



National Health Mission
SDA Complex, Kasumpti, Shimla-9
Himachal Pradesh

Dated: Shimla-171009, the

MISSION DIRECTOR (NHM)
May 2020

05 MAY 2020

New Shimla-9 (H.P.)

CIRCULAR

In view of the pandemic of COVID-19, it is imperative to pay adequate attention to the health of pregnant mothers and simultaneously adhere to the protocols for prevention and containment of COVID-19. The following protocol is to be followed by all health personnel and health facilities dealing with Obstetric patients in the State of Himachal Pradesh.

1. Definitions used in this protocol:

Confirmed:

A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

Suspected:

All symptomatic individuals* who have undertaken international/interstate travel in the last 14 days

or

All symptomatic contacts of laboratory confirmed cases

or

All symptomatic healthcare personnel (HCP)

or

All hospitalized patients with severe acute respiratory illness (SARI) (fever AND Cough and/or shortness of breath)

or

Asymptomatic direct and high-risk contacts[#] of a confirmed case.

**Symptomatic refers to fever/cough/shortness of breath.*

[#]Direct and high-risk contacts include those who live in the same household with a confirmed case and HCP who examined a confirmed case.

2. Ante-natal care

- All pregnant women should be subjected to routine Ante-Natal Check-up (ANC) as per the following schedule
 - **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
- Additional ANC visit may be planned at the discretion of the maternal care provider, if there are any specific symptoms or danger signs related to pregnancy. The content of the ANC will be as per already laid down guidelines.
- The Pregnant Woman should be discouraged to make unnecessary contact with the community at large to avoid contracting COVID19 infection. She should be counseled to wear a face cover, whenever stepping out of her house including for antenatal visits. The ASHA and MPW shall share their numbers with the pregnant women in their area and remain available for any telephonic advice.
- The antenatal visits should be encouraged to be undertaken at the nearest Primary Health Centre/Subcentre and visit to secondary/tertiary hospitals for routine antenatal visits should be discouraged. Whenever a pregnant woman visits a facility for ANC, she should be examined on priority and segregated from the routine patients waiting for their appointments. If possible, fixed day approach for antenatal check up in a week may be adopted and adequate IEC of the same may be done in the drainage area of that PHI. In no case, shall the PW visit a facility dedicated for COVID-19 for antenatal check up.
- MO-PHC or a CHO may arrange a Tele-consultation of the patient with the Obstetrician at the hub as and when required.
- The women should be counseled that if she tests positive for COVID-19 immediately before delivery, she shall have to deliver at a dedicated COVID facility. Similarly, If she tests positive during the course of her

pregnancy, she will be shifted to a dedicated COVID facility for further care.

- If a pregnant woman develops symptoms like fever, Cough, difficulty in breathing or flu like symptoms, she shall inform the concerned ASHA and ANM/CHO, who shall further promptly inform the MO-PHC and BMO. The sampling of such case for COVID-19 shall be done. The clinical condition of the PW including assessment of high risk pregnancy shall be criteria for deciding whether the sample shall be taken from home or under observation in an institution.
- In case, a PW has tested negative and there is no obstetric intervention required, she shall be home quarantined till the symptoms resolve. Referral for antenatal ultrasound services for foetal growth surveillance is recommended after 14 days after resolution of acute illness. For women who have had symptoms, appointments can be deferred until 7 days after the start of symptoms, unless symptoms (aside from persistent cough) become severe. For women who are self-quarantined because someone in their household has possible symptoms of COVID-19, appointments should be deferred for 14 days for antenatal visits.
- Any pregnant woman who has a routine appointment delayed for more than 3 weeks should be contacted by the ANM and ASHA; and the reasons for delay be ascertained.
- Even if previously a pregnant woman has tested COVID-19 negative, and in case the symptoms like fever, Cough, difficulty in breathing or flu like symptoms appear, she should be treated as COVID suspect and should be tested for COVID19 again.
- It must be ensured that a line list of women who are expected to deliver in the next three months is maintained by the MO-PHC/ANM/CHO/ASHA and the women be linked with an appropriate facility for delivery.

