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A Message from the President

Martin Smith, MBBS, FRCA, FFICM
SNACC President

It is a huge honor and privilege to serve as the President of the Society for Neuroscience in Anesthesiology and Critical Care. I am grateful for the trust that you, the members, have placed in me and guarantee that I will work diligently on behalf of the Society during my term of office. The leadership of SNACC is in good shape with an outstanding group of colleagues serving on the Board of Directors and as Committee chairs and members. I thank them all for the time and commitment that they give to the Society.

I should particularly like to thank Dr. Ansgar Brambrink for his leadership during his recently completed term as President. The Society has had a difficult year but, as a result of Ansgar’s careful stewardship, we have come through that and are in much better shape. In particular, we have maintained a close professional relationship with the American Society of Anesthesiology despite moving our management services away from them. Ansgar was instrumental in delivering this smooth transition while maintaining business as usual. I would also like to thank Dr. Monica Vavilala, who recently demitted office as Immediate Past President. Monica has given many years of distinguished and dedicated service to SNACC. Her enthusiasm and energy is well known to many of you and the Board is still working on some of the projects that Monica initiated! I would finally like to welcome Dr. Deepak Sharma as the newly elected Director at Large, and to welcome Dr. Andrew Kofke back to the Board as Secretary/Treasurer.

There were a record number of attendees (more than 330) at the 40th Anniversary Meeting in Washington, DC on October 11-12. There is a full report of the meeting elsewhere in this Newsletter. I am sure that you will wish to join me in thanking Dr. Kristin Engelhard for overseeing such a high-quality meeting program and Drs. Deb Culley and Monica Vavilala for stage-managing the 40th Anniversary celebrations at the Thursday evening dinner symposium. Particular thanks are due to Drs. Jim Cottrell and Bill Lanier for outlining the history and likely future trajectory of our Society during dinner. One of the things that most impresses me about SNACC is the continued and unwavering support of our senior and distinguished members, both in their regular attendance at our meetings and also in their willingness to contribute to them. The tribute to the Past Presidents after dinner also served to remind us of the commitment to SNACC of so many internationally-recognized faces who are pre-eminent in our field. The ‘before and after’ photographs have however given me pause for thought about the rigours of being SNACC President!

Those of you who were able to attend the 40th Anniversary Meeting witnessed at first hand the impressive organization and on-site support provided by Sandra Peterson, Stewart Hinckley and the team from Ruggles Service Corporation. This was a professionally delivered event and it showed. In association with Ruggles, we are planning many enhancements for next year’s meeting in San Francisco and I look forward to sharing these plans with you in future newsletters. The feedback from the meeting has been universally positive, although we are aware of concerns about the absence of CME credits for the poster sessions and the noise in the poster room. These are issues that we will address for next year, but they do illustrate the challenges of running meetings in an increasingly difficult financial climate. With the industry liaison team from Ruggles, we are looking at innovative ways of securing commercial support throughout the year, rather than focussing only on the annual meeting. Dr. Jeff Pasternak and the Scientific Affairs Committee are also reviewing several options for the poster sessions, but please be assured that the highly valued moderated poster ‘walk around’ sessions will continue.

There remains much to be done in completing the initiatives that have been developed during the last two years. Some, such as the development of an expert consensus statement on the Anesthetic Management of Endovascular Treatment of Acute Ischemic Stroke (led by Dr. Pekka Talke), are nearing completion whereas others, such as the SNACC-sponsored neuroanesthesia fellowship, have moved from development to implementation stage. The one-year UCNS-accredited neurocritical care fellowship, jointly sponsored by SNACC, the Neurocritical Care Society and the Emergency Medicine Section of the American Academy of Neurology, is currently under review by UCNS. New initiatives for 2012-13 include a Research Taskforce, chaired by Dr. Ansgar Brambrink, and completion of the work of the Peri...
In this issue of the SNACC newsletter, you will see new changes that will hopefully enhance your reading experience. This issue will highlight some of the events of SNACC’s 40th anniversary celebration at the Omni Shoreham Hotel in Washington DC. It was a fabulous event attended by a record number of people from all over the world. The registrants learned about many topics in neuroanesthesia including quality issues, the relationship between the brain and lungs, a diverse variety of educational posters as well as other topics like total brain injury.

We will continue from the Fall Newsletter with an interview with Dr. James Cottrell, one of the founding fathers of SNACC. We will also have a report from the World Congress of Anesthesiology from Dr. Andrew Kofke.

If you missed the meeting in DC, you still have a chance to look at the JNA page dedicated to our anniversary at http://journals.lww.com/jnsa/Pages/snacc40thanniversary.aspx.

We would like to offer something new to our newsletter that we feel would be engaging to our members. In this issue, I interview one of the neuroanesthesia residents at our hospital. In future issues, I will be reaching out to fellows and residents from other cities and countries.

The success or failure of our newsletter will be ultimately decided by its readership. Please feel free to contact me with any questions or suggestions.

Renew your SNACC membership today. Every day neuroanesthesiologists and neuroscientists enlighten others on the value of SNACC and supporting it. That’s because we believe in the power of SNACC’s membership. Go to www.snacc.org to renew your membership and take advantage of our many member benefits.

Operative Stroke Taskforce under the leadership of Dr. George Mashour. The Education Committee, chaired by Dr. Rafi Avitsian, continues to expand our on-line educational content and is planning some exciting new initiatives for next year. We will also continue to develop links with other professional organizations via our established Outreach program. You will hear more about all these issues in future newsletters and via the website.

Membership of SNACC remains relatively constant at around 550, with more than 150 international members. However, this stability hides the fact that each year we lose some members and gain new ones. The Board is acutely aware of the difficult times in which we all work; we experience increasing pressure to deliver clinical service at the expense of wider professional activities. SNACC thus needs to adapt to this changing environment so that it can stay relevant to its members. While the Society is well-recognized for producing an outstanding Annual Meeting, I am aware that some members believe that their membership otherwise delivers little. With these issues in mind, the Board of Directors has established a Membership Taskforce to identify how we can deliver “added value” to members and thereby increase and maintain our member base. I will report more on this important initiative at a later date.

