Updated Interim Guidelines On
Management of COVID-19
in Obstetrics & Gynaecology
<table>
<thead>
<tr>
<th></th>
<th>Key recommendations</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Statement on National O&amp;G services</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Management of confirmed and suspected (PUI) COVID-19 patients</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Management of probable COVID-19 patients</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Management of patients in isolation / quarantined</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>Management of recovered patients and those returning to work</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>Safety of staff including concessionaire workers</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>Modification of antenatal care and postnatal care</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>Gynaecological services</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Elective and emergency gynaecological services</td>
<td>15</td>
</tr>
<tr>
<td>11</td>
<td>Laparoscopic surgeries</td>
<td>16</td>
</tr>
<tr>
<td>12</td>
<td>Assisted Reproductive Technology (ART) Services</td>
<td>17</td>
</tr>
<tr>
<td>13</td>
<td>Information for patients</td>
<td>44</td>
</tr>
</tbody>
</table>
1) Obstetric services, which includes early pregnancy care remains an essential priority. The quality of provision of such services should continue without disruption despite this pandemic, although there can be modifications of care. Essential gynaecological services for malignancy and gynaecological emergencies should continue and this includes contraception advice and management.

2) All frontline staffs should adhere to MOH recommendations on the use of PPE and should be updated on the available guidelines on management of COVID-19 in pregnancy. Training on PPE should be extended to the concessionaire workers as well.

3) Screening of PUI and management of confirmed patients should be as per MOH guidelines which are constantly updated.

4) Confirmed patients should be referred to designated MOH COVID-19 hospitals.

5) Designated COVID-19 hospitals should establish a dedicated core O&G team who will oversee the management of COVID-19 patients during pregnancy. These hospitals should have a designated labour room and an operating theatre to manage confirmed and suspected patients. Mother and baby friendly policies at these designated hospitals are suspended for now until new evidence on safety of mother and newborn is available.

6) Undesignated hospitals should identify a specific isolation room at the admission centre, a labour suite and an operating theatre to manage potential PUI who may present in imminent labour. Pathways should be developed based on individual logistics and resources. These patients can then be referred to the designated COVID-19 hospitals post-delivery.

7) In the event of requiring an urgent surgical intervention, regional anaesthesia is preferred. If general anaesthesia is required, induction and reversal should preferably be done in a negative pressure ventilation room with staffs optimising an enhanced PPE which includes a PAPR suit (surgeons included).

8) Patients in labour should be offered a caesarean section as mode of delivery in view of the lack of negative pressure ventilation in most labour rooms in Malaysia. Vaginal delivery is not contraindicated if the patient is in imminent labour. The patient should use a surgical facemask and face shield and staffs should use full PPE which includes a N95 mask and a face shield although the second stage of labour is not an aerosol generating procedure. Handling of bodily fluids, specimens including placentas and patient apparels should be handled based on standard universal precautions.

9) Medications such as hydroxychloroquine, aspirin and antenatal corticosteroids are not contraindicated in pregnancy among confirmed or PUI.

10) Although breastfeeding is not an absolute contraindication, the risk of transmission from a symptomatic mother remains a concern. Both the mother and baby should be isolated as per recommendation until such time that it is deemed safe to be reunited. Expressed Breast Milk feeding is encouraged if possible.
11) Consider VTE prophylaxis if there are no contraindications.

12) Patients undergoing elective surgeries may be offered a screening test depending on the availability of resources, although a routine chest x ray for all pregnant mothers is not practical. However, testing should not cause undue delay in providing needed care and the operating team should wear the appropriate PPE to perform the surgical procedure if the patient status is unknown. The safety of patients and healthcare givers remains a priority.
A) Rationale of guideline

1) The continuation of the safe and optimal provision of O&G services in health facilities in Malaysia during the Covid-19 pandemic.

2) To reduce the risk of transmission to other patients and healthcare professionals in the management of patients identified as SARI, PUI or Covid-19.

B) Statement on National O&G Services during COVID-19 pandemic

1) Obstetric services, which includes early pregnancy care remains an essential priority and the quality of provision should continue without disruption despite this pandemic although there can be modifications of care. This includes elective caesarean sections which should not be delayed and should be performed based on current available O&G recommendations. Postpartum care and contraception services are also an essential component which should not be compromised. This statement is relevant for both primary and tertiary obstetric services in Malaysia.

2) It is recommended that husband and baby friendly policies among mothers’ identified as PUI or COVID-19 positive to be temporarily suspended until such time it is deemed safe for the mother to bond.

3) Essential gynaecological services for malignancy and gynaecological emergencies should continue and this includes contraceptive advice and services. Barriers towards care which includes access to healthcare should be identified and it is essential to avoid undue delay in management of these patients. Consider the uptake of telemedicine to provide contraceptive advice.

4) Since we will have to optimize our resources and priorities, non-essential gynaecological services can be delayed and rescheduled but mechanisms should be in place to have access to medications and healthcare when required. Telemedicine can be optimized as a mechanism to manage these patients.

5) Based on international recommendations, Assisted Reproductive Technologies (ART) should be delayed at this moment of time as we continue to prioritize our services and resources.

6) Low COVID risk mothers in labour should wear a mask and a face shield during the active phase of labour. This Universal precaution should be practiced in the absence of Universal screening.
Obstetrics
C) General information on COVID-19 and pregnancy

1) COVID-19 is an **infectious disease** caused by a newly discovered Coronavirus named **SARS-CoV-2**.

2) First reported in the Hubei Province, China at the end of 2019, this pandemic now has affected more than two million people globally. The WHO COVID-19 dashboard provides an up to date global report.

3) There are over five thousand confirmed patients in Malaysia at the time of publication and the latest information can be viewed at the moh.gov.my webpage.

4) There are two identified routes of transmission
   i) **Direct**
   Close contact with an infected person, irrespective of symptoms.
   Hence it is recommended to maintain a distance of at least 1-2 meters.
   
   ii) **Indirect**
   Contact with surface, object or hands etc. which has been contaminated by an infected person.
   *
   Some recent evidence does suggest vertical transmission is probable although the absolute risk is yet to be established.

5) Although most reports have shown that pregnant mothers are not at an increased risk of having severe COVID-19 infections, we are still concerned about the theoretical risk to pregnant mothers, especially in the third trimester due to the change in the immune system. Hence, patients should be advised to follow strict precautions, maintain personal hygiene and to practice social distancing if possible.

6) Most pregnant mothers will be asymptomatic. Some may have mild symptoms like fever and cough. However, if patients are unwell, especially if experiencing breathing difficulties, it is best to advise them to seek urgent medical attention.

7) COVID-19 does not cause fetal anomalies. Studies have not proven the association with an increased risk of miscarriage or preterm deliveries although these are the concerns. Hence, patients with COVID-19 do not need additional interventions or monitoring apart from routine evidence based obstetric care.

8) Although the evidence and information is evolving and there are concerns with regards to COVID-19 infections among pregnant mother who are still deemed as a vulnerable group especially in the third trimester, the benefits of universal screening off all patients remains controversial and thus is not currently recommended until we have further evidence.
D) Management of confirmed or suspected (PUI) COVID-19 patients

1) These patients should be managed as per MOH recommendations and ideally at the designated COVID-19 hospitals or hybrid COVID-19 hospitals by a multidisciplinary team involving an Infectious Disease Specialist, Intensivist, Anaesthetist, Obstetrician and Neonatologist.

2) The care for these mothers remains unchanged in pregnancy although there are some concerns in the third trimester which is perceived as a time of vulnerability, especially if these patients have other confounding risk such as diabetes, obesity, cardiac diseases or medical complications in pregnancy. It is best to involve a senior obstetrician in the management although having a COVID-19 infection per se is not an indication for delivery.

3) These patients should be isolated for a period of at least 14 days or until they are no longer infective as per current MOH guidelines.

4) The women should be advised to wear a surgical face mask and practice hand hygiene at all times.

