NARCHI BULLETIN

SJH, Issue 8, October 2020

REACHING THE UNREACHED

NARCHI

Delhi Branch

An Update on COVID-19 Infection in Pregnancy

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Room No. 001, Department of Obstetrics & Gynaecology,
Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi-110029
Email: narchidelhisjh@gmail.com

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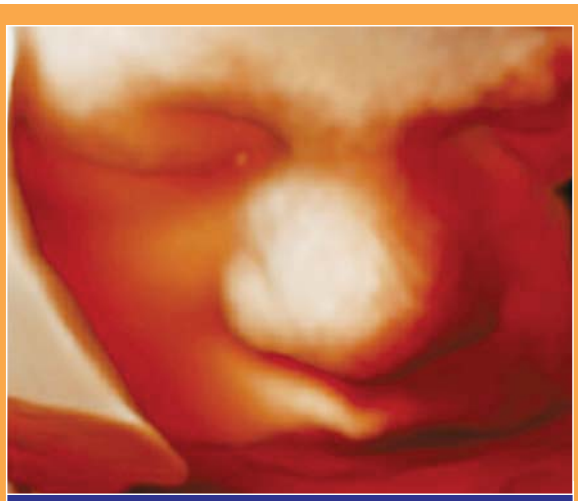

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NARCHI Secretariat
Room No. 001
Department of Obstetrics & Gynaecology,
Vardhman Mahavir Medical College
& Safdarjung Hospital, New Delhi-110029
Email: narchidelhisjh@gmail.com

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Contents

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Dr Jyotsna Suri & Dr Rekha Bharti on behalf of National Association for Reproductive & Child Health of India, Delhi Branch.

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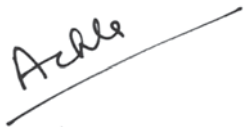
President's Message

Bonjour! hope you are in best of your health, and are also striving towards holistic wellness. The COVID is not just a disease pandemic but it also has a flip side, these times have brought us close to nature, has given us phases of introspection and has ultimately boosted our mental strength and will power. It has also uplifted us on a professional front and has yet again proved doctors as noble and indispensable. The COVID has made us enriched with experience of intensive care in obstetrics. Amidst all this NARCHI is still continuing its efforts to reach out the unreached, we have been communicating through the virtual world. Since advent of covid we have been conducting series of interesting online webinars and and CMEs on pertinent topics for general practitioners and gynecologists and sharing our COVID experience at safdarjung hospital. Our online CMEs have covered important topics like, infertility, recurrent pregnancy loss, postmenopausal osteoporosis, breast cancer, contraception, pregnancy with medical disorders.

We look forward to more of such informative interactions. As the festivals are round the corner and the celebration is in the air, wish u all a happy Diwali.

We hope for COVID free and mask free communication. Good luck!!



Dr Achla Batra

Secretary's Message

Greetings from NARCHI Delhi Branch!

It gives me great pleasure to bring forth this issue of NARCHI Delhi bulletin dedicated to "Update on COVID 19 in pregnancy".

Our NARCHI- Delhi team has always strived for keeping up with our motto of '**Reaching the Unreached**' even in these difficult times of pandemic by organizing various educational webinars in collaboration with various institutes across Delhi on important aspects of maternal and reproductive health. This issue of NARCHI bulletin is another step towards keeping pace with the latest knowledge in maternal health issues in COVID19 era.

This issue deals with the most important current health issue in Obstetrics all around the world in times of COVID-19 pandemic. A great deal has been now revealed about COVID-19 in pregnancy. We are highlighting the current updated knowledge as per the evidence available in literature.

I congratulate the editorial team for their immense effort in conceptualizing and shaping up a very meaningful and appropriate compendium of topics like QI methodology for containing the spread of corona virus, guidelines for sonography in non COVID patients during COVID-19 pandemic, antenatal management of COVID-19 positive women and also COVID related mortality in pregnancy.

I am sure after reading this issue of NARCHI bulletin various 'Myths and Facts' related to COVID-19 in pregnancy will be crystal clear to all the practitioners for good clinical practice in COVID-19 in pregnancy.

Happy Reading to all NARCHI Members!

Dr Monika Gupta

Editor's Message

Greetings from the editorial board,

In the month of March, when the first case of COVID 19 was reported in India, no one had any idea about how the situation could be handled. The diagnosis and management strategies were new to all, however, information was shared from the countries that had some experience of managing these patients. Webinars were organised by the state and national societies to apprise clinicians and researchers about this novel corona virus infection that shattered the whole world. The Ministry of health and family welfare along with ICMR and experts from across the country laid many guidelines and updated them from time to time. The guidelines were also formulated for the management of pregnant women with COVID 19 infection and prevention of the spread of the infection.

In the past 6 months there has been an exponential rise in the number of cases. Government tried to combat the infection by imposing lock downs and creating separate facilities for the admission and management of COVID positive and suspect cases. These efforts could not help much in curtailing the spread of infection to the community but provided the time to understand characteristics of the disease. People who were asymptomatic and not aware of their exposure to positive patients were the main source of dissemination of the infection.

This special issue on "An update on COVID 19 in pregnancy" is planned to share experiences of the experts from various centres dealing with either COVID positive women or providing services to the asymptomatic women with unknown infection status. We are thankful to the authors who have contributed to this bulletin and shared their experience of taking steps for combating this challenging situation and providing recent developments in the management of pregnant women during this pandemic.

Hope this issue is able to provide better understanding of the current guidelines and help the obstetricians in gallantly managing the antenatal women during ongoing pandemic.

Happy reading!

Dr Jyotsna Suri
jyotsnasuri@gmail.com

Dr Rekha Bharti
rekhabharti@gmail.com

First Row: Dr Jyotsna Suri & Dr Rekha Bharti (The Editors)
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Use of QI Methodology to Contain The Spread of Coronavirus: Experience from a non-COVID facility

Manju Puri[1], Swati Agrawal[2], Anuradha Singh[2], Lata Singh[3]
[1]Director Professor & Head, [2]Associate Professor, [3]Assistant Professor
Department of Obstetrics & Gynaecology, Lady Hardinge Medical College & Smt. Smt. Sucheta Kriplani Hospital, New Delhi

Introduction

The goal of all the guidelines by the different national and international health agencies has been to reduce the morbidity and mortality associated with COVID-19 infection for both general population and Health care Workers (HCWs). The reduction of infection in the HCWs attains prime importance as it not only leads to a reduction in the workforce but also adversely affect the morale of the HCWs and generates reluctance to work, fear and apprehension in them[1].

In the current pandemic, all the hospitals are usually divided into zones depending on the profile of patients admitted and the expected viral load.[2] A green zone in a hospital is an area which has no suspected or confirmed cases of COVID-19 and so the probability of nosocomial infection or the HCW getting infected is presumed to be minimal in this zone. However, recent studies have reported that the infection rate among the HCWs working in the green zone is higher as compared to the frontline HCWs working with the suspected or confirmed cases.[3] This may be attributed to insufficient protective measures adopted in the green zone. Thus, accurate and effective triaging of patients is imperative to minimize the admission of presymptomatic or aysymptomatic patients infected with COVID-19 into the green zone.

The QI Journey

The first case of COVID 19 in India was reported on 30th January 2020. Delhi reported its first confirmed case of Coronavirus infection on 2nd March 2020. A nationwide lockdown was imposed by the Indian Government from 24th March 2020 with the aim of containing the spread of the infection and preparing the health care facilities for this never seen pandemic. Our hospital is primarily a maternity & childcare hospital situated in the heart of New Delhi, with a delivery load of more than 1000 deliveries per month. Unlike elective surgeries and procedures, management of obstetric patients cannot be put on hold. While COVID positive pregnant women are referred and managed at dedicated COVID care centers, the challenge is the management of COVID suspect pregnant women awaiting test results but requiring urgent intervention without increasing unnecessary risk to the HCWs.

While battling with the pandemic, we realized that that a significant number of health care workers in the department were being diagnosed with the COVID-19 infection consequent to presence of unsuspected asymptomatic COVID-19 positive patients in the green zone. To further analyze this, a proforma to tabulate the daily statistics of the total admissions and patients detected COVID-19 positive zone wise in the department of Obstetrics and Gynaecology, was formulated. The consultant on duty for 24 hours was assigned to get this proforma filled, check its accuracy and submit to the Head of the Department at the end of the duty. This data was analyzed after a week to calculate the number of patients admitted in the green zone coming positive for the COVID-19 infection. Collection of baseline data revealed that out of 65 patients admitted in the green zone in one week, starting 6/06/2020, 13 patients eventually came out positive for COVID-19 infection which is roughly 20% of all green zone admissions. Data was also collected to know the percentage of HCWs in the department contracting COVID-19 infection among the total strength of HCWs posted in the department and it was found that 40 out of 502 HCWs (7.9%) had tested positive for COVID-19 infection over a period of 9 weeks out of which 24 (60%) were those who were posted in the green zones of the department. The percentage of HCWs posted in the green zone getting infected of the total HCWs posted in green zone was 7.4% (24/322).

This was a stimulus to initiate a quality improvement project to improve the triaging of patients at admission and reduce the number of asymptomatic COVID-19 positive patients admitted in the green zone. The secondary objective was to reduce the COVID-19 infection rates in health care workers working in the hospital.

To meet our aim of reducing the COVID positive admissions in green zones and infection rate of HCWs posted in the green zone, we planned to continue to

collect the data using this same proforma daily and analyze the data weekly.

Study Design

Making a Team

A COVID-19 action QI team was made with the Head of the Department as the team leader and included important stakeholders such as QI champions from the department, nursing officers, faculty members and residents.