There are several ways you can become involved in the work of SNACC. A series of Special Interest Groups (SIGs) met for the first time at this year’s annual meeting and many members are enthusiastic about developing some of these further. The SIGs are being coordinated by Dr. Deb Culley and more information will be available shortly. I believe that these groups will become an integral component of SNACC business and provide an ideal mechanism for engaging the expertise and enthusiasm of the wider membership. I thus urge you to consider whether you might be able to contribute to one of the SIGs when they are launched. The various SNACC committees are also crucial in driving the Society forward and you might wish to consider serving on one of them. Details of their terms of reference and chairs are available on the relevant pages of the website.

I joined the Society and first attended a meeting more than 20 years ago and did not imagine at that time that I would one day be writing to you as your President. I have learned an enormous amount from friends and colleagues in SNACC during the intervening years and am grateful for the collegiality and mentorship that I have experienced, and for the personal and professional relationships that I have formed. The year ahead holds exciting opportunities, but also many challenges and I am grateful for the opportunity to lead the Society during this time of continued change.
SNACC NEWS

SNACC 40th ANNUAL MEETING RECAP

W. Andrew Kofke, MD, MBA

The SNACC 40th Anniversary Annual Meeting was held October 11-12, 2012 in Washington, DC. The Thursday meeting consisted of PBLD Sessions and Workshops followed by the annual Thursday evening Dinner Symposium, which was a commemoration of the 40th Anniversary of SNACC. Friday consisted of the scientific and educational sessions.

Along with the three PBLDs on Thursday there were three Workshops: Neurophysiologic Monitoring, Transcranial Doppler Ultrasonography and a How to Write a Paper.

The PBLDs were organized by Drs. Sulpicio Soriano, Cynthia Lien, and Ines Korner. They discussed issues with ARDS and elevated ICP for craniectomy and how to manage such a case during surgery, subdural hemorrhage management in patients on platelet inhibitors and dabigatran and resuscitation of the patient with acutely blown pupils in the PACU.

The Neurophysiologic Monitoring Workshop was organized by Drs. Antoun Koht and Tod Sloan. They taught monitoring methods for spine cases (Drs. Linda Aglio, Daniel Janik, and Richard Toleikis), brain tumors and vascular lesions (Drs. Laura Hemmer, Christoph Seubert, and Gerhard Schneider), and posterior fossa operations (Drs. Leslie Jameson, John McAuliffe, Michael Mahla, and Kenneth Van Dyke).

The Transcranial Doppler (TCD) Ultrasonography Workshop was organized by Dr. Deepak Sharma with participation and presentations by Drs. Andrew Kofke, Deepak Sharma, Luzius Steiner, and Arthur Lam. Included were several lectures with an overview of techniques and indications for TCD.

The How to Write a Paper Workshop was organized by Dr. Deborah Culley with contributions by Drs. William Lanier, David Warner, John Hartung, and Michael Todd. They discussed issues in overcoming writer’s block, pitfalls that will prevent a paper from being published, how to prepare a publishable and valid manuscript and what to do when your paper is rejected.

The Annual Dinner Symposium this year was a celebration of 40 years of SNACC. It began with a champagne reception followed by a welcome address by President Ansgar Brambrink.

This was then followed by two memorable talks. The first by Dr. James Cottrell who reviewed the roots of SNACC. He overviewed the many seminal contributions by important contributors early in the history and the genesis of SNACC 40 years ago. This was then followed by a presentation by Dr. William Lanier on a vision for the next 40 years for SNACC. Dinner followed and a presentation honoring the Past Presidents was given by Drs. Deborah Culley and Monica Vavilala. A photograph was taken of all of the past SNACC Presidents who were in attendance.

The Friday, October 12 meeting consisted of two Mini-Symposia and Poster Sessions. The Keynote Lecture was by Timothy McDonald, MD, JD, from the University of Illinois in Chicago. He is a practicing anesthesiologist and also an attorney with an interest in litigation and quality issues in anesthesia. He presented a nice overview of issues facing neuroanesthesiologists with respect to quality and clinical outcome.

The Keynote Lecture was followed by a Mini-Symposium which was a joint effort of the Neurocritical Care Society, the Society of Cardiovascular Anesthesiologists and SNACC. Moderators were Drs. Piyush Patel and Christian Werner. G. Burkhard Mackensen presented a lecture on Perioperative Brain Heart Cross-talk. Dr. Jonathan Rhodes then presented a lecture on Cross-talk Between the Injured Brain and the Lung. Dr. Claude Hemphill then discussed Therapeutic Challenges of Brain, Heart and Lung Cross-talk. Overall, the three speakers made important points on how neurologic disease affects cardiac and pulmonary function and how issues with cardiac and pulmonary function affect the brain.

There were two Scientific Poster Sessions organized by the SNACC Scientific Research Committee. Both Scientific Sessions were moderated by Dr. Jeffrey Pasternak. The poster sessions consisted of numerous groups of posters which were moderated by SNACC past presidents and other leaders.

The Business Luncheon included presentation of the John Mitrenchfelder New Investigator Award and the SNACC Education Award. The Mitrenchfelder New Investigator Award went to Un Cheol Lee, PhD, University of Michigan Medical School.

Ansgar Brambrink, MD, PhD (right) passed the gavel to incoming SNACC President Martin Smith, MBBS, FRCA, FFICM.

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40th Annual Meeting Recap
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Ann Arbor, MI, who presented an abstract titled, *Effects of Ketamine on Feedforward and Feedback Connectivity in Humans.* This year’s SNACC Teacher of the Year Award was presented to Michael E. Mahla, MD from the University of Florida at Gainesville.

