COVID-19-Labor and Delivery Guidelines

Purpose: To identify the process for Women’s Services regarding suspected and diagnosed COVID-19.

Identification:
- A health care provider, as designated by Hospital Administration, will screen patients and visitors in the Main Lobby according to the CDC guidelines, defined as experiencing any of these symptoms: cough, subjective fever, temperature > 38.0 C or 100.4 F, shortness of breath, other respiratory symptoms, anosmia, recent travel, contact with a confirmed or suspected COVID-19 case or COVID-19 diagnosis in the last 14 days.
- Anyone screening positive will immediately perform hand hygiene and don gloves and a surgical mask.
- Patients presenting with positive COVID-19 screening and obstetric complaints will go to Labor and Delivery (L&D) with appropriate PPE.
  - Obstetric complaints include a gestational age of 23 weeks or higher with any of the following:
    - Greater than 6 painful contractions in 1 hour, vaginal bleeding, amniotic fluid leaking, or decreased fetal movement.
- A pregnant patient, at ANY gestational age with flu-like symptoms or in respiratory distress who has no obstetric complaints, will be seen in the Emergency Department (ED), with OBGYN to consult.
  - ED charge RN to call LDR charge RN to alert unit to patient presence in ED.
- A pregnant patient, at ANY gestational age with flu-like symptoms or in respiratory distress who has no obstetric complaints and requires admission, should be admitted to Medicine, with OBGYN to consult.
- An experienced OBGYN physician available, should evaluate the patient.
  - Fetal doppler/NST machine will be cleansed with Cavi Wipes prior to returning to L&D
  - Ultrasound probe covers will be utilized and the ultrasound cleaned per the manufacturer’s instructions
  - Utilize the bedside phone to obtain PHI
  - Wear PPE per the hospital’s guidelines

**If no respiratory complaints or flu like symptoms—NO CONCERN FOR COVID-19—and negative to all screening inquiries, ok to send patient to L&D after 16 weeks.

Precautions for Patients Who Screen Positive and Have an Obstetric Complaint:
- Identify COVID-19 team members at the beginning of each shift
  - Members include Ob Attending, Chief Resident, R1, R2, NICU, and Anesthesia
  - Distribute role cards
  - Confirm phone numbers
  - Obtain N95 and carry in labeled paper bag
  - Check PAPRs, located in the womb
- Prepare Labor Room 1,2,7,8, 10, 363, 364 (these are negative pressure rooms)
  - Remove unnecessary equipment, furniture, carts, birth balls, mirrors etc.
  - Bring COVID-19 Delivery Kit into the room
    - Sterile gloves, FSE, amnihook, IUPC, foley catheter, red rubber, gel packs
    - Delivery kit, sutures, rolling stool, step up and placental bucket
- 1 patient gown, 1 pair socks, 3 baby blankets, 1 extra blanket, bed linens, chux, sanitary pads, peri-bottle
- Place door sign “AIRBORNE/DROPLET” precautions
- Place log sheet for contact tracing on door
- Remove regular trash bag
- Set up donning station
- Ensure adequate PPE supplies are available.
  - All appropriate personal protective equipment (PPE) will be placed outside of the room. N95 masks are kept at the L&D nurses’ station.
    - All L&D personnel should have completed fit testing in Employee Health
    - N95 masks are accessed with a key located in the pyxis.
    - Storage and reuse will follow the hospital’s N95 Use and Reuse Guidelines
    - An N95 seal check should be performed after donning the mask
  - PPE – N95 mask, surgical cap, eye protection, gloves, plastic gown
  - Eye glasses are NOT considered to be adequate eye protection
  - To preserve and N95, utilize a face shield if appropriate
  - Shoe covers should be worn at the time of delivery
  - N95 masks and PPE must be worn by healthcare providers when entering the room.
  - A PAPR is available to the healthcare provider spending an extended period of time at the bedside.
    - 6 PAPRs are located at the L&D nurses’ station
    - 4 PAPRs are located in the NICU
    - The PAPR will be cleaned and reused per the CDC guidelines
    - The PAPRs will be checked per the hospital’s routine protocol
  - Caps, eye protection, gloves and gown should be removed and disposed of within the LDR per hospital’s routine doffing guidelines
  - N95 masks should be removed outside of the LDR and hand hygiene performed.
  - N95 mask should be evaluated. If soiled, broken or saturated with the patient’s secretions or blood the N95 should be discarded.
- Consistent and thorough hand hygiene is required before and after encounter.
- A log will be kept of providers and visitors who enter the room.
- Limit the number of healthcare providers.
  - 1:1 nursing is recommended to minimize staff exposure
  - Utilize bedside phone to communicate with patient when direct contact is not required
- Move the patient to negative pressure room.

Testing:
- **As of March 29, 2020, all patients admitted to L&D will be tested for SARS-COV-2 Real Time PCR**
  - Use a nasopharyngeal viral swab and “wet” tube with media
  - Specimen may be sent through the pneumatic tube device
  - Inductions and scheduled procedures will not proceed until test is resulted
- As of April 16, 2020, all triage patients MFTI 1 or 2 as determined by the triage nurse are swabbed for SARS-COV-2 Real Time PCR.
- As of May 1, 2020 Abbott ID NOW (SARS-CoV-2 RdRp gene) is available for emergencies, such as precipitous delivery, level 1 cesareans etc.
- Use a nasopharyngeal viral swab and “dry” white top tube without media
- Specimen should be brought to the lab to expedite processing
- Positive results take approximately 10 minutes
- If Abbott ID NOW is positive, Real Time PCR will be cancelled
- If Abbott ID NOW is negative, Real Time PCR will run to confirm
- Patient should be considered a PUI until Real Time PCR results