Analysis of the Problem

The problem was analyzed using Fish Bone analysis (Figure 1). During the analysis it was felt that an inadequate triaging policy was the most important cause of inadvertent positive patient in green zone.

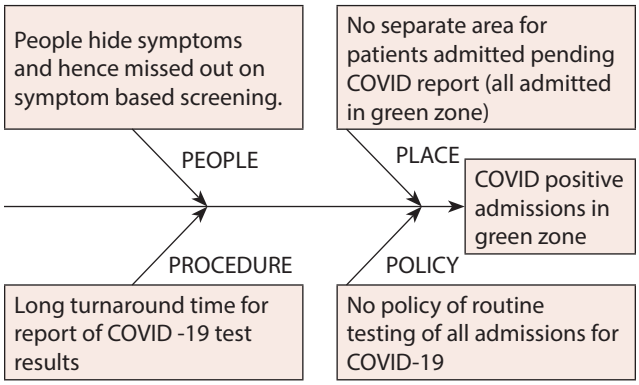


Figure 1: Fishbone analysis

Aim Statement

Our SMART aim was to reduce the number of patients coming positive for COVID-19 infection from the green zone by 50% i.e from 20% to 10% in 4 weeks' time.

Indicators

The impact of the interventions was to be evaluated by the following indicators: percentage of patients detected to have COVID-19 infection from the green zone among the total patients admitted in green zone(process indicator) and percentage of HCWs posted in the green zone getting infected of the total HCWs posted in green zone. (outcome indicator).

Implementating Change Ideas

Change Idea 1: Revised testing Strategies

- **PDSA 1:** Expand testing with RT-PCR to asymptomatic patients from Hotspots
- **PDSA 2:** Expand Testing with RT-PCR to all patients to be admitted
- **PDSA 3:** Testing with Tru-NAAT instead of R T-PCR

Change Idea 2: Avoid mixing of confirmed COVID negative patients with patients awaiting report

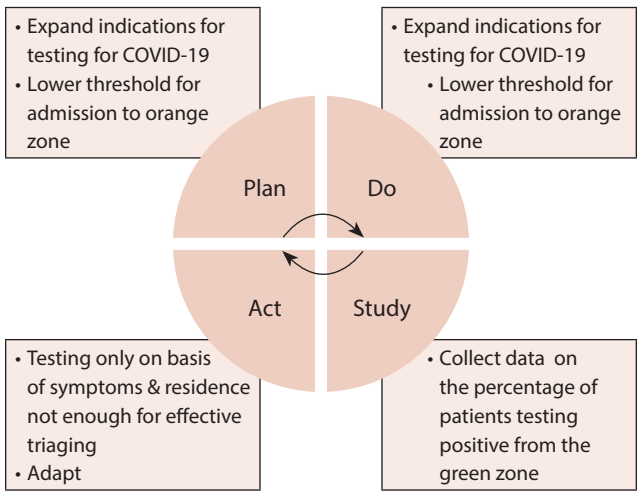
- **PDSA 4:** Create Grey Zones for Patients awaiting test results

The improvement process was dynamic where the team went through conducting and analyzing the change ideas via multiple Plan-Do-Study-Act (PDSA) cycles. The team members met every week to investigate the progress made and identified the issues that needed to be addressed in order to achieve the desired results. Also, representatives of the new providers and staff who were posted on rotational basis were also called for these meetings weekly and were updated with the progress of the project with instructions to pass the information to all the staff through Whatsapp messages.

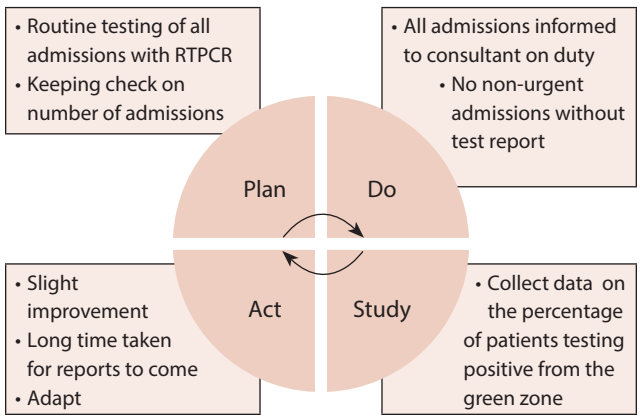
Strategy

We undertook 4 PDSA test cycles with 2 change ideas to implement our proposed interventions (Figure 2).

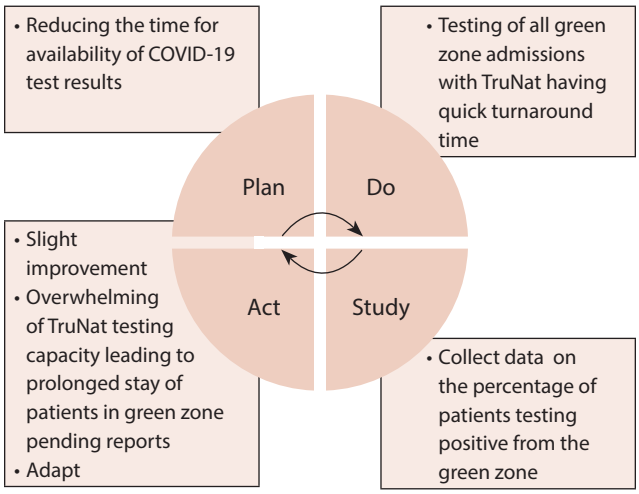
PDSA Cycle 1



PDSA Cycle 2



PDSA Cycle 3



PDSA Cycle 4

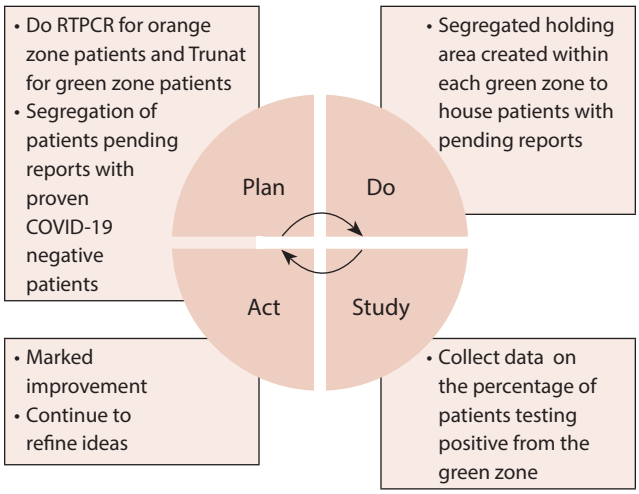


Figure 2: Plan-Do-Study-Act Cycles conducted to implement change idea

Change Idea 1: Revised testing Strategies

PDSA 1: Our first intervention was expanding the indications for testing for COVID-19 in patients requiring admission and lowering the threshold for admitting the patient in designated suspect area (orange zone). The admission criteria for admitting patients to orange zone was expanded to include all patients from the hotspot/containment zones tested for COVID-19 pending reports, patients presenting with even mild symptoms such as cough, cold or fever. However, it was found that despite strict triaging, many patients in the green zone developed symptoms after having spent considerable time in the green zone and were subsequently found to be COVID-19 positive. There was no decrease in the percentage of patients testing positive from the green zone at the end of the first week of the project. Feedback received indicated that testing the admissions only based on symptoms and residence is not enough for effective triaging.

PDSA 2: Our next intervention was routine testing of all admissions and keeping a check on the number of admissions. All admissions were discussed with concerned consultants to rationalize and limit the number of admissions. Only emergency admissions were done without COVID-19 test report. Admission for non-urgent indications was delayed till COVID-19 test result was available. This intervention was partly successful and a fall in the percentage of patients testing positive from the green zone was observed. However, it was observed that many of the emergency admissions came positive after having spent 24-48 hours in the green zone as the testing was done with Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) method for which the turnaround time for reporting was long with limited facilities available in developing countries like ours. We realized that the time taken for reporting of COVID-19 testing needs to be reduced if the stay of infected patients in the green zone is to be reduced.

PDSA 3: The next intervention included routine testing of all admissions for detection of COVID-19 using the TrueNat test which had a quick turnaround time. This was done with the aim to receive the test report on the same day so that patients can be segregated accordingly. The percentage of cases with COVID-19 positivity reduced to 10% following this intervention which was our target. However, the feedback received suggested that the TrueNat capacity for testing was also being overwhelmed as it could only test 1-4 samples at one time. This was leading to delayed reports even after using TrueNat and as a result, the positive patients were still staying in the green zone for more than 24 hours in certain instances.

Change Idea 2: Creation of Holding area

PDSA 4: For our final test cycle, we created holding areas grey zones for each green zone and kept all patients with pending reports in that area till the report was available. The HCWs were instructed to use additional precautions while caring for patients in these parking areas. The patients were shifted to the main area of the green zone only after a negative COVID-19 test report. We continued to screen our green zone admissions with TrueNat and orange zone admissions with RT-PCR to prevent overwhelming of the capacity of anyone testing method. Our efforts bore fruit and there was no COVID-19 positive case from the green zone in the subsequent week.

Results

Our main outcome measure was the percentage of patients coming positive for COVID-19 infection from the green zone which gradually decreased from 20% in the first week to 0% at the end of the 4th week. A time series chart was plotted for the collected data (Fig 3). The most effective intervention was in PDSA cycle 4 which involved creation of a designated segregation area(Grey zone) in each ward. However, data collected at the end of 5th, 6th & 7thweek again showed a positivity percentage of 9.7%, 8.5% & 2.8% respectively from the green zone which, although within our target range, warrants further evaluation and monitoring to ensure strict compliance to the interventions initiated so that no COVID-19 cases are admitted in the green zones.

