COMPLETE

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Page 1: Background Information

Q1

First Name

Michaela

Q2

Last Name

Farber

Q3

Credentials

MD MS

Q4

Institution

Brigham and Women's Hospital

Q5

Street Address

75 Francis Street

Q6

City

Boston

Q7

State

MA

Q8

Zip Code

02115

Q9

Country

USA

Q10

Email address

mfarber@bwh.harvard.edu

Page 2: Institutional and Application Details

Q11

Please mark the application designation that is applicable to you.

Recertification (i.e. previously received COE certification)

Q12

Describe the institution where you provide obstetric anesthesia services

Academic/university affiliated

Q13

What is the country of the applying institution

USA

Q14

If USA application, what is the institution's zip code?

02115

Q15

Mark all that apply to your institution

Train/teach residents,

Train/teach obstetric anesthesia fellows,

Has an ACGME-accredited OB Anesthesia fellowship program

,

Train/teach other learners (student nurse anesthetists, anesthesiology assistants, medical students, etc.)

Q16

How many deliveries are there at your institution per year?

7,581

Q17

What is the current cesarean delivery rate percentage at your institution? Do not enter percentage sign in your answer. Please answer in decimal format.

33.2

Page 3: General Anesthesia Rates

Q18

What is your institution's overall general anesthesia rate (percentage) for cesarean delivery?* Do not include percentage sign in answer. Please answer in decimal format.

1.72

Q19

What is your general anesthesia rate (percentage) for planned/scheduled/elective cesarean delivery? Do not include percentage sign in answer. Please answer in decimal format.

1.3

Q20

What is your general anesthesia rate (percentage) for unplanned/intrapartum/urgent cesarean delivery? Do not include percentage sign in answer. Please answer in decimal format.

2.1

Q21

Do you conduct a quality assurance review of all cases requiring general anesthesia (irrespective of your institution's general anesthesia rate)? Please provide (attach with application) evidence of your quality assurance review process.

Yes

Page 4: Institutional Details

Q22

What percentage of laboring patients at your institution receive neuraxial analgesia? Do not include percentage sign in answer. Please answer in decimal format.

87.1

Q23

What is your labor epidural block replacement rate (percentage)? The labor epidural replacement rate should ideally be 3-6%. Do not include the percentage sign in your answer. Please answer in decimal format.

2.9

Q24

What is your institution's "wet-tap" rate (percentage) in the obstetric setting? Do not include the percentage sign in your answer. Please answer in decimal format.

1.55

Q25

What is your institution's "epidural blood patch (EBP)" rate (percentage) in the obstetric setting? Do not include the percentage sign in your answer. Please answer in decimal format.

0.8

Q26

How many labor and delivery rooms are in your obstetric unit?

23

Q27

How many operating rooms are in/dedicated to your obstetric unit?

6

Q28

What American College of Obstetricians and Gynecologists (ACOG) level of maternal care (Level 1, 2, 3, or 4) is your institution? (https://www.acog.org/clinical/clinical-guidance/obstetric-care-consensus/articles/2019/08/levels-of-maternal-care)

4

Page 5: Personnel and Staffing:

Q29

How many faculty in total cover the obstetric anesthesia service (day, night, weekends, and holidays)?

18

Q30

How many of the total faculty that cover the obstetric anesthesia service have completed an ACGME-accredited obstetric anesthesia fellowship, and/or have equivalent expertise and experience in obstetric anesthesia (e.g. specific training in obstetric anesthesia, several years of practice with a focus on obstetric anesthesia, and/or evidence of expertise based on academic contributions)? Please enter the actual number and the percent of total faculty.

18 (100%)

Q31

On a daily basis, how many staff are assigned to provide dedicated coverage for the obstetric anesthesia service during the daytime?

*Attending physician:	**3**
Fellow:	**1-2**
Resident:	**3-4**
Certified Registered Nurse Anesthetists (CRNA) / Certified Anesthesiologist Assistants (CAA)	**0-1**
Other (specify):	**0-1 SRNA**

Q32

On a daily basis, how many staff are assigned to provide dedicated coverage for the obstetric anesthesia service during the nighttime?

*Attending physician:	**1-2**
Fellow:	**0-1**
Resident:	**2**
Certified Registered Nurse Anesthetists (CRNA) / Certified Anesthesiologist Assistants (CAA)	**0**
Other (specify):	**0**

Q33

On a daily basis, how many staff are assigned to provide dedicated coverage for the obstetric anesthesia service during the weekends?

*Attending physician:	**1-2**
Fellow:	**0-1**
Resident:	**2**
Certified Registered Nurse Anesthetists (CRNA) / Certified Anesthesiologist Assistants (CAA)	**0**
Other (specify):	**0**

Q34

Estimate the proportion of each shift covered by attending specialists vs. generalists (percentage). Please do not include the percentage sign in your answer. Please answer in decimal format.

Daytime	**100 vs 0**
Nighttime	**100 vs 0**
Weekends	**100 vs 0**

Q35 **Yes**

Are all neuraxial procedures (spinal/epidural/combined spinal epidural (CSE)/dural puncture epidural(DPE)) in labor and operating rooms performed under direct supervision of the attending physician when performed by Fellow, Resident, Student Registered Nurse Anesthetists (SRNA) and/or CRNA?

Q36

*Outline the expertise and experience of the obstetric anesthesia lead. The obstetric anesthesia lead must be a board-certified physician anesthesiologist who has completed an ACGME-accredited obstetric anesthesia fellowship, and/or has equivalent expertise in obstetric anesthesia. If equivalent expertise, the basis for this must be clearly delineated (e.g. specific training in obstetric anesthesia, several years of practice with a focus on obstetric anesthesia, and/or evidence of expertise based on academic contributions). Please provide the curriculum vitae of the lead obstetric physician anesthesiologist with your application.

Dr. Michaela K. Farber is a board-certified anesthesiologist who completed obstetric anesthesia fellowship in 2009. In 2009, the OB anesthesia fellowship was not yet eligibile to be accredited by the ACGME. Dr. Farber served as director of OB Anesthesia fellowship research from 2009-2010, and then was OB Anesthesia fellowship program director from 2010 through 2021, overseeing the ACGME accreditation of the fellowship in 2012, and training a total of 56 fellows. Her expertise is in obstetric hemorrhage including detection of postpartum hemorrhage, quality improvement for hemorrhage preparedness, quantitative blood loss, point-of-care coagulation testing, and pharmacokinetics of tranexamic acid. She has over 40 peer-reviewed publications specific to obstetric anesthesiology and lectures nationally and internationally on the above topics. She also serves on the Massachusetts DPH Maternal Morbidity and Mortality Review Committee and has served on two committees for the Massachusetts Perinatal-Neonatal Quality Improvement Network.

Q37

*Provide evidence of ongoing participation in continuing medical education and professional practice improvement. The obstetric anesthesia lead and the majority of core faculty members need to show evidence of ongoing participation in continuing medical education relevant to the practice of obstetric anesthesia (e.g. SOAP membership, attendance at a SOAP conference or equivalent obstetric anesthesia-focused meeting at least every other year, and can provide examples of professional practice improvement or evidence-based updates to clinical practice).

Our 18 core faculty members include Michaela Farber, Lawrence Tsen, Bill Camann, Jay Zhou, Mihaela Podovei, Sharon Reale, and Vesela Kovacheva. Each of these core faculty members attend SOAP on an annual or nearly annual basis and make meaningful contributions to the SOAP or ASA meeting in the form of lectures, panels, abstracts presented orally or as posters, and committee participation. Dr. Farber is currently serving on the SOAP Board of Directors and both Drs. Tsen and Camann are former board members and SOAP Presidents. Our remaining core faculty bring additional expertise to our division in the areas of perioperative care (David Hepner), critical
care/simulation (Chih King, Bushra Taha), and congenital heart disease; POCUS (Jean Marie Carabuena). Evidence-based updates to clinical practice are ongoing, and include the use of point-of-care coagulation testing (ROTEM) and tranexamic acid for postpartum hemorrhage transfusion management, dosing studies with programmed intermittent epidural bolus (PIEB) and the dural puncture epidural (DPE) for labor epidural analgesia. We have twice monthly in-situ high fidelity, multidisciplinary simulation drills for hemorrhage, hypertension, and other maternal care. We have implemented a hemorrhage risk assessment and overall risk assessment (the Obstetric Comorbidity Index).

Q38

If applicable, please also outline efforts made to ensure continuing medical education for all non-core faculty that cover the obstetric service.

