The MISSION of SOAP is to improve 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.

In the promotion of excellence in clinical care and improving pregnancy related outcomes, SOAP is collaborating with several societies including ACOG, SMFM, AWHONN, the American College of Nurse-Midwives (ACNM), and our component society, ASA. In partnering, collaboration activities include the Physician Quality Reporting System (PQRS), the new OB Perioperative Surgical Home, OB Bundles on post-partum hemorrhage, preeclampsia and amniotic fluid embolism (AFE), and the OB related Enhanced Recovery After Surgery (ERAS), among others.

SOAP’s research activities include the awarding of the annual SOAP/Gertie Marx Education and Research Grant; and new this year SOAP will implement a Young Investigator Physician Research Starter Grant (more information on this new grant will follow in future SOAP Newsletters). SOAP will also continue to foster both education and research with our individual ACGME institutional accredited OB-Anesthesia fellowship programs.

As one of our mainstays, SOAP promotes continuing medical education (CME) activities via our annual meetings, comprising the SOAP Annual Meeting, the Sol Shnider Meeting, the SOAP Education Track held in conjunction with the ASA meeting, and a new East Coast Meeting that will convene in the fall of 2016. The SOAP Education Committee and the SOAP CME Committee have already begun to work with ASA to develop OB-Anesthesia specific CME questions.

SOAP is looking for innovative ways to grow global membership and extend our brand through global education, which is essential to our mission. SOAP most recently participated in the 2nd Latin American Symposium on Obstetric Anesthesia held at the XXI Colombian Congress of Anesthesiology in Cali,

President’s Message continued on page 2
The main feature of the summer newsletter is a summary of our annual meeting. The Broadmoor Hotel and Resort in Colorado Springs proved to be a fascinating site and the meeting was well attended. Dr. Mason is giving us a summary of the meeting and the highlights, both as a reminder for those in attendance and information for those who could not attend.

As media committee chair, I would like to share the highlights of our committee’s goals with you. We are very mindful of the need to communicate with our members effectively; to that end we try to keep our website up-to-date and organized in a logical fashion. Questions about changes in the layout come up often but so far the majority of members like the current structure. There is however a need to make our website mobile-friendly. At a time where web content is increasingly read via tablets and smartphones, websites need to be designed to automatically adapt to these devices. The SOAP board of directors will evaluate several cost and design options of a mobile-friendly web design.

Another topic that resurfaces on a regular basis is the best use of social media. Facebook, Twitter and other similar social media venues are driven by the end user but in the professional setting requires some monitoring and or prompting by dedicated individuals. Some of the available options and ideas are being discussed in an article by Dr. Month in this newsletter.

Finally, a future SOAP newsletter will feature the topic of the value of diversity in the professional setting. Diversity has been considered an important element for political and social progress in professional organizations. In the academic world diversity allows consideration of viewpoints from people with different backgrounds and experiences, thus enhancing our ability to make observations that may even influence our interpretation of scientific conclusions. Look forward to some future content that describes the contributions of a diverse group of SOAP members to our specialty.

President’s Message continued from page 1

Colombia in June 2015. Another SOAP initiative is the 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 (look for website changes as soon as this fall).

It is an honor to serve as President and I look forward to building, improving, and promoting our MISSION and building the SOAP brand through partnership.
SOAP, through the Media Committee, has made great strides in advancing the social media presence of the Society. We are utilizing multiple channels to provide different and improved communication with the membership about the Society, the specialty, and patient care at large. Our current social media footprint includes:

**Service:** Facebook

**Status:** Available now

**Address:** [https://www.facebook.com/SOAPHQ](https://www.facebook.com/SOAPHQ)

Our Facebook page has grown from humble beginnings, now serving almost 2100 members and non-members alike from around the world. Curated by Bill Camann, the SOAP home office, and myself, the SOAP Facebook page has become the go-to source for cutting-edge information about the specialty, be it from the latest journal, the newest lay-media source, or from the Society. The target audience includes all SOAP members, future members, and the public. If you have articles, news, or information that you wish to share on our Facebook page, you may send them to soap@soap.org or to either Bill or I.

To follow us on Facebook, go to the SOAP Facebook page and click “Like.” Then be sure to read our posts and share them with your friends.

**Service:** LinkedIn

**Status:** Available now

**Address:** [http://www.linkedin.com](http://www.linkedin.com)

LinkedIn is the world’s largest professional network, with over 300 million members from all over the world. Our small corner of LinkedIn, with fewer than 200 members currently, is structured to be a home for SOAP members to congregate for employment opportunities, research, and/or collaboration. LinkedIn allows group members to communicate securely, reach out to other members, and endorse specialties for each other, and use many other useful tools.

To participate, join LinkedIn, search for the “Society for Obstetric Anesthesia and Perinatology” group, and request to join.

**Service:** Twitter

**Status:** Coming soon!

**Address:** [https://twitter.com/SOAPHQ](https://twitter.com/SOAPHQ)

Our newest social media outlet is our Twitter feed! Twitter is among the world’s most popular public messaging portal, with over 302 million active users throughout the world. Described simply as the “text messaging of the Internet,” Twitter allows users (or organizations, like SOAP) to send 140-character messages out into the world; links to webpages and images may also be sent. Users may choose to “follow” SOAP, allowing them to see our posts (or “tweets”) as they occur in real-time. These posts may then be forwarded (or “retweeted”) to their followers. Users may also direct tweets to us (by “tagging” SOAP in the tweet), which would allow us to respond to questions or comments in real time.

While it is still a work in progress, the core audience for our Twitter presence is expected to be medical students, residents, and fellows. Possible uses include:

- A weekly or monthly case presentation and discussion with the residents and fellows
- A post-webinar question-and-answer after the already occurring Fellow Webinars
- Twitter Journal Club (not as crazy as it sounds!)
- Reminders for fellowship, grant, or meeting deadlines and applications
- Tweets regarding meeting sessions

This simply scratches the surface of how we can use Twitter to advance the Society. “Tweets” will be originated from a moderator or from the SOAP main office.

Over the past several years, SOAP has developed a robust social media presence and we hope for it to continue its expansion. Please join us in cyberspace and get out the word to your residents, fellows, and colleagues!
“Colorful Colorado” provided a beautiful backdrop for the 47th Annual Meeting of the Society of Obstetric Anesthesia and Perinatology (SOAP). The 2015 Annual Meeting convened from May 13th to May 17th at the luxurious Broadmoor Hotel and Resort in Colorado Springs and offered 504 attendees from 19 countries an extraordinary opportunity to engage in a variety of obstetric anesthesia educational experiences that focused on the theme: “The New Role of Education in Obstetric Anesthesia – Educating the Clinician, Trainees and the Public.”

On Wednesday, three well-attended workshops were conducted: “Use of the Transthoracic Echocardiogram in the Management of the High Risk Parturient” directed by Brendan Carvalho, M.B.B.Ch., FRCA, M.D.C.H. (Stanford University) and John T. Sullivan, M.D., M.B.A. (Northwestern University); “Professional Development and Education” directed by Elizabeth H. Elinas, M.D. (Medical College of Wisconsin), Michaela K. Farber, M.D., M.S. (Harvard University Medical School, Brigham and Women’s Hospital), Klaus Kjaer, M.D., M.B.A. (New York Presbyterian Weill Cornell), Paloma Toledo, M.D., M.P.H. (Northwestern University), and Lawrence C. Tsen, M.D. (Harvard University Medical School, Brigham and Women’s Hospital); and “Use of Ultrasound for Obstetric Anesthesia” directed by Jose C.A. Carvalho, M.D., Ph.D., FANZCA, FRCPA (University of Toronto, Mount Sinai Hospital). At the day’s end, SOAP members and guests mingled while enjoying delicious appetizers and wine at the welcome reception that was held at the Broadmoor Golf Club, notably the site of several past US Golf Association tournaments. American Society of Anesthesiologists (ASA) President-Elect Dr. Daniel J. Cole was a special guest in attendance. The evening was made even more special by the presence of wildlife—an American bald eagle, other birds of prey, and wolves that could be fed and petted. A Colorado cowboy also demonstrated his lasso skills. All who were present had a truly magnificent time!

The scientific program officially commenced on Thursday morning after words of welcome and opening statements by 2015 Meeting Host Dr. Brenda A. Bucklin (University of Colorado), 2015 SOAP Scientific Chair and President-Elect Dr. Manuel C. Vallejo, Jr. (The West Virginia School of Medicine), and SOAP President Dr. Robert Gaiser (University of Pennsylvania). Dr. Richard M. Smiley (Columbia University) moderated the longstanding Gertie Marx Research Competition where the top six peer-reviewed obstetric anesthesia research abstracts were presented. This year’s abstracts addressed the following topics: impact of forced air and fluid warming on hypothermia and shivering during cesarean delivery; programmed intermittent epidural bolus versus continuous epidural infusion for labor analgesia; recovery time of oxytocin induced desensitization; pain recovery after cesarean delivery; a novel mechanism to explain temperature rise after epidural analgesia; and a comparison of continuous phenylephrine vs. norepinephrine infusion to prevent spinal hypotension during cesarean delivery. The winning abstract was presented by Dr. Chiraag Talati (University of Toronto, Mount Sinai Hospital) and was titled “Recovery Time of Oxytocin Induced Desensitization in Human Myometrium In Vitro.” A complete listing of the winners of the Gertie Marx Research Competition appears in Table 1.

