In the promotion of excellence in clinical care and improving pregnancy related outcomes, SOAP is collaborating with several societies including the American College of Obstetricians and Gynecologists (ACOG), the Society for Maternal Fetal Medicine (SMFM), the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN), the American College of Nurse Midwives (ACNM), the International Anesthesia Research Society (IARS), and our component society, the American Society of Anesthesiologists (ASA). SOAP and ACOG worked on several initiatives including the Obstetric Bundles on post-partum hemorrhage, amniotic fluid embolism (AFE), and DVT prophylaxis. SOAP is convening a working group to create consensus clinical recommendations on the new ACOG-VTE prophylaxis guidelines which will impact the anesthetic care of the parturient as there is a lack of guidance regarding neuraxial anesthesia in these patients. ASA and SOAP will soon publish the new updated Practice Guidelines for Obstetric Anesthesia. Furthermore, ACOG, ASA, and SOAP have partnered to launch the Maternal Quality Improvement Program (MQIP), a joint effort to develop a national obstetrical outcomes registry through ASA’s affiliated Anesthesia Quality Institute (AQI) with the goal to provide hospitals with vital information needed to understand and improve maternal outcomes. This program will provide a framework for reporting performance and outcomes measures for obstetrical care. The information gathered through this registry will help to structure obstetrical care in the future, improve the care provided to women and their babies and pave the way for better patient outcomes. With the assistance of Dr. Jill Mhyre, SOAP developed a Collaboration and Endorsement Policy, where SOAP can officially provide ‘endorsement’ or ‘support’ for other societies with respect to policies, guidelines, or clinical opinions seeking SOAP’s endorsement.
President’s Message continued from previous page

At the October ASA annual meeting in San Diego, California, we hosted an “Ask Obstetric Anesthesia Booth” where meeting attendees had the opportunity to have their obstetric related questions answered along with information on joining SOAP. As a special gift, every booth attendee was given SOAP antiseptic as a reminder of our society.

For the past several years, SOAP has held a panel at the IARS annual meeting and will continue this important endeavor this coming year. SOAP is also looking to host an educational panel at the SMFM annual meeting.

SOAP’s research activities include the awarding of the annual SOAP/Gertie Marx Education and Research Grant where we have 8 interesting applications this year. With the assistance of Dr. Robert Gaiser, SOAP created a Young Physician Investigators Award which is a FAER and SOAP co-sponsored 10K award targeted for a fellow or for an up to a 2 year post-fellowship graduate. The award will be implemented this year.

With respect to international outreach, SOAP participated in the 2nd Latin American Symposium on Obstetric Anesthesia held at the XXI Colombian Congress of Anesthesiology in Cali, Colombia in June 2015. In the spring of 2016, SOAP will present an educational panel at the annual meeting of the Mexican Society for Obstetrics and Gynecologist Anesthesia (SMAGO). The SOAP International Outreach Committee is currently developing a checklist on minimum standards for neuraxial anesthesia in developing countries. In addition to reduced membership fees for retired, medical student, resident, and fellows, SOAP would like to offer a reduced global membership.

New this year to the SOAP annual meeting in Boston, we will offer electronic posters for abstract presentations, and Spanish language interpretation services will be available for our Latino attendees. Spanish interpretation services will also be available for the 2018 SOAP 50th Annual Meeting in Miami, Florida.

Dr. Barbara Scavone is finalizing the SOAP Policy and Procedure Manual, and in January, 2016, electronic access to Obstetric Anesthesia Digest (OAD) will be included as part of membership. New SOAP committees will include an Ad hoc Immediate Past President committee, and election monitors to collect and count ballots during the SOAP annual business meeting.

Another important SOAP initiative is the continued promotion of our society via social media venues such as Twitter and Facebook and the improvement of our website to make it more smart phone mobile user friendly.

Future SOAP meetings include The Sol Shnider, M.D. Obstetric Anesthesia Meeting at the Grand Hyatt Hotel in San Francisco, California from March 10-13, 2016; the 2016 SOAP 48th Annual Meeting at the Seaport Boston Hotel in Boston, Massachusetts from May 18-22, 2016; and the 1st annual 2016 SOAP Clinical Update in Obstetric Anesthesia held at the Grand Hyatt in Washington, D.C. from November 4-6, 2016. Please update your calendars.

SOAP is engaged, energetic, and at the forefront to serve the needs of our society on all levels (local, regional, national, and global).

Sincerely,

Manny Vallejo, MD, DMD
SOAP President
The Society for Obstetric Anesthesia and Perinatology (SOAP) newsletter continues to grow in its scope and size. Once limited by the financial constraints of printing and mail distribution, today we impose little size and format constraints on the submissions to the newsletter. We continue to distribute important business and meeting information to our members, but also use the newsletter to deliver a growing body of educational and safety content to our members. Clearly, social media and mobile device based communication methods will take a much more prominent method of communication for SOAP in the future.

This newsletter features a preview of the upcoming SOAP meeting in Boston and several important educational articles. They cover changes in the recommendation for Neonatal Resuscitation as well as Maternal Cardiac Arrest by the American Heart Association. Then we have a review of changes in the International Classification of Diseases (ICD) coding, which was conceived as standard diagnostic tool for epidemiology, health management and clinical purposes. This is followed by a clinical update on post-Cesarean section options for analgesia. Another article reviews the current practice patterns of utilizing platelet count information for the planning of obstetric anesthesia care.

We also introduce a problem based learning example as a new feature of this newsletter which may be of interest both for practicing anesthesiologist and anesthesiologists in training. Finally, a review of survey data to better understand the needs of our fellows in Obstetric Anesthesia highlights some of the potential advantages and challenges with the newly introduced national match system and the expanded availability of fellowship training opportunities.

During the last Board of Directors meeting at the Annual Meeting of the American Society of Anesthesiologists, I announced that I would step down from the position of newsletter editor, media committee chair and member of the Board of Directors. I am in my second appointed 3-year term and realize that it is important to provide opportunities for other SOAP members to get involved in the business aspects of SOAP. Taking on this role certainly creates a professional growth opportunity that should be available to SOAP members on a regular basis. This role has kept me connected with my friends and colleagues in SOAP and allowed me to do my part in advancing our mission. I am looking forward to continued growth of communication and media at SOAP.

Sincerely,

*Michael Froelich, MD, MS*
*Birmingham, AL*
The 48th Annual Meeting of the Society for Obstetric Anesthesia and Perinatology will be held May 18th through 22nd, 2016 – That’s only a few months away! We look forward to inviting you to the vibrant city of Boston. Here are a few things you should know about the city, the meeting, and the hotel.

**Boston**

Boston is easy to get to, with an International airport that has more than 40 airlines flying nonstop from over 100 domestic and international destinations. The airport is located just across the inner harbor – and only minutes – from the hotel. You can take a traditional taxi, a water taxi, or the Silver line of the MBTA (the subway). Getting around town is simple – the subway can get you almost anywhere, and there are lots of taxis. The new ‘Greenway’ connects the waterfront with many downtown sites by foot or bike.

Bring the family! Boston is at the epicenter of American history, from the landing of the first colonial settlers at Plymouth Rock, to the founding of the country. Boston’s Freedom Trail will lead you through several historical sites from the Revolutionary war, stopping at Paul Revere’s House, Old North Church, where the famous ‘One if by land’ signal lamp was lit, and many other places. Stroll through the Boston Public Gardens, the first botanical garden in the United States, and a National Historic Landmark. Or the Boston Commons, the oldest public park in the US, dating back to about 1634. If the weather is nice, you can take a swan boat ride through the lagoon in the Boston Gardens. There is a wealth of shopping for anyone’s style, a plethora of restaurants for any culinary taste, and loads of family and children’s activities.

**The Meeting**

The 48th SOAP Annual Meeting will bring a host of experts who will present the cutting edge of obstetric anesthesia and medical science. President-elect John Sullivan has put together one of the most educational meetings ever. The meeting starts with the optional workshops on Wednesday, May 18th. These include an ultrasound workshop by Jose Carvalho and a transthoracic echocardiography workshop by Laurie Chalifoux. The traditional lectures will all be there, including the Fred Hehre by Lawrence Tsen, Ostheimer by Phil Hess, and the What’s New in OB (Neel Shah) and Neonatology (Terri Inder). In addition, a number of cutting edge lectures will ensure the highest educational value for anyone who can attend. New for this year will be the use of e-posters for the presentation of abstracts, which will allow more effective interaction.

The welcome reception will be held on the evening of May 18th, overlooking the inner harbor and the airport in the distance. There’s a fellows’ reception on Thursday, and a banquet on Saturday, May 22nd – don’t miss it! The meeting lectures and exhibits will all be held in the adjacent World Trade Center.

**Organized Tours**

Friday afternoon is free of lectures, so we’ve organized several exciting things to do. We want it to be easy for you to enjoy your time in Boston!

What history is more relevant but the history of Anesthesia? We have a tour that will take you to many of these locations, including the Ether Dome, where William Morton made history on October 16, 1846, when he demonstrated the first public surgery using anesthesia, the Ether Monument in the Public Gardens, and finally Mt. Auburn Cemetery to visit graves of Morton, Jackson, and Fanny Longfellow, and learn about their places in history.

One of the best ways to see the city is the Boston Duck Tours. From the inside of a W.W.II style amphibious landing vehicle you get a great overview of the city, from the many unique neighborhoods to the historic landmarks. You’ll also take a boat ride in the Charles River for a breathtaking view of the Boston and Cambridge skylines.

If ships are your interest, we have the Boston Harbor tour, where you discover the historic and contemporary milestones of Boston’s inner and outer harbors. From the hero tales of the Revolutionary War to the local legends of the sea, you’ll be entertained and enthralled. See how the harbor was transformed to one of the cleanest harbors in the country!

Take a foray into the food traditions and marketplaces of the most authentic “Little Italy” remaining in America. The Boston Food tour will give you an old world experience in the new world – it’s the perfect way to experience what our country’s oldest neighborhood has to offer. This walking tour is like a cooking class on foot: learn about how Italians eat; learn insider cooking tips; gain resources and knowledge on how to identify and buy the very best ingredients.

**The Hotel**
The Seaport Hotel is beautiful, with over 900 recently renovated rooms and a 2000 space garage. The Seaport district is the new hip, bustling area in Boston, with more than 60 bars and restaurants within walking distance. And not too far away is the Union Oyster House, the oldest restaurant in Boston dating from 1715, where Daniel Webster reputedly would consume 6 plates of half-dozen oysters with a tumbler of brandy per plate.

On Your Own

Close to the hotel are several interesting places to visit. The Boston Children’s Museum is within walking distance, and the New England Aquarium is close, too. You can take a short walk on Greenway to Faneuil Hall & Quincy Market with lots of food and shopping. Only a few blocks from the hotel is the Harpoon Brewery, where you can take a tour. Don’t miss shopping on Newbury Street – one of the best in the city! You will receive a long list of things to do and places to go when you register.

After 25 years, Boston is once again hosting SOAP in 2016, we hope to see you all there!
The American Heart Association Updates and Expands Recommendations for Maternal Cardiac Arrest in 2015

Benjamin G. Cobb, MD* and Steven Seth Lipman, MD**
*University of North Carolina, Chapel Hill, NC
**Stanford University, Stanford, CA

Twenty-six years after the publication of the first American Heart Association (AHA) Guidelines on Cardio-pulmonary Resuscitation in 1966, the topic of cardiac arrest in the obstetric patient was first addressed in the 1992 guidelines in “Part IV: Special Resuscitation Situations” (immediately following the section on ‘Lightning Strike’) in a total of four paragraphs and eight references.

Now, twenty-three years after that underwhelming first mention, the topic of maternal cardiac arrest has finally received the attention it deserves from the AHA with the publication in October 2015 of the first AHA Scientific Statement on Cardiac Arrest in Pregnancy (AHA SS). Several SOAP members were among the 18 authors from multiple specialties who contributed to the twenty-eight page statement with one hundred and fifty five references. (An even longer appendix with nearly one hundred and fifty references on etiologies of maternal cardiac arrest and mortality was published online accompanying the AHA SS).

This new document, along with the SOAP Consensus Statement on the Management of Cardiac Arrest in Pregnancy published in Anesthesia & Analgesia in 2014, have re-focused clinicians’ attention on this rare but critical event. Included in the AHA SS is an expanded discussion of both maternal physiology as it pertains to resuscitation and outcomes associated with in-hospital maternal cardiac arrest. Both pre- and post-cardiac arrest planning receive additional attention in the new recommendations as well. In particular, pre-event risk stratification of the critically ill parturient with ‘a validated obstetric early warning score’ is advocated for the first time. (Jeejeebhoy 2015; Vanden Hoek 2010)

In addition to an expansion of prior recommendations, there are also noteworthy changes in the 2015 AHA SS. First, elevated hand placement on the sternum is no longer recommended, consistent with AHA guidelines for the non-pregnant population. Previous recommendations also allowed for the use of left uterine tilt for uterine displacement during cardiac arrest. Tilt is no longer recommended: manual uterine displacement in a supine patient is the preferred positioning to relieve potential aortocaval compression while optimizing the quality of chest compressions as well as airway management. The guidelines for cardiac arrest also advocate for the omission of routine cricoid pressure during laryngoscopy, a preference for epinephrine over vasopressin, deferred fetal assessment during resuscitation, as well as a “bundled” obstetric code blue call to avoid errors and save time. (Jeejeebhoy 2015)

The readership may be interested to know that during the writing of the AHA SS, there was lively debate surrounding the issue of when to perform delivery during arrest in patients with caval compression. The example given was of a patient who had arrested at some unknown time but was not discovered until at least 5 minutes after the arrest. The committee wrestled with whether immediate delivery should occur in such a situation, or whether 4-5 minutes of CPR should be rendered before committing to perimortem cesarean delivery (PMCD).