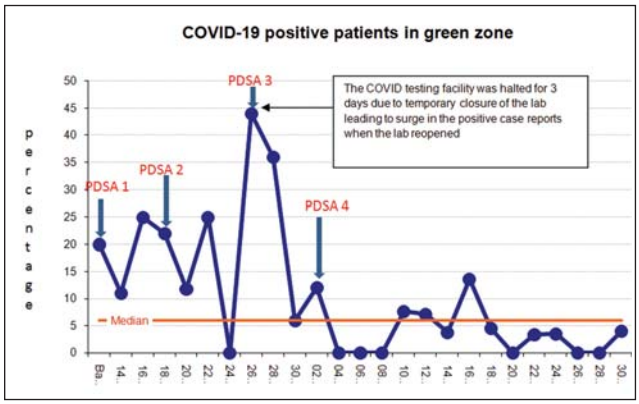


Figure 3: Time series chart of the percent of patients testing positive for COVID-19 infection out of total admissions in the green zone.

Another important observation was that the percentage of HCWs in the department contracting COVID-19 infection among the total strength of HCWs posted in the department, after the project initiation, was found to be only 23 out of 462 (4.9%) over a period of 9 weeks out of which only 7(30%) were from the green zone of the department. The percentage of HCWs posted in the green zone getting infected of the total HCWs posted in green zone was reduced from 7.4% to 2.3% (7 out of 298). Further, no HCW from the green zone of the department has tested positive for COVID-19 infection for the last 1 month at the time of submission of this article.

Lessons Learnt

The project aim was to reduce the percentage of patients coming positive for COVID-19 infection from the green zone with resultant reduction in the incidence of COVID-19 infection amongst the HCWs. Multiple PDSA test cycles were undertaken to bring about this change through various interventions. The key focus of all the interventions was to ensure effective and continued implementation by means of administrative support, which was provided by the team leader, and active participation of all stakeholders, to devise a sustainable solution rather than a short-term intervention. The team members ensured participation of all concerned doctors, ward nurses and others HCWs working in the green zones through communication via WhatsApp groups so that a clear and uniform message was conveyed to all. Daily feedback from the duty doctors was taken by the team leader. In addition, feedbacks were also collected via WhatsApp groups of HCWs which helped the team devise more interventions based on their suggestions. The enhanced communication also increased the support of the HCWs for a new sustainable system.

However, there were a few challenges which included the exhaustion of testing capacity of RT-PCR and TrueNat tests when routine sampling of all admissions was started. To avoid overwhelming of anyone testing method, a protocol was made to test all green zones admissions with TrueNat and Orange zone admissions with RT-PCR. Another challenge faced was that with the creation of a segregated holding area (Grey zone) within the green zone, the nurses had reservations about attending to the patients admitted there without full personal protective equipment (PPE). Their reservations were addressed by providing level 2 PPEs in the green zone as well, for use by the HCWs as per the risk of infection perceived by them. It was subsequently observed that most of the HCWs did not wear full PPE while attending to the Grey zone patients but took additional precautions which were necessary. There were no subsequent demands or complaints.

Although the team was successful in achieving the target, a rise in the percentage positivity rate from the green zone after touching the zero mark signifies that there are still many gap areas to be plugged and more effective implementation of all the interventions is required at all levels with continuous auditing of the census.

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Obstetric and Gynaecology Sonography: Guidelines for Non-COVID USG Scans During COVID-19 Pandemic

Sumitra Bachani[1], Neha Mohit Bhagwati[2]
[1]Associate Professor & Senior Specialist, [2]FNB High Risk Pregnancy & Perinatology
Vardhman Mahavir Medical College & Safdarjung Hospital

COVID-19 pandemic began in Wuhan province of China in late December of 2019 and since then has spread across 188 countries of the world till date. At the time of writing this article, 26 million people have been affected and almost 900,000 people have succumbed to the deadly virus. India is second on the list of total infections and tops the list of new daily infections with almost 4.5 million cases and 70,000 deaths so far. The pandemic has affected health care delivery adversely with long duration of lockdowns, hospitals occupied by COVID-19 patients and initially suspension of elective surgeries in many hospitals. COVID-19 is a viral illness caused by SARS-CoV-2 virus predominantly affecting respiratory system and causing death by Acute respiratory distress syndrome, sepsis and multi organ dysfunction. The spread of infection is air borne, through fomites and contact. Across the world, all health care delivery institutes are at highest level of infection control and prevention alert with strict usage of personal protective equipment and other sanitisation measures. It will be prudent to consider even an asymptomatic person to be a source of infection.

Obstetrics and Gynaecology ultrasound scans whether routine or emergency are an integral part of patient care that needs to be maintained despite the ongoing pandemic. Apart from routine risks of infection transmission, the sonographer and assistants are at increased risk of getting infected due to:

1. Physical proximity to the patient while scanning which is less than the stipulated 2 meters.
2. Ultrasound rooms are mostly closed areas that are typically small with restricted ventilation.
3. Examination time is long, ranging from 15-30 minutes. Sometimes the patient may require a repeat scan due to suboptimal window.
4. The surface of machine i.e keyboard, probe, trackball and touch screen are frequently touched as various functions of the machine have to be utilized while scanning.
5. Examination may include various breathing manoeuvres like deep inspiration and expiration, or change of posture to face the sonographer which may increase the risk of infection transmission.
6. There is a repeated and prolonged patient transducer contact (skin and mucous membrane in transabdomen and trans vaginal respectively.
7. Lot of verbal communication occurs between the sonographer and patient as the relevant images are shown and explained to her.

Various societies and committees have issued consensus statements and guidelines (ISUOG, SMFM, RCOG) with respect to safe practices for conducting ultrasound examination during COVID pandemic. Society of Fetal Medicine, India has also endorsed these and published India oriented guidelines specific for our country. This article aims to provide simplified and effective infection control guidelines for sonographers doing Obstetric and Gynaecology ultrasounds of non COVID patients in COVID era.

Guidelines

These guidelines shall be enumerated under following headings:

1. Ultrasound Room preparation and disinfection
2. Ultrasound equipment care
3. Staff and Sonographer guidelines.

Ultrasound Room Preparation and Disinfection

- Room should have a good ventilation, in closed spaces exhaust fans can be installed.
- Single unit air conditioning in an 'open to outside air' mode.
- Minimise clutter in Examination room and remove all unnecessary items like extra bins, chairs, almirahs etc.
- Disposable sheets and wipes to be used on patient examination table in place of cloth and should be discarded after each examination.
- Hand Hygiene station should be there at the room entrance.

- Seating arrangement in the patient waiting area should be designed in accordance of social distancing norms (at least 1 meter apart)
- Examination room should be cleaned/mopped with1% NaOCl (Sodium Hypochlorite), phenolic disinfectants depending upon frequency of examination. (2 hourly mopping for 2-3 examination per hour)
- High contact areas and frequently touched like elevator buttons, hand rails, door handles, table tops, keyboard etc should be mopped at least 2-3 times a day with 1% NaOCl soaked cloth or sanitizer with 60-70% alcohol content.
- Glass/Plastic barriers should be used in the reception or Triage area.

Ultrasound Equipment Care

- Keep only one required ultrasound transducer out at a time. Keep others in a clean closed shelf.
- Use of single use gel packs instead of gel containers should be encouraged if economically viable.
- Ultrasound transducer and cables should be cleaned every morning and after each examination to remove residual gel or debris with low level disinfectants (70% alcohol, 10% bleach and cidex) as per CDC guidelines. Confirm this with the concerned service provider for your machine prior to use.
- Frequently touched surfaces like keyboard, screen and cord should also be cleaned thoroughly after each examination with low level disinfectant.
- Transvaginal transducer should be disinfected by high level disinfectant.

Staff and Sonographer Care

- USG provider who are vulnerable and high risk population (with comorbidities or elderly) should avoid performing ultrasound examination. They may be shifted to some other non contact work station like reviewing the reports or Staff training.
- Quarantine and Isolation of staff and sonographer as per local guidelines.
- Work place clothing, 3 ply surgical mask or an N95 respirator and disposable gloves is the bare minimum personal protective equipment recommended. Face shield usage to be preferred. Disposable non latex gloves to be worn, changed and discarded after each examination.
- Hand hygiene with soap and water or 65-90% alcohol before and after examining each patient is a must.
- Attempt to do focused examination and to shorten the contact time.
- Store short examination clips and review them later to formulate the final report.
- No children or elderly should accompany the patient and she can either come alone or one person can accompany her. She should advised to come with minimum baggage and jewellery on her person.
- All patients should wear face mask all the time and follow social distancing and sanitization norms at all times.
- All patients should be screened with temperature checks before entering the clinic/designated area.
- Reports should be preferably emailed and no personal contact apart from examination should be encouraged. Try to minimize verbal communication at close quarters while scanning.
- Documents requiring patient signature should be handled at a designated place and filed away.

Patient Selection

Triaging should be done on telephonic consultation by a trained staff member prior to giving an appointment. Appropriate history of travel, occupation, contact with any COVID 19 positive person and visit to a cluster should be actively enquired. All symptoms suggestive of COVID 19 should be addressed and only women who are screen negative should be scheduled for a scan. Rest others may be guided to reschedule the appointment /visit a hospital or center appropriate for such cases.

Prioritization should be done according to the urgency of the indication.

Obstetrics

- Obstetric emergency – Antepartum Hemorrhage, Ectopic pregnancy should be examined on urgent basis.
- Dating scans can be clubbed with 11-13 weeks NT and early morphology scans.
- If the NT scan cannot be performed NIPT may be advised with appropriate counselling about its benefit for aneuploidy screening only and that it cannot replace the anomaly scan.
- Anomaly scan should be done between 18-20 weeks, may be delayed by few days in women with SARS-CoV2 infection. If in such a case this leads to a delay in detecting lethal anomaly one should be

able to get the permission for termination from the Appropriate authorities.

