

## Review Article

# Facility preparedness for an obstetric unit during the Covid-19 pandemic

K. APARNA SHARMA, VATSLA DADHWAL, ANUBHUTI RANA, SEEMA SINGHAL, SUNESH KUMAR, NEERJA BHATLA

### ABSTRACT

Covid-19 infection has placed health systems under unprecedented strain and foresight for preparedness is the key factor to avert disaster. Every facility that provides obstetric service needs a certain level of preparedness to be able to handle at least Covid-suspect pregnant women awaiting test reports, who need to be managed as Covid-positive patients till reports are available. Thus, these facilities need to have triage areas and Covid-suspect labour rooms. Healthcare facilities can have designated areas for Covid-positive patients or have referral linkages with designated Covid-positive hospitals. Preparation includes structural reorganization with setting up a Covid-suspect and Covid-positive facility in adequate space, as well as extensive training of staff about infection control practices and rational use of personal protective equipment (PPE). A systematic approach involving five essential steps of making standard operating procedures, infrastructural reorganization for a triage area and a Covid-suspect labour ward, procurement of PPE, managing the personnel and instituting appropriate infection control practices can ensure uninterrupted services to patients without compromising the safety of healthcare providers.

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### INTRODUCTION

Covid-19 infection caused by the novel coronavirus (SARS-CoV-2) is one of the major public health emergencies of our times. It was declared a pandemic by the WHO on 11 March 2020.<sup>1</sup> This pandemic has resulted in major stress on healthcare services as health workers struggle to cope with this unique threat. There are limited data on the impact of Covid-19 infection on pregnancy, yet it is the need of the hour to be prepared to face this crisis.<sup>2,3</sup> The key approaches to interrupt the spread are containment measures and considerable restructuring of infrastructure.<sup>4</sup> Various national and international organizations

have formulated guidelines,<sup>5,6</sup> but in reality, the reorganization of workforce and existing infrastructure to establish a functional obstetric unit for a pregnant woman with suspected or confirmed Covid-19 infection can be challenging, especially in low- and middle-income countries. We describe our experience of making our maternity unit Covid-ready, which can be useful for healthcare facilities at all levels to be prepared to provide essential maternity services by taking a stepwise approach to reorganization.

### SETTING UP A COVID-19 TASK FORCE

The essential step at the commencement of this major assignment was to set up a task force within the healthcare facility, which met regularly to understand the resources needed, find solutions to various challenges and resolve crises by shared decision-making.

### FORMULATION OF STANDARD OPERATING PROCEDURE

Although guidelines for the management of pregnancy and labour in women with confirmed or suspected Covid-19 infection have been issued by various academic societies, every facility should have written protocols and standard operating procedures (SOPs) outlining the definitions, patient flow, area management and human resource management as applicable to their set-up and resources. For our facility, the protocol was jointly developed by a team from the Departments of Obstetrics and Gynaecology, Neonatology and Anaesthesia who reviewed the available literature and guidelines<sup>7–18</sup> and determined their applicability to local conditions. The SOPs for pregnant women who fall into Covid-19-positive or Covid-19-suspect categories were explained/detailed as flowcharts (Figs 1 and 2). The SOP was revised from time to time to incorporate updated evidence and rapidly changing guidelines and also to respond to the needs of the system.

### REORGANIZATION OF THE INFRASTRUCTURE

A triage area was set up to streamline the flow of incoming patients to the obstetrics and gynaecology block. This prevented an accidental entry of a Covid-suspect or Covid-positive patient and enabled optimum patient care.

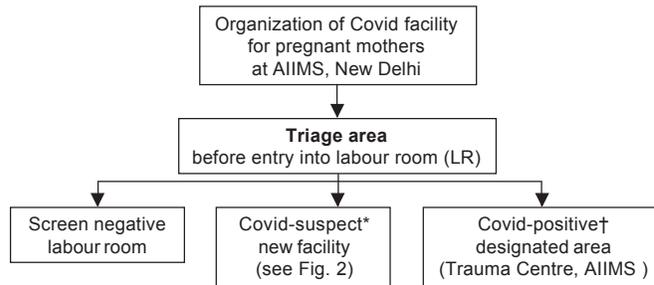
Patients with Covid-19-related symptoms or a possibility of Covid infection (Covid-suspects) cannot be kept in the same ward as Covid-positive patients because several of the former may turn out to be negative and may actually acquire an

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**A: Overview of triage at patient entry****\* Covid-suspect if screen positive according to the following criteria:**