3. Obstetric patients reporting to Non-FRU/Non-LaQshya Delivery Point:

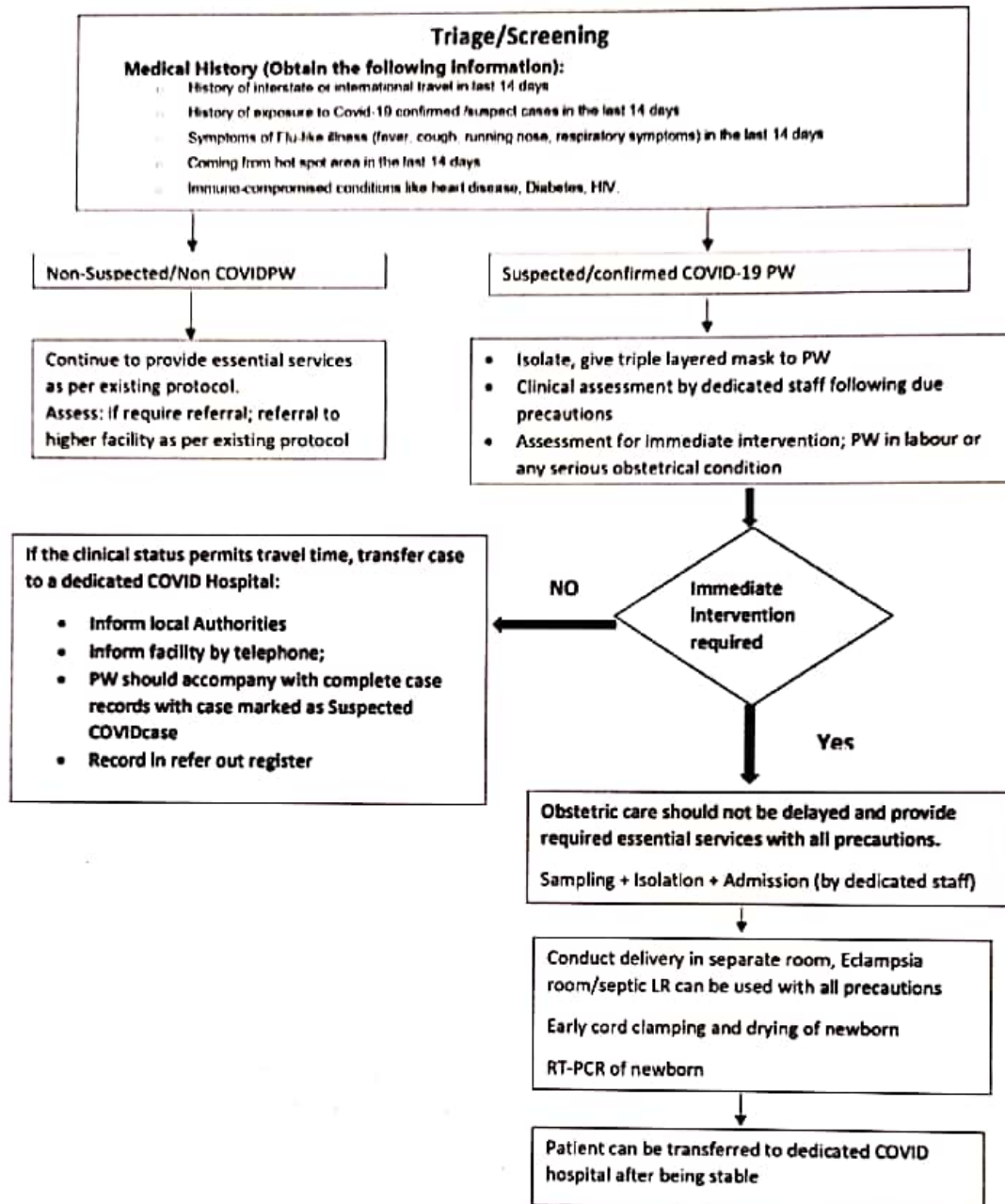
- A triage area at the entrance of hospital gate should be established in such institutions, which should be functional 24x7. All women in labour or

Pregnant women presenting with obstetric emergencies have to be screened for following in the triage area:

- History of interstate or international travel in last 14 days
- History of exposure to Covid-19 confirmed /suspect cases in the last 14 days
- Symptoms of Flu-like illness (fever, cough, running nose, respiratory symptoms) in the last 14 days
- Coming from hot spot area in the last 14 days
- Immuno-compromised conditions like heart disease, Diabetes, HIV.
- In case the patient does not have the above-mentioned conditions, the patient has to be taken in the Delivery point and take appropriate action as per already laid down protocols.
- In case the patient has positive history on screening, the patient has to be referred to the nearest FRU/LaQshya facility. The ambulance used for referral shall ensure universal precautions as per the guidance note already circulated.
- The FRU/LaQshya facility to which the patients has been referred has to be informed immediately over telephone about the status of the patient. The referral should be duly recorded in the referral-out register.

