COVID-19: PREGNANCY SPECIFIC MANAGEMENT AND MATERNAL HEALTH OUTCOMES

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COVID-19 MATERNAL HEALTH OUTCOMES
▪ 9 pregnant women with COVID-19 pneumonia

▪ All patients had a cesarean section in their third trimester and fetal distress was monitored in two cases

▪ None of the patients developed severe COVID-19 pneumonia

▪ 9 livebirths were recorded. No neonatal asphyxia was observed

▪ The first evidence that clinical features of COVID-19 in full-term pregnant women were similar to those of non-pregnant adult patients with COVID-19 and outcomes were good following intensive active management of the disease

CORONAVIRUS SPECTRUM INFECTIONS AND PREGNANCY OUTCOMES: META ANALYSIS

**Table 4.** Pooled proportions of the different pregnancy outcomes in the overall population of pregnancies infected with Coronavirus infection.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Studies (n)</th>
<th>Pregnancies (n/N)</th>
<th>I² (%)</th>
<th>Pooled proportions (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTB &lt;37 weeks</td>
<td>16</td>
<td>14/56</td>
<td>25.5</td>
<td>24.30 (12.5-38.6)</td>
</tr>
<tr>
<td>PTB &lt;34 weeks</td>
<td>16</td>
<td>11/56</td>
<td>1.9</td>
<td>21.79 (12.5-32.9)</td>
</tr>
<tr>
<td>PE</td>
<td>6</td>
<td>2/19</td>
<td>0</td>
<td>16.21 (4.2-34.1)</td>
</tr>
<tr>
<td>PPROM</td>
<td>8</td>
<td>6/34</td>
<td>0</td>
<td>20.72 (9.5-34.9)</td>
</tr>
<tr>
<td>FGR</td>
<td>10</td>
<td>2/29</td>
<td>0</td>
<td>11.66 (3.2-24.4)</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>2</td>
<td>8/21</td>
<td>0</td>
<td>39.08 (20.2-59.8)</td>
</tr>
<tr>
<td>Cesarean delivery</td>
<td>17</td>
<td>50/58</td>
<td>4</td>
<td>83.91 (73.8-91.9)</td>
</tr>
</tbody>
</table>

For combination of SARS, MERS, and COVID-19

CORONAVIRUS SPECTRUM INFECTIONS AND PREGNANCY OUTCOMES: META ANALYSIS

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<th>Pooled % (95% CI)</th>
<th>I² (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTB &lt;37 weeks</td>
<td>6</td>
<td>14/32</td>
<td>41.11 (25.6-57.6)</td>
<td>0</td>
</tr>
<tr>
<td>PTB &lt;34 weeks</td>
<td>6</td>
<td>4/32</td>
<td>15.03 (3.9-31.7)</td>
<td>22.6</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>3</td>
<td>1/12</td>
<td>13.55 (1.2-36.0)</td>
<td>0</td>
</tr>
<tr>
<td>PPROM</td>
<td>5</td>
<td>5/31</td>
<td>18.78 (8.0-33.5)</td>
<td>0</td>
</tr>
<tr>
<td>FGR</td>
<td>3</td>
<td>0/12</td>
<td>0 (0-21.4)</td>
<td>0</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cesarean delivery</td>
<td>6</td>
<td>38/41</td>
<td>91.04 (81.0-97.6)</td>
<td>0</td>
</tr>
</tbody>
</table>

18 articles reporting data from 108 pregnancies between Dec 8, 2019 and Apr 1, 2020 were included

3 maternal ICU admissions but no maternal deaths

91% were delivered by CS

1 neonatal death and 1 IUFD

Conclusions: Although the majority of mothers were discharged without any major complications, severe maternal morbidity as a result of COVID-19 and perinatal deaths were reported.
Case series of 43 COVID pos. pregnant patients
- 85% mild disease
- 10% moderate disease
- 5% severe disease

30% of patients who were COVID pos. were asymptomatic initially

COVID-19 AND PREGNANCY

- 18 patients delivered
  - ~45% delivered by CS for obstetric indications
  - 10 women (55%) had uncomplicated VD
  - 0 cases of neonatal transmission
    - Tested negative for COVID by viral PCR testing
    - No antibody testing performed

OUTPATIENT CARE

CHANGES TO ROUTINE PRENATAL CARE
Focus on Telehealth visit and use of home blood pressure monitoring to limit need for in person visits

Formal ultrasounds reduced to limit patient/HCW exposures

**SPACING OUT APPOINTMENTS**

- 12wk: Bedside u/s NIPT
- 20wk: Anatomy u/s
- 28wk: Vaccines Labs
- 36wk: GBS/HIV
- Growth ultrasound q4-8 weeks prn