5) Chest x-rays and CT scans are not contraindicated as the radiation doses are below the toxic dose of 50mG, especially if these tests are performed for the benefit of the mother as part of her management of COVID-19. If ultrasound or CTG’s are used, the probes should be cleaned using disinfectants and then wiped dry.

6) There is no need for additional obstetric monitoring or interventions such as ultrasound monitoring or the need for delivery apart from the usual obstetric indications. Delivery is best delayed to beyond 14 days if possible unless the mother is ventilated and there are respiratory issues that warrant a resuscitative hysterotomy. Planned delivery or induction of labour should also be postponed beyond the isolation period if possible.

7) If these patients spontaneously progress into labour, then a caesarean section is the recommended mode of delivery. Observations should include respiratory rate and oxygen saturations (maintained above 95%). Regional anaesthesia is preferred.

8) Vaginal delivery is not contraindicated if the patient has imminent delivery although the risk of aerosol transmission is perceived to be higher during the second stage of labour. All women admitted to the COVID delivery room should wear a mask and face shield during labour. Faecal contamination should be minimised.

9) There should be a continuous electronic fetal heart monitoring intrapartum and Entonox is best avoided due until further evidence due to the perceived risk of aerosol contamination of the system.
10) The neonatal team should be informed in advance and the management should be based on the current MOH neonatal protocol.

11) Staffs managing these patients should be kept to a minimum, including the duration of contact with the patient if possible without affecting patient safety.

12) Staffs managing these patients should adhere to full PPE precautions which includes a N95 mask and a face shield.

13) Medications such as antiviral medication and hydroxychloroquine are not contraindicated in such patients. There are no contraindications for neonatal vaccinations.

14) NSAIDS should ideally be avoided and although there are no absolute contraindications for aspirin and antenatal corticosteroids, the decision and the benefits for use should be weighed by a consultant.

15) These patients should ideally be on thromboprophylaxis provided there are no contraindications.

16) Although early evidence suggests no viral transmission via breastmilk, there are concerns of direct transmission to the fetus from a symptomatic mother. Hence this should be weighed against the benefits of breastfeeding. The mother should be advised to express her breast milk as she will be separated from her newborn at birth. She can breastfeeding her infant once she is tested negative.
E) Management of probable COVID-19 patients

The definition of probable patients are

A suspect case for whom testing for the COVID-19 virus is inconclusive.

a. Inconclusive being the result of the test reported by the laboratory OR
b. A suspect case for whom testing could not be performed for any reason.

In view of the current pandemic in Malaysia, all maternity units should be ready to deal with probable cases which are neither confirmed nor fulfil the definition of PUI (suspected).

1) These patients can be managed at non designated COVID-19 hospitals but should ideally be isolated from other healthy patients. The need for admission to the O&G units should ideally be based on urgent obstetric issues and they are best to be managed as outpatient.

2) The outpatient appointments of these patients’ are best deferred for beyond 14 days if possible unless they have urgent obstetric issues.

3) It is best to discuss with the physicians / infectious disease team to screen these patients especially if they are symptomatic.

4) All staffs should be kept to a minimal number and those managing these patients should also adhere to full PPE. There is no need for additional obstetric monitoring or interventions or the need for delivery apart from the usual obstetric indications.

5) Chest x-rays are not contraindicated as the radiation dose of <0.01mG is below the toxic fetal doses of 50mG. If ultrasound is used, the probes should be cleaned using disinfectants and then wiped dry.

6) Medications such as antiviral medication, hydroxychloroquine, aspirin and antenatal corticosteroids are not contraindicated in such patients.

7) The recommended mode of delivery for these patients is also a caesarean section unless they present in imminent delivery. Regional anesthesia is preferred.

8) Vaginal delivery is not contraindicated if the patient has imminent delivery and there are no benefits of shortening the second stage of labour. All staffs should wear a full PPE. There should be a continuous electronic fetal heart monitoring intrapartum and Entonox is best avoided.
9) There are no contraindications for neonatal vaccinations.

10) These patients should ideally be on thromboprophylaxis provided there are no contraindications.

**F) Management of patients isolation / quarantined**

1) The antenatal appointment of these patients should ideally be deferred for at least after the isolation period has ended.

2) If these patients develop red flags such as breathing difficulties, they should be advised to seek urgent hospital admission.

3) If there are urgent obstetric issues within the isolation period, these patients should be managed as per PUI protocol.

**G) Management of recovered patients or those returning from isolation / quarantine.**

1) These patients should have routine obstetric care and there are no benefits of additional obstetric monitoring or intervention.

2) The risk of secondary infection remains unknown and they should adhere to standard precautions of social distancing and maintaining personal hygiene.

3) There should receive routine obstetric care or interventions.
H) Management of general O&G patients

1) It is essential to screen all patients attending the clinic, Early pregnancy assessment unit (EPAU) and Patient assessment centre (PAC) as per MOH recommendations with potential risk, especially those who are symptomatic or those who have significant contact with confirmed COVID-19 patients. Universal testing of asymptomatic mothers remains controversial and is not the current standard of care in Malaysia at the point of preparing this guideline.

2) Patients are also advised to sign a declaration form at the triage as part of the compulsory screening for the risk of COVID-19 infection.

3) These patients should adhere to the movement restriction order and adhere to the advice of physical distancing and maintaining personal hygiene. Ultrasound which is now an essential part of obstetrics is also a potential source of infection which needs to be cleaned, especially the probes which should be cleaned in-between patients.

4) However all obstetric cases should be seen on the given appointment date. Appointments are staggered and physical distancing should be practiced in patient waiting area and consultation rooms.

I) Safety of staffs, including concessionaire workers

1) All health care staffs, both frontlines and non-clinicians who are involved in clinical work should ideally adhere to the MOH recommended PPE especially when in contact with a probable, suspected or a confirmed patient.

2) The recommended PPEs when in contact with a probable, suspected or a confirmed patient:
   i) Surgical mask (N95 mask is recommended for aerosol generating procedures)
   ii) Respirator (PAPR) for suspected or confirmed COVID-19- patients undergoing general anaesthesia or intubation.
   iii) Eye protection (googles or face shield)
   iv) Disposable double gloves
   v) Head cover
   vi) Disposable plastic aprons
   vii) Isolation gown (long sleeved, fluid resistant)
J) Modifications of antenatal and postnatal care while maintaining safety and quality during this pandemic

1) Patients reviewed in the clinic should continue to observe physical distancing while the appointments can be staggered as to minimize overcrowding. Partners and those accompanying patients should be kept to a minimum while visitation hours can also be limited and restricted as per current MOH directive.

2) Sufficient medications should be given to avoid repeated visits to the hospital. Compliance should also be addressed.

3) There is growing recommendations to screen test all patients prior to elective surgeries. Although these may not be practical for emergency cases, patients at risk should be managed as PUI. Testing could still be performed after the surgery for patients at risk and the operating teams should be wearing the appropriate PPE during the surgery. The benefits and cost implications remains unknown since caesarean section remains the most commonly performed elective surgery in Malaysia during this pandemic. Due to the low incidence in Malaysia among the general population, universal testing is not yet recommended as a standard of care until there are more concrete evidence on the benefits and cost implications. However, local practices may vary depending on the perceived prevalence in designated red zones and availability of testing resources.

4) It is essential to assess mental health wellbeing during these challenging times especially the presence of domestic violence. If required, such patients should be offered appropriate counselling preferably by a counsellor or a psychiatrist.

5) Each obstetric unit should continue to audit the number of patients who have been confirmed, suspected or those who had probable COVID-19 in pregnancy. Audits should include standard auditable measures in O&G such as maternal and neonatal morbidity and mortality as to ensure these variables remains unaffected during these pandemic.

6) Postnatal care remains an essential component and should be addressed as per recommended standards. This is even more relevant now than before as patients may not be able to return to their hometown as per their cultural norms and isolation may be an additional risk of postnatal mental health issues. Health care givers should continue to be vigilant about such issues and escalate the care if required as per current guidelines in management of mothers with mental health issues.
Gynaecology
A) Gynaecological services

1) It is essential to screen all patients who have potential risk, especially those who are symptomatic or those who have significant contact with confirmed COVID-19 patients. Patients are also required to sign a declaration form as part of the management.