4. Obstetric patients reporting to FRU/LaQshya facility:

- A triage area at the entrance of hospital gate should be established in such institutions, which should be functional 24×7. At triage, the following flow chart is to be followed:



Note: In no case should a FRU/LaQshya facility refer a patient requiring immediate intervention. Responsibility would be fixed, if this condition is not adhered to.

5. Universal Precautions for suspect/confirmed cases of COVID-19:

The Personal Protective Equipment as prescribed in guidelines issued earlier shall be used for delivery/management of obstetric complications. The donning & Doffing Sequence shall be as under:

Donning sequence	Doffing sequence
<pre> graph TD A[Hand Wash] --> B[Cap] B --> C[Shoe cover] C --> D[Hand rub] D --> E[Inner glove] E --> F[Cover all/Gown] F --> G[Mask] G --> H[Goggles] H --> I[Hood] I --> J[Outer gloves] </pre>	<pre> graph TD A[Shoe cover] --> B[Outer Glove] B --> C[Hood] C --> D[Cover all/Gown] D --> E[Hand rub (gloved hand)] E --> F[Goggles] F --> G[Inner glove] G --> H[Wear new glove] H --> I[Remove Mask] I --> J[Cap] J --> K[Remove new glove] K --> L[Hand wash] </pre>
Before donning –remove all external wearings such as watches, jewellery, earrings, bangles, pen, ID card etc.	

6. Preparedness of a facility for handling suspect/confirmed COVID-19 pregnant woman:

Even if dedicated COVID- 19 hospitals have been set up, all FRU/LaQshya facilities should have preparedness to handle suspected/ confirmed COVID-19 pregnant women

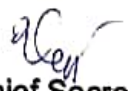
- Identify and equip a separate Isolation room with PPE kit, supplies and instruments so that the same room can be used for labour, delivery and recovery. The isolation room is preferred with negative pressure (IRNP).
- Neonatal Resuscitation corners should be located at least 2 metre away from delivery table
- C-section for suspected/positive COVID patients should be performed in separate OT, wherever possible. Wherever due to resource constraint this is not possible, all standard infection prevention precautions including disinfection (as per circulated guidelines) and fumigation after each case should be done.
- **A Dedicated COVID Hospital** should also identify and equip a separate Isolation room with PPE kit, supplies and instruments so that the same room can be used for labour, delivery and recovery. The isolation room is preferred with negative pressure (IRNP).
- **A Dedicated COVID Hospital** should have dedicated areas for suspect and confirmed cases of COVID-19 including Labour Delivery Room.

7. Care of Suspected/confirmed COVID Pregnant Women during labour:

The clinical guidelines for management of Pregnant Women in COVID-19 Pandemic as issued by ICMR and annexed with this circular shall be followed for perinatal care.

8. Points to note

- Do not delay Obstetric management in order to test for COVID-19.
- Elective procedures like induction of labour for indications that are not strictly necessary, routine growth scans not for a strict guidance-based indication and routine investigations should be reduced to minimum at discretion of care provider.
- If ultrasound equipment is used, it should be decontaminated after use.

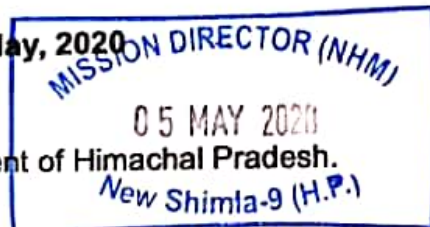

 Additional Chief Secretary (Health) to the
 Government of Himachal Pradesh

Endst. No.: As above.

Dated Shimla-9 the

May, 2020

Copy for information and necessary action to:



1. The Additional Chief Secretary (Health) to the Government of Himachal Pradesh.
2. All the Deputy Commissioners, Himachal Pradesh.
3. The Director Health Services, Himachal Pradesh.
4. The Director Ayurveda, Himachal Pradesh
5. All the Chief Medical Officers, in Himachal Pradesh.
6. All Principals, Government Medical Colleges, Himachal Pradesh
7. All Institutional Incharges, LaQshya Facilities/FRUs
8. Project Head, 108 NAS, Himachal Pradesh
9. Project Head, 104 Comprehensive Call Centre, Himachal Pradesh
10. The State Surveillance Officer, Himachal Pradesh.
11. All the District Surveillance Officers under IDSP, Himachal Pradesh.
12. State Lead, IPE Global
13. SPO – Maternal Health to ensure training and compliance to the protocol.

