


## *“ COVID-19 Infection Prevention and Control Guidelines in Obstetric and Gynecological hospital ”*

### **Authors**

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## Abstract:

### **Background:**

During first months of the COVID-19 outbreak, infection prevention and control (IPC) for pregnant women was challenging for both staff & patients due to a relatively lacking of clinical information about the virus, high rates of transmission, lack of information about its transmission from mother to fetus & insufficient storage of personal protective equipment (PPE).

### **Aim of the Study:**

Compose an IPC policies and practices for Obstetrics & Gynecology (obs.& gyn.) Hospital during COVID-19, in order to minimize risks of infection and protect the safety of patients during this outbreak.

### **Methodology:**

SWOT analysis, TOWS analysis, Brain Storming.

### **Conclusion:**

During COVID-19 outbreak IPC policies is essential in hospital. SWOT analysis is important to supply unique information helps in compose IPC protocols. It is mandatory to plan for obs & gyn, hospital to plant IPC program to face this outbreak. This program should be updated regularly to face developing situation and Health Care Workers (HCWs) should be trained on this program.

### **Key words:**

COVID-19, Obs. & Gyn. Hospital, Healthcare, patient

## **Introduction:**

COVID-19 is the disease caused by (SARS-CoV-2), which appeared in Wuhan (China) in 2019 and then quickly spread around the world causing the most serious pandemic since influenza which swept the world in 1918. COVID-19 caused significant morbidity & mortality, and has mostly manifested itself as a respiratory disease that spread easily by infected asymptomatic & pre-symptomatic persons.

Pregnant women do not appear to contract COVID-19 more or less likely than general population; more than two thirds of pregnant women are asymptomatic. Cough and fever are the most usual symptoms that appear in COVID-19 infected pregnant women. There is increasing proofs that demonstrate increased risk for severe illness from COVID-

19infection in pregnant & recently pregnant women compared to non-pregnant one, especially in 3<sup>rd</sup> trimester. Also, COVID-19 infected pregnant women have a higher risk of giving birth preterm & other adverse pregnancy outcomes.

The delta variant appears to be associated with more severe disease with 1:10 of alpha variant symptomatic women are admitted to intensive care while it is 1:7 incase of delta variant. Omicron variant may be less severe disease than delta, however, it is more contagious, and it probably related to unfavorable maternal & neonatal outcomes, mostly in unvaccinated cases.

Vertical transmission of COVID-19 is uncommon and there is no reported increase in congenital abnormalities incidence. Maternal infection is related to nearly twice risk of stillbirth and higher rate of smallfor gestational age babies. The rate of preterm birth rate seems to be 2 to 3 times more than normal rates; which are mainly iatrogenic preterm births.

The fact that COVID-19 still developing and mutating to different new versions and all previous reasons make it crucial to enhance IPC policies for those unique patients.

IPC is essential to provide safe healthcare ambience for patients & HCWs. It is a critical element in interrupting the transmission of priority infectious diseases as COVID-19.