The election for officers was held and the current officers for SNACC now are:

- **President:** Martin Smith, MBBS, FRCA, FFICM, National Hospital for Neurology and Neurosurgery, University College London Hospitals, United Kingdom
- **President-Elect:** Kristin R. Engelhard, MD, PhD, University Medical Center of the Johannes, Gutenberg-University, Germany
- **Vice President for Education and Scientific Affairs:** Deborah J. Culley, MD, Harvard Medical School, Brigham & Women’s Hospital, Boston, MA
- **Vice President for Communications:** Marc J. Bloom, MD, PhD, Langone Medical Center, NYU, New York, NY
- **Secretary-Treasurer:** W. Andrew Kofke, MD, MBA, FCCM, University of Pennsylvania, Philadelphia, PA
- **Immediate Past President:** Ansgar Brambrink, MD, PhD, Oregon Health & Sciences University, Portland, OR

The afternoon Mini-Symposium began with an overview on the NINDS common data element project. Several speakers including Drs. Scott Janis, Monica Vavilala and Martin Smith presented issues on the common data elements project which the NINDS is supporting. Basically, any research which is supported by the NINDS requires that investigators use the common data element system to provide a systematic method of collecting and collating data so that multiple investigators can have the same method of recording data across projects. This session ended with a presentation of a patient’s perspective of recovering from traumatic brain injury by mother and daughter Christine and Ariel Soule.

The meeting ended with a Pro/Con Debate on Striving for Culture of Quality and Safety moderated by Drs. Adrian Gelb and Arthur Lam with Drs. Cor Kalkman and Greg Crosby debating. Dr. Kalkman’s talk was titled, *Awake Ye Dinosaurs! Medicine Has Changed. We Need Quality and Safety!* And Dr. Crosby presented a talk titled, *Beware of the Quality Potion – It’s More Bun than Beef!* It was a spirited debate with a lot of discussion of the use of checklists and timeouts and their use and misuse in neuroanesthesia and neurocritical care. Closing remarks were then offered by Dr. Ansgar Brambrink followed by a wine and cheese reception with the exhibitors and inaugural meetings of the special interest groups (SIGs).

Ramis Ghaly, MD, right, visits with one of our exhibitors, Covidien.

FOR MORE 40TH ANNUAL MEETING PHOTOS

Wine and Cheese Reception
Summary of the Neurosurgery Sessions at the World Congress of Anaesthesiology

W. Andrew Kofke, MD, MBA, FCCM
University of Pennsylvania

At the World Congress of Anesthesiology (WCA), held on Tuesday, March 27, 2012, a series of seminars related to neurosurgery and neurotoxicity were presented. The first session was moderated by Sergio Berghese (USA) and James Cottrell (USA).

Anton Koht (USA) presented a talk on monitoring the central nervous system. He reviewed the various modalities and issues with monitoring the CNS with evoked potentials, EEG and other modalities.

Andrew Kofke (USA) gave a talk discussing HHH (hypertension, hemodilution, hypervolemia) and other therapies for management of vasospasm. He reviewed the fallacies underlying the various elements of HHH. He suggested that the use of hypervolemia for vasospasm has no decent evidence in support of it. He further suggested that hemodilution also has minimal evidence and that both hemodilution and hypervolemia can have deleterious side effects. There is some evidence in support of hypertension, but it is mostly anecdotal and retrospective series, but it is nonetheless convincing and based on a reasonable rationale. He went on to describe the use of endovascular therapies, including intraarterial nicardipine and angioplasty. Also mentioned was the use of intrathecal nicardipine for vasospasm as having a reasonable rationale and encouraging initial evidence.

William Lanier (USA) discussed evaluation and management of a patient with intracranial aneurysm. He discussed the need to maintain cerebral perfusion pressure. This includes methods for management of brain tissue volume with a description of special techniques which may be used intraoperatively. These include induced hypotension, which is not done anymore, blood pressure elevation, CSF drainage, which has to be done carefully, and occasional use of adenosine. If the blood vessel is cross-clamped, increased blood pressure may be needed, but if the aneurysm ruptures, there may be a need to temporarily decrease blood pressure. He briefly discussed intraoperative monitoring and the cost versus benefits and questioned whether there is an effect on outcome. He noted that it is very expensive and the anesthetic paradigm has to be changed because of monitoring.

He discussed cerebral protection interventions including hypothermia. He described the IHAST study of 1,000 patients, all with subarachnoid hemorrhage, who were randomly assigned to cool or not. All were intact pre-operatively. No intergroup differences in outcomes were noted. There was an observation of more bacteremia in patients who were cooled. He noted that profound hypothermia is protective but is excessively complex and expensive and the anesthetic paradigm has to be changed because of monitoring.

Observations on glucose control from the IHAST study were described. Glucose levels greater than 152mg% were associated with worse NIH stroke scale. He suggested that there is a “sweet spot” with optimal outcomes such that low blood sugar and high blood sugar are both associated with worsening.

Dr. Lanier suggested that boluses of barbiturates or etomidate have no effect on outcome and that nitrous oxide use has no detrimental or beneficial effect on outcome. He noted that balancing optimal cerebral versus systemic physiology is a challenge with which neuroanesthesia physicians have to deal. Sometimes we must temporarily push the limits of allowable systemic physiology to allow the brain to recover. He ended by noting that team work is essential in neuroanesthetic management of patients with aneurysms.

LD Mishra (India) presented a seminar on controversies in neuroanesthesia. The controversies that he discussed were inhalation anesthesia versus TIVA, nitrous oxide, opioid use and others.

With respect to inhalation versus IV anesthetics, inhalation anesthetics provide rapid control of depth, but can cause a rise in cerebral blood flow volume and ICP which is thought to be less severe with sevoflurane, but is more severe with all of the agents at higher doses. He suggested that isoflurane produces delayed recovery and is partly metabolized. He also suggested that sevoflurane has a faster onset and recovery, but clinicians need to be aware of the reactions to the sodalime.

IV anesthesia decreases cerebral metabolic rate with no interference with autoregulation, but may have a delayed recovery, although recently this is less problematic. He discussed sevoflurane versus propofol quoting Sneyd from BJA, who indicated that the drugs are comparable. Adverse effects of sevoflurane include seizure spikes and it may impair autoregulation at high doses. Adverse effects of propofol include minimal effect on SJO² and zero flow pressure is increased with propofol and de-

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He reviewed the use of nitrous oxide in neurosurgery indicating that it is controversial. The drug does increase ICP and should be avoided with pneumoencephalography, severe ICP and the need for high FiO₂. He noted the studies which indicate that tight glucose control is not associated with improvement, but he didn’t go into more details.

