

## COVID19 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 COVID19 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

Time		Key Scenario Points	Ideal Actions
<b>Pre-drill</b>	Orient Participants to patient in triage area	<ul style="list-style-type: none"> <li>• Patient is in triage bed (mannequin vs standardized patient/actor)</li> </ul>	<ul style="list-style-type: none"> <li>• Orient team members to drill environment</li> <li>• Discuss use of props/miming to conserve PPE and other equipment</li> </ul>
<b>Part 1: Triage eval</b>	<b>Patient in active labor</b>  Participants involved (as per institution): OB/CNM, RN, anesthesia provider to assess respiratory status	<ul style="list-style-type: none"> <li>• Patient coughing, in active labor</li> <li>• (Patient may have mask on if available through regular entry points)</li> </ul> <u>Maternal baseline vitals:</u> 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 <ul style="list-style-type: none"> <li>• Relevant history: symptoms started a week ago; her toddler had a playdate around that time and maybe the other</li> </ul>	Clinical: <ol style="list-style-type: none"> <li>1. Correct donning of PPE outside of triage room according to institutional guidelines (**consider practicing with props or having people mime steps rather than using actual PPE**)</li> <li>2. (Correct contactless passing of mask to patient if she has no mask on; again, consider practicing with props or miming)</li> <li>3. Confirm patient identity and perform focused history and physical exam (may discuss airway exam depending</li> </ol>

		<p>family has some people with colds. Otherwise, she feels her asthma is exacerbated recently, and thinks it may be due to allergies.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> </ul> <p>PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</p>	<p>on institutional guidelines)</p> <ol style="list-style-type: none"> <li>4. Apply oxygen to patient</li> <li>5. Obtain influenza, RSV, coronavirus swabs</li> </ol> <p>Behavioral:</p> <ol style="list-style-type: none"> <li>1. Clear communication between staff members to coordinate entry into triage room</li> <li>2. Clear role delineation and plan to move patient to labor room</li> <li>3. Updates to labor room to coordinate receiving patient</li> <li>4. Encourage patient to keep mask on (perhaps even designate someone to watch this to limit spread)</li> <li>5. Clear communication to others at an institutional level that a patient with possible COVID19 is present (per institutional policies)</li> <li>6. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)</li> </ol>
<p><b>Part 2:</b> <b>Triage to labor room</b></p>	<p><b>Patient needing transport</b></p> <p>Participants (as per institution): [insert appropriate participants]</p>	<ul style="list-style-type: none"> <li>• 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)</li> <li>• (Optional: Patient's support person arrives on labor floor, is a close contact of patient)</li> </ul> <p><u>Maternal vitals in labor room:</u> 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</p> <ul style="list-style-type: none"> <li>• Patient still contracting, will remove mask if not counseled</li> <li>• Patient arrives in labor room, requests anesthesia provider for neuraxial placement</li> <li>• Cervical exam on entry to room is 7cm/100%/0 station</li> </ul> <p>PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</p>	<p>Clinical:</p> <ol style="list-style-type: none"> <li>1. Correct transport with minimal patient/personnel exposure in clinical environment</li> <li>2. Correct donning of PPE outside of labor room with providers either awaiting patient inside room or outside room (according to institutional guidelines)</li> <li>3. (Optional: Correctly giving support person a surgical mask)</li> <li>4. (Abbreviated anesthesia consent is appropriate here for sake of time with the drill)</li> </ol> <p>Behavioral:</p> <ol style="list-style-type: none"> <li>1. Clearly defining limited staff on entry to room</li> <li>2. Encouraging patient to continue to keep mask on</li> <li>3. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)</li> </ol>
<p><b>Part 3: Fetal brady, transfer to OR</b></p>	<p><b>Patient with recent neuraxial analgesia, getting comfortable, with nonreassuring fetal status</b></p>	<ul style="list-style-type: none"> <li>• Patient now getting comfortable after neuraxial placement, still with some discomfort (low suprapubic) 5 minutes after anesthetic initiation</li> <li>• FHR then drops to 80 BPM with recurrent late decelerations (Category 3 tracing) without uterine hyperstimulation</li> </ul>	<p>Clinical:</p> <ol style="list-style-type: none"> <li>1. Early dosing of neuraxial for C/D to avoid need for intubation</li> <li>2. Correct donning of PPE for all providers necessary for care</li> <li>3. Correct transport and personnel involved in moving patient into the OR while minimizing exposure of others</li> </ol>

