I always enjoy attending the ASA Annual Meeting. It is a time to learn new things and get caught up with old acquaintances. The ASA always has an excitement as members share new information. However, there was also more concern than in previous years as a general unease permeated throughout the meeting due to changes in reimbursement and in group management. There is the worry of how does one optimally position oneself for the upcoming changes. To address this issue, I would like to share a personal story.

One of my favorite activities in the fall is to participate in a run to honor the victims of September 11th and the servicemen who have sacrificed their lives in the wars since then. The run I choose is the 9/11 Heroes Run. These races occur across the United States and this run offers the opportunity to reflect upon the contributions of these individuals while raising money for a great cause, the Travis Manion Foundation, a foundation for returning veterans. Travis Manion was a graduate of the Naval Academy who served in Operation Iraqi Freedom. In April 2007, he was killed in an ambush as he distracted gunfire towards him and away from his colleagues. Due to his actions, his fellow patrol members lived. In interviews before his death, 1st Lt. Travis Manion was asked why he chose to repeatedly risk his life, he replied, “If not me, then who?”

Every time I run this race, this phrase constantly goes through my head. “If not me, then who?” These simple words serve as valuable advice for life. This phrase also serves as a great admonition as anesthesiologists prepare for the changing health care environment. Those who practice obstetric anesthesia are going to be challenged and must prove their value to the hospital. Obstetric anesthesiologists have led the way.
This newsletter gives you an update on our upcoming annual meeting which will take place at the Broadmoor Hotel in Colorado Springs. Brenda Bucklin brings you this important information that will help you plan ahead. SOAP president, Dr. Robert Gaiser provides his perspective on the future of our society in his message that is well aligned with the theme of our upcoming annual meeting, The New Role of Education in Obstetric Anesthesia.

As we focus on education in our upcoming meeting, the update on our fellowship match, provided to you by Dr. Libby Ellinas, is very relevant. You will find out that the committee has determined that we will join the National Residency Matching Program. This initiative aligns our fellowship with other specialties and creates a framework where applicants can expect a fair interview process. All programs will get a chance to meet some of the residents interested in our specialty, perhaps attracting applicants from a large geographic region.

President’s Message continued from previous page

Finaly, we continue to feature high quality and timely educational articles. As we are constantly reminded of drug shortages, the article on alternatives to intrathecal morphine addresses this dilemma. A review of staffing options in the labor suite provides a background for discussion on this topic. Several models are reviewed and a variety of viewpoints are discussed. The safety committee is contributing an article on Ebola. Hopefully, we will all be experts on this topic very soon. Back by popular demand, you will find a pro con debate on a topic of continued debate, the combined spinal-epidural technique. Finally, we receive a membership update from Dr. LaToya Mason and another excellent article from our legacy committee, this time featuring the life and legacy of Dr. James Elam.

I hope you enjoy this newsletter. Stay warm and enjoy the winter with some fun in the snow.

Greetings,

Michael Froelich, MD, MS
Birmingham, AL

Editor’s Corner

Michael Froelich, MD, MS
University of Alabama at Birmingham
Birmingham, AL

This concept may also be extended to issues regarding professionalism. The labor floor is a high acuity place in the hospital where tensions may be high. I hope that the obstetric anesthesiologist is the example of professionalism. Instead of hollering, the obstetric anesthesiologist should be the leader in communication. Instead of complaining, the obstetric anesthesiologist should volunteer to educate both colleagues and patients. The obstetric anesthesiologist should be the example to which other physicians and colleagues view for professionalism. When trying to decide whether or not to be the role model, please remember “If not me, then who?”

As we are confronted with changes in the healthcare environment, we have the option of embracing and modifying the change or of ignoring it and allowing it to proceed without input. As Theodore Roosevelt stated, “In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing.

Sincerely,

Robert R. Gaiser, MD
President, Society of Obstetric Anesthesia and Perinatology
SAVE THE DATES! The 47th annual meeting of the Society of Obstetric Anesthesia and Perinatology will be held at the Broadmoor Hotel in Colorado Springs, Colorado on May 13th-17th, 2015. The meeting promises to be as intellectually stimulating as the Broadmoor is memorable!

Are you wondering about the annual meeting in Colorado Springs? Here are the top-10 FAQs!

1. **How will I get to Colorado Springs?**

The Colorado Springs Airport is serviced by major airlines with non-stop flights from more than 12 major U.S. cities including: Atlanta, Chicago, Dallas, Los Angeles, Seattle, San Francisco, and Washington, D.C. The Broadmoor is a 15-minute drive from the airport. Shuttle service will be available.

For those traveling to Colorado Springs via Denver, Colorado Springs is 75 minutes south of Denver International Airport (DIA). DIA is the 5th busiest airport in the world and provides non-stop service to destinations throughout North America, Latin America, Europe, and Asia. It is a main hub for low-cost carrier, Frontier Airlines. It is also the 4th largest and central U.S. hub for United Airlines and a major focus city for Southwest Airlines. Direct charter bus service to Colorado Springs will be available from DIA to Colorado Springs. For information pertaining to available transportation, please visit: http://www.broadmoor.com/directions/

2. **What can I expect from the Broadmoor?**

Located on more than 3000 lush acres under the shadow of Cheyenne Mountain, The Broadmoor is the longest-running consecutive winner of both the AAA Five-Diamond and Forbes Travel Guide Five-Star awards and was recently named *Golf Magazine’s* #1 Golf Resort in North America. Built in the early 20th century as the “Grand Dame of the Rockies”, The Broadmoor offers guests a unique way to experience the beauty of Colorado. Wi-Fi will be available if reservations are made through SOAP.

3. **Will there be must-attend pre-meeting workshops?**

Pre-meeting workshops will be held on Wednesday, May 13th, 2015 including:

New this year! “High Risk Obstetric Anesthesia Simulation (MOCA)” will be available for at least 6 participants and held at the University of Colorado School of Medicine in Denver. Overnight accommodations will be available adjacent to the Anschutz Medical Campus (AMC) prior to the workshop at Springhill Suites. Direct charter bus service to Colorado Springs will be available from the AMC to Colorado Springs.

Given the popularity of the ultrasound workshops presented in previous years, we will continue to offer comprehensive workshops on the use of ultrasound for obstetric anesthesia and transthoracic echocardiography. In addition, there will be a faculty development workshop and research symposium. All of these workshops will be held in Colorado Springs.

4. **What is the theme of the meeting?**

The theme of the 47th annual meeting is “The New Role of Education in Obstetric Anesthesia - Educating the Clinician, Trainees and the Public”. Along with oral presentations of original research, there will be posters of interesting...
and challenging cases, Breakfast with the Experts, a session reviewing the Best Cases of the Year, as well as panels discussing education, patient management, and research.

5. Will there be traditional lectures and sessions?
Favorite SOAP sessions will include the Gertie Marx competition, the “What’s New” and Fred Hehre Lectures. Distinguished guest lecturers will include:
Lynne Barbour, MD, MSPH, Professor of Medicine and Obstetrics and Gynecology, University of Colorado School of Medicine (What’s New in Obstetric Medicine); Timothy M. Crombleholme, MD, FACS, FAAP, Professor of Surgery, University of Colorado School of Medicine and The Ponzio Family Chair for the Surgeon-in-Chief at Children’s Hospital Colorado (What’s New in Fetal Surgery); Elliot Main, MD, Medical Director of the California Maternal Quality Care Collaborative (Maternal Safety: SMFM Bundles); Fred Hafferty, PhD, Professor of Medical Education, Associate Director Program in Professionalism and Ethics, Mayo Clinic (Gertie Marx/FAER Education Lecture).

6. Will there be a social program?
The SOAP Welcome Reception will be held outdoors at the Broadmoor on the Lakeside Terrace. With more than 300 days of sunshine per year and temperatures in the 70’s, the reception will be an opportunity for you to reunite with friends and mingle with colleagues.

Not to be missed! Instead of the traditional SOAP banquet, there will be a “strolling” dinner Saturday evening in the Lake Terrace Dining Room at the Broadmoor. Award-winning Colorado wines, beers, and sodas will be featured. Space will be limited for this event so be sure to make your reservations early!

7. Should I bring friends and family?
From a Forbes Travel Guide Five-Star rated spa as well as 19 restaurants, Cafes, and Lounges (including the only Five-Star, Five-Diamond restaurant in Colorado, Penrose Room), your friends and family can enjoy 54 holes of championship golf, six tennis courts, indoor and outdoor pools, distinctive retail shops, and activities for all ages and interests. In addition, Colorado Springs is home to the Air Force Academy and the Olympic Training Center, as well as Pikes Peak!