- Second trimester scans should be given priority over first trimester scans.
- Routine growth and Doppler scans should be postponed to a late third trimester assessment
- Decision making growth and Doppler scans should be prioritized

Gynaecology

Acute and non resolving pain or a suspicion of gynaecological emergencies like ovarian torsion, ruptured adnexal cyst, PID, Tubo-ovarian abscess, postoperative or procedure complications, abdominal mass with symptoms, severe bleeding per vaginum should be examined as early as feasible.

Non acute pelvic pain, non severe AUB, review of previously noted 'likely' benign adnexal pathology, prolapse, infertility or Recurrent pregnancy loss may be postponed.

Where ever possible transabdominal scans should replace the transvaginal scans.

USG Guided Procedures

All procedures pertaining to Obstetric -Gynaecology and Fetal medicine which are time bound such as Amnio-reduction, Amniocentesis, CVS, Intrauterine blood transfusion can be scheduled after testing for SARS-CoV-2 infection along with all other perquisites for the procedure.

Suggested Reading

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Narchi Activity Febuary to September, 2020

1. A CME was conducted under the aegis of NARCHI on 14th February 2020. Deliberations were held on "Current trends in management of recurrent pregnancy loss" by Dr Mala Arora and "Drugs in Pregnancy and their Safety" by Dr Sonia Naik.
2. Another CME was organised on 24th February 2020. Vivid lectures were delivered on "Advance protocol of IVF" by Dr Anup Gupta and "Overview on Yamuna Yatra for clean Environment and population control" by Dr Shirin. The CME was attended by over 75 delegates.
3. A live webinar was conducted on "Gearing up for Novel Corona" by NARCHI Delhi on 2nd May, 2020. Dr Achla Batra spoke on 'Postnatal care in COVID positive women', Dr Archana Kumari on 'Role of Telemedicine', Dr Sumitra Bachani on 'Reorganization of COVID Unit' and Dr Sheeba Marwah on ''Dilemmas in testing and quarantine of HCW'. It was attended by 292 delegates.
4. A webinar on "Management of Pregnancy during COVID Pandemic" was organised on 31st May, 2020. Two panel discussions on "Management of COVID Positive Pregnancy" and "Management of COVID Negative Pregnancy" were moderated by DR Jyotsna Suri/ Dr Sumitra Bachani and Dr Achla Batra / Dr Rekha Bharti, respectively. The panelists were senior faculty members of all premier teaching institutes of Delhi. The webinar was attended by 229 delegates.
5. An online CME (webinar) on "Post-menopausal Osteoporosis" was organised under aegis of NARCHI and FOGSd on 15th June, 2020 from 4:00 to 5:00 pm. Dr Sonia Naik gave an excellent talk on postmenopausal osteoporosis. The CME was attended by over 100 delegates.
6. A Webinar was organised under aegis of NARCHI Delhi and FOGSd under the leadership of Dr Alpesh Gandhi, President FOGSI on 1st July 2020 from 5 to 6 pm. There were excellent lectures on "Update on Breast Cancer" by Dr Manish Sharma (Oncologist, Rajiv Gandhi Cancer Hospital, Delhi) and "Genital Tuberculosis and Dilemma in its Diagnosis" by Dr Vishakha Munjal (Sr. Consultant at South Delhi). This was preceded by a Zumba session for good health and followed by Doctors Day celebrations.
7. A poster making competition was organised for Safai Karamkacharis on the occasion of World Population Day under the aegis of NARCHI on 25th July 2020. There were about 50 participants and a cash prize was given to the winners.
8. On 5th August, a webinar was organised on the occasion of Breast feeding week 2020 under ageis of NARCHI Delhi, Safe Motherhood Committee of AOGD and Breast feeding committee of FOGSI. Panel discussion on case based challenging situations in breastfeeding along with poster and slogan competitions were conducted.
9. An eCME (webinar) was organised by NARCHI and Deptt of Obstetrics and Gynaecology, Maulana Azad Medical College, Delhi on "Contraception: Making Right Choices" on 8th August from 3:30-5:30 pm. Very important deliberations on, "Prevention of Litigation in FP Services" and "What's New in Contraception?" were given by Dr Jyoti Sachdeva and DR AG Radhika respectively. This was followed by a panel discussion on "Case-based Contraception "which was moderated by Dr Manju Puri and Dr Devender Kumar.
10. A webinar was organised under the aegis of NARCHI on 24th August, 2020 on,"Preterm Birth Management and Caesarean Myomectomy". The topics were covered by the eminent speakers, Dr Ranjana Sharma and Dr Alka Kriplani. The webinar was attended by over 100 delegates.
11. Another webinar was conducted on, "Medico-legal Aspects of Obstetrics and Gynaecology" on 17th August, 2020. It was attended by over 250 delegates.
12. A webinar was conducted in collaboration with department of Obstetrics and Gynaecology, ABVIMS and Dr RML Hospital on "High Risk Management: Challenges in pregnancies with Heart Disease" on 26th September, 2020. Excellent talks on "CVS changes during pregnancy", "Vaginal delivery or Caesarean Section in Heart Disease?" and "Thromboprophylaxis in Heart Disease in Pregnancy" were delivered by Dr Kamna Dutta, Dr Kiran Aggarwal and Dr Jaya Chawla. This was followed by an excellent panel discussion moderated by Dr Jyotsna Suri and Dr Priyanka Badhana where different case scenarios were discussed in detail.

Events held under aegis of NARCHI

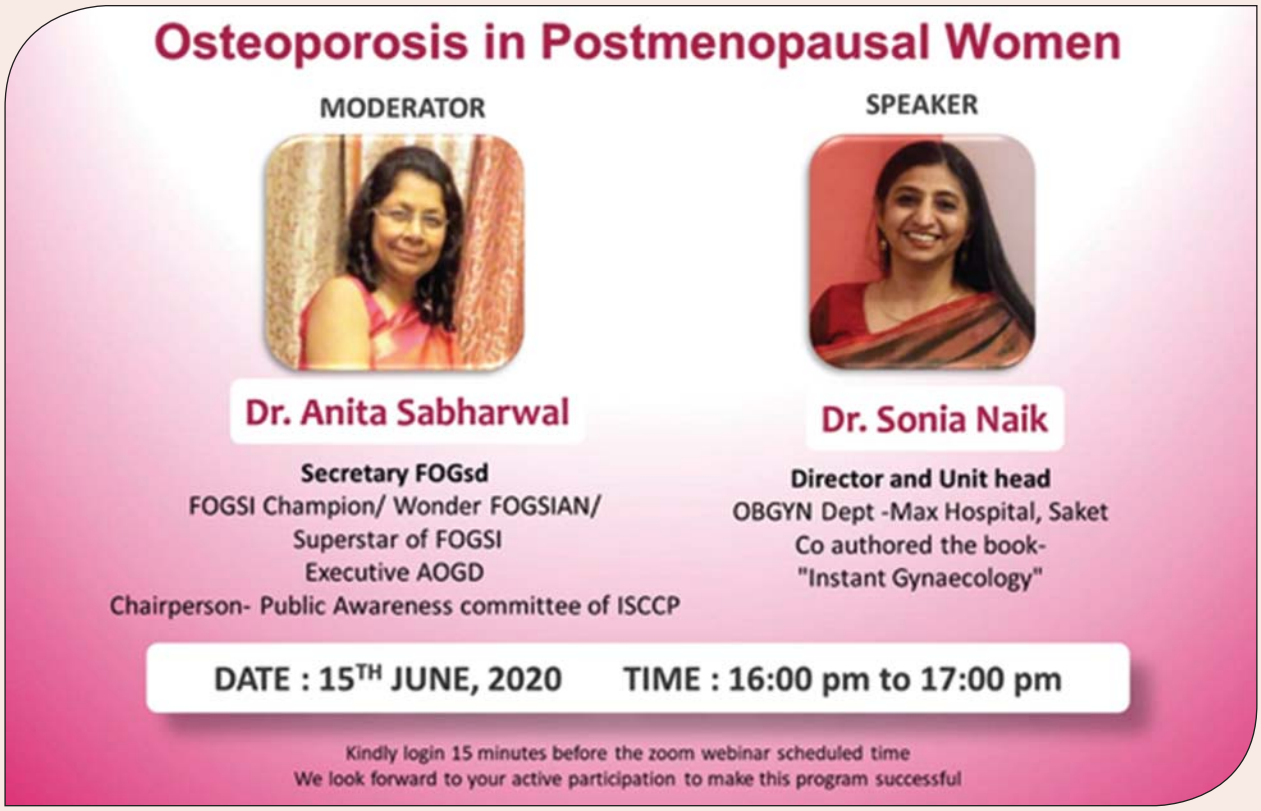
CME on Management of RPL & Drugs in Pregnancy, 14th February

CME on "Advance Protocol of IVF" and "Overview on Yamuna Yatra", 24th February

Webinar on "Gearing Up for Novel Corona", 2nd May

Webinar on Management of Pregnancy During COVID Pandemic, 31st May

Events held under aegis of NARCHI



Events held under aegis of NARCHI

Poster making competition for Safai karamkacharis on World Population Day, 25th July

eCME organized by Abbott

Abbott

Date: 8th AUGUST 2020 (Saturday)

