as per need.
- Early physical therapy
- Stress ulcer prophylaxis. PPI or H_2 blocker
- Protocolised light sedation
- Pressure ulcer prevention by two hourly turning
- Deep vein thrombosis prophylaxis
- Protocolised liberation from ventilation
- Caution about premature extubation (especially without facilitative HFNC / NIPPV) and subsequent reintubation
- Not to use glucocorticoid routinely (if not indicated for some other cause)
- Use point-of-care Ultrasound as much as possible to avoid transfers out of CCU for investigations (e.g. CT scans)

TEST FOR VIRAL CLEARANCE FOR DISCHARGE IN MODERATE / SEVERE CASES

Nasopharyngeal and Oropharyngeal Swab test for RT-PCR is not routinely required excepting in very severe cases with immunocompromised states, e.g. HIV, Transplant recipients and Malignancy. One negative report is required before discharge of such patients.

DISCHARGE CRITERIA IN MODERATE / SEVERE CASES

1. Moderate cases whose symptoms resolve within 3 days and maintains SpO_2 above 95% for next 4 days can be discharged after 10 days of symptom onset if there is absence of fever without Paracetamol, Resolution of breathlessness and No oxygen requirement
2. Moderate to severe cases whose fever does not resolve within 3 days and demand of oxygen therapy continues can be discharged only after Resolution of clinical symptoms and ability to maintain oxygen saturation above 95% for 3 consecutive days
3. Severe Cases (including Immunocompromised patients, HIV patients, Transplant recipients and Malignancy) can be discharged only after Clinical recovery and the patient's swab test becomes negative once by RT-PCR after resolution of symptoms

FOLLOW UP

- All patients must follow strict Home Isolation for 7 days after discharge
- Clinical assessment may be carried out after 14 days and 28 days or as required in between

COVID-19 AND PREGNANCY

GENERAL PRINCIPLES

- Reported cases of COVID-19 pneumonia in pregnancy are milder and with good recovery. Pregnant women with heart diseases are at higher risk of severity
- There is no data suggesting any increased risk of miscarriage or loss of early pregnancy
- COVID-19 is not an indication for Medical Termination of Pregnancy
- There is no recorded case of vaginal secretions being tested positive for COVID-19
- There is no recorded case of breast milk being tested positive for COVID-19
- Vaginal delivery is recommended, if feasible, unless severely ill. If urgent delivery by Caesarean Section is needed, spinal anaesthesia is recommended to minimise the need for general anaesthesia. Always aim to keep the oxygen saturation above 94% during the procedure
- Transmission of the disease from the mother to the baby after birth via contact with infectious respiratory secretions is a major concern
- Mother has to be isolated from the new-born until the mother becomes negative two times by RT-PCR at 24 hours apart. A separate isolation room should be available for the new-born
- The new-born has to be tested by RT-PCR whenever symptomatic.