- A patient with acute respiratory illness (fever and at least one sign/symptom of respiratory disease (e.g. cough, shortness of breath) AND with no other aetiology that fully explains the clinical presentation AND a history of travel to or residence in a country/area or territory reporting local transmission of Covid-19 infection during the 14 days prior to onset of symptoms

OR

- A patient with any acute respiratory illness AND who has been in contact with a confirmed or probable Covid-19 case in the 14 days prior to onset of symptoms

OR

- A patient with severe acute respiratory infection (fever and at least one sign/symptom of respiratory disease (e.g. cough, shortness of breath) AND requiring hospitalization AND with no other aetiology that fully explains the clinical presentations

OR

- Any patient coming from a hotspot requiring admission to LR even if currently asymptomatic requires Covid testing

**Please note:** Being a novel infection, guidelines on Covid-19 may keep changing with new evidence coming each day. Readers are advised to keep themselves updated and refer to the latest guidelines of the Indian Council of Medical Research (ICMR)/Ministry of Health and Family Welfare (MOHFW), India.

† Covid-positive confirmed on laboratory tests

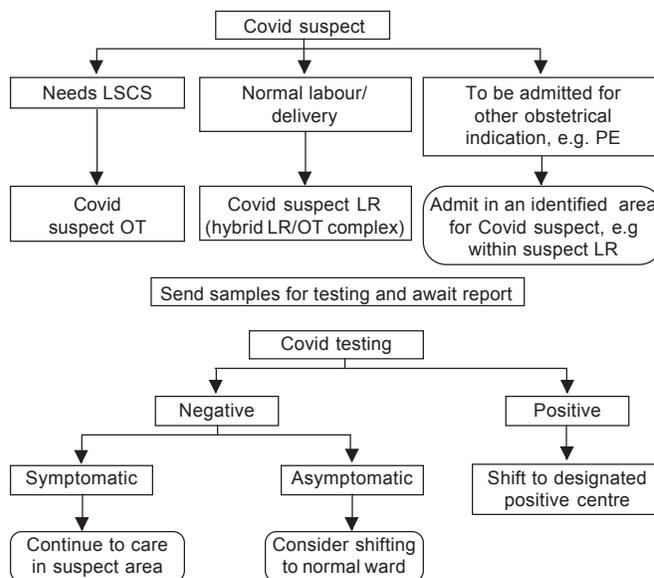
**B: Patient flow algorithm for pregnant women with suspected Covid-19 infection**

FIG 1. Organization of mother and child services during the Covid pandemic LSCS lower segment caesarean section OT operation theatre PE pre-eclampsia

infection by exposure to positive patients in the same ward. Thus, the next step was to identify separate areas for each of these groups: positive, negative and suspect pregnant patients and to achieve a closed circuit for all Covid-positive patients.

Ideally, Covid-positive and Covid-suspect patients are to be accommodated in designated airborne infection isolation (AII)

rooms in hospitals to control the spread of the disease. However, healthcare facilities may not have an adequate number of AII rooms to accommodate all such patients.

In normal practice, most of these patient rooms are served by a heating, ventilating and air-conditioning (HVAC) system of a recirculatory type, wherein the air from the room is taken back to the air-handling unit for thermal conditioning and brought back.<sup>19</sup> The same HVAC system is often connected to a few other areas of the hospital. If a patient is admitted to such a room, there is a risk of transmission to other patients and healthcare providers (HCPs).

Creating AII rooms for Covid-positive and Covid-suspect patients requires blocking air vents, converting it to a non-circulatory system and also treating exhaust air by high-efficiency particulate air filter of a minimum of H13 (EN1822-1) filter class or equivalent. In resource-limited settings, it might not be possible to convert the existing wards. In such a situation, it should be ensured that the space should have good ventilation and, if possible, a stand-alone air-conditioning system. There should be 12 air changes/hour and filtering of exhaust air. Negative pressure in isolation rooms is desirable for patients requiring aerosolization procedures (intubation, suction and nebulization).

Keeping these principles in mind, three areas were designated at our facility: triage, Covid-suspect labour room (LR) and operation theatre (OT) complex and the Covid-positive area.

