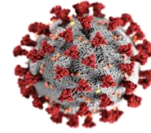


KFOG GOOD CLINICAL PRACTICE RECOMMENDATIONS ON MANAGEMENT OF COVID-19 AFFECTED PREGNANCIES-1ST MAY 2021



This document has been prepared for the management of pregnant mothers with COVID-19, for the state of Kerala. This has been developed based on existing clinical guidelines, available evidence, good practice and expert opinion. The recommendations are subject to change as more and more evidence pours in.

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Though pregnancy is considered an immunocompromised state, pregnant women with SARS Co V 2 have not fared much worse than their non pregnant counterparts. What the state of Kerala witnessed in 2020, though large in numbers were mainly asymptomatic women, with a very negligible vertical transmission rate. However as with most centers around the world, cesarean section rates were rather high to the tune of almost 52%.

With the resurgence we are seeing in 2021, as early as it may be, symptomatic pregnant women appear to be on the rise. Hence it was a felt need across the state to

write down a set of guidelines, drawing on the robust experience of the past year, coupled with international guidelines and the Kerala government directives

1]Categorization of COVID 19 in pregnancy

Though the ICMR guidelines consider pregnancy as a potentially immuno compromised state and hence put all pregnant women into category B , it may be well worthwhile to formulate a separate set of categories that would be specific to pregnancy which would also allow better patient treatment plans.

A thorough history, especially with regard to covid symptomatology, extensive review of records, and a well done general and Obstetric examination is a must before categorizing women into B1,B2 and C.

- **Category B1** : The asymptomatic pregnant woman
- **Category B2** : The pregnant woman with ILI symptoms(fever, cough, rhinitis, sore throat)or diarrhea or fatigue , or those with co morbidities like hypertension, diabetes, liver disease, renal disease
- *Categorization should be reassessed every 24-48 hours for Category B1 & B2 based on symptoms and walk test.
- **Category C**: The pregnant woman with either breathlessness, chest pain, drowsiness, or hypotension hemoptysis, cyanosis [red flag signs]

Severe fatigue and malaise and persistent fever, though not classically red flag signs, usually indicate active disease and it is in these cases that the pro inflammatory markers need to be looked at closely. One can expect deterioration in this subset.

Also, it may be well to understand that the fever in COVID 19 can be prolonged and unrelenting.

2] Clinical stages of severity

- **Mild** : no breathlessness or hypoxia, RR < 24/mt, spO2 > 94% on room air, and otherwise asymptomatic
- **Moderate**: Dyspnea and / or hypoxia , RR 24-29 / mt, spO2 91-94% on room air, or fever and cough

- **Severe:** Dyspnea and / or hypoxia RR > 30 breaths/ mt or spO2 < 90% on room air or a pulse rate > 125/mt with or without pneumonia

3]When to admit and where and how to manage?

3.1. **Category B1:**

- The lady can be allowed care at home provided they are able to self-isolate and are < 34 weeks of pregnancy. They must preferably procure a pulse oximeter for personal use.
- Dietary advise and avoidance of total bed rest must be emphasized.
- Iron calcium folic acid are to be continued.
- They must report to the nearest facility if they become symptomatic or if they have a fall in spO2 < 94%
- Also they must be taught to do the walk test – whereby they walk for 6 mts or take 40 steps and are told to measure their spO2 before and after – a fall of > 3 % from baseline is significant and they must report to the health facility.
- Women with gestational age more than 34 weeks is admitted in CSLTC for proper work up and observation. If stable, she may be discharged to continue care from home with instructions to report if any symptoms of the disease or pain or leaking or bleeding or diminished fetal movements. She is not discharged if close to term.

3.2 **Category B2:**

- She may be cared for in a CSLTC as they will need symptomatic treatment and laboratory investigations. Daily check on vitals including RR and spO2 is a must. Walk test will allow professionals to pick up problems earlier.
- Symptomatic treatment may include paracetamol, anti-tussive, and oseltamivir 75 mg bd x 5days in addition to the routine iron, calcium and folic acid.
- Lab investigations to be sent are CBC, RFT, LFT, RBS, S.electrolytes, ECG, CRP.
- It may be advisable to ask for an Xray chest PA view with lead shielding of the abdomen in all cases who have a persistent cough. Additional markers like d - dimer, ferritin, CPK are to be sent if persistent symptoms. MDI/DPI Budesonide 800mcg twice a day can be started if symptoms (fever and/or cough) are

persistent beyond 5 days of disease onset. They should be monitored by thrice daily recording of temperature, pulse rate, respiratory rate, SPo2 and Walk test and review of symptoms.