8. Are there activities for me? What can I do on Friday afternoon?
Please attend the complimentary early morning yoga sessions at the hotel, as you may find that this is an activity that will energize you to fully experience your day! A 5K Walk/Run will be a fun event for all and an opportunity to exercise and meet others! Other activities will include an optional zip line tour and a trip to Pike’s Peak.

9. Who should attend?
Anesthesiologists, obstetricians, obstetric medicine specialists, maternal-fetal medicine specialists, neonatologists, and members of related allied health specialties including fellows, residents, and medical students with an interest in the care of the pregnant patient! This is rare opportunity where individuals can discuss medical problems unique to the pregnant patient as well as gain knowledge that will reinforce past learning as well as disseminate new concepts, practices, and skills to promote excellence in clinical care, research, and education.

10. How can I find out more about the meeting?
Please check the SOAP website for additional information and watch for the e-blasts that we will be sending out. Important information on transportation, registration, and other key issues will be found in these resources and in the meeting brochure.
The Patient Safety Committee was established to promote patient safety within SOAP, to ensure adequate educational activities within the society related to patient safety, and to assist the Board with regards to patient safety policies and practices. Throughout 2014, committee members undertook a number of initiatives in pursuit of this mission.

The Patient Safety Archive is a searchable database that features published articles, hyperlinks, and other resources that may facilitate local improvements in safety systems and team performance, with an emphasis on peripartum and perioperative care for pregnant and recently delivered women. Led by Michaela Farber, Grant Lynde and Audrey Alleyne, members of the committee worked to compile the list of resources, and to define how each resource might be most helpful for those leading local efforts to improve patient safety. Future efforts will be directed towards expanding the number of articles and other resources available through the archive. Please email any article or hyperlink suggestions to Michaela Farber at mranes@partners.org.

Expert opinions summarize operational solutions that promote patient safety that have not been well described in the published literature. Rachel Kacmar has been instrumental in compiling and summarizing institutional strategies from committee members to address topics such as syringe labeling on the sterile field, multidisciplinary communication, and preoperative huddles before cesarean delivery. Although the committee maintains a list of upcoming topics to address, urgent topics may be added. For example, the current newsletter contains an Expert Opinion on Institutional Preparation for the Pregnant Patient with Ebola.

In addition, our members have continued to write articles for the Newsletter, propose high quality safety-related programming for both the SOAP and ASA annual meetings, and select the winner of the SOAP Patient Safety Award each year at the annual meeting. This is an exciting time in maternal patient safety with new opportunities for collaboration with the Council on Patient Safety in Women’s Healthcare, the National Partnership for Maternal Safety, the Centers for Disease Control, the Anesthesia Quality Institute, the Joint Commission, and other organizations. It is my goal to ensure that the Patient Safety Committee continues to make meaningful contributions to national intra-professional safety initiatives and to bring the most current information about patient safety to the SOAP membership.
Since the ACGME first began to accredit fellowships in 2012, twenty-seven fellowships have achieved accreditation. With the development of the SOAP OB Anesthesiology Fellowship Committee, our subspecialty has actively worked toward improving the fellowship experience. In 2015 the fellowship will bring two new steps forward: the first OB Anesthesia Fellowship Match and the implementation of Milestones for Obstetric Anesthesiology.

The Match:
The SOAP Board of Directors and the Fellowship Committee began with the implementation of a “Handshake Agreement” for resident recruitment for 2015, and both groups believe that a match is the necessary next step for fellows entering OB Anesthesia in 2016. Dr. Chestnut expressed the feeling of the Committee well at SOAP 2014:

“Overall, a match is in the best interests of our applicants. Further, coming on the heels of ACGME accreditation, participation in a match further validates the legitimacy and quality of our obstetric anesthesia fellowship training programs alongside the other subspecialty training programs in anesthesiology.” – David Chestnut, MD

The OB Anesthesia Fellowship Committee reviewed match programs offered by NRMP and the San Francisco Match, including multiple interviews with representatives from both companies. We have decided to retain NRMP as the Match provider for our subspecialty, and are moving forward with our participation in their Anesthesiology Fellowship Match. For success, the hope and expectation is that all programs will participate in the match. With NRMP, it is a requirement that 75% of programs (that meet eligibility requirements) and 75% of fellowship slots (again from eligible programs) participate in the match. We therefore truly need every program possible to participate.

Programs may elect either not to participate in the match at all, or not to put all of their available positions in the match. The number of positions that a program has in the match must be decided by approximately five weeks prior to match day. Given the 75% rules, keeping positions out of the match is not preferred, but the Committee understands that this may be necessary for individual programs and candidates.

To be eligible for the OB Anesthesia Match in October 2015 (for fellows entering in July of 2016), fellowships must be either ACGME accredited or eligible in their current state for accreditation. To clarify, programs must be approved by their GME offices and ready to pursue ACGME accreditation within the next two years. After the first two match cycles, ACGME accreditation will be required for participation in the OB Fellowship Match. Currently, Canadian programs and programs that are partial-faculty positions are not eligible to participate in the fellowship match.

The timeline for the first OB Anesthesia Fellowship Match is indicated in Table 1. The SOAP OB Anesthesia Fellowship Committee will review the match process annually to ensure that it is meeting the needs of the residents and programs. Based on experience, and when deemed necessary, modifications will be made for subsequent match cycles.

Milestones for OB Anesthesia Fellowships:
SOAP and the OB Anesthesia Fellowship Committee are pleased to announce that OB Fellowship Milestones have been developed by the ACGME’s Obstetric Anesthesiology Milestones Committee, chaired by Cynthia Wong, MD. Similar in structure to the Anesthesiology Milestones for the Anesthesiology Core program, the OB Milestones have five levels that indicate the Fellow’s progress through the fellowship, with Level 1 indicating skills of a typical entering fellow, and Level 5 indicating an aspirational level expected of a mature, practicing consultant in obstetric anesthesia.

The Milestones can be easily located on the ACGME website, and a graphic of one of the milestones is included in Figure 1. Fifteen milestones have been developed for OB Anesthesia, and include at least one milestone for each of the six general competencies: Patient Care, Medical Knowledge, Systems-based Practice, Practice-based Learning and Improvement, Professionalism, and Interpersonal and Communication Skills. Fellows in ACGME-accredited programs must be evaluated along the continuum of each of the 15 milestones beginning in July of 2015, and the fellow’s level on each milestone must be reported to the ACGME every six months beginning in approximately January of 2016.

The SOAP OB Anesthesia Fellowship Committee sees the advent of milestones as another “coming of age” of the subspecialty, and looks forward to the improved opportunity to assist fellows in their development into consultants in Obstetric Anesthesiology.
Table 1: NRMP Proposed Timeline for Fellowships Beginning July 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 2014</td>
<td>Open Meeting at SAAA to discuss match changes and NRMP participation.</td>
</tr>
<tr>
<td>Jan 2015</td>
<td>SOAP and Fellowship Committee re-survey PDs/PCs to be able to provide the most up-to-date information to the NRMP.</td>
</tr>
<tr>
<td>Feb 2015</td>
<td>SOAP provides NRMP with a list of PDs and PCs.</td>
</tr>
<tr>
<td>March 2015</td>
<td>NRMP begins the data entering process.</td>
</tr>
<tr>
<td>June 3, 2015</td>
<td>Match opens.</td>
</tr>
<tr>
<td>August 5, 2015</td>
<td>Ranking opens.</td>
</tr>
<tr>
<td>Sept 9, 2015</td>
<td>Quota deadline – last chance for programs to decide how many positions they want to put in the match.</td>
</tr>
<tr>
<td>Sept 30, 2015</td>
<td>Ranking closes.</td>
</tr>
</tbody>
</table>

Figure 1: Example of an Obstetric Anesthesiology Milestone: Crisis Management
Greetings, SOAP Members!

I begin this SOAP Membership Committee update by sincerely thanking each of you for your support of the Society of Obstetric Anesthesiology and Perinatology (SOAP). By investing in SOAP membership, you are helping to make a positive and profound difference in the lives of countless individuals in the promotion of outstanding obstetric anesthesia care as well as the molding of professional careers in this specialty. As members of SOAP, you are indeed our greatest ambassadors as we together strive to fulfill the Society’s mission.

The SOAP membership body presently numbers 1000 and comprises a variety of clinicians at various stages of development in their professional lives. Realizing that sustainability of membership is immensely important to any organization, the SOAP Membership Committee aims to strengthen membership numbers by focusing upon both the retention of existing and the recruitment of new members. I’m excited to report that membership numbers appear to be on an upward trend! A total of 176 new members were acquired in 2014. 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.