2) Confirmed, suspected or probable patients should ideally be isolated / quarantined and have their gynaecological reviews delayed unless in the event of a gynaecological emergency.

3) Care for patients with significant conditions such as malignancies or gynaecological emergencies should be continued without disruption while optimizing universal precautions. If these patients are symptomatic or has had a significant contact, liaise with the infectious disease specialist to best optimize care for these patients.

4) For other non-gynaecological emergencies, it is suggested to delay routine clinic reviews including elective non critical gynaecological surgeries. This should also be relevant for full paying patients within MOH hospitals.

5) Each hospitals and units should develop their own mechanisms to manage such patients. This includes mechanisms to ensure patients have sufficient medications and can still access healthcare if required in the event of an emergency or a concern.

6) Contraception remains an essential need and this advice and service should continue to be provided by healthcare professionals. In view of the possible challenges in assessing quality in health care, it is advisable for women to practice effective contraception for now and to avoid a pregnancy during this pandemic.

7) Assisted reproductive technologies are best deferred at this moment as we continue to prioritise our resources and healthcare.

B) Elective and emergency gynaecological services

1) The provision to continue to provide elective gynaecological surgical services may be limited to non COVID-19 hospitals only and limited in hybrid COVID-19 hospitals. However, these surgeries should ideally not involve postoperative management in the intensive care unit and require blood transfusions. Elective surgeries should be deferred to a later date if possible.

2) Emergency gynaecological surgery services should continue to be provided

3) The MOH directive recommends screening and testing of patients prior to elective or semi-emergency surgeries, especially those needing general anaesthesia. However, this is left to each health facility to decide if such a policy is implementable.
Laparoscopic gynaecological surgeries among asymptomatic patients during the COVID-19 pandemic

Key recommendations

1) There is still a role for laparoscopic surgeries during this pandemic as it has various benefits which outweighs the risk associated with laparotomies. The timing and type of laparoscopic surgery would be dependent on appropriate indication and urgency.

2) Laparoscopic surgeries are best avoided among confirmed or PUI patients. If possible, surgery should be deferred until such time the patient has recovered fully from COVID-19 infection.

3) Universal screening testing of all patients prior to laparoscopic procedures are recommended.

4) Experienced surgeons and anaesthetist should be involved in laparoscopic procedures during this pandemic.

5) Refined techniques can be optimized to minimize exposure.

6) All staffs to adhere to full PPE and available MOH guidelines.
Assisted Reproductive Technology (ART) Services

MOH of Malaysia is aware of the statement from the European Society of Human Reproduction and Embryology (ESHRE) & Human Fertilisation and Embryology Authority (HFEA) and recommends a precautionary approach in the provision of ART services in Malaysia.

Our priority will be to ensure the safety of patients and healthcare givers during this pandemic while we continue to prioritise our resources and on essential and critical issues. Thus, we recommend adherence to the above guidance and a temporary halt of ART services, irrespective of being hospital based or stand alone ART centre for the following reasons:

i. To support and adhere to the current recommendations of physical distancing

ii. To prioritize resources and focus on essential services as we continue to battle the COVID-19 pandemic

iii. Evolving evidence on the risk of vertical transmission and the impact on the pregnant mother as it is hence best to avoid unknown harm to the potential mother during this pandemic until we have concrete evidence.

However, in exceptional circumstances, these services can be continued for the following reasons

i. Patients having already commenced on Controlled Ovarian Simulations. In these circumstances, it is in the best interest to continue treatment until Ovum pick up and these embryos and oocytes should eventually be frozen.

ii. Patients requiring urgent fertility cryopreservation, especially oncology patients.

iii. Monitoring and management of OHSS patients.

Other essential recommendations are

i. All clinics and ART laboratories to maintain skeletal and support staffs

ii. Healthcare professionals and clinics should remain available to provide clinical consultations and supportive care, preferably via phone/online consultation. This includes counselling and completing existing cycles.

iii. Laboratory staff to check on daily maintenance of the Lab

iv. Staffs to adhere to the current recommendations of physical distancing and maintenance of hygiene and universal precautions.
Information for O&G Units
A) Information for O&G units

i) Each O&G unit should establish have a **core COVID team** to manage PUI and the team should comprise of at least
   1) One O&G Specialist
   2) One O&G Registrar
   3) One Midwife

This identified team should be **on-standby for all suspected patients** and should be optimally trained in management of COVID-19 patients apart from handling the personal protective equipment’s. Training on "donning and doffing" of PPE is compulsory and they should also manage specimen collections and exercise universal precautions at all times.

ii) Universal precautions

The number of staffs managing a PUI should be kept to a minimum. The PUI should wear an appropriate mask (three ply face mask) at all times.

The intrapartum management of PUI should be by the core team, both incorporating vaginal or caesarean deliveries.

Despite no evidence of vertical transmission, it is good clinical practice to treat the body fluids, tissues (placenta) and apparels as potentially biohazards. Hence, the labour suite and the operating theatre should be cleaned based on universal recommendations following a biohazard exposure.

iii) Transfer and documentation

All PUI must first be given a 3 ply face mask to use at all times.

All staffs managing a PUI should wear a complete PPE and these patients should be transferred to the holding area (via passage of minimal exposure) where appropriate screening and investigations can be performed.

It is important to minimize exposure for patients and health care givers.

Documentation of all health care givers involved in managing PUI is essential.

iv) Designated labour suite

The location of such labour suites should ideally be nearest to the point of entry which is either at the Patient Admission Centre or the isolation ward but this should depend on the resources of the individual hospitals. Each O&G unit is recommended to have their own logistics based on their own resources. These labour rooms should preferably have negative pressure ventilation.

Disposable equipment’s are preferred. Cleansing of the labour room should adhere to biohazard decontamination protocols.
v) Undesignated labour suites

All undesignated O&G units should be prepared to manage PUI who presents in imminent labour. They should have an identified core team and the delivery should be conducted by staffs geared with PPE. The location of this labour suite should ideally be located nearby the Patient Admission Centre or at a location with minimal exposure to other patients. Each unit should ideally have their own written protocols in the event of having such patients presenting with imminent delivery.

10mls of additional cord blood for all PUI and confirmed patients should be taken for storage. Further details on cord blood storage will be furnished by IMR. Parental consent should be taken.

Post-delivery, the patient and the baby should be transferred to the designated admitting hospital. Cleansing of the labour room should adhere to the biohazard decontamination protocol.

The recommended number of staff during an imminent vaginal delivery should be one doctor and one midwife who are part of the core team.

vi) Designated operation theatre

All tertiary hospitals should have a dedicated operating theatre for patients suspected with COVID-19. This theatre should ideally be fully equipped and although a negative pressure ventilation is recommended, it is more essential for patients requiring general anesthesia and hence this will depend on the resources and each individual hospitals. Most operation theaters have its own air handling units.

The location of this theatre should ideally be easily assessable from the point of contact but this once again should depend on the individual logistics and resources of each hospitals. The benefits of having this theatre nearby to the point of entry will also facilitate crash caesarean sections if required.

vii) Undesignated operating theatre

Undesignated O&G hospitals should also have plans in place to manage PUI who presents in active labour and requires a caesarean section. A specific theatre with defined pathways should be created based on the local logistics to facilitate PUI requiring unscheduled surgical interventions.

The recommended number of staff to manage a patient during caesarean section is seven (one obstetrician, one assistant, one anesthetist, GA nurse, one scrub nurse, one circulating nurse and one floating nurse).