- As of May 20, 2020, all scheduled labor and delivery procedures should have COVID-19 prior to the admission
  - Scheduled external cephalic versions and cesareans should be tested in the Pre-admission Testing Unit on the first floor of the hospital within 48-72 hours of admission
  - Scheduled inductions may have outpatient testing within 48-72 hours of admission
- Consider differential diagnosis testing if patient is symptomatic.
  - Respiratory Panel PCR, urine and blood
    - Laboratory specimen may be sent through the pneumatic tube system if double bagged
  - Chest xray – shielded and portable
- Note: The hospital Respiratory Panel-25 does NOT include COVID-19. If the patient tests positive for any of the infections on this panel, he or she may still test positive for COVID-19. Airborne and droplet precautions should continue until the confirmatory COVID-19 test results.
- Start sepsis workup as outlined by hospital’s sepsis bundle.
  - CBC with diff, CMP, lactate, UA, blood, sputum and urine culture
  - If SARS-COV-2 positive and symptomatic: add CRP, LDH, coags, EKG, troponins to sepsis workup bundle
  - Strict I&O
  - If SARS-COV-2 positive, consider prophylactic anti-coagulation regardless of the mode of delivery or BMI
  - If SARS-COV-2 positive with severe symptoms or organ failure consider therapeutic anti-coagulation
  - Questions regarding inpatient testing can be directed to Tiger Text Role: COVID19 ID On Call

Notification
- Contacts
  - HOS at 202-925-2186 or RF 73886
  - COVID-19 Safety Office RF 2221 / Contact Center RF 4242
  - Laboratory for possible COVID-19 specimen ext 4439
  - Radiology tech if portable chest xray needed
  - Infection Prevention – Tiger Text Candace Johnson or Renee Zell
  - Emergency Management – Tiger Text Dr. Bruno Petinaux or call at 202-258-0615
  - Neonatology Attending on call (RF 2538)
  - Anesthesiology Attending on call (RF 6091)
  - Dr. Sheetal Sheth and Dr. Nancy Gaba – Tiger Text

Deliveries:
- Vaginal delivery should occur in LDR1,2,7, 8 or 10 with negative pressure.
  - If LDR1,2,7,8 or 10 are not available, consider 363 or 364
- Prepare alternative LDR as described in section: Precautions for Patients Who Screen Positive and Have an Obstetric Complaint
- Given increased risk of cesarean delivery, prepare patient
- Bedside RN Checklist:
  - Place cap and surgical mask
  - Place SCDs
  - Place second IV line
  - Cleans skin with CHG wipes
  - Place EKG leads
  - Consent for general routine care, blood transfusion and cesarean delivery
  - Identify health care proxy and phone number on CORES
  - Encourage epidural to minimize aerosolized procedures and GETA
  - COVID-19 positive patients will be cared for by the physician team
  - Minimize health care providers
  - Continuously monitor the fetus externally
  - Continuous pulse oximetry
  - Avoid oxygen via nasal cannula, non-rebreather for intrauterine resuscitation
  - If oxygen therapy is required for maternal benefit, patient will wear a surgical mask with the non-rebreather on top
  - Use disposable stethoscope
  - Hydrotherapy and water immersion therapy are not permitted
  - N95 and PPE is required during the second stage of labor
  - Terminal cleaning is required after the patient is transferred

- Cesarean delivery (CD) should occur in LD-OR2
  - If LD-OR2 is not available, CD should occur in Main OR 11
  - LD-OR2 preparation will comply with GW’s COVID-19 OR-11 Guideline
  - L&D Charge Nurse to Main OR Charge Nurse must occur prior to moving the patient to Main OR-11
    - Back elevator to Main OR requires badge access
    - Both LD-OR2 and Main OR-11 are positive pressure rooms. Air exchange filtration takes a minimum of 28 minutes.
    - HEPA Air Filtration in OR continuously starting 30 minutes prior to the case when clinically appropriate, throughout procedure, and for 30 minutes following the case. Terminal cleaning should not start until after 30 minutes of HEPA Air Filtration in empty OR.
  - PAPRs are required for Anesthesia, 2 OBGYNs, RN1 and Scrub Tech
  - Most experienced OBGYNs should perform the CD
  - Minimize the number of staff members entering and exiting the OR
    - Once the patient enters the OR, the OR door and the Antechamber door should NOT be open at the same time
  - Donning should occur prior to entering the OR
  - The ante-chamber contains a Hepa Air Filter
  - If an epidural is not in place and the patient requires a level 1 CD, consider a spinal if no contraindications
Spinal attempt may be made by an experienced Anesthesiologist or Advanced Practice Provider (AAP).

- If GETA is required, intubation should occur in the LD-OR2 or Main OR-11.
- The COVID19 Safety Officer RF 2221 should assist the Anesthesiologist/AAP with PPE and hood.
- After the procedure, extubation may occur in LD-OR2 or Main OR-11.
  - Anesthesiologist, RN and scrub tech to remain in the OR for 30 minutes after extubation.
  - Transporters will don PPE.
  - Once the patient has exited the OR, doffing of soiled boots, outer gloves and gown should occur in the OR.
  - Doffing of the PAPR should be completed last outside of the OR.
  - Hand hygiene must be performed after doffing.

- Multidisciplinary simulation of a level 1 cesarean delivery of a COVID19 patient who requires GETA is available.
  - See Attached Drill Simulation.