*Setting up a triage area for obstetrics and gynaecology block*

All pregnant women (whether booked cases or otherwise) are now screened at their initial point of entry into the hospital for symptoms suggestive of Covid-19, history of contact with positive cases or residence in a containment zone. Appropriate infographics are displayed for reinforcement of messages, and security personnel have been instructed to direct the patients accordingly. The screening area selected for setting up a triage area is a well-ventilated spacious area at the common entry point for all patients. Screening teams comprising residents, nurses, interns and social workers run the service round the clock, following the guidelines for the use of personal protective equipment (PPE) for triage areas.<sup>11</sup> The teams are trained to administer a simple questionnaire to screen all pregnant women upon arrival to a healthcare facility (Table I), thus determining the need for testing and directing each to the proper place of admission.

*Setting up a Covid-suspect labour room*

The Covid-suspect LR, like a Covid-positive LR, should be located away from the main labour area with separate air-conditioning, adequate space, an appropriate route for patient/doctor entry, space for donning and doffing and a functional OT.

Such an identified area, even if only 1–2-bedded depending on the size of the facility, needs to be made functional with inputs from colleagues from neonatology, anaesthesiology, hospital administration as well as nursing staff.

In our facility, such an area was identified in a presently non-functional outpatient department block on the same floor, where a unidirectional movement of healthcare personnel from donning area to LR and OT area/recovery room/nursery, to the doffing, wash and shower area and finally to the exit was made possible by meticulous planning with the assistance of colleagues from the hospital infection control committee (HICC), microbiology and hospital administration (Fig. 3).



### Step 3: Management of labour in pregnant women suspected with Covid-19 infection (without severe symptoms)

#### Maternal surveillance:

- **Temperature, heart rate, respiratory rate, blood pressure** (3–4 times/day) and SpO<sub>2</sub>
- **Chest imaging** (high resolution CT-scan or X-ray)
  - Only if indicated
  - With abdominal shield
  - After informed consent
- Consider **oxygen therapy** to keep O<sub>2</sub> saturation >95%
- Encourage **oral hydration; limit i.v. fluid**
- **Antipyretic therapy**
- **Screen** for other viral infections and/or superimposed bacterial infections
- Consider empirical i.v./oral antibiotics/antimalarial/antiviral treatment
- **Respectful maternity care at all times**
- **Monitor progress of labour**

#### Foetal surveillance:

- **Foetal heart rate monitoring:**
  - Dependent on gestational age and maternal condition
  - Avoid examination with a stethoscope
- **Continuous cardiotocographic monitoring in labour**
- **Antenatal corticosteroids:** Use with caution after a multi-disciplinary decision
- **Tocolysis for preterm labour:** Mostly avoided

#### Check Covid-19 test results

##### Negative

Shift to clean LR  
Consider repeat testing if patient becomes symptomatic

##### Report awaited

(Treat as positive till report available)  
(Do not delay obstetric care)

##### Positive

Go to Step 4

#### Vaginal delivery

- **In same Covid suspect area (LR and OT complex)**
- Analgesia as per routine care
- May require **assisted second stage via instrumental delivery** if respiratory status limits pushing efforts

#### Caesarean delivery

- **Shift patient to designated Covid suspect OT**
- Performed only for standard indications
- Use operating room with negative pressure, if possible
- Anaesthesia as per routine care

Shift patient to recovery room and then to respective ward based on report of the test

### Step 4: Management of labour in pregnant women with confirmed Covid infection

#### No preference of one mode of delivery above other

##### Indications for caesarean delivery:

- Woman's respiratory status demands urgent delivery
- Any obstetric indication for urgent delivery
- Septic shock
- Multi-organ failure

##### Timing of delivery not indicated by Covid-19 infection except in critically ill patients

Continue maternal and foetal surveillance as in Step 3 for patients with suspected Covid-19

#### Vaginal delivery

Conduct in same room of Covid-suspect area (LR/OTcomplex) to avoid cross-infection

**Strength:** There is OT facility within LR in case an emergency arises  
**Ideal:** In an isolation room with negative pressure

#### Caesarean delivery: if indicated

**Shift the patient to designated Covid-positive maternity OT**  
Transport patient in compliance with shifting protocols for Covid-positive patients

#### Multidisciplinary team

##### Hospitalization in designated ward or ICU for Covid suspects (case to case basis):

Assess the need for ICU using the **Quick Sequential Organ Failure Assessment Tool (SOFA):** 2 out of 3

- Systolic BP <100 mmHg
- Respiratory rate >22/minute
- Altered level of consciousness

#### Admit in ICU

Yes

#### Stabilize the woman

##### Delivery:

- **Caesarean section: if indicated as above**

No

#### Continue intensive clinical maternal and foetal monitoring

##### Assess for signs of labour

Intrapartum care same as in Step 4

**Note:** Confirmed Covid-19-infected pregnant patients who require ICU should be admitted or transported to a designated Covid facility (Trauma centre, AIIMS, New Delhi)