	<p>Participants (as per institution): [insert appropriate participants]</p>	<p><u>Maternal vitals at this time:</u> BP: 108/50 HR: 126 O2 Sat: 92% on RA (goes to 95% on any O2) RR: 21 Temp: 99.9F; FHR Category 2→3</p> <ul style="list-style-type: none"> <li>Cervical exam is 8cm/100%/0 station</li> </ul> <p>PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</p>	<p>4. Consider the role of preparing to use N95/PAPR for the entire team in case of general anesthesia/intubation</p> <p>Behavioral:</p> <ol style="list-style-type: none"> <li>Clear communication to teams to ready equipment in the OR</li> <li>Clear role delineation when organize to move patient</li> <li>(Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)</li> </ol>
<p><b>Part 4:</b> <b>STAT C/D and conversion to GA with intubation</b></p>	<p><b>Patient with inadequate level of anesthesia, needing to convert to GA with intubation</b></p> <p>Participants (as per institution): [insert appropriate participants]</p>	<ul style="list-style-type: none"> <li>Patient in OR, fails level (level at T10 bilaterally) *or* patient with adequate level but complains of pain with incision</li> </ul> <p><u>Maternal vitals at this time:</u> BP: 108/50 HR: 126 (goes to 100 with any phenylephrine) O2 Sat: 92% on RA (goes to 95% on any O2→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) <ul style="list-style-type: none"> <li>Cervical exam is 8cm/100%/+1 station</li> <li>(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</li> </ul> <p>PAUSE AND DISCUSS AT ANY POINT DURING CASE TO HIGHLIGHT GOOD BEHAVIORS OR HAVE PARTICIPANTS REDO</p> </p>	<p>Clinical:</p> <ol style="list-style-type: none"> <li>Correct PPE of ALL TEAM MEMBERS prior to preoxygenation (according to institutional guidelines)</li> <li>Correct equipment ready to prepare for any difficulty in intubation (e.g., videolaryngoscopy)</li> <li>Preoxygenation with lowest O2 flows possible, and with HEPA filter</li> <li>ETT cuff inflated prior to positive pressure ventilation</li> </ol> <p>Behavioral:</p> <ol style="list-style-type: none"> <li>Clear communication around the time of intubation to coordinate help and steps</li> <li>Clear role delineation when initiating general anesthesia</li> <li>Clear communication of now-contaminated areas, with steps to minimize further contamination of personnel</li> <li>(Optional: Description of conversation with support person, and clear communication to support person in labor room, or removal of support person from OR)</li> <li>(Optional: Clear communication with support person of isolation protocols for neonate, per institutional guidelines)</li> <li>(Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team's activities)</li> </ol>
<p><b>Part 5:</b> <b>Neonatal resuscitation and transport</b></p>	<p><b>Patient under general anesthesia, neonate requiring resuscitation and transport to NICU/isolation (per institution)</b></p> <p>Participants (as</p>	<ul style="list-style-type: none"> <li>Patient stable during delivery, under general anesthesia</li> </ul> <p><u>Maternal vitals at this time:</u> BP: 108/50 HR: 107 (goes to 100 with any phenylephrine) O2 Sat: 97% on 100% O2→ 94% if nitrous oxide used RR: (set by ventilator)—can be 15, EtCO2 is 28 Temp: 99.9F EBL: 800mL, good uterine tone</p>	<p>Clinical:</p> <ol style="list-style-type: none"> <li>Correct PPE of all team members in OR and caring for neonate</li> <li>Correct neonatal resuscitation personnel available in OR</li> <li>Correct equipment and isolation procedures demonstrated while preparing to transport neonate (per institutional guidelines)</li> <li>Correct transport out of OR while minimizing contact with neonate (per institutional guidelines)</li> </ol>

