ANC, INC and PNC Services During COVID-19

DR. SHALINI RATHORE

Effects of COVID-19 on Pregnant Women

Are Pregnant Women More Vulnerable

- Pregnancy *does not increase susceptibility* to SARS-CoV-2 infection but appears to *worsen the clinical course of COVID-19* compared with non pregnant women of the same age (CDC).
- The **factors responsible for worsening of disease** during pregnancy
  - Physiological changes during pregnancy
    - Altered immunological state
    - Decreased respiratory capacity
    - Vascular and haemodynamic changes
    - Hypercoagulable state
    - Increase oxygen consumption

- Coexisting medical condition or obstetric complications:
    - Chronic respiratory conditions e.g. Asthma, COPD
    - Diabetes type 1 or 2 / gestational diabetes mellitus
    - Chronic hypertension or pregnancy induced hypertension
    - Hypothyroidism
    - Obesity
    - Age >35 years
    - Congenital or acquired cardiovascular disease
    - Dialysis or advanced kidney disease
    - Immunocompromised conditions e.g. organ transplant recipient, malignancy, HIV, SLE etc.

Symptoms of COVID-19 in pregnant women

- Majority (60%-70%)of pregnant women are asymptomatic
- Most symptomatic women experience only mild to moderate flu like symptoms.
- Symptomatology includes:
    - Dry cough
    - Fever
    - Myalgia
    - Diarrhoea
    - Breathing difficulty

- Severe disease is noted in 8-10% of infected pregnant women.
- 80% pregnant women with severe disease present in third trimester.
- Preterm births - 30%
    - 45-50% iatrogenic for maternal compromise.
    - 15% iatrogenic for foetal indications.
    - 10% preterm births in asymptomatic women
    - 20-25% preterm births in symptomatic women

- Preterm births 2-3 times higher in symptomatic women.
- Preterm birth associated with perinatal mortality or morbidity and single biggest cause of neonatal morbidity and mortality.
- Maternal COVID-19 is associated with increased rate of caesarean birth, half of because of maternal and foetal compromise and remainder are for obstetrical reason.
- Pregnant women with high risk factors should be managed in hospital settings.

Effect on Foetus

- There is no evidence to suggest that first trimester exposure may increases the risk of teratogenicity but more follow up studies needed.
- The reported COVID-19 cases are few in number in first trimester, but there is observation of 25% increased incidence of pregnancy loss in this trimester as compared to non covid pregnant women.
- Aside from preterm births, there is no evidence of any other adverse effect on foetus or neonatal outcomes.
- SARS-CoV-2 infection itself is not an indication of termination of pregnancy.

Antenatal care during the COVID-19. pandemic

Antenatal care during the COVID-19 pandemic

- Pregnant women should be advised to continue routine antenatal care with service modification to enable social distancing.
- Staff members should ensure adequate PPE.
- Antenatal care should be offered in full, wherever safely possible.
- Discuss women with high risk factors of developing severe complications of COVID-19 and advice them to seek medical help without delay.

- Tele consultation should be encouraged.
- Triage tools to assess the severity of illness for women who telephone with suspected or confirmed COVID-19.
- This should include advice regarding risks of deterioration and when to seek urgent medical attention.
- Guide them to vaccinate against COVID-19

Antenatal care for women who have recovered from COVID-19

- COVID-19 recovered women with mild, moderate or no symptoms, without requiring admission to hospital — Antenatal care should remain unchanged following the period of self isolation

- If antenatal appointment missed due to quarantine, they should be seen as early as possible.

- Women with serious or critical illness with COVID-19, requiring hospital admission should be given simultaneous obstetric care as these are at high risk of developing oligohydramnios, foetal distress, IUD, PIH, gestational diabetes etc.

- Placental histopathology showed abnormalities such as foetal vascular malperfusion and villitis among COVID-19 cases.
- Follow up ultrasound for foetal biometry, 14 days following recovery in severely ill COVID-19 pregnant women.