## **Aim of the Study:**

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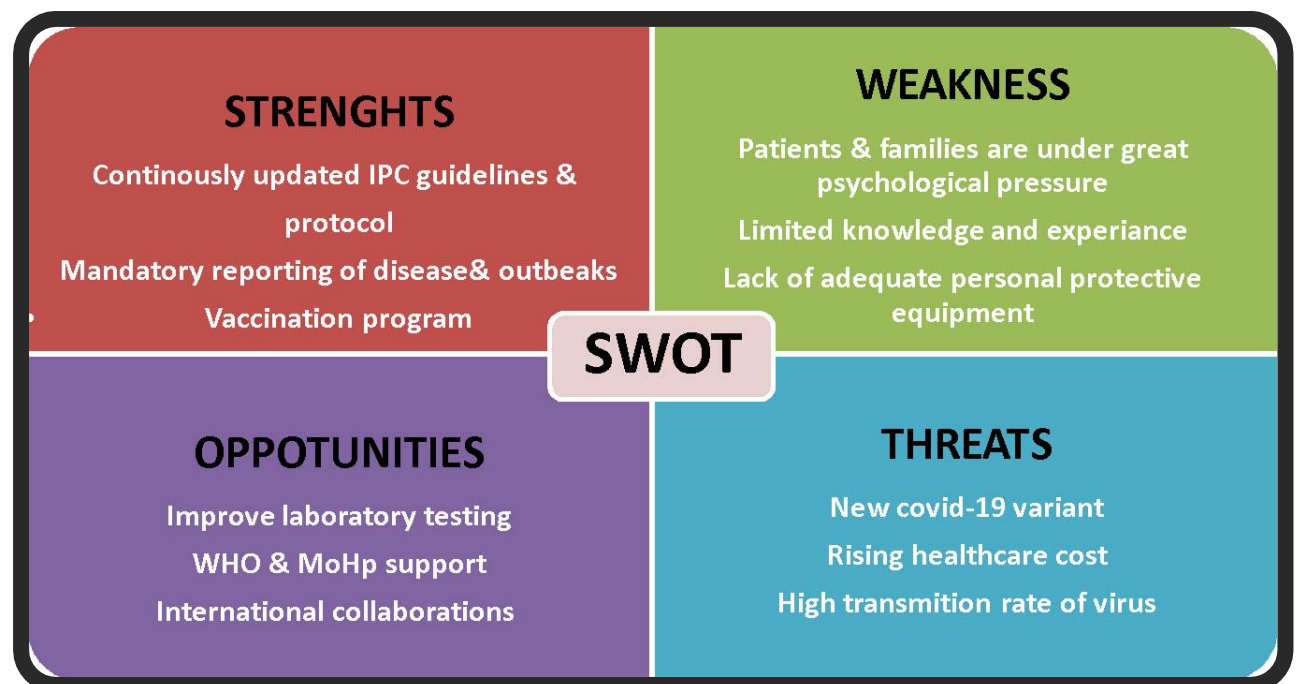
## **Methodology:**

Our study was conducted in period from June 2021 to December 2021. We used SWOT analysis, brain storming and TWO analysis in order to develop IPC strategy in obs. & gyn. Hospital during COVID-19 outbreak. Data was collected from internet and different strategies from WHO, CDC, UNFPA and MOHP (Ministry Of Health Egypt).

## **SWOT analysis:**

It is a strategic management & planning method used in determining strength, weakness, opportunity & threat. It is used in initial phase of decision making process also to assessment the strategic position of the

institution. Healthcare professionals (Infection preventions (IPs) or quality improvement specialist) use SWOT to investigate public health issues and to improve healthcare outcomes. Strength & Weakness are internal, while Opportunity & Threat are external. We can use SWOT analysis to list factors that affect disease prevention across a population as below:



**Brainstorming:**

It is a way to create ideas & share information in order to resolve certain issue, where everyone is able to think freely. It is a group activity where everyone can shares his thoughts freely. At end of session, ideas are sorted and arranged for actions to follow. We will use it in order to convert weakness to strengths and threats to opportunities. We can use brainstorming and collecting data from the internet about the project and other resources in order to analysis current situation and define strength, weakness, opportunities and threats that face our project.

**TOWS Analysis:**

It is an extension of the classical analytical tool SWOT. TOWS analysis is very similar to SWOT analysis, however there is a key difference between them, other than a reshuffling of a few letters. TOWS analysis forces you to look at external environment first (threats and opportunities), while; SWOT analysis, puts the emphasis on the internal environment (strengths and weaknesses). TOWS analysis goes further in searching for matching up Strength with Opportunity and Threat with Weakness as shown in table (1). It's a magnificent next phase after SWOT that allows taking action from the analysis.

Combining both internal & external factors makes TOWS more useful than SWOT with clear next phase. Its major objects are: decrease threat, seize opportunity, exploiting strength and removing weakness. Thoughtful TOWS can give you details of your SWOT and more data to decide on the overall direction.