NICU Delivery Attendance:
- Vaginal Delivery
  - Full Term Infant
    - Panda Warmer should be set up >6 feet from the mother.
    - Call NICU per routine: meconium, operative delivery, category III FHT.
    - NICU waits outside of LDR dressed in PPE and N95.
      - Only enters at the request of OB.
    - If no concerns, NAN attends to infant wearing PPE and N95.
    - Peds is notified of birth and assesses infant in the negative pressure room donned in PPE and N95.
    - Infant testing at 24 hours.
  - Preterm Infant
    - Panda warmer should be set up >6 feet from the mother.
    - Call NICU per routine.
    - NICU waits outside of LDR dressed in PPE and N95 with Giraffe incubator.
    - Ob delivers baby and transfers to the Panda warmer.
    - RN moves Panda to the door and knocks on the LDR door.
    - NICU opens Giraffe incubator and RN places infant in the warmer for transfer to the NICU.
    - Care for the infant per NICU’s COVID Guidelines.
    - PAPRS are located in the NICU in case of aerosolized procedures.

- Cesarean Delivery
  - Full Term Infant
    - NICU RN to prepare crib with sterile blankets.
    - NICU RN to don PPE and N95 and enter OR-2’s antechamber with crib and close door.
    - NICU RN receive infant from OB and knocks on antechamber door.
    - NICU Attending or Fellow, donned in PPE and N95, to receive infant in Giraffe isolate.
      - Covers Giraffe isolate in with clear plastic drape.
- Transports infant to LDR negative pressure room where mother will recover
- NICU RN to doff in the antechamber except N95 and face shield, performs hand hygiene and dons outside of LDR and enters to assist with resuscitation
- NICU team determines infant’s disposition
  - NICU to notify second NICU RN and NICU MD to receive infant, clean Giraffe
    - Both second NICU RN and NICU MD to don PPE and N95
    - Proceed to NICU’s negative pressure isolation room
- If no concerns, NAN attends to infant wearing PPE and N95
- Peds is notified of birth and assesses infant in the negative pressure room donned in PPE and N95
- Infant testing at 24 hours

- Preterm Infant or High Risk for Intubation
  - NICU RN and NICU Attending or Fellow to prepare crib and accept infant as per COVID Positive Mother or PUI Asymptomatic, Full Term section above except
    - Transport infant to negative pressure room in the NICU
  - NICU team determines infant’s disposition as noted above.

Anesthesia:
- Per Society for Obstetric Anesthesia and Perinatology:
  - Early epidural anesthesia may reduce the need for GETA in case of CD
  - A COVID-19 diagnosis is NOT considered a contraindication for neuraxial anesthesia
  - Given prolonged patient exposure at close distances during procedures, all procedures (neuraxial blockade or intubation/extubation) should be performed by Attending Anesthesiologist using airborne precautions in appropriate PPE.
- Neuraxial blockade for labor:
  - Placement of neuraxial blockade may occur prior to SARS-COV-2 PCR results
    - Placement prior to PCR results is at the discretion of the Anesthesiologist
  - Do not take travel anesthesia cart into room
  - Bring supplies needed for neuraxial placement into the room.
  - Double gloves are required for ALL procedures.
- Anesthesia for Cesarean Delivery:
  - If neuraxial blockade utilized:
    - Patient will wear a surgical mask with a non-rebreather on top.
  - If general anesthesia is needed:
    - PEE is required in the OR. Safety Officer (RF 2221) will assist with proper PPE
    - Large clear plastic drape or plastic tent should be placed over patient’s upper torso and head to decrease aerosolization
    - Pre-oxygenation should occur with a circuit extension and HEPA filter at the patient side of the circuit, mask ventilation should be avoided, and RSI with video laryngoscope should be used for first attempt given risk of difficult airway. Follow COVID19 intubation department guidelines from “GW COVID for ICU and Anesthesia: GW Anesthesiology & Critical Care Medicine Guidelines” for the patient with suspected or known COVID-19 (Section C: Intubations).
Extubation is equally, if not more of a significant risk. Minimize personnel, utilize N95/PAPR and PPE precautions. Complete extubation in the OR. Wait 30 minutes after extubation prior to opening doors to antechamber.

- NSAIDs may be used safely in asymptomatic patients.
- Antiemetics should be administered to prevent vomiting in patients undergoing cesarean delivery. However, due to potential risks of steroids in the setting of COVID infection, consider avoiding the use of dexamethasone for PONV prophylaxis in suspected or COVID+ patients.
- Donning/doffing takes time, avoid crash situations by anticipating needs and maintaining communication between all involved teams. Airborne precaution PPE is required for anesthesia personnel for all cesarean sections, even in the case of a level 1 cesarean.

Critically Ill COVID-19 Patient
- A critically ill COVID-19 pregnant patient > 23 weeks admitted to the ICU will be prepared as described in the Deliveries section
- Consents for cesarean and blood to be completed on admission
- Identify and document health care proxy and telephone number
- Consider weight based Lovenox or subq heparin if labor is not imminent
- Routine hand hygiene will be performed prior to entry
- Obtain history through the bedside phone when possible
- PPE and N95 will be donned prior to entry in the ICU room
  - In the case of extended exposure, second stage or delivery, a PAPR should be worn
- A cesarean delivery kit, betadine splash and sutures will be outside of the room
  - Kits are located in the LD-OR Hallway
- Uterotonics will be available
- Ancef 1-3 grams and will be available in the pyxis
- In case of level 1 cesarean, the patient should not be transferred to the Main-OR11 or LD-OR2
- CODE L-19 to ICU BED # should be called overhead
  - This will bring the Chief Resident, Attending, COVID –19 RN1/RN-2 and NICU
- Remove excess pillow and blankets
- Place patient on stiff transfer board
- Intubation as described in the Anesthesia for Cesarean section should be performed
- Complete cesarean, immediate cord clamping
- Cord blood should be sent to pathology in a double bag
- Placenta will be sent to pathology, labeled COVID-19 and bagged in a red biohazard bag
- Pass baby to NICU team waiting at the door
- The infant will be transported to the negative pressure room in the NICU with the transporter draped in a large plastic drape per protocol
- Doffing of soiled boots, outer gloves, face shield and gown should occur in the ICU room
- Doffing of the N95/PAPR should be completed last outside of the ICU room
- Hand hygiene must be performed after doffing