Regarding cerebral protection, he suggests that there’s no magic bullet, but there is an advantage of decreasing metabolic rate with barbiturates, propofol or inhalational agents. He suggests that benzodiazepines and lidocaine are reemerging. Magnesium may have a role. Unfortunately, most studies are done on animals, making it difficult to make decisions in clinical practice. He suggested that thiopental is the protectant of choice and he reviewed briefly the new data that is coming out about preconditioning and that may affect practice eventually. He suggested that benzodiazepines can decrease cerebral metabolic rate with less cardiovascular effects. In summary, he indicated that controversies exist and that future research is needed.

Pedro Amorim (Portugal) delivered the next talk on the importance of awakening management in neurosurgery. His lecture was limited to strategy for supratentorial neurosurgery and reviewed the evidence. For brain tumor surgery, there is a fear of ICP problems after surgery and he indicated that the scientific evidence is limited. He also looked at post operative complications. Intracranial hematoma and edema are the most feared as are concerns about respiratory complications and cardiovascular complications, including hypertension and issues of hypovolemia. He reviewed metabolic endocrine and thermoregulatory issues. Post-operative complications after brain surgery were reviewed. Factors associated with an ICU stay greater than 24 hours were: tumor severity, intraoperative fluid management, post operative endotracheal tube, and surgery longer than seven hours. Care after four hours from the end of surgery was mostly pain related. Complications after brain tumor surgery were primarily issues with hypercarbia.

Hypertension was reviewed in an article by Basali and Shubert. They found intracerebral hemorrhage at 0.7% of the time with intraoperative hypertension in 60% of those with post operative intracranial hematoma. Hypertension in the 12 hours after surgery was present in 62% of those who bled. He suggested that there’s a need to control blood pressure.

In the past, fear of complications resulted in patients with large tumors and long procedures going to the ICU intubated. However, with that strategy, it’s difficult to do neurological assessment. If a patient is going to the ICU intubated, then many feel that neurological monitoring in the form of ICP monitoring, licox or EEG is then needed. He suggested there should very seldom be an indication to transfer a patient to the ICU intubated. If the patient is awake before surgery, the patient should be awake after surgery. He reviewed the question of whether the type of anesthesia matters. He reviewed several articles, generally showing that the difference in time to extubation was small to negligible to clinically not significant. There is a danger of early emergence with extubation with the fear of intracranial hypertension and systemic hypertension. Nonetheless, these common assumptions should be questioned. Certainly, one is whether there is an increased ICP risk after the tumor has been removed, what is this patient’s specific situation and are there issues with residual edema and hematoma.

Cerebral hyperemia during recovery
from GA and neurosurgery was reviewed by Bruder et. al. and they found extubation to be associated with increased blood flow velocity and with increased SJVO². There was clearly hyperemia that occurs that is independent of anesthesia technique.

What do we know about awakening? Kelz et. al. have raised questions about this suggesting that the neurochemical processes for going to sleep are different from those for arousal. The neuroscience question is how the brain transitions between conscious and unconscious states. Kelz proposes a fundamental and biologically conserved concept of neural inertia, a tendency of the CNS to resist behavioral straight transitions between conscious and unconscious states. This contributes to the hysteresis that is thought to underlie these transitions. In conclusion, he suggests that there is little actually known about reversal of unconsciousness and that modern surgery and neuroanesthesia result in a relaxed brain following tumor removal, maybe modern TIVA and target controlled infusion and monitors will allow for a better and smoother emergence. Perhaps we need to distinguish between return of reflexes and return of consciousness, if we agree that earlier emergence is desirable.

He then suggested how to handle an early emergence. The following are needed: an okay train of four, normothermia analgesia and so on. Brain monitoring may help guide emergence with EEG SAO₂ and evoke potential in high-risk cases. Remifentanil may be ideal for early emergence. His thoughts on early extubation is that there is a bias to late extubation with late cases and long procedures and some old habits that suggest it’s best to give the brain a rest after surgery. He questions some of these truisms. The decision to do early extubation should not be based on tumor size, location or midline shift, or surgery duration or pre-op status. He suggested that surgical tools and skills are improving, which makes it easier to have a rapid emergence. He ended by noting that ICU care costs a lot and that if possible extubation should be performed early.

Session two was also moderated by Sergio Berghese (USA) and James Cottrell (USA).

Dr. Audree Bendo (USA) discussed adult head injury and whether the guidelines are improving outcome. She indicated that there is ample controversy with most of the issues having to do with secondary brain injury. She limited her discussion to pre-hospital intubation, hyperventilation and hypothermia.

Primary injury is irreversible but secondary injury is a problem and our goal is to prevent that. This includes hypoxemia, hypotension, anemia and so on. She suggested that there has been very little progress with the incidence unchanged with 52,000 deaths annually and 100,000 with significant residual disability. She indicated that there has been a big emphasis on guidelines, but their implementation has been suspect. The Brain Trauma Foundation has started with a public education campaign. The campaign is about patients with head injuries that don’t go to the hospital when they should. She reported it as problematic when a patient has a head injury and goes to sleep at home and goes on to have significant morbidity. She suggested that pre-hospital guidelines have had a huge impact and that all should have a trauma care system with a protocol for EMS and that transport decisions need to be made.

Pre-hospital intubation has been a surprising area. Pre-hospital intubation has been recommended, but there has been an unexpected worse outcome and it is now being revisited. There is concern that perhaps the paramedics’ education was inadequate and they weren’t properly trained or that hyperventilation is being done inappropriately or that endotracheal intubation has been done when not needed.

The recommendations now are to correct hypoxemia and to have airway management done by those who are the most experienced.

Preventing hyperventilation has been problematic. Surprisingly, this is a guideline that has been difficult to implement. She cited Coles’ critical care medicine paper which shows that modest hyperventilation produces significant ischemia throughout the brain and indicates that there are no studies to suggest an improvement in outcome from routinely using hyperventilation.

She continued by discussing the role of hypothermia and TBI. She pointed out that this is a therapy that should work but doesn’t seem to, although it uniformly works in animals and single institution studies. It’s a second tier therapy in guidelines because some still believe it works, but nonetheless, it needs to be cautiously used. A meta-analysis suggests that data barely favor hypothermia and the risks are pneumonia and arrhythmias. A European RCT is now in effect with no barbiturates and it is called the Eurotherm Trial.