Time: 03:30 pm to 05:30 pm

NARCHI

&

Dept. of Ob-Gyn, Maulana Azad Medical College

In Association with AOGD

Cordially invite you to a Webinar on

Contraception: Making Right Choices

Time	Topic	Speaker	Chairperson
3.30 PM	Welcome	Dr. Achla Batra & Dr. Asmita M. Rathore	
3.45PM to 4PM	Prevention of Litigation in Family Planning Services	Dr. Jyoti Sachdeva	Dr. Asmita M. Rathore Dr. Achla Batra Dr. Mala Srivastava
4PM to 4.15PM	What's New in Contraception	Dr. A.G. Radhika	
		Panelists	Moderators
4.25PM to 5.10PM	Panel discussion Contraception- Case Scenarios	Dr. Renu Arora Dr. Taru Gupta Dr. Mamta Dagar Dr. Garima Kachhawa Dr. Leena N. Sreedhar Dr. Rachna Sharma	Dr. Manju Puri Dr. Devender Kumar
5.10PM-5.25PM	Q & A Session		
5.25PM -5.30PM	Vote of Thanks	Dr. Sangeeta Gupta	

Events held under aegis of NARCHI

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Webinar on Preterm Birth Management and Caesarean Myomectomy

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Webinar on High Risk Pregnancy Management: Challenges in pregnancies with Heart Disease

Antenatal Management of Asymptomatic COVID-19 Positive Women

Divya Pandey[1], Shivangi Sharma[2]
[1]Associate Professor, [2]Post-graduate Resident, Department of Obstetrics and Gyanecology
Vardhman Mahavir Medical College and Safdarjung Hospital, Delhi

Novel coronavirus (SARS-CoV-2), the new strain of dreaded coronavirus causing COVID-19 was first identified in Wuhan city China towards the end of 2019 and gradually became a pandemic in a short span of time owing to its high infective potential. In most of the global cases of COVID-19, there has been human to human transmission through respiratory droplets/ secretions, faeces, fomites mostly after close contact with the infected person.[1]

COVID-19 Infection During Pregnancy

Though the chance of pregnant women contracting infection is almost similar to the general population but the illness remains mostly asymptomatic or mild in pregnant individuals. A prospective study of 675 antenatal women consecutively admitted to three New York City hospitals for delivery, all tested for SARS-CoV-2, found 10% of women were positive and 79% of those infected women were asymptomatic for COVID-19.[2]

Most of the pregnant women experience only mild/ moderate cold or flu like symptoms, however shortness of breath, headache, anosmia, can also be present. Approximately 20% women develop severe disease. The most frequent symptoms include fever (80–100%), cough (59–82%), myalgia/fatigue (44–70%), and shortness of breath (31–54%). Less frequent symptoms are expectoration (28–33%), headache (6–17%), and diarrhoea (2–10%).[3] The severity of the symptoms can be due to alterations in body's immune system during pregnancy and response to viral infection in general.

I. Screening Antenatal Cases for COVID-19

With the latest COVID-19 testing strategy issued by ICMR (4-9-2020) extending to, all hospitalised pregnant women who are near/in labour, the detection rate has definitely increased. Most of these women remain asymptomatic and discovered about their positive status on this routine testing after admission. Figure 1 shows a very basic algorithm that can be followed while dealing COVID positive antenatal women.[4]

II. Case Notification

Health Care Professionals should promptly notify infection control personnel at their facility of the arrival of a pregnant woman who has confirmed COVID-19 or is a PUI(person under Investigation) so that infection control measure can be kept in place. After notification of COVID positive patient, a registry of such patients should also be maintained.[5]

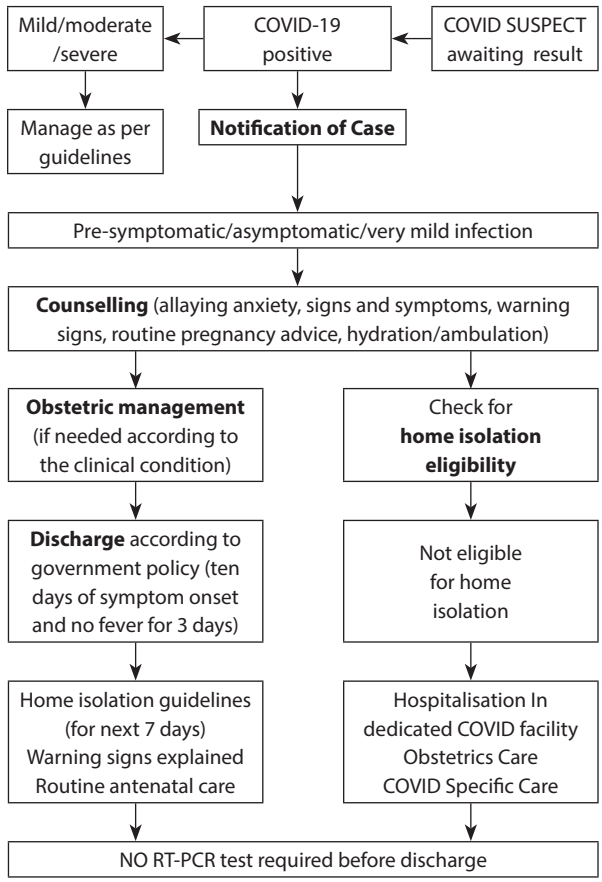

Figure 1: Algorithm showing approach to deal COVID-19 positive pregnant women.

III. Counselling

The counselling of the positive pregnant women as well as her attendant is of utmost importance. The counselling should allay her anxiety about the disease. She must be told, that she is most

likely to have no symptoms or a mild illness with full recovery. The development of more severe symptoms or delayed recovery may be a sign of developing a more significant chest infection and should prompt her to seek help from health care provider.

The attendant should be explained about the rules of keeping a COVID positive case in dedicated isolation wards in addition to the existing Obstetrics condition. The woman is told about the symptoms and warning signs apart from routine antenatal advice like maintaining track of daily fetal kick count. The importance of maintain hydration and remaining ambulatory must be explained. In case, an asymptomatic women is fit to be discharged from Obstetrics care point of view, and if she opts for home isolation, she can be sent for home isolation if found eligible. Home isolation guidelines are explained to her in detail (discussed below). If antenatal, she should get an ultrasound done for fetal well-being after two weeks. If postnatal, hand hygiene practices, breast feeding and new-born care is explained to her.[5]

IV. Obstetrics Care to Asymptomatic/ pre-symptomatic/very mild symptomatic COVID 19 positive pregnant woman

A. Asymptomatic/ pre-symptomatic/very mild symptomatic COVID 19 positive pregnant woman: For low risk antenatal women (not in labour) who are asymptomatic and test-positive for COVID-19, if there are no concerns regarding the health of either the woman or baby and if urgent Obstetric intervention is not required, women can undergo home isolation for atleast 17 days (provided, they meet home isolation eligibility) or until onset of labor. Women is informed regarding the signs and symptoms of labour, but in addition should be informed about symptoms that might suggest deterioration related to COVID-19 and asked to call back if concerned. Home isolation is extended only to those who are eligible as per guidelines. But immunocompromised woman must not be home isolated.[6,7]

i. **Home Isolation guidelines[6,7]**

A care giver should be available to provide 24x7 basis. A communication link between the caregiver and hospital is a pre requisite for the entire duration of home isolation. The care giver and the close contacts of such cases should take hydroxychloroquine prophylaxis as per protocol. Aarogya Setu App on mobile must be downloaded and it should remain active all the time, (including Bluetooth and internet).The patient shall agree to monitor her health and regularly inform her health status to the district surveillance officer, who will facilitate further follow up by the surveillance teams. The patient has to fill in an undertaking on self isolation and should follow home quarantine guidelines.

ii. **How to monitor while in home isolation**

Role of authorities: The health status of women under home isolation is monitored by field staff/surveillance team through personal visit and a dedicated call centre to follow up the patients on daily basis in terms of temperature, pulse rate and SPO2.

Role of woman under isolation: They should continue monitoring of SPO2 and temperature at home. During home stay, hydration should be maintained and temperature charting should be done (twice a day and opportunistically if new-onset symptoms occur, such as sweating, shivering, or headache), and if needed paracetamol up to 500–1,000 g/6–8 h (up to a maximum of 4 g/ day) can be given. Although available, use of home pulse oximetry by smartphone or smartwatch apps is not recommended as there is concern regarding reliability.[1]

Phone follow up is done daily by the surveillance team whereas routine visits can be postponed for atleast 2 weeks. If at all needed to visit the health care, she should take own transport or call 108 informing the ambulance about her status so that adequate protective measures can be taken. Other than this she should continue daily foetal monitoring count, maintain hydration, ambulation and should report as soon as possible to the health care facility in case severe features develop. Ultrasonographic foetal surveillance for growth and doppler is done every 2 weeks.[5]

iii. **When to seek medical attention**

The patient or care giver should seek immediate medical attention if serious signs or symptoms develop which are; difficulty in breathimg, fall in oxygen saturation (SPO2<95%), persistent pain or pressure in chest, mental confusion or inability to

arouse, slurred speech or seizures, weakness or numbness in any limb or face, developing bluish discoloration of lips/face.[7]

iv. **When to discontinue home isolation**

The women under home isolation will stand discharged after 10 days of symptoms onset and no fever for 3 days. Thereafter, the patients are advised to isolate at home and self monitor their health for further 7 days. There is no need for testing after the home isolation is over.[7]

v. **Antenatal care after recovery**

For women who have recovered from COVID-19 with mild, moderate or no symptoms, without requiring admission to hospital, antenatal care should remain unchanged. Services should ensure that women who have missed antenatal appointments because of self-isolation are seen as early as is practical after the period of self-isolation ends. For women who have recovered from a period of serious or critical illness with COVID-19 requiring admission to hospital for supportive therapy, ongoing antenatal care should be planned together with a consultant obstetrician.