Venous thromboembolism prevention

Venous thromboembolism prevention

- Home quarantined women should stay hydrated and mobile.
- All pregnant women should have venous thromboembolism risk assessment during pregnancy.
- SARS-CoV-2 infection should be considered as minor risk factor and prompt reassessment.
- Clinical VTE risk assessment should be performed for home isolated patients, thromboprophylaxis considered and prescribed on individual basis.
- Thromboprophylaxis with LMWH should be continued until they have recovered from acute illness(7-14 days).

- Continue thromboprophylaxis for more days in women with ongoing morbidity and limited mobility on physician advice.

- All admitted pregnant women with confirmed or suspected COVID-19, should be offered prophylactic LMWH, unless birth is expected within 12 hours or there is significant risk of haemorrhage.

- For women with severe complications of COVID-19, therapeutic dosing regimen of LMWH to be given with MDT approach.

- All hospitalised pregnant women with confirmed COVID-o should be offered thromboprophylaxis for 10 days following discharge.
- Monitor D-dimer every 2 to 3 days.
- Patients on therapeutic dose of LMWH — daily Hb, h/o Melena, etc. should be observed.

Intranatal care during the COVID-19 pandemic

SARS-CoV-2 positive asymptomatic women

- All pregnant women admitted in maternity units should be tested for SARS-CoV-2 as per ICMR guideline.
- Asymptomatic low risk women who test positive for SARS-CoV-2 within 10 days prior to birth should be in line with usual practice.
- Risk and benefits of continuous electronic foetal monitoring should be weighed in low risk asymptomatic women in labour.
- Delayed cord clamping should be offered.

Symptomatic suspected or confirmed COVID-19 in labour

- Increased risk of foetal compromise in active labour
- Full maternal and foetal assessment on admission:
  - PPE
  - Assessment of severity of COVID-19 symptoms
  - Maternal — temperature, respiratory rate, oxygen saturation
  - Confirmation of onset of labour as per standard
  - CEFM

- MDT approach — obstetrician, anaesthetist, neonatologist, respiratory physician.
- Standard hourly maternal observation and assessment with addition of hourly O2 saturation monitoring.
- Oxygen therapy should be titrated to aim for saturation above 94%.
- SARS-CoV-2 is not a contraindication to perform foetal blood sample or using foetal scalp electrodes.
- No. of staff members should be minimised.
- Delayed cord clamping and skin to skin contact with baby to be practiced.

Recovered COVID-19 pregnant women in labour

- Women recovered from antenatal COVID-19, without requiring hospital admission — no change in planned care during labour and birth.
- Women who recovered from critical illness, requiring hospital admission and supportive therapy — individualised approach and consideration should be given to foetal growth parameters.
- As there is risk of FGR in recovered women from severe illness, CEFM can be individualised.

Birth partners during COVID-19 pandemic

- There is pandemic induced increased perinatal stress as well as feeling of fear and loneliness in pregnant women.
- A supportive birth partner provide emotional protection to parturient.
- Birth partner should be asymptomatic and SARS-CoV-2 negative.
- Birth partner should be in PPE.
- Restriction of visitors.

Timing and mode of birth during COVID-19 pandemic

- It depends upon obstetric and foetal indication.
- In severely ill patients, medical indication can determine timing and mode of termination

Labour analgesia or anaesthesia

- Entonox (50% nitrous oxide and 50% oxygen) can be safely offered with a standard single-patient microbiological filter.
- There is no evidence that the use of Entonox is an aerosol-generating procedure (AGP).
- There is no evidence that epidural or spinal analgesia or anaesthesia is contraindicated in the presence of coronaviruses.
- Intubation required for GA is an AGP. This significantly increases the risk of transmission of SARS-CoV-2 to attending staff.

Personal protective equipment during labour and birth

- Healthcare professionals should follow ICMR guidelines.
- For caesarean births where GA is planned from the outset all staff in theatre should wear PPE, including an FFP3 mask and a visor.
- PPE should be donned prior to commencing the GA.
- The number of staff in the operating theatre should be kept to a minimum and all colleagues should wear appropriate PPE.