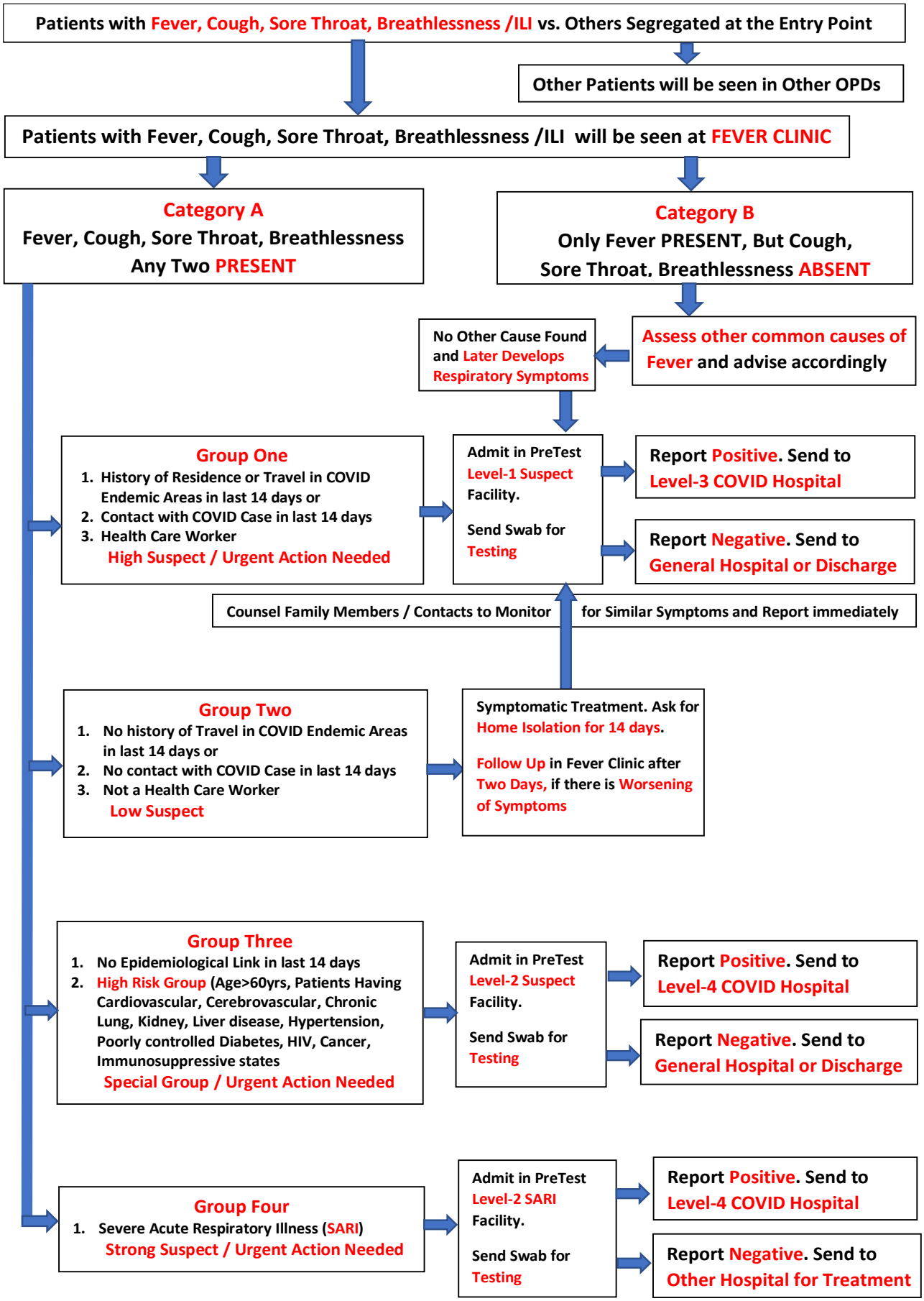
BREAST FEEDING

- The risks and benefits of temporary separation should be discussed with the mother
- During temporary separation, if the mother is not seriously ill and she wishes to breastfeed the baby, breast milk can be expressed in a dedicated breast pump, after appropriate hand hygiene. Baby is fed the expressed breast milk by a healthy caregiver after disinfecting the pump
- If the new-born requires “rooming in” with the sick mother in the same room as per the wish of the mother or it becomes unavoidable due to facility limitation, due consideration should be given to implement measures to reduce the viral exposure of the new-born. The mother should always wear a three-layered medical mask
- The decision to discontinue temporary separation should be made on a case-by-case basis after proper consent and after ensuring appropriate measures to reduce exposure of the baby
- If the mother is not too sick and if the mother and baby are kept in the same room, mother can breast feed the baby, after putting on a three-layered medical mask, appropriate hand hygiene and proper cleaning of her breast and nipple before each feeding

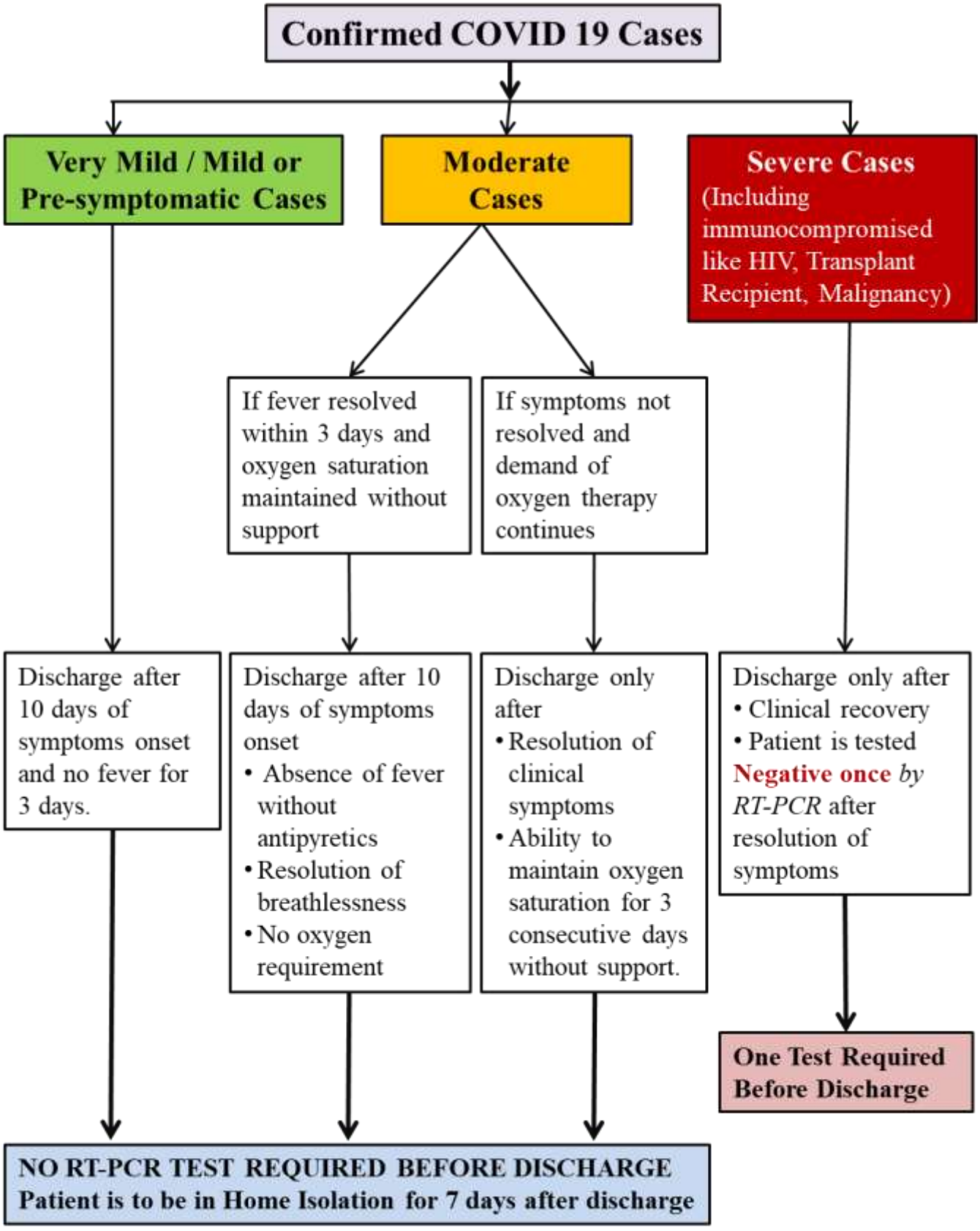
KEY POINTS

- If we follow the management protocol for all COVID-19 patients, the recovery rate is satisfactory and the death rate is only around 3% of all the affected persons
- We should address the hypoxia or acute respiratory failure component and multi-organ involvement as early as possible in moderate to severely ill patients to save the maximum number of affected patients
- The patient should be referred to Critical Care Unit in proper time on proper indications
- During the course of treatment, we should always reassure the patient to alleviate his/her fear or panic related to the disease
- HCWs must write the appropriate treatment notes time to time in the management Top Sheet
- Appropriate and adequate self-protection of the HCWs is of paramount importance during patient care.
- Any lack in safety measures and infection prevention is extremely undesirable

PROTOCOL IN FEVER CLINIC



DISCHARGE POLICY FOR COVID-19 CASES



Addendum to Covid-19 Management Protocol

Covid-19 with Co-morbid conditions

1. **Patients with one or more co-morbidity should be admitted as moderate disease in Level 4 facility**
2. **Treatment of co-morbidities should be continued as per guideline**