Dr. Katherine Arendt (Mayo Clinic) and Dr. Kathryn J. Zuspan (Lakeview Hospital, Stillwater, MN) then presented the 2015 Distinguished Service Award to recipient, Dr. William R. Camann (Harvard University Medical School, Brigham and Women’s Hospital). Adorned in Hawaiian shirt attire, Drs. Arendt and Zuspan offered a fitting tribute that poignantly chronicled the life and career, thus far, of Dr. Camann. Special focus was made on Dr. Camann’s truly remarkable work as an educator, mentor, patient advocate, family man, and friend.

With the first meeting break of the day, attendees were invited to view posters and vendor exhibits over coffee/tea. Abstract authors were present at their posters to explain their research during walk-around poster rounds.

Meeting attendees returned to the majestic décor of the Broadmoor’s International Center North for the Gertie Marx/FAER Education Lecture. Dr. Vallejo introduced and presented Dr. Frederic W. Hafferty (Mayo Clinic) who spoke on the topic “Professionalism and the Hidden Curriculum.” Utilizing many quotes to convey his message, Dr. Hafferty examined challenges that have arisen in medicine’s modern day professional movement and explored how understanding the tacit dimensions of medical learning can be used to more effectively organize the preparation of tomorrow’s physicians.
To further illustrate these points, Dr. Hafferty facilitated two interactive index card exercises wherein he invited the audience to offer their definitions of professionalism and thoughts on case examples presented.

Dr. Kenneth E. Nelson (Wake Forest University) cleverly moderated “Poster Session 1” where he highlighted 47 abstracts covering a wide range of research topics. In this intriguing hour of review, Dr. Nelson invited abstract authors to the microphone offering them the opportunity to elaborate upon pertinent aspects of their work.

SOAP members enjoyed lunch while conducting business affairs of the Society including voting for available Board positions. Mark I. Zakowski, M.D. (Charles R. Drew University of Medicine and Science, Cedars-Sinai Medical Center) was elected 2nd Vice-President and Scott Segal, M.D. (Wake Forest University) was elected Treasurer. Special guest ASA President-Elect Dr. Daniel J. Cole (Mayo Clinic) addressed the Society and offered comments regarding the important work of the Maternal Quality Improvement Project (MQIP). He also emphasized the ASA’s dedication to continuing in collaborative partnership with SOAP. Perhaps the pinnacle of his remarks was his announcement that obstetric anesthesia icon, Dr. David Chestnut, would be the presenter of the prestigious Zuspan Lecture at the 2016 ASA Annual Meeting. SOAP President Dr. Robert Gaiser (University of Pennsylvania) summarized the achievements of his administration and presented certificates to Dr. Barbara Scavone (*add institution for consistency*) and Dr. Lawrence Tseng (*add institute for consistency*) in acknowledgement of their service on the SOAP Board of Directors. SOAP Treasurer Dr. Scott Segal provided an update on the Society’s financial status. Dr. Paloma Toledo (Northwestern University) offered a compelling presentation that resulted in the membership voting in favor of Miami Beach as the site of the 2018 SOAP Annual Meeting where she will serve as meeting host.

The scientific program continued with an afternoon panel that addressed “Maternal Safety Bundles.” This patient safety program yielded attendees an opportunity to claim MOCA credit. Dr. Yaakov “Jake” Beilin (Icahn School of Medicine at Mount Sinai, Mount Sinai Hospital) eloquently moderated the session that featured two speakers, Dr. Elliot K. Main (Sutter Pacific Medical Foundation, Mills-Peninsula Health Services) and Dr. Jill M. Mhyre (University of Arkansas for Medical Sciences). Dr. Main serves as Medical Director of the California Maternal Quality Care Collaborative (CMQCC) and elaborated on the CMQCC’s work to measure and promote maternal and neonatal outcomes, especially as it relates to the national partnership for maternal safety. Particular emphasis was placed on CMQCC’s development of preeclampsia and obstetric hemorrhage toolkits/safety bundles that aim to reduce maternal mortality. In her presentation, Dr. Mhyre thoroughly discussed the value of an early maternal warning system to identify women at greatest risk for physiologic decompensation. Furthermore, she defined implementation considerations for an early warning system that includes potential roles for the anesthesia provider.

Meeting attendees then had another opportunity to engage in dialogue with exhibit hall vendors and abstract authors in a poster walk around session that was moderated by Dr. Richard M. Smiley (Columbia University).

Dr. Philip E. Hess (Harvard University Medical School, Beth Israel Deaconess Medical Center) moderated the final scientific session of the day, “Oral Presentations 1.” The session comprised five excellent oral abstract presentations that discussed original research on the following topics: chronic pain in childbirth; the effects of extracellular calcium on contractility in oxytocin induced desensitized human myometrium; the impact of labor analgesia technique on maternal plasma epinephrine concentrations and fetal bradycardia; the onset of labor epidural analgesia with varying doses of fentanyl; and determination of the effective dose of intrathecal morphine and hydromorphone when combined with multimodal analgesia for pain relief after cesarean delivery. One of the abstracts presented during this session, “Investigating the effect of extracellular calcium on contractility, in oxytocin induced desensitized human myometrium in-vitro” won this year’s Zuspan Award; the abstract was presented by Dr. Chiraag Talati (University of Toronto). The final presentation of the session was given by Dr. Sonal Zambare (Baylor College of Medicine) and included a case discussion titled “Use of real time transthoracic echocardiography during cesarean delivery for early detection and reversal of shunt flow across an atrial septal defect in a parturient with severe pulmonary arterial hypertension”; the abstract was awarded Best Case Report.

The day concluded with a networking/career development reception for obstetric anesthesiology fellows that took place in the Broadmoor Spa and Golf Club.

A Friday morning yoga class offered early risers an opportunity for physical rejuvenation prior to engaging in intellectual stimulation. After opening remarks, the second official meeting day was off to a cerebrally invigorating start with the “Best Paper Session” moderated by Dr. Lawrence C. Tseng (Harvard Medical School, Brigham and Women’s Hospital).

Six original research abstracts were presented that spanned the following topics: effects of oxytocin on neural progenitor cells; impact of patient choice on post Cesarean delivery pain and opioid requirements; relationship between induction of labor and risk for autism spectrum disorder; impact of neuraxial analgesia techniques on labor duration in nulliparous parturients; effect of perinatal progesterone on hyperalgesic response to surgery; and clinical application of neostigmine as a non-opioid adjuvant to labor analgesia. The Best Paper Award went to “Oxytocin Enhances Proliferation and Alters Differentiation of Neural Progenitor Cells in Vitro” presented by Dr. Arvind Palanisamy (Harvard Medical School, Brigham and Women’s Hospital).

The 2013 Gertie Marx Recipients, Dr. Brian T. Bateman and Dr. Richa Saxena (both from Harvard Medical School, Massachusetts General Hospital), provided updates on the prog-

47th Annual Meeting Summary continued on next page
Dr. Brenda A. Bucklin (University of Colorado) introduced Dr. Linda A. Barbour (University of Colorado) who presented the “What’s New In Obstetric Medicine?” Dr. Barbour rendered a very thought-provoking presentation that explored intrauterine factors fueling trans-generational obesity. With great detail, she reviewed how and why maternal diet may be a powerful driver for excess fetal fat accretion and risk for subsequent childhood obesity. Dr. Barbour also highlighted how postnatal factors, including infant microbiome development and breastfeeding, may modify growth trajectory and predispose offspring to metabolic disease.

The morning coffee break offered meeting attendees their second opportunity to partake in a poster walk around session moderated by Dr. Richard Smiley. Additionally, meeting sponsors and vendors were on hand in the exhibit hall to converse with attendees.

Dr. Warwick Ngan Kee (The Chinese University of Hong Kong, Prince of Wales Hospital) presented the honorary Fred Hehre Lecture on the topic, “Reflections on the Evolution of the Management of Hypotension During Spinal Anesthesia for Cesarean Delivery.” In a very engaging and contemplative manner, Dr. Kee told the story of how he became involved in researching this topic. Complete with infusions of New Zealand vernacular, Dr. Kee’s lecture addressed background, timeline of research on this topic, how these research findings have impacted clinical practices, and ideas for future directions of research in this area.

Dr. Mark I. Zakowski (Charles R. Drew University of Medicine and Science, Cedars-Sinai Medical Center) moderated the last scientific session of the day, “Poster Session 2.” Posters reviewed during this session covered a potpourri of topics including the perioperative surgical home, practice affairs, techniques for neuraxial labor, and anesthesia for postpartum bilateral tubal ligation. Meeting attendees then had an open afternoon to explore the picturesque beauty of the area and the abundant amenities of the Broadmoor Resort.

On Friday evening, the SOAP Banquet took place in the elegant Broadmoor Lake Terrace Dining Room. In lieu of traditional banquet style, the event featured a “strolling” dinner wherein attendees feasted on award-winning Colorado cuisine. All enjoyed the highly festive, celebratory evening!