Managing clinical deterioration during the COVID-19 pandemic

Managing clinical deterioration during the COVID-19 pandemic

- The clinical symptoms of COVID-19 overlap with those of a variety of other clinical conditions.
- Healthcare providers should consider all different diagnoses for women who present with a fever in pregnancy and follow the advice and guidance as in septicaemia in pregnancy.
- Investigations to be sent:
  - CBC, LFT, RFT, CRP, LDH, S. Ferritin, RBS, Urine R/M, ABG, blood culture.
  - Nasopharyngeal swab for Qualitative PCR for SARS-CoV-2.
  - ECG.
  - D-dimer, Procalcitonin, CPK-MB, PT-INR, aPTT (before initiating anticoagulants).
- As per some studies, CRP can be a guide for steroid dose. Higher the CRP, use a higher dose of steroid.

- Chest imaging for evaluation of unwell women with COVID-19 and should not delayed, as maternal wellbeing is paramount.

- Consider PE or HF for women presenting with chest pain, worsening hypoxia or RR>20/min or persisting or worsening of breathlessness after expected recovery from COVID-19.

- Additional tests for DD, includes ECG, echocardiogram,CT pulmonary angiogram, ventilation perfusion lung scan.

- The priority of medical care to stabilise the woman’s condition.
- Definition of unwell pregnant women with COVID-19:
    - Women who are requiring oxygen to maintain saturation between 94-98%.
    - RR>20/min.
    - Heart rate >110/min.

- The following should be considered:
    - Key priorities for medical care of women and her baby
    - The most appropriate location of care.
    - Concerns among the team regarding special considerations in pregnany including the health of the baby
    - Regularly update women’s family about her health and that of baby.

Observation and investigations

- Hourly monitoring of vitals including HR, RR and O2 saturation
- Always be aware that young fit women can compensate for deterioration respiratory function and are able to maintain normal oxygen saturation until sudden decompensation.
- The women's care should be escalated early if any of the following signs of the escalation develop:
    - Increasing oxygen required or fraction of inspired oxygen (FiO2) above 35%,

.

- Increasing respiratory rate despite oxygen therapy of or above 25 breaths/ minutes or a rapidly rising respiratory rate,
- Reduction in urine output when this is being monitored,
- Acute kidney injury (serum creatinine levels above 77 µmol/l in women with pre-existing renal disease),
- Drowsiness, even if the oxygen saturations are normal.

.

- The possibility of myocardial injury should be considered, as the symptoms are similar to those of respiratory complications of COVID-19.
- The frequency and suitability of fetal heart rate monitoring should be considered on an individual basis, accounting for the gestational age and the maternal condition

Interventions

- If there is clinical uncertainty about whether to offer a therapy to a pregnant woman, advice should be sought through physician.
- Oxygen should be titrated to target saturations to 94–98%.
- Caution should be applied to IV fluid management:
- Hourly fluid input/output charts jshould be used to monitor fluid balance in women with moderate to severe symptoms of COVID-19.
- The aim should be to maintain a neutral fluid balance in labour.
- When required, boluses in volumes of 250–500 ml should be employed and an assessment for fluid overload made before proceeding with further fluid resuscitation.

- Antibiotics should be commenced at presentation if there is clinical suspicion of bacterial infection or sepsis, with an early review and rationalisation of antibiotics if COVID-19 is confirmed.
- Even when COVID-19 is confirmed, clinicians should remain open to the possibility of another coexisting condition.
- There should be no delay in the administration of therapy that would usually be given in maternity care.
- All pregnant women should be assessed for risk of VTE and prescribed thromboprophylaxis with LMWH unless there is a contraindication.
- The dose of LMWH should be considered on an individual basis and discussed with the MDT.
- Therapeutic doses of LMWH should be employed when VTE is suspected until objective testing can be undertaken.