Diabetes	• **High chance of stresshyperglycemia** • **COVID can unmask latent Diabetes.** • **Use of steroids can aggravate hyper-glycaemia.** • **HCQS can causehypoglycemia** • **SGLT2 inhibitors, Glitazones should be used in caution, should not be newly started.** • **Patients admitted to ICU may need insulin for glucosecontrol** • **Check blood glucose 3times/day** • **Never stopinsulin** • **In high fever, insulin dose may needto beincreased** • **Target blood glucose between 110and 180mg/dl**
Obesity	→ **Obesity is an independent risk factor for mortality** → **Obesity increases dyspnea** → **Difficulty in intubation and prone ventilation** → **Do not initiate aggressive weight losing measures during COVID-19 infection.** → **No sudden change in pattern of diet or activity is advised. Yoga such as Surya Namaskar or simple asana is recommended.**
Hypertension	• **ACEi or ARB should be continued.** • **Patients already on these drugs may continue same without change of dose** • **Good control of blood pressure is advised in patients**
Geriatric patients	• **Social distancing most important for this age group** • **Non-essential travels outside home should be stopped** • **Strict hygiene in old age homes** • **Visitors at home to be discouraged** • **Elderly are more symptomatic, Fever may not be present, atypical symptoms may be presentation.** • **In Chest Radiology multiple lobar involvement common, with slower recovery.** • **HCQs should be used with caution, QT interval should be monitored.** • **Routine vaccination should be continued.**

CVD	→ **SARS-CoV2 myocardial injury is a cause of mortality** → **Arrhythmia due to acute inflammation or cytokine storm** → **Vascular thrombosis in pulmonary or coronary vessels** → **Symptoms of AMI may be masked** → **Management of shock as in other cases** → **Anticoagulants may be used** → **ECMO n refractory cases** → **Monitor for heart failure** → **Drugs like HCQS may cause arrhythmia/ QT prolongation** → **Echocardiography preferred in severe dyspnea** • Acute Coronary Syndrome ➢ **An acute COVID-19 cardiovascular syndrome is characterized by acute myocardial injury which is often associated with decreased left ventricular ejection fraction in the absence of obstructive CAD.** ➢ **Primary percutaneous coronary intervention (PCI) is the standard of care for STEMI (ST-segment elevation myocardial infarction) patients only in high-risk cases during the COVID-19 pandemic, based on personal protective equipment (PPE) availability.** ➢ **In the absence of these resources, a fibrinolysis first approach should be considered.** ➢ **Regarding non–ST-segment elevation ACS and unstable angina, COVID-19 positive or probable patients should be managed medically**
Hematology	• **Leukopenia** • **Lymphopenia** • **D-dimer is a prognostic marker** • **Serum ferritin is a marker of cytokine storm** • **Thrombocytopenia rare; but if patient on DAPT and Platelet count<50,000, one anti-platelet agent (Ecosprin) to be stopped**
Asthma/COAD	→ **People with asthma/COPD at high risk of complications in COVID-19infection** → **Avoid crowded places** → **Do not stop inhalers** → **Avoid asthma triggers like dust or pollen** → **Use masks that are non-allergic** → **Stop smoking** → **Avoid spirometry study unless essential** → **Use of nebulizers in COVID-19patients increases aerosol generation**

Use of STEROIDs

They have shown to decrease mortality by 33% in patients on ventilation and by 20% on patients on oxygen therapy.

What to use? 1.Methyl Prednisolone 2. Dexamethasone

When to use?

Moderate disease on Oxygen Therapy:

- If Oxygen requirement is increasing
- If inflammatory markers are increasing
- Preferably within 48 hours of admission

Severe Disease:

If not already given, use when oxygen requirement or inflammatory markers are increasing

Dose & Duration:

Moderate disease: 1.IV methylprednisolone 0.5 to 1 mg/kg for 3 days **OR**

2. Dexamethasone 0.1 to 0.2 mg/kg for 3 days

Severe Disease: 1.IV methylprednisolone 1 to 2 mg/kg for 5-7 days in 2 divided doses if not already given **OR**

2. Dexamethasone 0.2 to 0.4 mg/kg for 5-7 days in 2 divided doses if not already given

Precaution:

Larger doses and longer durationof steroid should not be used as it will delay the recovery from Covid-19 due to immunosuppression.

Adjustments in different co-morbid conditions:

In case of patients with Diabetes mellitus, insulin dose needs to be titrated as steroid may increase/ alter glycemic status.

In case of hypertensive patients, antihypertensive drugs needs to be adjusted as steroids may alter blood pressure control.

Anticoagulation therapy in COVID-19

Whom to start?

- **VTE prophylaxis** for all high-risk patients i.e. patients with multiple co-morbidities and moderate/severe covid without any comorbidity
- **Therapeutic** for considering PE for patients with
    - Sudden onset of oxygenation deterioration, respiratory distress, and reduced blood pressure or imaging(CT angiogram) proved.
    - High Risk patients (increased PT, aPTT, D-dimer, FDP , prolonged immobilization, cancer, hospital admission >7 days etc.)
    - Signs of microthrombi induced organ dysfunction
    - Documented/suspected Macro-Thromboembolism

What to use? **LMWH** rather than oral anticoagulants, including switching patients who were taking a direct oral anticoagulant (DOAC) or vitamin K antagonist.

How long to continue?

- **During Hospital Stay:**Prophylactic/Therapeutic dose as indicated
- **Post discharge**: On the basis of individual risk/benefit ratio- Prophylactic dose to be given depending on:
    - Duration of Hospital Stay
    - Reduced mobility
    - Previous VTE
    - High D-Dimer level
    - Malignancy
    - Therapy can be extended upto 4-6 weeks

How to estimate Risk Stratification in Hospitals? By serial estimation of D-dimer during Hospital admission:

- D-dimer <1000 microgram/dl: continue prophylactic dose
- D-dimer >2000 microgram/dl: imaging is warranted. If imaging not feasible and patient deteriorates clinically, give therapeutic dose
- D-dimer between 1000-2000mcg/dl: no clear guideline. Physician to apply his discretion

Dose of LMWH

Prophylactic:

- CrCl>30 ml/min: Enoxaparin 40mg SC /daily
- CrCl<30 ml/min: Enoxaparin 20mg SC/daily
- BMI >40: Enoxaparin 40 mg SC BID

Therapeutic:

- 1 mg/kg BD SC(dose adjustment in renal failure)
  If anticoagulation contraindicated: mechanical device

How to monitor treatment depending on the dosage of Anticoagulants?

1. D dimer alternate daily (if possible)
2. Prothrombin time(INR) /aPTT
3. Platelet count

Use of antiplatelet drugs in patients already receiving them:

Platelet Count	Number of Antiplatelet Drugs	Further Treatment
<25,000	Two Drugs	Stop antiplatelets
25,000-50,000	Two Drugs	Stop Aspirin and Monitor Carefully
>50,000	Two Drugs	Continue management

Management of bleeding:

Clinically-overt bleeding is uncommon in the setting of COVID-19. However, when bleeding occurs in COVID-19-associated DIC, blood products support is to be given as follows:

- Platelet concentrate to maintain platelet count >50 000 in DIC patients with active bleeding or >20 000 in those with a high risk of bleeding or requiring invasive procedures.
- Fresh frozen plasma (FFP) (15-25 mL/kg) in patients with active bleeding with either prolonged PT and/or aPTT ratios (>1.5 times normal) or decreased fibrinogen (<1.5 g/L)
- Fibrinogen concentrate or cryoprecipitate to patients with persisting severe hypo-fibrinogenemia (<1.5 g/L),

Tranexamic acid should not be used routinely in COVID-19-associated DIC.