If there are non-core faculty on our service for weekend or overnight coverage, they are always working in conjunction with a fellowship-trained obstetric anesthesiology attending. In addition, we have on average 6-8 grand rounds lectures per year that are specific to obstetric anesthesiology.

Q39

Outline obstetric anesthesia-related staff meetings. Regular (e.g. every 1-2 months) staff meetings for obstetric anesthesia providers to provide clinical service updates and ongoing education is recommended.

OB anesthesia staff meetings occur monthly at a set time and day per month (1st Wednesday of the month 4-5:30p) and all staff and fellows are encouraged to attend. Clinical service updates, safety report reviews, updates on any medication or equipment shortage, publications/ announcements, and rotator evaluations are discussed.

Q40

*Outline your coverage model. In-house (24/7) coverage of obstetric patients, by at least one board-certified (or equivalent) physician anesthesiologist who is dedicated to cover the obstetric service without additional responsibilities for non-obstetric patients is emphasized. If a low volume center (<1500 deliveries per year), non-dedicated coverage with minimal additional responsibilities may be acceptable. If a very high volume center (>5000 deliveries per year), solo dedicated coverage may not be adequate unless there is a readily available physician anesthesiologist backup with adequate numbers of trainees/CRNAs to support the clinical load. If applicable, provide the full list of out-of-unit responsibilities, and the frequency at which faculty are called to complete these duties outside the obstetric unit.

Our unit has 24/7 coverage of obstetric patients by one of our core faculty members, all with expertise in obstetric anesthesia. The attending has a minimum of 3 trainees (typically 1 fellow and 2 residents) under their supervision at all times. The obstetric anesthesia faculty member has no additional responsibilities other than managing patients on the L&D unit during their designated shift.

Q41

Outline your supervision policy. In academic centers that train residents or fellows, institutional policy should dictate that the physician anesthesiologist dedicated to the obstetric floor is present (regardless of the level of experience of the trainee) for placement and induction of neuraxial labor analgesia procedures with rare exceptions (e.g. simultaneous emergency), and should be present (regardless of the level of experience of the trainee) at induction and emergence from general anesthesia. For team-based (physician plus CRNA) care models, physician leadership and active medical management involvement is necessary. Evidence of physician contribution to education and training of fellow, resident, CRNA and Student Registered Nurse Anesthetist (SRNA) should be provided.

Our institutional policy dictates that the anesthesia attending be present for epidural placement and induction of neuraxial analgesia. If simultaneous or emergent cases occur, there is an additional obstetric anesthesia attending available to assist, and a senior fellow back-up in the evenings. For induction and emergence from general anesthesia, an obstetric anesthesia attending is always physically present and assisting.

Q42

*Outline your backup system. Ability to mobilize (within 30-minute timeframe) additional anesthesia personnel in case of obstetric emergencies or high clinical volume beyond the capacity of in-house staff assigned to the obstetric service is required.

During the daytime shift, additional resources are immediately available from the main operating room upon request.
In the evening, our immediate backup for clinical emergencies is our main operationg room attending. At any time overnight, there are 2 attendings (one main OR, one OB anesthesia) immediately available. In addition, cardiac and thoracic anesthesia attendings can be recruited within 30-60 minutes if not in-house at the time of an emergency. The cardiac perfusionist on call also has a 45 minute maximum allowed time for travel, to respond for cases requiring cardiopulmonary bypass. The cardiothoracic surgical fellow is in-house 24/7 for urgent need for cannulation for cardiopulmonary bypass.

Q43

Outline if anesthesia techs or equivalent are staffed on the obstetric unit. Describe their availability (24/7 or only daytime) and if anesthesia techs are dedicated to the obstetric service.

We have an anesthesia technician dedicated to cover obstetric anesthesia and endoscopy during the day shift. At night, the anesthesia technician from the main operating room covers obstetric anesthesia as well.

Page 6: Equipment, Protocols and Policies

Q44

Outline your hemorrhage risk stratification algorithm and management protocol. Protocols should consider core elements of the National Partnership Obstetric Hemorrhage Bundle (1), California Maternal Quality Care Collaborative Obstetric Hemorrhage Toolkit (2), or comparable recommendations to manage obstetric hemorrhage.

Our unit has adopted the NPMS OB Hemorrhage Bundle. We evaluated each of the 13 elements for deficiencies, and have actively addressed the deficiencies in our unit. We have adopted components of the CMQCC Hemorrhage Toolkit, in addition to a ROTEM-based transfusion protocol with guidelines about tranexamic acid and fibrinogen concentrate administration. We perform QBL for every delivery (vaginal and cesarean) and we stratify risk upon admission for general morbidity (the OB-CMI) as well as hemorrhage risk (modified AWHONN tool).

Q45

*Describe your massive transfusion protocol. Availability of a massive transfusion protocol with O-negative blood and other blood products, and an emergency release system for available blood is essential. Blood bank protocol needs to have been tested and be functional on the obstetric unit.

We have a massive transfusion protocol for general trauma and we also have an OB-specific massive transfusion protocol that streamlines our communication with the blood bank for the acquisition of blood products within 5 minutes. Activation of the OB hemorrhage protocol triggers immediate delivery of 2 units PRBCs (cross-matched or emergency release) through a hospital tubing system, followed by a cooler containing 6 additional PRBCs, 4 FFP, and a 5+5 pack of cryoprecipitate. We stock methergine and hemabate, tranexamic acid, and fibrinogen concentrate in a central location on the labor and delivery unit, immediately adjacent to our operating rooms for easy access.

Q46

*Describe your rapid-infuser devices. Rapid-infuser device to assist with massive resuscitation (e.g. Belmont® Rapid Infuser, Level 1® Fast Flow Fluid Warmer) should be stored on the obstetric unit.

Our labor and delivery unit has a Belmont Rapid Infuser to use for massive resuscitation. The Belmont is dedicated to the labor and delivery unit at all times. Ranger fluid warmers with normal and high-flow tubing are also available in every operating room.

Q47

Outline how obstetric blood loss is recorded (quantitative versus estimated blood loss) and how the incidence of postpartum hemorrhage is tracked.

We utilize electronic quantitative blood loss (QBL) in every labor room with alerts sent to the OB anesthesia team for QBL >500 mL, and QBL systems in every operating room. These systems generate central reports (Stryker, USA) that are sent to us on a monthly basis for tracking our hemorrhage incidence and severity.

Q48

*Outline plans for difficult peripheral and/or central intravascular access, e.g. ultrasound and intraosseous kits available.

Plans for difficult peripheral and/or central intravascular access, e.g. ultrasound and intraosseous kits are available.
Our L&D unit has an ultrasound machine that is designated for OB Anesthesia use only. The intraosseous kit (needles and drill) is stored on our unit within a designated emergency cart.

Q49

Describe your point-of-care equipment to assess hematocrit and/or coagulation. Outline if thromboelastography (TEG®), thromboelastometry (ROTEM®), sonorheometry (QuantraTM) or other viscoelastic monitoring technology are available to guide management.

Our unit has a designated on-site ROTEM device that is actively used for patient care and research. All of our research assistants, all of our clinical fellows and approximately 35% of faculty are certified to run and interpret the ROTEM, and the Lab Director for the device is an obstetric anesthesiology faculty member who works directly with the hospital's point-of-care technologists.
A ROTEM-based transfusion guide is readily available to help with results interpretation and clinical management. Didactics specific to point-of-care with ROTEM are given to residents, fellows, and faculty on a monthly basis.

Q50

Outline availability of intraoperative cell salvage for patients who refuse banked blood, and/or during high-risk cesarean deliveries. How are patients who refuse blood transfusion identified prior to presenting for delivery, counselled regarding blood product options, and prepared or optimized for delivery?

We utilize cell salvage on a routine basis for high-risk hemorrhage cases such as suspected placenta accreta or a Jehovah's Witness patient who has hemorrhage risk factors. For cases in which postpartum hemorrhage is anticipated, cell salvage is arranged prior to delivery. Whether planned or unscheduled, we have a clearly defined mechanism for contacting the cardiac perfusion team when cell salvage is
warranted, and the perfusionist on call manages the cell salvage procedure.

Q51

Describe your hemorrhage quality assurance review process. Quality assurance review of all “severe” hemorrhage cases (defined at an institutional level, e.g. >4 unit blood transfusion) and all unplanned intrapartum hysterectomies should be in place so that opportunities for improvement can be identified and initiated.