- Thrombocytopenia may be associated with severe COVID-19. If thrombocytopenia (platelets less than 50 × 109/l), discontinue aspirin and LMWH thromboprophylaxis and haematology advice sought.

- The use of mechanical aids (such as intermittent pneumatic compression) should be used if LMWH therapy is contraindicated or paused secondary to thrombocytopenia.

- Corticosteroid therapy should be considered for 10 days or up to discharge, whichever is sooner, for women who are unwell with COVID-19 and requiring oxygen supplementation or ventilatory support.

- One suggested steroid regimen is:

  - If steroids are not indicated for fetal lung maturity, oral prednisolone 40 mg once a day, or IV hydrocortisone 100 mg twice daily, for 10 days or until discharge, whichever is sooner.

  - If steroids are indicated for fetal lung maturity, intramuscular dexamethasone

  - 6 mg every 12 hours for four doses, then oral prednisolone 40 mg once a day, or IV hydrocortisone 100 mg twice daily, to complete a total of 10 days or until discharge, whichever is sooner

- Remdesivir should be avoided in pregnant women with COVID-19 unless clinicians believe the benefits of treatment outweigh the risks to the individual.
- Any decision to treat with remdesivir should be taken by an MDT that includes obstetric and physician.
- Clinicians should be aware that the fetal risk profile of remdesivir is largely unknown.
- When considering the use of remdesivir in women with COVID-19 who are breastfeeding, clinicians should consider the benefits and risks of treatment.
- Use only in women where benefit has been reported (hospitalised patients requiring oxygen therapy, especially early in disease course, i.e. within 10 days of onset of first symptom and not in patients who are mechanically ventilated).

- The interleukin-6 receptor antagonist (anti-IL6) tocilizumab has been shown to improve outcomes, including survival, in hospitalised patients with hypoxia and evidence of systemic inflammation.

- Although data for the use of tocilizumab in pregnancy in this situation are limited, there is currently no compelling evidence that tocilizumab is teratogenic or fetotoxic.

- For women meeting the criteria above (hypoxic with systemic inflammation), the use of tocilizumab should be considered.

- It is recommended that any decision to treat with anti-IL6 agents should be taken by an MDT to include obstetric and physician, and given if the benefits outweigh the risks.

- Other therapies are being investigated for the management of COVID-19, and pregnant women should be offered the opportunity to enroll in clinical trials for which they are eligible.

- Hydroxychloroquine, lopinavir- ritonavir and azithromycin have been shown to be ineffective in treating COVID-19 infection and should not be used for this purpose.

Planning the birth of baby

- For pregnant women in the third trimester who are unwell, an individualised assessment by the MDT to decide whether emergency caesarean birth or IOL should be prioritised, either to facilitate maternal resuscitation or because of concerns regarding fetal health.
- If maternal stabilisation is required before delivery can be undertaken safely, this is the priority, as it is in other maternity emergencies.
- If urgent intervention for birth is indicated for fetal reasons, then birth should be expedited as for usual obstetric indications, as long as the maternal condition is stable.
- When iatrogenic preterm birth required, consider administration of antenatal corticosteroids to promote fetal lung maturation and magnesium sulfate for fetal neuroprotection,
- Urgent intervention for birth should not be delayed for their administration.

Postnatal care during COVID-19 pandemic

Postnatal care

Maternal

- Thromboprophylaxis for duration of their admission and for at least 10 days after discharge.
- Consideration should be given to extending this until 6 weeks postpartum for women with significant ongoing morbidity.

Postnatal care

Mother- infant dyad

- Breastfeeding should be recommended to all women in line with usual guidance.
- Individualised support, advice and guidance on breastfeeding should be offered to all women who wish to breastfeed.
- Women and their families should be informed that infection with COVID-19 is not a contraindication to breastfeeding.

.

- Women and their families should be supported to make a fully informed choice on how to feed their baby.

- The risks and benefits of feeding the baby in close proximity to individuals with suspected or confirmed COVID-19 should be discussed.