A handwritten signature in blue ink, appearing to be "V. Singh".

Additional Chief Secretary (Health) to the
Government of Himachal Pradesh

Guidance for Management of Pregnant Women in COVID-19 Pandemic



**ICMR - National Institute for Research in Reproductive Health
Jehangir Merwanji Street, Parel, Mumbai - 400 012**

PREFACE

These infection prevention and control considerations are for healthcare facilities providing obstetric care for pregnant patients with confirmed novel coronavirus disease (COVID-19) or pregnant Persons Under Investigation (PUI) in obstetric healthcare settings including obstetrical triage, labour and delivery, recovery and inpatient postpartum settings.

These considerations are based upon the limited evidence available to date about transmission of the virus that causes COVID-19, and knowledge of other viruses that cause severe respiratory illness including influenza, severe acute respiratory syndrome coronavirus (SARS-CoV), and Middle East Respiratory Syndrome coronavirus (MERS-CoV). The approaches outlined below are intentionally cautious until additional data become available to refine recommendations for prevention of person-to-person transmission in inpatient obstetric care settings.

These recommendations are adapted based on guidelines from international agencies like CDC, ACOG, RCOG, FOGSI and Lancet publications. However, they are simplified and made user friendly for Indian context. This guidance is prepared considering resources in our government health settings.

Guidance for Management of Pregnant Women in COVID-19 Pandemic

Obstetric units should take into consideration:

Appropriate isolation of pregnant patients who have confirmed COVID-19 or are Persons Under Investigations

Basic and refresher training for all healthcare personnel to include correct adherence to infection control practices, Personal Protective Equipment (PPE) use and handling (preferably by a video presentation)

Sufficient and appropriate PPE supplies positioned at all points of care

Processes to protect new-borns from risk of COVID-19

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1. Introduction

1.1 Effect of COVID-19 on Pregnancy

- Pregnant women do not appear more likely to contract the infection than the general population. However, pregnancy itself alters the body's immune system and response to viral infections in general, which can occasionally be related to more severe symptoms and this will be the same for COVID-19.
- Reported cases of COVID-19 pneumonia in pregnancy are milder and with good recovery.
- In other types of coronavirus infection (SARS, MERS), the risks to the mother appear to increase in particular during the last trimester of pregnancy. There are case reports of preterm birth in women with COVID-19 but it is unclear whether the preterm birth was always iatrogenic, or whether some were spontaneous.
- Pregnant women with heart disease are at highest risk (congenital or acquired).
- The coronavirus epidemic increases the risk of perinatal anxiety and depression, as well as domestic violence. It is critically important that support for women and families is strengthened as far as possible; that women are asked about mental health at every contact

1.2 Transmission

- With regard to vertical transmission (transmission from mother to baby antenatally or intrapartum), emerging evidence now suggests that vertical transmission is probable, although the proportion of pregnancies affected and the significance to the neonate has yet to be determined.
- At present, there are no recorded cases of vaginal secretions being tested positive for COVID-19.
- At present, there are no recorded cases of breast milk being tested positive for COVID-19.

1.3 Effect on Foetus

- There are currently no data suggesting an increased risk of miscarriage or early pregnancy loss in relation to COVID-19.
- There is no evidence currently that the virus is teratogenic. Long term data is awaited.
- COVID-19 infection is currently not an indication for Medical Termination of Pregnancy.