Additional staff may be required, for example the pediatric team for resuscitation of baby. Routine neonatal examination and care can be performed outside the operating theatre to minimize exposure unless the neonate warrants urgent resuscitation.

viii) Postnatal care

Following delivery, the PUI should be transferred to the dedicated wards for monitoring as per MOH guidelines.
Appendices
## Content

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessment of O&amp;G patients requiring admission for surgery or delivery</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>Workflow for management of O&amp;G patients requiring admission for surgery or delivery in tertiary hospitals</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Workflow for management of O&amp;G patients requiring admission surgery or delivery in district hospitals</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Pre-operative testing for caesarean section (elective)</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Pre-operative testing for gynaecological cases (elective)</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>Testing for O&amp;G cases (emergencies)</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>Flowchart for breastfeeding</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>Recommended PPE for O&amp;G patients</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>Safety of imaging in pregnancy</td>
<td>41</td>
</tr>
<tr>
<td>10</td>
<td>Medications in pregnant and breastfeeding</td>
<td>42</td>
</tr>
<tr>
<td>11</td>
<td>Haematological problems</td>
<td>43</td>
</tr>
<tr>
<td>12</td>
<td>Patient information</td>
<td>44</td>
</tr>
<tr>
<td>13</td>
<td>Consent forms for breastfeeding</td>
<td>47</td>
</tr>
</tbody>
</table>
ASSESSMENT FOR O&G PATIENTS REQUIRING ADMISSION FOR SURGERY OR DELIVERY IN HOSPITALS DURING COVID-19 PANDEMIC PERIOD

A. History taking from patient or family members:
   1. Close contact of confirmed COVID-19 cases or any clusters OR
   2. Had travelling history to affected countries or any countries past 2 weeks (self or close family members) OR
   3. Travelled to or resides in ‘Red Zone’ areas in the country OR
   4. Had any symptoms of fever, URTI, difficulty in breathing, red eye, loss of smell or others OR
   5. Fever within the last 14 days

B. Physical Examination:
   1. Fever on admission
   2. Lungs – crepitations or added sounds on auscultation

C. Investigation:
   1. **Abnormal CXR – pneumonic changes
   2. Lung USG (if indicated) – suggestive of pneumonic changes
   3. FBC – leukopenia, lymphopenia for age

D. High risk Group:
   1. Immunocompromised patients OR
   2. Elderly (more than 60 years old) OR
   3. Cancer Patients OR
   4. Co-morbid

*If any of the above is present or in combination, proceed as HIGH PROBABILITY

**Chest X-Ray is required for all non-pregnant women

***Chest X-Ray for symptomatic pregnant women is carried out with abdominal shield
WORK FLOW MANAGEMENT FOR O&G PATIENTS REQUIRING ADMISSION FOR SURGERY OR DELIVERY IN TERTIARY HOSPITALS DURING COVID-19 PANDEMIC PERIOD

COVID-19 Screening to be done where patient arrives:
1) Patient Assessment Centre / Clinic
2) Emergency Department

*Life threatening/Unable to assess patient (e.g. fitting, unconscious, shock)

Require surgery?

NO

Surgery to be done in designated COVID-19 OT with appropriate PPE

Refer Appendix 4 for Post Operation Care in Guideline for Management of Surgery during COVID-19 Pandemic Version 2/2020

*Take swab for COVID-19 test

YES

*Patient to be admitted and managed in designated isolation room in Intensive Care Unit

*Take swab for COVID-19 test

Low Probability of COVID-19

Patient to be admitted to Obstetrics or Gynaec Ward

Require surgery

Vaginal Delivery

PPE Requirement:
- Routine OT attire
- Face shield

PPE Requirement:
- Surgical mask
- Long-sleeved plastic apron
- Sterile gloves (1 layer)
- Non-sterile gloves (1 layer)
- Eye Protection (face shield/goggles)
- Closed shoes
- Scrubs

HIGH PROBABILITY OF COVID-19

Ensure patient wear surgical mask

Send patient to ED surgical mask area for swab

Admit to designated PUI/COVID-19 unit after assessment by assigned team and to follow respective hospital COVID team workflow management

Notes:
*COVID-19 screening and investigations to be taken in admitting ward post admission/procedure
All staffs should take bath after conducting deliveries/gynaec procedure
WORK FLOW MANAGEMENT FOR O&G PATIENTS REQUIRING ADMISSION FOR SURGERY OR DELIVERY IN DISTRICT HOSPITALS DURING COVID-19 PANDEMIC PERIOD

COVID-19 Screening (Refer Appendix 1) to be done where patient arrives:
1) Patient Assessment Centre / Clinic
2) Emergency Department

1) Life threatening/Unable to assess patient (E.g. fitting, unconscious, shock)
2) High Probability of COVID-19

Low Probability of COVID-19
(risks not present)

Low risk O&G
(Can be managed in District)

High risk O&G
(Require referral to tertiary hospital)

Urgent referral to O&G Specialist on call for patient transfer

High probability of COVID-19 patient with imminent delivery

Stabilize patient and transfer to tertiary hospital
*If PUI/High Probability for COVID-19, consultant on call and designated COVID team in respective hospital should be notified

1) Deliver in designated isolation room if available with full PPE
2) Baby to be separated from mother immediately after delivery

Require surgery

PPE Requirement:
- Routine OT attire
- Face shield

Normal delivery

1. Deliver in normal labour room
2. PPE requirement:
- Surgical mask
- Long-sleeved plastic apron
- Sterile gloves (1 layer), non-sterile gloves (1 layer)
- Eye Protection (face shield/goggles)
- Closed shoes

Send to PAC/Emergency Department and follow respective hospital workflow management

Update O&G Team post-delivery. If indicated to take over for admission to tertiary hospital, refer baby to paediatrics team
*Send mother and baby in 2 separate ambulances if taking over

Notes:
All staffs should take bath after conducting deliveries/gynaec procedure
PRE-OPERATIVE TESTING FOR COVID-19 FOR CAESAREAN SECTIONS (ELECTIVE)

ELECTIVE CAESAREAN SECTION CASES

SCREENING FOR RISK FACTORS FOR COVID-19 BY ATTENDING MEDICAL OFFICER DURING BOOKING OF CAESAREAN SECTION DATE

LOW PROBABILITY FOR COVID-19

NO COVID-19 TEST NEEDED

SCREENING FOR RISK FACTORS FOR COVID-19 DURING ROUTINE PRE OPERATIVE ADMISSION

REMAINS LOW PROBABILITY FOR COVID-19

PROCEED WITH SURGERY (STANDARD PPE)

POSSIBLE TO DELAY SURGERY

DO COVID-19 TEST, QUARANTINE PATIENT, POSTPONE SURGERY UNTIL RESULTS

BECOMES HIGH PROBABILITY FOR COVID-19

NOT POSSIBLE TO DELAY SURGERY

PROCEED WITH SURGERY AS PER HIGH PROBABILITY COVID-19 EMERGENCY CASE [FULL PPE] & DO COVID-19 TEST POST OPERATIVE

HIGH PROBABILITY FOR COVID-19

ARRANGE FOR COVID-19 TEST 7-14 DAYS PRIOR TO OPERATION DATE

BOOK DATE FOR COVID-19 TESTING IN APPT BOOK

COVID-19 TEST PERFORMED & TRACING OF RESULT BY DESIGNATED MEDICAL OFFICER

COVID-19 TEST POSITIVE

REFER MEDICAL FOR ADMISSION TO COVID DESIGNATED HOSPITAL

COVID-19 TEST NEGATIVE

PROCEED AS PER ELECTIVE SURGERY FOR LOW RISK FOR COVID-19

INFORM O&G SPECIALIST
PRE-OPERATIVE TESTING FOR COVID-19 FOR GYNAECOLOGICAL CASES (ELECTIVE)