Repurposed or off-label therapies

Hydroxychloroquine:
This drug has demonstrated in vitro activity against SARS-CoV2 and was shown to be clinically beneficial in several small single centre studies though with significant limitations. Nonetheless, several large observational studies with severe methodologic limitations have shown no effect on mortality or other clinically meaningful outcomes. As such, the evidence base behind its use remains limited as with other drugs and should only be used after shared decision making with the patients while awaiting the results of ongoing studies.

It can be used in following situations:
1. **Mild disease:** 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. To be avoided in patients with underlying cardiac disease, history of unexplained syncope or QT prolongation (> 480 ms).
2. **Moderate disease: Dose**400 mg BD on day 1 followed by 400mg daily for next 4 days.

Investigational therapies in Covid-19

Remdesivir (under emergency use authorisation)

- **Indication**: Moderate to severe disease (on Oxygen).
  (Written informed consent should be obtained prior to administration)
- **Dose**: 200 mg IV on D1, Then 100 mg IV OD for 4 days.
- **Contraindications**: SGPT >5 times upper limit, eGFR<30 ml/min or need for haemodialysis, Pregnancy/lactation, Child below 12 years, hypersensitivity.
- **Side effects**: anaemia, LFT abnormalities , AKI

Tocilizumab (off label)

Tocilizumab is a humanized monoclonal antibody against the interleukin-6 receptor (IL-6R). Interleukin 6 (IL-6) is a cytokine that plays an important role in immune response and is implicated in the pathogenesis of COVID19 diseases.

- **Indications**:Patients with moderate disease with progressively increasing oxygen requirements and in mechanically ventilated patients not improving despite use of steroids , Lung infiltrate on Chest Xray, Elevated inflammatory markers (Ferritin, CRP, IL6 > 5 times upper limit of normal)
- **Contraindications:** Active infections(bacterial/fungal), Latent or clinical Tuberculosis, Pregnancy, lactation. Platelet<1lacs/cumm, Neutrophil <2000/cumm, ALT/AST >5 times ULN.
- **Dose:** 4-8 mg /kg BW maximum 400 mg as a single one hour IV infusion in normal saline. Can be repeated after 12-24 hours, if necessary.
- **Adverse effects:** upper respiratory tract infections, flu like symptoms, headache, high blood pressure, asymptomatic Liver enzyme elevation, skin rashes, gastritis and mouth ulcer.
- Patients should be carefully monitored post Tocilizumab for secondary infections and neutropenia

Convalescent plasma

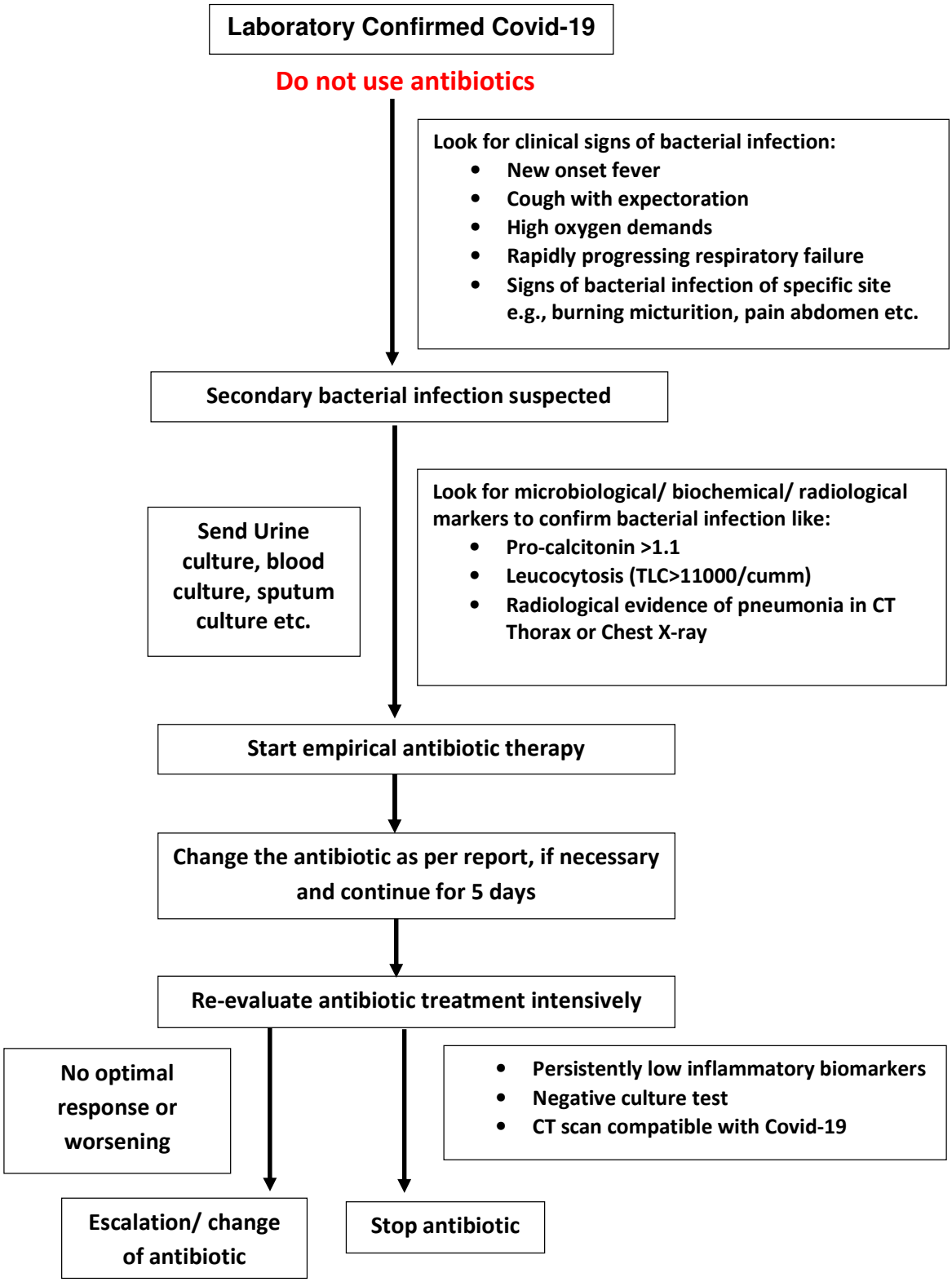
Convalescent plasma (Off Label) may be considered in patients with moderate disease who are not improving (oxygen requirement is progressively increasing) despite use of steroids. Special prerequisites while considering convalescent plasma include:

- ABO compatibility and cross matching of the donor plasma
- 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 be used)
- Recipient should be closely monitored for several hours post transfusion for any transfusion related adverse events
- Use should be avoided in patients with IgA deficiency or immunoglobulin allergy
- **Dose**: Dose: Dose is variable ranging from 4 to 13 ml/kg (usually 200 ml single dose given slowly over not less than 2 hours

In event of the adverse transfusion event it is to be documented and the concerned blood centre should be informed. Only DCGI/ICMR approved centres may process convalescent Covid plasma. Any off-label convalescence Covid19 plasma use is to be approved by an expert review team along with the institutional ethics committee.

Protocol for Rational Use of Antibiotics in the Management of Covid-19

[An Interim Guideline that shall be periodically updated]



For details please refer to the protocol published.

Renal Replacement Therapy in Covid-19 patients

COVID -related AKI is more common in patients admitted in ICU. Morality is more in chronic kidney disease patients, usually associated with co-morbidities & immune dysfunction. ESRD patients on maintenance hemodialysis may develop COVID 19 as they have comorbidities, travel twice or thrice in a week, get exposed to hospital environment Renal transplant & glomerular disease patients on immunosuppressants are also susceptible to COVID-19 infection.

AKI

Screening for renal involvement as early as possible by monitoring urine output, urine routine examination and blood for urea, creatinine, Na, K.

All patients with requirement of hospitalization will need screening for AKI with

- diabetes, hypertension IHD or COPD
- dyspnoea, particularly with increasing oxygen demand and abnormal chest Xray
- hemodynamic instability
- admitted with COVID 19 in ICU

Early intervention with optimal fluid management, maintaining hemodynamic stability and avoiding nephrotoxic drugs are primary. Complicated patients may require multi - specialist opinion but one critical care consultant in ICU/CCU and one medical consultant in wards may make a summary of considered changes daily.

AKI on CKD

Diabetic, hypertensive, ischemic heart disease with compromised ejection fraction or already diagnosed chronic kidney disease patients may develop acute kidney injury.

A. Fluid management - more conservative.
B. Antibiotic and other drug choice need to be adjusted according to eGFR (CKD-EPI 2009 eGFR : Android based calculation)
C. Dialysis may be needed early if patients develop oliguria (refractory to fluid challenge or diuretics), volume overload, pulmonary edema, severe metabolic acidosis or uremic encephalopathy.
D. Fluid challenge and vasopressor support along with judicious use of diuretics some patients may come out of AKI.

Dialysis population: COVID patients already on dialysis, should be dialyzed in dedicated COVID unit and stay admitted as per ICMR Guideline for discharge in immune-compromised patients.

HD Modality

1. SLEDD is to be considered for hemodynamically unstable and multiorgan failure.
2. CRRT may be useful, but practiced only in few units.
3. Stable patients requiring HD may be managed by intermittent hemodialysis.
4. Acute Peritoneal dialysis may be done if there is crisis of resources, problem with access or need for avoiding anticoagulation.

Dose of dialysis

May be decided based on the indication (volume overload vs need for solute clearance) haemodynamic status, presence of coagulopathy. COVID 19 patients have problem of increased access thrombosis, use of loading and hourly unfractionated heparin in patients without bleeding complication may be favored anticoagulation.

Managing resources: MT/ dialysis nurses team, nephrologist and dialysis management administrative head may take decision. (Already implemented in W.B.)

Medication

- No specific drug recommended.
- Injudicious antibiotic use should be discouraged.
- Patients on ACEI, ARB may continue if they are already taking unless there is hypotension,hyperkalemia and rising creatinine.
- Statins, antihypertensives and antidiabetic to continue as per required modifications.

Safety of HCP involved in dialysis management:

1. Dialysis nurse, MT, residents in dedicated COVID unit must wear PPE, N95 MASK and face shield.
2. PPE Donning and Doffing areas should be identified in each facility
3. HCQS prophylaxis for MTS, HCPs in contact should be given as per ICMR Guideline.

Update on Oxygen Therapy

- Administer oxygen to all Severe Acute Respiratory Illness (SARI) patients and to patients with respiratory distress / hypoxemia /shock / sepsis
- Target SpO2 during initial stabilization: 94-98% (88-92% in patients with documented hypercapnic respiratory failure)
- Target SpO2 after initial stabilization: 90-96% (88-92% in patients with documented hypercapnic respiratory failure)
- Always write an Oxygen prescription mentioning (a) Device (b) Flow rate (c) Target SpO_2

  (See Annexure 1 for oxygen therapy)

Update on Some points on Critical care Management

- Check whether patient is tolerating oxygen therapy. Consider conscious proning as an add on therapy in indicated patients. Do not delay intubation if worsening *(See Annexure 1 for oxygen therapy and Annexure 2 for protocol of conscious proning)*
- Conscious prone positioning should not be used as an rescue therapy for refractory hypoxemia to avoid intubation in patients who otherwise require intubation and mechanical ventilation
- If High Flow Nasal Cannula (HFNC)is available, consider a trial of HFNC in selected patients failing mask oxygen therapy under close monitoring. Do not delay intubation ifworsening
- Use ROX index (SpO2/FiO2)/RR) to predict HFNC success (ROX Index ≥4.88 at 2, 6, 12 hrs: predictors of HFNC success and lower risk of intubation; ROX Index <2.85(at 2 hrs), <3.47(at 6 hrs), <3.85(at 12hrs): predictors of HFNC failure.
- If HFNC is not available, can consider a short Non-invasive Positive Pressure Ventilation (NIPPV / CPAP or Bilevel) trial in selected patients under close monitoring. Do not delay intubation ifworsening. NIPPV tolerance can be monitored by HACOR Score *(See Annexure 4)*
- Conscious proning may be tried with mask oxygen or any non-invasive respiratory support, either in the wards or Critical Care Unit, if the patient tolerates *(Annexure 2 for protocol of conscious proning)*

When to Intubate:

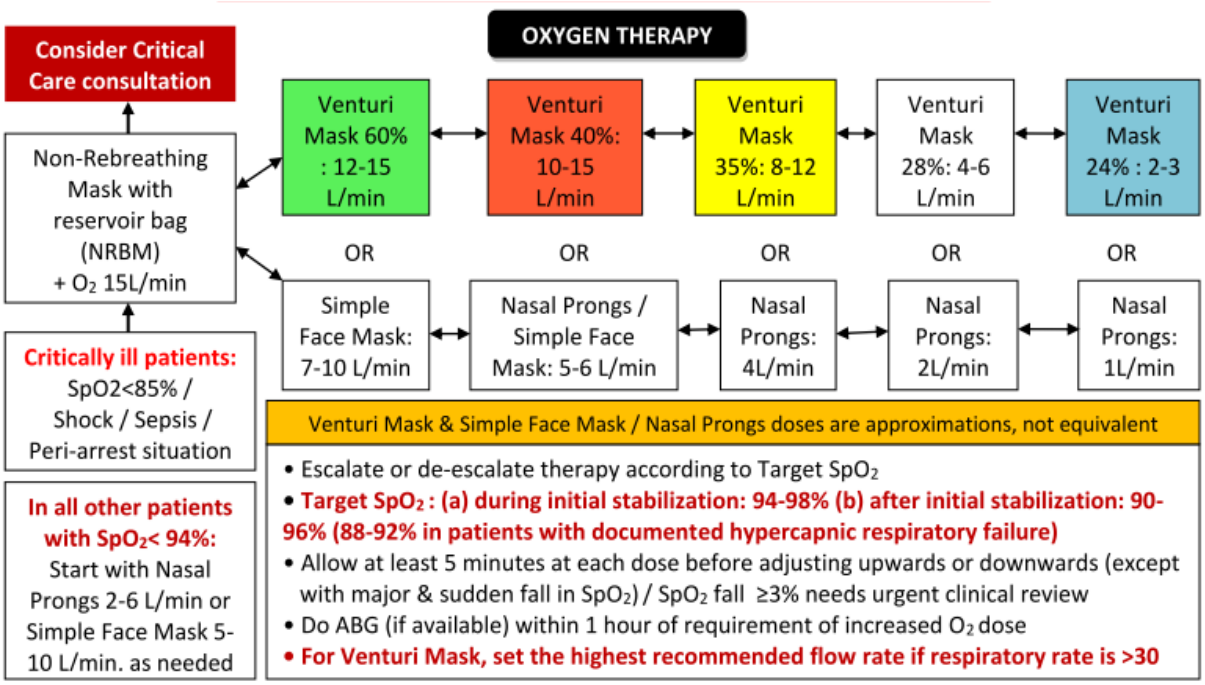
1. Worsening respiratory failure and increased work of breathing despite oxygen therapy or HFNC / NIPPV trial

2. Haemodynamic instability needing high dose vasopressor support

3. Altered sensorium with threatened airway

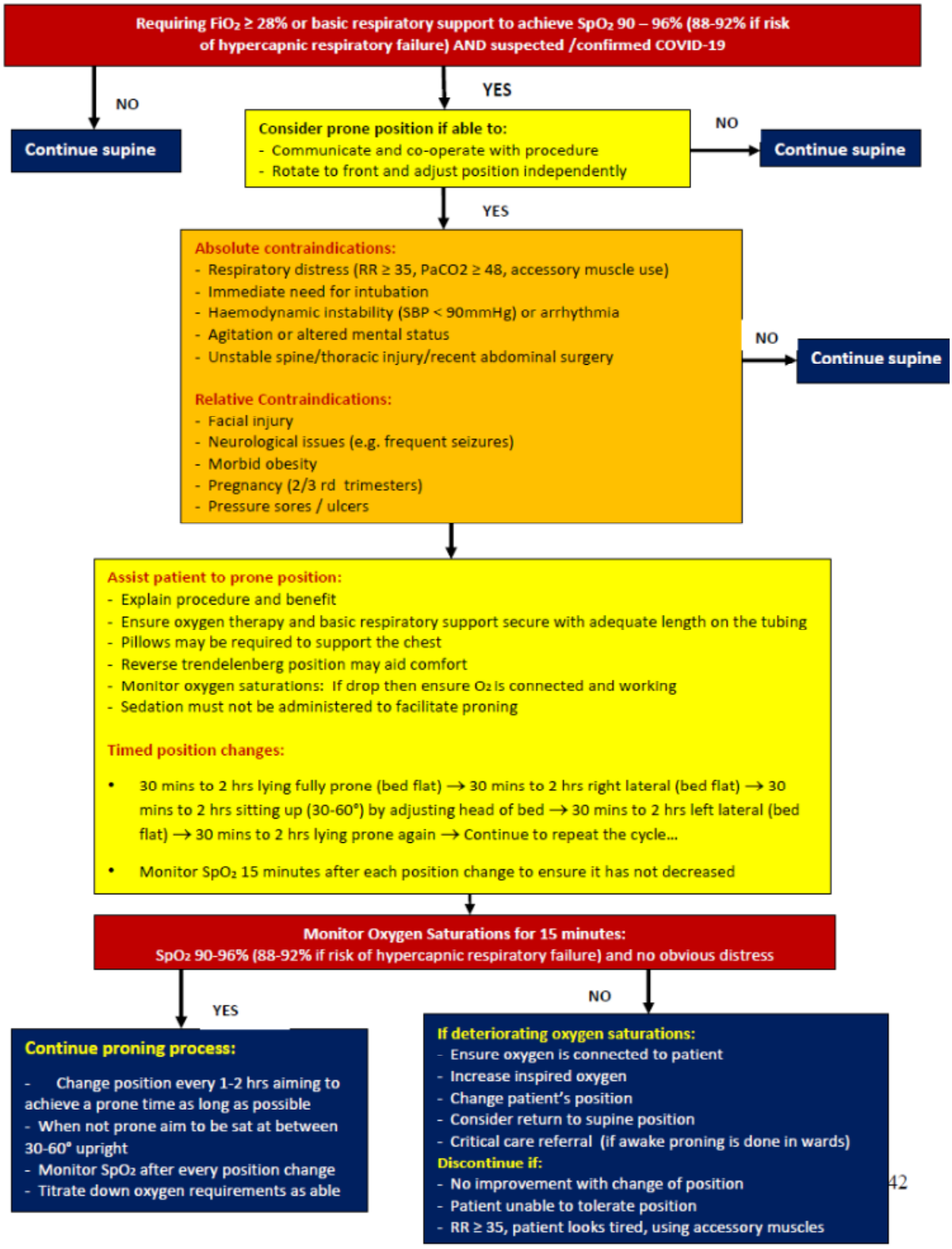
(Intubation should be done only when necessary. It should neither be done prematurely, nor it should be too late. Assessing the correct timing of intubation needs close monitoring of the patient and astute clinical judgment. Keep a very low threshold for intubation at PaO_2 / FiO_2 ratio of ≤150)