	<b>INTERNAL WEAKNESS</b>	<b>INTERNAL STRENGTHS</b>
<b>EXTERNAL THREATS</b>	<b>WT</b> MINI-MINI Strategy Strategies that minimize weakness and avoid threats	<b>ST</b> MAXI-MINI Strategy Strategies that use strengths to minimize threats
<b>EXTERNAL OPPORTUNITIES</b>	<b>WO</b> MINI-MAXI Strategy Strategies that minimize weakness by taking advantage of opportunities	<b>SO</b> MAXI-MAXI Strategy Strategies that use strengths to maximize opportunities
<b>Table (1): TOWS analysis</b>		

## **Result (IPC protocol during COVID-19 in obstetrics & gynecology hospital):**

### **1- Triage for early recognition of COVID-19 suspected patients:**

In order to simplifying screening & triage in the hospital we should:

- a) Display information about sign of COVID-19 at the hospital entrance so patients with signs can be directed to triage area.
- b) Create separate entrances for patients showing signs of COVID-19.
- c) Train HCWs on signs of COVID-19 and keep them updated.
- d) Encourage HCWs to be alarmed about possibility of infection with COVID-19 in patients.
- e) Create full-equipped triage area, with adequate PPE supplies; ensure that screening HCWs maintain a least 1.5m distance from patients, with a divider screen either a glass or plastic. If it is impossible HCWs should wear surgical mask & eye protection. This process must be fast as possible and minimize waiting time before triage as possible.
- f) Use a triage algorithm as acute respiratory infection (ARI) checklist (**fig. 1**) to rapidly identify COVID -19 suspected patients then allocate them to separate well-ventilated waiting area.

- g) Either suspected or confirmed COVID-19 patients must wear medical mask & keeping 1.5 m between them. Direct patients during coughing or sneezing to cover their nose & mouth either with tissue then dispose it directly after use in closed trash can or flexing their elbow then clean their hands.
- h) Disinfect and clean all surfaces and medical equipment periodically.
- i) Visitors should not be allowed or restrict them to caregivers of pregnant women (one person only) and ask them to wear a mask.

<i>A. Clinical symptom/sign</i>		Points	Score
1	Fever ( $\geq 38^{\circ}\text{C}$ )	2	
2	Cough (New or worsening)	2	
3	Shortness of breath (New or worsening)	2	
4	Nausea, vomiting, diarrhea	1	
5	Sore throat and/or runny nose	1	
6	DM, Chronic renal failure, CAD/heart failure	1	
<b>B- Risk of Exposure to COVID-19</b>			
7	Exposure to a confirmed case in last two weeks	3	
8	<b>Direct or in direct contact with suspected case in last two weeks</b>	2	
9	Visit to health care facility that has COVID-19 case in last two weeks	1	
<b>Total Score</b>			
* Patient or household			

**Fig. (1): Acute respiratory infection (ARI) checklist**

## 2-Applying standard precautions:

It aims to minimize infection transmission. They include the following points:

### a) Hand hygiene:

It is one of the best ways to inhibit COVID-19 transmission.

HCWs must apply WHO's five moments of hand hygiene approach prior touching patient, prior performing any procedure (clean or aseptic), after exposure to any body fluid, after touching a patient or his surroundings

Hands cleaning with alcohol-based hand rub (ABHR) containing at least 70% alcohol if hands are not visibly dirty, or with soap & water if hands are visibly dirty.

Using correct method & time for hand rubbing or washing.

#### b) Respiratory hygiene

Display graphic posters on how to cover nose & mouth during coughing or sneezing either with tissue then dispose it directly in closed trash can or flexing their elbow then clean their hands.

Cleaning your hands if it touches respiratory secretions or contaminated objects with respiratory secretions.

COVID-19 suspected patients should be wearing a mask.

#### c) Using PPE

Proper PPE using can minimize exposure to infection.

Efficiency of PPE using highly relies on:

1. Training staff on how to wear & remove PPE with immediate access to supply.
2. Correct hand hygiene.
3. HCWs compliance, periodic follow up & feedback by IPC staff.