Saturday started very early and energetically with attendees having a chance to engage in another invigorating yoga class as well as a 5K run/walk. Continental breakfast was offered in the exhibit hall, giving everyone the opportunity to mingle prior to the start of a robustly scheduled meeting day. Simultaneously, “Breakfast with the Experts” occurred, moderated by Dr. David J. Wlody (SUNY Downstate Medical Center). The first session of the day was: “Obstetric Anesthesia Education Panel: All Anesthesiologists are Educators at Heart.” Dr. Rita M. Patel (University of Pittsburgh) started this panel with a discussion titled “GME & Me”. In her opening statements, she rendered a very heartwarming and unexpected disclosure, of her being a woman and a program director and thanking the audience for being teachers. She then discussed recent changes in GME accreditation, duty hour restrictions, and new changes. Immediately after Dr. Patel’s presentation, Dr. Robert R. Gaiser (University of Pennsylvania) inspired the audience with an “Evidence Based Approach to Teaching in Obstetric Anesthesia”, where he creatively captured everyone’s attention with pictures of penguins and took the audience through a thoughtful review of how learning theories work, what learners prefer, and what teaching methodologies work best. Dr. May C. M. Pian-Smith (Harvard University, Massachusetts General Hospital) then guided the audience through a very insightful lecture titled “How to Best Teach Our Patients about Obstetric Anesthesia.” Her presentation predominantly comprised of images with little to no text on the slides; she used only eye catching photographs and her calm voice to help the audience understand how to notice what is unique and different with each patient and how to use such observations to teach our patients and ourselves. The session concluded with a brief question and answer period wherein audience members raised very introspective questions about how to improve and evaluate the effectiveness of their teaching of obstetric anesthesia.

Immediately following this outstanding panel, Dr. Vilma E. Ortiz (Harvard Medical School, Massachusetts General Hospital) guided attendees through “Poster Session 3” with a very organized and thorough presentation of an array of topics. Her organization helped the audience get very clear and concise information on each abstract being presented; the questions she raised after each abstract were quite punctual and thoughtful. She provided the audience a superb review of all topics presented, which ranged from oxygen desaturation with an open glottis to self-assessment in emergent cesarean deliveries.

Dr. Manuel C. Vallejo, Jr. then presented this year’s SOAP award winners. A complete listing of award categories, names of recipients, their affiliate institutions, and abstract titles appear in Table 1. Notably, the audience was treated to a viewing of the video presentation that won this year’s SOAP Media Award. The video, titled “The Gentle C: More Like a Birth”, has aired on CNN and features 2015 Distinguished Media Award. The video, titled “The Gentle C: More Like a Birth”, has aired on CNN and features 2015 Distinguished Service Award recipient, Dr. William R. Camann.

With a completely full auditorium, Dr. Katherine Arendt (Mayo Clinic College of Medicine) honored meeting attendees with the “Gerard W. Ostheimer Lecture: What’s New in Obstetric Anesthesia?.” In this presentation, she gave a stellar and distinctively organized comprehensive review of literature published on obstetric anesthesia and perinatology from January to December 2014. She was introduced by last year’s Ostheimer lecturer, Dr. Lisa R. Leffert (Massachusetts General Hospital, Harvard Medical School), who emphasized many of Dr. Arendt’s accomplishments and her positive outlook on life.
The next topic was: “What’s New in Fetal Surgery?.” In this lecture, Dr. Timothy Crombleholme (University of Colorado School of Medicine, Colorado Institute for Maternal Fetal Health Children’s Hospital Colorado) discussed how fetal surgery has advanced through recent decades. He enlightened attendees on how programs for fetal surgery have evolved and the surgical and anesthetic challenges.

Dr. Paloma Toledo (Northwestern University) ingeniously moderated “Oral Presentations 2.” The session comprised of three very interesting original research abstracts that explored the association between intrapartum magnesium and the incidence of intrapartum fever; use of continuous invasive monitoring to investigate hemodynamic effects of lower extremity compression; and management of spinal anesthelia in pregnancy. She explained how newer research is aiming to prevent and to start the conversation and establish how many audience members currently used nitrous oxide for labor analgesia in their practice. Dr. Vallejo, who also holds a dental doctorate degree, went on to debate the “pros” of nitrous oxide for pain relief in labor and delivery. He ingeniously explained its use throughout the world, including information about mechanisms of action and from available patient satisfaction surveys. Arguing the “con” side of the debate, Dr. Robert S. McKay (University of Kansas School of Medicine, Wesley Medical Center) presented evidence on how little clinical validation is available on the safety of nitrous oxide during the labor process and emphasized the euphoria it generates.

Dr. McKay went on to share an extensive array of data, factfully comparing its use to a medieval analgesic technique. Both expositions were filled with interesting data supporting each stand. At the conclusion of the “Pro-Con” debate, another survey of the audience was performed. All who were present were declared winners as everyone was able to take home new (and old) facts about nitrous oxide, its advantages, disadvantages, and much needed areas of research.

Dr. Roshan Fernando (University College London Hospitals) then presented the findings from the accepted “Meta-Analyses” abstracts. His presentation started with a very educational comparison highlighting the differences between systematic reviews and meta-analysis. He displayed each abstract and followed with intriguing questions to each presenting author, who in return demonstrated both wit and extensive knowledge of their topics. Topics covered included pregnancy related coronary artery dissection, syringomyelia in pregnancy, cerebral venous thrombosis, comparative guidelines for management of post-partum hemorrhage, local anesthesia for wound infiltration for post-caesarean analgesia, high and low dose intrathecal morphine outcomes, and the effect of active warming on maternal and neonatal outcomes.

The meeting day concluded with a Research Hour entitled “Research Applications/Opportunities with Non-Invasive Cardiovascular Monitors,” introduced by Dr. Richard Smiley (Columbia University) and presented by Dr. John T. Sullivan (Northwestern University). Although late in the day, the audience avidly listened to Dr. Sullivan’s explanations of how non-invasive cardiac output monitors work, how they compare to the gold standard, how they can be used clinically, their advantages and disadvantages. Dr. Sullivan ended his review with an analysis of the paradigm shift occurring in training and education.

A beautifully sunny day welcomed attendees to the final day of the SOAP 2015 Annual Meeting in picturesque Colorado Springs. Following opening remarks, Dr. Pamela Flood (Stanford University) introduced the highly awaited Chronic Pain Panel: “Prediction, Prevention, Genetics of Obstetric Pain” by reviewing the incidence of chronic pain conversion. Dr. Ruth Landau (Columbia University) exemplified her topic by comparing two patients at the beginning of the session: one who developed chronic pain and another did not. From there, she explained how newer research is aiming to predict which patients will develop chronic pain and with these predictors develop a personalized approach to pain management. The panel continued with Dr. Pamela Flood transitioning from the topic of chronic pain prediction to prevention. She offered new concepts on how to manage patients considered to be at high risk for development of chronic pain and offered an array of preventative strategies. Dr. Patricia Dalby (University of Pittsburgh), the final presenter for this panel, guided the audience through the newest discoveries on the understanding of the genetics of pain and offered available data on how some genetic polymorphisms are specifically associated with obstetrical pain.

Dr. Manuel C. Vallejo then introduced the highly anticipated MOCA-accredited Patient Safety “Pro-Con Debate: Nitrous Oxide”. Dr. Vallejo energetically surveyed the audience to start the conversation and establish how many audience members currently used nitrous oxide for labor analgesia in their practice. Dr. Vallejo, who also holds a dental doctorate degree, went on to debate the “pros” of nitrous oxide for pain relief in labor and delivery. He ingeniously explained its use throughout the world, including information about mechanisms of action and from available patient satisfaction surveys. Arguing the “con” side of the debate, Dr. Robert S. McKay (University of Kansas School of Medicine, Wesley Medical Center) presented evidence on how little clinical validation is available on the safety of nitrous oxide during the labor process and emphasized the euphoria it generates.

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Dr. John T. Sullivan (Northwestern University), Scientific Chair for the 2016 SOAP Annual Meeting, had the honor of presenting the final session of the meeting. With meticulous organization and keen attention to details, he moderated the Best Case Reports Review session. The vast spectrum of cases presented was exceptionally interesting and his review of learning points offered the audience a comprehensive look into management of these challenging cases. At the conclusion of this session, the outstandingly presented 47th Annual Meeting of the Society of Obstetric Anesthesia and Perinatology was adjourned. A very satisfied audience bursting with new and fascinating scientific knowledge applauded the moderator, scientific chair, meeting host, and all who played a role in the planning and execution of this wonderful meeting. A heart-felt and inspiring invitation to meet again at the 48th SOAP Annual Meeting to be held May 18-22, 2016, at the Seaport Boston Hotel, in Boston, Massachusetts, will linger in the minds of SOAP members and meeting attendees until next year!
### Table 1

