NEWSLETTER

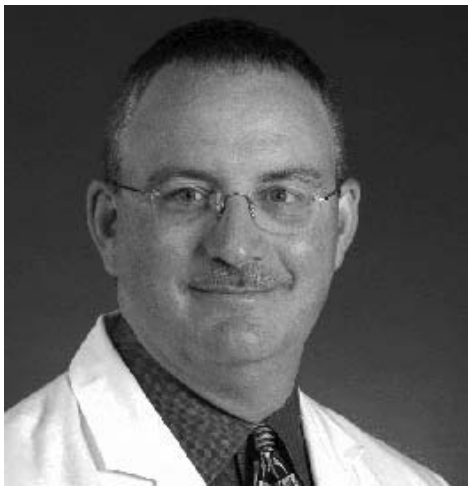
ASCCA INTERCHANGE

AMERICAN SOCIETY OF CRITICAL CARE ANESTHESIOLOGISTS

Volume 20 Number 4 www.ascca.org

President's Message

Critical Care 2012



Todd Dorman, M.D., F.C.C.M.
ASCCA President

In health care today, it is hard to predict next week, much less try to predict a few years into the future. Health care may have once been a stable environment with short intervals of significant change, but clearly we have moved into an era of constant change with infinitesimally short periods of stability. Global change for health care is coming, and critical care will surely be a focus of that change, given the costs associated with what we do.

Strategic planning requires us to look to the future. Predicting the future requires hubris. I admit that to prognosticate I needed help. Thus, I just returned from a walk through the Northwest Market, a typical Baltimore street market, where I picked up a crystal ball, some tea leaves and a magic 8 ball. Using these has been challenging, but there simply wasn't a Cochrane review nor was there any significant published evidence of any type. Thus I have utilized what seem like the best tools available and offer you these thoughts.

Physician Work Load:The Crystal Ball

In most American ICUs, attending physicians cover a large number of patients. Although this number frequently ranges between 10 and 16, there are examples of a single attending physician covering 40 and 50 patients. In international ICUs, it is not uncommon for attending physicians to cover only four to eight patients. The correct ratio is simply unknown and will need to be determined using both quality and financial outcomes. Given the economy in which we exist and the fact that significant economic improvement is unlikely for awhile, I doubt American ICUs will be able to fiscally support the lower patient-to-attending ratios seen overseas. Understanding the break points, though, for quality and cost will enable us to choose wisely. We should also understand how such decisions impact work satisfaction and thus the work lifespan of an intensivist. Adopting a model with high burnout when we already have inadequate manpower is foolhardy. In addition, impact on trainees' competency should be assessed. Without such data, my new crystal ball says it is highly likely that we will be commonly caring for higher patient-to-attending ratios in the order of 16-24.

I suggest two things will happen in response to this. First, some centers will simply acquiesce to higher ratios, while others will innovate. We should insist that before ratios are increased, the decision be evidence-based in the same manner that outside forces suggest our care be evidence-based. Maybe we should label this end point a "never event" and avoid this fate, but I doubt it. The crystal ball unfortunately shows administrators winning this battle since we simply don't have the data in hand to prevent it. If I am right, we need to immediately begin to collect data regarding all pertinent outcomes for comparison in what will likely be a natural pre-post study.

ICU Admit/Discharge Criteria: The Tea Leaves

Greater pressure will be placed to more strictly define admission criteria while loosening discharge criteria. The cost of time in the ICU is seen as too high, and thus limiting admissions and forcing throughput will be considered by many to be common sense. Of course, this will put pressure on step-down and telemetry beds and force a more ICU-without-walls and telemetry-on-demand approach to patient care. The hospitalists are clearly nicely poised to step in, and we should immediately take steps to position ourselves to do the same. We should consider positioning ourselves for a perioperative care model that starts with preoperative assessment and ends at posthospitalization follow-up clinics. No matter the change and model, data regarding clinical, fiscal, educational and satisfaction outcomes is required, and thus study designs that utilize quantitative and qualitative methodologies should be employed.

The quantity and type of end-of-life care will be different than today, but by choosing 2012 as my timeframe, I am not convinced that this issue will change much in the next three years as it is a political hot potato few want to address in a society whose underpinning is individual right to decide. My tea leaves do suggest, however, that we will see patients later in the course of their disease and be pressured to limit interventions sooner. The poorer economy, fewer patients with insurance and generally higher debt burdens will likely translate into families wanting to avoid further debt and may lead some to request limitation of support at an even earlier stage of illness. Government-controlled health care will surely force a limitation of support. Taken together, these pressures could limit innovation in critical care medicine. In order to limit this negative impact, a campaign that includes success stories (touch the heart) will be required in concert with cost-effective data (touch the mind).