#### d) Environmental cleaning

Periodic and adequate cleaning & disinfection procedures must be carried out.

All hospital surfaces must be cleaned & disinfected regularly, particularly highly touched surfaces, or if contaminated by body fluids or visibly soiled.

Frequent cleaning of areas with COVID19 patients as showing in **(fig.2)**

Cleaning surfaces completely with water & detergent; use disinfectant solution ( 0.1% sodium hypochlorite or 70-90% ethanol) is efficient with COVID-19; 0.5% sodium hypochlorite is used for large blood or body fluids spills.

Discard detergent or disinfectant solutions after each use in areas with COVID-19 patients.

Equipment used for isolated areas should be color-coded & kept alone.

When working in screening and triage areas or in presence of COVID-19 patients or when conducting clinical consultations, cleaners obligated to wear PPE: gown, medical mask, heavy-duty gloves, eye protection (if there is a risk of splashing organic matter or chemicals) and closed shoes or boots.

Patient area	Frequency <sup>a</sup>	Additional guidance
Screening/triage area	At least twice daily	<ul style="list-style-type: none"> <li>Focus on high-touch surfaces, then floors (last)</li> </ul>
Inpatient rooms / cohort – occupied	At least twice daily, preferably three times daily, in particular for high-touch surfaces	<ul style="list-style-type: none"> <li>Focus on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible; then floors (last)</li> </ul>
Inpatient rooms – unoccupied (terminal cleaning)	Upon discharge/transfer	<ul style="list-style-type: none"> <li>Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected</li> </ul>
Outpatient / ambulatory care rooms	After each patient visit (in particular for high-touch surfaces) and at least once daily terminal clean	<ul style="list-style-type: none"> <li>High-touch surfaces to be disinfected after each patient visit</li> <li>Once daily low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, examination bed thoroughly cleaned and disinfected</li> </ul>
Hallways / corridors	At least twice daily <sup>b</sup>	<ul style="list-style-type: none"> <li>High-touch surfaces including railings and equipment in hallways, then floors (last)</li> </ul>
Patient bathrooms/ toilets	Private patient room toilet: at least twice daily Shared toilets: at least three times daily	<ul style="list-style-type: none"> <li>High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order)</li> <li>Avoid sharing toilets between staff and patients</li> </ul>

<sup>a</sup> Environmental surfaces should also be cleaned and disinfected whenever visibly soiled or if contaminated by a body fluid (e.g., blood); <sup>b</sup> Frequency can be once a day if hallways are not frequently used.

**Fig. (2): Frequency of cleaning according to patient areas with COVID-19**

**e) Waste management:**

Waste generated in care of COVID 19 patients considered infectious & must be safely collected in clearly lined marked containers and sharp secure boxes.

During COVID 19 outbreak there will be increase in the volume of infectious waste so designate responsibility, sufficient human resources and materials for waste separation & disposal.

It is preferable to process the waste on site and then dispose it safely. If waste is transported off-site, it is crucial to know how & where it will be processed and disposed of.

Use proper PPE (mask, long sleeve gown, boots, heavy-duty gloves & goggles or face shield) during dealing with infectious waste then proper hand cleaning after PPE removal.



### **3-Implementing additional precautions:**

COVID-19 is primarily transmitted through respiratory droplets and contact routes. It can be transmitted by direct contact with infected person and indirect contact with contaminated environmental surfaces. Airborne transmission can occur when aerosol generating procedures (AGPs) are performed as tracheal intubation, non-invasive ventilation, etc.....

#### **a) Isolation of COVID -19 suspected or confirmed patients:**

Designate separate HWs team for COVID-19 patients. Patients should be placed in well-ventilated single rooms or isolation ward with bed distance 1 m at least.

Limit patient movement if not vital. Preferred to use portable equipment (X ray or US) if available. If transportation is essential, patient must be wearing mask and use specific designated routes to decrease exposure to others (staff, patients and visitors). HWs that transport patients should wear proper PPE & follow IPC protocols.

