COVID-19 LABOR TO CESAREAN DELIVERY: CASE FLOW AND FACILITATOR’S GUIDE
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Notes to facilitators:
• Please feel free to drill any relevant part(s) of this and omit those parts that are not relevant.
• Please modify anything that does not align with your institutional guidelines.
• Consider holding small sessions (≤6 people) and/or hosting virtual sessions using filmed footage to talk through considerations with a larger team.
• Consider prioritizing PPE when holding drills for the first time, and adding in additional components later (such as the support person, etc.).
• Please note that the focus of this packet of drills is not to be physiologically representative of any particular clinical situation; rather, it is meant as a platform to practice teamwork and organizational skills.

SCENARIO Synopsis to orient participants:
• Cori Vidman is a 30 yo G2P1 female at 37w2d who presents to triage in active labor after ROM.
• Her PMH includes asthma, h/o rapid first labor, and recent onset of cold-like symptoms. No known COVID-19 exposures.
• She is requesting labor analgesia but has not been seen by an obstetrics/midwife provider yet (if starting in triage).
• She needs evaluation, assessment, and treatment.

Equipment needed:
• Mannequin or standardized patient/actor (for mother); (optional: standardized patient/actor for support person for Part 4)
• Neonatal mannequin/trainer (if doing neonatal scenario)
• Space for using as triage bed, labor room, OR as needed
• Plan for PPE—consider using props (e.g., handkerchiefs or facial tissues/Kleenex taped to ears for masks, patient robes worn backwards for gowns, likely can use gloves as these are not generally on shortage—otherwise, consider miming all donning/doffing or using lanyards to denote PPE items)
• Appropriate monitors for settings, appropriate equipment for OR (can mime for surgical equipment, but will likely need anesthetic equipment if possible, and airway equipment if performing intubation/extubation)

OVERALL FLOW

<table>
<thead>
<tr>
<th>Time</th>
<th>Key Scenario Points</th>
<th>Ideal Actions</th>
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<tbody>
<tr>
<td>Pre-drill</td>
<td>Orient Participants to patient in triage area</td>
<td>• Patient is in triage bed (mannequin vs standardized patient/actor) • Orient team members to drill environment • Discuss use of props/miming to conserve PPE and other equipment</td>
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<tr>
<td>Part 1: Triage eval</td>
<td>Patient in active labor</td>
<td>• Patient coughing, in active labor • (Patient may have mask on if available through regular entry points) Maternal baseline vitals: BP: 120/50 HR: 112 O2 Sat: 92% on RA (goes to 95% on any O2) RR: 21 Temp: 99.9F; FHR: Category I tracing • Relevant history: symptoms started a week ago; her toddler had a playdate around that time and maybe the other Clinical: 1. Correct donning of PPE outside of triage room according to institutional guidelines (<strong>consider practicing with props or having people mime steps rather than using actual PPE</strong>) 2. (Correct contactless passing of mask to patient if she has no mask on; again, consider practicing with props or miming) 3. Confirm patient identity and perform focused history and physical exam (may discuss airway exam depending</td>
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family has some people with colds. Otherwise, she feels her asthma is exacerbated recently, and thinks it may be due to allergies.

- Relevant physical exam: cervical exam is 6cm/90%/1 station (hand paper with written exam to OB/CNM). Airway exam (if done—this may be a point of discussion) shows MP 3, otherwise favorable airway features. Lung exam demonstrates diminished sounds at right base. Other findings normal.
- During contractions, once surgical or oxygen mask is placed, patient may occasionally remove surgical/oxygen mask but will respond to replace mask if asked by staff

### Part 2: Triage to labor room

<table>
<thead>
<tr>
<th>Participant</th>
<th>Description</th>
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<tbody>
<tr>
<td>Patient needing transport</td>
<td>Patient being transported to labor room, needs to be counseled to keep mask on (surgical or oxygen mask, depending on what has been placed—can be discussed that oxygen mask may not protect others)</td>
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<tr>
<td>Participants (as per institution): [insert appropriate participants]</td>
<td>Maternal vitals in labor room: BP: 131/72 HR: 125 O2 Sat: 92% on RA (goes to 95% on any O2) RR: 21 Temp: 99.9F; FHR: Category 2 tracing Patient still contracting, will remove mask if not counseled Patient arrives in labor room, requests anesthesia provider for neuraxial placement Cervical exam on entry to room is 7cm/100%/0 station</td>
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### Clinical:
1. Early dosing of neuraxial for C/D to avoid need for intubation
2. Correct donning of PPE for all providers necessary for care
3. Correct transport and personnel involved in moving patient into the OR while minimizing exposure of others