Dr. Bendo raised a question of whether guidelines are improving outcome. At most, 80% are following guidelines with levels of evidence mostly level two and three. CDC in 2010 suggested we could save lives if we would follow the guidelines uniformly, however, Dr. Bendo suggested that it actually may be a failure to follow the guidelines or do good studies and doesn’t really agree that guidelines are improving outcome.

The next talk was a pair of pro-con talks regarding the use of inhalational anesthesia. Kristen Englehardt (Germany) gave a talk in support of inhalation anesthesia suggesting that it does matter and that there is a difference. She suggested that the goal of anesthesia agents in neuro-
anesthesia include no increase in cerebral blood volume or ICP, maintain coupling of CBF and CMR, cardiovascular stability and rapid recovery. With respect to intracranial pressure: CVR and volatile anesthetic studies in Porcine models at MAC indicate that desflurane has the most decrease in CVR and Sevo seems to be more inert. CVR decreases should be appreciated to translate to increased ICP. Cerebral blood volume with sevoflurane or propofol in humans has been studied. Cerebral blood volume appears to be lower with propofol with a 20% drop in baseline whereas sevoflurane produces a drop of about 5%. Nitrous oxide increases intracranial pressure.

Regulation of CBF and CMR:

Again from the Porcine model desflurane dilates vessels with double the CBF compared to sevoflurane. Another study was quoted indicating that sevoflurane can produce a 20% drop in CBF and more of a drop in CMR with propofol producing about a 50% drop to both CBF and CMR. In studies of SJO₂ sevoflurane plus hyperventilation is still okay. Propofol with normocapnia decreases SJO₂ but to an acceptable extent. Propofol plus hyperventilation causes a very low, possibly bad SJO₂. She suggested that it’s important to individualize and that if the ICP is high preferentially use propofol and if the ICP is okay then sevoflurane and that individualization should carry the day.

With Respect to Cardiovascular Effects:

Comparing propofol remi versus sevo remi, there is no difference noted. In patients with left ventricle dysfunction sevoflurane appears to increase DP/DT compared to propofol with improved length of stay in hospital. Propofol still produces a propofol infusion syndrome. Studies of TiVA versus a balanced with inhaled anesthetic have shown no difference.

PONV:

There appears to be a huge difference between anesthetics. All inhalation anesthetics increase the incidence whereas propofol appears to be the best.

The Con argument was presented by William Lanier (USA). He suggested that it doesn’t matter with the exception that N₂O should not be used with pre-existing intracranial air and no desflurane if an increase in CSF fluid is a problem. He then reviewed the desirable properties of anesthetics and the myths about a rapid wake-up.

1. A faster wake-up is always better. There should be concern about end of day long cases with a lot of fluids given and sometimes a fast wake-up like after remifentanil could be quite difficult to manage.

2. Anesthesia wake-up time is highly dependent upon anesthesia technique. This is art versus science.

With respect to cerebral protection, he suggested that the greatest evidence for cerebral protection by a clinically relevant anesthetic occurs when barbiturates are given in a setting of focal cerebral ischemia. He cited the Nussmeier study and neuropsychiatric outcomes after cardiac surgery. However this has not been reproduced. Warner did a study evaluating the extent of EEG depression with barbiturates and brain protection finding that there’s equal protection with burst oppression versus modest depression. Do other metabolic depressant anesthetics provide protection? With barbiturates, there have been 20 studies, 80% of which are positive, and with isoflurane, there were nine studies, of which 40% are positive. It appears that a decrease in CMRO₂ by itself doesn’t confer protection. Equal metabolic depressant are not equally protective.

He suggested a common sense anesthesia technique. You tailor the anesthetic properties to patient physiology and pathophysiology. Through properties of a TiVA that cannot be duplicated by inhalation anesthesia with proper supplement of additional drugs as needed i.e. let’s not be ideological about this. One will have a great difficulty demonstrating that one technique is better than another.

This was followed by a pair of seminars regarding perioperative glucose management. Federico Bilotta (Italy) presented a talk about how perioperative glucose management matters. He cites the Vanden Berghe paper in The New England Journal of Medicine that states that tight glucose control resulted in better outcome. However, other studies have suggested that tight control results in higher mortality, which is likely related to hypoglycemia issues. There appears to be no additional benefit of lowering blood glucose levels below moderate. He indicated that there are risks related to hyper and high glycemia variability. There appears to be an optimal glucose range. He went on to cite other studies showing that hypoglycemia at mild to about 80 is associated with a higher death rate and another indicating that a duration of time on intensive insulin therapy predicts hypoglycemia in surgically, critically ill population and hypoglycemia was associated with a higher death rate. Other studies indicate a blood sugar greater than 180 is associated with a higher risk of death and also indicate that a higher glucose variability is associated with a higher risk of death. The Maerz et. al. study was quoted indicating that a glucose of 140-180 should be the goal and that there is a u-shaped curve with an optimum in this range. Multiple other studies have supported this notion.
A talk was then given by María Niño De Mejía who argued that glycemic control does not matter. The conclusions of her talk stated that avoidance of hyperglycemia is neuroprotective and that there are differences in mortality related to hypoglycemia. She quoted that randomized, multi-center trials indicating that tight glucose control doesn’t improve mortality and makes things worse if patients become hypoglycemic.

A meta analysis on neuro patients with TBI showed no difference in mortality or neurological evolution and more hypoglycemia with efforts to control blood glucose. She concluded by agreeing that we need values to be around 150 and that too high may damage a brain and too low may cause neuroglycopenia to detrimental effect.

Session three was co-moderated by Serghio Barghese and James Cottrell.

Karen Domino (USA) gave a presentation on functional brain surgery. She began by indicating that the role of anesthesia is to provide optimal surgical conditions and patient temperate indicating that it is often done under MAC so surgeons can do intraoperative monitoring for the effects of their functional surgery. She reviewed some of the diseases for which it is used. For Parkinson’s Disease, it is used for tremor and muscle rigidity, autonomic dysfunction, pharyngeal and larynx dysfunction, sialorrhea and depression. They often have significant medication issues so the anesthesiologist needs to be aware of drug interactions. The surgeon often holds meds so that the tremor gets worse and it becomes difficult for the anesthesiologist to manage. Pharmacokinetics may be altered and opioids need to be titrated to allow easy arousability.