Equipment must be single-use or dedicated (as thermometers, stethoscopes,....). If it is needed to be shared within patients, clean & disinfect it with ethyl alcohol 70% before and after each patient. Keep records of all staff entering the isolated area.

#### **b) Contact and droplet precautions:**

HWs must follow contact & droplet precautions and standard precautions prior entering isolated area.

Use proper PPE: medical mask, eye protection or facial protection, clean non-sterile long sleeve gown and medical gloves. Proper hand cleaning before wearing and after removal PPE

Through routine care HWs must wear surgical mask, but no need to wear boots or apron.

HCWs should wear new gown & gloves after handling COVID-19 patient with multi-drug resistant organism.

HWs should not touch their faces with possibly polluted bare hands or gloves.

Clean & disinfect surfaces which patient touches periodically.

#### **c) Airborne precautions when performing AGPS:**

Conduct AGPs procedures in adequate ventilated room and follow both airborne & contact precautions

Use proper PPE, mask N95, gloves, eye protection and long sleeve gown.

HCWs should wear waterproof apron if gown isn't fluid-resistant and the procedure will produce large volume of fluid.

In ICU, where AGPs are performed usually, HWs may N95 during entire shift, in areas of community transmission.

#### **4-Implementing administrative controls**

It includes: establishing sustainable IPC infrastructures and activities; ensuring adherence to IPC policies, establish protocol for COVID-19 triage; easy access to COVID-19 laboratory tests; prevent overcrowding particularly in ER; specifying area for waiting and isolating area for COVID-19 patient; secure sufficient supply of PPE and educating HWs & patients caregivers.

Adequate training for HWs and adequate patient to staff ratio.

Monitoring HWs compliance with standard precautions.

Developing surveillance process for ARI potentially caused by COVID-19 among HCWs.

Implement policies to restrict visitor access.

Limit entry to essential visitors as caregivers (one person)

Designate especial entrance for visitors

Keep a record of all hospital visitors

Provide alternatives ways of interaction between patients and their family as telephone or internet connection.

Educate caregiver on standard precautions as hand hygiene, physical distancing, respiratory etiquette and recognition COVID-19 symptoms.

Educate caregiver of COVID-19 patients on proper use of PPE.

Caregiver should wear a medical mask in places of community transmission even if they are caring for non-COVID-19 patients.

Restrict movement of the visitor within the hospital

Perform active screening of all caregiver visitors' prior hospital entry.

Prohibit visitors' presence during AGPs.

#### **5-Implementing environmental and engineering controls:**

It addresses basic hospital infrastructure and aims to provide proper ventilation in whole hospital and appropriate environmental cleaning.

We should keep one meter distance between patients.

Spatial separation & proper ventilation may minimize infection.

Hospital will be equipped with 2 High-Efficiency Particulate Air (HEPA) filters.

Using glass or plastic barriers may lower HWs' COVID-19 exposure. It may be used in places where patients first present as screening and

triage areas, registration desk or at pharmacy window where medication is collected.

Ensure periodic and proper cleaning & disinfection techniques, and using hospital disinfectant (sodium hypochlorite) is appropriate & efficient.

Use standard IPC protocols in dealing with food service utensils, laundry and medical waste product.

## **6-Implementing especial considerations for obst & gyna department:**

Train HCWs on how to manage COVID-19 patients in delivery room.

Affirm to caregivers the importance of IPC protocols during labor, mother and newborn postnatal stay in hospital which includes practicing on PPE use & movement restriction in hospital.

In delivery suite, we should increase negative pressure rooms to adjust increased number of COVID-19 cases.

Suspected or confirmed COVID-19 patients will be isolated in negative pressure rooms. If the patient turns out to be positive during labour, we should decrease staff number entering operative room, no visitors and newborn should be isolated after delivery.

Since 2<sup>nd</sup> stage of labor is aerosol-producing stage, managing teams should wear full PPE. Recommended PPE during the surgical procedure is shown in **fig (3)**.