Fortunately, the guidelines themselves emphasize that better outcomes are associated with earlier deliveries. The recommendations for delivery state that a perimortem cesarean delivery be may performed earlier than 4-5 minutes if caval compression is suspected and initial attempts to restore spontaneous circulation with manual uterine displacement and usual resuscitative maneuvers fall short of the historic 5-minute mark for delivery. (Jeejeebhoy 2015)

The 2015 AHA SS also incorporates a variety of new topics related to maternal cardiac arrest. Perinatal considerations such as the need for post-arrest monitoring of the unborn fetus, as well as newborn resuscitation team dynamics in the event of delivery are discussed. Another new set of recommendations addresses out of hospital maternal cardiac arrest, with an emphasis on appropriate and timely facility disposition to provide a higher level of care. (Jeejeebhoy 2015)

Perhaps most importantly, the SOAP Consensus started – and the AHA SS has continued - to explore macro-view level systems that can be leveraged to optimize patient safety by addressing the logistic complexities and operational challenges associated with maternal cardiac arrest. The

Maternal Cardiac Arrest in 2015 continued on next page
emphasis on both multi-disciplinary reviews of near-miss events as well as training/drills is not understated in the most recent recommendations. Future development of local and national curriculum to enhance maternal resuscitative skills for multi-disciplinary healthcare teams is also recommended.

While each of us should consider reading the 2015 AHA SS on Maternal Cardiac Arrest, we have included the recommendations below in the order they appear to draw our membership’s attention to the recent publication and highlight critical components of resuscitation in the setting of maternal cardiac arrest.

**The Critically Ill Pregnant Patient**

*Early Warning Systems*

1. Pregnant women who become ill should be risk stratified by the use of a validated obstetric early warning score
2. Hospital units with a pregnant woman in their care should ensure that proper pre-event planning has been instituted, including preparation for maternal cardiac arrest and neonatal resuscitation

*Unstable Pregnant Patient*

1. The patient should be placed in a full left lateral decubitus position to relieve aortocaval compression
2. Administration of 100% oxygen by face mask to treat or prevent hypoxemia is recommended
3. Intravenous access should be established above the diaphragm to ensure that the intravenously administered therapy is not obstructed by the gravid uterus
4. Precipitating factors should be investigated and treated

*Cardiac Arrest Management*

*Compressions*

1. Chest compressions should be performed at a rate of at least 100 per minute at a depth of at least 2 inches (5 cm), allowing full recoil before the next compression, with minimal interruptions, and at a compression-ventilation ratio of 30:2
2. Interruptions in chest compressions should be minimized and limited to 10 seconds except for specific interventions such as insertion of an advanced airway or use of the defibrillator
3. The patient should be placed supine for chest compressions
4. There is no literature examining the use of mechanical chest compressions in pregnancy, and this is not advised at this time.

*Left Uterine Displacement*

1. Continuous manual LUD should be performed on all pregnant women who are in cardiac arrest in which the uterus is palpated at or above the umbilicus to relieve aortocaval compression during resuscitation
2. If the uterus is difficult to assess (eg, in the morbidly obese), attempts should be made to perform manual LUD if technically feasible

**Hand Placement for Compressions**

1. The rescuer should place the heel of 1 hand on the center (middle) of the victim’s chest (the lower half of the sternum) and the heel of the other hand on top of the first so that the hands overlap and are parallel

**Location of Perimortem Cesarean Delivery**

1. Because an immediate cesarean delivery may be the best way to optimize the condition of the mother and fetus (see section on “PMCD”), this operation should optimally occur at the site of the arrest. The guidelines suggest that a pregnant patient with in-hospital cardiac arrest should not be transported for cesarean delivery. Management should occur at the site of the arrest. Transport to a facility that can perform a cesarean delivery may be required when indicated (eg, for out-of-hospital cardiac arrest or cardiac arrest that occurs in a hospital not capable of cesarean delivery).

**Defibrillation**

1. The same currently recommended defibrillation protocol should be used in the pregnant patient as in the nonpregnant patient. There is no modification of the recommended application of electric shock during pregnancy
2. The patient should be defibrillated with biphasic shock energy of 120 to 200 J with subsequent escalation of energy output if the first shock is not effective and the device allows this option.
3. Compressions should be resumed immediately following the delivery of the defibrillation shock.
4. For in-hospital settings where staff have no ECG rhythm recognition skills or where defibrillators are used infrequently such as in an obstetric unit, the use of an automated external defibrillator may be considered.
5. Anterolateral defibrillator pad placement is recommended as a reasonable default. The lateral pad/paddle should be placed under the breast tissue, an important consideration in the pregnant patient.
6. The use of adhesive shock electrodes is recommended to allow consistent electrode placement.

**BLS (Actions Are Simultaneous, Not Sequential)**

1. Rapid notification should be provided to the maternal cardiac arrest response team
2. The time when pulselessness was confirmed should be documented
3. High-quality CPR should be paired with uterine displacement, and a firm backboard should be used
4. Rapid automated defibrillation should be provided whenever it is indicated as appropriate by rhythm analysis
Maternal Cardiac Arrest in 2015 continued from previous page

5. Appropriate BLS airway management should be initiated
   a. A member of the first responder team should perform
      bag-mask ventilation with 100% oxygen flowing to
      the bag at a rate of at least 15 L/min
   b. Two-handed bag-mask ventilation is preferred
6. Hospitals need to establish first-responder roles that satisfy
   all of the requirements for BLS, including modifications
   recommended during pregnancy. A minimum of 4 staff
   members should respond for BLS resuscitation of the
   pregnant patient. All hospital staff should be able to fulfill
   first-responder roles.

ACLS
1. There should be a single call to notify all members of the
   maternal cardiac arrest team to ensure that specialized
   equipment is brought to the scene without delay
2. The maternal cardiac arrest team would ideally be
   composed of the following:
   a. An adult resuscitation team (potentially composed
      of critical care physicians and nurses, and/or emergency
      physicians and nurses, and/ or internal medicine
      physicians and nurses, or other service lines such as
      general surgery and trauma, with respiratory therapy
      or equivalent [ie, nurse or physician] and pharmacy
      representatives according to institutional policy, etc)
   b. Obstetrics: 1 obstetric nurse, 1 obstetrician
   c. Anesthesia care providers: obstetric anesthesiologist
      if available or staff anesthesiologist; certified
      anesthesiologist assistant or certified nurse anesthetist
      if available
   d. Neonatology team: 1 nurse, 1 physician, 1 neonatal
      respiratory therapist or equivalent (ie, nurse or
      physician)
   e. In centers without obstetric/neonatology services,
      it is suggested that the cardiac arrest committee and
      hospital emergency services discuss contingency
      plans in the event of maternal cardiac arrest.
3. Leadership during a maternal cardiac arrest is complicated,
   given the multiple teams involved. Leadership will
   depend on where the arrest occurs and may be specific to
   institutional practices. In general, there should be a team
   leader for adult resuscitation, a team leader for obstetric
   care, and a team leader for neonatal/fetal care. One approach
   to deal with multiple subspecialties is for the usual cardiac
   arrest team leader to delegate leadership for obstetric care,
   fetal/neonatal care, and airway/ventilatory management.
   All team leaders must communicate effectively together to
   make decisions about code management

Airway & Breathing
1. Hypoxemia should always be considered as a cause of
   cardiac arrest. Oxygen reserves are lower and the metabolic
   demands are higher in the pregnant patient compared with
   the nonpregnant patient; thus, early ventilatory support
   may be necessary.
2. Endotracheal intubation should be performed by an
   experienced laryngoscopist
   a. Starting with an ETT with a 6.0- to 7.0-mm inner
      diameter is recommended
   b. Optimally no more than 2 laryngoscopy attempts
      should be made
   c. Supraglottic airway placement is the preferred rescue
      strategy for failed intubation
   d. If attempts at airway control fail and mask ventilation
      is not possible, current guidelines for emergency
      invasive airway access should be followed (call for
      help, obtain equipment).
3. Prolonged intubation attempts should be avoided to
   prevent deoxygenation, prolonged interruption in chest
   compressions, airway trauma, and bleeding
4. Cricoid pressure is not routinely recommended
5. Continuous waveform capnography, in addition to clinical
   assessment, is recommended as the most reliable method
   of confirming and monitoring correct placement of the
   ETT and is reasonable to consider in intubated patients
   to monitor CPR quality, to optimize chest compressions,
   and to detect return of spontaneous circulation (ROSC).
   Findings consistent with adequate chest compressions or
   ROSC include a rising end-tidal CO2 level or levels >10
   mm Hg
6. Interruptions in chest compressions should be minimized
   during advanced airway placement

Arrhythmia-Specific Therapy
1. For refractory (shock-resistant) ventricular fibrillation and
   tachycardia, amiodarone 300 mg rapid infusion should be
   administered with 150-mg doses repeated as needed
2. Medication doses do not require alteration to accommodate
   the physiological changes of pregnancy. Although there
   are changes in the volume of distribution and clearance of
   medication during pregnancy, there are very few data to guide
   changes in current recommendations
3. In the setting of cardiac arrest, no medication should be
   withheld because of concerns about fetal teratogenicity
4. Physiological changes in pregnancy may affect the
   pharmacology of medications, but there is no scientific
   evidence to guide a change in current recommendations.
   Therefore, the usual drugs and doses are recommended
   during ACLS

Other Drugs Used During ACLS
1. Administering 1 mg epinephrine IV/IO every 3 to 5 minutes
   during adult cardiac arrest should be considered. In view
   of the sustained vasoconstriction effects of vasopressin
   on the uterus and because both agents are considered

Maternal Cardiac Arrest in 2015 continued on next page

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- equivalent, epinephrine should be the preferred agent.

2. It is recommended that current ACLS drugs at recommended doses be used without modifications.

Fetal Assessment During Cardiac Arrest

1. Fetal assessment should not be performed during resuscitation.

2. Fetal monitors should be removed or detached as soon as possible to facilitate PMCD without delay or hindrance.

Delivery

PMCD Technique

1. During cardiac arrest, if the pregnant woman (with a fundus height at or above the umbilicus) has not achieved ROSC with usual resuscitation measures with manual uterine displacement, it is advisable to prepare to evacuate the uterus while resuscitation continues.

2. Decisions on the optimal timing of a PMCD for both the infant and mother are complex and require consideration of factors such as the cause of the arrest, maternal pathology and cardiac function, fetal gestational age, and resources (i.e., may be delayed until qualified staff is available to perform this procedure). Shorter arrest-to-delivery time is associated with better outcome.

3. PMCD should be strongly considered for every mother in whom ROSC has not been achieved after ≈4 minutes of resuscitative efforts.

4. If maternal viability is not possible (through either fatal injury or prolonged pulselessness), the procedure should be started immediately; the team does not have to wait to begin the PMCD.

5. When PMCD is performed, the following are recommended:
   a. The woman should not be transported to an operating room for PMCD during the management of an in-hospital maternal cardiac arrest; the PMCD should be performed in situ where the arrest occurred.
   b. The team should not wait for surgical equipment to begin the procedure; only a scalpel is required.
   c. The team should not spend time on lengthy anti-septic procedures. Either a very abbreviated antiseptic pour should be performed, or the step should be eliminated entirely.
   d. Continuous manual LUD should be performed throughout the PMCD until the fetus is delivered. Care should be taken to avoid injury to the rescuer performing the manual LUD during PMCD.

6. If the uterus is difficult to assess (e.g., in the morbidly obese), then determining the size of the uterus may prove difficult. In this situation, PMCD should be considered at the discretion of the obstetrician by using his or her best assessment of the uterus. In these patients, bedside ultrasound may help guide decision making.

Vaginal Delivery During Maternal Cardiac Arrest

1. Assisted vaginal delivery should be considered when the cervix is dilated and the fetal head is at an appropriately low station.

Neonatal Resuscitation Considerations

Neonatal Resuscitation Team

1. The neonatal resuscitation team should be notified of the impending delivery and its circumstances as early as feasible to allow maximum preparatory time.

2. The following critical information should be provided to the neonatal resuscitation team leader: gestational age, number of fetuses, and mode of delivery.

3. In the event of multiple pregnancies, it is recommended that each fetus be resuscitated by a separate resuscitation team.

EMS Considerations

1. If resources are available, EMS response to a maternal cardiac arrest should include the appropriate complement of staff to ensure that BLS and ACLS actions can be performed, including chest compressions, LUD, defibrillation when indicated, and management of the difficult airway.

2. If available, transport should be directed toward a center that is prepared to perform PMCD, but transport should not be prolonged by >10 minutes to reach a center with more capabilities.

3. EMS and the receiving emergency department must establish optimal communication and an action plan for the transport of a maternal cardiac arrest patient. The emergency department should be able to rapidly mobilize the maternal cardiac arrest team, and specialized equipment should be available from the time the patient arrives in the emergency department.

Point-of-Care Instruments

1. Institutions should create point-of-care checklists to help guide and support critical interventions during obstetric crises.

Immediate Postarrest Care

1. If the patient is still pregnant, she should be placed in the full left lateral decubitus position, provided that this does not interfere with additional management issues such as monitoring, airway control, and intravenous access. If the patient is not in full left lateral tilt, manual LUD should be maintained continuously.

2. The patient should be transferred to the ICU unless an operation is required.

3. Optimal pre-event planning should be ensured as discussed above.

4. Multidisciplinary care must continue.

Maternal Cardiac Arrest in 2015 continued on next page
5. The cause of the arrest should continue to be considered and treated accordingly.