We participate in a monthly QA review meeting which is multidisciplinary in which all severe (and moderate) hemorrhage cases and unplanned hysterectomies are presented for quality review and improvement.

Q52

*Briefly describe and provide your institution’s obstetric hemorrhage toolkit (including protocols, checklists and/or algorithms).

We have an overall postpartum hemorrhage protocol, a ROTEM protocol for coagulopathy management, and a transfusion management algorithm for activation of the obstetric hemorrhage MTP.

Q53

*Outline your policies/procedures for suspected abnormal placentation (e.g. placenta accreta/percreta) cases. Describe the location (obstetric or main operating suite), staffing (e.g. obstetric anesthesia specialists), planning process (e.g. multidisciplinary meeting) and other considerations (e.g. blood management) for these cases.

We participate in monthly planning meetings (Surgical Obstetrics) during which upcoming deliveries of patients with anticipated PAS are discussed by the maternal fetal medicine specialists, sonographers, anesthesiologists, and other specialists as needed. We have a main operating room site with hybrid capacity to perform radiologic procedures intraoperatively, but the majority of our PAS suspicion cases are performed on our L&D unit. In both locations the cases are staffed by obstetric anesthesiologists. We will frequently involve the blood bank, cardiac perfusionists for cell salvage, urologists for ureteral stenting, interventional radiology, and gynecologic/oncologic surgeons. Upcoming cases and their care plans are disseminated to the entire OB, OB anesthesia, and nurse leadership teams on a monthly basis. We utilize a PAS checklist for guidance and education of our residents and fellows.

Q54

Outline your difficult airway cart and supplies (laryngoscopes, endotracheal tubes, rescue airway devices (e.g. supraglottic airway device such as a laryngeal mask airway), video-laryngoscope and surgical airway equipment) that are stored on the obstetric unit.

There is a video laryngoscope (C-Mac) and a fiberoptic airway equipment outside the OB operating rooms on the labor and delivery unit. The fiberoptic cart has 2 bronchoscopes- pediatric and adult sized; available for use at all times. Additional supplies such as gum elastic bougies, air entry and exchange catheters, and different types of laryngeal mask airways (LMAs) are also in the airway tower. Cricothyrotomy kits are present in both the airway tower and in the adult code cart.

Q55

*Describe if you have an obstetric-specific difficult airway protocol on the difficult airway cart and in obstetric operating rooms.

We have an emergency protocol for how to call for assistance from the difficult airway team (this is the anesthesia code response team) as well as the surgical airway team. We also have a crisis checklist for difficult airway which is in every anesthesia machine and in our anesthesia lounge on the L&D unit.

Q56

Describe the availability of suction devices. Suction and a means to deliver positive pressure ventilation (e.g. bag-valve mask device) is required to be immediately available in readily accessible locations where neuraxial analgesia/anesthesia and/or general anesthesia are administered.

All labor rooms and the ORs have wall suction ready for use if needed. All labor rooms have anesthesia carts, and the bottom drawer of each anesthesia cart has an Ambu-bag. All labor and operating rooms have wall oxygen. All residents rotating on L&D are familiarized with the location of the ambu-bag in the rooms and the location of the C-mac and the video cart during their orientation.

Q57

Describe your in-house backup plan to provide personnel with surgical airway access skills if needed 24/7.

There is a protocol delineating how to activate the code airway protocol that is to be called if a second attempt at the airway done by a provider with experience fails, and a separate surgical code airway page brings general surgical staff to the floor for a surgical airway. There is 24/7 main OR code (anesthesia airway) coverage, general surgery coverage, and trauma coverage.

Q58

*Outline your lipid emulsion availability, appropriate supplies, and protocols that allow a timely response to local anesthetic systemic toxicity.

OR Omnicells contain Intralipid for the possible occurrence of local anesthetic toxicity, with the administration protocol attached to the bags.

Q59

Outline your malignant hyperthermia protocol. Dantrolene formulations and sterile water vials, along with other supplies must be available to allow a timely response to malignant hyperthermia.

An MH cart is present on the floor, with labeled drawers. A print-out of the MH protocol is in the first drawer, with dantrolene and sterile water. MH vent filters are present both in the cart and on top of the cart. The cart is checked for products expiration dates daily by the anesthesia technicians on L&D. A logbook with technicians' signatures documents the checks.

Q60

Outline cognitive aids and training resources. Provide evidence for cognitive aids and clinician awareness of resources to manage emergencies, and training to facilitate team member awareness of the location and means to retrieve resources to better manage emergencies.

All anesthesia machines at BWH, including the ones on L&D, have a book of cognitive aids for intra-op emergencies attached to the first drawer. Other cognitive aids in the OB ORs are a poster with our institution's hemorrhage protocol, that includes numbers for the blood bank, and the OB escalation of care protocol, with pager number for consultants like trauma surgery, gynecologic oncology, urology and general surgery.

Q61

*Outline availability and usage by obstetric anesthesia providers of ultrasound devices for peripheral and central intravenous access, neuraxial blocks, regional blocks (e.g. transversus abdominis/quadratus lumborum/erector spinae), and point-of-care evaluations (gastric, airway, lung, and cardiac).

We have a dedicated ultrasound device (Sonosite x-porte) on the L&D unit for the OB anesthesia team, with curvilinear, linear and echo probes. A point-of-care ultrasound (POCUS) curriculum is in development including use of the ultrasound for lumbar spine imaging, gastric, cardiac, lung imaging. The ultrasound is frequently used for IV access, and occasionally for TAP blocks when needed.

Q62

*Describe systems in place to ensure inter-professional communication and situational awareness on your obstetric unit such as: board sign-out at each shift change of anesthesiology staff; pre-procedural timeouts; post-procedural briefings, as indicated; daily multidisciplinary rounds or huddles to discuss management plans for patients on labor and delivery, antepartum and postpartum.

Twice daily OB anesthesia sign-out is performed at set times. At 7am and 3pm, each patient on the labor floor is discussed, including relevant clinical information, airway exam, status, epidural information, and plan. Twice daily board rounds are held to review patients on L&D, at 10am and 10pm. Members of OB anesthesia, OB, midwifery, and nursing teams attend the board rounds, and all are encouraged to provide input on each patient's management. The OB-CMI score for each patient is part of the discussion, along with reasons for the scoring so the entire team is engaged in individualized and evolving risk assessment. Pre-procedural time-outs are performed prior to any epidural for pain relief or any anesthetic, whether epidural, spinal or general. Preoperative huddles are performed prior to any operative procedure with the presence of each team member required. Post-procedural debriefings are organized on an as-needed basis. A current QA initiative on standardizing debriefings both in general and upon transfer to the postpartum floor is ongoing, which will incorporate hemorrhage and hypertension risk assessment.

Q63

Outline how timeouts are performed prior to all anesthetic interventions.

As above, pre-procedural huddles are performed prior to each OR case, and timeouts are performed prior to all anesthetic interventions. The preoperative huddle checklist is integrated in our EPIC EMR. A pre-epidural checklist for time out is posted in every labor room.

Q64

Outline evaluations by the anesthesiology service of: 1) all patients undergoing scheduled cesarean delivery and other obstetric-related surgeries, and 2) the vast majority of patients presenting to labor and delivery. Patients presenting to labor and delivery should be triaged, and/or evaluated by the anesthesiology service soon after admission.

Patients are routinely evaluated or triaged by the anesthesiology service soon after admission to L&D.
This includes all patients scheduled for cesarean delivery or other procedures. The anesthesia team is paged to consult patients having elective procedures or admitted for labor and delivery, approximately 1 hour before their surgery and/or 1 hour after admission. Even women who express the desire for unmedicated childbirth are briefly evaluated by our team, including a review of their medical and obstetric history, current situation, and airway examination.

An electronic monitor of all laboring patients' contraction pattern, fetal, and maternal heart rate is displayed in our anesthesia lounge for quick evaluation over time, awareness of category 2 tracings, and response to fetal decelerations. In conjunction, the anesthesia TL attending and fellow are paged for fetal decelerations and any assisted vaginal deliveries. We have a Stage 1 Variance system that defines the mechanism and triggers for team notification about any patient concerns, so events can be managed by the multidisciplinary team.

Q65

Outline the system in place to screen and identify all high-risk patients. Discuss early anesthesia evaluation of high-risk antenatal patients prior to admission for scheduled surgery or labor and delivery (e.g. high-risk anesthesia clinic).