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<tr>
<th>AWARD</th>
<th>RECIPIENT</th>
<th>INSTITUTION</th>
<th>ABSTRACT TITLE</th>
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<tbody>
<tr>
<td>Gertie Marx Research Competition 1st Place</td>
<td>Chiraag Talati, MBBS, BSc (Hons), FRCA</td>
<td>Mount Sinai Hospital/University of Toronto</td>
<td>Recovery of Oxytocin Induced Desensitization in Human Myometrium In Vitro</td>
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<tr>
<td>Gertie Marx Research Competition 2nd Place</td>
<td>Benjamin G. Cobb, MD</td>
<td>Stanford University</td>
<td>Active Warming Utilizing Forced Air and Intravenous Fluid Warming Combined Decreases Hypothermia and Shivering During Cesarean Delivery</td>
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<td>Gertie Marx Research Competition 3rd Place (Tie)</td>
<td>Carlos M. Delgado, MD</td>
<td>University of Washington</td>
<td>PIEB (Programmed Intermittent Epidural Bolus) versus CEI (Continuous Epidural Infusion) for Labor Analgesia: Results of a Pilot Set-up and Where to Go From There</td>
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<tr>
<td>Gertie Marx Research Competition 3rd Place (Tie)</td>
<td>Emily Sharpe, MD</td>
<td>Wake Forest University</td>
<td>Modeling Recovery from Pain Following Non-Emergent Cesarean Delivery</td>
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<td>Best Paper</td>
<td>Arvind Palanisamy, MD, FRCA</td>
<td>Brigham and Women’s Hospital/ Harvard Medical School</td>
<td>Oxytocin Enhances Proliferation and Alters Differentiation of Neural Progenitor Cells in Vitro</td>
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<td>Best Paper – 1st Runner Up</td>
<td>Brian T. Bateman, MD, MSc</td>
<td>Massachusetts General Hospital/ Brigham and Women’s Hospital</td>
<td>Labor Induction and Offspring Risk of Autism Spectrum Disorder</td>
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<td>Best Paper – 2nd Runner Up</td>
<td>Mieke A. Soens, MD</td>
<td>Brigham and Women’s Hospital/ Harvard Medical School</td>
<td>Perinatal progesterone decreases the hyperalgesic response to surgery in the adult: a study on female rats</td>
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<tr>
<td>Best Case Report</td>
<td>Sonal Zambare, MD</td>
<td>Baylor College of Medicine</td>
<td>Use of Real Time Transthoracic Echocardiography during Cesarean Delivery for Early Detection and Reversal of Shunt Flow across an Atrial Septal Defect in a Parturient with Severe Pulmonary Arterial Hypertension</td>
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<tr>
<td>Frederick P. Zuspan</td>
<td>Chiraag Talati, MBBS, BSc (Hons), FRCA</td>
<td>Mount Sinai Hospital/University of Toronto</td>
<td>Investigating the Effect of Extracellular Calcium on Contractility, In Oxytocin Induced Desensitized Human Myometrium in Vitro</td>
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<td>Patient Safety</td>
<td>Mrinalini Balki, MBBS, MD</td>
<td>Mount Sinai Hospital/University of Toronto</td>
<td>High-fidelity Simulation to Evaluate an Interdisciplinary Teamwork Assessment Scale in Obstetric Crisis Management</td>
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<td>Patient Safety – 1st Runner Up</td>
<td>Lisa Leffert, MD</td>
<td>Massachusetts General Hospital</td>
<td>Absence of Hypertension at Presentation in Pregnancy-Related Stroke: Findings from a Large US Stroke Registry</td>
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<td>Labor Induction and Offspring Risk of Autism Spectrum Disorder</td>
</tr>
<tr>
<td>Research in Education (Tie)</td>
<td>Katherine G. Lim, MD</td>
<td>University of Pittsburgh</td>
<td>Low-fidelity Haptic Simulation versus “Mental Imagery” Training for Epidural Anesthesia Technical Achievement in Novice Anesthesiology Residents: A Randomized Comparative Study</td>
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<td></td>
<td>Mrinalini Balki, MBBS, MD</td>
<td>Mount Sinai Hospital/ University of Toronto</td>
<td>High-fidelity Simulation to Evaluate an Interdisciplinary Teamwork Assessment Scale in Obstetric Crisis Management</td>
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<tr>
<td>Kybele International Outreach Grant</td>
<td>Ivan Velickovic, MD</td>
<td>SUNY Downstate Medical Center</td>
<td>Intrathecal Morphine Chloride (with sodium edetate) for Post-Cesarean Section Analgesia</td>
</tr>
<tr>
<td>SOAP Gertie Marx Education and Research Grant</td>
<td>Carlo Pancaro, MD</td>
<td>Tufts Medical Center</td>
<td>Newborn Anatomic and Functional Consequences of a Rat Model of Non-infectious Maternal Inflammatory Fever</td>
</tr>
<tr>
<td>Distinguished Service Award</td>
<td>William R. Camann, MD</td>
<td>Brigham and Women’s Hospital/ Harvard Medical School</td>
<td>Video: The Gentle “C”: More Like a Birth</td>
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<tr>
<td>SOAP Media Award</td>
<td>Linda Ciampa</td>
<td>CNN</td>
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</table>
The energy at the SOAP Education Committee held during the annual meeting was fabulous. Members expressed a lot of great ideas and youthful enthusiasm. We will be considering not just new topics but new ways that you, the membership, want to learn or ‘consume’ the information. The addition of some new, younger members to the committee has been a definite success!

SOAP is leading a joint SOAP-ASA Continuing Medical Education project, led by Regina Fragneto MD. The final product will be 100 questions and answers within Obstetric Anesthesiology, with both SOAP and ASA benefiting. The question and answer development process is somewhat similar to the ABA in that writers submit questions and answers in a structured format. Those chosen will write questions and participate in the group evaluation of questions and answers. Please contact Fragneto, Regina [fragnet@email.uky.edu] if you are interested.

PBLD. A sub-group of the education committee, led by Grace Lim Thurston MD, has developed Problem Based Learning Discussion questions and tools useful for obstetric anesthesiology fellowships, residencies, and yes, even studying for the boards. The PBLDs will be featured in upcoming newsletters with links to supplemental materials. I have been able to preview the first two and they are great!

If you have topics you would like to see the education committee explore, please email me – Mark.Zakowski@cshs.org. Continuing for this year, May Pian-Smith, Richard Month and Grace Shih are the chairs of Education sub-committees of awards, information and programs, respectively. On behalf of the entire Education Committee, we look forward to another great year serving you and SOAP.
Anesthetic Choice for the Morbidly Obese Parturient Undergoing Cesarean Delivery: Pro Continuous Spinal

J. Sudharma Ranasinghe, MD
University of Miami
Miami, FL

General anesthesia is extremely hazardous in the morbidly obese parturient. One third of tracheal intubations are difficult in morbidly obese parturients, with a failure rate of 6% due to several reasons (1). These include increased amount of soft tissues of the upper airways, increased tongue size, large breasts, short neck with increased circumference, and difficult neck extension due to presence of a large posterior fat pad. Mask ventilation may also be difficult or impossible in morbidly obese patients (2). Pregnancy and obesity each independently increases the risk of failed or difficult intubation and ventilation. Both conditions also increase oxygen consumption, reduce functional residual capacity (FRC) and shorten the time before hypoxemia develops (3). Therefore, neuraxial anesthesia is the technique of choice for cesarean delivery in morbidly obese parturients. Insertion and use of a continuous spinal catheter for surgical anesthesia is highly desired in these patients because of high reliability.

Morbid obesity increases the cesarean delivery rate (1,4). The need for emergent or urgent cesarean delivery during labor is also higher. According to a retrospective study by Tonidandel et al., 84% of laboring morbidly obese parturients require emergency cesarean delivery, compared to 68% of matched controls ($p < 0.01$) (4). Therefore, if an epidural technique is chosen, early placement and frequent evaluation of the quality of the epidural block in these patients is vital because several investigators (1, 4, 5) have demonstrated a high risk of epidural failure in obese parturients. The initial epidural catheter failed in 42% of morbidly obese parturients, compared to only 6% of control patients in the study by Hood et al. (1). However, the need for a replacement procedure for labor was significantly less (17%) in the more recent study by Tonidandel et al. (4). Locating the epidural space and obtaining adequate neuraxial block may present unique challenges in the morbidly obese patient population (6). Any questionable catheters should be replaced promptly. One should be aware that opioid containing solutions can mask a malpositioned epidural catheter because of the pain relief caused by the systemic absorption of opioids, rather than directly from the epidural space.

The combined spinal epidural (CSE) technique offers the advantage of combining rapid onset of reliable subarachnoid anesthesia with the flexibility of epidural catheter for cesarean delivery. However, the function of the epidural catheter inserted under CSE technique is uncertain until after the duration of spinal anesthesia. Possible delayed recognition of a nonfunctional catheter, therefore, is a concern in this high-risk patient population.

In recent years, ultrasound has been used to facilitate neuraxial catheter placement. Ultrasound imaging in the transverse plane can reliably determine the skin puncture site, predict the depth to the dura and thereby facilitate intrathecal catheter placement in obese parturient (7).

Continuous spinal technique offers several potential advantages over single injection spinal anesthesia and continuous epidural anesthesia. The ability to obtain rapid onset, reliable and dense surgical anesthesia is especially useful in emergent or STAT cesarean delivery situations. Obese women are more likely to deliver large for gestational age infants, and are more likely to develop preeclampsia or deliver prematurely (8). A solid neuraxial block before surgical incision facilitates cesarean delivery success and avoids intraoperative conversion to general anesthesia. Despite adequate dermatomal level of a T4 block, excessive patient discomfort during delivery is more likely with epidural anesthesia than with spinal anesthesia.

The continuous spinal technique also offers the ability to prolong the block more reliably while maintaining hemodynamic stability due to the possibility of incremental dosing. In many cases the time to perform cesarean delivery can exceed 2 hours in morbidly obese patients (9). A functional neuraxial catheter is essential in morbidly obese patients to avoid the risks of general anesthesia and tracheal intubation during urgent operative intervention and prolonged surgery.

