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**ANTENATAL MANAGEMENT DURING COVID-19**

**Mrs. Divya Deepa H P,**

*Asst. Professor, Sanjay Gandhi College of Nursing, Bangalore-11*

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**ABSTRACT**

*Coronavirus disease-19 (COVID-19) is an acute infection caused by Severe Acute Respiratory Syndrome CoronaVirus-2 (SARS CoV-2). Covid-19 disease became pandemic in the year 2019 in a short period. To prevent the spread of infection, numerous measures were undertaken like wearing the mask, sanitizing, social distancing, compulsory lockdown, and getting vaccinated. These measures have constituted problems for antenatal mothers and also midwives. Antenatal management is an essential service to identify high-risk cases and to have good pregnancy outcomes concerning mother and baby. If antenatal management is detained for any reason may lead to calamity; hence there should be no hurdle in antenatal management in this pandemic situation. This article briefs about the standard recommendations laid by different organizations on antenatal management during the Covid-19 pandemic. Pregnancy is not very adversely affected by the virus but extra precautions should be taken to avert complications before they stem. The standard norms of different organizations should be followed while caring for expecting mothers to ensure the safety of antenatal mothers and also midwifery health personals. The present Covid-19 pandemic situation should not retard the antenatal mother from receiving timely care and prompt management of high-risk conditions.*

**KeyWords :** Antenatal mother, Covid-19, standard recommendations, management.

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**INTRODUCTION**

Pregnancy is a subtle time for both the mother and fetus. A high-risk pregnancy can lead to complications that involve the mother's health and also the fetus's health. Novel Coronavirus-19 causes a very infectious respiratory disease resulting in Covid pneumonia and severe respiratory illness. Covid-19 has materialized as a pandemic in December 2019 and has been declared as a global pandemic by WHO (World Health Organization).

Covid-19 disease was first reported in Wuhan, China which was associated with high morbidity and mortality all over the world. The virus is most likely of zoonotic origin, bats.

In line with Obstetrics, whether pregnant women are at increased risk of getting the disease, or are they more prone to develop serious complications of the disease, is there any increased risk of abortion or preterm delivery, or whether there is any risk of vertical transmission to the fetus through the placenta. The effect of Covid-19 disease on the health of the mother and fetus is still

obscure. Based on the works of literature obtained, this article narrates the standard recommendations set down by different organizations on antenatal management during the covid-19 pandemic.

## STANDARD RECOMMENDATIONS

ICMR – Indian Council of Medical Research

FOGSI - The Federation of Obstetric and Gynecological Societies of India.

WHO - World Health Organization

ACOG - The American College of Obstetricians and Gynecologists

RCOG - Royal College of Obstetricians and Gynecologists

Lancet

## CAUSATIVE AGENT

Coronaviruses belong to the family Coronaviridae which includes two types of viruses, namely severe acute respiratory syndrome (SARS CoV-1) and Severe acute respiratory syndrome (SARS CoV-2). SARS infection is caused by Severe Acute Respiratory Syndrome (SARS CoV-1). The outbreak of SARS was in the year 2003 where the Southern part of China was affected. Coronavirus disease-19 (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).

To culminate both COVID-19 and SARS are caused by coronaviruses. Coronaviruses are a group of RNA viruses that cause diseases in mammals and birds. In humans and birds, they cause respiratory tract infections that can range from mild to devastating.

## MODES OF TRANSMISSION

**Direct route** – Through close contact with an infected person where the respiratory secretions can enter the mouth, eyes, nose, or airways of an uninfected person.

**Indirect route** – Via touching an object surface or hand of an infected person and subsequently touching one's mouth, eyes or nose transmits the infection.

**Vertical transmission** – Transmission of infection from mother to fetus through the placenta during the antenatal or intranatal period is known as vertical transmission. Emerging documentations suggest that vertical transmission of infection is anticipated.

## INCUBATION PERIOD

The period between the entry of micro-organism till the development of first signs and symptoms in the case of Covid-19 infection is 5 to 7 days.

## CLINICAL PRESENTATION OF COVID INFECTION IN PREGNANCY

Clinical presentation remains the same as the general population. The pregnant woman experiences – Fever  $>38^{\circ}\text{C}$ , dry cough, sore throat, shortness of breath, GI symptoms, and other symptoms like body pain, conjunctivitis, headache, and rashes.