Procedure related challenges of these procedures include different out of OR locations, the use of a stereotactic frame, positioning, microelectrode recordings, being able to do neurological testing in the awake patient, control of blood pressure and it can be quite long. Generally, there is poor access to the patient who is in a semi-sitting position. This position can create problems with hypovolemia, hypertension and even venous air embolism.

Awake sedation techniques are required for this procedure. Propofol has advantages and disadvantages. Advantages include that it is short acting, decreased nausea or vomiting and there’s wide experience with it. The disadvantages include that it is a gaba agonist and can suppress microelectrode recordings and can abolish tremors, which may not be desired if that is used as an end point for therapy. Dexmedetomidine has also been used. Advantages include that it has no gaba effect, has less effect on motor responses, has some anxiolysis, preserves responsiveness, preserves tremor and reduces hypertension. However, in high doses, it could suppress motor-evoked responses, cause hypotension and cause bradycardia. Deep sedation with dexmedetomidine can suppress subthalamic nucleus activity, which can be a problem, but nonetheless, can be titrated to allow easy arousability.

Problem patients for undergoing sedation for these procedures include those with cognitive impairment, psychiatric disorders, severe movement problems, children, poorly controlled hypertension, chronic pain, non-English speaking, severely obese, sleep apnea, laryngeal and pharynx symptoms and those with a difficult airway.

Blood pressure control is important, as there could be a 2.3% incidence of intracerebral hemorrhage associated with the procedure. Hypertension increases the ICH risk. Thus, SBP should be kept less than 140 and no more than 20% above the patient’s baseline. A variety of antihypertensive drugs are available for use.

Surgery can be quite long and patients may need physiotherapy and/or massage, intrathecal opioids, and foley catheters. There may be psychic stress or fatigue and more disinhibition upon reawakening. Some place an LMA or endotracheal tube for the last part of the procedure.

Intra-operative complications are generally about 12-16%. Seizures occur in 0.8-4.5%, decreased level of consciousness 2.2-2.8%, ICH 2.8%, respiratory issues 1.1-1.6%, coughing 1.2%, and nausea and vomiting 1.7%.

In summary, the challenges are numerous when providing anesthesia for functional neurosurgery and they could be patient-related and procedure-related. No one best technique has been identified and all that we have to rely upon in our literature are case series without any RCTs available.

Alex Bekker (USA) followed by presenting a talk on anesthesia for awake craniotomy.

The rationale for awake craniotomy is the need to perform interoperative functional cortical mapping, the need to minimize drug-induced interference with intraoperative EP recordings, the need to identify seizure types, the need to avoid resecting the speech area and identify the motor cortex, and the need to apply electric grids. He reviewed a variety of issues regarding GA versus awake craniotomy and physical and emotional stress associated with both techniques. Post-operative nausea and vomiting appear to be better in the awake situation. Many use an asleep/awake/asleep technique so the awake portion can be fairly short. However, for a portion of the testing, the patient needs to be able to follow complex commands, thus

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creating an anesthetic challenge. He included a quote from Dr. Llinas, “The brain is not a sausage, it’s more like a well-tuned musical instrument.”

He continued by discussing the use of dexmedetomidine. Its advantages are that it can provide sedation and analgesia without respiratory depression or disinhibition. It can be used alone as an adjunct or as a rescue drug and allows neurocognitive testing. It appears to work fine at a lower range for intraoperative testing. He emphasized the importance of a scalp block. He uses 0.5% marcaine.

In a patient satisfaction survey in a review by Goebel, he reported that 61% were highly satisfied and 39% had some dissatisfaction related to pain. Palese recorded patient descriptions of the experience with a variety of descriptions including out of this world experience, unreal and so on. Maninen reported that 93% were completely satisfied.

Gastao Duval Neto (Brazil) gave a talk reporting the association of perioperative risk factors in increased hypnotic time. Does a low BIS increase mortality? Neurotoxicity has been associated with hours of decreased BIS with neurotoxicity, particularly in the elderly and the young. He indicated that GA activates neuroapoptosis in developing rat brains with increases in caspase. Inhalation anesthesia with isoflurane induces a cycle of apoptosis and beta amyloid deposits in rodents.

So, does the use of a BIS monitor change outcome? Monk reported a retrospective study of cumulative hypnotic time with a number of minutes of BIS less than 45 as an independent predictor of death. This produced an extensive reaction in the anesthesia world, with the main criticisms being confusion of causative effect versus association and the problem with combining comorbidities into a single score. Moreover, there was a co-authorship of this paper by an employee of Aspect Medical. Sandin, in Anesthesia & Analgesia, reported mortality within two years after surgery in relation to low BIS and confirmed the previous observations. Other studies followed including the B unaware trial finding that accumulative duration of BIS less than 45 is not associated with mortality. So, altogether it seems that this is not a predictor of mortality. Things that increase mortality include cancer and poor ASA status.

Martin Smith (United Kingdom) gave a talk on the implications of emerging technologies in neuroanesthesia. The aim is to use outputs to make decisions that will improve patient outcome. We can evaluate all sorts of variables. Multiple monitor modalities provide a more complete picture. ICP CPP therapy is a standard of care, however, there are no studies on the assessment of adequacy of CBF in an individual patient. Dr. Smith quoted the Penn studies relating to ICP and low PbO2 and pointed out that licox PbO2 monitoring had become a bedside gold standard, although it does have problems being a focal monitor. Changes in PbO2 can be related to CBF and OEF. A low PbO2 burden is associated with poor outcome. The specific determinants of PbO2 appear to be cerebral O2 delivery and metabolism, issues related to cerebral O2 diffusion and systemic physiologic variables. PbO2 directed therapy has had better outcomes in the Spirotta retrospective paper. Many interventions were used to improve PbO2 including FiO2, increasing blood pressure, increasing sedation, head position, ICP control, and others.