Code-L:
- Code-L indicates an obstetric emergency
• Code-L team members should be identified at the beginning of each shift
  o Members include Ob Attending, Chief Resident, R1, R2 and NICU
  o Transport equipment per Code-L Guidelines
• With the spread of COVID-19 in the community, patients who have not been screened should be considered PUIs
• Code L to the Valet, Lobby and ER
  o Place mask and gloves on patient as soon as possible
  o Code L team should don gloves and N95 mask prior to attending to patient
  o Code L team to inquire about travel, COVID-19 symptoms and contacts
    ▪ If screens positive, transfer patient to negative pressure room
  o Once on L&D, SARS-COV-2 Real Time PCR sent per routine protocol
    ▪ If negative, discontinue droplet and airborne precautions
  o If CNM patient is brought to L&D and is stable and undelivered, notify CNM of patient’s location and disposition in order for CNM to assume care

Placental Disposition:
• The placenta from a suspected or confirmed COVID-19 patient, regardless of symptoms, will be sent to pathology for evaluation
• In addition to routine label, COVID-19 should be written clearly on the placental bucket and placed into a red biohazard bag
• The placenta from a suspected or confirmed COVID-19 patient will not be released for burial, consumption or encapsulation

Infant:
• Risks and benefits of temporary separation of the mother from her infant should be discussed with all confirmed and suspected COVID-19 cases by the healthcare team prior to delivery.
  o Confirmed COVID-19 mother with active symptoms
    ▪ Infant to be placed on airborne and droplet precautions and PPE worn
    ▪ The infant will be admitted to the NICU’s negative air-pressure isolation room
      ▪ Alternative: Negative pressure room on 3N with asymptomatic support person or RN staff
    ▪ The infant will be cared for by the RN staff
    ▪ The infant may not have visitors
    ▪ Video access to the baby will be provided to the mother
    ▪ Infant to be bathed as soon as possible
    ▪ SARS-COV-2 PCR will be completed at 24 hours of life
    ▪ **If infant negative**, he or she will be discharged in accordance with CDC’s guidelines
      ▪ Education regarding COVID-19 and infant care will be provided
      ▪ Infant should be discharged to a non-infected caregiver
      ▪ If mother resides in the same household,
        ▪ Maintain 6 feet or greater distance from infant
        ▪ Hand hygiene, wear gloves/mask during infant care until mother has been afebrile without antipyretics for >72 hours AND at least 7 days has passed since first symptoms appeared
        ▪ Precautions maybe lifted if 2 SARS-COV-2 tests are negative and 24 hours apart
- Non-infected caregiver should monitor themselves for symptoms
- **If infant positive but asymptomatic**, consider repeating in 48-72 hour increments until 2 negative per American Academy of Pediatrics Guidelines
  - Infant to be discharged on a case by case basis with close outpatient follow-up
  - Education regarding COVID-19 and infant care will be provided
  - Optimally, infant should be discharged to a non-infected caregiver <60 years of age without co-morbidities
- If mother resides in the same household,
  - Maintain 6 feet or greater distance from infant
  - Hand hygiene, wear gloves/mask during infant care until mother has been afebrile without antipyretics for >72 hours AND at least 7 days has passed since first symptoms appeared
  - Precautions maybe lifted if 2 SARS-COV-2 tests are negative and 24 hours apart
  - Non-infected caregiver should monitor themselves for symptoms
  - **If positive and needs respiratory support**, the NICU will coordinate with Children’s National Medical Center for the most appropriate care and probable transfer.
**If the patient declines separation, provide the AAP/CDC recommendations, consult NICU and consider Ethics consultation.**
  - Suspected or Confirmed COVID-19 mother without symptoms
    - Rooming in may occur if requested
    - Consider using engineering controls such as a curtain or barrier to separate the infant and mother
      - The mother should be >6 feet away
    - The mother should practice hand hygiene, don gloves and a mask prior to touching or breastfeeding the infant.
      - Mask and gloves remain in place during contact with the infant.
      - If possible, pumped breastmilk should be provided by a healthy support person or healthcare worker as described below
    - The infant will not be permitted in the respite nursery
    - Any healthcare provider who comes in contact with the infant or mother should don appropriate PPE.
    - Support person should wear a mask at all times
    - Support person should wear mask and gloves during infant contact

Children’s National Medical Center follow up testing for infants:
Requires physician referral form to be completed by pediatrics or NICU
Patient requires: referral, signed consent, Quest requisition and photo ID
Breastfeeding:
- At this time, there is no evidence that COVID-19 is spread through breast milk. It is safe and appropriate for the mother to provide breast milk to the infant. However, coronaviruses can spread from a positive mother to the infant through respiratory droplets. The CDC recommends that a healthy family member or health care worker provide pumped breast milk to an infant whose mother is COVID-19 positive. If the mother declines, she should don a mask and wash her hands for 20 seconds prior to breastfeeding and perform breast hygiene.