With this in mind, over the past year, the SOAP Membership Committee has tenaciously worked with the SOAP Board of Directors, the SOAP Management Company, and other SOAP component committees to expand the wealth of resources made available to members. In Spring 2014, this committee proposed a prorated membership policy that was approved by the SOAP Board. This policy is of benefit to “all new members making application after the first of September of any calendar year” as it entitles them to the privileges of membership for the remaining months of that year and for the entire next fiscal year. Moreover, this policy benefits the Society in that it serves to enhance new member recruitment efforts. This committee also recognizes the importance of member retention to the perpetuation of the Society and has added benefits that appeal to every tier of membership. SOAP members enjoy free electronic (online) access to *The International Journal of Obstetric Anesthesia*. SOAP members have been afforded the opportunity to attend OB centered MOCA simulation courses at discounted rates. SOAP members are also eligible for discounted membership to IARS. (A complete listing of SOAP member benefits appears on [www.soap.org](http://www.soap.org).) Perhaps most significant, membership in SOAP continues to provide an excellent forum in which to exchange ideas, receive research 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 to become a member of SOAP than now! And truly, there are remarkable rewards in renewal of SOAP membership!

As always, the SOAP Membership Committee has your best interests in mind. This committee is here for you and 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. In closing, I would like to express gratitude to the members of the SOAP Membership Committee for their relentless dedication and hard work. Finally, I challenge each of you to continue to do your part to ensure that our Society thrives by recruiting new members and maintaining your membership. Let’s continue to advocate for optimal maternal-fetal outcomes together!
Institutional Preparation for the Obstetric Patient with Ebola

SOAP Patient Safety Committee
“How We Do It” Expert Opinion

Editor: Rachel M. Kacmar, MD, University of Colorado Denver, Denver, CO
Contributors of Expert Opinions: Paula A. Craigo, MD, Mayo Clinic College of Medicine, Rochester, MN; Grant Lynde, MD, Emory University, Atlanta GA; Jill M. Mhyre, MD, University of Arkansas for Medical Sciences, Little Rock, AR; Stephen Pratt, MD, Beth Israel Deaconess Medical Center, Boston, MA

The recent outbreak of Ebola virus in West Africa and its subsequent spread to the United States highlights the front line role healthcare providers play in both the identification and containment of the disease. While it is not known at this time how two Dallas nurses contracted the Ebola virus, it’s becoming clear to all involved that education and preparation are critical if we are to stop the virus’s spread. Websites, such as those belonging to the Centers for Disease Control and Prevention (http://www.cdc.gov/vhf/ebola/) and World Health Organization (http://www.who.int/csr/disease/ebola/en/) provide the latest information on both the disease and containment. This document is intended to provide “quick reference” for issues and concerns specific to the Obstetric Anesthesiologist.

What is Ebola?
The Ebola virus is an enveloped, non-segmented, negative stranded RNA virus in the family Filoviridae. The Ebola virus was first discovered in the Democratic Republic of the Congo (DRC) in 1976. The current outbreak began in March 2014, is the largest in history and was initially centered in Nigeria and Senegal. Another unrelated outbreak began in July 2014 in the DRC.

The incubation period for the Ebola virus ranges between 2 and 21 days, with patients typically displaying signs of infection between 8 and 10 days. Initial signs and symptoms include fever, chills, malaise, myalgia, weakness and fatigue. Gastrointestinal symptoms typically follow, beginning with anorexia, nausea and abdominal pain followed by vomiting and diarrhea with intravascular volume depletion and electrolyte disturbance.

There are several interrelated mechanisms hypothesized to contribute to hemorrhage: direct viral infection of vascular endothelium, hepatic dysfunction and necrosis, thrombocytopenia, and sepsis-associated disseminated intravascular coagulopathy. Histologic examination of liver specimens demonstrate necrosis. Longitudinal studies of coagulation abnormalities in this patient population do not currently exist. However, thrombocytopenia, elevations in PT and PTT, as well as decreases in fibrinogen are common in patients with Ebola-related hemorrhage.

What is special about caring for pregnant patients with Ebola?
Whether pregnancy increases the risk or severity of an Ebola infection is unknown. Historic data suggests that pregnancy loss followed by post-partum hemorrhage is likely among women infected while pregnant. When adding previous data to the current outbreak, fetal and neonatal mortality is 100%. For example, fifteen cases of Ebola in pregnant women were documented in the Kikwit General Hospital during the 1995 DRC outbreak; one woman survived (93% fatality rate). Four were in the first trimester, six in the second trimester, and five in the third trimester. All patients experienced fever, abdominal pain, diarrhea, hiccups, and shock. All suffered fetal or neonatal loss complicated by vaginal or uterine hemorrhage. All five women who delivered in the 3rd trimester died secondary to postpartum hemorrhage.

The index case of the current outbreak in the Democratic Republic of the Congo was a pregnant woman who died in July 2014. Four healthcare providers were infected while performing a post-mortem cesarean delivery and the disease has continued to spread over the past several months. Several news reports and clinician blogs describe cases of pregnancy loss complicated by obstetric hemorrhage and the subsequent infection of the clinicians, family, friends, and bystanders caring for these women.
Institutional Preparation continued from previous page

Fetal distress and obstetric hemorrhage are two situations in which surgery may be indicated. The Association of periOperative Registered Nurses (AORN) guideline for Ebola Hemorrhagic Fever Precautions in the Operating Room recommends standard, contact, and droplet precautions for patients with known or suspected Ebola who may be undergoing surgery, and explicitly recommend comparable precautions for cesarean delivery. The American Society of Anesthesiology Ebola Workgroup recommends that: "Emergency operations be considered [only] in…Persons Under Investigation [for Ebola], Probable Cases, and early Confirmed Cases. Patients with severe active disease would not likely tolerate an operation due to the severity of their disease. Any decision to operate should weigh all risks and benefits; specifically the risk of death from the current severity of their EVD, risk of death from their surgical disease, and risk of exposure to the OR team against the likelihood of potential benefit of emergency surgery." Every effort should be made to bring personnel, resuscitation and surgical equipment to the isolation room rather than transport the patient to the operating room. The ASA statement provides further guidance for transportation to and from the operating room, operating room set-up, intraoperative conduct, airway management, and post-operative decontamination and debriefing.

There is currently no national consensus as to whether fetal heart rate monitoring is appropriate, given the high rate of fetal and perinatal demise. Certainly any limitations in clinical services should be clearly discussed at the time of diagnosis, and the patient transported to an appropriate facility if possible.

There is insufficient data to evaluate the safety of neuraxial analgesia or anesthesia for pregnant women who have contracted Ebola. The clinical effect, if any, of viremic blood in the spinal fluid after dural puncture is unknown. Ebola may lead to dehydration and hypovolemic shock; in such cases, the addition of a sympathectomy may precipitate cardiovascular collapse. Intrauterine fetal demise and sepsis markedly activate maternal inflammatory mediators and increase risk for coagulopathy, which may increase risk for both epidural hematoma and obstetric hemorrhage. Consequently, caution and best medical judgment should be applied when prescribing analgesia and anesthesia for pregnant women infected with the Ebola virus.

The CDC is currently drafting Question & Answer references in regards to pregnant patients infected with Ebola. In the interim, AWHONN has issued a practice brief on caring for pregnant and postpartum women with Ebola in the United States.

How do I protect myself and my other patients?

Current CDC and WHO guidelines are to place the patient into an isolation unit and implement standard, contact, and droplet precautions. Facilities should maintain a log of all persons entering the patient room and should limit the number of people on the care team. If possible, a dedicated team should be responsible for Ebola patients and should not have contact with any other patients. Non-essential staff should be restricted from Ebola patient care areas. All persons entering the patient room should receive rigorous and repeated training in the optimal use of Personal Protective Equipment (PPE). Updated guidance from the CDC directs institutions to ensure the availability and proper use of impermeable, disposable, single-use PPE that completely covers all skin surfaces. Personal items including badges, cell phones, and stethoscopes should not be taken into the designated care area. Additional healthcare professionals should be trained and available to monitor the donning and doffing of PPE to ensure proper use, using a buddy system to crosscheck each other for lapses from protocol.

Disposable medical equipment should be used whenever possible and all durable medical equipment should be cleaned and disinfected according to manufacturer’s instructions. Phlebotomy and laboratory analysis should be limited to the minimum necessary to reduce the chances of accidental needle injuries and blood/fluid exposure. (1) When collecting labs or other specimens, PPE should be worn as outlined above. Laboratory workers should take the same precautions as other healthcare workers if concern exists for exposure to bodily fluids. Point of care testing may be considered if appropriate.