He reviewed issues with the use of NIRS. A notable advantage is that it is non-invasive. Recent developments allow an absolute measure of cerebral tissue O2 saturation. There are lots of commercial devices but there’s no standardization between them and it becomes difficult to compare them. There is no evidence for wider routine application at this point and it isn’t widely investigated after TBI. He raised the question of whether intraoperative RSO2 monitoring during cardiac surgery can help. There are 488 papers reviewed and eight had decent evidence. Prolonged intraoperative desaturation is associated with adverse neurological outcome. In CEA operations, similar accuracy and reproducibility was found and compared to other monitors, but the NIRS ischemic threshold is not known. There is significant individual variability. It may have a role in assessment in cerebral autoregulation, using the so-called COx.

He also discussed cerebral microdialysis, which can be useful to give information about the lactate-pyruvate ratio, glycerol, glutamate, and other chemicals. Neurometabolic crisis can be detected by an ischemia pattern in microdialysis with SAH. He showed cases with increased glycerol and LPR that proceeded to rise in TCD by 20 hours.

Calling All SNACC Members
Volunteers are at the heart of SNACC. We invite our members every year to assist the Society governance by serving as volunteer leaders, not just for our Board, but also for each of these member committees: International Relations, Scientific Affairs, Communications and Education sub-committees on Neurocritical Care and Neurointensive Care. To volunteer to serve on a committee, contact snacc@snacc.org.
A Report from the Education Committee

Rafi Avitsian, MD  
Chair, Education Committee

The education committee is excited about our new administrative company Ruggles Service Corporation. Our goal is to reach out to the membership with better educational material. Drs. Laurel Moore and Deepak Sharma have been the leaders in the Bibliography Project. You can visit the bibliography through the education menu on the SNACC website as a member. You can access a valuable collection of suggested readings according to the topic and be directed to the PubMed site in order to access the manuscript simply by clicking on them. The committee would like to acknowledge and thank all those members who have dedicated their valuable time in helping us successfully complete this project. Obviously, we are not done yet since every bibliography needs continuous updating. So, please do not refuse when you are approached to review a topic, add to or change the suggested reading list. I also want to ask all members to send us their suggestions about topics and new articles that you may feel worth adding to the bibliography. You can access the education committee by sending your e-mails to education@snacc.org.

We are happy that the Board of Directors has encouraged us to include trainee committee members. We will be adding a resident or fellow member in the coming year. If there are any trainees interested, please e-mail us at education@snacc.org.

Another project that has been well received is the “Chat with the Author.” What we are missing now is feedback from you. We are currently considering setting up a communication method for the membership to be able to ask questions from the authors after hearing the “chat” for a certain period of time after it is posted.

We are happy that one of our own committee members, Dr. Reza Gorji, has been selected to be the editor of this newsletter. We are enthusiastic to start a new initiative to add educational material to the newsletter. As always, we are waiting for your suggestions.

A Report from the Scientific Affairs Committee

Helping Facilitate a Memorable Annual Meeting

Jeffrey J. Pasternak, MD  
Chair, Scientific Affairs Committee

Preparing for SNACC’s Annual Meeting and 40th Anniversary was a busy time for the Scientific Affairs Committee.

In an effort to support and mentor junior investigators, Dr. Deborah Culley, the preceding chair of the Scientific Affairs Committee, organized and moderated a workshop addressing the techniques, opportunities, and challenges associated with writing and publishing a manuscript. The session entitled “How to Write A Paper Workshop” was a great success and included speakers Drs. John Hartung, William Lanier, Michael Todd and David Warner. These experts offered a wealth of advice to junior academic faculty members as well as physicians and scientists in training.

One hundred thirty-six abstracts were submitted for the poster session and our committee was busy grading and selecting the 120 that were presented at the annual meeting. This was not an easy task because the scientific content of the abstracts was truly exceptional and provided a snapshot of current innovative ideas and research findings in the field of neuroanesthesia. These abstracts were submitted by investigators from around the world, representing both basic science and clinical research. As part of the celebration of SNACC’s 40th Anniversary, past-presidents helped moderate the walk-around poster sessions.

We were also involved in selecting UnCheol Lee, PhD, from the University of Michigan to receive the prestigious John D. Michenfelder New Investigator Award for his abstract “Effects of Ketamine on Feedforward and Feedback Connectivity in Humans.” Our committee also selected the winners of the Resident Travel Awards. The goal of this latter award is to encourage interest in neuroanesthesia among trainees.

We hope you enjoyed SNACC’s anniversary celebration at the annual meeting and we look forward to seeing you in San Francisco in October 2013.
Editor: What got you interested in neuroanesthesia? I know it is not my personality in the operating room.

Dr. Rosenblatt: I was a neuroscience major in college because I enjoyed prying into the unknown and using scientific theories and mathematical models to explain human behavior. My goal as a premed student at Johns Hopkins was to become a Neurosurgeon one day. After graduation I worked in a Trauma Research group investigating ways to improve surgical outcomes and was exposed to the exciting world of trauma surgery. During medical school I remembered how much I loved breaking down complex human processes into systematic scientific formulas. When it was time to choose a residency, I was torn between continuing in my pursuit of becoming a neurosurgeon and working in a general field where I could apply all of my medical science knowledge to patient care. I discovered the Neurocritical Care Society and the field of neurointensivism. Candidates of a neurocritical care fellowship include residents with neurology, neurological surgery, internal medicine, surgery, emergency medicine or anesthesiology training. After I had completed all of my clinical rotations, I believed that anesthesiology would be the most invigorating and gratifying area to pursue, while still as intellectually stimulating and challenging as neurology or neurosurgery, but without the ultra-specialization of the latter two areas. In no other specialty would I face the hands-on application of basic sciences while simultaneously devoting 100 percent of my efforts to active patient care. Anesthesiologists maintain the most intimate knowledge of all areas of medicine and must apply this knowledge almost reflexively in highly intense and demanding situations. It wasn’t until I was on the anesthesia residency interview trail that I met actual neuroanesthesiologists, like you Dr. Gorji, and it was too good to be true. I thought, “Here is a career that must have been created for people just like me.”

Editor: That’s really funny. I did not think I was special at all.