**Targeted Temperature Management/Therapeutic Hypothermia**

1. Targeted temperature management should be considered in pregnancy on an individual basis.
2. If used in pregnancy, targeted temperature management should follow the same current protocol as for the nonpregnant patient.
3. Fetal monitoring should be performed throughout targeted temperature management.

**Assessment of the Newborn**

*Fetal Assessment (If Undelivered)*

1. Postarrest assessment of the fetus should include continuous fetal heart rate monitoring.
2. Signs of nonreassuring fetal status should prompt a thorough maternal and fetal reassessment.
3. Delivery could be considered if signs of nonreassuring fetal status occur.

**Medical-Legal Considerations**

1. All cases of cardiac arrest and severe maternal emergencies should be reviewed
2. Identified deficiencies should be corrected.

**Knowledge Translation Strategy**

1. All stakeholders/specialties involved in maternal resuscitation should form maternal cardiac arrest committees within each institution to ensure guideline implementation, training, and institution of mock code drills.

**Maternal Resuscitation Training**

1. Periodic multidisciplinary drills may help institutions optimize safety systems.
2. Specific courses on maternal resuscitation should be available to staff and if not available, access should be provided outside the local institution.
3. The future goal should be to have national and international programs in maternal resuscitation.

**Future Considerations**

1. A central registry of cases of maternal near miss and cardiac arrest with documentation of both process and outcome should be established.
2. A standardized training course in maternal resuscitation should be developed

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**References**

In October, the American Heart Association released a guidelines update for Neonatal Resuscitation. These guidelines apply to the newly born infant transitioning from intrauterine to extrauterine life, and are also applicable to infants in their first weeks of life. Anticipating the need for neonatal resuscitation is very important and every birth should be attended by one provider not involved in the birth itself and also proficient in the initial steps of neonatal resuscitation and positive pressure ventilation (PPV). Furthermore, each institution should have a procedure in place to rapidly mobilize a team with complete resuscitation skills for any birth. Below, find an overview of the major updates.

**Delayed Cord Clamping:**
Until recently, immediate cord clamping and stabilization of the neonate was common practice; however, emerging evidence suggests delayed cord clamping (DCC) may be beneficial for infants not requiring resuscitation at birth. Immediately after birth, if the infant is breathing and crying, cord clamping can be delayed 30 seconds or longer for both term and preterm neonates; however, if the infant is not breathing or crying, cord clamping should occur immediately and resuscitation should commence. Identifying those infants requiring resuscitation can be done by answering the following three questions:
- Term gestation?
- Good tone?
- Breathing or crying?

If the answer is yes to all three, the infant may be dried and placed with the mother with careful observation of breathing, color, and activity. If the answer to any of these questions is no, initial stabilization steps should take place (maintain normothermia, dry, stimulate) and resuscitative measures as required (ventilate, oxygenate, chest compression, epinephrine).

**Maintenance of Normothermia:**
Normothermia (36.5 – 37.5) should be maintained after birth and throughout stabilization, and admission temperature should be recorded as a predictor of outcomes as well as a quality indicator. Radiant warmers, increased room temperature, thermal mattresses and the use of warm, humidified air may all be considered to prevent hypothermia.

**Airway Management Changes – Bulb Suction, PPV, Meconium:**
For all neonates, timely initiation of ventilation is considered the most important step to a successful resuscitation. When amniotic fluid is clear, clearing the airway by bulb suction or suction catheter should now only be considered if the airway is obstructed or PPV is required. When meconium is present, if the infant is vigorous with good respiratory effort and tone, the infant may stay with the mother. However, if the infant has poor tone or respiratory effort, initial steps of resuscitation should commence. Routine intubation for tracheal suctioning in this setting is no longer recommended and instead, emphasis should be placed on initiating PPV within the first minute of life for the nonvigorous infant with poor respiratory effort. If the airway is obstructed, tracheal intubation and suction of the airway may be indicated.

PPV can be delivered using a flow-inflating bag, self-inflating bag, or T-piece resuscitator. For the neonate requiring PPV, there is no data to support the use of sustained inflation greater than 5 seconds duration in the transitioning neonate. The use of PEEP of approximately 5 is still suggested with PPV, which may require a PEEP valve for self-inflating bags. For term infants, PPV should be initiated with air (21% oxygen) and titrated to maintain oxygen saturations equal to that of a term infant born at sea level. Resuscitation of preterm infants less than 35 weeks should be initiated with low oxygen between 21 and 30%; initiating resuscitation with high oxygen (65% or greater) is not recommended; however, if chest compressions are indicated, 100% oxygen should be used, but weaned down as soon as the heart rate recovers.

**Monitoring – ECG and Pulse Oximetry:**
Progressing to positive pressure ventilation or supplementary oxygen is determined by heart rate and respirations, with PPV initiated if the heart rate is less than 100 bpm. Historically, clinical assessment of heart rate has been done by pulse palpation or auscultation of the precordium; however, both of these techniques have been shown to be unreliable, and pulse oximetry routinely underestimates actual heart rate. Therefore, during resuscitation, a 3-lead ECG in conjunction with pulse oximetry is recommended for evaluation of heart rate and oxygenation. Note that institutions may need to purchase additional equipment in order to provide ECG monitoring capability at every birthing location. Pulse oximetry should continue on all infants requiring resuscitation, PPV, or when central cyanosis persists.

2015 AHA Guidelines continued on next page
Figure 1. Neonatal resuscitation algorithm – 2015 Update

Neonatal Resuscitation Algorithm—2015 Update

- Antenatal counseling
  - Team briefing and equipment check

  Birth

  Term gestation? Good tone? Breathing or crying?
  - Yes
  - Infant stays with mother for routine care: warm and maintain normal temperature, position airway, clear secretions if needed, dry. Ongoing evaluation
  - No
  - Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate

  1 minute

  Apnea or gasping? HR below 100/min?
  - Yes
  - PPV
    - SpO₂ monitor
    - Consider ECG monitor
  - No
  - Labored breathing or persistent cyanosis?
    - Yes
    - Position and clear airway
      - SpO₂ monitor
      - Supplementary O₂ as needed
      - Consider CPAP
    - No
    - PPV
      - SpO₂ monitor
      - Consider ECG monitor

  HR below 100/min?
  - Yes
  - Check chest movement
    - Ventilation corrective steps if needed
    - ETT or laryngeal mask if needed
  - No
  - HR below 60/min?
    - Yes
    - Intubate if not already done
      - Chest compressions
      - Coordinate with PPV
      - 100% O₂
      - ECG monitor
      - Consider emergency UVC
    - No
    - HR below 60/min?
      - Yes
      - IV epinephrine
        - If HR persistently below 60/min
        - Consider hypovolemia
        - Consider pneumothorax
      - No

Targeted Preductal SpO₂ After Birth

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>SpO₂ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 min</td>
<td>60%-65%</td>
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<tr>
<td>2 min</td>
<td>65%-70%</td>
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<td>3 min</td>
<td>70%-75%</td>
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<tr>
<td>4 min</td>
<td>75%-80%</td>
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<tr>
<td>5 min</td>
<td>80%-85%</td>
</tr>
<tr>
<td>10 min</td>
<td>85%-95%</td>
</tr>
</tbody>
</table>


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ICD-10 Obstetric Anesthesiology: What You Need to Know

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Cedars-Sinai Medical Center
Los Angeles, CA

Whimper or Boom? Still too early to tell. After years of delayed implementation, ICD-10 (International Classification of Diseases) became mandatory for use in the United States October 1, 2015. While ICD-10 was created in 1990, and first used by the World Health Organization members in 1994, most countries around the world have been using ICD-10 for many years. The USA has been using this version for mortality reporting since 1999.

So what’s all the fuss? The number of codes in the USA (ICD-10-CM) has exploded, from about 12,000 to 69,000, more then any human can memorize. The actual code reported has changed from a 5-digit code (ICD-9 format) to a 7-digit code. Not to worry – there is a system to the apparent madness. The first 3 digits tell the category, the second 3 code for the etiology, anatomic site, and severity of disease, and the 7th digit is an extension, providing additional information, if needed. The intent is to use coding to follow population health, trauma and epidemiology. New required information in ICD-10 is laterality, (left, right, bilateral, unspecified), which by itself adds about 25,000 variations in coding. The highest complexity award goes to orthopedics, which also describes the multiple types of fractures for each bone. Fortunately, Obstetric Anesthesia coding is much simpler.

The other major category required in ICD-10 is the type of encounter. Initial encounter means the problem is being actively treated; in Anesthesiology that usually means the patient is having surgery or a procedure. Note that the initial office visit pre-operatively is NOT the initial treatment, but the surgery/procedure is the ‘initial treatment’. The next phase is the subsequent encounter, intended as the recovery phase of the illness/treatment. The third and last type of encounter is sequela, or complications. Complications can be complications of the treatment; there are additional codes for complications from anesthesia.

The physician anesthesiologist (or CRNA or CAA) needs to document the patients condition(s), reasons for surgery, traumatic (rare in OB), laterality (uncommon in OB), complications and encounter type. The professional coder will translate what you document into the correct ICD-10 code, but can ONLY code from what’s in the medical record. The best places for you to document are in your preoperative assessment, anesthesia record, post-op note, with the diagnosis reflecting the correct post-op diagnosis, not the pre-op diagnosis. Best to copy the surgeon’s ICD-10 coding if you can. The easier you make it for your coder to find the required information, the less time they spend (hard cost of billing), the more accurate (real cost of denials/claims reprocessing), and delays in collections (accounts receivable).

Specific to obstetric anesthesia, the first 3 digits will start with an O, indicating Obstetric, or a P, indicating Newborn Pediatric (see tables 1.a and 1.b). The other major classification categories needed for coding and should be included and clear in your preoperative assessment note are Timing (pregnancy, childbirth, puerperium), and Trimester (1st, 2nd, 3rd).

Two of the most common events coded for in obstetric anesthesia include term, uncomplicated vaginal delivery (O80.xxx.x) and term cesarean, no medical indication (O82.xxx.x). Preterm labor and delivery must specify when the preterm labor occurred and when the actual delivery occurred – e.g. preterm labor 2nd trimester with preterm delivery 3rd trimester (O60.13x.x). These examples are not intended for your memorization but to reinforce the type of information you need to include in your notes for proper coding. Incorrect coding = claims denial.

Complications of Anesthesia may occur from: general anesthesia, regional anesthesia, local anesthetic injection, sedation or analgesics – obviously some of these may not even involve an anesthesiologist, they are intended for big data epidemiology. Complications of anesthesia affecting the Newborn (P01.0) includes: affected by maternal anesthesia and analgesia during pregnancy, labor and delivery, or affected by maternal opiates and tranquilizers during labor and delivery. Complications of Obstetric anesthesia are coded by Pregnancy (O29), Childbirth (O74) or Puerperium (O94). Events beyond the 6-week puerperium are coded as non-obstetric. Complications of anesthesia are defined in ICD-10 as: pulmonary, cardiac, CNS, toxic reaction to local anesthetic, spinal or epidural Post-Dural puncture headache, other complication of spinal/epidural, failure or difficult intubation for anesthesia, other complications of anesthesia and unspecified complication of anesthesia.

So, what other medical information do you need to add to your medical record to help ensure correct coding? Take a deep breath and relax. Most of the list makes sense, and we have to do the others anyway. Be sure add the additional information required that’s new in ICD-10: Trimester (can be Gestational age), if multiple birth specify which baby had the problem (e.g. IUGR twin B), breech (list type - frank,

ICD-10 Obstetric Anesthesiology continued on next page
footling, complete), Diabetes (type, trimester occurred), Previa (with or without hemorrhage), preeclampsia (mild, severe, HELLP), Gestational hypertension (trimester first occurred), cesarean (no medical indication ‘elective’, prior uterine scar – myomectomy/repeat or OB medical indication for cesarean), major repairs (3rd or 4th degree laceration), laterality of complication, forceps/vacuum use, laterality of additional procedure (e.g. right ovarian cyst).

Medical information that is now required for ALL patients (obstetric and non-obstetric) that you need to include involves alcohol use and especially tobacco use OR exposure to tobacco smoke for any pulmonary condition (e.g. asthma, pneumonia), specifics of respiratory failure (hypoxia, hypercarbia) and hypertension (list heart or kidney involvement).

The good news: in a joint letter by CMS/AMA dated July 6, 2015, Medicare (does not apply to Medicaid or commercial carriers) will allow 1 year ‘flexibility’ on ICD-10 coding. Meaning they won’t issue a denial solely on ICD-10 coding if the code is mostly correct (within the same family of codes – meaning just got the last digit(s) incorrect).

With some education and a little more documentation details, your ICD-10 implementation should go relatively well. Sounds a little like Back to the Future.

**Resources:**
Second best resource – [www.ASAHQ.org](http://www.ASAHQ.org). View the recorded webinar on ICD-10 by Marc Leib MD JD ASA Chair Committee on Economics and Sharon Merrick, ASA director of Payment and practice management

**Disclaimer:**
This is an educational article written by a physician, with no expertise or degrees in coding. Consult your own attorney, coder, practice manager!