However, the continuous spinal catheter technique has not been widely used, although gaining in popularity due to limitations on the proper size needles and catheters. Reports of persistent neuropathies and cauda equina syndrome with microcatheters (28-32 gauge), which were described mostly in non-obstetric patients led to the U.S. Food and Drug Administration (FDA) removal of spinal microcatheters from the market. In those cases hyperbaric lidocaine injected through the spinal microcatheters at slow infusion rates likely led to maldistribution and pooling of highly concentrated drug in the sacral area causing neurotoxicity (10). In 2008, a randomized double-blinded study of over 300 intrathecal microcath-
eters placed for labor analgesia reported no permanent neurological complications (11). Currently, the only equipment available for continuous spinal technique in the United States are epidural kits with 17 or 18G Tuohy-type epidural needle and 20 G epidural catheters. Because of the high incidence (9%) of post dural puncture headache (PDPH) that may accompany the use of the epidural needle and catheter (11), continuous spinal anesthesia is considered a less favorable routine option in obstetric patients. However, the incidence of PDPH appears to be lower in morbidly obese parturients compared to normal weight parturients (12).

In our tertiary care center, continuous spinal catheters are utilized in a significant number of high-risk obstetric patients including those with severe cardiopulmonary disease, morbid obesity and following unintentional dural punctures. Catheters placed for labor receive our standard local anesthetic mixture (bupivacaine 0.1% with fentanyl 2.5 mcg/ml) continuously infused at 2-3 ml/hr. An initial bolus of 1.25 mg of bupivacaine with 15 mcg of fentanyl is given prior to starting the infusion. Continuous spinal catheters used for cesarean delivery receive 0.75% hyperbaric bupivacaine in incremental doses to achieve a T4 dermatomal block. Fentanyl (15 mcg) and preservative-free morphine (0.2mg) are injected through the spinal catheter prior to the administration of bupivacaine.

It is very important that the continuous spinal catheter is clearly labeled, and communicated to all personnel involved in her care to avoid accidental administration of epidural doses of medications.

References
Morbidity obesity presents significant challenges to the anesthesia provider, and significant risk to the patient. A pre-pregnancy BMI >40kg/m² and a delivery BMI >45kg/m² are predictive of adverse anesthesia outcomes (1). With approximately 35% of adults over the age of 20 being classified as obese, the percentage of pregnant patients who carry this diagnose is high (2).

Obesity in pregnancy is associated with a longer first stage of labor, macrosomia and abnormal labor patterns (3). Tondeti al. showed that morbidly obese parturients are more likely than their control counterparts to require a cesarean delivery (50% vs. 32% respectively). This is in line with previous studies, which have shown obesity to be a risk factor for cesarean delivery (CD) (3, 4). Given the high rate of CD in this population, practitioners must consider the optimal plan for delivery of safe and effective surgical anesthesia. Both obesity and pregnancy increase the likelihood of difficult intubation and pulmonary aspiration (5). Regional anesthesia is therefore preferred over general anesthesia for CD, although provisions should be made for the airway to be secured if the need arises. Morbid obesity is also associated with longer surgical times, with approximately half of patients weighing over 250 pounds having CD lasting longer than 2 hours (1, 6).

Therefore, the anesthetic technique of choice should allow for the ability to re-dose. While a combined spinal epidural seems like an attractive option in these patients, there is an inherent failure rate of the untested epidural catheter. Failure to prolong surgical anesthesia with an untested catheter will likely necessitate general anesthesia with its associated risks.

Obesity may account for further decreases in lumbar CSF volume during pregnancy and exaggerated spread of local anesthetics in the spinal space (1, 5, 7). This leads to uncertainty of spinal dosing requirements in obese patients. Cephalad spread of local anesthetic in the intrathecal space may result in respiratory compromise and the need for emergent tracheal intubation. For these reasons, a single shot spinal anesthetic is not the best choice in this patient population.

Epidural anesthesia is the most sensible choice for surgical anesthesia in the morbidly obese parturient undergoing CD. The catheter can be dosed slowly to avoid abrupt changes in sympathetic tone which may be poorly tolerated by these patients, who likely have coexisting systemic and pulmonary hypertension, as well as exaggerated hypotension in the supine position (8). In addition, epidural anesthesia may be less likely to block accessory muscles of respiration, which could worsen already existing hypoxemia in the setting of diminished FRC in pregnancy and obesity, particularly in the supine position (5). An epidural catheter would also be instrumental in management of postoperative pain following CD. Given the higher rates of vertical skin incisions in this patient population, postoperative pain is likely to be more severe (9). A large percentage of morbidly obese patients have undiagnosed obstructive sleep apnea, making them susceptible to postoperative respiratory failure. Epidural analgesia would minimize the need for systemic opioids, thus reducing this risk (5). The epidural should be secured with the patient in a neutral or lateral position, as the catheter may be pulled out of the epidural space during movement if secured to the skin in the flexed position (10).

An intrathecal catheter may be considered if accidental dural puncture (ADP) occurs at the time of attempted epidural placement, but should not be the primary anesthetic plan. Miu and colleagues recently showed that a higher BMI may not be protective against the development of a dural puncture headache or the need for an epidural blood patch, as previously reported (11, 12). A dural puncture headache is more than a potential nuisance complication of this technique. In addition to prolonged hospital stay and the need for invasive procedures, ADP increases the risk of chronic headaches (13). Subdural hematoma is a rare but potentially life threatening complication of ADP, potentially subjecting the patient to additional surgical and anesthetic risk (14). In addition, the presence of an intrathecal catheter introduces increased risk of infection, as well as accidental dosing errors with larger than intended doses of local anesthetic, resulting in the need for emergent airway management, cardiovascular collapse and neurotoxicity.

Epidural anesthesia offers providers the ability to establish and maintain adequate surgical anesthesia for a prolonged period of time, with minimal concerns regarding dosing requirements, hypotension and respiratory compromise. The ability to provide postoperative analgesia, minimizing narcotic requirements during this period, is an added benefit.
References

10. Faheem M Salwar N. Sliding of the skin over subcutaneous tissue is another important factor in epidural catheter migration. Can J Anaest 2002; 49(6):634.
12. Bell ED. Decreased incidence of post dural puncture headache in morbidly obese parturient following continuous spinal using 17 gauge Touhy needle. Anesthesiology 1997; 87:A886.
I am pleased to present this annual Treasurer’s report for our society. SOAP is in excellent financial shape at this time and there is every reason to be hopeful that this favorable status will continue unabated in the coming year. This financial health should allow us to maintain our moderate dues while offering expanded services to the membership.

In the past year, we completed several important projects related to our financial infrastructure. Most notably, our investment accounts were rationalized, by moving substantial amounts of cash previously in checking accounts into an investment account. This account, managed by our professional fund managers, has a balance of $815,000; it is conservatively invested but earns substantially more than the near-zero interest in ordinary checking. Unlike our endowment accounts, we are free to spend any of this money we choose, consistent with the society’s mission. We have also clarified that a portion of another investment account, containing an endowment to benefit education and obstetric anesthesia fellowships from the estate of Gertie Marx, with some $283,000 of income, also available to spend on society activities. SOAP also underwent an external audit of our financial records and received an excellent report with no substantial deficiencies in need of correction.

SOAP earns most of its income from dues and meeting registration fees and spends the majority of its income on the Sol Shnider and Annual meetings, grants, management fees and member benefits. The society ends each year with a moderate positive margin, which is used for reserves and to bolster its investments, to allow future growth in mission-based activities.

Figure 1 shows the performance of the SOAP Annual meeting over the last several years. The meeting generated unusually high margins in both 2013 and 2014, due to unexpectedly low expenses primarily for food and beverage services. Our preliminary estimate for the Colorado Springs 2015 meeting shows a positive margin of approximately $57,000. Together, these three years’ results have strongly bolstered the society’s financial picture. The results of the Sol Shnider meeting are shown in Figure 2. Attendance was somewhat lower than historical averages in 2015, but strong expense management still yielded a positive margin for the year. The overall financial picture for the society is shown in Figure 3, which includes revenue from dues and expenses for grants, management fees, and other costs. SOAP continues to generate a moderate positive margin each year.

Figure 1: Annual meeting financial results, 2006-present. 2015 data is preliminary but approximates final totals.

Figure 2: Sol Shnider meeting results, 2010-2015.

Treasurer’s Report continued on next page
The society maintains several assets, including a checking account and several investment accounts. The total of these assets as of May 2015 was $3,474,940, an 8% increase over 2014. Because of the very strong performance in the previous two years, the Board voted to defer a planned dues increase at both the 2014 and 2015 meetings (dues have now been stable for nearly a decade). In addition, Gertie Marx research funding was doubled in 2015, to $100,000. As you are likely aware, an electronic subscription to the International Journal of Obstetric Anesthesia was added last year as a membership benefit. The Board is considering adding other grants and benefits in the 2015-6, to capitalize on its strong financial performance, and looks forward to a strong coming year.

In summary, SOAP is in excellent financial health, with a strong endowment and exceptionally good operating performance over the last two years. We have over $1 million in unrestricted funds to support the mission of the society in addition to our restricted endowments, which will continue to generate income for society activities. Our Annual and Sol Shnider meetings continue to be profitable. We can look forward to leveraging this financial position to support an expanding role in research, education, and outreach.

**Figure 3:** Overall SOAP financial results, 2006-present. 2015 data are shown as budgeted amounts; final results will be available at year-end.
The 2015 SOAP/Gertie Marx Education and Research Grant was awarded to Carlo Pancaro, MD of Tufts University School of Medicine. His proposal is entitled “Newborn Anatomic and Functional Consequences of a Rat Model of Non-infectious Maternal Inflammatory Fever.” Dr. Pancaro will be re-locating to the University of Michigan this year, but will continue the work on this project.