- Once patients have been worked up and are stable with subsidence of symptoms, they can go into home quarantine with the same checks as detailed for others on quarantine.

3.3 Category C:

- These patients require multi-disciplinary care and must therefore be admitted in Covid designated hospitals.
- A thorough history, especially with regard to covid symptomatology, extensive review of records, and a well done general and Obstetric examination is a must.

3.3.1 Laboratory investigation for admitted COVID 19 positive patients

At Admission	CBC, RFT, LFT, CRP, RBS, S. electrolytes, ECG, Pulse oximetry.
If clinically Indicated	Portable CXR, D-Dimer, Ferritin, LDH, CPK, procalcitonin, Blood culture, TROP T/I, HRCT Thorax [only in case of worsening]
To repeat Every 48 hours if clinically deteriorating.	CBC, Creatinine, AST/ALT, CRP, LDH, CPK, Ferritin, D Dimer.
For Immunocompromised patients eg Transplant recipients, HIV	Tests to rule out opportunistic infections like Mycobacterium tuberculosis, pneumocystis jiroveci etc

To note:

- Pulse rate: If < 100/mt it is reassuring. If between 100-110 b/mt she needs closer observation.
- If > 110/mt ECG to be looked into closely and she is categorized a high risk if it crosses 125/mt.
- RR and spO2 need careful monitoring.

	RR	spO2
Mild	<24 breaths/mt	>94% on room air
Moderate	24-29 breaths/mt	91-94% on room air
Severe	30 and> breaths/ mt	<90% on room air

3.3.2 Values to remember for the pro inflammatory markers:

Marker	Normal value	High risk
CRP	< 5	CRP > 100 mg /L
d Dimer	1 st trimester :169-1202mcg/l 2 nd trimester: 393- 3258 mcg/l 3 rd trimester: 551- 3333 mcg/l	
Ferritin	< 60	Ferritin > 300mcg/L
LDH	< 400	LDH > 400 U /L
		#NLR >3.13, *ALC < 0.8

*ALC – Absolute lymphocyte count #NLR – Neutrophil lymphocyte ratio [NLR – should be calculated prior to steroid administration

- Xray: chest- PA view with abdominal shielding to be taken if there is a persistent cough or dyspnea
- Look for lower lobe consolidation, fluffy opacities.
- HR CT Thorax – if there is worsening of signs, symptoms even after steroids and oxygen.

3.3.3. Steroid trigger

MDI/DPI Budesonide 800mcg twice a day started when the symptoms (fever and/or cough) are persistent beyond 5 days of disease onset.

Parenteral/oral steroids can be started when

1. Moderate to severe rise in RR or a fall in spO₂ even without pneumonia
2. 3% desaturation with 6-minute walk test
3. Bronchopneumonia and
4. Marked rise in pro inflammatory markers with symptoms.

For the last two indications, steroids are started as per opinion of internist/pulmonologist.

Start with Inj Dexamethasone 6 mg 12th hourly for 4 doses, followed by Intravenous Methyl prednisolone 0.5-1 mg/kg or 40 mg OD or oral Prednisolone 40 mg OD for 10 days or until discharge whichever is earlier. Higher dose of steroids may be needed in severe cases and can be decided by multi-disciplinary team. If lung maturity is not an issue, Inj Dexamethasone may be skipped.

Monitor sugars while the patient is on steroids and expect a marginal increase in TC. Correlate with ALC and NLR. Methyl Prednisolone does not cross the placenta and hence cannot be a substitute for the dexamethasone that is used to enhance lung maturity.

3.3.4. LMW heparin trigger:

- All admitted patients in category B2 and C in third trimester are to receive prophylactic Enoxaparin at:
 - 40 mg sc od if between 50-90 kg
 - 60 mg sc od if between 90-130 kg
- LMWH has to be stopped 12 hours prior to delivery/ C section (24 hours if taking higher doses)
- Higher dose of enoxaparin may be needed in category C severely ill patients and those with very high d dimer values. If the d dimer is very high or there are progressively increasing values, due consideration is to be given to stepping up the dose to 60 mg bd provided there is no enhanced risk of bleed.