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**Table 1a. Obstetric Anesthesiology Complications**

<table>
<thead>
<tr>
<th>ICD-10 Obstetric Anesthesiology Complications of Anesthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>O74 Complications of Anesthesia during Childbirth (labor and delivery)</td>
</tr>
<tr>
<td>O74.0 Pulmonary - Aspiration</td>
</tr>
<tr>
<td>O74.1 Other pulmonary</td>
</tr>
<tr>
<td>O74.2 Cardiac</td>
</tr>
<tr>
<td>O74.3 CNS</td>
</tr>
<tr>
<td>O74.4 Toxic Reaction Local Anesthetic</td>
</tr>
<tr>
<td>O74.5 Spinal or Epidural PDPH</td>
</tr>
<tr>
<td>O74.6 Other Complication Spinal/Epidural</td>
</tr>
<tr>
<td>O74.7 Failed or difficult Intubation for anesthesia</td>
</tr>
<tr>
<td>O74.8 Other complications anesthesia</td>
</tr>
<tr>
<td>O74.9 Unspecified complication of anesthesia</td>
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</table>

**Table 1b. Obstetric Anesthesiology Complications**

<table>
<thead>
<tr>
<th>Timing</th>
<th>ICD-10 base code</th>
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<tbody>
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<td>Pregnancy</td>
<td>O29.XXX.X</td>
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<td>Childbirth</td>
<td>O74.xxx.x</td>
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<td>Puerperium</td>
<td>O89.xxx.x</td>
</tr>
<tr>
<td>Newborn</td>
<td>P04.0xx.x</td>
</tr>
</tbody>
</table>
Post Cesarean Delivery Pain Management Options

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**University of Kansas Medical Center, Kansas City, KS

Cesarean delivery (CD) is the most common surgical procedure performed in the United States and accounts for more than 30% of all births. This rate has doubled since the mid-1990s due to varied maternal, fetal, medico-legal, and social factors. When pregnant mothers were asked about expectations during delivery, pain during and after cesarean was at the top of their list of concerns. The expectation of pain, the pain experience, and genetic susceptibility to pain are closely connected. Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. A review of 15 studies of chronic pain among adults found that prevalence estimates ranged from 2% to 40%, with a median of 15%, and women tend to experience pain more than men. Severe or persistent persistent pain can limit one’s functional status and adversely impacts quality of life. Consequently, pain can be costly not only to the individual but also to the nation because it requires medical treatment, complicates treatment for other medical conditions, and can hinder people’s ability to work and function in society. Estimates for the national cost of pain approach $600 billion a year.

Acute postoperative pain occurs with cesarean delivery, and the literature suggests that chronic postoperative pain may develop as well. Acute pain is particularly worrisome since it has been associated with and a possible causative factor for chronic pain. Retrospective studies have shown a 10–15% incidence of chronic pain following CD. This newsletter article is to explain and help the reader to evaluate options for prevention or treatment of acute pain post cesarean delivery, which may help prevent the development of chronic pain. By choosing the options for pain management, you can design protocols based for your institution, taking into account your individual practice constraints. Multimodal therapy utilizing narcotic and non-narcotic options is superior to a single therapy approach once used.

Options for post-CD analgesia include neuraxial analgesia and anesthesia, peripheral nerve blockade, and parenteral, oral and rectally administered drug options. Best practices utilize a combination of neuraxial and non-opioid adjuncts with additional systemic opioids/non-opioid adjuncts and rescue therapies. About 95% of cesarean deliveries in the United States are performed using neuraxial anesthetic techniques, with general anesthesia reserved for those situations in which a neuraxial blockade is not possible because of time or contraindicated. Neuraxial techniques include spinal, epidural, or combined spinal-epidural anesthesia and are selected based on evaluating maternal, fetal and surgical factors. A recent Cochrane review found no differences in intraoperative anesthesia, need for intraoperative conversion to general anesthesia, postoperative pain relief, or need for neonatal interventions between spinal and epidural anesthesia. Thus, the type of anesthesia may be tailored to the individual patient’s situation. Spinal anesthesia with local anesthetic, along with short and long-acting neuraxial opioids is the most common choice for CD. The American Society of Anesthesiologist’s Practice Guidelines for Obstetric Anesthesia recommends the use of neuraxial opioids for postoperative analgesia. Generally, a combination of lipophilic and hydrophilic opioids are used to provide intraoperative and prolonged postoperative analgesia. The duration of opioid action is dependent on both the route of administration (spinal vs. epidural) and the lipid solubility of the drug. Fentanyl and sufentanil are highly lipid-soluble opioids and have a rapid onset of action and relative short duration. Both effects are due to their lipophilicity, enabling them the ability to cross lipid membranes into and out of the spinal cord. Morphine, a hydrophilic opioid, takes longer to cross membranes like the dura, and thus has a slower onset of action (epidural administration), and has a harder time leaving the CSF compartment, providing a longer duration of analgesia. Benefits of neuraxial opioids, such as morphine, compared to intravenous administration, include better postoperative analgesia, increased functional ability, earlier ambulation and earlier return of bowel function. Epidural anesthesia/analgesia in combination with general anesthesia has shown many benefits in a wide variety of cases, including decreased risk of cardiovascular, pulmonary and gastrointestinal endpoints including arrhythmias, pneumonia, atelectasis, respiratory depression, ileus, and postoperative nausea and vomiting.

Neuraxial opioids increase the density as well as the duration of spinal and epidural blocks for CD. Spinal opioids reduced the need for intra-operative supplementation and prolonged the duration of effective analgesia prolonged. Epidural sufentanil has a faster onset of action and slightly longer duration of action than epidural fentanyl due to its greater lipophilicity and mu-receptor binding capacity.

Some anesthesiologists utilize epidural infusions postoperatively analgesia for 24-48 hours to provide pain relief, either with or without opioids added to the dilute local anesthetic solution. Use of a plain dilute local anesthetic solution might provide insufficient pain relief while higher concentrations would increase the incidence of motor blockade post operatively. A recent study found comparable pain relief post-CD at rest and
movement using epidural infusions of levobupivacaine 0.1% vs. 0.06% with fentanyl 2 mcg/ml and similar patient satisfaction in both groups.\textsuperscript{14}

Single dose neuraxially administered morphine is still considered the standard for comparisons in treating post-CD pain. Given its hydrophilic properties, intrathecal morphine provides the longest duration of post CD analgesia which ranging from 14 to 36 hours. In addition, the time to first request for supplemental analgesia has a median duration of 27 hours.\textsuperscript{15} Lipophilic opioids such as fentanyl utilized as an adjunct to intrathecal local anesthetic results in a time to first request for supplemental analgesia at 4 hours with a range of 2-13 hours. Delayed respiratory depression is a rare side effect and most institutions utilize a morphine protocol watching for signs of depression (sedation, respiratory rate). Respiratory depression is rare, with no events noted in 5000 cases even in a population with a high incidence of obesity and thus presumably at risk for Obstructive Sleep Apnea.\textsuperscript{16} Extended-release morphine encapsulated in lipid foam may extend pain relief into day 2 postoperatively. However, the lipofoam may become unstable in the presence of local anesthetic and its safety following epidural analgesia during labor is not yet known.\textsuperscript{17}

Various intrathecal morphine doses have been studied and range from 0 to 0.5 mg in a single dose. Recent literature suggests that doses greater than 0.1 mg of intrathecal morphine does not significantly improve analgesia but does increase opioid-related side effects.\textsuperscript{18} If epidural anesthesia is utilized for CD, epidural morphine also provides excellent postoperative analgesia. It is well established that epidural morphine provides greater postoperative analgesia compared to comparable intravenous or intramuscularly delivered morphine doses.\textsuperscript{19}

Some institutions due to preservative-free morphine shortages or as in the case of Parkland Hospital in Dallas, Texas, do not utilize intrathecal or epidurally administered morphine. What are acceptable opioid alternatives? Hydromorphone is a hydrophilic opioid with a rapid onset and long duration of action similar to morphine, with a similar side effect profile. It is important to remember that hydromorphone is 7 times more potent than morphine and currently no randomized, double-blind study exist comparing intrathecal morphine and hydromorphone in cesarean delivery.\textsuperscript{20}

Some may argue that the neuraxial combination of short and long-acting opioids, while successful in managing pain, increase the rate of problematic side effects such as nausea, vomiting, pruritus, urinary retention and respiratory depression. Alternative medications such as non-opioid neuraxial adjuncts such as alpha-2 agonists are more commonly being used to not only prolong the postoperative analgesia period but to reduce the side effects of opioids mentioned above.\textsuperscript{21}

Clonidine is a $\alpha_2$ adrenergic agonist, and as with lipophilic opioids, it is possible to achieve analgesia from systemic, epidural, or intrathecal administration of clonidine. Clonidine acts at alpha-2 receptors in the dorsal horn of the spinal cord to exert its antinociceptive effect and provides dose-dependent analgesia.\textsuperscript{22} Since conventional doses of intrathecal clonidine (1 $\mu$g/kg) are associated with side effects like maternal hypotension and sedation, the routine use of intrathecal clonidine is not recommended.\textsuperscript{23}

Intrathecal clonidine dosages range from 30 to 150 $\mu$g in spinal anesthesia, but no ideal dose has yet been found to maximize analgesia and minimize side effects. A recent double blind randomized, dose finding study looked at 102 patients undergoing spinal anesthesia for cesarean and utilized 50 and 75 mcg doses of clonidine. They found that the duration of analgesia is prolonged by the addition of clonidine to the spinal, but the duration is not greatly affected by increasing the dose of clonidine from 50 to 75 $\mu$g. The onset time of motor block was comparable in all groups with no increase in maternal side effects in the 75-mcg group and no difference in neonatal outcome in any group.\textsuperscript{24} Again, it is important to emphasize that the routine use of clonidine is not currently recommended due to frequent hypotension and sedation.\textsuperscript{25}

Intrathecal dexmedetomidine is a highly $\alpha_2$-adrenergic agonist agent that is gaining popularity and has been studied in lower limb surgeries utilizing spinal anesthesia. Mehendru et al. recently published a study comparing the addition of fentanyl, clonidine, or dexmedetomidine to spinal bupivacaine to see duration of spinal blocks. They looked at over 120 patients undergoing lower limb surgery requiring a T8 sensory block. The results of their study showed that supplementation of spinal bupivacaine with 5 mcg dexmedetomidine significantly prolonged both sensory and motor block compared with intrathecal 25 mcg fentanyl and 30 mcg clonidine. Quality of analgesia, as evidenced by a reduced demand of rescue analgesics in 24 hours, significantly improved with use of dexmedetomidine as an adjuvant when compared to groups containing fentanyl and clonidine or bupivacaine alone.\textsuperscript{26} The complementary action of local anesthetics and $\alpha_2$ adrenoreceptor agonists accounts for their profound analgesic properties. The prolongation of the motor block of spinal anesthetics may be the result of binding of $\alpha_2$adrenoreceptor agonists to the motor neurons in the dorsal horn of the spinal cord. It is also important to remember that neuraxial use is considered off-label and toxicity in pregnancy and the postpartum period has not yet been elucidated.

Dexmedetomidine can also be utilized as an intravenous (IV) adjunct to spinal anesthesia. A meta-analysis by Abdallah et al. looked at 7 trials with 300 patients demonstrated that IV dexmedetomidine could prolong the duration of sensory block when administered to patients undergoing spinal anesthesia. In each of the studies, a bolus dose of dexmedetomidine was used that was usually 0.5 mcg/kg over 10-20 minutes followed by a continuous infusion of 0.2-0.5 mcg/kg/hour. They also found that IV dexmedetomidine could prolong the duration of motor block to a lesser extent and delay the time to first analgesic request after spinal anesthesia. These effects may be accompanied by an increased risk of transient reversible bradycardia, easily treated with atropine.\textsuperscript{27}

Neuraxial magnesium is another centrally acting antinociceptive agent used to improve the quality of neuraxial blockade and improve post CD pain. Magnesium sulfate is a non-competitive N-methyl-D-aspartate (NMDA) receptor antagonist that blocks ion channels in a voltage dependent fashion.\textsuperscript{28} Central sensitiza-
tion has an important role in pain perception and is considered to be one of the mechanisms responsible for chronic postoperative pain. NMDA receptor signaling may also be important in determining the duration of acute pain. Therefore, NMDA receptor antagonists may be essential in the prevention and treatment of post-injury pain. In a study utilizing epidural magnesium while using a combined spinal-epidural, 90 women were randomized to receive saline placebo or 500 mg magnesium sulfate along with a standard spinal-epidural dosing regimen. The magnesium patients were found to have better intraoperative conditions (improved analgesia and muscle relaxation) than those who received only bupivacaine and fentanyl. Postoperative analgesia was also prolonged, with a lower incidence of shivering. Unfortunately the safety and correct dosage of neuraxial magnesium has not yet been determined. There is limited information about the safety of administration of neuraxial magnesium. In one report, Goodman described inadvertent administration of a large dose of epidural magnesium without neurological injury, while another report described transient motor block after intrathecal magnesium administration followed by complete resolution without deficit at long term follow up.29 A group in China has combined 500 mg of epidural magnesium with 1.5 mg of morphine and found that the morphine–magnesium combination added to epidural bu-

pivacaine provided better analgesia and satisfaction than either agent alone, as reflected by lower pain scores both at rest and on movement and higher patient satisfaction scores. In addition, the incidence of shivering was lower in the combined group.30 Some would argue that the safety of intrathecal magnesium has not been well established. A Korean study recently added 25 mg of intrathecal MgSO4 to a 0.5% bupivacaine spinal for CD in 72 patients. They found a reduced incidence of intraoperative shivering which was their endpoint and had no evidence of neurotoxicity as well.31

Neuraxial neostigmine, by inhibiting acetylcholinesterase and preventing the breakdown of acetylcholine in the spinal cord interneurons, provides effective analgesia with no motor or sympathetic blockade. Unfortunately when administered intrathecally it causes severe nausea and vomiting and epidurally can cause maternal sedation at high doses. Its safety profile in pregnant patients has certainly not yet been established.32

The use of neuraxial anesthesia for CD pain management with or without the addition of neuraxial opioids has been well es-


tablished. It is important to know what adjuvants are also available for rescue therapy. Nonsteroidal anti-inflammatory drugs (NSAIDs) are excellent and cost-efficient adjuvants for CD. They suppress inflammation by inhibition of the cyclooxygenase (COX) enzyme, which converts arachidonic acid to prostaglan-
dins and thromboxane. NSAIDs also inhibit a variety of chemical mediators (e.g., bradykinin) that are involved in the inflammatory and nociceptive response of acute pain physiology. NSAIDs consistently have been shown to be reducing post CD pain and have an opioid-sparing effect.33

Acetaminophen has been administered orally, rectally and via the intravenous route for post CD pain. The analgesic and antipyretic properties of acetaminophen have been attributed to inhibition of the COX-3 iso-enzyme within the brain and reduction in CNS prostaglandin E2 production.34 Acetaminophen alone has not been shown to be as effective as NSAIDS as rescue or adjunct therapy. The addition of acetaminophen to NSAIDS has failed to show additional analgesic benefit regimen after cesarean delivery except in one study. Munishanker et al. showed a reduction in morphine consumption using a combined NSAID-acetamin-

ophen regimen when compared with acetaminophen alone.35 While acetaminophen does not seem to have much benefit alone, in patients who are not able to receive NSAID postoperatively, acetaminophen may be acceptable adjunct.