The CDC defines intubation and extubation, the use of BiPAP, bronchoscopy, and airway suctioning as aerosol generating procedures (AGP). When involved in an AGP, the CDC recommends that the number of healthcare personnel be limited to those absolutely necessary for patient-care and support. In addition, the procedures should ideally be completed in an Airborne Infection Isolation Room (AIIR) by healthcare personnel wearing appropriate PPE, including a disposable N95 filtering facemask or other single use respirator. (1)

What should I do if I have been exposed to Ebola?

Institutional Preparation continued on next page
Providers who have a high risk exposure, including percutaneous (e.g., accidental needle stick), mucous membrane, or direct skin contact with the blood or body fluids of a symptomatic Ebola patient, should wash the affected skin with soap and water. Eyes and mucous membranes should be irrigated with copious amounts of water or eyewash solution. Occupational health specialists, the local health department, and the CDC should also be contacted. Healthcare providers who had high risk exposure to Ebola should receive a medical evaluation and monitor body temperature for 21 days after the last known exposure. (1) Asymptomatic individuals with a high risk exposure to Ebola should maintain a 3-foot physical separation from other individuals during this period, by avoiding indoor public spaces, public transportation, congregate gatherings, and work unless approved by the state or local health department. (http://www.cdc.gov/vhf/ebola/pdf/monitoring-and-movement.pdf)

In conclusion, although the likelihood of caring for a pregnant patient infected with the Ebola virus is low, the potential risks inherent in this care can be anticipated and policies established to mitigate risks for both the patient and care providers. While we have described the latest information regarding the disease and the pregnant population, evolving information regarding the spread of the virus and current recommendations for patient care and PPE are updated frequently on the CDC and WHO websites. Providers should refer to these sources as well as their own hospital policies in determining the best practice for patients with potential Ebola virus infection on labor and delivery units.

Table 1. Organ-system Presentation of the Ebola Virus

<table>
<thead>
<tr>
<th>Organ-System</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>Conjunctival Injection, Postural Hypotension, Edema, Macropapular Hemorrhage, Pericardial Tamponade</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Nasal Discharge, Cough, Shortness of Breath, Chest Pain, Hiccups, Hemoptyisis</td>
</tr>
<tr>
<td>Neurological</td>
<td>Fever, Fatigue, Headache, Confusion, Coma</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Anorexia, Nausea, Vomiting, Abdominal Pain, Diarrhea, Dysphagia, Jaundice, Bleeding gums, Hematemesis, Melena</td>
</tr>
</tbody>
</table>

Sources: (1, 4)
*It is unknown whether cerebrospinal fluid contains the ebola virus, and if so, at what point in the disease process the spinal fluid becomes infected.

Table 3. CDC screening guideline. If a patient has recently traveled to an at-risk West African Country (Sierra Leone, Guinea, Nigeria, Liberia) within 21 days he/she should be questioned about the following criteria.

- Fever (≥ 100.4° F or 38.0° C)
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting
- Stomach pain
- Unexplained bleeding and bruising

Source: University of Colorado Health Ebola Update 10.17.2014

References:
In obstetric anesthesia, intrathecal or epidural morphine and fentanyl are the most commonly used opioids for post-cesarean section 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. A recent meta-analysis evaluated the impact of epidural analgesia in patients who underwent a variety of surgeries under general anesthesia. Epidural analgesia was associated with a decreased risk of a variety of cardiovascular, pulmonary and gastrointestinal endpoints including arrhythmias, pneumonia, atelectasis, respiratory depression, ileus, postoperative nausea and vomiting and earlier return of bowel function. [3] Morphine is considered the gold standard, administered via epidural or intrathecal route, for single-dose neuraxial postoperative analgesia. Post-operative pain control and patient early mobilization are important goals, especially as hospitals look for greater patient satisfaction scores, reduced morbidity and earlier discharges.

Over the past several years, drug shortages have become a more common occurrence for a variety of reasons[4] and has impacted the practice of anesthesia. Preservative free morphine, which is used in neuraxial analgesia, is one of the drugs affected by these shortages. A recent update (12/17/13) by the FDA at www.fda.gov/drugs/drugsafety/drugshortages/ucm050792.htm continues to cite its limited availability. With drug shortages threatening the availability of intrathecal morphine, alternative options to provide patients with significant and lasting analgesia following a cesarean delivery must be pursued. Alternative pharmacologic options and regional techniques will be addressed.

Looking at alternative opioids, hydromorphone may be an acceptable alternative. With a rapid onset and prolonged duration of action with a similar side effect profile to morphine, intrathecal hydromorphone is one such agent.[5] However, no blinded study exists comparing intrathecal morphine and hydromorphone in cesarean section. A review by Rathmell suggests an intrathecal hydromorphone dose of 50-100 mcg is equivalent to an intrathecal morphine dose of 100-200 mcg.[6] The Agency for Health Care Policy and Research (AHCPR) Management of Cancer Pain Guidelines recommends a dose equivalence rule of approximately 1.5 mg hydromorphone to 10 mg morphine suggesting hydromorphone is about 7 times as potent as morphine for pain relief. [7] Several studies have demonstrated the use of intrathecal hydromorphone in the acute postoperative period.[8] Rauch reported successful post-cesarean analgesia using 100 micrograms of intrathecal hydromorphone in a patient with history of adverse reaction to morphine. This patient had 15 hours of analgesia.[9] Hydromorphone 0.5-1 mg may also be used epidurally for post-cesarean analgesia. Meperidine, preservative free, has been used as the sole intrathecal agent for surgical anesthesia at 1 mg/kg due to a local anesthetic type effect, while also providing post-operative analgesia.

Other intrathecal opioids available for use include sufentanil and fentanyl. However, neither of these drugs can provide the same duration of analgesia as morphine as they are more lipophilic. Other analgesic adjuvants include clonidine, dexmedetomidine, magnesium, and gabapentin. Intrathecal clonidine provides analgesia by binding to receptors in the dorsal horn of the spinal cord and inhibiting the release of substance P and producing analgesia. Due to its side effects of hypotension and sedation, the routine use of clonidine is not recommended.[10, 11] Intrathecal dexmedetomidine is another alpha-2 adrenergic receptor agonist that modulates pain via primary afferent nerve terminals in the CNS. A meta-analysis by Abdallah et al. demonstrated an increased duration of analgesia with intrathecal dexmedetomidine. They concluded that further study of the drug needed to be done, as the safety data on this drug with perineural use was limited. [12] Significant sedation associated with dexmedetomidine may be undesirable in the post-partum patient.[13] Magnesium sulfate is a non-competitive NMDA receptor antagonist that may augment analgesia by limiting central sensitization from peripheral nociceptive stimulation when given neuraxially. A recent meta-analysis found that intrathecal magnesium delayed the onset of analgesia, provided a longer duration of analgesia and decreased the need for supplemental opioids. In contrast, magnesium accelerated the onset of the block when given epidurally. Further studies need to be done.

Intrathecal Morphine Shortage continued on next page
to determine the safety of magnesium and ideal dosing prior to routine neuraxial clinical use.[14] The anticonvulsant gabapentin when given orally also has been studied as a possible analgesic adjuvant.[13] It interacts with voltage gated calcium channels and prevents the release of excitatory mediators by binding to the receptors in the dorsal root ganglia. Moore and his colleagues prospectively randomized women to either 600 mg of gabapentin or placebo preoperatively. These women received a spinal anesthetic of bupivacaine, fentanyl and morphine. Postoperatively, they received acetaminophen, NSAIDs and morphine. At 24 hours post op, mean VAS scores with movement was 21 mm in the gabapentin vs 41 mm in the placebo group (p=0.001). Maternal satisfaction was greater in the gabapentin group for the first 12 hours. Gabapentin was associated with greater maternal sedation.[15] More large-scale randomized control trials are needed to determine ideal dosing, its effectiveness and safety in the post cesarean population. Transcutaneous electrical nerve stimulation and percutaneous intradermal electrical stimulation are two non-pharmacologic interventions with limited research but potential for application in post-cesarean pain relief.

Regional anesthesia is another option for rescue analgesia. Transversus abdominus plane (TAP) block is an intramuscular plane block that targets T7-L1 sensory fibers between the internal oblique and transverse abdominus muscles. Benefits of this block compared to neuraxial techniques include decreased side effects (such as hypotension, motor blockade, pruritis), ease of block performance, duration of analgesia and IV and oral opioid sparing ability. This block is efficacious for somatic (incisional) type pain, but not visceral uterine pain. TAP blocks have been studied both as an additional intervention for cesarean delivery as well as a rescue technique.