2. General Guidelines for Obstetric Health Care Providers

- Ob-gyns and other health care practitioners should contact their local and/or state health department for guidance on testing persons under investigation and should follow the national protocol.
- Health care practitioners should immediately notify infection control personnel at their health care facility and their local or state health department in the event of a PUI for COVID-19.
- A registry for all women admitted to with confirmed COVID-19 infection in pregnancy should be maintained. Maternal and neonatal records including outcome should be completed in detail and preserved for analysis in future.
- Health care providers should create a plan to address the possibility of a decreased health care workforce, potential shortage of personal protective equipment, limited isolation rooms, and should maximize the use of telehealth across as many aspects of prenatal care as possible.
- Each facility should consider their appropriate space and staffing needs to prevent transmission of the virus that causes COVID-19.
- Pregnant women should be advised to increase their social distancing to reduce the risk of infection and practice hand hygiene.
- Health care practitioners should promptly notify infection control personnel at their facility of the anticipated arrival of a pregnant patient who has confirmed COVID-19 or is a PUI so that infection control measures can be kept in place.
- Intrapartum services should be provided in a way that is safe, with reference to minimum staffing requirements and the ability to provide emergency obstetric, anaesthetic and neonatal care where indicated.
- A single, asymptomatic birth partner should be permitted to stay with the woman, at a minimum, through pregnancy and birth. Visitors should be instructed to wear appropriate PPE, including gown, gloves, face mask, and eye protection.
- Women should be met at the maternity unit entrance by staff wearing appropriate PPE and be provided with a surgical face mask. The face mask should not be removed until the woman is isolated in a suitable room.
- Staff providing care should take Personal Protective Equipment (PPE) precautions as per national guidance.

3. Specific Obstetric Management Considerations

3.1 Medical History

For all pregnant women obtain the following information:

- A detailed travel history
- History of exposure to people with symptoms of COVID-19
- Symptoms of COVID-19
- Coming from hot spot area
- Immunocompromised conditions

3.2 Information to be shared with pregnant women

Pregnant women should be informed as follows:

If you are infected with COVID-19 you are still most likely to have no symptoms or a mild illness from which you will make a full recovery.

If you develop more severe symptoms or your recovery is delayed, this may be a sign that you are developing a more significant chest infection that requires enhanced care; you should contact your maternity care team immediately.

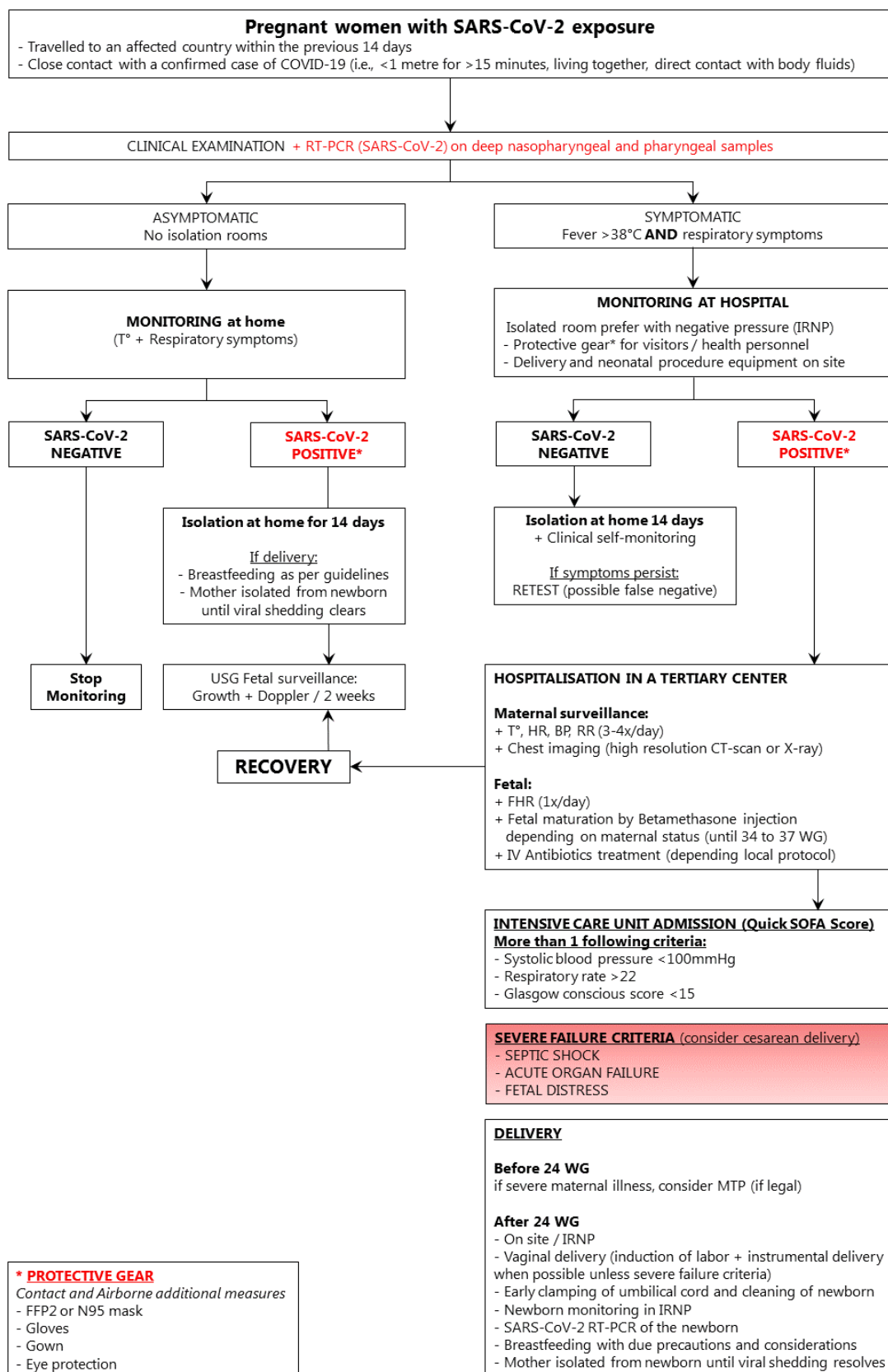
There may be a need to reduce the number of antenatal visits you have. However, do not reduce your number of visits without agreeing first with your maternity team.