ELECTIVE GYNAECOLOGICAL CASES

SCREENING FOR RISK FACTORS FOR COVID-19 BY ATTENDING MEDICAL OFFICER DURING BOOKING OF OPERATION DATE

ARRANGE FOR COVID-19 TEST 7-14 DAYS PRIOR TO OPERATION DATE

BOOK DATE FOR COVID-19 TESTING IN APPT BOOK

COVID-19 TEST PERFORMED & TRACING OF RESULT BY DESIGNATED MEDICAL OFFICER

COVID-19 TEST POSITIVE

POSTPONE SURGERY

REFER MEDICAL FOR ADMISSION TO COVID DESIGNATED HOSPITAL

REMAINS LOW PROBABILITY FOR COVID-19

PROCEED WITH SURGERY (STANDARD PPE)

COVID-19 TEST NEGATIVE

PROCEED WITH ROUTINE ADMISSION FOR SURGERY

SCREENING FOR RISK FACTORS FOR COVID-19 DURING ADMISSION

BECOMES HIGH PROBABILITY FOR COVID-19

PERFORM COVID-19 TEST, THEN DISCHARGE & QUARANTINE TILL RESULTS AVAILABLE
TESTING FOR COVID-19 FOR OBSTETRIC AND GYNAECOLOGICAL CASES (EMERGENCIES/ SEMI-EMERGENCIES)

EMERGENCY/ SEMI-EMERGENCY O&G CASES

SCREENING FOR RISK FACTORS FOR COVID-19 AT:
1) EMERGENCY DEPT
2) PATIENT ADMISSION CENTRE (PAC)
3) O&G CLINIC

LOW PROBABILITY FOR COVID-19

NO COVID-19 TEST NEEDED

ADMIT TO GENERAL WARD

PROCEED WITH SURGERY (STANDARD PPE)

COVID-19 PCR TEST NEGATIVE

TRANSFER TO COVID DESIGNATED HOSPITAL AND SURGERY IN COVID-OT (FULL PPE)

COVID-19 PCR TEST POSITIVE

HIGH PROBABILITY FOR COVID-19

CAN DELAY SURGERY FOR TESTING FOR PCR TEST FOR COVID-19?

YES

DO NASAL SWAB FOR COVID-19

ADMIT TO COVID WARD

COVID-19 PCR TEST NEGATIVE

SURGERY TO BE PERFORMED IN DESIGNATED COVID OT (FULL PPE)

POST-OP ADMIT COVID WARD AND DO NASAL SWAB FOR COVID-19

POST-OP UNSTABLE: ADMIT COVID ICU

POST-OP STABLE: TRANSFER TO COVID DESIGNATED HOSPITAL

COVID-19 PCR TEST POSITIVE

RAPID TEST FOR COVID-19 (*not available)

SURGERY TO BE PERFORMED IN DESIGNATED COVID OT (FULL PPE)

COVID-19 RAPID TEST NEGATIVE

RAPID TEST FOR COVID-19 (*if available)

LOW PROBABILITY FOR COVID-19 OR UNABLE TO ASSESS

PATIENT HAS LIFE THREATENING CONDITION (ie seizures, unconscious, shock)

HIGH PROBABILITY FOR COVID-19

NO NEED COVID-19 TEST

PROCEED WITH SURGERY (STANDARD PPE)
Flowchart for breastfeeding mothers (Confirmed, PUI, PUS and probable patients)

- **Post-partum mothers**
  - **Probable patients**
    - Patients with mild symptoms
    - Or
    - History of distant or indirect contact
    - **COVID swab test negative**
      - Direct Breastfeeding is not contraindicated
      - Mother to wear mask and maintain adequate hand hygiene
  - **Symptomatic patients**
    - Fever > 37.8°C
    - Severe Acute Respiratory Distress Syndrome
    - Pneumonia
    - **COVID RT-PCR test positive**
      - Breastfeeding is not contraindicated once mother is asymptomatic.
      - If mother is symptomatic and is still keen to breastfeed, expressed breast milk is recommended by minimizing direct contact. Mother must wear mask, clean breast and maintain adequate hand hygiene before pumping. Breastfeeding mothers are advised to sign a consent
    - **COVID RT-PCR test negative**
      - No COVID testing or while awaiting results
      - Direct Breastfeeding is not contraindicated
      - Mother to wear mask and maintain adequate hand hygiene
  - **Confirmed COVID 19, PUI or PUS**
    - Breastfeeding not encouraged (especially if baby is COVID 19 negative)
    - Support mother to express and discard breast milk until discharge from hospital (>14 days).
    - If mother is still keen to breastfeed, mother to sign consent form and to express breast milk while maintaining strict hygienic measures. Milk to be administered by healthy personnel.
### RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE) IN MANAGING OBSTETRIC & GYNAECOLOGY (O&G) PATIENTS DURING COVID 19 PANDEMIC

<table>
<thead>
<tr>
<th>SETTING</th>
<th>ACTIVITY</th>
<th>TYPE OF PPE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triage</td>
<td>Screening / Triage</td>
<td>Surgical mask</td>
<td>Practice frequent hand hygiene</td>
</tr>
<tr>
<td></td>
<td>Preliminary screening with no direct contact</td>
<td>Face shield</td>
<td>Maintain physical distance of at least 1 metre at all time with patient</td>
</tr>
<tr>
<td></td>
<td>with patient</td>
<td></td>
<td>Ideally, build glass/plastic screens to create barrier between healthcare workers &amp; patients.</td>
</tr>
<tr>
<td></td>
<td>Preliminary screening</td>
<td></td>
<td>(Providing to all patients is optional)</td>
</tr>
<tr>
<td></td>
<td>with no direct contact with patient</td>
<td></td>
<td>Ensure patient to be seated at least with a distance of 1 metre from each other at the waiting area</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Full PPE set must be made available at the site in case of emergency</td>
</tr>
<tr>
<td>WARDS</td>
<td>Ward rounds/patient assessment</td>
<td>Surgical mask</td>
<td>Precautions</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| a) Non-PUI/COVID-19/SARI (Asymptomatic patient)                       | Ward rounds/patient assessment                                                                  | Surgical mask                                                                                   | • Practice frequent hand hygiene  
  • Minimum number of HCW during ward rounds.  
  • Practice appropriate distancing during ward round.  
  • Surgical masks for patients (optional)                                                                |
|                                                                      | • Without body fluid splashing risk                                                              |                                                                                                 |                                                                                                                                            |
|                                                                      | • Non-aerosol generating procedure (Non-AGP)                                                    |                                                                                                 |                                                                                                                                            |
| b) Non-PUI/COVID-19 but                                               | Ward rounds/patient assessment                                                                  | Surgical mask                                                                                   | • Ensure patient is wearing surgical mask (if tolerable). If not tolerable, advise the patient to cover nose and mouth during coughing or sneezing with tissue or flexed elbow.  
  • Minimum number of HCW during ward rounds.  
  • Practice appropriate distancing during ward round.  
  • HCW attending patient must be trained in donning and doffing procedure.  
  • Reduce the number and duration of contact to as minimum if possible.  
  • May use innovative ways of clerking patient (e.g. using mobile phone) for stable patient.  
  • Visitors are not allowed                                                                |
| - Patient with Influenza like illness (ILI) symptoms                  |                                                                                                 |                                                                                                 |                                                                                                                                            |
| - Severe Acute Respiratory Illness (SARI) patient                     |                                                                                                 |                                                                                                 |                                                                                                                                            |
| Performing Aerosol Generating Procedures (AGP)                        |                                                                                                 | N95 mask                                                                                       |                                                                                                                                            |
| • High-flow mask oxygen                                               |                                                                                                 | Gloves                                                                                         |                                                                                                                                            |
| • Intubation                                                          |                                                                                                 | Isolation Gown (fluid-repellent long-sleeved gown)                                            |                                                                                                                                            |
| • Suctioning                                                          |                                                                                                 | Eye protection (face shield /goggles)                                                         |                                                                                                                                            |
| • Nebulization                                                        |                                                                                                 | Head cover                                                                                     |                                                                                                                                            |
| • CPR                                                                 |                                                                                                 | Boot cover/shoe cover –not always necessary (unless when anticipating spillage and vomiting) |                                                                                                                                            |
| Also, when performing oropharyngeal or nasopharyngeal swab           |                                                                                                 |                                                                                                 |                                                                                                                                            |
| c) PUI/Confirmed COVID-19 | Ward rounds/patient assessment  
- Patient is able to wear surgical mask  
- Without body fluid splashing risk  
- Non-aerosol generating procedure (Non-AGP) | Surgical mask  
- Isolation Gown (fluid-repellent long-sleeved gown)  
- Gloves  
- Eye Protection (face shield/goggles)  
- Boot cover/shoe cover (when anticipating spillage and vomiting) | Ensure patient is wearing surgical mask. If not tolerable, advise the patient to cover nose and mouth during coughing or sneezing with tissue or flexed elbow.  
- Limit number of HCW reviewing the patient to one.  
- HCW attending patient must be trained in donning and doffing procedure.  
- Reduce the number and duration of contact to as minimum if possible.  
- May use innovative ways of clerking patient (e.g. using mobile phone) for stable patient.  
- Visitors are not allowed |
| --- | --- | --- | --- |
| d) Patient awaiting swab result | Ward rounds/patient assessment  
- Patient unable to wear surgical mask  
- Without risk of splashing body fluid  
- Non-aerosol generating procedure (Non-AGP) | N95 mask  
- Isolation Gown (fluid-repellent long-sleeved gown)  
- Gloves  
- Eye Protection (face shield/goggles)  
- Head cover  
- Boot cover/shoe cover (when anticipating spillage and vomiting) | |
- Powered air-purifying respirator (PAPR)  
- Isolation Gown (fluid-repellent long-sleeved gown) with plastic apron / Coverall suit  
- Gloves  
- Eye Protection (face shield/goggles) *  
- Boot cover/shoe cover  
*Depends on type of PAPR | Option 2:  
- Coverall suit  
- N95 mask  
- Eye Protection (face shield/goggles)  
- Gloves  
- Boot cover/shoe cover | Option 3 (if Option 1 & 2 not available):  
- N95 mask  
- Isolation Gown (fluid-repellent long-sleeved gown) with plastic apron  
- Gloves  
- Eye Protection (face shield/goggles)  
- Head cover  
- Boot cover/shoe cover |
<table>
<thead>
<tr>
<th>LABOUR WARD</th>
<th>Patient review/assessment</th>
<th>conducting vaginal delivery</th>
<th>assisting vaginal delivery</th>
<th>Patient review</th>
<th>conducting vaginal delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Non-PUI/COVID-19/SARI - Asymptomatic patient</td>
<td>Non-aerosol generating procedure (Non-AGP)</td>
<td>Surgical mask</td>
<td>Long-sleeved plastic apron</td>
<td>Gloves (sterile)</td>
<td>Eye Protection (face shield/goggles)</td>
</tr>
<tr>
<td>b) Non-PUI/COVID-19/SARI - Patient with Influenza like Illness (ILI) symptoms</td>
<td>Non-aerosol generating procedure (Non-AGP)</td>
<td>Surgical mask</td>
<td>Long-sleeved plastic apron</td>
<td>Gloves (non-sterile)</td>
<td>Eye Protection (face shield/goggles)</td>
</tr>
</tbody>
</table>