We have a high-risk telemedicine consultation service through which patients are evaluated, most commonly during the third trimester, by a fellow/resident and an attending. These patients are identified by the OB and Midwifery teams based on a guideline the anesthesia service has provided (by written and electronic memo) that defines who we would like to see prior to delivery. Patients with a coagulopathy, congenital or acquired heart disease,
active pulmonary concerns, prior spine surgery/hardware, morbid obesity, or prior history of difficulty with anesthesia are the most common reasons for consultation. Our assessment notes are forwarded directly to the OB or midwife provider after the patient has been counseled, and any required studies or medical records are obtained prior to the patient's admission. High-risk patients are then identified by the team staffing the labor and delivery unit, when they are re-evaluated by the anesthesia team upon admission.
Additional risk assessment tools in place is the obstetric comorbidity index and a modified AWHONN hemorrhage risk assessment, both which occur upon every admission by the triage nursing team and the admitting obstetrician or midwife.

Q66

*Describe the availability of surgical backup. Surgical backup (e.g. trauma and/or gyn-onc surgeons) must be available, ideally 24/7 and in-house.

There is 24/7 backup from gynecologic oncology, urology, and trauma surgery available in-house.

Q67

Outline your protocol or pathway to activate interventional radiology.

The interventional radiology team can be called in 24/7 from home for cases in need of uterine artery embolization. Patients with suspected PAS frequently are evaluated by the interventional radiology team prior to delivery.

Q68

Describe the intensive care units available to receive obstetric patients (e.g. expertise, proximity to the obstetric unit and capacity).

We can rapidly transfer patients to the intensive care unit when needed. The surgical and cardiac intensive care units are within the same hospital as the L&D unit.

Q69

Outline the qualifications of nursing staff who provide post-anesthesia care in the obstetric unit and describe their competencies to recover surgical patients from both neuraxial and general anesthesia.

All of our L&D nurses are certified with appropriate competencies and skills to recover surgical patients in the post-anesthesia care unit on our labor floor. Nurses certified as critical care OB (CCOB) provide post-anesthetic and/or peripartum care to the highest-risk parturients, such as patients in heart failure due to congenital heart disease, or patients recovering after severe postpartum hemorrhage requiring major transfusion. CCOB nurses each have extensive experience on the L&D unit, and are certified to provide Advanced Cardiovascular Life Support (ACLS). In addition, CCOB staffing is 1:1 nurse:patient to enable care to higher acuity patients on the L&D unit (otherwise, the nurse:patient ratio is 1:2).

Q70

*Describe your obstetric emergency response team and policy. Outline obstetric conditions and/or vital sign parameters that warrant activation, the means of notifying all members of the response team, and the approach for including anesthesiologists in the response to obstetrical emergencies such as hemorrhage, severe hypertension and non-reassuring fetal heart rate.

We have a unit policy for "Stage 1 Obstetric Variance." This policy is posted in every labor room and in the shared spaces throughout L&D with notice it can be activated by anyone at any time, with suggested triggers for activation that include the maternal early warning criteria, and mechanisms for activation of notifying the unit coordinator. This pages the nurse in charge, attending OB, attending anesthesiologist to the bedside for multidisciplinary intervention and de-escalation. Additional protocols for escalation ("All hands on deck" or stage 2; and crisis management/code or stage 3) are also in place.

Q71

*Outline your simulation drills and training.

We have two sources of multidisciplinary simulation exposure for those who work on the L&D unit. At the STRATUS high-fidelity medical simulator, L&D providers can attend OB-specific simulation scenarios every 2 years every two years. The sessions at the simulator involve anesthesiologists, obstetricians, and nurses working together in a multidisciplinary approach to crisis resource management. Second, in-situ drills (on the L&D unit) using a low-fidelity mannequin are performed on a routine basis (approximately once every 2-4 weeks).

Q72

Outline the percentage of anesthesiology faculty (who cover obstetric anesthesia call), obstetricians, nurses, and other personnel who have participated in obstetric simulation (or inter-professional team training) in the last five years. _____%

Attendees of the high-fidelity simulation sessions are incentivized to attend every two years through lowering malpractice insurance rates for attendees. Providers on L&D are expected and encouraged to attend the low-fidelity simulation sessions if they are on the L&D at the time the drill occurs. Through these two approaches, >90% of all physicians (OB and OB anesthesia) on the L&D unit have participated in an obstetric simulation drill in the past 5 years and approximately 65% of the L&D nurses have participated.

Q73

Describe simulation training scenarios practices and compliance with The Joint Commission (JACHO) requirements for obstetric hemorrhage and preeclampsia simulations. (https://www.jointcommission.org/standards/r3-report/r3-report-issue-24-pc-standards-for-maternal-safety/#.YofbDHbML-g)Physicians providing obstetric anesthesia should participate in at least one simulation drill every five years. An active multidisciplinary program with obstetric and anesthetic emergency simulation drills (e.g. emergent cesarean delivery, maternal cardiac arrest, difficult/failed intubation, obstetric hemorrhage, and eclampsia) is preferable. Simulation drills for anesthesiology providers only may be acceptable, if no formal multidisciplinary program exists, or to supplement pre-existing drills.

Emergency simulation drills in both the low and high fidelity simulations include scenarios such as STAT cesarean delivery, maternal cardiac arrest, failed intubation, obstetric hemorrhage, and eclamptic seizures.

Q74

Describe your ability to provide anesthesia care for postpartum tubal ligation procedures within 24 hours of delivery, and urgent cerclage placement within 12 hours of surgical request. Outline policies/procedures to ensure postpartum tubal ligation are prioritized and performed in a timely manner as per ACOG recommendations. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/06/access-to-postpartum-sterilization

We can perform postpartum tubal ligations within 24 hours of delivery or urgent cerclages within 12 hours of surgical request. We staff 24/7 with an OB anesthesia attending plus either a fellow or a second attending. In extreme cases, we can call for backup from the MOR teams. Postpartum tubal ligations are non-elective with ACOG guideline-based memos circulated annually to the providing teams on our unit.

Q75

*Outline options for an additional operating room (with nursing/tech/obstetric and anesthesiology personnel) that is available at all times for emergency obstetric procedures (if all obstetric unit operating rooms are occupied).

We have 4 operating rooms and 2 procedure rooms on the labor and delivery unit and approximately 50 operating rooms in our main operating room area which is 5 floors below the labor and delivery unit. At any point in time, we keep one of our 4 operating rooms vacant and immediately available for urgent or stat cesarean delivery.
Elective cases will not be started if there is not one L&D operating room immediately available for an unscheduled case.

Q76

Describe your ability to provide invasive monitoring and other advanced management techniques for high-risk patients on the obstetric unit, including arterial lines, central lines, cardiac output monitoring, and transthoracic/transesophageal echocardiography.

A designated OB Belmont rapid fluid infuser is located outside the OB ORs. An OB anesthesia hemorrhage cart is also located outside the ORs, and has large bore tubing, kits for vascular access (both arterial and venous, central and peripheral kits, including RICs) and intraosseous kits. The OB Anesthesia team has a designated ultrasound equipped with probes specifically to perform TAP blocks,
lumbar ultrasound, TTEs, and vascular access.

Q77

Outline your management of patients who need vasoactive drug infusions, intensive care or cardiac care, and/or additional monitoring requirements (e.g. monitored bed, telemetry).

Nurses certified as critical care OB (CCOB) provide post-anesthetic and/or peripartum care to the highest-risk parturients, such as patients in heart failure due to congenital heart disease, or patients recovering after severe postpartum hemorrhage requiring major transfusion. CCOB nurses each have extensive experience on the L&D unit, and are certified to provide Advanced Cardiovascular Life Support (ACLS). In addition, CCOB staffing is 1:1 nurse:patient to enable care to higher acuity patients on the L&D unit (otherwise, the nurse:patient ratio is 1:2). CCOB nurses on L&D manage patients who require arterial monitoring and telemetry. Antepartum or postpartum patients who require mechanical ventilation, sustained vasoactive infusions, intensive care or cardiac care are managed in our surgical intensive care unit with a multidisciplinary approach to care from OB and OB anesthesia and critical care teams.

Q78

Outline your approach to educating expectant people, patients and families.