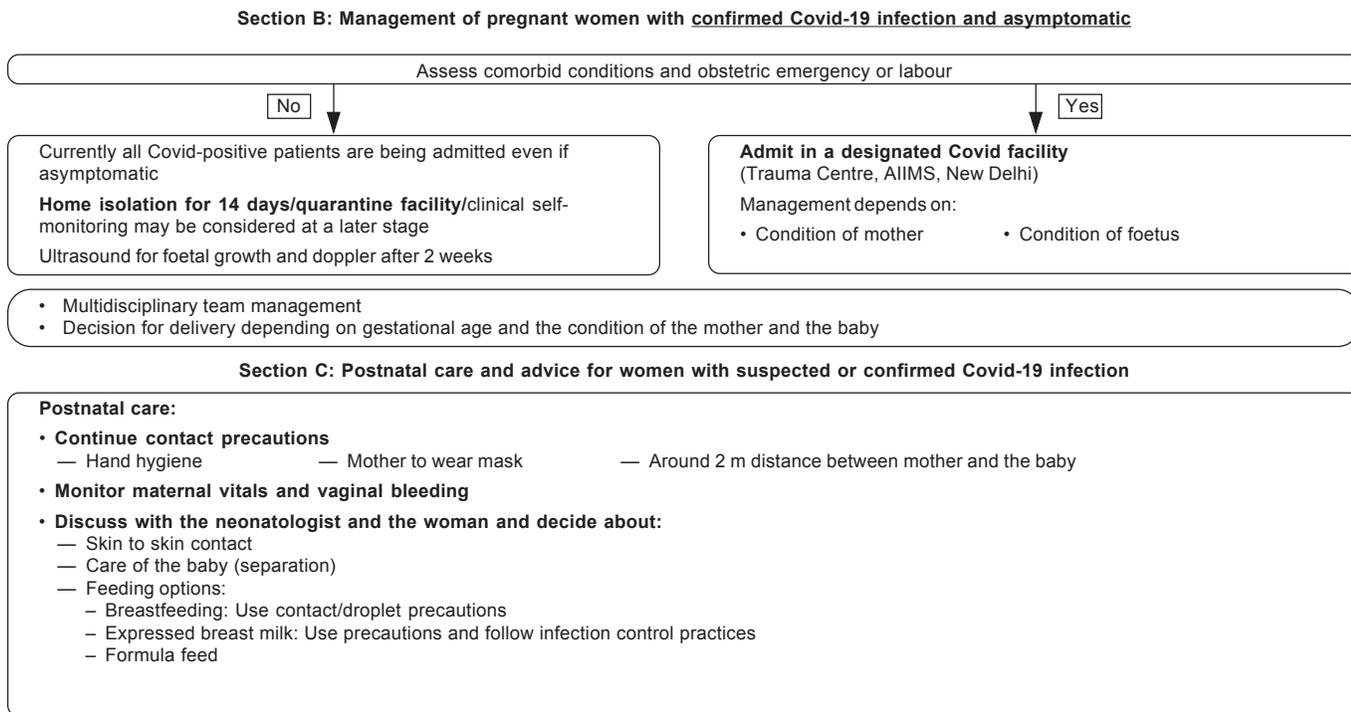


FIG 2. Standard operating procedure for pregnant women with suspected/confirmed Covid-19 infection OT operation theatre PPE personal protective equipment ICU intensive care unit LR labour room

TABLE I. Screening form for pregnant women upon arrival at healthcare facility

Patient details			
Name:		Age:	
Address:		Contact number:	
Unique hospital identification number: _____			
S.No.	Question	Yes	No
1	Does the patient have any symptoms of fever, cough, sneezing, sore throat, fatigue, myalgia?		
2	Does the patient have any difficulty in breathing?		
3	Has the patient travelled outside the country in the past 30 days? If yes, mention the countries		
4	Has the patient travelled inside India to other cities in the past 15 days? If yes, mention the cities		
5	Does the patient have any exposure to a confirmed Covid-19 case or suspect patient in the past 2 weeks?		
6	Has the patient visited a healthcare facility in the past 2 weeks?		
7	Is the patient from a hot spot?		
Information collected by			
Signature: _____		Name: _____	
Designation: _____		Contact number: _____	

In the LR area, a corner was demarcated for the initial evaluation of suspect pregnant patients. This area had adequate space for physical examination, along with ultrasound and cardiocography machines to enable complete evaluation.