- Labour Companion is not recommended, if present MUST be screened and sign declaration form, and wear surgical mask.
- Labour Companion are not recommended, if present MUST be screened and wear 3 ply surgical mask.
- Minimise the HCW involve in conducting delivery/present in delivery room.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Equipment/Protocols</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assisting vaginal delivery</td>
<td>- Closed shoes&lt;br&gt;- Surgical mask&lt;br&gt;- Long-sleeved plastic apron&lt;br&gt;- Gloves (non-sterile)&lt;br&gt;- Eye Protection (face shield/goggles)&lt;br&gt;- Closed shoes</td>
<td>delivery room.</td>
</tr>
<tr>
<td>Patient review/assessment</td>
<td><strong>c) PUI/Confirmed COVID-19/SARI</strong>&lt;br&gt;- Non-aerosol generating procedure (Non-AGP)&lt;br&gt;- N95 mask&lt;br&gt;- Isolation Gown (fluid-repellent long-sleeved gown)&lt;br&gt;- Gloves (non-sterile/sterile depending on procedure)&lt;br&gt;- Eye Protection (face shield/goggles)&lt;br&gt;- Head cover&lt;br&gt;- Boot cover/shoe cover</td>
<td>Labour Companion are not recommended, if present MUST be screened and sign declaration form, and wear surgical mask.</td>
</tr>
<tr>
<td>Conducting vaginal delivery</td>
<td>- N95 mask&lt;br&gt;- Isolation Gown (fluid-repellent long-sleeved gown)&lt;br&gt;- Gloves (sterile)&lt;br&gt;- Eye Protection (face shield/goggles)&lt;br&gt;- Head cover&lt;br&gt;- Boot cover/shoe cover</td>
<td>HCW attending patient must be trained in donning and doffing procedure. Limit number of HCW in delivery room. Senior doctor to attend the delivery if possible, to minimise the risk of complication. Donning/Doffing should be carried out in appropriate designated area. Ensure appropriate disinfection of reusable respirators/filters after each use. Paediatric team informed and on</td>
</tr>
<tr>
<td>Assisting vaginal delivery</td>
<td>- N95 mask&lt;br&gt;- Isolation Gown (fluid-repellent long-sleeved gown)&lt;br&gt;- Gloves (non-sterile)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Eye Protection (face shield/goggles)</td>
<td>standby</td>
</tr>
<tr>
<td></td>
<td>Head cover</td>
<td><strong>Elective Caesarean Section is the preferred mode of delivery</strong></td>
</tr>
<tr>
<td></td>
<td>Boot cover/shoe cover (ONLY when anticipating spillage and vomiting)</td>
<td></td>
</tr>
<tr>
<td>OPERATION THEATRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>a) Pre-op RT-PCR swab negative</td>
<td>• Follow PPE in Guidelines on “Management of Surgery during COVID-19 Pandemic – Version 2”</td>
<td>• Ensure patient is on surgical mask (if practical).</td>
</tr>
<tr>
<td>b) Unknown status &amp; Low Probability</td>
<td></td>
<td>• Ensure patient is on surgical mask (if practical).</td>
</tr>
<tr>
<td>c) PUI/Confirmed COVID-19/SARI patient or Unknown status but stratified as High Probability</td>
<td>• HCW attending patient must be trained in donning and doffing procedure.</td>
<td>• Limit number of HCW in the operating room.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Senior Doctor to perform the surgery to minimise the risk of complication.</td>
</tr>
</tbody>
</table>
|   |   |   | pressure, if not, should be isolated from other OT room.  
Donning/Doffing should be carried out in appropriate designated area.  
Ensure appropriate disinfection of reusable respirators/filters after each use.  

---

### References:


4. Pictorial Slide Presentation on Recommended Personal Protective Equipment (PPE) to be used when Managing Patient Under Investigation (PUI) / Confirmed COVID-19 in Healthcare Facilities.

Minimal standards for labour room staffs

Vaginal delivery or caesarean section for PUI / Confirmed patients

Caesarean section for PUI / Confirmed patients undergoing GA
Further reading on PPE

Recommended PPE to be used when managing patients under investigations (PUI)/ confirmed COVID-19 in healthcare facilities. Medical Programme. MOH. 21 April 2020
Safety of imaging in pregnancy

<table>
<thead>
<tr>
<th>Gestational age (weeks)</th>
<th>Effect of &lt;50 mGy (&lt;5 rad)</th>
<th>Effect of 50–100 mGy (5–10 rad)</th>
<th>Effect of &gt;100 mGy (&gt;10 rad)</th>
<th>Estimated threshold dose*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–2</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>50–100 mGy</td>
</tr>
<tr>
<td>3–4</td>
<td>None</td>
<td>Probably none</td>
<td>Possible spontaneous miscarriage</td>
<td>200 mGy</td>
</tr>
<tr>
<td>5–10</td>
<td>None</td>
<td>Uncertain</td>
<td>Possible congenital anomaly (skeletal, ophthalmic, genital tract)</td>
<td>200–250 mGy</td>
</tr>
<tr>
<td>11–17</td>
<td>None</td>
<td>Uncertain</td>
<td>Fetal growth restriction</td>
<td>60–110 mGy</td>
</tr>
<tr>
<td>18–27</td>
<td>None</td>
<td>None</td>
<td>Microcephaly</td>
<td>200 mGy</td>
</tr>
<tr>
<td>&gt;27</td>
<td>None</td>
<td>None</td>
<td>Severity is dose dependent</td>
<td>25 IQ point loss per 1000 mGy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IQ deficits not detectable at diagnostic doses</td>
<td></td>
</tr>
</tbody>
</table>

*Data based on results of animal studies, epidemiological studies of survivors of atomic bombs and groups exposed to medical radiation. IQ = intelligence quotient.