Annexure 1



- **Each institute should ensure that all the four types of oxygen therapy devices mentioned above are continuously available in emergency, wards, OTs, CCU / HDU and during transport**
- **An oxygen prescription must be written in the daily orders by doctors in every case needing oxygen mentioning : (a) Device (b) Flow (L/min) (3)Target SpO_2**
- **Conscious proning may be tried as an add on to oxygen therapy *(see Annexure 2)***

Annexure 2 : PROTOCOL FOR CONSCIOUS PRONING



Annexure: 3

INITIAL ASSESSMENT & STABILISATION OF ADULT SARI AND COVID-19 PATIENTS

Assess severity of illness & risk of clinical deterioration in Emergency / Wards by (1) Complete clinical examination AND (2) Early Warning Score (EWS)

EARLY WARNING SCORE (EWS)

Physiological parameters	SCORE						
	3	2	1	0	1	2	3
Age (years)				<65			≥65
Respiratory rate (per min)	≤8		9-11	12-20		21-24	≥25
O_2 Saturation (SpO_2) (%)*	≤91	92-93	94-95	≥96			
On Oxygen**		Yes		No			
Systolic BP (mm Hg)	≤90	91-100	101-110	111-219			≥220
Pulse rate (per min)	≤40		41-50	51-90	91-110	111-130	≥131
Consciousness				A (Alert)			CVPU***
Temperature (°F)	≤95		95.1-96.8	96.9-100.4	100.5-102.2	≥102.3	

* Initial Target SpO_2: 94-98%

** Any increase in O_2 requirement : At least hourly monitoring to be continued till thorough clinical review is done

***C: New confusion; V: Responsive to verbal stimuli; P: Responsive to painful stimuli; U: Unresponsive

CLINICAL ACTIONS ACCORDING TO EWS

Score (EWS)	Risk	Monitoring frequency	Clinical response	Solution
0		12 hourly	Routine monitoring	
1-4	Low	6 hourly	Evaluation by nurse	Maintain routine monitoring / Increase monitoring frequency / Inform doctor
5-6 or 3 in one parameter	Medium	1-2 hourly	Nurse should notify doctor for evaluation	Maintain existing treatment / Adjust treatment plan / Critical Care Team remote consultation
≥ 7	High	Continuous	Nurse should notify doctor for emergency evaluation / Critical Care Team consultation	Critical Care team on site consultation + Consider Isolation HDU or Isolation CCU admission

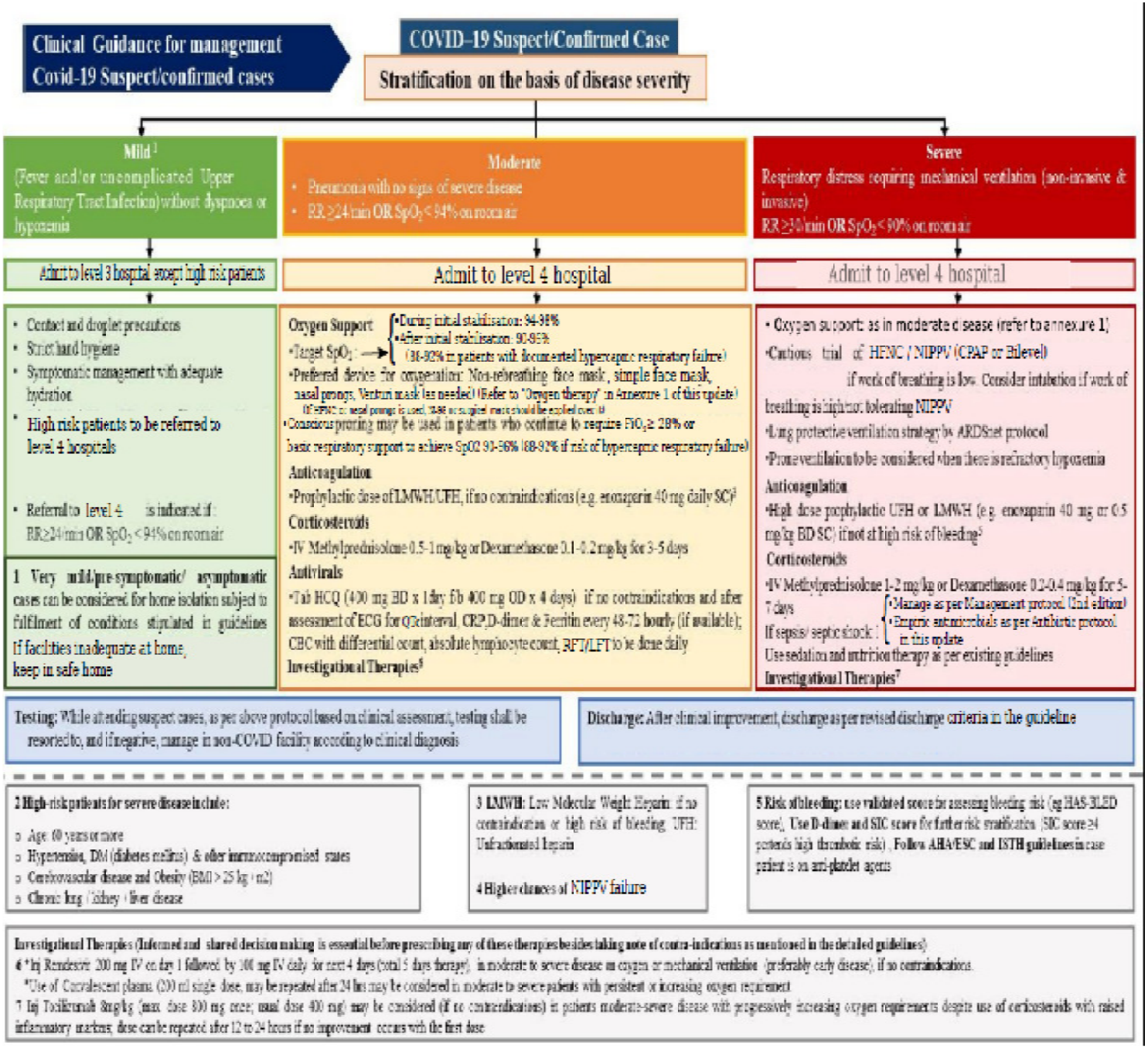
Indications of Isolation Critical Care Unit (CCU) admission: (1) Requiring HFNO / NIV / Invasive ventilation **(2)** Hypotension requiring vasopressor support **(3)** Worsening mental status **(4)** Multi-organ dysfunction syndrome