Patients receive education about obstetric anesthesiology through various mechanisms prior to their hospital admission. Information about anesthesiology is included within orientation packets that patients receive from their obstetric or midwife provider during the 3rd trimester. In-person and virtual prenatal courses include information on obstetric anesthesiology. A specific anesthesiology course is being designed and implemented this year by our staff director of patient education (Dr. Sebastian Seifert) who is also creating patient education tools at the national level with SOAP. Upon admission to the labor floor, every patient is consulted by the anesthesia team as early in their labor as possible, to provide further information about anesthesia options specific to their anticipated delivery course. This year, a policy allowing the support person in the operating room for the entire operating room duration was implemented. Prior to this, a support person waited outside of the operating room until spinal anesthesia induction was complete, the patient was prepped and draped. Now, support people accompany the patient from the start. To facilitate this, educational tools were created for both the patient and the support person explaining the operating room experience and what to expect, from both perspectives. These tools are provided to the patient and to the support person upon admission.

Q79

Outline your approach to educating nurses, obstetricians and other healthcare providers.

The Division Chief is involved in numerous multidisciplinary meetings including but not limited to: Labor and Delivery Management - discussion of all policies, delivery statistics, safety concerns, and staff notes, bi-monthly 30 minute meetings; Nursing Practice Council and Nurse-in-Charge leadership meetings; Quality Initiatives; Equity Initiatives; Unit-Based Teams; OB GYN Clinical Quality Collaboratives. Through these interactions, communications about policies, policy changes, and educational initiatives are defined an prioritized. Our divisional faculty frequently provide lectures to nurses and obstetricians through established curriculuar pathways, and our nurse education team creates "top 5" content for weekly dissemination at every 7a and 7p shift changes, which is an excellent way for us to introduce new anesthesia clinical research studies, policy changes, or other information to the entire nursing staff. The Chief of L&D disseminates medical staff notes that frequently are authored or co-authored by the OB anesthesia Division Chief; the MSNs are emailed to the entire L&D faculty.

Q80

Outline your approach, if applicable, to educating obstetric anesthesia training for residents, fellows, CAAs, and/or SRNAs.

Monthly rotating anesthesia residents receive a welcome email that contains an EPIC tip sheet for OB anesthesia-specific documentation requirements in the EHR; a tri-fold clinical tip sheet for obstetric anesthesia; an OB anesthesia board review question packet; and a pre-neuraxial checklist that they must complete prior to performing any neuraxial techniques (knowledge proficiency, use of our epidural back mannequin under observation, observation of placements in the labor and delivery setting). They are instructed to view an orientation video online prior to their first, day, and they are assigned specific chapters from one of the basic anesthesia textbooks (Lange or Miller). Rotators have two 45-minute lectures as well - given largely by the anesthesia attendings but also by the OB anesthesia fellows and to include one journal club per month, one high-risk case presentation, and essential basic knowledge topics (physiology of pregnancy, hypertensive disorders of pregnancy, postdural puncture headache, postpartum hemorrhage, crisis management, maternal cardiac arrest, labor analgesia, local anesthetics, dural puncture epidural and other techniques, cardiac disease in pregnancy, and more.

Our fellows benefit from the above structured education for themselves, and then progressively more through the year, as contributors with lecture skill development. In addition, they have a separate, advanced curriculum that occurs every Wednesday afternoon to incorporate the SOAP virtual fellow webinar one week, and faculty-driven content on the other 3 weeks of the month. Hands-on training during fellowship is emphasized - including performing and interpreting ROTEM, point-of-care ultrasound applications, and technically challenging neuraxial techniques/critical situations. Fellows have additional course offerings from the Harvard Catalyst including clinical research, biostatistics and other topics; a QI bootcamp that is organized by the OB/MFM group; a combined cardiac anesthesia/OB anesthesia/Critical Care fellows' research curriculum 2-3x monthly for discussion of ongoing projects; study design; biostatistics; how to write a manuscript; and other relevant curriculum. Elective rotations are encouraged, and can include international outreach, women's health initiatives at the national or local level, re-immersion in main operating room or regional anesthesia, coursework in point-of-care ultrasound, or other areas upon review and approval.

Q81

*Outline the initiatives that you have done at your institution to better meet the needs of patients from the most prevalent racial and ethnic minority group(s) that your facility serves (e.g. implicit bias training of healthcare providers; provision of health educational resources for non-English speakers). Describe efforts to promote diversity, equity and inclusion of your workforce (e.g. support pipeline programs for groups underrepresented in medicine; diversity, equity and inclusion hiring/promotion practices; microaggression and bystander response training; mentorship/sponsorship of individuals from groups underrepresented in medicine and female trainees and faculty).

The Division Chief works at the state level with DPH Massachusetts Maternal Morbidity and Mortality Review Committee and this group is actively pursuing best documentation practices for race, ethnicity and bias as it contributed to poor maternal outcomes. This data will be actively taken back to our unit. The Division Chief also works with the Massachusetts Perinatal Newborn Quality Initiatives Network (PNQIN) and through this organization has taken the Speak Up coursework on implicit bias. This course is actively recommended to all L&D faculty (anesthesia/OB/nursing/OR techs) and resources from the course have been integrated on our unit. We are currently engaged at the state level in the PNQIN Equity Bundle rollout which involves tools to evaluate race and ethnicity in parallel to morbidity tracking over time, and specific to our hospital, the implementation of a Team Birth model is happening in 2023. This initiative promotes patient-centered care by involving patients in major decision discussions as they occur between teams. The Division Chief is the anesthesia champion for this initiative. Our department's residency, fellowship, and staff recruitment teams have incorporated DE&I training (this year it was virtual format); we have several grand rounds per year on microaggression and equity-based topics (one was recently specific to female mentorship strategies); the division chief has served on 3 annual DE&I panels for residency program applicants, and has personally mentored 2 URM residency program applicants in the past 2 years through a structured program (BWH STARS program). At the staff hiring level, the Division Chief actively considers diversification at any opportunity. Our current faculty and fellows (n = 23 total) include 3 black (13%); 13 female (57%); and a Division Chief who is female. We celebrate and support our staff and trainee diversity inclusive of LGTBQ, religious, and cultural aspects.

Page 7: Cesarean Delivery Management

Q82

*Outline, describe, and provide your enhanced recovery protocol as defined by the SOAP Enhanced Recovery After Cesarean (ERAC) Consensus Statement (3). A standardized enhanced recovery protocol or clinical care pathway that is utilized by the institution and all obstetric anesthesia providers is an essential element.

Our hospital has a multidisciplinary ERAD (ERAS for cesarean delivery) team. The chief of OB attends monthly ERAD data review meetings to evaluate compliance with all criteria and to discuss any amendments to the protocol. The BWH protocol is consistent with the SOAP ERAD consensus statement.

Q83

*Outline your routine utilization of a pencil-point needle, 25-gauge (or smaller) for the provision of spinal and CSE anesthesia for cesarean delivery.

We utilize 25-gauge Whitecre needles for spinals and for combined spinal epidural and dural puncture epidural techniques on our labor floor. This specific needle is stocked on the L&D unit to ensure that its use is standardized.

Q84

*Describe your approach and outline policies and/or protocols to prevent and/or treat insufficient anesthesia or intraoperative pain during cesarean delivery. Outline how neuraxial block are tested prior to incision and strategies/protocols used to ensure blocks are adequate for surgery. Outline strategies/protocols to treat intraoperative pain, and describe the follow-up for patients that experience intraoperative pain.

For reliability for use for unscheduled cesarean delivery, labor epidurals are evaluated every 1.5 hours on our unit and reinforced or replaced when needed. Epidural dosing for surgery begins at the time of the preoperative huddle in these cases, and continues upon arrival to the operating room. All in situ or de novo epidurals, and spinals for anesthesia are checked by sensory to cold or pinprick and then surgical Allis testing prior to incision. Intraoperative pain is treated with epidural bolusing, IV analgesic and sedation, or conversion to general anesthesia as needed. All postpartum patients are followed up with on postpartum day 1, including those who may experience intraoperative pain.

Q85

*Outline your post-cesarean delivery analgesic protocol. Analgesic protocols should include low dose long-acting neuraxial opioid (such as 100-150 mcg intrathecal morphine or equivalent long-acting opioid, or 2-3 mg epidural morphine or equivalent long-acting opioid), and supplemental multimodal analgesics (ideally scheduled non-steroidal anti-inflammatory drugs and acetaminophen).

Our analgesic protocols include the use of low-dose neuraxial morphine (intrathecal: 100 mcg, epidural: 2mg). All patients without a contraindication are prescribed round-the-clock (standing) acetaminophen and
NSAIDS (ketorolac followed by ibuprofen). Oxycodone or other opiods are prescribed only as needed.

Q86

Describe your ability to provide local anesthetic wound infusions or regional nerve/fascial plane blocks when appropriate. Are regional blocks performed by obstetric anesthesia providers or the acute pain/regional anesthesia service?