- Telehealth: OB intake
- Telehealth: Q1-4 weeks as indicated
Triaging for respiratory symptoms and exposure

If any answer is positive, postpone the appointment, offer home quarantine and performing testing for COVID-19
ANTENATAL SURVEILLANCE

First trimester ultrasound
• Formal ultrasound for concerns for nonviability, high risk for anomaly, or multiple gestation

Anatomy ultrasound
• Will continue anatomy ultrasound and universal cervical length screening
• Follow up views at time of planned growth if possible

CL screening
• Serial repeat screening reserved for highest risk patients
ANTENATAL SURVEILLANCE

Growth ultrasounds

No growth ultrasound prior to 28 weeks with rare exceptions
Serial growth Q 6-8 weeks for lower risk patients
One time growth for lower risk patients

NSTs

Twice weekly NSTs limited to IUGR with abnormal dopplers
BPP in place of NST if ultrasound is already planned
Kick counts instead of NST for lower risk patients (i.e. AMA, BMI>40, no other comorbidities)
Counsel patients on risks/benefits of in person office surveillance
Medications

- Recommend use of expectorants for respiratory symptoms, acetaminophen as an antipyretic
- For patients with a history of asthma ensure they currently have an Salbutamol inhaler as well their controller medications, which should be continued
- Currently we do NOT recommend outpatient use of hydroxychloroquine

Daily call to check in on symptoms
WHEN TO COME IN

- Symptoms warranting follow-up
  - Inability to tolerate oral intake
  - New or progressive shortness of breath
  - Difficulty breathing
  - Chest pain or palpitations
  - Decreased fetal movement (>24 weeks)
GENERAL CHANGES IN PRACTICE MANAGEMENT FOR ALL PATIENTS

LABOR AND DELIVERY
In setting of a pandemic, without universal testing, certain changes need to be implemented in order to:

- Accommodate increased volume of patients seeking care
- Provide adequate staff protection against acquiring disease
- Provide adequate patient protection from acquiring disease
- Limit disease related morbidity
**Problem:** Many patients may be asymptomatic carriers of COVID-19 and still shed virus

**Solution:**

- Only one support person allowed
- Patient and support person should wear masks at all times on L&D

**VISITOR POLICY**
PPE GUIDELINES

COVID-19 infection is highly contagious, and this must be taken into consideration when planning intrapartum care

- All medical staff caring for potential or confirmed COVID-19 patients should use appropriate personal protective equipment (PPE)
- All medical staff should be trained in and adhere to proper donning and doffing of PPE
PPE GUIDELINES

- Respirator or Facemask
  - Put on a respirator or facemask (if a respirator is not available) before entry into the patient room or care area

- Eye Protection
  - Goggles or a disposable face shield that covers the front and sides of the face
  - Personal eyeglasses and contact lenses are NOT considered adequate eye protection

- Non-sterile Gloves

- Disposable fluid-resistant Gown
PPE GUIDELINES – VAGINAL BIRTH

- Surgical Mask or Respirator
  - Put on a fluid-resistant surgical mask or respirator
- Eye Protection
  - Goggles or a disposable face shield that covers the front and sides of the face
- Gloves
- Disposable fluid-resistant Gown
Patients

- A person with suspected or confirmed COVID-19 would normally be instructed to wear a facemask
- But, active pushing while wearing a surgical mask may be difficult
- And forceful exhalation may significantly reduce the effectiveness of a mask in preventing the spread of the virus by respiratory droplets
PPE GUIDELINES — CESAREAN DELIVERY

- Cesarean Delivery
  - The level of PPE should be determined based on the risk of requiring general anesthesia
  - If CS with GA is planned from the outset, all staff in theatre should wear full PPE, including a filtering face piece mask (N95 respirator) or PAPR
  - For a non-urgent CS where regional anesthesia is planned, all staff not needed should stay outside theatre until the block is effective. Then they should don PPE with a fluid-resistant surgical mask (FRSM) and eye protection
Remember the goal is **RISK REDUCTION**

| No amount of PPE is 100% protective | Use your judgment | Feel empowered to protect yourself |

Be conscious of resource utilization

Preserve N95 by covering with a surgical mask

**PPE GUIDELINES**
LABOR AND DELIVERY

MANAGEMENT OF THE COVID POS PATIENT IN LABOR
Timing of delivery, in most cases, should not be dictated by maternal COVID-19 infection.

Indications for early delivery depend upon: the mother's clinical status, GA, and fetal well-being.

For suspected or confirmed COVID-19 cases early in pregnancy who recover, no alteration to the usual timing of delivery is indicated.