Dr. Rosenblatt: I like trauma cases. I enjoy working quickly and thinking fast. In general anesthesia I enjoy multi-trauma cases and cases that involve rapid resuscitation. In neuroanesthesia my favorite cases are the emergent decompressive craniectomies and the posterior spine surgeries for acute cord trauma with neuromonitoring. Knowing that I play a role in saving a patient’s life or maintaining a patient’s ability to walk is extremely gratifying.

Editor: I can always tell when someone has an interest in neuroanesthesia when they enjoy posterior spine cases. What are your expectations from a neuroanesthesia rotation?

Dr. Rosenblatt: Basic proficiency in interpreting neuroimaging, including cerebral angiography, brain and spine MRI. Also proficiency in reading and interpreting EEG waves.

• Understanding basic principles of neurophysiologic monitoring including EEG, evoked potentials (SSEP, BAEP, tcMEP), transcranial Doppler, cerebral oximetry, and ICP monitoring.
• Competency in specific intraoperative interventions including ICP management, CSF drainage, deliberate hypotension or hypertension, precordial Doppler monitoring, and hypothermia.
• Management of perioperative complications such as cerebral ischemia, intracranial hypertension, air embolism, intraoperative aneurysm rupture, seizures, cranial nerve

Kathryn Rosenblatt, MD
dysfunction, neuroendocrine disturbance, electrophysiologic monitoring changes.

- Competency in technical procedures commonly employed in neuroanesthetic practice, including invasive monitoring such as arterial line, central line and LP Drain placement and total intravenous anesthesia setup and management.

**Editor:** Looks like I have my work cut out for me. Do you think neuroanesthesiologists are a different breed than a general anesthesiologist?

**Dr. Rosenblatt:** Yes, I believe neuroanesthesiologists are fundamentally academic anesthesiologists, while general anesthesiologists are not obliged to have academic interests. Similarly, neuroanesthesiologists are inherently physician-scientists primarily because the fields of neurosurgery, neurophysiology and neuropharmacology advance more quickly and with greater increments than other areas of surgery for which general anesthesiologists must be prepared.

I found a common term used in its many forms by my attendings during almost all cases. This word was “art,” and there is certainly an art required to care for patients during brain and spine surgery. Like painting a perfect picture or composing a symphony, anesthesiologists make small adjustments and maintain delicate balances with tight control over many factors during these special procedures. Pardon this pun, but the right brains of anesthesiologists must be just as active and developed as their left brains to be skilled and artful. And this blend requires a different breed of doctor.

**Editor:** Thank you for taking the time to answer my questions. I appreciate it very much.

**SNACC Newsletter Schedule**

SNACC’s newsletter is open to submission by members of SNACC. Please adhere to the following schedule. Submissions do not guarantee publication. We are interested in news and articles of interest from the membership at large. In addition, if you have a question to ask any of the officers of SNACC, you can submit them as well. Due to time and the volume of issues anticipated, not all questions can be answered.

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Send all submissions to the Editor at reza@gorji.com and put “SNACC Contribution” in the subject line. Reza Gorji, MD, **SNACC Newsletter Editor**
More SNACC History with James Cottrell, MD

Reza Gorji, MD
SNACC Newsletter Editor

Dr. James Cottrell was the SNACC President from 1981-1982 and is considered one of our senior members and founding fathers of our organization. I had the pleasure of interviewing Drs. Albin and Cottrell on the occasion of SNACC’s 40 Anniversary. Dr. Albin’s interview was published in the 2012 Fall issue. Dr. Cottrell gave a very warm and interesting talk at the SNACC Annual Meeting during the Dinner Symposium on Thursday evening. Dr. Cottrell is Dean for Clinical Practice and Distinguished Service Professor as well as Chair in the Department of Anesthesiology at SUNY Downstate Medical Center in New York. Here is my interview with him on occasion of our Society’s birthday.

Reza Gorji (Editor): Dr. Cottrell thank you for agreeing to this interview. When did you join SNACC?

Dr. Cottrell: 1975

Editor: How many members did SNACC have at that time?

Dr. Cottrell: SNACC had about 150 members.

Editor: SNACC began with heavy involvement of neurosurgeons but that is not the case anymore. Can you comment on that? What were some of the problems SNACC faced in that era?

Dr. Cottrell: We had a rule that every other year the President had to be a Neurosurgeon but we ran out of neurosurgeons who had sufficient stature and interest. At one of those early meetings, the neurosurgeon President of SNACC did not realize that he was the President of SNACC and he did not come to the Annual Meeting! I think we should renew our efforts to have the involvement of neurosurgeons, since without their participation we will not progress as quickly in improving patient outcomes.

Editor: SNACC president not showing up to the annual meeting seems so odd and zany. I’m glad our present presidents are so attentive and clearly a different breed. How has SNACC changed over the years and how do you see it in the next decade?

Dr. Cottrell: SNACC has become a larger society, more organized and will be better able to advance the science of neurosurgical anesthesiology, especially with the inclusion of neuroscience in the society’s name. In addition, with the robust participation of our international members, our focus on outcomes will allow more and larger multi-center outcome studies.

Editor: I think having such a diverse membership adds so much to our organization. How has neuroanesthesia changed over the years and how do you see it in the next decade? Specifically has the role of neuroanesthesiologists changed over time?

Dr. Cottrell: Neuroanesthesia has grown with its associated technology ever better utilization of processed EEGs, advanced MRI technology, etc., and other new monitors for detection of neuropathology and intraoperative ischemia. Because of that increasing capacity to monitor patients, neuroanesthesiologists now make so many of the pre-op, intra-op and post-op decisions that we are truly co-captains with our neurosurgeon colleagues in the operating room and we are rapidly becoming THE captains in the neuro ICU. We have also gained enhanced capacity to measure the effectiveness or harm of our anesthetics and anesthetic adjuvants.

Editor: What’s your opinion on the neuroanesthesia fellowship accreditation?

Dr. Cottrell: It is absolutely essential. We need to decide what we need to teach and we need to teach the same basic skills and knowledge set in all major U.S. neuro centers. Doing so will set a world-wide standard for neurosurgical anesthesiology that will be widely emulated.

Editor: Thank you very much Dr. Cottrell for your time and dedication to SNACC.

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SNACC welcomes Drs. Kofke and Sharma as our newest Board members!

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