All intraoperative local anesthetic wound infusion provided by our obstetricians (e.g. wound infiltration or paracervical blockade) is provided with guidance from the OB anesthesia physician about maximum dose, to minimize the risk of local anesthetic systemic toxicity. The OB anesthesia team provides transversus abdominis plane (TAP) blocks to patients who may benefit from them, such as patients
who've had cesarean delivery under general anesthesia (no intrathecal opioid) or those who have chronic pain or substance abuse history and are on buprenorphine or methadone therapy.

Q87

*Outline institutional efforts to minimize opioid usage, such as limiting rescue opioid doses (e.g. <30 mg oxycodone/24 hours), non-opioid rescue analgesic options (e.g. transversus abdominis plane blocks, gabapentin), and efforts to limit the number of opioid tablets (e.g. 10-20 tablets) prescribed on discharge.

A previous multidisciplinary QI initiative eliminated the routine use of PO opioids, including reducing opioid prescribing during hospitalization and following discharge after delivery. As above, TAP blocks are readily offered for patients with inadequate pain control postpartum. In addition, our acute postoperative pain service can be consulted for any patient with refractory pain, for additional recommendations and daily followup of therapeutic regimens that are tailored to each patient.

Q88

Describe your standardized protocol or plan of action to manage patients with opioid use disorders, and/or chronic pain.

We have a protocol for suggested management of patients on methadone or buprenorphine or other medication, for chronic pain or opioid use disorder. The protocol recommends maintaining the baseline dose of maintenance therapy in divided doses if possible; use of standard OB anesthesia opioid (fentanyl 2mcg/mL in the epidural infusion; intrathecal and epidural opioids for surgery); TAP blocks postpartum; use of epidural analgesia for select cases; consultation by our chronic or acute pain services as needed.

Q89

*Outline strategies to prevent maternal and fetal intraoperative hypothermia, e.g. active warming, warm intravenous fluids, appropriate ambient delivery/operating room temperature. Active warming and a standardized minimum operating room temperature of at least ≥73oF (22.8oC), and/or operating room temperature based on gestational age for cesarean delivery is recommended.

We routinely administer warmed fluids and use a Bair hugger for cases with high risk of maternal hypothermia, such as prolonged surgery and postpartum hemorrhage. We have a protocol for actively managing the OR temperature, with temperatures dictated by the gestational age of the infant at delivery.
Maternal temperature is measured routinely during GA cases, and all parturients having cesarean delivery have their oral temperature measured prior to delivery and immediately after delivery.

Q90

Describe your approach to the measurement of maternal temperature during general and neuraxial anesthesia.

Maternal temperature during general or neuraxial anesthesia is measured by bladder temperature probes that are built in to the foley catheters utilized.

Q91

*Describe your antibiotic prophylaxis protocols, specifically how the following are ensured: timely administration (prior to skin incision) of appropriate antibiotic(s); implementation of a weight-based dosing approach; implementation of an appropriate re-dosing strategy; identification of alternatives if allergies known/detected; and consideration of additional antibiotics for high-risk patients.

We have a protocol to ensure the administration of appropriate antibiotics prior to incision, with dosing according to patient's weight. Antibiotics are re-dosed according to a specified schedule. The first-line antibiotic prior to cesarean delivery is cefazolin. Patients at high risk for wound infections such as those with obesity, diabetes, chronic immunosuppression, or on steroid treatment also receive azithromycin therapy. The protocol for dosing, second line agents in cases of cephalosporin allergy, and indications for adjunctive azithromycin therapy is available from our pharmacy and on the departmental website.

Q92

Outline which antibiotics are stored in the operating room for emergency cesarean deliveries, and describe how additional antibiotics are acquired urgently from pharmacy.

Antibiotics immediately available in the operating room for emergency cesarean delivery include cefazolin, gentamicin, clindamycin, ampicillin, and azithromycin. We have a dedicated OB pharmacist available 24/7 to specifically address any needs from the L&D unit.

Q93

*Outline your standardized approach to prevent and treat hypotension after spinal anesthesia. Ideally, prophylactic infusion of phenylephrine to maintain blood pressure within 10% of baseline, with boluses of phenylephrine and ephedrine as appropriate to treat hypotension, as well as intravenous fluid pre-load or co-load during spinal or CSE anesthesia should be utilized.

A prophylactic infusion of phenylephrine initiated immediately following intrathecal spinal dosing (typically 40 mcg/min IV infusion) titrated to maintain blood pressure within 10% of baseline is our divisional policy to prevent and treat hypotension after spinal anesthesia. Boluses of phenylephrine and ephedrine are also used to prevent and treat hypotension, when necessary. Prior to spinal anesthesia, IV patency is verified and typically patients receive a total volume of 500 mL intravenous fluid (pre-load and co-load combined) at the time of the intrathecal dosing. The 500mL volume is not set by policy, and can be adjusted according to clinician judgement.

Q94

Describe your approach to risk stratify patients at risk for perioperative nausea and vomiting.

Patients are evaluated for their baseline risk for intraoperative and postoperative nausea and vomiting. This includes young, healthy non-smoking patients, history of prior IONV or PONV.

Q95

*Outline your perioperative antiemetic prophylaxis and treatment protocol. A standardized approach ideally involving at least one prophylactic antiemetic agent routinely administered, with an alternative class of antiemetic agent available for additional prophylaxis (in patients at higher risk for PONV) and for treatment of nausea and vomiting.

Our first-line agents for nausea treatment are intravenous ondansetron and metoclopramide. Additional agents we provide are transdermal scopolamine and intravenous promethazine. Patients can receive sodium citrate PO immediately prior to spinal or GA, and famotidine can also be administered for aspiration prophylaxis. Avoidance of hypotension is prioritized.

Q96

Outline which medications are immediately available for treatment of intraoperative shivering and pruritus in the operating room and recovery unit.

Nalbuphine 0.07mg/kg is used to treat shivering and pruritis. Dexmedetomidine 10-30 mcg IV is also used to treat intraoperative shivering.

Q97

Describe your approach to risk stratification to identify patients at increased risk for respiratory depression, and screening for obstructive sleep apnea.

All patients who have received intrathecal opioids remain on the floor under continuous pulse oximetry monitoring for a minimum of 1 hour postpartum. Criteria for transfer to the postpartum floor include partial resolution of the neuraxial block, adequate control of pain and nausea, and stable hemodynamics.
All patients who receive neuraxial (intrathecal or epidural) long acting opioid are distinguished by a specific order set that requires 24h intermittent monitoring, and no additional opioids within that 24 hour period without assessment by the anesthesia service for approval. If supplemental opioids are deemed appropriate, a one-time dose order is placed by the anesthesia physician. The obstetric or midwife providers cannot order prn or scheduled opioid medications until the 24 h post neuraxial period has elapsed. High risk patients (high BMI, sleep apnea history, or those with increased sedation for any
reason) are monitored with continuous pulse oximetry for at least 24 h after any neuraxial with long-acting opioids.

Q98

*Describe your monitoring and treatment for respiratory depression after cesarean delivery. Your protocol should be consistent with the SOAP Consensus Recommendations for the Prevention and Detection of Respiratory Depression Associated with Neuraxial Morphine Administration for Cesarean Delivery Analgesia for the Prevention, Detection and Management of Respiratory Depression Associated with Neuraxial Opioids (4, 5).

Our Labor and Delivery unit monitoring for respiratory depression after neuraxial morphine (or hydromorphone) administration for cesarean delivery is consistent with both the ASA and SOAP recommendations. Specifically:
-monitoring for at least 24h after administration
-including at least 1 time per hour for the first 12 hours, then at least once per 2h for the second 12 h (hours 12-24h)
-re-assessment at the 24h point for any need of additional monitoring requirement

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Q99

Outline your nursing care and monitoring. Your nursing care should be consistent with the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) and ASA recommendations.

The nursing care that patients receive peripartum is consistent with ASA recommendations and AWHONN recommendations. Laboring parturients are monitored by labor nurses in a patient:nurse ratio of 1:2 at maximum and otherwise 1:1.

Q100

Describe how your anesthesiology service is supportive of baby-friendly breastfeeding practices (e.g. ability to safely facilitate skin-to-skin in the operating room or recovery unit, when possible).