It appears the TAP block may have a more important role in rescue analgesia and in patients whom additional IV narcotic medication and/or NSAIDS are undesirable or contraindicated. Carvalho and Mirza presented a short case series of patients who received rescue TAP blocks after standard intrathecal doses of fentanyl and morphine. These patients experienced significant reduction in pain and reduced need for additional intravenous narcotics.[16] TAP blocks also may be of benefit in patients not receiving intrathecal morphine. In a study by Onish et al., patients receiving a TAP block had decreased need for IV morphine post-operatively compared to those patient’s receiving only epidural morphine.[17] Mishrik and colleagues performed a meta-analysis on the efficacy of TAP blocks after cesarean section. They demonstrated that patients who did not have intrathecal morphine had significant improvement in analgesia. However, patients who received intrathecal morphine did not have any additional benefit from TAP block. Patients who had only intrathecal morphine had better analgesia than the patients who only had TAP blocks, but at a cost of increased incidence of side effects.[18] Continuous TAP catheters are another potentially useful technique for the anesthesiologist; however, more studies are needed.

Instillation of local anesthetic into the incision site is another option for providing postoperative analgesia. Shahin and colleagues demonstrated that intraperitoneal instillation of lidocaine resulted in a reduction in post-cesarean pain scores and need for additional IV morphine.[19] These authors do not surmise the peritoneum during their closure and noted that further studies are needed to evaluate the influence of closure on pain.

Although their popularity has declined, PCEA and IV PCA remain viable alternatives for providing effective postoperative analgesia.[20, 21] Examples of post-cesarean PCEA solutions range from bupivacaine 0.015% with fentanyl 0.4 mcg/ml and epinephrine 0.5 mcg/ml at 15 ml/hr, 3 ml bolus and 10 min lockout.

Despite the limited availability of preservative-free morphine for neuraxial use, effective postoperative analgesia can be provided with alternative options.

References:


### Table 1: Alternatives to intrathecal morphine

<table>
<thead>
<tr>
<th>Agent</th>
<th>Mechanism</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrathecal Hydromorphone</td>
<td>Mu opioid receptors</td>
<td>Recommended dose 50-100 µg</td>
</tr>
<tr>
<td>Epidural Hydromorphone</td>
<td>Mu opioid receptors</td>
<td>Recommended dose 0.5 – 1 mg</td>
</tr>
<tr>
<td>Intrathecal Clonidine</td>
<td>α2 agonist, Modulation of pain via primary afferents in the CNS; decrease release of substance P</td>
<td>Routine use not recommended secondary to hypotension and sedation.</td>
</tr>
<tr>
<td>Intrathecal Meperidine</td>
<td>Mu opioid receptors</td>
<td>12.5 - 25 mg meperidine</td>
</tr>
<tr>
<td>Intrathecal Dexmedetomidine</td>
<td>α2 agonist, Modulation of pain via primary afferents in the CNS</td>
<td>Not currently used clinically, further studies needed to assess safety associated with perineural use. Associated with significant sedation</td>
</tr>
<tr>
<td>Magnesium</td>
<td>NMDA antagonist, Limits central sensitization when given neuraxially.</td>
<td>Potential for epidural and intrathecal use. Further studies needed for safety and dosing recommendations.</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>Voltage gated Ca channels in, Prevents release of excitatory neurotransmitters in dorsal root ganglia</td>
<td>Further studies needed to determine ideal dosing, effectiveness and safety.</td>
</tr>
<tr>
<td>Transcutaneous electrical nerve stimulation</td>
<td>Neuromodulation</td>
<td>Non-pharmacologic intervention</td>
</tr>
<tr>
<td>Percutaneous intradermal electrical stimulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transversus abdominus plane block</td>
<td>Regional nerve block, Targets T7 – L1 sensory fibers.</td>
<td>Continuous catheter placement possible.</td>
</tr>
</tbody>
</table>
Anesthesia Staffing in the Labor Suite

Steven Ropers, MD and Lee Coleman, MD
Cedars-Sinai Medical Center
West Hollywood, CA

The Labor and Delivery (L&D) suite is a very unique place in every hospital. Although mainly a joyful location, emergencies can develop within minutes and threaten the life of both the patient and her unborn fetus. This inherently unpredictable nature of the L&D suite renders the task of anesthesia staffing difficult. Other variables such as fluctuating delivery volume and the potential presence of high-risk obstetric patients further complicate routine scheduling of anesthesia coverage.

Determining and recommending anesthesia staffing requirements using either minimum standards and/or subsequent variables, such as number of deliveries, number of anesthetic interventions, etc, has been investigated and subsequently lead to guidelines. Proposed staffing has been linked to such rudimentary calculations as one anesthesiologist per 500 deliveries, to the more complex formula proposed by Dexter et al that utilizes statistical methods to attempt to determine optimal number of beds and occupancy at any given time. However, while these formulas may predict an end product that is satisfying to funding sources and planners, it may not be functional on a practical basis.

There is tremendous variability among institutions such that other studies have demonstrated that there is no clear association between number of anesthetic interventions with the number of deliveries, cesarean sections, or regional anesthetics. The critics of such models have argued that “of crucial importance is the provision for staffing when an ‘unexpected’ surge in workload occurs in order to maintain appropriate standards of care.” The ability to minimize cost, maximize efficiency, and retain the standard of care is as much an art as it is a science.

Trying to predict these “surges” in workload has lead to investigation of circadian rhythms associated with laboring patients and findings that approximately 60% of all anesthetic workload occurred during daytime hours. However, other studies have shown that institutional factors, such as induction policies and work patterns, have a greater influence than any natural factor and any anesthetic staffing predictions should be adjusted to compensate for these institutional practices. Further complicating the staffing issue for larger and academic hospitals is the referral of high-risk patients.

The importance of these multiple variables was briefly addressed by the American Society of Anesthesiologists (ASA) when it published its 2012 Operating Room Design Manual. It recommended that the question of anesthesia staffing be addressed early on, even before the decision of where to place the labor floor within the hospital. It also stated that if the L&D suite is close to the main OR, cross-coverage between both places may be possible for the anesthesiologist. Important decisions to be made are whether or not an anesthesiologist should be dedicated exclusively to L&D, and whether or not it is acceptable to have the anesthesiologist on home call. This debate has extended even to the American College of Obstetricians and Gynecologists (ACOG), where the availability of anesthesiologists is described differently in different ACOG documents. The Guidelines for Perinatal Care state that an anesthesia provider should be immediately available throughout labor, while the Practice Bulletin requires just the availability of anesthesia services for emergency surgery.

ACOG and the ASA, recognizing the difficulties in defining a standard for anesthetic staffing, published a joint statement addressing some of these issues. The statement acknowledged “the extent and degree to which anesthesia services are available varies widely among hospitals.” However, it emphasized that certain optimal anesthesia goals should be ensured. All hospitals need to provide “availability of anesthesia and surgical personnel to permit the start of a cesarean delivery in a timely manner in accordance with clinical needs and local resources.” ACOG eliminated the ’30-minute rule’ for decision-to-incision for cesarean delivery, stating “…the scientific evidence to support this threshold is lacking” and that multiple studies affirm the lack of association of increased adverse outcomes when the decision-to-incision interval was greater then 30 min. In the setting of a Category III fetal heart rate tracing, a decision to perform a cesarean delivery “…should be accomplished as expeditiously as feasible” and “…based on timing that best incorporates maternal and fetal risks and benefits.”

If the institution allows for trial of labor after C-section (TOLAC), the “immediate availability of appropriate facilities and personnel… including obstetric anesthesia, nursing and physician to perform the cesarean is optimal.” Note that the exact determination of “immediately available” was deliberately left to the individual institution. Other recommendations included the availability of 24-hour in-house anesthesia coverage in larger maternity units and high-risk centers; and in these larger centers, the obstetric anesthesia services should preferably be directed by an anesthesiologist with special training or experience in obstetric anesthesia. However, no firm guidelines were stated. Should this

Anesthesia Staffing continued on next page
anesthesiologist be solely assigned to L&D, and what about other duties that can impinge upon the time commitment to L&D, such as teaching and administrative duties?