Gabapentin is another non-opioid alternative that has been evaluated for post CD pain relief as part of a multimodal approach. Gabapentin, a structural analogue of gamma-aminobutyric acid, has been used as an anticonvulsant and antinociceptive drug. Its main binding site is the voltage-dependent calcium channel. Carvalho et al. had 2 studies looking at the use of preoperative oral gabapentin. The first study did find some benefit from a high 600 mg oral dose, but was associated with significant maternal sedation. The second study comparing a lower 300 mg dose with the larger 600 mg dose (with intrathecal opioids) did not improve post cesarean pain management and maternal satisfaction with either dosage.36

Ketamine is an N-methyl-D-aspartate (NMDA) antagonist that has been used for post cesarean delivery analgesia. Its antino-

ceptive-hypnotic effects are most likely due to the noncompetitive antagonism at the N-methyl-D-aspartate) receptor of the central nervous system.37 Ketamine has an opioid-sparing effect when used in combination with general anesthesia but has not been shown to have such an effect with neuraxial anesthesia. A recent study looked at a small dose of intravenous ketamine prior to induction of general anesthesia for CD and found no significant benefit of preincisional small-dose intravenous ketamine versus placebo on the postoperative pain and analgesic consumption during 2 to 24 hours after surgery.38 Because high dose ketamine is associated with many undesirable side effects, further work is necessary to better define its role during the postpartum period.39

Peripheral nerve blockade seems to be another area of interest for adjuvant therapy. Transversus abdominis plane (TAP) blockade, ilioinguinal nerve blockade, and local anesthetic infiltration have all been attempted for post cesarean delivery analgesia. The TAP block is the most commonly used regional block when comparing these 3 techniques. The TAP block involves injecting local anesthetic within the facial plane between the internal oblique and transversus abdominis muscles. Initially TAP blocks were studied as additions to neuraxial morphine and showed reduced morphine requirements in the first 48 hours post op.40 Subsequent studies failed to reproduce these results. Two recently published large meta-analyses have revealed that while that TAP blocks do not confer incremental analgesic benefit when given in combination with intrathecal morphine, they can be beneficial in the absence of intrathecal opioids as in the case of general anesthesia. The block may also provide some benefit for breakthrough pain after spinal anesthesia with intrathecal morphine.41 And finally, the utilization of systemic opioids in the form of oral

Post Cesarean Delivery Pain continued on next page
medication, intravenous bolus or patient-controlled analgesia (PCA) has long been utilized as reliable adjuncts in a multimodal approach. These techniques are essential in those patients who received general anesthesia, neuraxial analgesia without long-acting opioids, or for those requiring rescue therapy. Multiple studies reveal that patients report greater satisfaction with PCA compared to bolus dosing, as this allows patient autonomy. It is imperative to have a policy and protocol deciding whether or not to incorporate a continuous basal infusion in addition to a continuous PCA. And of course, monitoring vital signs for respiratory depression and sedation are essential. Which narcotic to use is really up to the discretion of your hospital pharmacy. The American College of Obstetricians and Gynecologists recommend against the use of meperidine, because it has been associated with normeperidine neurotoxicity in the newborn. In regards to oral opioids, a 2005 study conducted in New England looked at oral analgesics and compared them to morphine IV PCA therapy. Patients underwent spinal anesthesia with bupivacaine and fentanyl and then were randomized to receive oxycodone-acetaminophen orally or a morphine IV PCA at the completion of CD. For 12 hours after the procedure, 2 tablets of oxycodone-acetaminophen were administered at fixed intervals every 3 hours. After 12 hours, 1 to 2 tablets were permitted every 4 hours as needed for pain, for a maximum of 12 tablets in 24 hours. Patients also received an NSAID every 6 hours for the first 24-hour period. Their results showed that oral analgesia provided superior pain control with less nausea and drowsiness compared to IV PCA. Oral analgesics can be a cost-effective and easily administered adjunct therapy that should be utilized and part of a standard protocol.

Many options exist for providing effective analgesia after cesarean delivery. The key component seems to be the use of a multimodal approach that involves neuraxial opioids along with NSAIDs and an arsenal of adjuvants for unique obstetric anesthesia practices. Providing optimal care with the safety of mother and newborn should be our utmost priority. But as an anesthesia community, it is our right and privilege to manage acute and hopefully prevent chronic pain syndromes. Please see the table below for helpful dosing regimens and options for designing an effective pain management protocol.

**TABLE 1:** Carvalho B. ASA Refresher in Anesthesiology 2014; 42(1):23-30.

<table>
<thead>
<tr>
<th>SETTING</th>
<th>DRUG</th>
<th>DOSE &amp; ROUTE</th>
<th>PRESCRIBING INFO</th>
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</thead>
<tbody>
<tr>
<td>Standard care (at time of surgery)</td>
<td>Neuraxial morphine</td>
<td>Preferred: Intrathecal preservative-free morphine 0.1-0.2 mg or Epidural morphine 3 mg after delivery</td>
<td>With intrathecal hyperbaric bupivacaine 12 mg and fentanyl 10 mcg. With epidural 2% lidocaine 15-25 ml (with bicarbonate and epinephrine) ± fentanyl 50-100 mcg.</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>Ibuprofen 600 mg PO (or ketorolac 15 mg IV if NPO)</td>
<td>Every 6 h for 48-72 h postcesarean delivery</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>Acetaminophen 650 mg PO (or IV if NPO)</td>
<td>Every 6 h for 48-72 h postcesarean delivery</td>
<td></td>
</tr>
<tr>
<td>Oral opioids</td>
<td>Oxycodone 5-10 mg PO</td>
<td>As needed for breakthrough pain: VNPS ≤ 4/10: 5 mg VNPS &gt; 4/10: 10 mg</td>
<td></td>
</tr>
<tr>
<td>IV opioids</td>
<td>IV morphine, fentanyl or hydromorphone</td>
<td>Intermittent IV boluses or IV patient-controlled analgesia</td>
<td></td>
</tr>
<tr>
<td>Regional anesthesia</td>
<td>Bilateral TAP block</td>
<td>0.25-0.375% Ropivacaine 20-30 ml each side Single-shot ± catheter</td>
<td></td>
</tr>
<tr>
<td>Oral adjuvants</td>
<td>Gabapentin</td>
<td>600 mg PO single-dose. (300 mg PO every 8 h for ongoing severe pain)</td>
<td></td>
</tr>
</tbody>
</table>

Post Cesarean Delivery Pain continued on next page
Post Cesarean Delivery Pain continued from previous page


43. Abdallah FW, Halpern SH, Margarido CB. Transversus abdominis plane block for postoperative analgesia after Cesarean delivery performed under spinal anesthesia? A


19
Welcome to the New Job!

Grant C. Lynde, MD, MBA
Emory University
Atlanta, GA

“Welcome to your first day on the job as Division Director of OB! We sure are glad you came here. I’m certain you’re going to find many things here that, well, aren’t quite up to standard. But the people are great and I’m sure you’re going to have a good time trying to make it all work out!”

Whether starting out in a new job after residency or fellowship, or being promoted into a position with greater responsibility, one can’t help but feel both incredibly excited and a sense of feeling overwhelmed. Where should you begin when suddenly everyone comes up to you with “just a little suggestion?” Perhaps you were promoted because of a recognition that the L&D unit has been ignored for far too long and that there are some serious lapses in billing or patient safety. Or maybe you were the most junior person in the group and “someone’s gotta do it!” I hope to begin a series of articles on various challenges faced by many of us who are new to leadership and provide a framework to help you navigate your new job.

Creating Changes

All new leaders come into a new job with a bucket list of items they want to change. How do you know where to begin? Do you tackle the big problems facing the unit or are your efforts better suited towards accomplishing the “easy wins?”

One of the first tasks is to overcome your desire to immediately act. Rather, it’s much more important to listen and observe. During this period of time, try to identify who are the formal and informal power brokers are. While the head nurse carries a title and authority related to her position, it’s equally likely that there will be members of the nursing staff whose opinions carry significant influence over other staff members. Also during this time, it is important to begin to characterize and categorize any change initiatives you may be considering.

One method for determining what change initiatives to tackle first is to place each idea into a grid. On the X axis, rate the level of impact each change will have on your organization. For example, initiating simulations for obstetrical emergencies may have significant impact on your unit’s safety. On the other end of the spectrum, making sure that the staff breakroom is stocked with disposable silverware probably would not have significant impact on your organization’s ability to deliver patient care.

The level of difficulty in accomplishing the task is plotted on the Y axis. The easiest tasks are typically those that either you, or someone you directly control, can perform. On the end of the spectrum, difficult tasks typically involve committee meetings and changes to unit or hospital policy. Difficult tasks also include items that involve cultural change. One frequently cited example of a difficult task involving cultural change is nursing involvement with placement of epidurals. In some facilities, the nursing staff may be immediately present and willing to position the patient. However, in other facilities, the nursing staff may appear ambivalent and unwilling to assist in even finding pulse oximeter cables. In order to improve the process of placing epidurals in a hospital like this, a cultural transformation would probably need to occur.

Once you have an idea of both the degree of impact on your organization and the level of difficulty in accomplishing the task, you would plot the two in a box similar to the one above. Consider the following four examples:

1. Ordering silverware for the breakroom (low impact/minimally difficult)
2. Changing the standard epidural infusion (low impact/moderately difficult)
3. Beginning disaster drills on L&D (large impact, mildly difficult)
4. Improving OR efficiency on L&D (large impact, significant difficulty)

Welcome to the New Job! continued from previous page
Of the four items listed above, starting disaster drills would have significant impact on the organization’s delivery of medical care and would not take significant amounts of effort. It’s something that would improve safety and would build teamwork almost immediately that staff generally enjoy. Additionally, having a “quick win” that has impact has the benefit demonstrating your credibility as a divisional leader.

Typically items that are low impact and are minimally difficult to accomplish wouldn’t be among the first items to tackle. However two circumstances would cause you to address these items early. First, the issue needing addressing may be a significant demoralizer and fixing it may generate the goodwill you will need to tackle other, more challenging, issues. The second time addressing low impact/low difficulty items would be to generate political goodwill when that item may actually be of higher impact or may be significantly more difficult for them to accomplish with their available resources.

While addressing OR efficiency may seem to be a good project to start with it is better to wait and better understand hospital and departmental dynamics because a change this substantial involves many players and requires significant influence to accomplish. Finally, avoid low impact/high effort activities at all cost. These types of activities typically involve high political risk and carry little gain for either you or your department.

A close friend made the mistake of engaging in one of these early on in their job when they attempted to switch local anesthetics used in labor epidural infusions. In this circumstance, they attempted to use a new to market, more expensive, medication that none of the older attendings were familiar. In this instance, my friend lacked the internal support, support from the pharmacy, and even support from the nursing staff who did not want to learn about a new medication. Fortunately, they had a supportive chair who sat them down and taught them the ropes before they got into real trouble.

In conclusion, one’s first days as a leader should be spent listening and observing how staff members interact and perform their jobs. Once you’ve had the chance to understand what the substantive issues are, by categorizing various issues into “high- and low-impact” and by levels of difficulty in accomplishing can you then begin to act. Difficult but minimally impactful activities should be avoided. On the other hand, you will probably find activities that have significant organizational impact that require little effort to create an early win.
Fellowship Training in Obstetric Anesthesiology – Match Results and Future Steps

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In 1960, Bradley Smith (SOAP President, 1970) joined Columbia University as the very first Obstetric Anesthesiology Fellow through the able mentorship of Virginia Apgar. From this beginning, obstetric anesthesia fellowship opportunities have grown dramatically, and are now being offered at almost 50 institutions, principally in the United States (45) and Canada (4).

This dramatic growth resulted from a number of hospitals and institutions of all sizes wanting to provide dedicated obstetrical services; the demand for fellowship-trained obstetric anesthesiologists over the next 20 years is expected to remain high, with the best demand/supply ratio for any subspecialty within anesthesiology (M. Zakowski).

Augmenting the stature of fellowship training in obstetric anesthesia has been the official accreditation status granted by the Accreditation Council for Graduate Medical Education (ACGME) Program in 2012, and this past year, the fellowship was accepted for enrollment in the Specialty Matching Service via the National Residency Matching Program (NRMP) for the first time. Announced on October 14, 2015, “The Match” filled 23 of the available 45 positions.

The number of fellowship positions filled through the Match prompted a few questions on how participation in the Match, and the relative overall interest and value of fellowship training could be improved; these were collated by the SOAP Obstetric Anesthesia Committee into a short survey sent to all SOAP members. A total of 288 of 878 surveys were returned, for a response rate of 33%; among the respondents, 64% had completed a fellowship.