3.3 Do's and Don'ts for Obstetric care providers in COVID-19 Pandemic

- If a woman meets criteria for COVID-19 testing, she should be tested. Until test results are available, she should be treated as though she has confirmed COVID-19.
- Do not delay obstetric management in order to test for COVID-19.
- Elective procedures like induction of labour for indications that are not strictly necessary, routine growth scans not for a strict guidance-based indication and routine investigations should be reduced to minimum at discretion of care provider.
- If ultrasound equipment is used, it should be decontaminated after use.

4. Management of COVID-19 in Pregnancy

4.1 Flowchart for Management in Pregnant Women (Adapted from Lancet)



4.2 Antenatal Care

- Women should be advised to attend routine antenatal care, tailored to minimum, at the discretion of the maternal care provider at 12, 20, 28 and 36 weeks of gestation, unless they meet current self-isolation criteria.
- For women who have had symptoms, appointments can be deferred until 7 days after the start of symptoms, unless symptoms (aside from persistent cough) become severe. Foetal Kick count to be maintained.
- If needed to visit health centre, should take own transport or call 108, informing the ambulance staff about her status.
- For women who are self-quarantined because someone in their household has possible symptoms of COVID-19, appointments should be deferred for 14 days.
- Any woman who has a routine appointment delayed for more than 3 weeks should be contacted. (In rural areas ANMs/ASHAs can contact by telephone/ routine household visits with PPE).
- Even if a woman has previously tested negative for COVID-19, if she presents with symptoms again, COVID-19 should be suspected.
- Referral to antenatal ultrasound services for foetal growth surveillance is recommended after 14 days following the resolution of acute illness.

Note:

- *The service providers can assess the feasibility of isolation for the patient at home, especially if in slums/small households, else she could be admitted in hospital or quarantine facility.*
- *Also, self-quarantine for close contacts of the pregnant patient tested positive for 14 days.*
- *Whether she has attended ANC clinic in the last 14 days before testing, if so self-quarantine of the service providers.*
- *If a woman tests positive, she should be advised to deliver at least at an FRU (Rural/SDH); preferably a tertiary facility anticipating the complications during delivery.*

4.3 Intrapartum Care

Once settled in an isolation room, a full maternal and foetal assessment should be conducted to include:

- Assessment of the severity of COVID-19 symptoms, which should follow a multi-disciplinary team approach including an infectious diseases or medical specialist.
- Delivery should be preferably at tertiary care centre.
- Maternal observations including temperature, respiratory rate & oxygen saturations.
- Confirmation of the onset of labour, as per standard care.
- Electronic foetal monitoring using cardiotocograph (CTG).
- Hourly oxygen saturation during labour.

4.4 Care in Labour

- Aim to keep oxygen saturation >94%, titrating oxygen therapy accordingly.
- If the woman has signs of sepsis, investigate and treat as per guidance on sepsis in pregnancy, but also consider active COVID-19 as a cause of sepsis and investigate according to guidance.
- Continuous electronic foetal monitoring in labour is recommended.
- There is currently no evidence to favour one mode of birth over another. Mode of birth should not be influenced by the presence of COVID-19, unless the woman's respiratory condition demands urgent delivery.
- There is no evidence that epidural or spinal analgesia or anaesthesia is contraindicated in the presence of coronaviruses. Epidural analgesia should therefore be recommended in labour to women with suspected/confirmed COVID-19 to minimise the need for general anaesthesia if urgent delivery is needed.
- In case of deterioration in the woman's symptoms, make an individual assessment regarding the risks and benefits of continuing the labour, versus emergency caesarean birth if this is likely to assist efforts to resuscitate the mother.
- When caesarean birth or other operative procedure is advised, it should be done after wearing PPE.
- An individualised decision should be made regarding shortening the length of the second stage of labour with elective instrumental birth in a symptomatic woman who is becoming exhausted or hypoxic.