One potential answer for some of the variation required for anesthesia staffing is the availability of residents or nurse anesthetists. The ASA published a “Statement on the Anesthesia Care Team” in which it describes the Anesthesia Care Team model. The anesthesiologist is ultimately responsible for the anesthetic management of the patient, but, depending on the clinical setting and the support staff, the anesthesiologist may medically direct up to 2 residents or 4 CRNAs. Many hospitals have an attending anesthesiologist covering cases in the main operating room as well as other anesthetizing locations, including the labor and delivery suite. Hence the presence of anesthesiology residents or nurse anesthetists reduces the requirement for a second attending anesthesiologist in most L&D suites when those surges do occur.

A SOAP Expert Opinion from principally academic institutions (n=17) surveyed staffing of Labor & Delivery. The results show a mix of anesthesiology attending, fellow, resident and nurse anesthetist coverage of anesthesia services based on institutional needs and the clinical and teaching demands of Labor and Delivery units of various sizes and levels of patient acuity. Generally, at approximately 3500-4000 deliveries per year, two anesthesiology attending physicians or an attending and a fellow covered the Labor and Delivery service along with 2 or more anesthesiology residents/nurse anesthetist. Some institutions provided the same coverage daytime/nighttime/weekends, but most provided extra residents to assist with clinical demands for scheduled (and unscheduled) cesarean sections during the daytime. At approximately 2000 deliveries/year the attending anesthesiologist covering Labor & Delivery may also be covering an operating room in the main OR. Staffing demands varied by institution (e.g. # deliveries/year, patient acuity, cesarean section rate, and/or resident training level and experience). Currently there are no strict metrics for providing clinical and teaching coverage of Labor & Delivery at primarily academic institutions. Each institution developed staffing solutions based upon individual requirements and needs.

References

Combined Spinal-Epidural for Routine Use in Labor and Cesarean Delivery: Pro

J. Sudharma Ranasinghe, MD
University of Miami Miller School of Medicine
Miami, FL

The combined spinal-epidural (CSE) technique, first reported as an option for cesarean delivery in 1984, has become popular for labor analgesia. CSE is widely used in obstetric anesthesia practice to provide analgesia for 37% of laboring parturients as well as to provide anesthesia for 28% of women cesarean delivery in one recent survey of predominantly academic centers.

Labor analgesia

Benefits:
The combined spinal-epidural technique offers effective, rapid-onset analgesia with minimal risk of toxicity or motor block to the laboring parturient. In addition, this technique provides the ability to prolong the duration of analgesia, as often required in labor, through the use of an epidural catheter. Furthermore, should an operative delivery become necessary, that same epidural catheter can be used to provide operative anesthesia. The onset of spinal analgesia is almost immediate, and the duration is between 1 and 2 hours, depending on which medications are chosen. The original descriptions of spinal labor analgesia utilized sufentanil or fentanyl, but the addition of isobaric bupivacaine to the opioid produces a greater density of sensory blockade while still minimizing motor blockade. Originally, 25 μg of fentanyl or 10 μg of sufentanil was advocated, but subsequent studies suggested the use of smaller doses of opioid combined with a local anesthetic. For example, many clinicians are now routinely using 10-15 μg of intrathecal fentanyl.

The CSE technique is also one technique of ambulation for parturients receiving neuraxial analgesia. Wilson et al. showed that significantly more women maintained superior leg power for longer period with CSE than with low dose infusion of standard epidural. Reduction of motor blockade is considered advantageous for parturients, even those who will not ambulate. In addition to rapid onset of pain relief, the CSE technique may reduce the incidence of several potential problems associated with the conventional epidural technique, including incomplete (patchy) blockade, motor block, and poor sacral spread. Another potential advantage of the CSE technique is that, it may be associated with a significant reduction in the duration of the first stage of labor in primiparous parturients.

When compared with epidural analgesia alone for labor, the incidence of overall failure, accidental intravascular epidural catheters, accidental dural punctures, inadequate epidural analgesia and catheter replacements were repeatedly shown to be significantly lower in patients receiving combined spinal-epidural analgesia. Additionally, both Norris et al. and Eappen et al reported that CSE has a higher success rate compared to the conventional epidural technique. This difference may be due to the ability to confirm questionable epidural location by successful spinal placement and observation of CSF.

Risks:
Theoretically, CSE is thought to be associated with an increased risk of meningitis compared to epidural alone because the dura (protective barrier for the central nervous system) is punctured deliberately during CSE and then a foreign body, an epidural catheter, is placed nearby. The epidural catheter can lie close to the dural hole, and is a potential focus of infection, especially following bacteremia. Contamination of the subarachnoid space may occur from bleeding due to needle trauma in a bacteremic patient or from failure of aseptic technique.

In 2008, three bacterial meningitis cases in postpartum women were reported to the New York State Department of Health. All three women received CSE for labor. S. salivarius (a normal commensal of oral flora) was cultured from the CSF of two patients. The anesthesiologist responsible for all three cases reported routine use of masks during neuraxial procedures. However, the staff reported that it was common to have unmasked visitors present in the room during these procedures. The hospital instituted new policies to minimize visitors and requiring masks for all persons in the room during neuraxial labor analgesia procedures. In 2009, two similar cases were reported to the Ohio Department of Health. The anesthesiologist responsible for these two cases did not wear a mask. CSF cultures from both patients’ revealed S. salivarius and one of them died from suppurative meningitis.

In 2009, Sankovsky, et al. also reported a case of Streptococcus salivarius meningitis subsequent to CSE for labor in a healthy primigravid patient. The anesthesiologist was wearing sterile gloves and a mask, but the mask had been worn during prior procedures.

The incidence of PDPH after CSE technique is controversial; some authors have reported decreased incidence when compared with epidural alone while others report an increased incidence. Reports in the literature suggest an increased frequency of non-reassuring FHR tracings and fetal bradycardia associat-
ed with CSE17-19. The etiology of fetal bradycardia after CSE may be related to an acute reduction in circulating maternal catecholamine levels after the almost immediate onset of analgesia. In addition, it has been postulated that an imbalance between epinephrine/norepinephrine levels (decreased epinephrine levels in the continuing presence of high norepinephrine levels) causes unopposed α-adrenoceptor effects on uterine tone with increased uterine vascular resistance leading to decreased uterine blood flow. The resulting fetal bradycardia is usually short lived and typically resolves within 5 to 8 minutes20. A retrospective study of 1240 patients who received regional labor analgesia (mostly CSE) and 1140 patient who received systemic medication or no analgesia demonstrated no significant difference in the rate of cesarean delivery, with rates of 1.3% and 1.4%, respectively. That study also reported that no emergency cesarean deliveries for acute fetal “distress” were necessary in the absence of obstetric indications up to 90 minutes after intrathecal sufentanil administration21. A prospective randomized study by Skupski et al22 also found no difference in the rate of prolonged deceleration between conventional epidural versus CSE for labor (3.2% versus 6.2% respectively; p = 0.43)

CSE for Cesarean Delivery

The advantage of CSE technique is that it provides rapid onset of dense surgical anesthesia while allowing the ability to prolong the block with an epidural catheter. In addition, because the block can be supplemented at any time, the CSE technique allows the initial use of smaller doses of spinal local anesthetics, which may in turn reduce the incidence of high spinal block or prolonged hypotension23-25. With the epidural catheter, one may extend the analgesia well into the postoperative period. Potential problems of the CSE technique for cesarean delivery include an inability to test the catheter, the possibility of a failed epidural catheter after spinal injection, and the risk of enhanced spread of injected spinal drug after use of the epidural catheter 28. In addition, epidurally administered medications may spread to the subarachnoid space through the dural puncture29.

The low-dose spinal followed by a low dose epidural, “low-dose sequential CSE” technique may be particularly advantageous in high risk parturients, such as those with cardiac disease, when slower onset of sympathetic blockade is desirable.31,32 Most spinal anesthetics are administered as a single injection procedure and rapid onset of sympathetic blockade may result in abrupt, severe hypotension. Traditionally high-risk patients are managed with the slow onset of controlled epidural anesthesia, which requires much higher total dosages of local anesthetic than is the case with sequential CSE. Gambling et al33 performed a randomized controlled comparison of epidural analgesia and CSE analgesia for labor in a private practice setting involving 800 patients. He concluded that CSE analgesia provided better first stage analgesia compared with traditional epidural technique despite fewer epidural top ups by an anesthesiologists.

In summary, CSE can reduce or eliminate many of the disadvantages of subarachnoid or epidural anesthesia alone while preserving their respective advantages. The CSE block offers the speed of onset, efficacy and minimal toxicity of a subarachnoid block combined with the potential of improving an inadequate block or prolonging the duration of anesthesia with epidural supplements.