A Closer Look

Below, we consider factors that might influence graduating residents’ interest in fellowship training within Obstetric Anesthesiology.

ACGME Program Accreditation. ACGME accreditation confers credibility and status on a subspecialty fellowship. It standardizes the curriculum, monitors programs, and provides an opportunity to improve content. ACGME accreditation also requires that fellowship participation be full time. To comply with these requirements, fellows have less ability to supplement their income during their fellowship year with arrangements such as working in the General Operating Room one day a week.

- SOAP Member Survey Results: 36% of the 288 respondents did not complete a fellowship. Among these respondents, the most common reason was Limited Perceived Value (56%), followed by Geographical Constraint (31%) and Financial Constraint (21%). (See Figure 1.) Interestingly, the years immediately following ACGME accreditation did not see a change in fellowship applicant numbers.

The Match. The impetus for joining the Match this year was to create a fair process for all participating residents, decreasing pressure on them to sign contracts before exploring all options.

There are 27 accredited and 18 non-accredited Obstetric Anesthesiology fellowship programs in the US. All accredited and 6 unaccredited programs registered for the Match initially, but 3 and 2 ultimately did not participate, respectively, yielding final participation rates of 89% and 33%. As noted above, 23 anesthesiologists were selected through the Match process. A few positions were filled outside the Match before

Matching Results and Future Steps continued on next page
and after Match Day. The final data will be solicited from Program Directors by the SOAP Fellowship Committee.

At the Society of Academic Anesthesiology Associations meeting in November, 2014, representatives from the Pediatric and Cardiothoracic programs presented data from their fellowship matches.

- They both described significant problems with the fellow selection process prior to the Match, stating that “applicants and programs were pitted against each other” and that there were “nontransparent and variable rules.”

- The Cardiothoracic Fellowship reported that currently more than 98% of both programs and positions are filled through their Match.

- The Pediatric Anesthesiology Fellowship reported that 82% of its positions are filled through the Match, and that more than 60% of program directors are happy with the Match process. Of pediatric program directors who shared a reason that they were “not completely satisfied with the Match process,” 12 of 13 cited positions offered outside the match, stating that those positions either created gamesmanship or negatively impacted recruitment of fellows. The consensus among pediatric program directors is to continue with the Match.

The Obstetric Anesthesiology Fellowship Mission. Is fellowship training in Obstetric Anesthesiology primarily about developing stronger clinicians, researchers, or teachers? Is it intended primarily to create exceptional practitioners, or future leaders of the subspecialty? Clarity around the mission is important, as there is competition from other fellowships. For example, fellowships in Regional Anesthesia, which are not yet ACGME Accredited, allow residents to learn a variety of blocks (including neuraxial) and also offers extensive ultrasound training. Should the Obstetric Anesthesiology Fellowship incorporate ultrasound training as a greater part of the curriculum, including use for TAP blocks, difficult neuraxial blocks, central lines, and Transthoracic Echocardiography (TTE). Or should we focus on research, leadership, or quality improvement?

- SOAP Member Survey Results: Among SOAP members who completed a fellowship, the most valuable skill they learned was Judgment and Decision Making, followed by Technical Proficiency. (See Figure 2.)

Practical Benefits of an OB Anesthesia Fellowship. To practice obstetric anesthesia clinically does not require fellowship training. By contrast, with some exceptions, anesthesiologists are often strongly encouraged or required to complete fellowship training in Cardiothoracic Anesthesiology, Critical Care Medicine, Pediatric Anesthesiology, and Pain Medicine to participate clinically in those practices. As a result, residents may believe that their obstetric anesthesiology exposure during residency is sufficient for future practice in the subspecialty. And indeed, many of our core programs do a great job teaching the core skills! Moreover, few anesthesiologists will devote their practice fully to obstetric anesthesiology.

Our survey showed that the most common amount of clinical time dedicated to the practice of Obstetric Anesthesiology was 40%.

Subspecialty Certification. Currently, subspecialty certification is offered only by Critical Care Medicine, Pediatric Anesthesiology, and Pain Medicine, although Transesophageal Echocardiography (TEE) certification serves this function to some extent for Cardiothoracic Anesthesiology. Certification could add impetus to efforts to have more fellowship trained Obstetric Anesthesiologists involved in the care of pregnant women.

Value Added. Should we encourage more departments and hospitals to deliver obstetric anesthesia care with fellowship trained obstetric anesthesiologists? Or at the very least, should we advocate fellowship training for those leading the obstetric anesthesia efforts at both private and academic departments? Who is better positioned to promote quality and safety via the requisite drills and maternal safety bundles?

- SOAP Member Survey Results: Forty-six percent of respondents worked for employers who require the Obstetric Anesthesiology Division Leader to be fellowship trained. Sixty-one percent of respondents who completed a fellowship reported that their fellowship training played a role when they were hired for their current position.

Clearly there is value in completing a fellowship in Obstetric Anesthesiology. However, given their multitude of options, how should residency graduates who are interested in incorporating obstetric anesthesiology into their practice decide whether fellowship training is appropriate for them? Perhaps we should more strongly advocate for the multiple opportunities made available by fellowship training, including the likelihood of a successful and happy lifetime career.
Matching Results and Future Steps continued from previous page

- SOAP Member Survey Results: In terms of life happiness, stress and work-life balance, SOAP members who completed a fellowship experienced equal happiness, lower stress, and better work-life balance relative to their non-fellowship trained peers. (See Figure 3.)

Finally, perhaps we should increase the opportunities for fellowship training and reduce the pressure on residents to make decisions. The Match Process assists residents in weighing the diverse benefits, risks and opportunities associated with the many fellowship programs available globally. Other subspecialties have enjoyed great success with the Match within a few years of joining. We believe that continued participation in the Match represents a way to further enable a balanced examination by and of resident candidates, identify the specific value available at individual fellowship programs, and elevate the overall practice and status of obstetric anesthesia.

Thoughts? Please send them to: Libby Ellinas, Chair, SOAP Obstetric Anesthesiology Fellowship Committee at libby@mcw.edu.

Figure 3
Understanding Varying Practice Patterns: Placement of Labor Epidural Catheters and Platelet Counts

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The Society for Obstetric Anesthesia and Perinatology (SOAP) Patient Safety Committee conducted a survey among its members to assess the practices in place surrounding labor epidural catheters and platelet counts. The survey highlighted the varying practice patterns required or not required for a routine platelet count for healthy parturients prior to labor epidural placement in low-risk patients.

The clinical significance of thrombocytopenia and the need to routinely obtain a platelet count on all parturients prior to a neuraxial block is an area of debate. Causes for thrombocytopenia range from gestational thrombocytopenia, idiopathic thrombocytopenia, preeclampsia, and HELLP syndrome. Asymptomatic thrombocytopenia (platelet count less than 150K) has an incidence of 5-7% in women presenting for delivery. Suspected preeclampsia, existing preeclampsia, and HELLP syndrome are important clinical distinctions, as these entities may progress rapidly to severe thrombocytopenia and platelet consumption. In these patients, or in patients with a suspected coagulopathy, the ASA guidelines strongly agree that obtaining a platelet count reduces maternal anesthetic complications. However, the ASA obstetrical guidelines state: “The anesthesiologist’s decision to order or require a platelet count should be individualized and based on a patient’s history, physical examination, and clinical signs. A routine platelet count is not necessary in the healthy parturient”. Unfortunately, no data defines the platelet count that will insure against the occurrence of an epidural hematoma. Most clinicians feel comfortable with a platelet count between 80-100,000. Some practitioners will proceed with platelet counts as low as 50,000 if platelet counts are stable and there are no confounding comorbidities. When faced with a low platelet count or downward trend in platelet number, a thorough history and physical exam directed at any evidence of petechiae, ecchymosis, or oozing from IV sites is needed. A recent investigation supports the safety of neuraxial anesthesia in the setting of platelet counts in the 50,000 – 80,000 range. Moreover, although the safety in the setting of even lower platelet counts is suggested, but difficult to confirm due to low numbers of patients in that very low range.

The balance between efficiency and safety is not always easily reconcilable when timely pain relief could outweigh clinical best practices: pain is considered the 5th vital sign, and timely pain relief can contribute to overall patient satisfaction. Similarly, laboratory turnaround times for specimen processing can be a source of provider and patient dissatisfaction. While definitions for turnaround times vary, a 90% completion time of less than 60 minutes is determined an acceptable goal from sample registration to result. Since collection, transport and reporting are among the many factors involved in final results of platelet counts, delays may occur for a variety of reasons. Also, abnormal lab results often necessitate further testing that can be of low clinical yield and cause further procedural delay.

The decision to perform a neuraxial block depends on many factors: history and physical exam, laboratory findings, and clinical course; some considerations when developing guidelines for your unit include:

- Are there individuals who can reliably assess which patients would require a platelet count and which would not?
- Are there individuals who can accurately evaluate patients throughout the labor processes? If a patient’s condition changes to show signs and symptoms of preeclampsia, it must be determined if there is an appointed provider who can evaluate and order a platelet count.
- Are their anesthesia practitioners in your group who are not comfortable proceeding without a resulted platelet count if one is ordered; even if the parturient is healthy?

Determine what a “healthy parturient” is for your particular unit and develop guidelines. Include labor and delivery nurses and obstetricians in this decision, as they have initial contact with patients and often order labs prior to involvement of the anesthesia practitioner. For patients who have no signs or symptoms of preeclampsia and lack comorbidities, ordering or waiting for a platelet count may not be warranted. In high risk patients who have attendant comorbidities, or who have a suspected coagulopathy, obtaining a platelet count is advisable. It is important for all practitioners and staff to agree which patients fall into each category so that each patient receives the care indicated for her situation. It is also important to know the limitations of your practice. If there is not a good screening system for determining who requires a platelet count and who does not, then ordering a routine platelet count on all patients may be needed.

Practice Patterns continued on next page
Discuss laboratory requirement rational with Obstetricians and Nurse Leadership. It is worth the time investment to discuss management decisions with staff. Often there are reasons to proceed with neuraxial analgesia in the presence of low platelet counts (risk vs. benefits). Additional explanations regarding the traumatic nature of an epidural needle and catheter when compared to a single shot spinal technique can support particular clinical decisions. The desire to avoid intubation can also support a neuraxial approach when faced with a low platelet count.

Operationalize a reasonable and safe approach to routine lab studies. Often there is variation in anesthesia practitioner experience in regional anesthesia skill sets within group practices. There must be allowance for individual practice and consideration for evidence based clinical choice. It is important to develop a reasonable, livable and safe protocol for your particular unit’s patient population and clinical environment. Members of an anesthesia department should discuss parameters for lab requests to alleviate confusion and delay in patient analgesia. Varying practices exist due to institutional differences and group culture. Implementation and sustained change of lab requirements include education of obstetricians, nurse midwives, and labor and delivery nurses regarding supportive evidence for platelet count requirements. Continued adherence to lab requirements necessitates departmental consensus and ongoing support of established criteria. Clear and well communicated policies can help support both safe and efficient neuraxial analgesia.

References

Greetings, SOAP Members!

I commence this SOAP Membership Committee update by simply yet sincerely expressing my gratitude to each of you for your continual support of the Society of Obstetric Anesthesiology and Perinatology (SOAP) as evidenced by your investment in SOAP membership. The Oxford Dictionary defines ‘ambassador’ as “an accredited diplomat sent by a country as its official representative to a foreign country”. In many ways, as active members of SOAP, you are the Society’s greatest ‘ambassadors’! That is, the SOAP membership body comprises a vast array of individuals who are highly qualified and dedicated to the specialty of obstetric anesthesia and who are sent by SOAP into their various communities of learning and institutions of clinical practice to promote the mission of SOAP. SOAP remains faithful in its mission “to improve the pregnancy-related outcomes of women and neonates through the support of obstetric anesthesiology research, the provision of education to its members, other providers, and pregnant women, and the promotion of excellence in clinical anesthetic care”. As members of the Society, you are an important and necessary component to ensuring that this mission is fulfilled!

The SOAP Membership Committee continues to collaborate with the SOAP Board of Directors, other SOAP component committees, members of the SOAP General Body, and the SOAP Management Company in the realization of SOAP’s mission. In particular, the Membership Committee continues to creatively strategize on how we may promote both retention and recruitment of new members. At the time of this update’s composition in mid-November, membership appears to be on an upward trend with the SOAP membership totaling 924 (Active: 705; Associate: 21; Retired: 22; Lifetime: 2; Resident: 97; Fellow: 75; Medical Student: 2)!

168 new members have been acquired thus far in calendar year 2015 (Active: 61; Associate: 8; Resident: 64; Fellow: 34; Medical Student: 1). SOAP’s membership body is comprised of individuals from all over the world who bring perspective from a variety of clinical specialties and various stages of professional development. This interest in our society is certainly reassuring, given that the cause for which SOAP petitions has not diminished. During this era wherein clinical pathology is becoming increasingly more perplexed and healthcare delivery systems are undergoing inevitable change, it is perhaps more important than ever that SOAP adds to and retains its membership body.

In recent months, special marketing tactics have been designed and executed to increase SOAP’s visibility in the anesthesia community and beyond. At the 2015 Annual Meeting of the American Society of Anesthesiologists, members of the Society met and greeted other meeting attendees as they stopped by the SOAP kiosk in the subspecialty society pavilion. This gave SOAP members the opportunity to reach out face-to-face with other anesthesia providers who may not have been familiar with SOAP as they discussed obstetric anesthesia topics as well as the benefits of membership in the Society. Those visiting the kiosk even received a special souvenir from SOAP, a handy antibacterial cleanser featuring SOAP’s logo and website information.