### Behavioral:
1. Clearly defining limited staff on entry to room
2. Encouraging patient to continue to keep mask on
3. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)

### Part 3: Fetal brady, transfer to OR

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<tbody>
<tr>
<td>Patient with recent neuraxial analgesia, getting comfortable, with nonreassuring fetal status</td>
<td>Patient now getting comfortable after neuraxial placement, still with some discomfort (low suprapubic) 5 minutes after anesthetic initiation FHR then drops to 80 BPM with recurrent late decelerations (Category 3 tracing) without uterine hyperstimulation</td>
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</table>

### Clinical:
1. Early dosing of neuraxial for C/D to avoid need for intubation
2. Correct donning of PPE for all providers necessary for care
3. Correct transport and personnel involved in moving patient into the OR while minimizing exposure of others

### Behavioral:
1. Clearly defining limited staff on entry to room
2. Encouraging patient to continue to keep mask on
3. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)
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<tr>
<th>Part 4: STAT C/D and conversion to GA with intubation</th>
<th>Patient with inadequate level of anesthesia, needing to convert to GA with intubation</th>
<th>Clinical: 1. Correct PPE of ALL TEAM MEMBERS prior to preoxygenation (according to institutional guidelines) 2. Correct equipment ready to prepare for any difficulty in intubation (e.g., videolaryngoscopy) 3. Preoxygenation with lowest O2 flows possible, and with HEPA filter 4. ETT cuff inflated prior to positive pressure ventilation</th>
<th>Behavioral: 1. Clear communication around the time of intubation to coordinate help and steps 2. Clear role delineation when initiating general anesthesia 3. Clear communication of now-contaminated areas, with steps to minimize further contamination of personnel 4. (Optional: Description of conversation with support person, and clear communication to support person in labor room, or removal of support person from OR) 5. (Optional: Clear communication with support person of isolation protocols for neonate, per institutional guidelines) 6. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)</th>
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<tr>
<td>Participants (as per institution): [insert appropriate participants]</td>
<td>Maternal vitals at this time: BP: 108/50 HR: 126 O2 Sat: 92% on RA (goes to 95% on any O2) RR: 21 Temp: 99.9F; FHR Category 2 à 3 • Cervical exam is 8cm/100%/0 station PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</td>
<td>Patient in OR, fails level (level at T10 bilaterally) <em>or</em> patient with adequate level but complains of pain with incision Maternal vitals at this time: BP: 108/50 HR: 126 (goes to 100 with any phenylephrine) O2 Sat: 92% on RA (goes to 95% on any O2 à can go to 99% on 100% O2 with preoxygenation, over 8 breaths) RR: 21 Temp: 99.9F; FHR Category 3 (still 80 BPM if checked) • Cervical exam is 8cm/100%/+1 station • (Optional, depending on institutional policies): Patient’s support person needs a plan—whether this person is already in the OR by now, or whether this person needs to be updated is up to the facilitators PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</td>
<td>Patient in OR, fails level (level at T10 bilaterally) <em>or</em> patient with adequate level but complains of pain with incision Clinical: 1. Correct PPE of ALL TEAM MEMBERS prior to preoxygenation (according to institutional guidelines) 2. Correct equipment ready to prepare for any difficulty in intubation (e.g., videolaryngoscopy) 3. Preoxygenation with lowest O2 flows possible, and with HEPA filter 4. ETT cuff inflated prior to positive pressure ventilation Behavioral: 1. Clear communication around the time of intubation to coordinate help and steps 2. Clear role delineation when initiating general anesthesia 3. Clear communication of now-contaminated areas, with steps to minimize further contamination of personnel 4. (Optional: Description of conversation with support person, and clear communication to support person in labor room, or removal of support person from OR) 5. (Optional: Clear communication with support person of isolation protocols for neonate, per institutional guidelines) 6. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)</td>
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<td>Part 5: Neonatal resuscitation and transport</td>
<td>Patient under general anesthesia, neonate requiring resuscitation and transport to NICU/isolation (per institution)</td>
<td>Clinical: 1. Correct PPE of all team members in OR and caring for neonate 2. Correct neonatal resuscitation personnel available in OR 3. Correct equipment and isolation procedures demonstrated while preparing to transport neonate (per institutional guidelines) 4. Correct transport out of OR while minimizing contact with neonate (per institutional guidelines)</td>
<td>Behavioral: 1. Clear communication around the time of intubation to coordinate help and steps 2. Clear role delineation when initiating general anesthesia 3. Clear communication of now-contaminated areas, with steps to minimize further contamination of personnel 4. (Optional: Description of conversation with support person, and clear communication to support person in labor room, or removal of support person from OR) 5. (Optional: Clear communication with support person of isolation protocols for neonate, per institutional guidelines) 6. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)</td>
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<td>Participants (as per institution): [insert appropriate participants]</td>
<td>Patient stable during delivery, under general anesthesia Maternal vitals at this time: BP: 108/50 HR: 107 (goes to 100 with any phenylephrine) O2 Sat: 97% on 100% O2 à 94% if nitrous oxide used RR: (set by ventilator)—can be 15, EtCO2 is 28 Temp: 99.9F EBL: 800mL, good uterine tone</td>
<td>Clinical: 1. Correct PPE of all team members in OR and caring for neonate 2. Correct neonatal resuscitation personnel available in OR 3. Correct equipment and isolation procedures demonstrated while preparing to transport neonate (per institutional guidelines) 4. Correct transport out of OR while minimizing contact with neonate (per institutional guidelines)</td>
<td>Behavioral: 1. Clear communication around the time of intubation to coordinate help and steps 2. Clear role delineation when initiating general anesthesia 3. Clear communication of now-contaminated areas, with steps to minimize further contamination of personnel 4. (Optional: Description of conversation with support person, and clear communication to support person in labor room, or removal of support person from OR) 5. (Optional: Clear communication with support person of isolation protocols for neonate, per institutional guidelines) 6. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)</td>
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Neonate at delivery:
- Color: Blue/dusky color
- Heart rate: 80
- Reflex irritability: No response
- Muscle tone: Limp
- Respiration: Absent