As most SOAP members are aware, the issue of “epidural fever” is a “hot” topic in obstetric anesthesia (no one can seem to avoid that statement so I didn’t even try). The current consensus is that it appears that there is at least a subset of laboring women who develop a non-infectious, inflammatory process that can lead to an increase in temperature, and sometimes to the level of clinical fever. There appears to be at least an association of increased temperature and poorer neonatal outcome. This area is obviously one that deserves some attention from obstetric anesthesiologists, and a good animal model would of course be useful to allow mechanistic and therapeutic investigations. We look forward to the results of Dr. Pancaro’s project.

The SOAP/Gertie Marx Education and Research Grant was established using funds generously given to SOAP by the late Gertie Marx, one of the giants (in influence and achievement if not in actual physical stature) of 20th century obstetric anesthesia. The grant award is up to $100,000 over the two-year project cycle. The number of grants that are funded each year is a function of both the quality of grants submitted, and the funds available, but the anticipated goal is to fund at least one new project each year. The purpose of the grant is to fund meritorious research by a SOAP member in any area of obstetric anesthesia. The subject can be clinical research, laboratory research, or investigation of educational/training methods. It is hoped that this funding will aid the investigator in developing preliminary data and publications in support of further foundation or government funding for continuing work.

The details of the proposal submission process and what is expected can be found on the SOAP website at http://www.soap.org/gertie-marx-award.php. The webpage will be updated over the summer, but we anticipate an October 1, 2015 deadline for submissions. Submissions are peer-reviewed by appropriate experts under the direction of the Chair of the Research Committee (Richard Smiley), the scores and reviews are then evaluated by the Disbursement Committee (Chaired by Joy Hawkins) and funding recommendations forwarded to the SOAP Board of Directors for funding early in the following year (e.g., January 2016). You are encouraged to submit your proposals. Any questions about the process can be directed to me (RMS) at rms7@columbia.edu.

SOAP 2015

A record number of research abstracts (201) were submitted for the 2015 meeting in Colorado Springs, with 20 oral research presentations and 137 research posters accepted and presented. With this larger volume (the previous record had been about 180 submissions), it is noteworthy that the quality of the submissions was judged by the members of the research committee who have been scoring abstracts for many years to be at least as good or better than usual. It is not clear if the accreditation of Fellowships and the ACGME requirement for Fellows scholarly work has had any influence on research productivity, but whatever the cause, this is a trend we hope continues.

References

With widespread use of regional anesthesia on labor and delivery, general anesthesia use is declining. Airway management of parturients is most commonly needed in emergencies, but also occurs in patients unable to receive regional anesthesia (coagulopathy, hemodynamic instability, sepsis) or when regional was difficult (morbid obesity) and not working, leading to a trend of intubations occurring in sicker/more acute patients1,2. This decrease has created concern for complacency and lack of preparedness among providers as well as lack of trainee experience as residents may graduate with limited experience handling the obstetric airway3.

Difficult airway on labor and delivery

Airway management in parturients can be complicated by a number of factors. Physiologic changes of pregnancy predispose to hypoxemia and difficult ventilation. Mallampati airway class can increase 1-2 classes over the course of labor and there are significant decreases in oral volume and pharyngeal area and volume after labor and delivery. As Mallampati class worsens, the risk of difficult airway increases: Class 3 is 7.58 times higher v. Class 1 while Class 4 is 11.3 times higher v. Class 1. Incidence of failed intubation in parturients is up to 8x higher v. non-pregnant population4 and overall incidences of difficult and failed intubation in pregnant patients are approximately 1:30 and 1:300 respectively2,7.

Airway equipment and training on labor and delivery

Availability of standard airway equipment on labor and delivery should be immediate. Facemasks, oral airways, multiple laryngoscope handles and blades, stylleted oral ETT (6.5 mm) with backup OETT (6-7 mm), and a gum elastic bougie and supraglottic airway should be prepared prior to induction5 and many would argue should be set up on the obstetric OR anesthesia machines at all times. While there are concerns for sterility of prepared equipment, a study in the emergency room showed storage of open endotracheal tubes for up to 48 hours did not result in bacterial contamination6, suggesting that longer storage could be safe as well. Presence of an Ambu Bag should also be confirmed prior to induction. In most cases, this basic equipment and the anesthesia machines should be checked daily in all operating rooms on labor and delivery by either the anesthesia technicians or the provider him/herself.

Advanced airway devices and availability of difficult airway “carts” varies among institutions7 (See Table 1). Supraglottic airways such as the LMA have a history of successful use in the obstetric airway2 and videolaryngoscopy is gaining popularity as a first line technique, especially in patients with predictors of difficult airway10. The feasibility for labor and delivery units to have dedicated tools such as videolaryngoscopes or fiberoptic bronchoscopes again varies by institution7,11,12. In many cases these are in the main operating room and have to be called for if needed on labor and delivery. Cost may limit the types of airway equipment, especially in smaller units, but cost effectiveness should be evaluated by potential risk of medical, legal and emotional outcomes after a failed airway8. Regardless of what is chosen for an individual difficult airway cart, all providers must be familiar with the contents and know where the cart is located, whether on the unit or in the main operating room.11,12 Suggested lists of equipment to include in a difficult airway cart do exist for institutions that need guidance8.

Training for difficult airways in obstetric patients can be challenging due to the issues mentioned above. Simulation has emerged as a way to expose trainees and even practicing anesthesiologists to the obstetric airway and general anesthesia for parturients in a controlled setting13. A recent study developed an OB specific airway management algorithm for use in simulated scenarios14. Other published algorithms for management of the difficult airway range from the newest iteration of the ASA Airway Algorithm15 to several algorithms specific for obstetric patients8,14,16,17.
Expert Opinion – how we do it:

University of Arkansas:

Room standardization, simplification, and disposable equipment seem to be important for ensuring that essential equipment is always available. The residents check and maintain the equipment with minimal tech support, so simplicity is key to success.

We use all disposable direct laryngoscopic blades and handles (Stryker), and light failures are rare with this equipment. We stock multiple back-ups in the drawer. Getting the par levels set with the supply chain has ensured that we have a continuous supply of Mac 3 blades, and no build-up of unused Mac4/Miller2/Miller3s. Likewise, we stock disposable Glidescope blades, and disposable LMAs in our airway drawers. Preset par levels ensure that MAC3&4 Glidescope and LMA 3&4 are available, and LMA5 is not. We do not maintain ETT 7.5mm and above. We are down to a single size for disposable oral airway, and a single size facemask (medium). We have Aintree airway exchange catheters and gum elastic bougies. There is a cricothyrotomy kit in the bottom drawer of each anesthesia machine, and the residents check the expiration date and location as part of their orientation rounds at the beginning of each month. The only reusable equipment includes the stylet for the glidescope and the fiberoptic scope.

University of Illinois, Chicago:

At the University of Illinois Hospital and Health Science System, we are very concerned about the potential for difficult

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<tr>
<th>Question</th>
<th>University of Arkansas</th>
<th>University of Illinois, Chicago</th>
<th>University of Colorado</th>
<th>Creighton University</th>
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<tr>
<td>Do you have a dedicated fiberoptic bronchoscope on the L&amp;D unit?</td>
<td>Yes, located in the equipment room. Residents check it as part of duties during the first week of the rotation.</td>
<td>Yes, it is in the difficult airway cart</td>
<td>No, available in the main OR</td>
<td>NO, available in main OR</td>
</tr>
<tr>
<td>Do you have a dedicated videolaryngoscope (Glidescope or C-MAC) on the L&amp;D unit?</td>
<td>1 glidescope, located in the larger OR.</td>
<td>All of our patients are intubated with the C-MAC videolaryngoscope. They are mounted on IV poles at the head of the bed</td>
<td>2 C-MAC on L&amp;D</td>
<td>Yes, C-MAC, Glidescope available in main OR</td>
</tr>
<tr>
<td>Do you have a difficult airway box or cart specifically for on the L&amp;D unit?</td>
<td>The fiberoptic cart is considered the difficult airway cart and can be wheeled to any location.</td>
<td>We have a difficult airway cart in one of our ORs. It has a jet ventilator, fastTrach, LMAs, cricothyrotomy kit and a fiberoptic bronchoscope in it.</td>
<td>Yes, a tackle box in the L&amp;D anesthesia workroom with intubating LMA, etc.</td>
<td>No , available in main OR</td>
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<td>Do you conduct simulations for obstetric airway/ difficult airway for anesthesia providers on L&amp;D?</td>
<td>Simulations conducted in the simulation center at this time.</td>
<td>We do not conduct simulations for airway scenarios on the L&amp;D unit</td>
<td>No current routine simulation for airway management</td>
<td>No, not yet but considering it</td>
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<td>Do you have a standardized way to communicate a potential difficult airway to all anesthesia providers on L&amp;D? If so, how is it communicated? On electronic patient census, in EMR, etc?</td>
<td>No standardized means of communication.</td>
<td>During rounds, or after a patient is identified, there is a discussion with the OB team to notify them.</td>
<td>No standard system. We ensure the providers on L&amp;D are aware during the day, and try to discuss with OB team as difficult airway is identified.</td>
<td>Yes, oral report provider to provider--OB group is only 10 Anesthesiologists--no EMR yet--will have in less than 6 months</td>
</tr>
<tr>
<td>Who is responsible for checking and maintaining airway equipment on L&amp;D? (Resident v. anesthesia tech v. CRNA, etc)</td>
<td>Residents with faculty verification.</td>
<td>The airway equipment is checked and assembled by the anesthesiology residents. We do not have CRNAs on our labor and delivery floor.</td>
<td>Residents and CRNAs check each L&amp;D OR daily. Techs are responsible for maintaining equipment.</td>
<td>Anesthesia Techs</td>
</tr>
<tr>
<td>How often is airway equipment (specifically rescue equipment (LMA, Bougie, etc) checked? Daily v. Weekly v. Monthly v. Only after used</td>
<td>Operating rooms are checked and restocked after every delivery, and at the beginning of every shift. The airway cart is reviewed monthly.</td>
<td>Daily</td>
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Table 1: Airway Equipment and Training

Patient Safety Committee continued on next page
intubation in our patient population due to high BMIs, high rates of pre-eclampsia and patients transferred to our institution in acute distress. Many of our patients decline anesthesia analgesic services and our rates of general anesthesia may be higher than other centers where epidural catheters are more accepted.