4.5 Management of Patients with COVID-19 Admitted to Critical Care

Particular considerations for pregnant women are:

- Hourly observations, monitoring both the absolute values and the trends.
- Titrate oxygen to keep saturations >94%.
- Hourly respiratory rate looking for the rate and trends:
- Young fit women can compensate for deterioration in respiratory function and are able to maintain normal oxygen saturations before they suddenly decompensate. So, a rise in the respiratory rate, even if the saturations are normal, may indicate deterioration in respiratory function and should be managed by starting or increasing oxygen.
- Radiographic investigations should be performed as for the non-pregnant adult; this includes chest X-ray and CT of the chest. Chest imaging, especially CT chest, is essential for the evaluation of the patient with COVID-19 and should be performed when indicated, and not delayed due to foetal concerns. Abdominal shielding can be used to protect the foetus as per normal protocols.
- Consider additional investigations to rule out differential diagnoses, e.g. ECG, CTPA as appropriate, echocardiogram. Do not assume all pyrexia is due to COVID-19 and also perform full sepsis screening.
- Consider bacterial infection if the white blood cell count is raised (lymphocytes usually normal or low with COVID-19) and commence antibiotics.
- Apply caution with IV fluid management. Try boluses in volumes of 250-500mls and then assess for fluid overload before proceeding with further fluid resuscitation.
- The frequency and suitability of foetal heart rate monitoring should be considered on an individual basis, taking into consideration the gestational age of the foetus and the maternal condition. If urgent delivery is indicated for foetal reasons, birth should be expedited as normal, as long as the maternal condition is stable.

4.6 Postnatal Management

It is unknown whether new-borns with COVID-19 are at increased risk for severe complications. Transmission after birth via contact with infectious respiratory secretions is a concern. Facilities should consider temporarily separating (e.g. separate rooms) the mother who has confirmed COVID-19 or is a PUI, from her baby until the mother's transmission-based precautions are discontinued.

Considerations below for temporary separation:

- The risks and benefits of temporary separation of the mother from her baby should be discussed with the mother by the healthcare team.
- A separate isolation room should be available for the infant while they remain a PUI.
- The decision to discontinue temporary separation of the mother from her baby should be made on a case-by-case basis in consultation with clinicians, infection prevention and control specialists, and public health officials. Decision should take into account disease severity, illness signs and symptoms, and results of laboratory testing for virus that causes COVID-19, SARS-CoV-2 of mother and neonate.
- **If colocation (sometimes referred to as “rooming in”)** of the new-born with his/her ill mother in the same hospital room occurs in accordance with the mother's wishes or is unavoidable due to facility limitations, facilities should consider implementing measures to reduce exposure of the new-born to the virus that causes COVID-19.
- Consider using engineering controls like physical barriers (e.g., a curtain between the mother and new-born) and keeping the new-born ≥ 6 feet away from the ill mother.
- If no other healthy adult is present in the room to care for the new-born, a mother who has confirmed COVID-19 or is a PUI should put on a facemask and practice hand hygiene¹ before each feeding or other close contact with her new-born. The facemask should remain in place during contact with the new-born. These practices should continue while the mother is on transmission-based precautions in a healthcare facility.

4.7 Breastfeeding

- During temporary separation, mothers who intend to breastfeed should be encouraged to express their breast milk to establish and maintain milk supply.
- If possible, a dedicated breast pump should be provided. Prior to expressing breast milk, mothers should practice hand hygiene. After each pumping session, all parts that come into contact with breast milk should be thoroughly washed and the entire pump should be appropriately disinfected as per the manufacturer's instructions.
- This expressed breast milk should be fed to the new-born by a healthy caregiver.
- If a mother and new-born do room-in and the mother wishes to feed at the breast, she should put on a facemask and practice hand hygiene before each feeding.