The OB Anesthesia team is supportive of baby-friendly breastfeeding practices. Skin-to-skin of the newborn with the mother or father is facilitated whenever possible. Maternal skin-to-skin typically requires support from the OB anesthesia physician in conjunction with a circulating nurse, for safety. Paternal skin-to-skin can be arranged more readily, with assistance from the circulating nurse. Additional family-centered care is promoted in our operating rooms. This includes placement of EKG electrodes, BP cuff, and pulse oximeter in ways that minimally interfere with the maternal/paternal/newborn
interactions, use of a clear surgical drape that is activated at the time of delivery (drape designed with an opaque segment at the head of the drape that can be lowered to reveal a clear plastic segment, so the parents can see their newborn), and readily available lactation consultation postpartum.

Q101

Outline how an in-house (24/7) clinician (separate from the anesthesiology service) with appropriate training to provide neonatal resuscitation is available.

We have a pediatric team from the NICU that attends all cesarean deliveries. All NICU responders (attending physicians, fellow physicians, resident physicians, and NICU nurses) are appropriately trained (NRP certified) to provide neonatal resuscitation. Our OB anesthesia attendings and fellows are also NRP certified.

Page 8: Labor Analgesia

Q102

*Outline your routine utilization of a pencil-point needle, 25-gauge (or smaller) for the provision of CSE or DPE labor analgesia.

a 25-gauge Whitacre needle is utilized for all CSE or DPE procedures performed on our L&D unit.

Q103

Describe your use of low concentration local anesthetic solutions (ideally ≤0.1% bupivacaine or ≤0.15% ropivacaine).

For our neuraxial labor analgesia solution, we utilize bupivacaine 0.0625% with 2 mcg/mL of fentanyl administered using a programmed intermittent epidural bolus (PIEB) dosing technique.

Q104

Outline your use of neuraxial opioids (e.g. fentanyl or sufentanil) and/or other adjuvants (e.g. clonidine) added to epidural local anesthetic solutions.

We use 2 mcg/mL fentanyl, as above.

Q105

Describe how standardized epidural solutions are provided and used by all providers. Ideally, pharmacy-provided pre-mixed epidural solutions.

Our pharmacy provides pre-mixed epidural solutions of B1/16 with fentanyl. The epidural solution
utilized has been agreed upon by all of our OB anesthesia attending physicians, and there is no other option readily available for use.

Q106

Outline if and which alternative neuraxial techniques are offered in addition to standard labor epidural analgesia (e.g., CSE, DPE, single-shot spinal).

In addition to the routine patient-controlled epidural analgesia (PCEA) technique, we also provide combined-spinal epidural (CSE) and dural puncture epidural (DPE) techniques. The choice between PCEA, CSE, and DPE are at the discretion of the anesthesia physician.

Q107

Please provide an estimated percentage breakdown of the utilization of these techniques, with the total equaling 100%. Do not include the percentage sign in your answers. Please answer in decimal format.

Standard epidural	**25.0**
CSE	**15.0**
DPE	**60.0**
Other (describe)	**0.0**

Q108

Outline your labor epidural maintenance techniques. Patient-controlled epidural analgesia (PCEA) and ideally background programmed intermittent epidural boluses (PIEB) should be utilized for provision of neuraxial labor analgesia.

We utilize PCEA using a PIEB approach for our neuraxial labor analgesia.

Q109

*Describe your routine utilization of flexible (flex-tipped/wire-reinforced) epidural catheters for labor epidural analgesia.

We utilize the Arrow single end-orifice flex-tip wire-reinforced epidural catheters for labor epidural analgesia.

Q110

*Outline how you provide regular assessment of neuraxial labor analgesia effectiveness. Ideally, pain scores documented by nursing staff (e.g. every 1-2 hours) supplemented with regular anesthesia provider rounds or evaluations (e.g. every 2-4 hours).

Anesthesia physicians or nurse anesthetists round on each patient with a running epidural at least every 90 minutes. Patients' pain control is documented during these visits, including specific assessment of VAS, localization (sidedness) of the block, degree of motor block, and interventions made.

Q111

Describe your protocol for managing epidural breakthrough pain. Describe your system used to track labor epidural replacement rates.

Epidural breakthrough pain strategies are taught to resident rotators with a monthly lecture (part of the twice daily lecture series). Concentration and type of local anesthetic or fentanyl epidural bolus is chosen based on degree of pain, stage of labor, degree of motor block, and sensory level to cold or pinprick. Epidural replacement rates are reported as part of our QI reporting based on EPIC reports and review of patients on L&D who receive more than one neuraxial technique.

Q112

Describe your ongoing monitoring (e.g. blood pressure, assessment of motor/sensory levels) and protocols to manage potential side effects or complications associated with neuraxial analgesia.

Our patients are continuously monitored by pulse oximetry and blood pressure measurements every 15 minutes for the duration of the epidural infusion. Patients with significant cardiac comorbidity, history of arrhythmia or acute symptoms have continuous EKG monitoring or invasive arterial blood pressure monitoring with a 1:1 labor and delivery nurse who is certified as a Critical Care OB (CCOB) nurse. CCOB nurses have ICU experience, up to date ACLS certification, and experience interpreting telemetry.
All patients on the labor floor have L&D nursing care of either 1:2 (nurse:patient) or 1:1 supervision. The anesthesia team is present for approximately 20 minutes after a neuraxial labor technique to evaluate the onset of the test dose and subsequent epidural dosing. Thereafter, the anesthesia team provides assessment on a strictly maintained 90-minute interval system. Side-effects are assessed and managed during these visits, with close documentation and follow-up.

Q113

Outline your nursing postpartum monitoring protocol that is consistent with AWHONN recommendations.

Our postpartum monitoring is consistent with AWHONN recommendations. Specifically, strategies for lowering the risk of maternal morbidity/mortality through recognition of symptoms that are not routinely expected postpartum (chest pain, shortness of breath, seizures, severe headache, fever, evidence of DVT, excessive bleeding, or psychiatric disturbances) are reinforced in women prior to their discharge from the hospital.

Q114

Describe intravenous patient-controlled opioid analgesia options offered, and outline protocol specifics including opioids available, administration settings and monitoring requirements. Outline the availability of nitrous oxide for labor analgesia, and if available provide protocol specifics.

Dilaudid PCA is available for postpartum patients who did not receive intrathecal morphine. Fentanyl PCA is available for patients who may have contraindications to epidural analgesia in labor. Nitrous oxide is available for labor analgesia. Patients must be consulted by the anesthesia team prior to implementation of nitrous oxide. The L&D nurse initiates the nitrous oxide which is via a 50/50% Oxygen/nitrous oxide circuit with scavenging.

Page 9: Recommendations and Guidelines Implementation

Q115

*At a minimum, provide evidence of implementation of the Practice Guidelines for Obstetric Anesthesia by the ASA Task Force on Obstetric Anesthesia and SOAP (6). Select key recommendations not otherwise addressed in other areas of this application: o Platelet count prior to neuraxial block placement: No requirement for routine testing in healthy patientso Appropriate liquid and diet restrictions: Intrapartum (allow clear liquids in uncomplicated patients); cesarean delivery (clear liquids up to 2 hours prior)o Timing of neuraxial analgesia: Allow neuraxial analgesia in early labor (no specific cervical dilation required)

We do not require a baseline platelet count prior to labor epidural placement. However, all of our patients admitted for labor and anticipated vaginal delivery have a routine complete blood count (CBC) drawn upon admission, so we encourage our providers to evaluate available labs prior to epidural placement. Patients with any concern for coagulopathy for any reason are tracked carefully by our service, so that the appropriate lab work is resulted prior to any consideration of a neuraxial technique.

As per our ASA guidelines for obstetric patients, clear liquids are allowed for uncomplicated laboring patients and clear liquids up to 2h prior to surgery for patients having elective cesarean delivery.

We do not mandate any particular cervical dilatation requirement prior to neuraxial analgesia.

Q116

Outline evidence of implementation of the SOAP Consensus Statement on the Management of Cardiac Arrest in Pregnancy (7).

We have implemented the SOAP consensus statement on the management of cardiac arrest in pregnancy, through several mechanisms. A monthly lecture on maternal cardiac arrest is provided to residents, fellows, and faculty. In-situ and high-fidelity drills are performed that include maternal cardiac arrest. Rotators are educated about the location of our unit's defibrillators and how to activate a Code Blue on the L&D unit. All OB, nursing, and midwife team members are aware of our response mechanisms, which includes Code Blue activation with immediate management by the OB anesthesia team and assistance by the in-hospital code team. Early defibrillation, quality chest compressions, and perimortem cesarean delivery within 5 minutes, expert airway management, and appropriate chest compression technique and frequency are reviewed with high frequency. All anesthesia physicians have ACLS recertification every 2 years.