Breast pumping:
- Refer to UHS’ COVID-19 Breast Milk Transportation Guidelines/Checklist
- The RN will teach the patient and support person, if applicable, about proper hand and breast hygiene before and after each pumping session.
- A sanitized breast pump will be provided to the patient.
- Patient will don gloves and mask while breast pumping or feeding
- Wipe surface where bottles/syringes will be placed after collection with a disposable germicidal wipe, cover the clean surface with a clean towel or paper towel
- Collect milk
- Ensure syringe/bottle cap is secured, cleans outside of syringe/bottle with a disposable germicidal wipe
  - Label with patient sticker, date and time
  - Place in biohazard bag
  - Store in patient’s room refrigerator
- A separate microwave, reserved for COVID-19 patients, to sterilize pump parts will be available.
- The pump must be wiped down after every use.
- The pump parts are to be sterilized after every use.
- If neonate is in the NICU
  - Healthcare worker (HCW) 1 dons PPE to retrieve breastmilk
  - HCW 2 performs hand hygiene and dons gloves to transport breastmilk to NICU, calls NICU RN to inform
  - NICU RN dons PPE and receives breastmilk from HCW2
  - NICU RN cleans outside of syringe/bottle with a disposable germicidal wipe and allows the syringe/bottle to dry prior to storage or feeding

Circumcision of PUI or COVID Positive Infants
- Circumcision may be performed at the request of an infant’s mother or guardian
- Circumcision may be performed on infants born to COVID positive mothers
- Circumcision consent and preprocedural verification form should occur by phone
  - 2 healthcare providers will verify consent via phone
- Infant should be at least 12 hours of life
- Verification of vitamin K administration and normal anatomy is required
- Circumcision should occur in negative pressure room on 3 North
- Prepare the room
  - Remove bed and any extra equipment
  - Set up PPE station an log book
  - Bring warmer, circumcision board and circumcision kit to the room
  - Circumcision kit: Mogan or Gomco clamp kit, sterile and blue gloves, sweeties, pacifier, alcohol swabs, lidocaine, tuberculin syringe, betadine, 2 by 2 gauze, petrolatum, diaper
- 1 additional Mogan or Gomco clamp kit, thrombin kit, and 5.0 monocryl suture should be available outside of the room
- PEE should be worn by MD and RN
- Circumcision to be performed by experienced Obstetrician
- After procedure, infant should recover in negative pressure room then transfer back to room
- Procedural room to be cleaned per EVS guidelines

Terminal Cleaning:
Terminal cleaning is necessary for any room in which a suspected COVID-19 patient has been.
- Once a HEPA filter is placed LDR7, the room must remain empty for one hour for complete air turnover before EVS starts the terminal clean.
- ORs must remain empty for 30 minutes for complete air turnover before EVS starts the terminal clean.
- Refer to Environmental Cleaning-Terminal Operating Room Sanitation Policy

Visitor Policy:
- All patients, staff and visitors will be screened in the Main Lobby.
- 1 asymptomatic designated support person of the suspected COVID-19 patient, who has had contact with the patient prior to arrival, may accompany the patient in triage and labor and delivery.
- Only 1 designated support person, may stay with the suspected COVID-19 patient on 3 North.
- If the designated support person leaves the hospital, they will not be permitted back into the hospital.
- Support person will sign the Visitor’s Agreement
- Support person will have symptoms and temperature taken twice a day, this is surveillance and does not require documentation in the EMR
  - If febrile or symptoms develop, contact the Command Center #4242 to arrange testing and tracking
  - Support person will be asked to leave the unit
  - If visitor refuses temperature or declines to disclose symptoms, he or she will be asked to leave the hospital
- As of March 12th, 2020, children younger than 18 will not be allowed onto L&D, the 3 North or NICU.
- NICU: Only one parent or guardian with the infant band will be able to visit the infant in the NICU.
  - Hand hygiene will be performed.
  - If the parent or guardian with the infant band leaves the hospital, they will not be able to return to hospital until the following day.
- Symptomatic support person of a PUI or confirmed COVID-19 patient may not enter the NICU.
- If neonate is transferred to CNMC for higher level of care, support person may accompany the neonate to CNMC.
  - The support person may not re-enter GW hospital
  - A second asymptomatic support person may take the place of the original support person
    - They will be screening in the lobby
    - They will sign a new visitor’s screening policy agreement per routine protocol
    - If they leave the hospital the will not be permitted to re-enter
Elective Procedures:
- As of March 26th, 2020, elective procedures, such as a bilateral tubal ligation or salpingectomy, will not be performed in compliance with the hospital’s surgical guidelines.
- A tubal ligation or salpingectomy may be performed concomitantly with a cesarean.
- Patients who request permanent sterilization should be offered alternatives, such as LARC.

More than one patient infected with COVID-19
- Reach out to HOS and other units for overflow relief as possible.
- Primary RN to don PAPR while spending prolonged periods of time in the contaminated room.