The operating theatre ventilation should be checked for ACH (Air changes per Hour) and airflow. There is no need to convert operating room to negative pressure since there is sufficient air volume (160L/sec) changes (up to 24 ACH) to maintain particularly high dilution factor when performing AGP.

	Green	Yellow	Red
<b>Team huddle</b>	<b>Team to review</b> <ul style="list-style-type: none"> <li>Confirm patient risk category</li> <li>Anesthetic approach</li> <li>Staff to be in OR (e.g., midwife/family physician)</li> <li>Presence of support person in OR as per routine</li> </ul>	<b>Team to review</b> <ul style="list-style-type: none"> <li>Confirm patient risk category</li> <li>Anesthetic approach</li> <li>Staff to be in OR (e.g., midwife/ family physicians)</li> <li>Presence of support person in OR<sup>iii</sup></li> </ul>	<b>Team to review</b> <ul style="list-style-type: none"> <li>Confirm patient risk category</li> <li>Anesthetic approach</li> <li>Staff to be in OR (e.g., midwife/ family physicians)</li> <li>Presence of support person in OR<sup>iv</sup></li> </ul>
<b>Neuraxial anesthesia</b>	<b>Routine personnel in the OR</b> All personnel in the OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/gloves if dictated by point-of-care-risk assessment</li> </ul>	<b>Limit personnel in the OR.<sup>v</sup></b> All staff in OR suite don: <ul style="list-style-type: none"> <li>Fit-tested N95 Respirator</li> <li>Face shield or goggles</li> <li>Gown &amp; gloves</li> </ul>	<b>Limit personnel in the OR</b> All staff in OR suite to don: <ul style="list-style-type: none"> <li>Fit-tested N95 Respirator</li> <li>Face shield or goggles</li> <li>Gown and gloves</li> </ul>
<b>If general anesthetic (GA): Intubation and extubation</b>	<b>Routine personnel in the OR</b> All staff in the OR don <sup>vi</sup> : <ul style="list-style-type: none"> <li>Routine OR protection</li> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/gloves</li> </ul>	<b>Limit personnel in the OR</b> All staff in the OR don: <ul style="list-style-type: none"> <li>Fit-tested N95 Respirator</li> <li>Face shield or goggles</li> <li>Gown and gloves</li> </ul> Pediatric team in N95 respirators in room at start of procedure <sup>vii</sup>  All non-essential personnel to leave the room for extubation	<b>Limit personnel in the OR</b> All staff in the OR: <ul style="list-style-type: none"> <li>Fit-tested N95 Respirator</li> <li>Face shield or goggles</li> <li>Gown and gloves</li> </ul> Pediatric team in N95 respirators in room at start of procedure <sup>viii</sup>  All non-essential personnel to leave the room for extubation
<b>Recovery regional</b>	Recover as per routine at site	Recover in the designated COVID location using droplet/contact precautions until ready to move to designated unit	Recover in the designated COVID location using droplet/contact precautions until ready to move to designated unit
<b>Phase 1 recovery GA</b>	Recover as per routine at site	Recover in the OR suite until ready to move to designated unit  Patient may be moved to designated unit after appropriate air exchanges	Recover in the OR suite until ready to move to designated unit  Patient may be moved to designated unit after appropriate air exchanges.
<b>Cleaning and disinfection</b>	Cleaning should be determined as per site specific routine protocols	All cleaning staff in OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/gloves</li> </ul>	All cleaning staff in OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/gloves</li> </ul>
<b>Disposition</b>	Transfer patient to postpartum as per routine care	<ul style="list-style-type: none"> <li>Return patient to appropriate inpatient unit based on further patient risk assessment</li> </ul>	<ul style="list-style-type: none"> <li>Return to appropriate COVID-19 isolation room if confirmed positive or isolation room if unknown</li> </ul>

<sup>iii</sup> The guiding principle is that there is a support person in the OR if the procedure is performed under neuraxial anesthesia, including yellow/red patients. Support persons should be screened for symptoms and wear appropriate PPE as per site/health authority protocol.