B. If asymptomatic woman is near/in labour or needs any Obstetric intervention or home isolation not possible-Such woman should be hospitalised in dedicated COVID facility for monitoring of labor as well as COVID specific symptoms and signs.

i. **Labour And Delivery**

When the woman is admitted to health care facility for the delivery, isolation is done and full maternal and foetal assessment including severity of symptoms. Maternal temperature, Pulse rate, respiratory rate, oxygen saturation is monitored. Electronic foetal monitoring using CTG machine is done and the aim of management is to maintain an oxygen saturation of >95% during active labour and oxygen is titrated accordingly. Exertion in women who are covid positive yet asymptomatic should be avoided to prevent her from getting exhausted and hypoxic.[5]

The preferred mode of delivery in COVID positive woman is vaginal delivery unless any Obstetric contraindication to it. Mode of delivery should not be influenced by COVID positive status unless respiratory condition demands urgent delivery.[1,5]

Individualised decision should be made regarding shortening the length of second stage of labour with preference for elective instrumentation in women who become exhausted and/or hypoxic. During delivery epidural anaesthesia (is available) is recommended in patient with COVID to minimise the need for GA if urgent delivery is needed.

ii. **Postnatal Care:**

Mothers who test COVID-19 positive should be advised to wear a mask and undertake frequent hand washing while handling their baby for next two weeks. They should also be advised about breast cleaning before neonatal feeding. These measures are likely to reduce COVID-19 transmission to neonates.

V. Thromboprophylaxis in COVID positive patients

Pregnancy is widely recognised as a hypercoagulable state. There is emerging evidence suggesting that individuals admitted to hospital with COVID-19 are also hypercoagulable and infection with SARS-CoV-2 is likely to be associated with an increased risk of maternal VTE. RCOG guideline version 11(24-7-2020) have given following recommendations.

i. **For Home Isolating Women**-A clinical Venous thromboembolism risk assessment should be performed during a period of self-isolation in all the positive patients, and thromboprophylaxis considered and prescribed on a case-by-case basis. Thromboprophylaxis commenced for pregnant women who are self-isolating should continue until they have recovered from the acute illness (between 7 and 14 days). Women who are self-isolating at home should stay well hydrated and mobile throughout this period.

ii. **Hospitalised women-**All pregnant women who have been hospitalised and have had confirmed COVID-19 should receive thromboprophylaxis for 10 days following hospital discharge. For women with persistent morbidity, a longer duration of thromboprophylaxis is considered. If women are admitted with confirmed or suspected COVID-19 within 6 weeks postpartum, they should receive thromboprophylaxis for the duration of their admission and for at least 10 days post discharge which can be extended until 6 weeks postpartum for women with significant ongoing morbidity.[1]

Conclusion

COVID-19 transmitted by person to person by respiratory droplets after contact with an infected person. Most patients have mild symptoms (flu-like), but approximately 20% develop severe disease (severe pneumonia, acute respiratory distress). Women who are pre-symptomatic /asymptomatic or ver mild symptomatic and without co-morbidities could be safely isolated at home provided they meet the eligibility criteria and followed up by telehealth means. Warning signs must be told while in home isolation as early identification of cases with serious manifestations allows timely treatment, oxygen support, and referral to the intermediate or intensive care. In women with COVID-19 infection without severity criteria with spontaneous-onset delivery or with an indication of induction due to obstetric conditions, the mode of delivery should be based on obstetric conditions and fetal status. Caesarean section should follow usual obstetric indications. Risk assessment for VTE must be done .Thromboprophylaxis must be started especially to all hospitalised women.

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Management of Symptomatic COVID-19 Positive Pregnant Women Including Critical Care

Niharika Dhiman[1], Divya Singh[2], Krishna Agarwal[3]
[1]Associate Professor, [2]Seniors Resident, [3]Professor, Department of Obstetrics and Gynaecology
Maulana Azad Medical College, New Delhi

Introduction

SARS- Cov 2 an unknown virus was first identified in Wuhan (China) in December 2019, despite multiple efforts taken to curb the transmission there is a worldwide COVID 19 epidemic leading to straining of our health care system. The mode of transmission is via respiratory droplets. The lack of immune response to this virus and a high load of virus has led to a high number of critically ill cases. Pregnancy is a state associated with various physiological, anatomical and immunological changes making it a high-risk condition in the ongoing COVID- 19 pandemic.

COVID-19 and Pregnancy

Pregnancy is a state of immunosuppression which not only makes the women susceptible to various viral infections but also has been found to have a higher morbidity and mortality in such infections.[1] The previous outbreaks from the severe acute coronavirus syndrome (SARS-Cov) and the middle east respiratory coronavirus (MERS-CoV) suggest that pregnant women are more susceptible to endotracheal intubation, admission to intensive care units (ICU), Severe acute respiratory distress syndrome (ARDS), multiple organ dysfunction (MODS) and even death.[1,2]

However, the ongoing research has been unable to find evidence suggesting transplacental transmission based on limited data. Managing a pregnant COVID 19 woman poses multiple challenges right from screening of women in labour and delivery to managing women of COVID-19 with moderate to severe symptoms, providing anaesthesia as well as protecting the health care personals.[1]

I. **Effect of Pregnancy on COVID Infection**

The clinical course of COVID-19 during pregnancy is unpredictable and may progress very fast in cases associated with medical co-morbities. The following anatomical and physiological changes during pregnancy may predispose a pregnant woman to the infection.

i. Under the effect of progesterone and other relaxants in pregnancy causes relaxation of the ligaments of the ribs, with the progressive increases in size of uterus the diaphragm is pushed up and the transverse diameter of the chest increases which leads to eventually lead to a 20 to 30% reduction in functional residual capacity (FRC), which makes the mother prone to hypoxia, subsequently compensated by increased tidal volume and hyperventilation.[3]

ii. It has been postulated that in the latter half of pregnancy is characterized by a decreased number and activity in NK cells and T cells, which may affect the viral clearance rate and lays a foundation for the onset and deterioration of infectious diseases in later half of the pregnancy as seen in the previous pandemics of SARS CoVi 1 and H1N1.[3]

iii. It is speculated that level of ACE2 is doubled during pregnancy to regulate blood pressure. This adaptation may be a favorable condition for SARS-CoV-2 infection. ACE2 is not only a receptor, but also involved in post-infection regulation, including immune response, cytokine secretion, and viral genome replication.

II. **Effect of COVID infection On Pregnancy**

i. Maternal - There are increased chances of caesarean section, FGR (fetal Growth Restriction), Preterm labour and fetal distress however the evidence is still limited.

ii. Fetal - The chances of vertical transmission is still not established.

Diagnosis

The main clinical manifestations are fever, cough, myalgia, shortness of breath and few of them have runny nose, nasal congestion, sore throat, haemoptysis or diarrhoea. Pregnant women with such symptoms should seek timely medical attention.

Management

Suspected pregnant women with COVID should be isolated and investigated. Diagnosed cases should preferably be managed in a negative

Table 1: Principle of management of COVID positive pregnant woman

Clinical syndrome	Definition	Management principles
Mild illness	Uncomplicated upper respiratory tract viral infection may have non-specific symptoms-fever, cough, sore throat, nasal congestion, headache, or malaise **NO breathlessness**	a. Adequate nutrition and hydration b. Symptomatic management like antipyretics and antihistaminic c. Tab Hydroxychloroquine (HCQ) may be considered for women having high risk factors (Hypertension, diabetes, chronic lung/kidney/ liver disease, cerebrovascular disease or obesity under strict medical supervision. d. If worsening symptoms, urgent medical care should be given
Moderate illness	Pneumonia with no signs of severe disease. Presence of breathlessness and or features of hypoxia (Respiratory Rate-24/minute, SpO2 90%-96% on room air).	a. Monitoring and supportive care to be provided b. Oxygen by nasal cannula or mask with breathing or non- rebreathing reservoir bag c. Maintenance IV fluids d. Awake proning till 20 weeks of pregnancy, semi- recumbent position with a slight left lateral tilt after 20 weeks of pregnancy e. Antibiotics to cover organisms known to cause community based pneumonia (cap amoxiclav 625 mg TDS for 7 days) f. Azithromycin 500 mg OD for 5 days g. Tab Hydroxychloroquine 400 mg BD on day1 followed by 200 mg BD for 4days h. IV methylprednisolone 0.5-1 mg/kg/day for 3 days in consultation with medicine consultant i. Prophylactic anticoagulation in consultation with medicine consultant- enoxaparin 40 mg per day SC or unfractionated heparin 5000 IU SC 12 hourly
	12-lead ECG- daily CBC, absolute lymphocyte count, KFT & LFT-daily CRP, D-dimer & Ferritin every 48-72 hours	
Severe illness	Severe Pneumonia- breathlessness with Respiratory rate ≥30/minute and/or SpO2 < 90% in room air	a. Admitted in COVID-19 ICU and receive treatment as per standard treatment protocol. b. Oxygen therapy by nasal cannula or mask with breathing or non-rebreathing reservoir bag at rate of 5 L/min with target SpO2 94% but not exceeding 96%. c. Antibiotics to cover organisms known to cause community based pneumonia IV ceftriaxone 2 gm IV BD. d. Early short course of IV methylprednisolone 0.5 -1 mg/kg /day for 3 days in consultation with treating physician [§] Or Tab Dexamethasone 6 mg PO once a day for 6-10 days.[§] e. Prophylactic anticoagulation enoxaparin 40 mg per day SC or unfractionated heparin 5000 IU SC 12 hourly. Higher doses can be given in severe illness. f. Specific therapy related to use of convalescent plasma, Remdesivir (a nucleotide analogue prodrug that inhibits viral RNA polymerases) should be considered in consultation with physician.[§]
	Hypoxemic respiratory failure and Acute Respiratory Distress syndrome (ARDS)	i. Initiate High-Flow Nasal Cannula Oxygenation (HFNO) or non-invasive mechanical ventilation if not responding to standard oxygen therapy. ii. If does not improve over then intubation and invasive ventilation should be performed.
	Sepsis	Higher antibiotics for broad-spectrum coverage.
	Septic Shock	a. Fluid therapy- RL or NS IV fluids -30 mL/Kg over first 3 hours. b. Prevent fluid overload- aiming daily negative balance of 0.5-1 L c. Vasopressor to be started if fluid therapy is not sufficient. Inotrope dopamine may be given if still poor perfusion persists

[§] Limited evidence available for use in pregnancy and postpartum period however have been used on compassionate grounds.
¥Antenatal corticosteroids can be given between 24 to 34 weeks in women at risk of preterm labor provided there is no risk of worsening of maternal condition. Tocolytics should be avoided. Treatment may be individualized according to the patient profile at the discretion of treating obstetrician.

pressure isolation ward preferably in a designated and multidisciplinary hospital with facilities of Critical care , neonatal care and surgical facilities for managing critically ill obstetric patients.