References:

18. Kuszczewski KM. Severe persistent fetal bradycardia following

Combined Spinal-Epidural: Pro continued on next page


**Combined Spinal-Epidural for Routine Use in Labor and Cesarean Delivery: Con**

Mark I. Zakowski, MD  
Cedars-Sinai Medical Center  
West Hollywood, CA

While Combined Spinal Epidural (CSE) has become popular, epidural is by far the most common method of labor analgesia, by a 2:1 margin.1 A word of caution – any technique inherently comes with its own unique risks and benefits, and CSE for labor analgesia or as anesthesia for cesarean delivery is no different. The better informed you are about risks as well as benefits allows you to make the best individualized decision and discussion of informed consent with your patients. Dr. Ranasinghe has done an excellent description of CSE, so I’ll just focus on the negatives, for a balanced perspective.

**Labor Analgesia CSE Risks:**

Does CSE change the fetal heart rate (FHR) or uterine contractility? While studies have certainly had mixed results, lets consider that higher dose intrathecal (IT) narcotic has been associated with an increase in FHR changes or uterine hypercontractility. CSE for labor analgesia using IT sufentanil 7.5 mcg had significantly increased incidence (24%) of FHR abnormalities (bradycardia or late decelerations) compared to epidural alone (11%) or CSE with IT bupivacaine 2.5 mg, epinephrine 2.5 mcg, sufentanil 1.5 mcg (12%), p<.05.2 The same study found uterine hyperactivity occurred significantly more frequently in 12% of parturients with IT Sufentanil 7.5 mcg compared to 2% in the other groups, P<.05 as well as a higher incidence of severe hypotension requiring IV Ephetrine in the IT bupivacaine/epinephrine/sufentanil group, 29% vs. 7% epidural and 12% IT Sufentanil groups, P<.05.

The current teaching about the physiology of fetal heart rate changes following labor analgesia concerns change in the uterine agonist/antagonist balance, which may occur even after intravenous analgesia. The faster the onset of analgesia, the faster and greater the drop in circulating catecholamines (which have an intrinsic beta-adrenergic agonist effect, relaxing the uterus), causing changes in the uterine agonist/antagonist balance, leading to uterine hyperactivity, especially in the presence of exogenous oxytocin administration. A prospective, randomized study found oxytocin use to be an independent and significant risk factor for FHR changes after analgesia, P<.01.3 Another study found the use of IT Sufentanil to be associated with a significantly lower rate of reassuring tracings (60.4% vs. 74.5%, P=.007), more fetal bradycardia (14.1% vs. 7.5%, P=.035), fewer accelerations (84% vs. 93.5%, p=.003), and more episodes of fetal tachycardia (11.4% vs. 3.5%, P=.005).4 Indeed, CSE use was associated with a significantly greater incidence of uterine hypertonus (P=018), FHR abnormalities (p<.01) with a correlation between decreased pain immediately after analgesia and probability of hypertonus/FHR abnormalities compared to epidural analgesia alone.5 Admittedly, the changes in uterine tone and fetal heart rate abnormalities have NOT been associated with an increase in cesarean delivery or adverse neonatal outcome, and are generally short term. But who needs the headache and worry?

**CSE safety**

From a medical safety point of view, you have to love the epidural space. While many case reports exist of unintended wrong site injection, very few medications cause permanent injury in the epidural space.6 As Dr. Ranasinghe points out, post dural puncture meningitis may occur. One editorial estimated post dural puncture meningitis may be as high as 1.3/10,000,7 while another review estimated 0.25/10,000 in obstetric patients.7 Neurologic deficits occur more frequently after spinal then epidural anesthesia (5.9 vs. 2/10,000).9 In a study of over 770,000 neuraxial blocks, the risk of neurologic injury for CSE vs. epidural was 3.9 vs. 0.6/100,000 blocks – a relative risk of 6.5!10 While CSE should be used in obstetric anesthesiology, the practitioner should be aware of the risks as well benefits. Choices of anesthetic technique should be individualized to the medical and laboring conditions of the patient.

**References:**


*Combined Spinal-Epidural: Con continued on next page*
There are a few personalities who were absolutely essential in the transformation of a nascent idea into the wonderful organization which is today known as SOAP. I sense that some of these are either unknown or rapidly fading from the memory of even only middle aged SOAP members. One was Otto C. Phillips. Another was Jim Elam.

While a few of we obstetric anesthesiologists were in the “...we oughtta get a group together...” stage, Jim actually went out and got a grant for a meeting location and travel money to Chicago for interested participants. He invited his personal friends Bob Bauer, Bob Hustead, and Jim Evans, while I invited others. Several contemporary “big names” were not interested and declined. But from that meeting on May 25, 1968 onwards, SOAP (yet without a name) grew, and the attendees eventually became known as the “Founders of SOAP”. Another thing which appears to be fading from SOAP group memory is that Jim was already world famous for entirely unrelated major contributions to medical care before he became interested in Obstetric Anesthesia. In fact, his biographers barely mention his contributions to Obstetric Anesthesia.

Jim Elam weighed only two pounds when born in Austin, Texas in 1918. That he lived was a miracle for those times. After graduation from the University of Texas in 1942, he finished Hopkins Medical School, 1945, an internship in the U.S. Navy, and postgraduate study in physiology at the University of Minnesota. There, as he remembered, he used mouth to mouth breathing for the first time. In his second year of surgery training at Barnes, under the famous and influential Evarts Graham, because of his growing interest in respiratory physiology, he switched to anesthesiology training and graduated from the Iowa program under Stuart Cullen in 1951. Sands tells us he spent mornings in the O.R. and afternoons in the biophysics laboratory. After anesthesia residency he returned to the Barnes staff briefly, but was then told that he could not carry out human experimentation, so migrated to the Roswell Park Institute in 1953.

Jim acquired a prototype of the first infrared carbon dioxide analyzer directly from the inventor, Liston. He quickly showed that CO2 elimination by existing anesthesia systems was inefficient. Subsequently, he and his pals Elwyn Brown and Raymond Ten Pas revolutionized the design of carbon dioxide absorption canisters by their research. In addition to revolutionizing intra anesthesia carbon dioxide absorption systems, he also invented and perfected what was at the time a revolutionary automatic anesthesia ventilator, the “Roswell-Park” (later to become familiar as the “Air Shields Ventilator”), which for many years was ubiquitous in American operating rooms because of its superior physiologic base and practical design.

While at Roswell Park he made what is undoubtedly the most important of his innumerable contributions to medical care. His 1954 NEJM publication on “mouth to mouth” rescue ventilation was the first description and investigation of this technique, and was the impetus which has led to our present worldwide recognition and application of CPR (“Cardio-Pulmonary-Resuscitation”). He is acknowledged by all as the modern “father” of rescue ventilation. Peter Safar, though ultimately even more acclaimed than Elam, never failed to acknowledge that Elam was the inventor of the method. Elam worked closely with Safar, Gordon and others to successfully “spread the gospel” of these methods. In 1959 Elam’s booklet “Rescue Breathing,” was distributed nationally, and was widely acclaimed. By 1960, mouth to mouth rescue breathing had been adopted by the National Academy of Science, the American Society of Anesthesiologists, the Medical Society of the State of New York and the American Red Cross. Elam was recognized by the United States Army with a Certificate of Achievement, and in 1962, the Medical Society of the state of New York presented him with his highest honor, the Albert O. Bernstein Award. Elam, Safar, Gordon, and Nagel were key figures in initiating the CPR Committee of the American Heart Association that has had such amazing worldwide impact.

Jim became Chairman of Anesthesiology at the University of Missouri, Kansas City branch in 1964. Not temperamentally suited for administration, he moved on to become Head of Obstetric Anesthesia at the University of Chicago, Chicago Lying In Hospital in 1966.

During this period he worked with Frederick Zuspan who was a giant in Obstetrics and Gynecology and later a SOAP stalwart. Significantly the “father of Obstetric Anesthesia in Great Britain”, J. Selwyn Crawford (“Jeff”), chose to serve a sabbatical with Jim at this time. At Chicago he published the first description and experience with “microcatheters” for continuous subarachnoid anesthesia in obstetric labor.

At the time of his death he was working on still more advances, including several prototype models of a hypopharyngeal airway which might have found the niche
now occupied by the Dr. Archie Brain’s Laryngeal Mask Airway, had Jim only lived to perfect it. We in SOAP owe James Otis Elam a revered prominent place in our collective memory!

**Further Reading:**

Announcements

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, 2015 with expected funding of the grant in spring/summer 2015.

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 13, 2015). 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

**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 Treasurer. Interested members should send a short statement and picture to tierney@soap.org for posting to the SOAP website.