APGARs at 1 & 5 minutes (with any resuscitation):
- Color: Acrocyanotic
- Heart rate: 130
- Reflex irritability: Grimace
- Muscle tone: Some flexion
- Respiration: Weak Cry/Hypoventilation

- Neonate needs transportation/isolation
  (per institutional guidelines)

PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO

Part 6: Extubation, recovery, and disposition of patient

Procedure complete, patient stable

Participants (as per institution): [insert appropriate participants]

- Cesarean delivery completed
- Maternal vitals at this time:
  - BP: 128/70
  - HR: 125
  - O2 Sat: 97% on 100% O2
  - RR: (breathing spontaneously)—can be 21, EtCO2 is 28
  - Temp: 99.9F
  - TOF: 0.9 (if additional nondepolarizing NMBs used)

- At start of Part 6, all anesthetic agents are turned off, patient is making some movements indicative of emergence (but not following commands yet)
- Patient then emerges normally, needs extubation (vitals do not change dramatically after extubation—SpO2 can drop to 95% on 100% O2 by oxygen mask)

PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO

Clinical:
1. Minimize personnel who are unnecessary during extubation
2. Correct PPE use (with N95/PAPR)
3. Consider decreasing oxygen flows during extubation or placing anesthesia machine on standby (per institutional guidelines)
4. Correct limiting of spreading contamination on surfaces related to anesthesia workstation
5. Correct moving of patient to appropriate recovery area (per institutional guidelines)

Behavioral:
1. Clear communication and organization of team during extubation with warning others to stay back in case of patient coughing
2. Anticipating and planning for gathering all equipment needed for extubation and sequestering it prior to extubation
3. Clear communication of plan in case of airway obstruction
4. Clear communication of recovery and disposition plan with team (per institutional guidelines)
5. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)

Post-drill

End Case

Clearly state, “Thank you so much—we are concluding this drill and will now focus on our debrief of the whole session.”

COVID19 Debriefing (suggested structure)

Location: can be in situ or

DEBRIEF Case:
- Reactions Phase
References:

- Clinton E. COVID-19 simulation script. Department of Obstetrics & Gynecology, Massachusetts General Hospital, Boston, MA, USA.
- Torbenson V. OB Simulation Emergency Drill 2020. Department of Obstetrics & Gynecology, Mayo Clinic, Rochester, MN, USA.
- Chan A, Lau V, Wong H. Covid-19 Sample Scenario Script for Airway Management in OT. Department of Anaesthesia and Intensive Care, Prince of Wales Hospital, Hong Kong.