<table>
<thead>
<tr>
<th>Type of examination</th>
<th>Fetal radiation dose (mGy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low dose examinations (&lt;0.1 mGy)</td>
<td></td>
</tr>
<tr>
<td>Cervical spine X-ray (AP and lateral views)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Chest X-ray (two views)</td>
<td>0.0005–0.01</td>
</tr>
<tr>
<td>Radiography of extremities</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mammography (two views)</td>
<td>0.001–0.01</td>
</tr>
<tr>
<td>Head and neck CT</td>
<td>0.001–0.01</td>
</tr>
<tr>
<td>Low to moderate dose examination (0.1–10 mGy)</td>
<td></td>
</tr>
<tr>
<td>Abdominal X-ray</td>
<td>0.1–3.0</td>
</tr>
<tr>
<td>Lumbar spine X-ray</td>
<td>1.0–10</td>
</tr>
<tr>
<td>CT chest or pulmonary angiography</td>
<td>0.01–0.66</td>
</tr>
<tr>
<td>Limited CT pelvimetry</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Low-dose perfusion scintigraphy</td>
<td>0.1–0.5</td>
</tr>
<tr>
<td>Technetium-99m bone scintigraphy</td>
<td>4–5</td>
</tr>
<tr>
<td>Pulmonary digital subtraction angiography</td>
<td>0.5</td>
</tr>
<tr>
<td>Higher dose examinations (10–50 mGy)</td>
<td></td>
</tr>
<tr>
<td>Abdominal CT</td>
<td>1.3–35</td>
</tr>
<tr>
<td>Pelvic CT</td>
<td>10–50</td>
</tr>
<tr>
<td>18F-FDG PET/CT whole-body scintigraphy</td>
<td>10–50</td>
</tr>
</tbody>
</table>

18F-FDG = 2-deoxy-2[fluorine-18]-fluoro-D-glucose; AP = anterior-posterior; CT = computed tomography; PET = positron emission tomography.
Medications in pregnancy and breastfeeding

<table>
<thead>
<tr>
<th>Medication</th>
<th>Compatible peri-conception</th>
<th>Compatible with first trimester</th>
<th>Compatible with second/third trimester</th>
<th>Compatible with breastfeeding</th>
<th>Compatible with paternal exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corticosteroids</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Prednisolone</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Antimalarials</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>HCQ</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>DMARDs</td>
<td>MTX &lt;20 mg/week</td>
<td>Stop 3 months in advance</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SSZ (with 5 mg folic acid)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Leflunomide</td>
<td>Cholestyramine washout, no</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Aza &lt;2 mg/kg/day</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CSA</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tacrolimus</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>MMF</td>
<td>Stop 6 weeks in advance</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>IVIG</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Anti-TNF</td>
<td>Infliximab</td>
<td>Yes</td>
<td>Yes</td>
<td>Stop at 16 weeks</td>
<td>Yes</td>
</tr>
<tr>
<td>Etanercept</td>
<td>Yes</td>
<td>Yes</td>
<td>Second but not third</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Adalimumab</td>
<td>Yes</td>
<td>Yes</td>
<td>Second but not third</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Golimumab</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Other biologics</td>
<td>Rituximab</td>
<td>Stop 6 months in advance</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Tocilizumab</td>
<td>Stop 3 months in advance</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Anakinra</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Abatacept</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Belimumab</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

BSR and BHPR guideline on prescribing drugs in pregnancy and breastfeeding—Part I: standard and biologic disease modifying anti-rheumatic drugs and corticosteroids
# Practical Guide for Managing Haematological Problems in Patients with COVID-19 in ICU

## Routine Haematological Management

1. **Check Haemoglobin**
   - If Hb <7 g/dL → give single unit red cell transfusion and recheck

2. **Check Platelet count**
   - If Plt <20 x 10^9/L → give one pool of platelets and recheck

3. **Check coagulation results**

4. **Check thromboprophylaxis**
   - Check if special circumstances apply (see special circumstances)
   - If none, go to no. 5

5. **Check creatinine clearance**
   - If CrCl >30 ml/min → prescribe *LMWH as per thromboprophylaxis dose* (if BW <60 kg → Enoxaparin 40 mg OD; if BW ≥60 kg → Enoxaparin 1 mg/kg OD)
   - If CrCl ≤30 ml/min → prescribe S/C **UFH 5000 IU BD or reduced dose LMWH** (Enoxaparin 20 mg OD or 40 mg EOD)

---

## General Principles

- **Minimise phlebotomy**
  - Avoid excessive blood sampling

## Special circumstances

- **AF or previous VTE**
  - If AF or previous VTE >90 days ago, no special circumstances apply
  - If VTE ≤90 days ago, prescribe treatment dose LMWH (Enoxaparin 1 mg/kg BD)

- **Active bleeding**
  - Correct abnormal results

## Planned procedures

- See targets for procedures

## Targets for procedures

**Central line/ arterial line insertion**
- Platelet transfusion if Plt <20 x 10^9/L

**Central line/ arterial line removal**
- Do not remove until Plt >50 x 10^9/L

**Chest drain or tracheostomy insertion**
- INR <1.5 or APTT <1.5
- Fibrinogen >1.5 g/dL
- Platelet count >50 x 10^9/L
Information for women

1) Physical distancing
   i) It is recommended to advice all patients to observe physical distancing and avoidance of contact with people who are known to have COVID-19 or anyone who is symptomatic.
   ii) Wearing a mask is essential.

2) Obstetric care
   i) Obstetric care remains important for optimal outcomes. It is best to contact and communicate with your doctors on how this can be modified but it is not advisable to miss essential appointments without advice from your obstetrician.
   ii) However, if you are unwell or if you came in contact with someone who is confirmed positive, it is best you to go to the nearest clinic or hospital for testing. Also inform your obstetrician before your appointment. It is not recommended to attend routine obstetric care if you are unwell or at risk of contact. It is best to be honest to your healthcare givers.

3) Gynaecological care
   i) If you do have a routine gynaecology review and if you are well, it is perhaps best to communicate with your healthcare giver and to delay such consultations until the restriction of movement order has been lifted.
   ii) However, if you do have an emergency or if you are unwell, do contact your hospital O&G Department who will facilitate a review.
   iii) Follow up of essential patients such as cancer patients and chemotherapies are unaffected and are continued and it is in your best interest not to miss these appointments.
   iv) Contraception remains an essential practice and we believe every pregnancy should be planned.

4) Can you get pregnant during this pandemic?
   i) There are many uncertainties with regards to COVID-19 especially with regards to the implications on the mother and the baby. The burden on healthcare is significant.
   ii) Although there are no general consensus with regards to conception during this pandemic, the possibility of you having optimal assess to healthcare may be a challenge apart from the quality of your care during pregnancy which may be affected.
   iii) Use contraception and is best to plan your pregnancy for optimal outcomes.
   iv) Assisted reproductive techniques may also be delayed at this moment of time but speak to your infertility expert if you are unsure.
COVID-19 INFECTION IN PREGNANCY

INFORMATION FOR PATIENTS

WHAT IS COVID-19?
COVID-19 is an infectious disease caused by a newly discovered Coronavirus named SARS-CoV-2.