Updated 6/19/2020
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<tr>
<th>Medication</th>
<th>Indication</th>
<th>Usual Dose</th>
<th>Adverse Effects</th>
<th>Alternatives/Recommendations for COVID-19</th>
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<tr>
<td>Azithromycin (Anticipate National Shortage)</td>
<td>1. Chlamydia 2. PPROM 3. Endometritis Prevention with ROM and Cesarean</td>
<td>12 mg IM, 2 doses 24 hours apart</td>
<td>Delayed Viral Clearance Avascular Necrosis Impaired Glucose Metabolism</td>
<td>1. Amoxicillin 500mg po TID for 7 days 2. Ampicillin 2g IV q6h+Erythromycin 250mg IV q6h for 48h then Amoxicillin 250mg po q8 + Erythromycin 333mg po q8h for 5 days (PCN allergy: Erythromycin 250mg po q6h for 10d) 3. Aneof 1g-3g IV (weight based dose) + vaginal prep</td>
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<tr>
<td>Betamethasone</td>
<td>Fetal lung maturity Decrease IVH-4 Decrease NEC</td>
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<tr>
<td>Indocin</td>
<td>Tocolysis</td>
<td>50mg po then 25mg po q6h for 48 hours</td>
<td>Premature Closure of Ductus Arteriosis Oligohydramnios</td>
<td>*Ok to use as an alternative to Procardia</td>
</tr>
<tr>
<td>Lovenox</td>
<td>&lt;60kg, 20 mg daily 50-90kg, 40 mg daily 91-130kg, 60 mg daily 131-170 kg, 40 mg bid &gt;170kg, 0.6mg/kg/day</td>
<td></td>
<td></td>
<td>*Administer anticoagulation, unless contraindicated, to SAR-COV-2 positive who are symptomatic and in critical condition</td>
</tr>
<tr>
<td>Magnesium Sulfate</td>
<td>Neuroprotection 23.0-33.6 weeks</td>
<td>6 gram bolus then 2 grams per hour</td>
<td>Respiratory Depression Cardiac Arrest</td>
<td>*Administer for no more than 12 hours *4 gram bolus only if respiratory distress</td>
</tr>
<tr>
<td>Magnesium Sulfate</td>
<td>Preeclampsia</td>
<td>4 gram bolus then 2 grams per hour</td>
<td>Respiratory Depression Cardiac Arrest</td>
<td>*Use with severe features *4 gram bolus then 1 gram per hour if Cr 1.1-2.5 *Lorazepam 4mg IV over 2-5 minutes may repeat after 15 minutes. Max dose 8mg in 12 hours</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>Post Operative Pain</td>
<td>30mg IV q6h</td>
<td></td>
<td><em>Ok to use post op</em>/Consider Tylenol 1gram IV</td>
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</tbody>
</table>
Level 1 Cesarean Delivery for a COVID-19 Positive Patient or PUI

For each shift, a designated care and delivery team will be assigned to the patient during sign-out. At the start of the shift it should be verified that the proper PPE is available for every member of the patient’s team (i.e. correctly fitted N95). Role cards should be obtained by members of the team.

This protocol should be followed for cesarean deliveries of COVID 19 patients and other emergencies requiring the OR (i.e. hemorrhage).

**Important points:**

- Route of anesthesia may vary. Goal is to attempt spinal or use epidural to minimize airway instrumentation. If epidural is present, begin dosing in LDR prior to transport.
- LD-OR 2 will remain minimally stocked to prevent contamination of supplies such as suture/gowns/gloves that cannot be cleaned.
- LD-OR 2 is preferred OR, but all OB and Anesthesia physicians will have badge access to the trauma elevators in the event of transport to backup Main OR-11.
- Certain decisions will be standardized to reduce stress and time:
  - FSE/IUPC/monitor to be removed in LDR
  - SCDs, CGH wipes, EKG leads and BP cuff to be placed on admission
  - General Care, Cesarean, Anesthesia and Blood Transfusion Consents to be completed on admission
  - N95s to remain on throughout
  - No monitoring of FHR in OR
  - Splash prep
  - All uterotonics will be pulled for cesarean to minimize OR traffic
  - Ancef 2g and Azithromycin 500 mg will always be given unless weight/allergies dictate
  - Immediate cord clamping
  - LDR bed will kept in the OR, stripped and used to transport back to negative pressure room

**Roles:**

RN1: Primary Bedside RN

CR- Chief Resident

OB-MD- Attending

RN2: Designated second for shift/delivery/OR

Anesthesia-1: OB Anesthesia Attending

Anesthesia-2: OR Anesthesia Attending, Senior Anesthesia Resident, Anesthesia Assistant (APA), or Junior Anesthesia Resident

NICU-RN: Charge RN

NICU-MD: NICU Fellow or Attending
**Level I Cesarean Communicated**

**Step 1: When cesarean called, team members will simultaneously fill the following roles:**

- RN1 and CR: Alert all team members of “Level 1 cesarean-19 out of LDR#.” In the LDR, preps patient for transport.
  - PPE to remain on during patient prep.
  - If epidural present, dosing of epidural to begin in LDR to determine adequacy by arrival to OR.
  - Bed unplugged, lines and epidural secured.
  - FSE, IUPO, and all fetal and TOCO monitors to be removed.
  - IV poles remain in the LDR- to be re-used post-op and to prevent any unnecessary contaminated equipment from leaving LDR.
  - Confirm mask, hat, SCDs and EKG leads placed on patient at time of admission.
  - CR to notify Anesthesia resident (6090)
  - RN1 notifies RN2
  - RN1 and CR push patient bed to the door and wait for OB-MD and RN2 to knock on LDR door for transfer, RN1 and CR to doff PPE appropriately inside of room except N95 remains on throughout.
  - RN1 and CR to don PAPRs if needed, CR to obtain PAPR for OB-MD and bring to LD OR Hallway.

- RN2: Calls charge RN (73700)/ OR tech (2533) – determines location of cesarean, then dons PPE and prepares to receive patient in LDR hallway.
  - Cesarean will preferentially take place in LD-OR 2 with Main OR11 as the backup.

- OB-MD: Calls Anesthesia-1 (6091) and NICU (2538), dons PPE and prepares to receive patient in LDR hallway.

- Anesthesia-1:
  - If epidural present, Anesthesia-1 and Anesthesia-2 will divide roles of dosing epidural and preparing the OR based on immediate availability.
  - If epidural not present, calls Anesthesia-2 and the safety officer (2221) for guidance in donning of ENHANCED PPE (following “PPE Guideline for Airway Procedures”) in case GESTA is required.
  - Anesthesia-2 role determined based on immediate availability. If OR Anesthesia Attending unavailable, role may be filled by Senior Anesthesia Resident, APA, or Junior Anesthesia Resident. During the case, specific member may change based on other emergencies/needs.