- When a woman is not well enough to care for her own infant or where direct breastfeeding is not possible, the woman should be supported to express her breastmilk by hand or using a breast pump, and/or offer access to donor breast milk.

.

- Any decision of whether to keep infant together or separate after birth with known or suspected SARS-CoV-2 mother should include a process of shared decision- making with the patient, their family and clinical team.
- For mothers with suspected or confirmed COVID-19, rooming-in should be combined with safety measures to minimise the risk of transmission.
- Consideration for counselling women, considering temporary separation include:
    - Mothers with suspected or confirm SARS-CoV-2 infection do not pose a potential risk of virus transmission to their neonates if they have met the criteria for discontinuing isolation and precautions:
        - At least 10 days have passed since the onset of symptoms, and
        - At least 24 hours have passed since their fever without th euse of antipyretics, and
        - Other symptom have improved.

Salient features

- Vertical transmission: The evidence for vertical transmission of SARS-CoV-2 is not well established .
- Vaginal secretions: No evidence of SARS-CoV-2 tested positive.
- Breast milk: No evidence of SARS-CoV-2 detection.
- Key point in management to identify the first day of onset of symptoms.
- The most infectious period is from 1 day prior to the onset of illness to 4 days after the onset of primary symptom.

- All pregnant women should follow COVID norms of mask, social distancing, and sanitisation.
- Routine antenatal care should be given.
- Each facility should have appropriate space and staffing
- Health care practitioners should promptly notify infection control personnel in their facility of the anticipated arrival of a pregnant women with confirmed SARS-CoV-2 infection or a suspect, so that infection control measures can be kept place.
- Safe intrapartum services with ability to provide emergency obstetric, anaesthetic and neonatal services with minimum staffing.

- Initial management in high risk pregnant women group results in good prognosis.
- In severe cases timely termination of pregnancy for medical indication results in better outcome.
- Covid-19 increases the risk of perinatal anxiety, depression as well as domestic violence and should be addressed efficiently.

COVID-19 Vaccination During Pregnancy and Lactation

- Pregnant women have a higher risk of severe illness from COVID-19 than non pregnant women.
- Growing amount of data confirms that covid-19 vaccines are safe during during pregnancy.
- The vaccines are very effective at preventing COVID-19 infection, severe illness and death.
- All pregnant women to be vaccinated against COVID-19, on their wish, if no contraindications present.
- Breastfeeding women can get covid-19 vaccine.
- There is no need to stop breastfeeding while getting the vaccine.

- Based on the recommendations from NTAGI, MoHFW has approved vaccination of pregnant women against COVID-19 with condition that the pregnant women may be informed about the risks of exposure to COVID-19 infection along with risks and benefits associated with the COVID-19 vaccines available in the country.

- WHO also recommends vaccination in pregnant women when benefits outweigh potential risks, such as pregnant women at high risk of exposure to COVID-19 and pregnant women with comorbidities that place them in high risk for severe COVID-19 disease.

- Pregnant women who has been infected with COVID-19 infection during the current pregnancy, should be vaccinated soon after delivery.

- There are three vaccines available:
  - Vector vaccine - Covishield
  - Killed vaccine - Covaxin
  - Vector vaccine - Sputnik
- Adverse Events Following Vaccination
  - Full impact of COVID-19 disease on pregnancy outcomes is still unclear. Therefore pregnant women require special considerations and systematic reporting of AEFI.

Contraindications to Covid-19 vaccination

- Anaphylactic or allergic reaction to previous dose of COVID-19 vaccine
- Anaphylactic or allergic reaction to various pharmaceutical products, food items etc.
- Vaccine is temporary contraindicated in the following conditions:
  - Diagnosis of COVID -19 infection — defer for 12 weeks from infection or 4-8 weeks from recovery.
  - Active COVID infection.
  - COVID-19 infection treated with anti-COVID-19 monoclonal antibodies or convalescent plasma.

Thank you