Indications of intubation: (1) Worsening respiratory failure despite Oxygen therapy or short HFNO / NIV trial **(2)** Haemodynamic instability needing vasopressor support **(3)** Altered sensorium with threatened airway

Annexre 4: HACOR SCORE

Variables	Values	Score
Heart Rate (H)	**≤120**	**0**
	≥121	**1**
Ph (A: Acidosis)	**≥7.35**	**0**
	7.30-7.34	**2**
	7.25-7.29	**3**
	<7.25	**4**
GCS (C: Consciousness)	**15**	**0**
	13-14	**2**
	11-12	**5**
	≤10	**10**
PaO_2/FiO_2 (O: Oxygenation)	**≥201**	**0**
	176-200	**2**
	151-175	**3**
	126-150	**4**
	101-125	**5**
	≤100	**6**
Respiratory rate (R)	**≤30**	**0**
	31-35	**1**
	36-40	**2**
	41-45	**3**
	≥46	**4**

- HACOR is a potentially useful bedside tool for the prediction of NIV failure
- It has been proved to be useful in hypoxemic respiratory failure.
- A HACOR score >5 at 1hour of NIV highlights patients with a >80% risk of NIV failure regardless of diagnosis, age, and disease severity


Clinical Guidance for management Covid-19 Suspect/confirmed cases
COVID–19 Suspect/Confirmed Case
Stratification on the basis of disease severity
Mild[1]
(Fever and/or uncomplicated Upper Respiratory Tract Infection) without dyspnoea or hypoxemia
Moderate
• Pneumonia with no signs of severe disease
• RR ≥24/min OR SpO2 < 94% on room air
Severe
Respiratory distress requiring mechanical ventilation (non-invasive & invasive)
RR ≥30/min OR SpO2 < 90% on room air
Admit to level 3 hospital except high risk patients
Admit to level 4 hospital
Admit to level 4 hospital
• Contact and droplet precautions
• Strict hand hygiene
• Symptomatic management with adequate hydration
• High risk patients to be referred to level 4 hospitals
• Referral to level 4 is indicated if: RR ≥24/min OR SpO2 < 94% on room air
1 Very mild/pre-symptomatic/ asymptomatic cases can be considered for home isolation subject to fulfilment of conditions stipulated in guidelines If facilities inadequate at home, keep in safe home
Oxygen Support
•Target SpO2 :
•During initial stabilisation: 94-98%
•After initial stabilisation: 90-94%
(88-92% in patients with documented hypercapnic respiratory failure)
•Preferred device for oxygenation: Non-rebreathing face mask, simple face mask, nasal prongs, Venturi mask (as needed) (Refer to "Oxygen therapy" in Annexure 1 of this update)
(If HFNC or nasal prongs is used, RAM or surgical mask should be applied over it)
•Conscious proning may be used in patients who continue to require FiO2 ≥ 28% or basic respiratory support to achieve SpO2 90-96% (88-92% if risk of hypercapnic respiratory failure)
Anticoagulation
•Prophylactic dose of LMWH/UFH, if no contraindications (e.g. enoxaparin 40 mg daily SC)[5]
Corticosteroids
•IV Methylprednisolone 0.5-1 mg/kg or Dexamethasone 0.1-0.2 mg/kg for 3-5 days
Antivirals
•Tab HCQ (400 mg BD x 1 day f/b 400 mg OD x 4 days) if no contraindications and after assessment of ECG for QTc interval, CRP, D-dimer & Ferritin every 48-72 hourly (if available); CBC with differential count, absolute lymphocyte count, RFT/LFT to be done daily
Investigational Therapies[6]
• Oxygen support as in moderate disease (refer to annexure 1)
•Cautious trial of HFNC / NIPPV (CPAP or Bilevel) if work of breathing is low. Consider intubation if work of breathing is high or not tolerating NIPPV
•Lung protective ventilation strategy by ARDSnet protocol
•Prone ventilation to be considered when there is refractory hypoxemia
Anticoagulation
•High dose prophylactic UFH or LMWH (e.g. enoxaparin 40 mg or 0.5 mg/kg BD SC) if not at high risk of bleeding[5]
Corticosteroids
•IV Methylprednisolone 1-2 mg/kg or Dexamethasone 0.2-0.4 mg/kg for 5-7 days
If sepsis/ septic shock :
•Manage as per Management protocol (2nd edition)
•Empiric antimicrobials as per Antibiotic protocol in this update
Use sedation and nutrition therapy as per existing guidelines
Investigational Therapies[7]
Testing: While attending suspect cases, as per above protocol based on clinical assessment, testing shall be resorted to, and if negative, manage in non-COVID facility according to clinical diagnosis
Discharge: After clinical improvement, discharge as per revised discharge criteria in the guideline
2 High-risk patients for severe disease include:
o Age 60 years or more
o Hypertension, DM (diabetes mellitus) & other immunocompromised states
o Cardiovascular disease and Obesity (BMI > 25 kg / m2)
o Chronic lung / kidney / liver disease
3 LMWH: Low Molecular Weight Heparin if no contraindication or high risk of bleeding. UFH: Unfractionated Heparin
4 Higher chances of NIPPV failure
5 Risk of bleeding: use validated score for assessing bleeding risk (eg HAS-BLED score). Use D-dimer and SIC score for further risk stratification (SIC score ≥4 portends high thrombotic risk). Follow AHA/ESC and ISTH guidelines in case patient is on anti-platelet agents
Investigational Therapies (Informed and shared decision making is essential before prescribing any of these therapies besides taking note of contra-indications as mentioned in the detailed guidelines)
6 *Inj Remdesivir 200 mg IV on day 1 followed by 100 mg IV daily for next 4 days (total 5 days therapy), in moderate to severe disease on oxygen or mechanical ventilation (preferably early disease), if no contraindications
*Use of Convalescent plasma (200 ml single dose, may be repeated after 24 hrs may be considered in moderate to severe patients with persistent or increasing oxygen requirement
7 Inj Tocilizumab 8mg/kg (max dose 800 mg once; usual dose 400 mg) may be considered (if no contraindications) in patients moderate-severe disease with progressively increasing oxygen requirements despite use of corticosteroids with raised inflammatory markers; dose can be repeated after 12 to 24 hours if no improvement occurs with the first dose