SOAP is also calling for those interested in serving as Meeting Host for the 2018 Annual Meeting, which is also a Board position. During the 2015 Business Meeting held during SOAP’s Annual Meeting, the SOAP membership votes on future meeting sites. In 2015, we plan to have three cities on the voting ballot for the 2018 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 6, 2015. 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, rooms rates, etc.

If you have any questions, please do not hesitate to contact SOAP headquarters at (414) 389-8611.
Applications Sought for FAER Research Grant Funding
Opportunities for Faculty Members and Trainees, Apply by Feb. 15

The board of directors of the Foundation for Anesthesia Education and Research (FAER) is pleased to announce FAER’s 2015 research grant funding opportunities.

FAER provides research grant funding for anesthesiologists and anesthesiology trainees to gain additional training in basic science, clinical and translational, health services and education research. For early-career anesthesiologists interested in pursuing careers as physician-scientists, FAER grants can be an important starting point. These grants aim to help anesthesiologists develop the skills and preliminary data they need to become independent investigators.

2015 FUNDING OPPORTUNITIES

The following research grant funding opportunities are available to anesthesiologists and anesthesiology trainees. The application website for the winter/spring 2015 grant funding cycle is open now through February 15, 2015.

For more information regarding FAER grants and eligibility requirements, visit FAER.org/research-grants or email Jody Clikeman at JodyClikeman@faer.org.

Mentored Research Training Grants
Research Areas: Basic Science (MRTG-BS), Clinical and Translational (MRTG-CT), Health Services Research (MRTG-HSR)*
Purpose: To help physician anesthesiologists develop the skills and preliminary data to become independent investigators
For Whom: Faculty members who completed core anesthesiology residency within the past 10 years
Funding: $175,000
Duration: Two years
Percent Research: 75%
*The MRTG-HSR is jointly sponsored by the Anesthesia Quality Institute (AQI).

Research Fellowship Grant
Research Areas: Basic Science, Clinical and Translational, Health Services or Education
Purpose: To provide significant training in research techniques and scientific methods
For Whom: Anesthesiology trainee after the CA-1 year  
Funding: $75,000  
Duration: One year  
Percent Research: 80%

Research in Education Grant  
Research Areas: Education Research  
Purpose: To improve the quality and impact of anesthesiology education research  
For Whom: Faculty member of any rank (junior or senior faculty)  
Funding: $100,000  
Duration: Two years  
Percent Research: 40%

RESEARCH GRANT APPLICATION DEADLINES

Winter/Spring Funding Cycle  
Online application opens November 1, 2014  
Applications due February 15, 2015  
Award notifications made by May 15, 2015  
Project start date July 1, 2015 or January 1, 2016

Summer/Fall Funding Cycle  
Online application opens June 1, 2015  
Applications due August 15, 2015  
Award notifications made by November 15, 2015  
Project start date January 1, 2016 or July 1, 2016

RESEARCH GRANT ELIGIBILITY CRITERIA – UPDATED FOR 2015

The FAER Grant Management Committee has made a few changes and clarifications to the eligibility criteria and rules for research grant funding from previous years.

- Applicants may submit only one grant application per award cycle.
- Tuition is not allowed in the budget for any grant.
- The applicant and the primary mentor for the grant must be at the same institution.

To view the complete eligibility requirements and application guide, visit  
FAER.org/research-grants.
Endowment Fund Contributors (November 2013 - November 2014)

Rishimani Adsumelli, MD
Manuel Alafriz, MD
Audrey Alleyne, MD
Valerie Arkoosh, MD, MPH
Noah Babins, MD
Gerard Bassell, MD
Terrence Bogard, MD
David Brady, MD
Brenda Bucklin, MD
Kathleen Buffone Dassier, MD
Jodie Buxbaum, MD
Harvey Carp, MD, PhD
Brendan Carvalho, MB, BCh, FRCA
Carmencita Castro, MD
Mairi Chadwick, MD, FRCPC
Wei Chao, MD
Richard Clark, MD
Sheila Cohen, MB, ChB, FRCA
Gary Coke, MD
Alexander Colquhoun, MB, ChB, FRCA
Roseann Covatto, MS, MD
Margaret Craig, MD
Paula Craigo, MD
David Currier, MD
Mark D’Agostino, MD
Patricia Dailey, MD
Patricia Dalby, MD
Sanjay Datta, MB
Renee Davis, MD
Sofronio De La Vega, MD
Emily Dinges, MD
Joanne Douglas, MD, FRCPC
John Downing, MB, BCh, FANZCA
George Dumitrascu, MD
Theodore Ellis, Sr, MD, BM
Thomas Farrell, MD
Jason Farrer, MD
Robert Fish, BA, MD
Michael Froelich, MD, MS
Robert Gaiser, MD
David Gambling, MB, BS, FRCPC
Ronald George, MD, FRCPC
Gilles Girouard, MD, FRCPC
Raymond Glassenberg, MD
Antonio Gonzalez-Fiol, MD
Stephanie Goodman, MD
Philip Greider, MD
Joy Hawkins, MD
Gina Hendren, MD
Philip Hess, MD
Roger Hobgood, DO
Alexander Hotinsky, MD
McCallum Hoyt, MD, MBA
Clyde Jones, MD
Susan Kaplan, MD
Ku-Mie Kim, MD, PhD
BettyLou Koffel, MD
Murugesan Kulandaivelu, MD
Maggie Lasley, MD
Anne Lavoie, MD
David Lea, BSc, MD
Kira Lebowitz, BA, MD
Jeffrey Lee, MD
Yunping Li, MD
Katherine Lim, MD
Agnes Lina, MD
Simon Lucy, MD
Edward McGonigal, MD
Robert McKay, MD
Sally McKellar, MD
James McMichael, MD
Paula Melone, DO
Jean Miles, MD
Karen Mitchell, MD
Daria Moaveni, MD, BS
Richard Month, MD
Alan Nastir, MD
Kenneth Nelson, MD
Mark Norris, MD
Luis Orosco, MD
Quisqueya Palacios, MD
Susan Palmer, MD
Lee Perrin, MD
Patricia Perry, MD
Stephen Pratt, MD
Maurice Prendiville, MD
Roanne Preston, MD
Peter Pryde, MD
Oscar Quintana, DM
Linda Rever, MD
Diane Ridley, MD
Michael Roberts, MD
Jessica Rock, MD
Stanley Roethemeyer, CRNA
Richard Rottman, MD
Louise Roy, MD
Divina Santos, MD
Barbara Scavone, MD
Scott Segal, MD
Yunus Shah, MD
Dennis Shay, MD
Michelle Simon, MD
Richard Smiley, MD, PhD
Vitaly Soskin, MD, PhD
Christian Stevens, MD
Alan Strobel, MD, MBA
John Sullivan, MD, MBA
Paloma Toledo, MD, MPH
Lawrence Tsen, MD
Ruben Valdespin, MD
Manuel Vallejo, Jr, MD, DMD
Anasuya Vasudevan, MB, BS, MD, FRCA
Pamela Webb, MD
Richard Wissler, MD, PhD
David Wlody, MD
Cynthia Wong, MD
Edward Yaghmour, MD
Mark Zakowski, MD
Kathryn Zuspan, MD
SOAP Newsletter Contributors

Brenda A. Bucklin, MD
2015 SOAP Annual Meeting Host

Paula A. Craigo, MD
SOAP Author

Elizabeth (Libby) Ellinas, MD
SOAP OB Fellowship Committee Chair

Michael Froelich, MD, MS
SOAP Newsletter Editor

Robert R. Gaiser, MD
SOAP President

Rachel M. Kacmar, MD
SOAP Author

Grant Lynde, MD
SOAP Author

LaToya Mason, MD
SOAP Membership Committee Chair

Jill M. Mhyre, MD
SOAP Patient Safety Committee Chair

Stephen Pratt, MD
SOAP Author

J. Sudharma Ranasinghe, MD
SOAP Author

Steven Ropers, MD
SOAP Author

Grace H. Shih, MD
SOAP Author

Bradley E. Smith, MD
SOAP Author

Katherine Stiles, MD
SOAP Author

Mark I. Zakowski, MD
SOAP Education Committee Chair

Not Pictured:
Lee Coleman, MD
SOAP Author
2014-2015 SOAP Board of Directors

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Jose C.A. Carvalho, MD, PhD, FANZCA, FRCPC

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Cathleen Peterson-Layne, MD, PhD
Vernon Ross, MD
Bhavani Shankar, MD
Mark Zakowski, MD

Production Team
Dan Dudzinski
Jenni Kilpatrick

Production Team
Dan Dudzinski
Jenni Kilpatrick