Pregnancy does not increase the risk of you having severe infections although it is best to be cautious especially in the third trimester.

EFFECTS TO MY BABY

SYMPTOMS
Most patients will be asymptomatic while a few may have mild symptoms such as fever or cough. Seek urgent attention if you have breathing difficulties.

TRANSMISSION
You can get infected with Covid-19 by close contact with an infected person or by touching surfaces which has been contaminated.

The risk of vertical transmission is yet to be established.

ANTENATAL CHECK UPS
It is not advisable to miss appointments without advice from your obstetrician. However, if you are unsure or have a positive contact, it is best to inform your obstetrician before your appointment.

WEAR FACE MASK
Wear a face mask if you are not feeling well. Cover your face when coughing or sneezing.

MAINTAIN GOOD HYGIENE
Wash your hands regularly with soap and water. Avoid touching your face, nose and mouth with unwashed hands.

DESIGN AND CREATION BY C.JMR / APRIL 2020
MOH GUIDELINES ON COVID-19 IN PREGNANCY
Jangkitan COVID-19 Ketika Hamil
Informasi Untuk Pesakit

Apa Itu COVID-19?

1. Gejala
Kebanyakan pesakit tidak menunjukkan gejala.
Sebilangan kecil menunjukkan gejala ringan seperti demam atau batuk. Namun dapatkan rawatan segera jika anda rasa sukar bernafas.

2. Jangkitan
Anda boleh dijangkiti COVID-19 jika berlaku kontak rapat dengan individu yang dijangkiti atau menyentuh permukaan yang tercemar dengan virus tersebut. Risiko jangkitan daripada ibu kepada konsumen masih dikaji.

3. Penjarakan Sosial
Penjarakan sosial sekerangkat kurangnya 1-2 meter adalah direkomendasi. Elakkan kontak dengan pesakit COVID-19 atau individu yang mempunyai simptom.

4. Kekalkan Kebersihan Diri
Kerap cucil tangan menggunakan sabun dan air. Elakkan menyentuh mata, hidung dan mulut tanpa mencuci tangan.

5. Gunakan Penutup Mulut Dan Hidung
Gunakan penutup mulut dan hidung sekiranya anda tidak sihat. Tutup mulut apabila bersin atau batuk.

6. Pemeriksaan Ketiakan Hamil
Sentiasa patuh tatkala temu jani anda. Namun, sekiranya anda tidak sihat atau mempunyai kontak dengan pesakit COVID-19, anda perlu meseumkan kepada doktor anda sebelum hadir untuk temu jani.

7. Jika Anda Berisiko

8. Kesan Terhadap Bayi Anda
COVID-19 tidak menyebabkan kecacatan bayi. Penjaagan kesihatan semasa dan selepas anda bersalin adalah berdasarkan Gratisk Panduan COVID-19 kekis hamil. KKM.

Sumber: MOH Guidlines On COVID-19 In Pregnancy
BORANG KEIZINAN MENYUSU DAN MEMBERI SUSU IBU OLEH IBU YANG DIJANGKITI COVID-19 ATAU DI BAWAH SIASATAN (PUI)

Dengan menandatangani di bawah, saya mengesahkan bahawa:

• Saya telah diberi maklumat secara lisan/bertulis tentang penyusuan susu ibu di dalam keadaan saya disyaki atau dijangkiti penyakit COVID-19

• Saya memahami bahawa walaupun tidak ada bukti yang penyakit ini dijangkiti melalui susu ibu, namun tiada juga kajian dibuat untuk mengatakan penyusuan susu ibu adalah 100% selamat.

• Saya mengakui telah diberikan masa secukupnya untuk mempertimbangkan manfaat dan risiko penyusuan susu ibu dalam keadaan saya dibandingkan dengan risiko tidak memberi penyusuan susu ibu.

• Saya mengakui telah diberikan penerangan secukupnya tentang langkah-langkah untuk mencegah jangkitan kepada bayi sepanjang tempoh penyusuan atau pemerahan susu iaitu:

  i. Membasuh tangan dengan sabun atau menggunakan hand sanitiser sebelum memulakan penyusuan atau pemerahan susu
  ii. Penggunaan penutup muka dan hidung sewaktu penyusuan atau pemerahan susu
  iii. Memastikan penjarakkan muka dari bayi atau dari bekas pemerahan dalam jarak yang sesuai sewaktu penyusuan atau pemerahan susu

• Saya bersetuju bahawa jika syarat-syarat tersebut tidak dapat dipenuhi atau keadaan tidak mengizinkan, saya tidak akan dibenarkan memberi penyusuan susu ibu.

Tandatangan ibu: ........................................
No. KP: ..................................................
Tarih: ........................................

Tandatangan Doktor: ................................. Tandatangan saksi: ......................
Nama Doktor: ................................. ............................. Nama saksi: .................................
Tarih: .................................

UNTUK KEGUNAAN HOSPITAL
Ibu telah diberikan taklimat pada .......................................................... (Tarih dan masa)

Tandatangan Doktor/jururawat bertugas..........................................................
Nama: ................................. Cop:
Tarih: .................................
CONSENT TO BREASTFEED OR PROVIDING EXPRESSED BREAST MILK BY A MOTHER WITH COVID-19 POSITIVE OR PERSON UNDER INVESTIGATION (PUI)

By signing below, I hereby confirm the following:

I have been given verbal/written information regarding breastfeeding in situation where I am COVID-19 positive or a Person Under Investigation (PUI).

I understand that although there is no evidence that COVID-19 virus is transmitted in breast milk, there are also no studies to prove that breastfeeding is 100% safe.

I certify that I have been given sufficient time to consider the benefits and risks of breastfeeding versus the risks of not breastfeeding in my current situation.

I certify that I have been given adequate information regarding steps I need to take to prevent transmission of infection during the period I am breastfeeding or expressing my breast milk:

- Wash my hands properly with soap and water or use hand sanitiser before start of breastfeeding or breast milk expression
- Wear a mask during breastfeeding or breast milk expression
- Ensure a suitably comfortable distance between my face and baby or from container during breastfeeding or breast milk expression

I hereby agree that if I am unable to fulfil any of these conditions or if situation does not permit, I will not be allowed to breast feed or provide expressed breast milk for my baby.

Signature of Mother: ……………………………………
IC number: ……………………………………………..
Date: ……………………………………… ………..

Signature of Doctor: ………………………………Witness by: …………………
Name of Doctor: …………………… …………… Name of witness: …………………
Date: ……………………………….

FOR HOSPITAL USE
Mother has been counselled on: ……………………………………(Date and Time)

Signature of Doctor/Nurse on duty
…………………………………………………………………
Name: …………………………………………………… Stamp:
Date : …………………………………..
EDITORS

1. Dr. Ravichandran Jeganathan
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Sultanah Aminah, Johor Bahru
   Ketua Perkhidmatan O&G KKM

2. Dr. Muniswaran Ganeshan
   Pakar Perunding Kanan O&G
   Hospital Tuanku Azizah, Kuala Lumpur

LIST OF CONTRIBUTORS

1. Datuk Dr Soon Ruey
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Wanita Dan Kanak-Kanak Likas

2. Dr Harris Njo Suharjono
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Umum Sarawak

3. Dr Norashikin bt Abdul Fuad
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Sungai Buloh

4. Dr Carol Lim Kar Koong
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Ampang

5. Dr Sharmini Diana
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Pulau Pinang

6. Dr Wan Ahmad Hazim bin Wan Ghazali
   Pakar Perunding Kanan O&G Dan Ketua Jabatan
   Hospital Putrajaya

7. Dr Noor Haliza bt Yussoff
   Pakar Perunding Kanan O&G
   Hospital Tuanku Azizah, Kuala Lumpur

8. Unit Kawalan Infeksi
   Cawangan Kualiti Penjagaan Perubatan
   Bahagian Perkembangan Perubatan