4.8 Hospital Discharge

Discharge for postpartum women should follow recommendations described in the guidelines for discharge of Hospitalized Patients with COVID-19. Test should be negative and maternal and foetal/neonatal condition should be stable.

4.9 General Advice for Obstetric/Emergency Gynaecology Theatre

- Elective obstetric procedures (e.g. cervical cerclage or caesarean) should be scheduled at the end of the operating list.
- Non-elective procedures should be carried out in a second obstetric theatre, where available, allowing time for a full post-operative theatre clean-up as per national health protection guidance.
- The number of staff in the operating theatre should be kept to a minimum, and all must wear appropriate PPE.

4.10 Anaesthesia and Advice regarding Personal Protective Equipment for Caesarean Birth

- The level of PPE required by healthcare professionals caring for a woman with COVID-19 undergoing a caesarean birth should be determined based on the risk of requiring a general anaesthetic.
- Intubation for general anaesthesia (GA) is an aerosol-generating procedure (AGP). This significantly increases risk of transmission of coronavirus to the attending staff.
- Regional anaesthesia (spinal, epidural or CSE) is not an AGP.
- For the minority of caesarean births where GA is planned from the outset, all staff in theatre should wear full PPE, including a filtering face piece level 3 (FFP3) mask. The scrub team should scrub and don PPE before the GA is commenced.
- For a non-urgent caesarean birth where regional anaesthesia is planned, the risk of requiring GA is very small. In this situation, all staff not required for siting of the regional anaesthetic should stay outside theatre until the block is effective. All staff in theatre should then don PPE with a fluid-resistant surgical mask (FRSM) and eye protection (to prevent against droplet or fomite spread of the virus).
- In the small proportion of cases in which regional anaesthesia cannot be successfully achieved, and GA is required, the scrub team should enter the theatre, scrub and don full PPE, including an FFP3 mask, before the GA is commenced.
- If the risk of requiring conversion to GA is considered significant, the theatre team should scrub and don full PPE, including an FFP3 mask, before the procedure is commenced. An example is a woman whose epidural has been suboptimal during labour, which is 'topped-up' for an emergency caesarean birth.
- If the risk of requiring conversion to GA is considered low, the theatre team should scrub and don PPE with an FRSM with eye protection. Examples include a woman whose epidural has been working well during labour and has been 'topped-up' for an emergency caesarean birth or a woman with a newly sited spinal anaesthetic that was inserted without difficulty and became effective in the expected timeframe.

4.11 Hand Hygiene

- Hand hygiene includes use of alcohol-based hand sanitizer that contains 60% to 95% alcohol before and after all patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE, including gloves.
- It can also be performed by washing with soap and water for at least 20 seconds.
- If hands are visibly soiled, use soap and water before returning to alcohol-based hand sanitizer.

4.12 Personal Protection Equipment for Management of Suspected/Confirmed Patient of COVID-19

Respiratory protection

- Triple layered surgical mask.
- N95 facemasks.
- These are needed when performing an aerosol-generating procedure or in an area where neonates are being provided respiratory support by CPAP device/ventilator.

Eye protection

- Goggles (will not be usable by those using vision glasses) or face shield.

Body protection

- Long-sleeved water-resistant complete gown including head and shoe cover. A single piece head to toe water resistant body cover will be ideal for attending resuscitation in delivery room or OT.
- 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.
 - The mask or respirator should be put on next and properly adjusted to fit; remember to fit check the respirator.
 - The goggles or face shield should be donned next and the gloves are donned last.
 - Keep in mind, the combination of PPE used, and therefore the sequence for donning, will be determined by the precautions that need to be taken.

• 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 a critical and important step that needs to be carefully carried out in order to avoid self-contamination because the PPE could by now be contaminated.



- The gloves are removed first because they are considered a heavily contaminated item. Use of alcohol-based hand disinfectant 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 doffing procedure. Using a new pair of gloves will prevent selfcontamination. Unbuttoning of the backside of the gown, performed by an assistant. Removal of gown to be performed by grabbing the back side 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 if they are single-use, or placed in a bag or container for disinfection. In order to remove the goggles, a finger should be placed under the textile elastic strap in the back of the head and the goggles taken off. Touching the front part of the goggles, which can be contaminated, should be avoided. If goggles with temples are used, they should be removed as per manufacturer's recommendations.



- The respirator/ mask should be removed next. In order to remove the respirator/mask, a finger or thumb should be placed under the straps in the back and the respirator taken 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. Use of 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.

5. Additional Information and References

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