- The same may be continued for 10 days in the post-partum. Thrombocytopenia may be associated with severe Covid 19 infection. For women with platelet count less than 50,000/mm³, LMWH and aspirin has to be discontinued. Since women tend to be discharged early, and if they can't take the injections at home, low dose aspirin at 150 mg/day HS can be considered a viable option for 2-3 weeks.
- VTE scoring must be done and duration of thromboprophylaxis to be modified accordingly. Hydration and ambulation are to be ensured.
- If women are admitted with confirmed COVID 19 infection within 6 weeks post-partum, thromboprophylaxis should be offered for the duration of hospitalization and continued at least 10 days after discharge. For those with significant comorbidity, duration of thromboprophylaxis may be extended to 6 weeks post-partum

3.3.5. Antibiotic policy:

- Oseltamivir may be offered to Category B2 patients.
- Adding Azithromycin, Inj Ceftriaxone or other higher antibiotics is considered with increasing counts or CRP.

3.3.6. Remdisivir:

- May be indicated in Category C with bronchopneumonia not responding to steroids and oxygen.
- Its safety in pregnancy though not yet established, it may be offered on a compassionate basis with written informed consent.
- It needs to be started within 10 days of onset of symptoms.
- Recommended dose is 200mg IV on day1 , followed by 100 mg daily iv x 4 days
- RFT and LFT must be normal and it is preferable to do a creatinine clearance.
- Ivermectin and Favipiravir are contraindicated in pregnancy.

3.3.7 Tocilizumab

- Use in pregnant patients must be made on a case-by case-basis to be decided by the multidisciplinary team.

3.3.8 Convalescent Plasma

- Its use can be decided by multidisciplinary team in moderate to severe cases.

4]When to Deliver?

- Decision for delivery is to be taken purely on obstetric grounds.
- Sometimes the decision is to be made for resuscitative purposes. It is to be taken by multidisciplinary team and is to be considered beyond 26-28 weeks on individual basis, if patient deteriorating and not responding to NIV and if invasive ventilation is needed.
- The mode of delivery depends on emergent nature and will be more often by Cesarean section. The decision will also be dictated by general condition of the patient and her ability to deliver.

5]Intrapartum care:

- Labour should be conducted in dedicated covid labour room. Category B1 and low risk B2 women in labour need not be monitored by CTG but may be used for ease of monitoring as auscultation in PPE is technically difficult.
- In addition to routine parameters monitored in labour, SPO2 also has to be closely monitored.
- Decision for caesarean section can be taken earlier than usual, considering the time delay in shifting and getting the COVID operation theatre and staff ready.

6]Post-Partum Care:

- Breast feeding can be permitted. Mother must wear masks and wash hands before and after feeding the baby. Encourage oral hydration, ambulation of patient.
- All post LSCS patients in covid ward should be given LMWH 40 mg od x 10 days.
- Patients should be taught to take LMWH by self after discharge.
- Antibiotic prophylaxis guideline is to follow institution protocol.

- **7]Discharge guidelines:**

Category B:

- Rapid antigen Test(RAT) negativity is not essential prior to discharge for category B1 and B2.
- The patient may be sent home / to CSLTC if there are no symptoms for 72 hrs and the lab results are normal. They should be off anti pyretics, no oxygen and should not be fatigued.
- Once discharged a total of 17 days of isolation is recommended from onset of symptoms or from diagnosis.
- While in quarantine, the patient must follow the same set of instructions as in 3.1. They must preferably procure a pulse-oximeter for personal use.
- Dietary advise and avoidance of total bed rest must be emphasized. Iron calcium folic acid are to be continued.
- Thromboprophylaxis with LMW heparin for a total of 10 days. Low dose aspirin at 150 mg/day HS for 2-3 weeks can be considered in low risk women especially if they can't take injections at home. They must report to the nearest facility if they become symptomatic or if they have a fall in spO2 < 94%.

Category C

- RAT to be done on day 14 from onset of symptoms.
- If negative and no symptoms for 3 days, afebrile , not requiring oxygen , the patient may be discharged.
- Follow up in any hospital of her choice or in a post covid clinic in 2 months post-natal.
- If patient is still not well even after being RAT negative, she may continued to be cared for in a covid ward/ ICU or in the non covid side.
- If RAT is still positive even after 14 days, repeat every 48 hrs until negative

8]Follow up of Covid 19 affected pregnancies

- After recovery, the lady can be followed up in any hospital of her choice if undelivered.
- Standard antenatal care is provided. The need for a detailed anomaly scan is to be emphasized for a woman affected by Covid in first trimester.
- Undelivered women in late second and third trimester of pregnancy need to get an ultrasound done after 2 weeks to assess fetal growth.

References

- *Covid 19 treatment guidelines for Kerala State, MoHFW, Government of Kerala, 25th April 2021*
- *Coronavirus (COVID-19) infection in pregnancy, RCOG, 19th Feb 2021*

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