In coming months, the Membership Committee plans to collaborate with the Resident Affairs Committee to strategize on ways to further energize our young professional base of members. For those individuals newly embarking on their careers in academic and private practice obstetric anesthesia, SOAP will continue to provide an excellent forum in which they may exchange ideas, receive research and clinical practice updates, and network with others who are motivated to make improvements in the care of parturients and their fetuses.

There’s never been a better time than now to promote SOAP membership and active involvement in the Society! There remain countless opportunities to make a positive and profound difference in the lives of so many patients and practitioners in the promotion of outstanding obstetric anesthesia care as well as the molding of professional careers in this specialty. In closing, I leave you with three personal challenges:

Maintain your current SOAP membership. Recognize that you play a vital part in what SOAP aspires to do and know that your involvement is essential to this society’s longevity. Your voice matters. As a valued and active member of SOAP, you help to decide what we promote as an organization.

Take full advantage of the vast wealth of benefits offered by SOAP membership. Doing so will enhance your clinical practice of obstetric anesthesia and equip you to make an even more profound impact in your patients’ lives.

Continue to be an ‘ambassador’ for SOAP and encourage others to join. Don’t keep all the wonderful aspects of SOAP membership to yourself. Spread the word amongst your professional colleagues and friends. Invite them to enjoy the fellowship of other individuals who share a genuine interest in

Membership Committee Update continued on next page
obstetric anesthesia. As always, the SOAP Membership Committee has the best interests of SOAP’s members in mind. This committee wants to know what more we can do to promote, enhance, and sustain SOAP membership. If you have questions or comments for this committee to consider, please send your correspondence to cmason@bcm.edu. Last but certainly not least, I extend a heartfelt thanks to the members of the SOAP Membership Committee for their relentless dedication and hard work. Let’s all continue to work together as we advocate for optimal maternal-fetal outcomes!
OB Anesthesiology Fellowship Problem Based Learning Discussion Series

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The Education Committee of SOAP is developing an Obstetric Anesthesiology Problem Based Learning Discussion (PBLD) Series! Case stems will be presented in every Newsletter, with a link to case development on Open Anesthesia. Tweet your questions and thoughts to @SOAPHQ! Your questions will be answered by an expert, and featured on an Open Anesthesia podcast.

PBLD #1: “Cognitive Aids in Obstetric Crises”

A 32 year old G2P1 with a history of a cesarean delivery was admitted at 38 weeks estimated gestational age for a trial of labor after cesarean delivery (TO-LAC). She is 61 inches tall, weighs 70kg and has no significant past medical history. Epidural was placed and her labor pain has been well controlled, but her labor has failed to progress and now you are called for a cesarean delivery.

After placing the patient in left uterine displacement (LUD), and confirming negative aspiration of the epidural catheter for blood or CSF, you bolus 5cc of buffered 2% Lidocaine with epinephrine through her epidural, and follow by another 5cc of the same solution 5 minutes later. One minute after the second bolus, the patient starts to complain of discomfort in her abdomen, pointing to the region of her suprapubic area, for which you bolus another 5cc of the lidocaine solution. 10 seconds later, she suddenly becomes unresponsive on her bed. She is now apneic and pulseless.

Instructions for Fellows:

• Identify a faculty mentor at your institution.
• Review the references given in the right column.
• Go to https://www.openanesthesia.org/subspecialty/subspecialtyobstetric-anesthesia/featured-ob-case/ for case development.

• Work through the case together with your faculty mentor.
• Tweet your questions and comments about the case to @SOAPHQ and #PBLD
• Download a podcast of an expert answering your questions on https://www.openanesthesia.org/subspecialty/subspecialtyobstetric-anesthesia/featured-ob-case/.

References:


This PBLD was peer-reviewed by a panel of experts from the Society of Obstetric Anesthesia and Perinatology (SOAP) and has been endorsed by the SOAP Education Committee.

Required Pre-work: References (below)

Learning Objectives: At the conclusion of this session, the fellow will be able to:
1. Describe the current evidence for use of cognitive aids during crises
2. Evaluate pros and cons of using cognitive aids
3. Create a personal version of a cognitive aid for an obstetric crisis and compare to existing cognitive aids

Instructions for Faculty Mentor: Before proceeding with the case, perform an assessment of your fellow’s prior review of the teaching materials and current understanding of topic. Review key points of learning, clarify any questions, and identify areas for further investigation by the fellow.

Case stem:

A 32 year old G2P1 with a history of a cesarean delivery was admitted at 38 weeks estimated gestational age for a trial of labor after cesarean delivery (TOLAC). She is 61 inches tall, weighs 70kg and has no significant past medical history. Epidural was placed and her labor pain has been well controlled, but her labor has failed to progress and now you are called for a cesarean delivery.

After placing the patient in left uterine displacement (LUD), and confirming negative aspiration of the epidural catheter for blood or CSF, you bolus 5cc of buffered 2% Lidocaine with epinephrine through her epidural, and follow by another 5cc of the same solution 5 minutes later. One minute after the second bolus, the patient starts to complain of discomfort in her abdomen, pointing to the region of her suprapubic area, for which you bolus another 5cc of the lidocaine solution. 10 seconds later, she suddenly becomes unresponsive on her bed. She is now apneic and pulseless.

What will you do next?
List below 5-10 items of management in decreasing order of priority (while realizing that several steps may happen nearly simultaneously).

Based on a compilation of the SOAP consensus statement checklist and Obstetric Cardiac Arrest Emergency Aids:

- Call for help – Call “OB Code”
  - Call both adult code team and neonatal team
  - Call OB team to prepare for immediate c-section at the site of arrest
  - Call for a defibrillator (manual or AED) and a code cart with a backboard
  - Call for scalpel/cesarean delivery surgical kit
- Start optimal CPR immediately
  - Remove the “LUD” pillows and place a backboard or a firm back support
  - Designate an available staff for manual LUD from the left side of the patient; if this is unsuccessful, considering applying manual LUD from the right side of the patient.
  - Place hands 2-3 cm higher on the sternum than in non-pregnant individuals.
  - Push hard (>2inches deep with complete chest recoil) and push fast (>100/min)
  - Minimize breaks - even the “perishock pause” should be limited to < 5 seconds
  - Rotate compressors every 2 minutes until return of spontaneous circulation is achieved
  - Monitor CPR quality (when available) – improve CPR if diastolic blood pressure is <20 mmHg or end tidal carbon dioxide level is <10 mmHg
- Place AED pads (front and back) and assess rhythm – if pulseless ventricular tachycardia (VT) or ventricular fibrillation (VF), defibrillate (if using a manual defibrillator, shock with 200 joules on biphasic energy – same in non-pregnant individuals)
- Disconnect a fetal scalp electrode (FSE) or external fetal monitors if any.
- Secure the airway – anticipate a difficult airway – do not interrupt chest compressions
- Place IV line above diaphragm or consider humeral intra-
Cognitive Aids continued from previous page

- Administer ACLS medications:
  - Administer epinephrine 1mg IV every 3-5 minutes
  - Consider replacing one epinephrine dose with Vasopressin 40 units IV
- Proceed to immediate cesarean delivery (or operative vaginal delivery, if imminent) if no ROSC within 4 minutes of arrest: incision by 4 min, fetal delivery by 5 min.\(^5,6\)
- Consult a cognitive aid for adherence to treatment steps once resuscitation is underway
  - This should be ideally done by someone who is not leading or managing the team’s resuscitation efforts
  - Assign a team leader or event manager to coordinate the team’s resuscitation efforts

Questions:

1. Which of the following statements about maternal cardiac arrest is NOT correct?
   a. There are significant deficiencies in maternal resuscitation knowledge and practice even among the providers with current ACLS certification.\(^1\)
   b. Cardiac arrest in pregnancy is estimated to occur in < 1/20,000 women; > 50% of those events had some aspect of substandard care inconsistent with national guidelines; > 50% of diagnosis-related adverse events in obstetric anesthesia were related to a delay in diagnosis or treatment.\(^10\)
   c. There is an algorithm specific for maternal cardiac arrest in the 2010 AHA Guidelines for CPR and ECC.\(^11\)
   d. All labor and delivery unit nurses are required to receive ACLS training.
   e. None of the above.

Answer: d.

Explanation:
Labor and delivery ward staff do not often practice ACLS skills because cardiac arrest is rare in the obstetric setting. The need for ACLS training depends on the acuity of the patient population served and the availability of a code team within the facility.\(^12\)

Even among those with current ACLS certification, recertification is currently required only every 2 years and ACLS skills are not often refreshed. Although there exists an algorithm specific for maternal cardiac arrest in the 2010 AHA Guidelines for CPR and ECC, most ACLS courses do not discuss issues specific to cardiac arrest in pregnant women.\(^13\)

A recent study has shown that even senior anesthesiology residents have poor knowledge of resuscitation of the pregnant patient during the board examination.\(^14\)

Actions specific to the parturient (LUD, placing a firm back support, preparation for perimortem cesarean delivery) are tend to be performed more poorly compared to the resuscitation not specific to the pregnant patient (commencing chest compressions, bag-mask ventilation, cardiac defibrillation).\(^15\)

Reference: Berkenstadt et al 2012, Lipman et al AJOG 2010

2. Which of the following statements about the use of a cognitive aid is NOT correct?
   a. The use of a cognitive aid is especially helpful in stressful situations such as medical emergencies where multiple aspects of human memory can be negatively impacted.
   b. Studies have shown that the use of a cognitive aid is more helpful in common but serious situations such as respiratory distress, than in a rare, high-stakes scenario such as malignant hyperthermia.
   c. The use of checklists to improve team performance during a maternal cardiac arrest is recommended in the SOAP consensus statement on the Management of Cardiac Arrest in Pregnancy.
   d. A cognitive aid can be useful not only during an actual crisis but also for pre-crisis educational “what-if” exercises and post-crisis debriefing.\(^16\)
   e. None of the above.

Answer: b.

Explanation:
Survival during rare, critical events largely depends on rapid recognition and implementation of a precisely accurate series of complicated treatment steps. However, stressful situations have been shown to negatively impact multiple aspects of human memory, including retrieval of inert knowledge, working memory for calculations, and prospective memory for future tasks.\(^17\)

Cognitive aids are prompts designed to help users complete a task or series of tasks. They may take the form of posters, flowcharts, checklists, or even mnemonics. It has been suggested that the use of cognitive aids improves performance and patient outcomes during anesthetic emergencies.\(^18\)

Previous research has shown that the presence of a cognitive aid can improve performance in the simulated management of a rare, high-stakes scenario such as maternal cardiac arrest and malignant hyperthermia.\(^19\)

Simulation studies suggest checklists may help medical teams perform optimally during emergencies; however, periodic training is necessary in order to familiarize health care provider teams with their use.


The plot thickens. More developments on the case stem.

ACLS is begun and roles are assigned. At four minutes after arrest, two cycles of CPR have been performed including administration of a 1-mg doses of epinephrine and two defibrillation shocks for VF. Preparations are made for an...
emergency cesarean delivery, and the baby is delivered in the patient’s room. Despite the delivery of the baby, the patient continues to be in refractory VF.

What should be included in the differential diagnosis of the patient’s signs and symptoms include? / What are the common treatable causes of maternal cardiac arrest? / What are potential contributing factors to maternal cardiac arrest?

(Quoted from Lipman et al. 2014Table 2)

- Anesthetic complications: high neuraxial block, loss of airway, aspiration, respiratory depression, hypotension, local anesthetic systemic toxicity
- Bleeding: coagulopathy, uterine atony, placenta accreta, placental abruption, placenta previa, uterine rupture, trauma, surgical, transfusion reaction
- Cardiovascular causes: cardiomyopathy, myocardial infarction, aortic dissection, arrhythmias
- Drugs: anaphylaxis; illicit; drug error; magnesium, opioid, insulin, or oxytocin overdose
- Embolic: pulmonary embolus, amniotic fluid [AFE], air
- Fever: infection, sepsis
- General nonobstetric causes of cardiac arrest: H’s: hypovolemia, hypokalemia/hyperkalemia, hypothermia, hypoxemia, H+/acidosis; and T’s: tension pneumothorax, thrombosis—coronary or pulmonary, cardiac tamponade, toxins
- Hypertension: preeclampsia/eclampsia/HELLP, intracranial bleed

(AHA “BEAU-CHOPS”)

3. Which of the following statements regarding the treatment of local anesthetic systemic toxicity (LAST) is NOT correct?
   a. It is recommended to reduce individual epinephrine dose to < 1mcg/kg.
   b. It is recommended to bolus 1.5 ml/kg of lipid emulsion (20%) intravenously over 5 minutes.
   c. It is recommended to start continuous infusion at 0.25 ml/kg/min after the initial bolus.
   d. It has been suggested that the ASRA checklist for treatment of LAST improves outcomes.
   e. None of the above.

Answer: b
Explanation:
The pregnant state may confer enhanced sensitivity to LAST. If standard resuscitative measures do not result in rapid ROSC, lipid emulsion should be administered as an adjunctive therapy if local anesthetic-induced cardiac arrest is suspected. The dosing and timing of lipid emulsion therapy during resuscitation of pregnant patients should follow standard algorithms used in nonpregnant patients. The fetal risk of lipid emulsion therapy remains unknown, but as in any maternal cardiopulmonary arrest, the fetus is best served by optimal management of the mother.


4. Which of the followings regarding the benefits of the use of a cognitive aid in medical emergencies is NOT correct?
   a. A cognitive aid would theoretically guide stressed clinicians through a sequence of complex steps and prevent them from omitting key actions.
   b. A cognitive aid can help clinicians to combat memory errors and fixation errors in critical situations.
   c. A cognitive aid has the potential to be used as a tool to improve non-technical skills such as decision-making, communication and situation awareness within teams.
   d. A cognitive aid can mitigate the influence of nonrational cognitive factors such as memory distortions, bias and over-confidence.
   e. None of the above.