## EFFECT OF COVID 19 ON PREGNANCY

Pregnancy is not a risk factor for developing severe COVID-19 infection. If the woman is already immune-compromised because of other conditions like diabetes mellitus, cardio-pulmonary compromise, hypertension, the renal disease then the COVID-19 may increase morbidity.

**Antenatal anxiety and depression** - The COVID-19 pandemic increases the risk of antenatal anxiety and depression because of lockdown situations and isolation.

**Non-registration** - Some of the expecting mothers have not registered their pregnancies which may lead to missing out on high-risk factors and lead up to developing complications.

### **Venousthrombo-embolism**

VTE is a condition in which a blood clot forms in deep veins of the legs, groin, or arm. The formed blood clot moves in circulation obstructing blood flow. Pregnancy itself is a hypercoagulable state and isolation will increase the risk due to reduced physical activity. On the other hand, COVID-19 infections also show a hypercoagulable state. Hospitalized individuals with Covid-19 infection show a hypercoagulable state so Covid-19 infection is likely to be associated with an increased risk of venousthrombo-embolism during pregnancy.

### **COVID 19 pneumonia**

Since a pregnant woman is at an immunosuppressive state due to physiological changes during pregnancy, patients suffered from mild to moderate Covid-19 pneumonia during pregnancy without causing pregnancy loss and have shown good recovery.

### **Psychosocial**

Pregnancy during this pandemic may affect the psychological and social well-being of a woman and her family.

### **EFFECT OF COVID-19 ON FETUS**

No studies are reporting congenital defects due to Covid infection. There are currently no data suggesting an increased risk of miscarriage or early pregnancy loss concerning COVID-19. No shreds of evidence currently stating the virus are teratogenic. Hence Covid-19 infection is currently not an indication for Medical Termination of Pregnancy.

### **INVESTIGATIONS**

Pregnant women with Covid-19 symptoms, having travel history in last 12-14 days, close contact with positive patients should undergo testing.

Testing should be done as per regional guidelines. qRT-PCR (quantitative reverse transcriptase-polymerase chain reaction) and IgM antibody testing are done for diagnosis of Covid-19 infection. Chest X-ray and CT scan only if indicated can be done with abdominal shielding.

Antenatal invasive testing like cordocentesis or amniocentesis for Covid-19 is currently not recommended.

### **ANTENATAL VISITS**

There is a minimum of four antenatal visits required for an expecting mother at 12 weeks, 20 weeks, 28 weeks, and 36 weeks.

**1st visit:** Within 12 weeks—preferably as soon as pregnancy is suspected

**2nd visit:** Between 14 and 26 weeks

**3rd visit:** Between 28 and 34 weeks

**4th visit:** Between 36 weeks and term

Pregnant women may have additional Antenatal visits according to their needs.

At these visits, women should undergo routine antenatal tests, complete blood count, blood pressure, blood sugar testing, anomaly scan, USG to assess the progress of normal pregnancy and to identify high-risk factors if any.

### **PRECAUTIONS DURING ANTENATAL VISIT**

Mother has to visit the nearest Antenatal clinic.

Pregnant women should continue visiting their midwife or maternity center if they are not in any containment zone.

A fixed-day approach for an antenatal checkup is recommended.

Pregnant women attending maternity services are advised to maintain strict social distancing.

They should compulsorily wear a mask while attending the clinic and should keep physical contact with the objects and persons to least.

In no case, the antenatal mother should visit a facility that is dedicated to Covid-19 patients.

Pregnant women having suspicion of covid-19 due to symptoms or travel to a high-risk area or international travel and contact with a positive person, then she should report to her clinician or hospital telephonically.

She should travel by private transport to the hospital only for urgent consultation; otherwise, she should self-isolate herself from others for 14 days.

Self-isolation means she should stay at home, not mix her utensils, dishes with others, ventilate her accommodation properly, not go out for work, school, or anywhere else for 14 days.

Upon arrival in the hospital premises, a suspect or covid-19 positive woman should be examined and cared for in the isolation room.

### **GUIDELINES FOR OBSTETRICIANS**

If a woman meets the criteria for Covid-19 testing, she should be tested. Until test results are available, she should be treated as a confirmed case of Covid-19.