Despite the presence of well-demarcated areas for the suspect and positive pregnant women, there were certain instances when completely asymptomatic women on screening, turned positive on being tested for symptoms such as fever. In such situations, the patient was shifted to the designated positive area. The HICC protocol for inadvertent exposure was followed

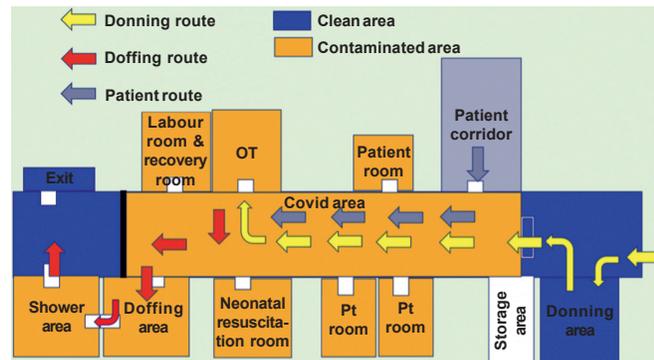


FIG 3. Set-up of Covid-suspect labour room/operation theatre complex

for both HCPs and patients. All were triaged as low or high risk on a standardized contact tracing proforma based on their duration of exposure, level of PPE and distance between the source and the contact. The high-risk contacts were quarantined and tested, while low-risk contacts were asked to follow standard safety measures. The patients were cohorted in the same cubicle, and depending on their risk, they were tested. Terminal cleaning was done after shifting the Covid-positive woman to the designated positive area.

Because of a routine practice of wearing N95 masks and face shields along with gowns and gloves in the labour and delivery areas at all times (Table II), the incidence of high-risk contacts and the subsequent period of quarantine was maintained at a low rate.

*Setting up a Covid-suspect/Covid-positive operation theatre*  
In secondary and tertiary referral centres, there is a need for a well-equipped Covid-suspect OT where patients can receive

adequate pre-, intra- and postoperative care. The set-up of the Covid-suspect OT has to be essentially the same as the Covid-positive OT. At our facility, an OT was set up in the Covid-suspect area described above as any labouring Covid-suspect patient could require an urgent caesarean section before the test results were available.

In addition to this OT, another OT was developed for positive patients in the Covid-positive facility. Subsequently, another Covid-suspect OT was made available for all disciplines, and this could be used for high-risk Covid-suspect cases with comorbid conditions, or in case, there was more than one patient at a time.

The design of the OTs was essentially similar. Separate workflow plans were prepared for the movement of staff and patients (Figs 4 and 5). Separate lifts and entry and exit points were designated for patients and staff. An area for donning of PPE and a separate area for doffing were created, with the provision of shower and geysers in all changing rooms. Within the OT premises, a separate area was earmarked as the postoperative care area. Provision of an incubator and warmer for the baby was made.

#### Personal protective equipment (PPE)

The most important component of managing any Covid facility is the protection of its HCPs for which adequate PPE should be arranged. Along with the availability, rational use of PPE needs to be ensured. Table II shows the use of PPE in various Covid and non-Covid areas in our facility as recommended by the HICC.<sup>20</sup>

#### PERSONNEL MANAGEMENT

Appropriate deployment of HCPs is the cornerstone of running a facility during a pandemic. Various components of personnel management include staggered staffing rosters, continuous training endeavours and regular check on the physical and mental health of the staff to reduce stress levels and maintain their motivational levels.

#### Staff roster

A detailed staff roster needs to be made to allocate staff into Covid and non-Covid duties, recognizing that there is a possibility of exposure necessitating isolation and quarantine. Moreover, about a quarter of residents are seconded to general Covid duties. Despite the suspension of routine surgeries and