Q117

National Partnership Maternal Safety Bundles (8): Confirm that aspects of the following Maternal Safety Bundles have been implemented. For each enter a Yes or a No.

Obstetric Hemorrhage	**Yes**
Severe Hypertension in Pregnancy	**Yes**
Maternal Venous Thromboembolism	**Yes**
Cardiac Conditions in Obstetrical Care	**Yes**
Care for Pregnant and Postpartum People with Substance Use Disorder	**Yes**

Q118

Provide examples of implementation of key aspects of National Partnership Maternal Safety Bundles; outline at least one example of an item that has been implemented to address each domain (Readiness, Recognition and Prevention, Response, and Reporting and System Learning) for the following:

Obstetric Hemorrhage	**Readiness: PPH risk assessment upon admission; Recognition and Prevention: use of QBL; Response: use of a hemorrhage protocol and MTP; reporting and systems learning: use of debriefing and monthly QI meetings**
Severe Hypertension in Pregnancy	**Readiness: risk assessment upon admission for HTN; Recognition and prevention: Stage 1 Variance trigger of severe range BP; response: EPIC orderset for preeclampsia; Systems learning: debriefing and QI monthly discussions.**

Q119

Outline your approach to coordinate care for patients receiving ante- and postpartum thromboprophylaxis as outlined by the SOAP Consensus Statement on Neuraxial Anesthesia in Obstetric Patients Receiving Thromboprophylaxis (9). Describe a process by which obstetric anesthesia providers are informed about patients receiving thromboprophylaxis.

Our patients are managed consistently wiht the SOAP consensus statement on neuraxial anesthesia in OB patients receiving thromboprophylaxis. In conjunction with the Chief of OB, a written and electronic memo is periodically sent to providers with updates about thromboprophylaxis guidelines. Any patient on thromboprophylaxis or anticoagulation therapy for any reason is called for telemedicine high-risk consultation prior to delivery or we are notified about them immediately upon their admission, for direct input on management in the peripartum period with the OB team.

Q120

Outline your implementation of recommendations from SOAP Interdisciplinary Consensus Statement on Neuraxial Procedures in Obstetric Patients with Thrombocytopenia.

All faculty are up-to-date on the SOAP Consensus Statement on Neuraxial Procedures in Obstetric Patients with Thrombocytopenia. Specifically, if patients have isolated thrombocytopenia with a platelet count of 50-70/kg, the benefits may outweigh the risks of doing a neuraxial technique.

Page 10: Quality Assurance and Patient Follow-up

Q121

*Describe how an anesthesiologist serves as a member of the team that develops and implements multidisciplinary clinical policies, e.g. quality improvement committee, patient safety committee. Outline current quality assurance and other patient care initiatives that the obstetric anesthesia division is leading, and/or involved in.

Our Division Chief serves as an active member of the L&D Management team. The L&D Management team meets on a monthly basis and consists of the Chief of Obstetrics,
Nursing leadership, Chief of OB Anesthesia, and other interested parties from all specialties (it's an open meeting with the agenda circulated by email prior to each session).

Q122

Outline involvement of obstetric anesthesia staff in hospital committees. Describe committees (e.g. peer review, blood management) that the obstetric anesthesia staff are involved in, and their role in these committees.

The division chief works closely with her counterparts in OB and nursing on QA related issues, on an ongoing basis; L&D Management, QA monthly meeting; Massachusetts General Brigham Clinical Quality Collaborative meeting; ERAD review monthly meeting. The QA/QI officer for our unit is involved in QA/QI at the hospital and network levels.

Q123

*Describe how patients receive follow-up with structured interview/consultation who received either labor neuraxial analgesia, cesarean anesthesia, or anesthesia for other procedures (e.g. postpartum tubal ligation, cerclage). Patients should be reviewed, or protocol criteria fulfilled prior to discharge or transfer from labor and delivery. All patients who received an anesthetic procedure should be reviewed by the anesthesia service on the postpartum floor prior to hospital discharge.

All patients who received either labor analgesia or anesthesia for cesarean delivery or other procedures
are seen before transfer from labor and delivery unit to ensure discharge criteria have been met. All inpatients on the postpartum floor are then re-evaluated at least 12 hours after delivery, as a routine postpartum check by the anesthesia service.

Q124

Outline your system to follow-up on all patients with anesthesia-related complications.

All identified anesthesia-related complications are followed up until resolution. Serious adverse events are reviewed by our QI/QA director and Division Chief. Every 3 months we run reports looking at the incidence of blood patches, number of replaced epidurals, number of cesarean sections performed under general anesthesia, the rate of conversion to general anesthesia.

Q125

*Describe your system to evaluate and treat (with an EBP, if necessary) a PDPH in a timely fashion. Are EBPs generally performed early (within 12-48 hours) or delayed? Who performs the EBP and which location(s) are EBPs performed in prior to and after discharge? Optimally, outpatient PDPH should be evaluated and treated on the obstetric unit and not in the emergency department.

Patients with a headache suggestive of a PDPH are managed by a specific protocol, including conservative therapy with rest, hydration and oral analgesics for 24h, an epidural blood patch if severity persists after 24h or sooner if clinically indicated, and daily follow-up by our service in person (inpatient) or by phone (outpatient) until resolution of the headache occurs. We maintain a list of all patients with a PDPH and follow them until symptoms resolve. Epidural blood patches are available 24/7. Out-patient
post-dural puncture headaches are evaluated and treated on labor and delivery not in the emergency room.

Q126

Outline if the anesthesiologist is an active participant in multidisciplinary root cause analysis, maternal case conferences, or equivalent program to evaluate maternal and/or fetal adverse events. Provide examples of effective implementation of identified system solutions.

The Divsion Chief analyzes anesthesia-related safety reports submitted on L&D, and all of the patient relations/ risk management complaints. If root cause analysis identifies that a system change is necessary, the QI/QA Anesthesia director meets with the nursing director or the nurse educator and the division chiefs of OB and OB Anesthesia to formulate an implementation plan. Examples: -secondary to a report of inappropriate blood product return by the bedside nurse we increased our low fidelity simulations on the floor to ensure that all providers are familiar with the protocols for obtaining and returning blood products.
-we changed the OB Epidural order set to improve the documentation of our PCEAs, secondary to a safety report placed on the postpartum floor that recognized that our documentation was not consistent with that of the Pain Service. Not all our system changes are secondary to adverse events/safety reports. We have bi-monthly multidisciplinary meetings to review our systems and protocols compare them with the recommendations of the Safety Bundles published by the National Partnership for Maternal Health. Some of the recent system changes generated by those meetings were the creation of an OB hemorrhage order set for OB providers, introduction of OB specific crisis checklists on the labor floor, increasing the frequency of low fidelity simulation, creation of a "hemorrhage omnicell" outside the ORs, and use of our daily floor safety rounds to educate the nurses on drugs like tranexamic acid.

Q127

Describe your approach to routinely collecting patient feedback on maternal experience of care, with a specific focus on anesthetic and analgesic care.

Patient feedback is elicited from all patients on the postpartum floor prior to their discharge. This feedback is collected and sent directly to the Division Chief for review and action if the feedback reveals any deficiency that occurred or that was perceived in anesthetic or analgesic care. In addition, HCAHPS survey data is collected from patients after their discharge from the hospital. Third, if a patient experiences anesthesia care that they are dissatisfied by, our hospital Patient Relations service is immediately available for consultation. The Patient Relations representative serves as a critically important liaison between the patient and the provider(s) when needed. We strive to optimize patient satisfaction at all times.

Page 11: Supplemental Documentation

Q128

Please upload supplemental documentation #1.

COE Memo Stage 1 BWH Obstetric Variance Protocol.pdf (128.6KB)

Q129

Please upload supplemental documentation #2.

COE BWH OB Hemorrhage Transfusion Protocols.pdf (603.1KB)

Q130

Please upload supplemental documentation #3.

COE OB-CMI tool.pdf (167.8KB)

Q131

Please upload supplemental documentation #4.

COE Algorithm fo AIRWAY ASSISTANCE.pdf (79KB)

Q132 **Respondent skipped this question**

Please upload supplemental documentation #5.

Q133 **Respondent skipped this question**

Please upload supplemental documentation #6.

Q134 **Respondent skipped this question**

Please upload supplemental documentation #7.

Q135 **Respondent skipped this question**

Please upload supplemental documentation #8.