Obstetric care should not be delayed to test for Covid-19.

Elective procedures like induction of labor or cesarean section in the period of quarantine should be avoided.

Invasive procedures and routine investigations should be kept to a minimum.

High-risk antenatal mothers should be given priority.

MO-PHC or CHO may arrange teleconsultation as and when required.

A minimum person should examine the patient in an isolation facility.

Do not delay obstetric management to test for COVID-19.

Even if a woman has previously tested negative for Covid-19, if she presents with symptoms again, she should be treated as a suspected case of Covid-19.

A registry for all women admitted with confirmed COVID-19 infection in pregnancy should be maintained.

Any women coming for an antenatal check-up or otherwise having suspicion or confirmation of Covid-19 should be examined by a healthcare worker after wearing full personal protective equipment (PPE).

Staff should adhere to PPE guidelines and make every effort to observe social distancing, hand washing, eating in designated areas, and maintaining a distance of 2 m between colleagues.

### **PPE KIT GUIDELINES**

Personal Protection Equipment for Management of Suspected/Confirmed Patient of Covid-19 as per national guidance.

Hand Hygiene - Hand hygiene includes the use of alcohol-based hand sanitizer that contains 60% to 95% alcohol before putting on and upon removal of PPE, including gloves.

Respiratory protection - Triple-layered surgical mask or N95 facemasks

Eye protection - Goggles or face shield.

Body protection - Long-sleeved water-resistant complete gown including head and shoe cover.

Hand protection - Well-fitting gloves.

### **USE OF PERSONAL PROTECTIVE EQUIPMENT**

#### **Steps in Wearing PPE (Donning)**

Before wearing the PPE for managing a suspected or confirmed COVID-19 case, proper hand hygiene should be performed. The gown should be donned first.

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The mask or respirator should be put on next and properly adjusted to fit

The goggles or face shield should be donned next

The gloves are donned last.

Remember, the combination of PPE used and the sequence for donning is paramount.

#### **STEPS IN REMOVING PPE (DOFFING)**

Wearing the PPE correctly will protect the healthcare worker from contamination. After the patient has been examined or desired procedure is performed, the removal of the PPE is an important step that needs to be carefully carried out to avoid self-contamination.

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graph TD; A[The gloves are removed first because they are considered heavily contaminated. The use of alcohol-based hand disinfectants should be considered before removing the gloves. Dispose of the gloves in a biohazard bin.] --> B[After the removal of gloves, hand hygiene should be performed, and a new pair of gloves should be worn to further continue the doffing procedure.];
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The gloves are removed first because they are considered heavily contaminated.  
The use of alcohol-based hand disinfectants should be considered before removing the gloves. Dispose of the gloves in a biohazard bin.

After the removal of gloves, hand hygiene should be performed, and a new pair of gloves should be worn to further continue the doffing procedure.

Using a new pair of gloves helps to prevent self-contamination.

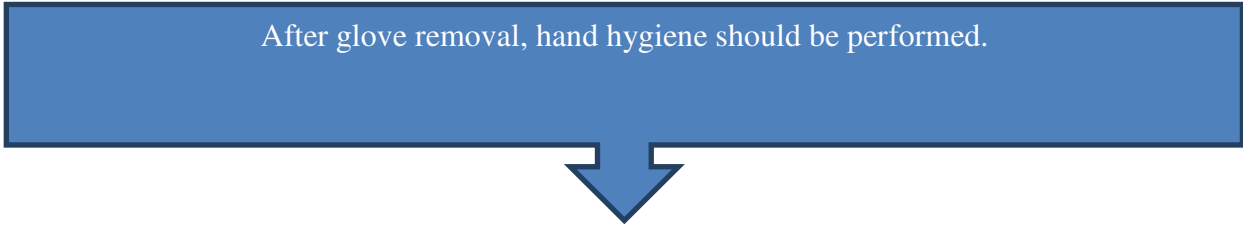
Removal of the gown to be performed by grabbing the backside of the gown and pulling it away from the body. Single-use gowns can now be disposed of; reusable gowns have to be placed in a bag or container for disinfection.