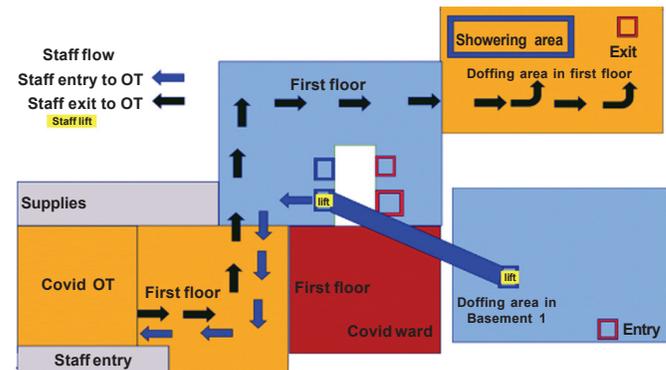


FIG 4. Staff flow at Covid-positive operation theatre

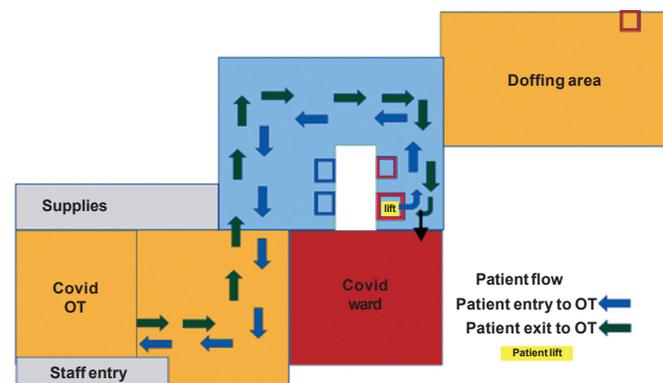


FIG 5. Patients flow at Covid-positive operation theatre

TABLE II. Contents of various levels of personal protective equipment (PPE) kits and their rational use in an obstetric unit

Level	Type of PPE kit	Contents of kit
1	Only gown-based PPE kit	Gown + N95 mask (if available) + goggles + gloves
2	Coverall-based PPE kits (material of coverall is the same as of gown used in level 1)	Coverall + N95 mask + goggles + long shoe cover + gloves
3	Coverall-based PPE kits (recyclable material used for coverall)	Coverall + N95 mask + goggles + long shoe cover + gloves

Note: Rational use of PPE in the screening and triage area in an obstetric unit: Healthcare providers to wear level 1

PPE kit

#### Rational use of PPE in case of pregnant woman in non-Covid labour room

Labour and delivery: Healthcare providers to wear level 2 kits and use face shields. For procedures that require aseptic precautions, sterile gown and sterile gloves should be used in addition

Caesarean section: Healthcare providers to wear level 2 kit plus sterile impervious gowns plus long boots with impervious shoe covers and waterproof apron/mackintosh along with face shields

#### Rational use of PPE in case of pregnant woman with suspected or confirmed Covid-19 infection

Labour and delivery: Healthcare providers to wear level 3 kits and use face shields. For procedures that require aseptic precautions, sterile gown and sterile gloves should be used in addition

Caesarean section: Healthcare providers to wear level 3 kit plus sterile impervious gowns plus long boots with impervious shoe covers and waterproof apron/mackintosh along with face shields

\* During labour and delivery, healthcare personnel are in close contact with patients, who are exerting extreme effort during labour and frequently blow out their breath, cough, shout and vomit. All of these potentially put the healthcare team at risk, considering that Covid-19 transmission from patients may occur during the above-mentioned activities.

outpatient clinics, the labour ward is an area which continues to run for 24 hours. For our facility, the departmental roster was made in such a way that the weekly cover for Covid duties is provided by the obstetric units in rotation, while non-Covid duties are provided by separate teams that work in weekly batches. Dedicated teams are posted in triage and suspect LR/OT areas so that there is no ambiguity between the first responders and the follow-up teams during this time. The aim is to ensure intensive work by residents for a week, followed by an off-duty week of clinical duties when they can provide teleconsultation services and remain on standby if needed. This ensures that in the event of a team being quarantined, services will continue uninterrupted.

#### Staff training

Training of staff needs to be done continuously and also differentially based on the training needs of each category of HCPs. All HCPs need to be trained on the proper use of PPE. Residents should be updated regularly about the SOP for the management of Covid-suspect and Covid-positive patients, while the staff nurses and the sanitation staff need training in infection control and waste disposal practices. A protocol should be made available for training and periodic reinforcement as per the guidelines of the HICC as was done in our facility (Tables III–V).<sup>20</sup> At our facility, the training of residents, staff nurses and technicians was also conducted on an online platform with specifically designed modules for each staff cadre. In addition, there are continuous onsite training programmes, especially for sanitation and security staff who do not have access to online modules. Posters are displayed at prominent locations to reinforce key messages.