For suspected or confirmed COVID-19 cases in 3rd trimester who recover, attempt to postpone delivery to avoid transmission to the neonate.
Take into consideration maternal medical status in addition to routine obstetric indications.

Stress of CS vs Stress/time of induction/laboring.

Consider assisted second stage.

Currently do not universally recommend CS for COVID pos patients.
Multidisciplinary care with MFM, ID/pulmonary as indicated

Limit total fluids to 75 mL/hour

No documented vertical transmission, but data limited

Use fetal scalp electrode as clinically indicated
**Indomethacin**
Use nifedipine as an alternative if available, otherwise use as indicated

**Betamethasone**
Balance risks on maternal disease process, potential for neonatal benefit, and likelihood of delivery within 7 days
Do not use for 34-36 weeks

**Magnesium Sulfate**
Use as clinically indicated, consider continuous pulse ox, maintain high concern for pulmonary edema especially if patient already preeclamptic
Adjust dosing for renal dysfunction as needed

**NSAIDs**
WHO and FDA currently not recommending restriction of NSAIDs
Do NOT need to substitute narcotics to avoid NSAID use
Low-dose aspirin should continue to be offered to pregnant women as medically indicated
ANESTHESIA CONSIDERATIONS

1. Encourage early epidural to reduce need for general anesthesia in setting of CS

2. COVID pos diagnosis is not a contraindication to regional anesthesia

3. Nitrous oxide should not be used because it might cause aerosolization of respiratory secretions
Negative Pressure Operating Theatre

Everyone should wear enhanced respiratory precautions

Limit use of bovie cautery due to potential for aerosolization

Only anesthesia needs PAPR for intubation; Patient needs to remain in OR for 30 minutes after extubation
INPATIENT MANAGEMENT

- **Supportive care**
  - Maintain O2 sat >95%
  - Conservative fluid administration

- **Diagnostics**
  - Chest imaging, especially CT scan versus CXR
  - Consider maternal echocardiography, especially if critically ill
  - CBC, LFTs, Platelets, Cr
  - D-dimer, CRP, fibrinogen do not change pregnancy specific management

- **Treatment**
  - Mucinex, albuterol inhaler PRN
  - Consider HCQ or antiviral Rx
  - Consider Rx for community acquired pneumonia
**POST PARTUM MANAGEMENT**

**Problem:** Being in the hospital with daily contact with healthcare workers increases risk of patients/HCW transmission

**Solution:** Expedited discharge whenever possible (PPD#1 for VD, POD#2 for CS)
- Need to discuss with pediatrician when baby able to be discharged
SAFETY IS A TEAM EFFORT!

- **READ** updated guidelines and protocols

- **PRACTICE** for different scenarios so you know what tools you need, where they are, and how to get them

- **EXECUTE** your continued amazing clinical care every day!
Enroll ANY pregnant or recently pregnant patient with known or suspected COVID-19

To provide a repository for data on COVID19 in pregnancy
Who global COVID 19 anonymised Clinical Data Platform:
▪ Funding to support this data collection is available from the Regional WHO Office
▪ Reports details of suspected or confirmed COVID 19 cases admitted to hospital facility
▪ Collects details of individual cases to permit increased knowledge of the natural history of the disease.
▪ Do health care facilities use a registry?
▪ Is NOT a research database, therefore no follow up.

Covi-Preg (Europe)
▪ Anyone can enter data on an open-access database
▪ Intended as a data-sharing tool so that everyone can enter and abstract data from a tool.

Pan- Covid (Imperial College London and Medical Research Council, London)
International Data Base with retrospective submission data by centres and clinicians.
▪ Suspected or confirmed COVID-19 at any stage in the pregnancy
▪ Data to include early pregnancy through to the postnatal period
▪ Principal research objectives are to study in-depth:
  - miscarriage
  - fetal growth restriction
  - stillbirth
  - preterm delivery
  - transmission of the virus from mother to baby

Priority study
Priority (pregnancy CoRonavirus Outcomes RegisTry) is a nationwide study of pregnant or recently pregnant women who are either under investigation for Coronavirus infection (COVID-19) or have been confirmed to have COVID-19. This study is being done to help patients and doctors better understand how COVID-19 impacts pregnant women and their newborns.

Knowledge is power!
▪ Enroll ANY pregnant or recently pregnant patient with known or suspected COVID-19
▪ To provide a repository for data on COVID19 in pregnancy
Many individuals and organizations have continued to provide regular updates in care guidelines and practice management in this setting

- SMFM has recorded lectures relating to COVID/pregnancy management, critical care management, and billing in setting of COVID/Telehealth (https://www.smfm.org/covid19)


- FIGO has published a statement and many resources https://www.figo.org/covid-19-resources-english