After the gown, the goggles should be removed and either disposed of if they are single-use or placed in a bag or container for disinfection. To remove the goggles, a finger should be placed under the textile elastic strap in the back of the head and the goggles are taken off.

The respirator/ mask should be removed next. To remove the respirator/mask, a finger or thumb should be placed under the straps in the back and the respirator took off. The respirator (or the surgical mask) should be disposed of after removal. It is important to avoid touching the respirator/mask with the gloves (except for the straps) during its removal.

The last PPE items that should be removed are the new set of gloves that were worn after disposal of the contaminated gloves. The use of an alcohol-based solution should be considered before removing the gloves. The gloves should be removed. Dispose of the gloves in a biohazard bin.

After glove removal, hand hygiene should be performed.



### **ANTENATAL MANAGEMENT**

Pregnant women with flu symptoms and no obstetric intervention required shall be home quarantined till the symptoms resolve.

After 14 days of quarantine, she is referred for AN ultrasound services for assessing fetal growth.

Even if previously a pregnant woman tested negative for Covid-19 and if symptoms reappear, she should be treated as Covid suspect and should be tested for Covid 19 again.

Any pregnant woman who has a routine appointment when delayed for more than 3 weeks should be contacted by ANM or ASHA worker.

If the woman tests positive for Covid-19 during pregnancy or shortly before delivery she shall consult/have to deliver at a dedicated Covid facility.

### **Critical Management of pregnant women with COVID-19**

Those women who are Covid-19 positive and hospitalized in the tertiary center should be assessed for the following:

Hourly monitoring of vital signs.

Oxygen titration to keep saturations >94%.

Intubation or ventilator as required depending upon the oxygen saturation.

IV fluid management – Conservative IV fluid at the rate of 75-100 ml/hr.

Chest imaging – if indicated, by using protective abdominal shielding.

FHR monitoring

Empirical antibiotics for bacterial pneumonia.

Antiviral therapy

Inotropes in critically ill patients.

Corticosteroids to be administered for gestation less than 37 weeks if termination of pregnancy is required.

### **ADVISORY FOR ANTENATAL WOMEN**

Disinfection of surfaces to reduce fomites-related spread. Fomites are the objects/materials that carry infection.



For working women, it is preferable to take Work from Home.

Avoid non-essential travel. If travel is undertaken, it is preferable to use a private vehicle.

Avoid gatherings and functions.

Minimize visitors from meeting the mother.

### **DRUGS DURING PREGNANCY**

Low-dose aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs)

There is no change in recommendation.

Low-dose aspirin should be offered to pregnant and postpartum women as medically indicated.

Use of NSAIDs, like ibuprofen is not recommended.

Use of Magnesium for preeclampsia/seizure prophylaxis

The risk of eclampsia should be balanced against the risk of respiratory depression in the setting of SARS-CoV2.

A single 4-gram bolus dose of MgSO<sub>4</sub> is helpful to treat mild respiratory distress.

Use of antenatal corticosteroids, if pregnancy is terminated before 34 - 37 Weeks of Gestation

Tocolytic Drugs

In general, tocolytics are contraindicated in a Covid Suspect/ Confirmed case.

Low Molecular Weight Heparin (LMWH)

RCOG guideline (May 2020) suggests thromboprophylaxis can be prescribed in the form of Low Molecular Weight Heparin (LMWH).

Those women who have one or more risk factors like antiphospholipid antibody syndrome (APLAS), previous history of VTE, prolonged immobilization, and ICU admission should receive enoxaparin 1 mg/kg subcutaneous injection once daily for a period of hospitalization or 10 days.

The patient need not be monitored while receiving prophylactic anticoagulation.

### **IS COVID VACCINE SAFE FOR PREGNANCY**

Initial Clinical trials excluded pregnant women and breastfeeding individuals from the Covid-19 vaccine.

Recent evidence has shown that Covid-19 vaccines are safe during pregnancy and have major benefits.

### **CONCLUSION**

The covid-19 pandemic has posed a great challenge for maternity and other healthcare workers as well as for pregnant women. Although the due course of pregnancy is not much affected by the disease itself complications may arise in absence of timely care and caution. Both the expecting mother and care-provider should be vigilant and the routine obstetric management should not be delayed due to testing or reports of covid-19 infection.

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