#### Stress management

In these unprecedented times, the anxiety and stress levels in HCPs can be high. It has been reported that non-medical healthcare personnel are at the highest risk for psychological distress during the Covid-19 outbreak.<sup>21</sup> Hence, a crucial aspect of leadership is to have open communication with all levels of HCPs. A communication group was created through various messaging applications to regularly address their concerns and provide solutions to the challenges commonly faced by them. Peer group support provides great help in these times. During instances of exposure, quarantine or any other adverse events, constant support is provided in terms of both medical help and psychological counselling. Their general morale is also kept high by constant motivation and appreciation by the consultant on rounds.

#### Infection prevention and control protocol

This is one of the most essential elements of a Covid facility. There is a need to perform multiple checks about infection prevention and control practices to assess the situation in the obstetric unit.<sup>20,22–25</sup> It includes correct area designation and marking for isolation of pregnant women as well as placing waste disposal bins at the correct place with proper labelling, correct disposal of the PPE after use and sanitization of reusable PPE and the terminal and environment cleaning of designated Covid areas.

The HICC protocol of our institute provided us with clear guidelines on each of the above components. The most important part, however, was the implementation of these practices in all the areas. For this, the administrative nursing staff were included

as stakeholders and given key responsibilities. This included protocols for accidental/inadvertent exposure of HCPs to a positive case with or without PPE and the individual and administrative measures to be taken thereafter (Table VI).<sup>20</sup>

#### Strategy for postnatal care

Care of the newborn and postnatal care is an important component, especially in the context of a mother with suspected

TABLE III. Environmental cleaning and surface disinfection of room while patient is admitted

<i>Prerequisites before commencing disinfection</i>
<ul style="list-style-type: none"> <li>• Close contaminated area</li> <li>• Wear appropriate personal protective equipment</li> <li>• Rinse buckets with hot water</li> <li>• Prepare disinfectants               <ul style="list-style-type: none"> <li>–1% sodium hypochlorite (freshly prepared for each use), contact time of about 10 minutes</li> <li>–70% alcohol: Isopropyl or ethyl alcohol for delicate instruments (thermometer, stethoscopes, blood pressure cuff)</li> </ul> </li> </ul>
<i>Method of applying disinfectants</i>
<ul style="list-style-type: none"> <li>• Use a damp cloth in a steady sweeping motion to apply disinfectants to surfaces</li> <li>• Caution: Do not use spray pack (uneven coverage, aerosol generation) and do not splash (prevent aerosol generation)</li> <li>• Remove curtains/fabrics/quilts for washing: hot-water laundry cycle with detergent or bleach in water at 70 °C for a minimum of 25 minutes</li> <li>• Mop floor and wipe down all accessible surfaces of floor, furniture, fittings, windows, all surfaces of bed and mattress with 1% hypochlorite</li> <li>• Wipe all high-touch surfaces with 1% hypochlorite or 70% alcohol</li> </ul>
<i>Protocol after disinfection</i>
<ul style="list-style-type: none"> <li>• Discard cloth/absorbent cleaning items (mop head, wiping cloths) into biohazard bags after cleaning and disinfecting each area. Use cable ties to fasten bags</li> <li>• Disinfect buckets by soaking in 1% hypochlorite solution</li> </ul>

TABLE IV. Terminal cleaning and surface disinfection of room

<i>Terminal disinfection after patient expires/is discharged/is shifted</i>
In addition to all the measures described previously in Table III, terminal cleaning is a 3-stage process
<ul style="list-style-type: none"> <li>• Cleaning with detergent/soap</li> <li>• Mopping with freshly prepared 1% sodium hypochlorite and keep the room closed for 45 minutes after this</li> <li>• Wipe all surfaces with clean duster once again</li> <li>• Fogging with H<sub>2</sub>O<sub>2</sub>-based disinfectant (20% solution in distilled water) with a minimum 30 minutes of contact using a mist fogger (if the room had only one patient)</li> </ul>

TABLE V. Biomedical waste management in designated Covid areas

<ul style="list-style-type: none"> <li>• Colour-coded bins/bags/containers—segregation of waste as per existing rules</li> <li>• Double-layered bags (using 2 bags)—adequate strength and prevent leakage and proper labelling as ‘Covid-19 waste’ should be done</li> <li>• Dedicated collection bin labelled as ‘Covid-19’—in separate temporary storage room</li> <li>• Bags/bins/trolleys labelled ‘Covid-19 waste’ for transporting waste from ward to disposal site</li> <li>• Record maintenance of waste generation/segregation/collection/disposal</li> </ul>
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TABLE VI. Policy for testing and quarantine following exposure