III. Care of COVID Positive Pregnant woman[4-10]

At the point of admission confirmed cases need to be assessed and risk stratification to be done depending upon the clinical presentation and triage to be done according to the National Early Warning Score (NEWS) 2.

Every confirmed case of COVID-19 (MoHFW) should be manged according to the following principles. [Table 1]

Supplemental Therapy

Oxygen therapy forms the first line of treatment for COVID induced respiratory distress and hypoxia as recommended by World Health Organisation (WHO) and centre for disease control and prevention. The treatment should be aimed to maintain oxygen saturation of more than 90% which has been recommended to be kept at >95% for pregnant women.[3,4]

Various invasive and non-invasive mode of providing oxygen therapy are available and an appropriate modality should be chosen as per the severity of the patient so as to minimize the number of patients requiring intubation, mechanical ventilation and ICU admission (Table 2).[3] All the forms available have the ability to aerosolize respiratory pathogen so the method used should balance the clinical benefit and the risk associated with nosocomial spread.[3]

Non Rebreather Mask (NRM)

These are a safe way to provide supplemental oxygen in COVID patients as they have the least dispersed aerosols. To prevent hypercapnia from occurring the reservoir bag must be inflated at all times keeping at least 10-15 L as the flow rate.

High Flow Oxygen Systems

These includes high flow nasal cannula and high flow nasal insufflation which aims to deliver oxygen rich heated humidified gas to the patients nose at flow levels sufficient to deliver a high Fio2. HFNO is associated with decreased risk of subsequent intubation (relative risk [RR] 0.85, 95% confidence interval [CI] 0.74-0.99) and need for ICU admission. Commonly used initial parameters are a flow of 50–60 L/min with an FiO_2 of 1.0 (100% oxygen). Once improvement is noted, the FiO_2 should be weaned before the flow is decreased, because the flow provides alveolar recruitment (high flow of air results in 3–5 cmH_2O of positive pressure ventilation, keeping more alveoli open). We recommend that, once the FiO_2 is 0.4–0.5, the flow may be weaned gradually by decreases of 5–10 L/min every 4–6 hours as tolerated to maintain the SpO_2 level above 94%.

Non-Invasive Positve Pressure Ventilation

These deliver positive airway pressure through tight fitting nasal mask and cannula through all phases of respiratory cycle and can achieve a Fio2 of upto 100% in closed circuit. They include continuous positive airway pressure (CPAP) or bi-level positive airway pressure (BiPAP). Multiple ongoing researches are being conducted to study the nosocomial transmission and infection in healthcare workers some of which have found to have an increased rate.

Mechanical Ventilation

Cases with frank respiratory failure or multi-organ dysfunction need mechanical ventilation via an endotracheal tube. However, the process of intubation produces a high amount of respiratory droplets which poses a threat to the healthcare professional, thus a risk to benefit analysis should be done before considering intubation and mechanical ventilation. The indications for using mechanical ventilation are unclear at present. A joint statement by German Intensive Care, Anaesthesia, and Emergency Medicine

Table 2: Oxygen Therapy and rate of oxygen delivered

	Method	Aerosol Dispersion Distance (Cm)*	Flow Rate	Oxygen concentration (FiO_2)
1	Simple mask	40cm (at 10 L/min)	5-10 L/min	40-60%
2	Nasal cannula	30 cm (at 1 L/min) 40 cm (at 5 L/min)	5-6 L/min	45%
3	Venturi mask (more precise oxygen delivery)	33cm (at FiO_2 40%) 40cm (at FiO_2 24%)	2-15 L/min	24% -60%
4	Nonrebreather mask (NRB's)	<10 cm (at 10-15 L/min) Least dispersion of aerosols	15 L/min	Upto 90%

*High fidelity human mannequin studies conducted to demonstrate the maximum exhaled dispersion distance

Societies suggests direct escalation to intubation and mechanical ventilation if PaO2/FiO2 < 200 mmHg.

Nebulizer Therapy

Nebulizer treatment should be avoided in the care of patients with COVID-19, they are a high-risk event for nosocomial viral transmission and should only be performed by trained personals under negative pressure environment.

Thromboprophylaxis Viral infections have been known to be associated with deranged coagulation profile leading to thromboembolic disorders and multiorgan dysfunction which is postulated to occur secondary to the release of inflammatory cytokines inducing the production of tissue factor and activate thrombin. Use of anticoagulant therapy with low molecular weight heparin is followed as the obstetric risk scoring available and also it is seen to improve prognosis in severe COVID-19 patients stratified by sepsis induced coagulopathy score or D-dimer results.

Steroids Therapy

In patients hospitalised with COVID-19 should be started on Dexamethasone 6mg OD IV/ oral dose can be raised according to the severity of disease. As per RECOVERY trial early initiation of therapy reduces the 28 days mortality.

Timing and Mode of Delivery

Every case should be individualized and timing and mode should be based on the severity of the disease, existing comorbidities, maternal obstetric parameters, gestational age and fetal condition. In critical COVID-19 cases pregnancy continuation endangers both the mother and the fetus, where delivery should be conducted irrespective of the fetal viability after consulting the patient and her family. The mode of delivery is decided by the obstetric indications, since there is lack of evidence for vertical transmission and vaginal shedding of virus, vaginal delivery can be considered in stable COVID 19 patients.

Newborn Care

As per the available evidence in which neonatal infection has been seen to occur in close contacts, it has thus been suggested that feed should be given after taking all safety precautions such as wearing a mask and sanitising hands. A healthy caregiver can also give top feed or expressed breast milk to the baby.

Conclusion

Adapting a multidisciplinary approach in managing an obstetric patient suffering from COVID-19 is the first thing to be taken care of. The ongoing pandemic poses multiple challenges due to lack of data, lack of healthcare professionals and protecting the workforce. Multiple logistical and medical shortcomings make the management of COVID 19 a challenge. However, adapting the right measures for the patients as well as the health care professionals help in managing the scenario and reducing the morbidity and mortality.

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COVID Related Death in Pregnancy- The quandary continues beyond life!!

Sheeba Marwah[1], Divya Arora[2]
[1]Assistant Professor & COVID-19 Nodal Officer, [2]Senior Resident
Department of Obstetrics & Gynecology, Vardhman Mahavir Medical College & Safdarjung Hospital

The global pandemic of COVID 19 or Severe acute respiratory syndrome coronavirus 2 (SARS CoV2) has rapidly enslaved all strata of population worldwide, including pregnant women. The disease is most frequently contracted by being in close contact with a confirmed positive case, who may or may not be symptomatic, via aerosol or by contact with infected surfaces.

The most common presenting symptom is fever (87.5%) followed by cough (53.8%), fatigue (22.5%), myalgia (16.3%), diarrhea (8.8%), dyspnea (11.3%), and sore throat (7.5%).[1,2] An infected female may be symptomatic or asymptomatic. Use of face mask, hand sanitizer, frequent hand-washing and social distancing is advocated as frontline preventive measures against the infection. However, those who have severe or critical disease and those with co-morbidities have higher complications, with higher propensity to succumb to the same.[2,3]

Maternal Morbidity and Mortality Due to COVID-19

The lockdown and movement restriction during this pandemic has prevented pregnant women to seek antenatal care liberally, thereby resultant non-recognition of high risk cases. Besides, restriction in family planning services and routine OPD has led to increased unintended pregnancies and higher adverse outcomes. Maternal morbidity due to COVID-19 is most commonly seen as Pneumonia, which can worsen to cause respiratory distress and need for mechanical ventilation and intensive care in 25% cases.[1-3] Viral pneumonia has higher mortality in pregnancy. Fever and hypoxemia from severe pneumonia may increase the risks for preterm labor, pre-labor rupture of membranes, and abnormal fetal heart rate patterns and fetal death. Complications include acute respiratory distress syndrome (ARDS), disseminated intravascular coagulopathy, renal failure, secondary bacterial pneumonia, sepsis, elevated liver enzymes, and cardiac injury (eg, cardiomyopathy, pericarditis, pericardial effusion, arrhythmia, and sudden cardiac death). Abnormal testing includes abnormalities on chest radiographic imaging, lymphopenia, leukopenia, thrombocytopenia and coagulopathy.

COVID-19 Death- definition

WHO defines a death due to COVID-19 , for surveillance purposes, as a death resulting from a clinically compatible illness, in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID disease (e.g. trauma).[4] There should be no period of complete recovery from COVID-19 between illness and death. COVID-19 should be recorded on the medical certificate of cause of death for all decedents where the disease caused, or is assumed to have caused, or contributed to death.