Since November of 2012, we have instituted the routine use of Troop pillow patient positioning devices and the Storz C-MAC video laryngoscope for all parturient intubations. The Troop pillow quickly creates a proper ramp for patients with minimal provider variability. Residents are instructed to perform the direct laryngoscopy with the Storz C-MAC blade and only to use the video screen as a rescue device if they cannot directly visualize the glottis. This allows providers to rapidly intubate the patient via direct laryngoscopy if possible, and provides an advanced technique without the need of another attempt or change of equipment. Our faculty can also visualize the resident’s approach to the airway to help with guidance if necessary and can signal the obstetric providers to perform their incision as soon as intubation is successful. Information regarding our ability or inability to intubate the patient via direct laryngoscopy is helpful if the patient requires re-intubation in the peripartum period. We have great success with this method and thus far have not encountered any complications.

In addition, our labor and delivery unit has a fiberoptic tower, a jet ventilator, laryngeal mask airways, intubating LMA devices and a cricothyrotomy kit.

Creighton University:

The basic airway equipment includes the anesthesia circuit and mask, laryngoscope handles and blades, endotracheal tubes and stylets, oral and nasal airways, LMA’s and working suction. In the obstetrical operating room, this equipment should be set up on your anesthesia machines at all times. (Additional quantities of this equipment should be stored in the operating room in a standardized fashion and should be easily accessible if more is needed). I recommend the following: 2 Laryngoscopes with a different blade on each (Bulb checked), 2 endotracheal tubes (usually 6.5mm, 7.0 mm) with stylets and cuff (checked), and multiple sizes of oral and nasal airways. LMA (sizes 3, 4, 5) are stored on top of our anesthesia machine or laid out on top of our equipment cart in the operating room. In our obstetric OR, a bougie device is also attached to the side of each anesthesia machine.

References

International Outreach
Ashraf S. Habib, MB, BCh, MHSc, FRCA
Duke University Medical Center
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International Outreach Programs have continued to be very active and impactful in several parts of the world. Within the last year, the Kybele program in Ghana, led by Drs. Adedeji Olufolabi (Duke University) and Medge Owen (Wake Forest University), continued to build on the success of past years through collaboration with Ghana health service and PATH, a large non-governmental organization (NGO) dedicated to the improved care of women and children. This team established a model that is believed to be transferable to other tertiary centers in low resource settings. Leadership, quality improvement methodology and clinical skill improvement have been the centerpiece of the program. Expanding from the Ridge Hospital in Accra, Kybele with its partners, have started collaborative work in four other regional tertiary type care centers in southern Ghana. The nurse anesthesia training school, established through this collaboration, continues to provide the country with much needed anesthesia health workers. The introduction of CPAP to NICU and the new infection prevention protocols have been successful and are expected to help reduce the high neonatal mortality. Databases have also been created to capture anesthesia and NICU data and track outcomes. Residents and fellows in Obstetric anesthesia continue to gain valuable experience and exposure to this Kybele collaboration. Projects assessing the use of transthoracic echo as a tool for diagnosis in Obstetric anesthesia emergencies (http://soap.org/display_2015_abstract.php?id=S-48) and introducing obstetric early warning signs (http://soap.org/display_2015_abstract.php?id=F-01) were conducted by residents and fellows and presented at the 2015 SOAP meeting in Colorado Springs. An article with an accompanying editorial was also published in Anesthesia and Analgesia (Anesth Analg 2015; 120:1317-22) describing the Ghana program.

Efforts of the Kybele program in Armenia, led by Drs. Yuill and Millar, resulted in significant increase in the use of neuraxial anesthesia for cesarean delivery in the capital city and other parts of Armenia. Epidural labor analgesia also increased within Yerevan. The group presented an abstract summarizing their findings at the recent SOAP meeting in Colorado Springs (http://soap.org/display_2015_abstract.php?id=F-28). In collaboration with the Armenian Society of Anesthesiologists and Intensive Care Specialists, the group developed the first national guidelines for obstetric anesthesia. Future plans include collaboration with Lifebox and the Armenian Society of Anesthesiologists (http://www.kybeleworldwide.org/032415-lifebox-and-kybele-partner-with-armenian-society-of-anesthesiologists-for-safer-surgery.html) to bring 100 pulse oximeters and implement the WHO safe surgery checklist.

Similarly, the program in Serbia led by Drs. Velickovic and Bayisinger resulted in an increase in neuraxial anesthesia use for cesarean delivery. The group presented two abstracts at the SOAP meeting describing the impact of their work (http://soap.org/display_2015_abstract.php?id=S-27) as well as a survey about the experience of Serbian anesthesiologist and anesthesia residents with regional anesthesia (http://soap.org/display_2015_abstract.php?id=S-15).

Dr. Virgil Manica continues his efforts in several parts of Romania. In Suceava, spinal anesthesia is now used for about 90% of cesarean deliveries, which is a big change from the very low rate used at the initiation of this program. A second program in Moldova is underway, with a planned obstetric anesthesia component as part of the Moldovan Society of Anesthesia meeting in September 2015.

The No Pain Labor and Delivery Global Health Initiative, led by Dr. Ling Hu, continues to produce a large impact in China with yearly programs being conducted in up to 30 hospitals in China to date. In addition to bedside teaching at those hospitals, the 2015 program involved obstetric anesthesia presentations at national meetings in Beijing, Shanghai, Wuhan, and Nanning. Their efforts have resulted in a significant increase in labor analgesia use with a concomitant decrease in cesarean delivery rate. A recent manuscript described the impact of their work in a large maternity hospital in China (Int J Gynaecol Obstet 2015; 129: 17-21).

The SOAP/Kybele international outreach grant offers funding to perform a project in collaboration with a country where an international outreach effort is being conducted with the goal of advancing the practice of obstetric anesthesia in that country. In 2015 the grant was awarded to Dr. Ivan Velickovic for his proposal assessing the safety, efficacy and side effect profile of intrathecal morphine chloride (with sodium edetate) for post cesarean analgesia (http://soap.org/display_2015_abstract.php?id=S-27). In 2016 SOAP meeting, with an application deadline of April 10, 2016. More information can be found at the SOAP website or by contacting Dr. Ashraf Habib (habib001@dm.duke.edu). The International Outreach Committee updated the information related to global health that is posted on the members section of the SOAP website (http://soap.org/global-health-opportunities.php). This includes information about groups performing global health work in obstetric anesthesia, anesthesia global health fellowship programs, women’s health global fellowship opportunities, and information for anesthesia residents regarding global health opportunities. For suggestions or other information to include in this section, please contact Dr. Ashraf Habib (habib001@dm.duke.edu).
History was made on June 3 – 6, 2015 in the city of Cali, Colombia. The Second Latin American Symposium on Obstetric Anesthesia, a collaborative effort between the Society for Obstetric Anesthesia & Perinatology (SOAP) and the Colombian Society of Anesthesiologists (Sociedad Colombiana de Anestesiología y Reanimación - S.C.A.R.E.), took place as an integral part of the XXXI Colombian Congress of Anesthesiology and Resuscitation. Planning for this joint educational endeavor began at the conclusion of the First Latin American Symposium on Obstetric Anesthesia during SOAP 2013 in San Juan, Puerto Rico. A total of 2500 people registered for the XXXI Colombian Congress. The attendance at the 2nd symposium reached 600. Its 350 attendees represented a wide spectrum of stakeholders in maternal / neonatal care in Colombia: obstetricians & gynecologists, nurses, government officials, community leaders, hospital administrators and anesthesiologists. Fifty percent of attendees were Colombians, the remainder came from Brazil, Chile, Peru, Ecuador, Panama, Costa Rica, Venezuela, Mexico, Dominican Republic and Argentina. The high attendance and quality of the audience participation exceeded the planning committee’s expectations.

The symposium began on Wednesday June 3rd with a day-long session devoted to maternal public health issues. Topics discussed included the infrastructure necessary to face the obesity epidemic, post-partum hemorrhage, informed consent for obstetric anesthesia, chronic pain and PTSD following delivery, monitoring maternal near-miss events and training for OB emergencies. The session concluded with an open forum discussion on the role of midwives in maternal care. There are currently no trained midwives in Colombia, but plans are underway for their introduction into obstetric care.