- NICU: prepares team to accept baby that may need transport to the NICU. Designated COVID bassinet and Giraffe isolate located in the OR Hallway.

**Step 2: Transport to OR:**

- OB-MD and RN2, donned in PPE, transport patient to OR.
- OB-MD and RN2 transfer the patient from LDR bed to OR table, with attention to lines/epidural.
  - Supine if epidural in place
  - Seated for spinal
- RN2 connects BP cuff, pulse oximeter, and EKG leads, and starts cycling of BP cuff.
- RN1 dons full PPE (and PAPR if no epidural) and enters OR to count.
- LDR bed moved against OR wall.

**Step 3: Patient in OR: Set-up for Cesarean and Intubation/Induction of Anesthesia**

- OB-MD positions step stools doffs PPE except for N95 and exits OR to don PAPR, scrubs, dresses and gloves for cesarean with second scrub tech. Re-enters through antechamber.
- RN1: Counts with OR tech
  - X-ray for incorrect cannot be brought into the COVID room.
- RN2: places foley catheter, bovie pad, connects SCDs, splash preps, doffs ppe except N95 and exits the OR.
- Brief Timeout Patient Name, Procedure, Allergies and Concerns.
- OB-MD and CR places drape.
- Anesthesia to administer antibiotics
- **If epidural is not present**, Anesthesia-1 will enact the predetermined support plan (see “Guidance for OB Anesthesia Attending: A Decision Tree for STAT Cesarean Delivery Anesthetic Planning”)
  - If Anesthesia-2 is able to handle an airway without supervision, then Anesthesia-1 dons PPE for spinal while Anesthesia-2 dons ENHANCED PPE for possible GETA.
  - If Anesthesia-2 is deemed likely to require support without direct supervision, then Anesthesia-2 will don PPE to assist with patient positioning and spinal prep while Anesthesia-1 dons ENHANCED PPE for neuraxial attempt followed by GETA, if necessary.
  - If patient is deemed a poor candidate for neuraxial anesthesia, both Anesthesia-1 and Anesthesia-2 will don ENHANCED PPE for attempt at GETA.
- **If GETA required**, predetermined Anesthesia attending (see above) performs induction/intubation following “Anesthesia Department COVID-19 Airway Intubation Guidelines.” Note:
  - Clear plastic drape or tent is placed on over the patient’s head prior to induction to protect against aerosolization
  - OB-MD, CR, OR tech and RN 1 remain > 6 feet from intubation.
- Once the level is adequate or the airway is secure, the obstetricians and OR tech to perform cesarean.

**Step 4: Patient airway now secured, start of cesarean**

- OB team begins cesarean. Anesthesia and OR Tech fulfill normal roles.
- RN 1 strips and replaces linen on LDR bed.
  - Make sure NICU in place to receive infant in antechamber.
  - Make any additional calls as needed.
- RN 1 remains in OR in PPE to circulate.

**Step 5: Infant Delivery:**

- Immediate cord clamping.
- OB-MD or CR carry neonate to antechamber, and place in bassinet.
- NICU RN to hand neonate to NICU MD waiting in OR Hallway.
- NICU MD to determined disposition of neonate for evaluation (NICU isolation or negative pressure LDR).
- NICU RN to doff PPE in the antechamber except N95, exit antechamber and assist NICU MD.

**Step 6: Post-cesarean**

- OB-MD and CR to doff surgical gown, boots, outer gloves. Clean PAPR with Cavi-wipe. Exit OR and doff PAPR.
- Anesthesia-1 will determine extubation team (Anesthesia-1 or Anesthesia-2) and who will receive patient in hallway after extubation.
  - The Anesthesia personnel performing extubation dons ENHANCED PPE (following “PPE Guideline for Airway Procedures”). A clear plastic drape needs to be placed on over the patient’s head prior to extubation to protect against aerosolization and all equipment should be immediately discarded in a biohazard waste bag.
- Once extubated, Anesthesia-1 or -2, the OR tech, and RN1 will remain in the OR for 30 minutes to monitor the patient.
- After 30 minutes, Anesthesia, OR tech, and RN1, and additional personnel (if needed) transfer patient to clean LDR bed.

**Step 7: Return for recovery**

- RN2 and Anesthesia-1 or -2, donned in PPE, will receive patient outside OR2 and transport to negative pressure room labor room.
- RN1 and Anesthesia to clean PAPR. Exit OR and doff PAPR.
- OR tech prepares OR for terminal clean.
Critically Ill COVID-19 Pregnant Patient

COVID + Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Symptoms</th>
<th>Radiologic Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Flu-like symptoms, fever, cough, myalgias, anosmia without sob</td>
<td>No radiologic evidence of disease</td>
</tr>
<tr>
<td>Moderate</td>
<td>Lower respiratory tract disease, dyspnea</td>
<td>Abnormalities noted on radiologic studies</td>
</tr>
<tr>
<td></td>
<td>Fever of 39.0 °C /102.2 °F or &gt;</td>
<td>Abnormal blood gas</td>
</tr>
<tr>
<td></td>
<td>-not alleviated with 2 Tylenol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oxygen saturation &gt; than 93% on room air</td>
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<tr>
<td>Severe</td>
<td>Respiratory rate &gt;than 30bpm</td>
<td>&gt;50% lung involvement on radiologic studies</td>
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<tr>
<td></td>
<td>Oxygen saturation &lt; than 93%</td>
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<tr>
<td>Critical</td>
<td>Multi-organ failure</td>
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</tr>
<tr>
<td></td>
<td>Respiratory failure requiring mechanical ventilation or high-flow nasal cannula</td>
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</tbody>
</table>