**Scenario 1: Healthcare worker (HCW) exposed to Covid-positive patient or Covid-positive HCW***With appropriate personal protective equipment (PPE)*

Observe for any symptoms and do testing if symptoms appear

No need for isolation/quarantine

Can continue to perform duty

*Without appropriate PPE*

Quarantine for 14 days

Test between days 5 and 14 or anytime when symptoms appear

*Breach in PPE*

Leave the patient care area when safe to do so

Properly remove and change the PPE

Immediately inform the nodal officer/head of the department

**Scenario 2: Patients cared for by a HCW who is later detected to be Covid-positive**

Cohort in the same ward/cubicle

Should be screened for respiratory symptoms and those who are symptomatic should be tested

Test other patients between days 5 and 14 of exposure or earlier, if symptoms appear, in consultation with infectious diseases team

Please note: Being a novel infection, guidelines on Covid-19 may keep changing with new evidence coming each day. Readers are advised to keep themselves updated.

or confirmed Covid-19 infection. In our facility, the SOP has a provision for discussion about the risks and benefits for rooming-in and skin-to-skin contact between the woman and the neonatologist to individualize care for the baby. There is no evidence that the virus can be secreted in breast milk and the well-recognized benefits of breastfeeding outweigh any potential risks of transmission of the virus through breast milk. Therefore, after counselling about the above concerns, all mothers are allowed to breastfeed their babies with adequate hand and respiratory hygiene. Moreover, social distancing is practised, and the number of visitors restricted. Babies born to mothers who have suspected or confirmed Covid infection at the time of birth are tested for SARS-CoV-2. At the time of planning discharge from the hospital, it is ensured that the test reports are negative for the mother and the baby and their condition is stable. Furthermore, danger signs and symptoms are explained to the mother at the time of discharge. The detailed clinical protocol for postnatal care is given in Fig. 2, section C.

**MANAGEMENT AT PRIMARY OR SECONDARY LEVEL**

We describe setting up obstetric healthcare facilities at a tertiary or even secondary level where facilities for delivery and caesarean section are available. For primary level facilities that provide basic obstetric healthcare, the SOP for triage and referral should be made with detailed protocols for screening, identification of suspects and further management, with referral linkages for transfer of suspect and positive patients. Once identified, a suspect can be referred to a designated centre. If, however, the patient is in advanced labour and cannot be transferred, the delivery needs to be conducted with all the precautions that are taken for a positive patient.

A place for triage and isolation of Covid-suspect pregnant mothers should be identified at the primary level facility. For the possibility of their being in advanced labour and imminent delivery, basic labour and delivery facilities should be made at all levels for the Covid-suspect pregnant women. PPE for triage and labour and delivery should be made available according to the

recommended guidelines. Training of staff in the use of PPE and infection control practices should be done. Staff shifts should be reviewed to see if staggering is possible. Biomedical waste management should be done responsibly according to the standard protocol, and proper facilities should be provided for the same. Clear written instructions should be provided for the protocol to be followed in case of accidental/inadvertent exposures.

*Limitations*

With the increasing number of pregnant women with suspected or confirmed Covid-19 infection, there could be a scarcity of resources (human and material). Therefore, all facilities must understand that it is crucial to have a strict policy for the rational use of resources.

*Possible strengths*

A determined and well-trained workforce, availability of an area which could be converted into a set-up for pregnant women suspected with Covid-19 infection and complete assistance from hospital administration for all the logistic issues were our main strengths.

*Conclusion*

During the pandemic, every obstetric unit should be equipped to take care of Covid-suspect and Covid-positive pregnant women. The five-step approach of (i) making an SOP; (ii) infrastructure reorganization; (iii) procuring PPE; (iv) personnel management; and (v) establishing infection prevention and control practices, is a practical guide to establishing an obstetric Covid facility, whether for a small practitioner or for large healthcare facilities.

Some key lessons learnt from this exercise are: first, that a complete reorganization of the existing infrastructure is mandatory and feasible for the proper functioning of any obstetric unit during the pandemic. Second, teamwork and cooperation between different cadres of healthcare workers within and between different departments are essential to keep the system running. Third, not only procuring PPE but also its rational use is the key to surviving this long battle. Finally, online web platforms have opened up a new way of teaching and continued learning for all levels of HCPs, especially in these challenging times.

Thus, for optimizing patient care in facilities, especially in developing countries such as ours where space and resources have constraints, it is imperative to optimally use our resources and create local protocols for the reorganization of an obstetric unit.

*Conflicts of interest.* None declared

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