The subsequent three days were devoted to discussion of obstetric anesthesia topics relevant to Latin America. Additionally, workshops on use of ultrasound in obstetrics as well as use of checklists during obstetric emergencies were held on Friday and Saturday. Whenever authorized by the speakers, the lectures were dubbed into Spanish, videotaped and are available worldwide -free of charge – at S.C.A.R.E.’s television network (http://original.livestream.com/scare_tv).

Fortunately, the educational activities were supplemented by Colombian coffee, excellent music (salsa) and the warmth of the people.

The Second Latin American Symposium on Obstetric Anesthesia represented the first large-scale meeting in the South American continent with participation from international experts in the field addressing issues that are relevant to Latin America. It created a robust precedent for future educational endeavors and solidified the bond between SOAP and Latin America. Attendees appreciated the high quality, up-to-date educational conferences offered with simultaneous translation into Spanish. The 3rd Latin American Symposium is projected to take place during SOAP 2018 in Miami.

We would like to extend our most sincere gratitude to all the speakers who participated in Cali. Thank you for making this symposium a success!!

SOAP Cali, Colombia 2015

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Nitrous oxide has long been used for labor analgesia in many countries including the United Kingdom, Canada, Finland, Australia and New Zealand. Recently interest in its use in the United States has increased. The last issue of the SOAP Newsletter provided some thoughts on how to say “NO” to nitrous oxide for labor analgesia. We present reasons to say “YES” based on systematic reviews (1, 2) and our recent experience.

It is all about patient choice that we support answering “Yes” to nitrous analgesia. Being able to offer an alternative technique, other than parenteral opioids, for women who may not wish to have regional analgesia, to those who are not candidates for medical reasons, and to women who have delivered and need analgesia for post-delivery repair conveys significant benefits. Risks to its use are very low, and while labor analgesia may be inferior to that offered by regional techniques, a large body of evidence shows benefit to many women during labor and delivery. Our experience with its use corroborates that reported in the literature and leads us to continue offering it and our advocating that others do as well. Like many analgesics, not all women are going to have the same response.

The use of nitrous oxide for labor analgesia has shown a long track record of safety, with moderate efficacy for selected patients, for many years in many countries around the world. For patients who are poor responders to opioid medication or who have high opioid tolerance, those with certain disorders of coagulation, or chronic pain or anxiety, or other reasons to consider alternatives or adjuncts to neuraxial analgesia, nitrous oxide is a valuable addition to the options we can offer. An important consideration is to remember that nitrous oxide is NOT an epidural. The pain relief is clearly inferior to that of an epidural. Nitrous oxide will not replace epidurals or even have any effect on the epidural rate at a particular institution. The key to a successful nitrous oxide program is appropriate recognition of proper patient selection and realistic expectations regarding the quality of analgesia offered by this agent (3). Compared to many other agents we have tried, it has less side effects, economically feasible, readily available, and rapidly reversible and without proven impact on neonatal outcomes.

Nitrous oxide administration for labor analgesia is simple, and safe. Both systematic reviews by Likis et al. and Rosen et al. did not report any significant complications to either mother or newborn (1,2), Collado et al concluded that, at worst, adverse reactions might occur in 3/10,000 patients based on a narrative review of reports measuring its safety (4). The experiences at both Vanderbilt and the Brigham and Women’s Hospital corroborate this. No complications have been associated with its use at Vanderbilt in the 4 years after its introduction and administration to 1700 women as well as following its use at Brigham and Women’s Hospital. Other centers in the USA have used nitrous oxide for many years (UCSF, and University of Washington, for example) and others who have recently adopted this agent also report no issues with either maternal or fetal safety (personal communication). Reported adverse effects are mild in nature, with an incidence of nausea of 13%, dizziness of 3-5 % and drowsiness of 4% (1), rates hard to detect over the baseline rates of those side effects due to labor and delivery alone. Many other centers have now adopted the use of this agent, with several hundred locations now offering nitrous oxide for labor analgesia in the USA.

The CMS (Center for Medicaid and Medicare Services), produced a clarification statement for 42CFR 482.52 definitions of “anesthesia services” that may be offered by a hospital, based on American Society of Anesthesiologists definitions. CMS, consistent with American Society of Anesthesiologists guidelines, does not define moderate or conscious sedation as “anesthesia”, thus oversight by anesthesiologist is not required. Furthermore, the definition of minimal sedation, which is where 50% concentration delivery of nitrous oxide would be categorized, also does not meet this requirement by CMS.

Nitrous oxide provides mild analgesia when provided by the currently commercially available 50% nitrous/50% oxygen intermittent delivery system. One study showed a 1 cm drop in visual analogue pain score when administered by intermittent technique (5). While many women will find this degree of pain relief inadequate, factors other than pain relief may explain why 40-50% of women who request nitrous oxide analgesia at Vanderbilt go on to deliver without other analgesia. King and Wong concluded in their recent editorial that additional tools are needed to assess women’s experiences during labor and that pain relief is “only one component of a multifactorial experience” (6). Measures of maternal coping skills for labor need to be developed (3) which includes...
the advantage for personal control that self-administered nitrous analgesia conveys. The use of analog pain scale measurements may not be appropriate in a setting where dissociation from pain might be the primary beneficial effect. Measurements of maternal satisfaction with their analgesic experience support this. The experiences at Vanderbilt and the Brigham and Women’s Hospital show that while pain relief is limited, similar to that reported in systematic reviews (1,2), maternal satisfaction scores for labor analgesia are not different among women who receive nitrous oxide analgesia, neuraxial analgesia, or those who transition from nitrous to neuraxial analgesia. At the very least, work to identify the characteristics of women who report success with inhaled nitrous oxide use needs to be performed so that patients can be better informed when making analgesic choices.

A very recent task force convened by the European Society of Anaesthesiology addressed some of the potential concerns with regard to nitrous oxide analgesia (7). Per their report, “the potential teratogenic effect of N2O observed in experimental models cannot be extrapolated to humans. There is a lack of evidence for an association between N2O and reproductive toxicity. The incidence of health hazards and abortion was not shown to be higher in women exposed to, or spouses of men exposed to N2O than those who were not so exposed. Moreover, the incidence of congenital malformations was not higher among women who received N2O for anaesthesia during the first trimester of pregnancy nor during anaesthesia for cervical cerclage, nor for surgery in the first two trimesters of pregnancy.” There is a theoretical concern of an increase in neuronal apoptosis in neonates, demonstrated in laboratory animals in anesthetic concentrations, but the human relevance of this is not clear (8). In particular since the data on animal developmental neurotoxicity is generally combined with data wherein potent inhalational agents were also used, not nitrous oxide alone. The analgesic doses and time of exposure of nitrous administered for labor analgesia are well below those required for these changes, as sub-anesthetic doses are associated with minimal changes, if any, in laboratory animals. No labor analgesic is without the potential for fetal effects, and alternative labor analgesics such as systemic opioids in higher doses may also have potential adverse effects on the fetus, such as fetal heart rate effects, or early tone, alertness, and breastfeeding difficulties. The low solubility and short half-life of nitrous oxide contribute to low absorption by tissues, thus contributing to the safety of this agent. Nitrous oxide sedation during elective cesarean has been reported to show no adverse effects on neonatal Apgar scores (9). A recent study examining hematological effects in children undergoing prolonged exposure during complex spine surgeries showed no adverse hematologic effects (10). Hopefully future non-human primate studies can help bridge this gap in knowledge regarding the safety of nitrous oxide and concern for neurotoxicity (11).

The effects of chronic occupational exposure to nitrous oxide are controversial, with one retrospective review of women exposed to high concentrations reporting reduced fertility (12). However, the only effects on fertility were seen when nitrous was used without scavenging equipment, and in high concentrations. Moreover, that study examined dental offices, where nitrous was free flowing during procedures, quite different than the intermittent inhalation, demand-valve modality as is used during labor. The concentrations associated with these risks occur at levels considerably higher than those reported with current scavenging equipment. Repeated environmental measurements at both Vanderbilt and Brigham and Women’s have shown levels to be lower than the NIOSH standard of 25 ppm during active nitrous oxide use in the labor and delivery setting, when using appropriate modern approved equipment and scavenging devices. The low solubility and short half-life of nitrous oxide contribute to low absorption by tissues, thus contributing to the safety of this agent. Per the recent European Society task force: “Members of the task force agreed that, despite theoretical concerns and laboratory data, there is no evidence indicating that the use of N2O in a clinically relevant setting would increase health risk in patients or providers exposed to this drug. With the ubiquitous availability of scavenging systems in the modern operating room, the health concern for medical staff has decreased dramatically. Properly operating scavenging systems reduce N2O concentrations by more than 70%, thereby efficiently keeping ambient N2O levels well below official limits.” (7).

The European Society task force concludes: “An extensive amount of clinical evidence indicates that N2O can be used safely for procedural pain management (in the emergency room, in the normal ward or in a prehospital situation), for the management of labour pain, and for anxiolysis and sedation in dentistry.” (7)

Delivery of a baby is one of life’s most memorable occasions and saying Yes to nitrous oxide for labor analgesia empowers women. Saying Yes to nitrous gives women another analgesic option for labor and delivery, an analgesic option with no serious risk to mother, child, or their providers. Nitrous oxide has been a central component of the labor pain relief menu in most of the rest of the world for decades, and the safety record is impeccable. This agent deserves to be included in American labor pain relief options as well. To us, it’s about increasing patient choices, and saying Yes to nitrous allows that worthy goal to be realized.

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How to Say “YES” continued on next page

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