Pregnancy O2 Saturation should be 95% or greater at rest and with exertion (if <95% with exertion → admit) 
Respiratory Rate >30, cyanosis, use of accessory muscles, pursing of lips, need for supplemental O2 signs of respiratory disease

Cytokine Storm Prediction

- **SHLH or Cytokine Storm Prediction Score**
  - **Score >169**
    - 93% sensitive
    - 86% specific
  - **b:**
    - Hemoglobin <9.2
    - Leukocytes <5000/mm3
    - Platelets <110,000/mm3

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Score</th>
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<tbody>
<tr>
<td>Temperature</td>
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<td>&lt;38.4 °C</td>
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<tr>
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<td>Triglycerides</td>
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<td>Fibrinogen</td>
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<td>Ferritin</td>
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<td>Serum aspartate aminotransferase</td>
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<tr>
<td>Known immunosuppression</td>
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<tr>
<td>No</td>
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</tr>
<tr>
<td>Yes</td>
<td>18</td>
</tr>
</tbody>
</table>
COVID+ and Pneumonia

- Procalcitonin helps delineate superimposed bacterial pneumonia
- If antibiotics are indicated, do not wait more than 45 minutes to start
  - ceftriaxone plus azithromycin or ceftriaxone alone
- Severe disease
  - cefepime, meropenem, piperacillin-tazobactam, linezolid, and vancomycin

<table>
<thead>
<tr>
<th>Procalcitonin ng/mL</th>
<th>Bacterial Infection/Co-existing Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.10</td>
<td>Very Unlikely</td>
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<tr>
<td>0.10-0.25</td>
<td>Unlikely</td>
</tr>
<tr>
<td>0.25-0.50</td>
<td>Likely</td>
</tr>
<tr>
<td>&gt;0.50</td>
<td>Very Likely</td>
</tr>
</tbody>
</table>
When to Call the ICU RF 6141?

Presence of any of the following:
- Inability to maintain O2 saturation > 95% with supplemental oxygen
- Hypotension (MAP <65) despite fluid resuscitation
- End organ dysfunction
  - Altered mental status
  - Renal insufficiency
  - Hepatic insufficiency
  - Cardiac dysfunction

Consult ICU RF 6141
- Persistence of above symptoms despite intervention
- Transfer to higher level of care
- Intubation
- Need for end-organ support

When to Intubate? Anesthesia RF:6090/6091

- Greater than 15 L per minute (by common nasal cannula or mask)
- Greater than 40 to 50 L per minute by high-flow nasal cannula
- Greater than 60% FiO2 by Venturi mask to maintain an oxygen saturation of 95% or >
- Inability to protect the airway due to altered mental status (GCS<8)
**DISPOSITION OF INFANT BORN TO COVID-19 POSITIVE PATIENT**

**Asymptomatic**
- Offer Separation
- Offer Co-Rooming After Education re: Barrier, Mask/Gloves, Hand Hygiene, Breast Pump Hygiene
- Infant Bathed After Birth and Tested at 24 Hours of Life

**Symptomatic**
- Recommend Infant Separation
- Infant Goes to Negative Pressure Room in NICU
- Education: Hand Hygiene and Breast Pump Hygiene
- Expired Milk Provided by NICU or 3N RN
- Infant Bathed After Birth and Tested at 24 Hours of Life

**Symptomatic NICU Negative Pressure Room Occupied**
- Recommend Separation
- Infant Goes to Negative Pressure Room on 3N with Asymptomatic Support Person
- Education to Mother: Hand Hygiene and Breast Pump Cleaning
- Education to Asymptomatic Support Person: Barrier, Mask/Gloves and Hand Hygiene
- Expired Milk Provided by Asymptomatic Support
- Infant Bathed After Birth and Tested at 24 Hours of Life

**Symptomatic With Support Person**
- Recommend Separation
- Infant Goes to Negative Pressure Room on 3N with Asymptomatic Support Person
- Education to Mother: Hand Hygiene and Breast Pump Cleaning
- Education to Asymptomatic Support Person: Barrier, Mask/Gloves and Hand Hygiene
- Expired Milk Provided by Asymptomatic Support
- Infant Bathed After Birth and Tested at 24 Hours of Life

**Symptomatic Without Support Person**
- Signs Refusal to Separate Form
- Education: Barrier, Mask/Gloves, Hand Hygiene and Breast Pump Hygiene
- Infant Bathed After Birth and Tested at 24 Hours of Life

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**All Patients Admitted to Labor and Delivery for Labor, IOL or Scheduled Cesarean (CD)**
*Scheduled CD should not be taken back to the OR until test resulted*
**Surgical masks to be worn during all face to face encounter**

**NEGATIVE**
- Routine Care
- Staff to Wear Surgical Masks

**POSITIVE**
- Staff to Wear PPE/N95

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Asymptomatic
1. Order SARS-COV-2 Real Time PCR
2. Collect Nasopharyngeal Universal Viral Swab
3. Personal Transport to Microbiology
4. 2-3 hour turn around

Symptomatic
1. Transfer to MD Service
2. Contact RF 4242 for Partner Testing and Tracking
3. Signs Visitor Policy and Screening Agreement
   - If Febrile or Resp Symptoms, Support Leaves
4. Transfer to Negative Pressure Room
5. Staff: PPE/N95 Required
6. Prepare for Delivery Per COVID-19 Guidelines
7. Consider Anticoagulation
8. Mother-Infant Co-Rooming Precautions
9. Recommend Mother-Infant Separation
10. Sepsis Bundle, Troponins, EKG, CRP etc