	per institution): [insert appropriate participants]	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	Behavioral:  1. Clear communication within neonatal team regarding care of neonate 2. Clear role delineation when caring for neonate 3. (Optional: Team can Name/Claim/Aim to orient participants to situation and organize their team’s activities)
<b><u>Part 6: Extubation, recovery, and disposition of patient</u></b>	<b>Procedure complete, patient stable</b>  Participants (as per institution): [insert appropriate participants]	<ul style="list-style-type: none"><li>• Cesarean delivery completed <u>Maternal vitals at this time:</u> 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)</li><li>• At start of Part 6, all anesthetic agents are turned off, patient is making some movements indicative of emergence (but not following commands yet)</li><li>• Patient then emerges normally, needs extubation (vitals do not change dramatically after extubation—SpO2 can drop to 95% on 100% O2 by oxygen mask)</li></ul> 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)
<b>Post-drill</b>	End Case	Clearly state, “Thank you so much—we are concluding this drill and will now focus on our debrief of the whole session.”	
<b><u>COVID19 Debriefing (suggested structure)</u></b>			
<b>Location: can be <i>in situ</i> or</b>	<b>DEBRIEF Case:</b> <ul style="list-style-type: none"><li>• Reactions Phase</li></ul>		

<b>in a separate location</b>	<ul style="list-style-type: none"> <li>○ <u>“one word”</u> to describe elicited emotion</li> <li>• Move to “Plus/Delta” debrief <ul style="list-style-type: none"> <li>○ Two columns to discuss: Under “Plus” column are things that the team feel they did well, and under “Delta” column are things that the team could change or improve</li> <li>○ Facilitators should find a few things that the teams did well to highlight to them, as participants are usually hard on themselves (and under a great deal of stress right now)</li> <li>○ Facilitators can also make a column of “unanswered/new questions” that need to be addressed at an institutional level, with a promise to circle back with participants</li> </ul> </li> <li>• Move to “Take-aways” phase <ul style="list-style-type: none"> <li>○ Ask participants what they are taking away from the session today (this will serve as useful feedback for facilitators, and identify anything about the session that should be changed for the future)</li> <li>○ <b><u>Thank participants for joining</u></b></li> </ul> </li> <li>• Finally, pass out evaluations and collect them once everyone fills them out</li> </ul>
<b>End debrief</b>	<b>Thank them for participating!</b>

### **References:**

- Podovei M, Bernstein K, George R, Habib A, Kacmar R, Bateman B, Landau R. Interim Considerations for Obstetric Anesthesia Care related to COVID19. Accessed 3/17/20 at: [https://soap.org/wp-content/uploads/2020/03/SOAP\\_COVID-19\\_Obstetric\\_Anesthesia\\_Care\\_031620-2.pdf](https://soap.org/wp-content/uploads/2020/03/SOAP_COVID-19_Obstetric_Anesthesia_Care_031620-2.pdf).
- 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.
- ACOG Committee Opinion 644. The Apgar Score. Accessed 3/17/20 at: <https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/The-Apgar-Score?IsMobileSet=false>.
- World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. Accessed 3/17/20 at: <https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-ncov-infection-is-suspected-20200125>.
- Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. The Lancet. 3/15/20 at: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30566-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30566-3/fulltext).
- Fauci AS, Lane C, Redfield RR. Covid-19—Navigating the Uncharted. NEJM. Accessed 3/15/20 at: <https://www.nejm.org/doi/full/10.1056/NEJMe2002387>