<sup>iv</sup> The guiding principle is that there is a support person in the OR if the procedure is performed under neuraxial anesthesia, including yellow/red patients. Support persons should be screened for symptoms and wear appropriate PPE as per site/health authority protocol.

<sup>v</sup> At any time based on any provider's personal assessment of risk, they may choose to wear either a surgical mask or N95. This personal decision does not impact the risk stratification nor the personal PPE decision of the rest of the team.

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**Fig (3): Recommended PPE during the surgical procedure**

IF mother was COVID-19 positive we should do swab test for the baby, nasopharyngeal swab or tracheal in intubated baby. 1<sup>st</sup> sample at 24 h of age, if negative then 2<sup>nd</sup> at 4<sup>th</sup> day of age.

Due to higher infection risk during USS, ultrasonographers should train on PPE use, minimum examination time and restrict presence of companion. USS room & machine will be disinfected at first & end of day and after each case.

USS appointment of positive COVID-19 pregnant patient will be at end of day to reduce contact with others (patient or staff). While, inpatients USS & emergency department will be performed at the patient room by a portable scan to prevent contamination of USS room and reduce exposure to others.

### Practices that mother should do while caring for baby:

Periodic hand cleaning with soap & water or ABHR before touching the baby, also maintain respiratory hygiene.

Surfaces that mother touches should be cleaned & disinfected periodically.

Mothers who are COVID-19 positive should wear mask during feeding babies till 14 days after symptoms resolve to avoid mother-to-child viral transmission via respiratory droplets. Since virus presence in breast milk not proved, we highly recommend breastfeeding.

Breast feeding mothers should clean their breasts with soap & water if coughing before breastfeeding but no need to wash it before each time. Some recommendations for COVID-19 mother caring for baby are shown in **fig.(4)**