COVID-19 Death- certification & Nomenclature

Differences in mortality between groups of people and countries are important proxy indicators of relative risk of death that guide policy decisions regarding scarce medical resource allocation during the ongoing COVID-19 pandemic. Therefore, Guidelines have been laid to ensure uniformity in COVID 19 death certification and reporting worldwide. The use of official terminology as COVID-19, is warranted for all certification of the cause of death being SARS CoV2, on the medical certificate of cause of death for ALL decedents where the disease caused, or is assumed to have caused, or contributed to death. Term coronavirus should not be used, since many types of coronaviruses exist. This would also aid in decreasing ambiguity in classification or coding of deaths, besides enabling accurate monitoring of deaths.

The death certificate should include a detail of causal sequence leading to death as well in part 1 of the certificate; for example pneumonia or acute respiratory distress syndrome. Certifiers ought to incorporate as much details as possible, built upon their knowledge of the case, and from medical records, or about laboratory

testing. Any preexisting chronic conditions or co-morbidities in the decedent should also be mentioned in part 2 of the certificate.

Example of certification of COVID 19 as cause of death in pregnancy

Figure 1 shows a typical course with a certificate filled in correctly. Noteworthy is the fact that In case of a pregnancy, puerperium or birth leading to death in conjunction with COVID-19, it is crucial to record the sequence of events as usual, besides putting in the additional details for pregnancies in frame B of the certificate of cause of death.

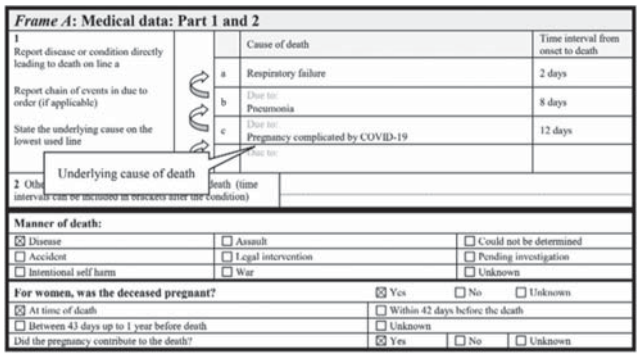

Figure 1: COVID-19 and maternal mortality: (as adapted from WHO guidelines of death certification in COVID 19)

ICD Coding of COVID-19 Death

In 2020, New ICD-10 codes for COVID-19 have been designated as i) U07.1 COVID-19, virus identified ii) U07.2 COVID-19, virus not identified iii) Clinically-epidemiologically diagnosed COVID-19-Probable COVID-19 or Suspected COVID-19

Although both categories, U07.1 (COVID-19, virus identified) and U07.2 (COVID-19, virus not identified) are apposite for cause of death coding, in many countries, detailed elements pointing to laboratory confirmation of COVID-19 would often NOT reported on the death certificate, due to various reasons. In absence of this detail, it is recommended, for mortality purposes only, to code COVID-19 provisionally to U07.1 unless it is stated as "probable" or "suspected". The international rules and guidance for selecting the underlying cause of death for statistical tabulation apply when COVID-19 is reported on a death certificate. But, given the intense public health requirements for data, COVID-19 is not considered as due to, or as an obvious consequence of, anything else (in analogy to the coding rules applied for INFLUENZA and emerging diseases reportable to WHO). Furthermore, there is no provision in the classification to relate COVID-19 to other causes or alter its coding.

Figure 2 shows ICD coding in a pregnant woman with COVID 19 as a cause of death. Important is to cipher all entries in Part 1 and 2, and, select other viral diseases complicating pregnancy, childbirth, and the puerperium (O98.5) as underlying cause of death. Step SP3 applies as causes have been reported on more than one line in Part 1 and the condition reported first on the lowest used line (other viral diseases complicating pregnancy, childbirth and the puerperium) can cause both of the conditions— pneumonia (O99.5 and J18.9) and acute respiratory distress syndrome (O99.5 and J80)—mentioned on the lines above. Use additional code to retain COVID-19.

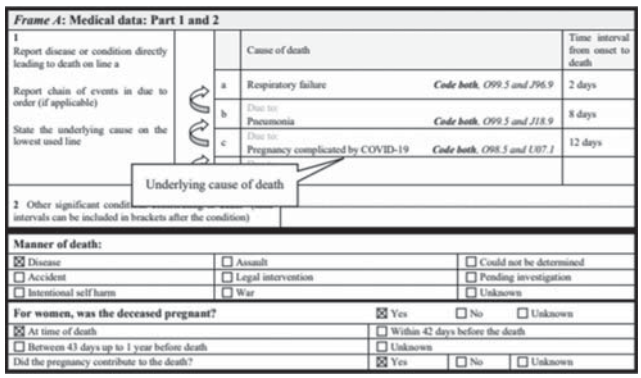

Figure 2: ICD coding in documenting maternal mortality due to COVID 19(as adapted from WHO guidelines of death certification in COVID 19)

Use of ICD Classification

Reporting of COVID 19 deaths in accordance with the aforementioned classification would allow investigation of comorbidities with COVID-19, execution of equity analyses or analyses of within-country disparities based on geography, ethnicity, profession, or other factors relevant to the determination of COVID-19 control policies worldwide. This will enable in more comprehensive understanding of SARS CoV2 , with the aim to curb its morbidity and mortality in future

What is Not COVID-19 Death?

Women with COVID-19 may die of other diseases / clinical conditions or accidents/ assaults; such cases are not deaths due to COVID-19 and should not be certified as such. In case you think that COVID-19 aggravated the consequences of the condition, you may report COVID-19 in Part 2. One should not forget to indicate the manner of death and record in part 1 the exact kind of an incident or other external cause.

Breaking Bad News

Since the relatives of the patient are not allowed to stay with the patient, they must be informed about the maternal and fetal condition and prognosis from time to time. The mounting anxiety and fear about the disease and the adverse outcome, in case women expires, leaves the attendants in a miserable state. So, it is of utmost importance that the healthcare providers show utmost care and empathetic attitude while explaining the sequence leading to death after breaking the bad news of death.

Disposal of Dead Bodies of Suspect/ Confirmed Patients

Adding to so many uncertainties associated with this novel coronavirus, handing over a dead body to the relatives, stirred quite an unparalleled dilemma too, amongst the healthcare workers, deceased patient's kith and kin, and of course the administrators and policy makers. The very fact that the dignity of the dead and the religious and cultural traditions have also to be maintained while taking austere decisions augmented the controversy further. Although an amplified risk of SARS-CoV2 infection from a dead body to health workers or family members, following stringent standard precautions while handling the dead body, is improbable; yet the dearth of enough scientific data on this aspect necessitates utmost care to circumvent the inadvertent spread of COVID-19.

SOPs for COVID-19 Dead Bodies

Keeping all this in mind, the Ministry of health and family welfare Government of India released guidelines on handling the dead bodies of COVID 19 patients.[5] These included that the dead bodies of confirmed COVID 19 cases to be kept in isolation area or mortuary with observation of infection prevention control practices. However, the dead bodies of the suspected COVID cases should be handed over to the relatives without waiting for the laboratory confirmation of COVID-19. The health worker attending to the dead body should perform hand hygiene; ensure proper use of PPE (water resistant apron, goggles, N95 mask, gloves). All tubes, drains and catheters on the dead body should be removed. Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be disinfected with 1% hypochlorite and dressed with impermeable material. Plugging of Oral, nasal orifices of the dead body to prevent leakage of body fluids should be done.

If the family of the patient wishes to view the body at the time of removal from the isolation room or area, they may be allowed to do so with the application of Standard Precautions. Place the dead body in leak-proof plastic body bag. The exterior of the body bag can be decontaminated with 1% hypochlorite. The body bag can be wrapped with a mortuary sheet or sheet provided by the family members. All used/ soiled linen should be handled with standard precautions, put in biohazard bag and the outer surface of the bag disinfected with hypochlorite solution.

Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed. Bathing, kissing, hugging, etc. of the dead body should not be allowed. The funeral/ burial staff and family members should perform hand hygiene after cremation/ burial.

Challenges Encountered

Delays in reporting deaths can lead to underestimation of the CFR. COVID-19 cases and deaths occurring in the community that go undetected or are reported late because they were incorrectly attributed to other causes. Other frequent problems in cause-of-death certification include: 1. reporting intermediate causes as the UCOD (i.e., on the lowest line used in Part I), 2. lack of specificity, and 3. illogical sequences

Conclusion

Maternal death due to COVID 19 is a sensitive issue and needs to be addressed. The acute nature of the disease and rapid progression make it a painful and stressful situation for both doctors and the patient's relatives. Adequate testing is needed to identify those with disease, and certification of cause of death. An accurate count of the number of deaths due to COVID–19 infection, which depends in part on proper death certification, is critical to ongoing public health surveillance and response. When a death is due to COVID–19, it is likely the UCOD and thus, it should be reported on the lowest line used in Part I of the death certificate. Ideally, testing for COVID–19 should be conducted, but it is acceptable to report COVID–19 on a death certificate without this confirmation if the circumstances are compelling within a reasonable degree of certainty More research is warranted to tackle those with severe disease to avert mortality. Utmost care, sympathy and empathetic attitude towards the kin of the deceased should be practiced by healthcare workers.

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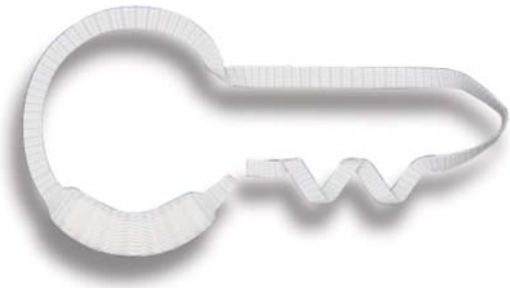

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