Answer: All are correct
Explanation:
When under stress, clinicians are less able to recall remembered lists and are more likely to become fixated. A cognitive aid would theoretically guide stressed clinicians through a sequence of complex steps and prevent them from omitting key actions.


5. Which of the followings regarding the use of a cognitive aid in medical emergencies is NOT correct?
   a. Poor cognitive aids (such as inaccurate or poorly designed aids), or poor use of cognitive aids, may distract clinicians and lead to worse performance than without them.
   b. The use of cognitive aids can cause harm by prompting users to follow an incorrect pathway of an algorithm.
   c. The introduction of cognitive aids can negatively af-
Checklist for Treatment of Local Anesthetic Systemic Toxicity

The Pharmacologic Treatment of Local Anesthetic Systemic Toxicity (LAST) is Different from Other Cardiac Arrest Scenarios

- Get Help
- Initial Focus
  - Airway management: ventilate with 100% oxygen
  - Seizures suppression: benzodiazepines are preferred; AVOID propofol in patients having signs of cardiovascular instability
  - Alert the nearest facility having cardiopulmonary bypass capability
- Management of Cardiac Arrhythmias
  - Basic and Advanced Cardiac Life Support (ACLS) will require adjustment of medications and perhaps prolonged effort
  - AVOID vasopressin, calcium channel blockers, beta blockers, or local anesthetic
  - REDUCE individual epinephrine doses to <1 mcg/kg
- Lipid Emulsion (20%) Therapy (values in parenthesis are for 70kg patient)
  - Bolus 1.5 mL/kg (lean body mass) intravenously over 1 minute (~100mL)
  - Continuous infusion 0.25 mL/kg/min (~18 mL/min; adjust by roller clamp)
  - Repeat bolus once or twice for persistent cardiovascular collapse
  - Double the infusion rate to 0.5 mL/kg/min if blood pressure remains low
  - Continue infusion for at least 10 minutes after attaining circulatory stability
  - Recommended upper limit: Approximately 10 mL/kg lipid emulsion over the first 30 minutes
- Post LAST events at www.lipidrescue.org and report use of lipid to www.lipidregistry.org
Cognitive Aids continued from previous page

fect how teams coordinate their activities.26

d. The use of cognitive aids can be viewed as a sign of weakness and lack of intelligence and result in the loss of trust from the teammates.

e. None of the above.

Answer: d

Explanation:

Cognitive aids must have the following properties: (1) Its content must be derived from “best practice” guidelines or protocols; (2) Its design should be appropriate for use in the context of the emergency situation; (3) It should be familiar, in a format that has been used in practice and training; (4) It should also assist other team members to perform their tasks in a coordinated manner.27

When patients require immediate actions, it is sometimes distracting for a clinician to consult a cognitive aid.28

A recent RCT found no significant difference in the performance of simulated neonatal resuscitation by anesthesia residents whether they had access to a cognitive aid or not.29 The authors concluded that lack of teaching that encourages the use of cognitive may account for the lack of difference between the groups. It has also been suggested that the introduction of an unfamiliar cognitive aid may lead to a reduction in the volume of communication within the team.30

Physical constraints of using aids, such as the ability to read, see, hear, or interact with the paper or computer-based aid, potential distraction caused by the aid, and the ability to perform concurrent tasks could make aids very difficult to use in the actual working environment and may reflect the apparent negative effects on team communication that have been reported.31

While in the past the use of these aids was viewed as a sign of weakness and lack of intelligence, many of us strive to emphasize to students, trainees, and experienced clinicians that their use is actually a sign of strength and wisdom and that failing to use them is a sign of weakness and lack of intelligence, many of us strive to emphasize to students, trainees, and experienced clinicians that their use is actually a sign of strength and wisdom and result in the loss of trust from the teammates.32


6. Which of the following statements regarding communication during crisis situations is NOT correct?

a. Communication failures among teams can cause morbidity and mortality in crisis situations.

b. Common communication errors during crises include “open-air” commands, “failure to close the loop”33, and poor workload delegation.34

c. The code leader ideally should serve as the “reader” when a cognitive aid is available.

d. All are the correct.

e. None of the above.

Answer: c

Explanation:
The code leader should not be task saturated, and should be able to direct interventions, communicate effectively, and periodically reassess management goals and outcomes. It is difficult for the leaders to read a cognitive aid while they are assessing and treating the patient and communicating with the team.

During simulated crises of obstetric cardiac arrest and malignant hyperthermia, no leaders performed all critical steps despite the presence of cognitive aids until the “reader” was introduced.35 The code leader should designate a team member to serve as the “reader” during crises so that interventions from the checklist can be read aloud and cross-checked.

Communication failures among teams were the root causes of morbidity and mortality in more than 70% of neonatal sentinel events.36 Periodic multidisciplinary emergency drills allow teams to learn, practice and refine critical communication skills in a safe environment and therefore are strongly recommended.


Model Discussion

A crisis is defined as a time-sensitive situation in which intervention must occur rapidly in order to change the patient’s clinical course. In such cases, it is vital that the patient care team comes together to deliver comprehensive and rapid care to avoid worsening outcomes for both mother and fetus. While the patient case above was one of maternal cardiac arrest, there are many obstetric crises that occur which have specific treatments to hopefully avoid the outcome of cardio-pulmonary arrest.

Anesthesia care frequently requires rapid, complex decisions that are most susceptible to decision errors,37 and while we may each build our own expertise in certain areas, no anesthesiologist is expert at managing all aspects of all critical events. Moreover, stressful situations have been shown to negatively impact multiple aspects of human memory, including retrieval of inert knowledge, working memory for calculations, and prospective memory for future tasks.38 This underscores the importance of identifying and reliably training with additional rapidly-accessible tools such as cognitive aids.

Cognitive aids are prompts designed to help users complete a task or series of tasks. They may take the form of posters, flowcharts, checklists, or even mnemonics. It has been suggested that the use of cognitive aids improves performance and patient outcomes during anesthetic emergencies.39 Previous research has shown that the presence of a cognitive aid can improve performance in the simulated management of a rare, high-stakes scenario such as maternal cardiac arrest and malignant hyperthermia.40 A cognitive aid would theoretically guide clinicians under stressful situations through a sequence of complex steps and prevent them from omitting key actions.41 It is important to promote throughout each or-

Cognitive Aids continued on next page
Cognitive Aids

Cognitive aids form one component of the larger picture of crisis resource management, which includes other important items such as cross-monitoring, clear and effective communication, mobilizing and managing resources, establishing role clarity, and calling for help early. Checklists and similar algorithmic cognitive aids are increasingly popular as decision support tools for critical events. Use of such aids may be effective in promoting better decisions and mitigating the influence of nonrational cognitive factors such as bias.

Simulation studies suggest checklists may help medical teams perform optimally during emergencies; however, periodic training is necessary in order to familiarize health care provider teams with their use. Incomplete or misleading cognitive aids (such as inaccurate or poorly designed aids), or incorrect use of cognitive aids, may distract clinicians and lead to worse performance than without them. It has also been suggested that the introduction of an unfamiliar cognitive aid may lead to a reduction in the volume of communication within the team, especially when a code leader attempts to read a cognitive aid and subsequently becomes task saturated by trying to perform too many simultaneous actions. Therefore, it has been recommended that a code leader designate a team member to serve as the “reader” of the cognitive aid during crises so that interventions from the checklist can be read aloud and cross-checked.

The critical determinants to enable the successful development and use of cognitive aids include 1) accurate content, 2) user-friendly design, 3) iterative testing using simulation, 4) repeated familiarization and training, 5) accessibility, and 6) the use of a reader. There is a need for larger prospective trials of the effect of aids on task completion, practitioners’ team behaviors, and overall team functioning.

As a separate exercise, we invite you to create your own personal version of a cognitive aid for a specific obstetric crisis. Is there already an existing cognitive aid for that particular obstetric crisis? If so, how does yours compare? If no cognitive aid exists, consider turning your work into a publication to better serve our community of providers.

Suggested Reading

Cognitive Aids continued from previous page


Post-PBLD Survey:

1. Have you seen this type of case before?
   a. Yes
   b. No

2. If so, how often?
   a. [Freetext]

3. Is this type of case one you would expect yourself to know how to manage as an expert in obstetric anesthesia?
   a. Yes
   b. No

4. Did the case progress in a way you would have expected?
   a. Yes
   b. No

5. How relevant is this case to your practice? _______
   0 (hardly relevant), 100 (extremely relevant)

6. As a result of participating in this activity, how likely are you to change your management for a patient with this type of problem in the future?
   a. 1 - Not probable
   b. 2 - Somewhat improbable
   c. 3 - Neutral
   d. 4 - Somewhat probable
   e. 5 - Very probable

7. How satisfied are you with this learning exercise?
   a. 1 - Very dissatisfied
   b. 2 - Dissatisfied
   c. 3 - Unsure
   d. 4 - Satisfied
   e. 5 - Very satisfied

References

   This consensus statement contains embedded point-of-care checklists for use during an actual event to optimize care.


3. This recommendation is based on expert consensus only.
4. Removal of fetal monitors should never delay defibrillation or incision.
5. Proposed mechanisms for the benefits of perimortem cesarean delivery (PMCD) include immediate relief of vena caval obstruction with improved venous return and cardiac output, decreased oxygen demand, and improved pulmonary mechanics.
6. Early sterile preparation may serve as a visual prompt to all staff present that PMCD is impending.
7. Lipman et al AJOG 2010
8. From SOAP consensus guideline, quoted from Lewis et al. CEMACH 2007
11. The 2010 AHA Guidelines for CPR and Emergency Cardiovascular Care (ECC) Part 12.3, Cardiac Arrest Associated with Pregnancy and Maternal Cardiac Arrest Algorithm (Figure)
12. SOAP consensus statement
13. Lipman AJOG 2010
17. Goldhaber-Fiebert and Howard A&A 2013
22. Stiegler et al Anesthesiology 2014
29. Bould et al BJA 2009
30. Burden et al
32. Gaba A&A November 2013
34. Key roles that are often neglected include timer/documenter, airway assistant, a second person to rotate performance of chest compressions, or a staff person dedicated to performing LUD (from SOAP consensus).
35. Burden et al 2012
37. Stiegler et al Anesthesiology 2014
38. Goldhaber-Fiebert and Howard A&A 2013
40. Berkenstadt et al.
42. Gaba A&A November 2013
47. Burden et al
49. Goldhaber-Fiebert and Howard A&A 2013
SOAP/Kybele International Outreach Grant
The Society for Obstetric Anesthesia and Perinatology (SOAP) is pleased to announce that it is seeking applications for the SOAP/Kybele international outreach grant. The application deadline will be April 10, 2016 with expected funding of the grant in spring/summer 2016.

The goal of this program is to provide funding needed to get involved with international outreach projects in order to identify and train future leaders in international outreach from SOAP members. Specifically the grant is designed to encourage research in collaboration with host countries with the goal of enhancing the practice of obstetric anesthesia in those countries.

Call for Nominations: Teacher of the Year, Media Award
The deadline for nominations for SOAP Teacher of the Year and SOAP Media Award is fast approaching (March 11, 2016). Don’t miss out on your opportunity to acknowledge someone special who has contributed to the world of obstetric anesthesia. The categories and criteria are:

SOAP Teacher of the Year Award
- Over 10 Years of Experience Award
- Less than 10 Years of Experience Award

The SOAP Teacher of the Year Award was created to recognize outstanding practitioners of obstetric anesthesia who have demonstrated superior teaching primarily of anesthesia residents and fellows, and secondarily of obstetricians, nurses, midwives, and the lay public.

The SOAP Education Awards Subcommittee is charged with the task of evaluating candidates and would like nominators to consider the following attributes of the candidates: clinical teaching, mentoring, and the advancement of obstetric anesthesia outside of our own community. Any SOAP member may nominate a candidate. Please forward your nominations to May Pian-Smith, mpiansmith@mgh.harvard.edu. Nominees will be contacted by the SOAP Awards Committee and will be asked to provide the following: CV and/or teaching portfolio, teaching evaluations and a letter of recommendation from their department chair.

SOAP Media Award
The goal of the SOAP Media Award is to acknowledge the contribution of a member of the media in furthering public awareness of the important role obstetric anesthesia plays in the care of the parturient.

Journalists, photographers, producers, directors and any other media professionals involved in the development and advancement of the above content will be considered. All relevant media genres including but not limited to print, radio, television and the Internet are eligible. The award is given for merit, and may not be awarded every year. Any SOAP member wishing to submit a candidate for consideration should send relevant information to May Pian-Smith at mpiansmith@mgh.harvard.edu.

Board Nominations
SOAP is calling for nominations for the elected positions of 2nd Vice President and Secretary. Interested members should send a short statement and picture to jenni@soap.org for posting to the SOAP website.

SOAP is also calling for those interested in serving as Meeting Host for the 2019 Annual Meeting, which is also a Board position. During the 2016 Business Meeting held during SOAP’s Annual Meeting, the SOAP membership votes on future meeting sites. In 2016, we plan to have two or three cities on the voting ballot for the 2019 Annual Meeting site. Each possible meeting host is required to make a short presentation promoting their city.

If you are interested in hosting a future SOAP Annual Meeting, please submit your proposal to the SOAP Executive Director, Jane Svinicki, CAE at jane@soap.org, no later than February 12, 2016. All locations that are submitted will be reviewed as potential sites. Please keep in mind that there are requirements that need to be met such as adequate meeting space, hotel availability, room rates, etc.

If you have any questions, please do not hesitate to contact SOAP headquarters at (414) 389-8611.

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