	<b>Interventions</b>
<b>Mother infant contact at birth</b>	<p>Mothers should not be separated from their infants unless the mother is too sick to care for her baby. If the mother is unable to care for the infant another competent family caregiver should be identified.</p> <p>Mother and infant should be enabled to remain together while rooming-in throughout the day and night and practise skin-to-skin contact, including kangaroo mother care, especially immediately after birth and during establishment of breastfeeding, whether they or their infants have suspected or confirmed COVID-19 virus infection.</p> <p>Neonates born to mothers with suspected or confirmed COVID-19 should be breastfed within 1 hour of birth. Mothers should apply appropriate IPC.</p> <p>Early and uninterrupted skin-to-skin contact between mothers and infants should be facilitated and encouraged as soon as possible after birth, while applying necessary measures for IPC. This applies also to infants who are born preterm or low birth weight.</p> <p>If the newborn or infant is ill and requires specialist care (such as neonatal unit), arrangements should be made to allow the mother free access to the unit, with appropriate IPC measures.</p> <p>Earlier initiation of breastfeeding results in greater benefits. This may be relevant to mothers who give birth by caesarean section, after an anaesthetic, or those who have medical instability that precludes initiation of breastfeeding within the first hour after birth.</p>
<b>During early childhood</b>	<p>Infants should be breastfed exclusively during the first 6 months after birth, as breastmilk provides all the nutrients and fluids they need.</p> <p>From 6 months of age, breastmilk should be complemented with a variety of adequate, safe and nutrient-dense foods. Breastfeeding should continue up to 2 years of age or beyond.</p> <p>Breastfeeding counselling, basic psychosocial support and practical feeding support should be provided to all pregnant women and mothers with infants and young children if they or their infants and young children have suspected or confirmed COVID-19 infection.</p>
<b>If feeding is interrupted</b>	<p>In situations when severe illness in a mother prevents her from caring for her infant or prevents her from continuing direct breastfeeding, mothers should be encouraged and supported to express milk, and the breastmilk provided safely to the infant, while applying appropriate IPC measures.</p> <p>In the event that the mother is too unwell to breastfeed or express breastmilk, explore the viability of feeding with donor human milk. If this is not possible, consider wet nursing (defined as another woman breastfeeds the child) or appropriate breastmilk substitutes, informed by feasibility, safety, sustainability, cultural context, acceptability to mother and service availability.</p> <p>Mothers who are not able to initiate breastfeeding during the first hour after delivery should still be supported to breastfeed as soon as they are able. Assistance should be provided after recovery for relactation to re-establish a milk supply and continue breastfeeding.</p>
<b>Practices the mother should perform during all infant and childcare</b>	<p>Perform frequent hand hygiene with soap and water or alcohol-based hand rub, especially before contact with her child.</p> <p>Perform respiratory hygiene: sneeze or cough into a tissue and immediately dispose of the tissue. Hands should immediately be washed with soap and water or alcohol-based hand rub.</p> <p>Clean and disinfect surfaces with which the mother has been in contact.</p> <p>Wear a medical mask until symptom resolution and criteria for release from isolation have been met.</p> <p>Additionally, breastfeeding mothers should be helped to clean her chest with soap and water if she has been coughing on it before breastfeeding. She does not need to wash her breasts prior to every breastfeed.</p> <p>While mothers are recommended to wear medical masks, if the mother does not have a medical mask, she should still be encouraged to continue breastfeeding as the benefits of breastfeeding outweigh the potential risks of transmission of the virus when breastfeeding while applying other IPC measures.</p>
<b>Best practices for breast-feeding</b>	<p>Health facilities providing maternity and newborn services should enable a mother to breastfeed for as often and for as long as she wishes. Minimizing disruption to breastfeeding will require health care practices that enable a mother to breastfeed.</p> <p>All mothers should receive practical support to enable them to initiate and establish breastfeeding and manage common breastfeeding difficulties. This support should be provided by appropriately trained health care professionals and community-based lay and peer breastfeeding counsellors.</p> <p>There should be no promotion of breastmilk substitutes, feeding bottles and teats, pacifiers or dummies in any part of facilities providing maternity and newborn services, or by any of the staff.</p> <p>Health facilities and their staff should not give feeding bottles and teats or other products that are within the scope of the International Code of Marketing of Breast-milk Substitutes and its subsequent related WHA resolutions, to infants.</p> <p>If the mother is too unwell to breastfeed or express breastmilk, explore the best alternatives to breastfeeding a newborn or young infant, in priority order, as follows: 1) donor human milk should be fed if available from a human milk bank; 2) if supplies are limited, prioritize donor human milk for preterm and low birth weight newborns; 3) wet nursing may be an option depending on acceptability to mothers and families, availability of wet nurses and services to support mothers and wet nurses. COVID-19 testing of a woman who is a potential wet nurse is not required. Prioritize wet nurses for the youngest infants. In settings where HIV is prevalent, prospective wet nurses should undergo HIV counselling and rapid testing where available. In the absence of testing, if feasible, undertake HIV risk assessment. If HIV risk assessment or counselling is not possible, facilitate and support wet nursing; 4) breastmilk substitutes may be used as a last resort.</p>

**Fig (4): Summary of recommendations when mother with COVID-19 is caring for infant**

Our results shows that provide safe care for pregnant women and their newborns was critical and challenging during COVID-19 out break. After application our protocols the observed outcomes appeared to be favorable, reduced infection rate and maintained safety of our patients.

## **Conclusion:**

COVID-19 considered a global public health emergency. SWOT analysis is helpful in formulation of prevention and control measures in obs & gyn. Hospital during the COVID-19 outbreak. Pregnant women are not likely to be highly infected more than other patients but they need special consideration. IPC programs have proven to be successful in lowering incidence and spread of infectious diseases. We advise using IPC protocols in order to fulfill greatest benefits through COVID-19 outbreak. Programs are comprehensive and include surveillance & prevention activities & staff training. It also should contain information about breast feeding when mother is COVID-19 positive and teach them hand hygiene and respiratory hygiene.

## **Recommendations:**

Since COVID-19 is the current catastrophe we have to face. IPC protocols is mandatory to face this catastrophe in order to minimize infection to lowest degree with need to improve this protocols regularly in order to coop this highly mutant virus.

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