Care Models: The Magic 8 Ball

I'm left with my magic 8 ball. At first I thought asking these questions would be easy as I mistakenly believed it held but five or six answers. I was surprised to find out that there are 20 standard magic 8 ball answers (MEBA). Thankfully, I only encountered a few.

Question: *Will house officer duty hours be reduced?*
MEBA: *Most likely*.
Comment: There will be significant costs associated with such a decision, but the concept is just too attractive to politicians, the media and newer generations of house officers.

Continued on page 14

CONTENTS

ASCCA Mentorship Program 3

PRO: CCM Specialists Improve Clinical Outcomes in the ICU 4

CON: CCM Specialists Have No Better (or Perhaps Worse) Motality Figures Than Non-Specialists Practicing in the ICU 5

PRO: Jugular Venous Oxygen Saturation Monitoring Should Be Established Soon After Admission in Salvageable Patients With Severe Traumatic Brain Injury 6

CON: Safety, Efficacy and Efficiency Data Do Not Support the Routine Use of Jugular Venous Oxygen Saturation Monitoring in Traumatic Brain Injury 7

Literature Review: Procalcitonin as a Biomarker for Spesis in Trauma Patients 8

Literature Review: Sequential Organ Failure Assessment Score for Predicting Outcome in Patients With Severe Sepsis 9

Fellowship Review I: Vanderbilt University 10

Fellowship Review II: Anesthesia Critical Care Medicine Fellowship at Brigham and Women's Hospital, Boston 11

Annual Meeting Information 12

Call for Nominations for Burchardi Award 14

MEMBERSHIP INFORMATION

E-mail

You may e-mail inquiries to ASCCA at:
General inquiries:
ascca@ASAhq.org
Meeting information:
asccameetings@ASAhq.org
Membership information:
asccamembership@ASAhq.org

Web Page

You may visit the ASCCA Web site at:
www.ascca.org

Membership

Membership in ASCCA is open to all anesthesiologists and residents in approved anesthesiology programs. Membership applications may be obtained by contacting ASCCA at (847) 825-5586 or through the ASCCA Web site at **www.ascca.org/shop/index.php**.

ASCCA Dues

Dues are $150 for active and international members; $100 for affiliate members and free for residents/fellows. Dues may be paid online at **www.ascca.org/shop/index.php** by credit card or by mailing payment to the ASCCA office at 520 N. Northwest Highway, Park Ridge, IL 60068.

Remember, payment of your dues allows you to enjoy the full privileges of ASCCA membership.

EDITORIAL NOTES

Editorial Policy

The opinions presented are those of the authors only, not of ASCCA. Drug dosages, accuracy and completeness of content are not guaranteed by ASCCA.

A Note from the Editor to ASCCA Members:

If you would like to contribute a review for a Fellowship Program at your institution in a future issue of the ASCCA Interchange, please contact Chris Dionne at **c.dionne@asahq.org**.

The ASCCA Interchange is published by the American Society of Critical Care Anesthesiologists, 520 N. Northwest Highway, Park Ridge, IL 60068-2573; (847) 825-5586.

ASCCA Mentorship Program

Michael Avidan, M.D.

The 2008 ASCCA Annual Meeting in Orlando concluded with a lively and provocative meeting among residents, fellows and a group of critical care anesthesiologists. A few important themes emerged from the discussions. It was noted that many anesthesia residents with an interest in critical care had already developed that interest prior to entering residency. It was suggested that many medical students who are captivated by critical care medicine as a career are unaware that anesthesiology is an outstanding path to pursue to reach that goal. Indeed, the skills and knowledge acquired during a residency in anesthesiology form an outstanding grounding for intensive care medicine. Anesthesiologists are well equipped to deal with the physiological derangements and life-threatening acute illnesses that are prevalent on the ICU. Anesthesiologists have well-honed skills in ventilatory and circulatory support, both essential components of ICU care. Interestingly, it is also increasingly recognized that subspecialty training in intensive care medicine reciprocally heightens the skills and abilities of the anesthesiologist in the operating room and in the perioperative period. It is therefore gratifying and unsurprising that it is now mandatory for all anesthesia trainees to spend more extended time training in intensive care medicine.

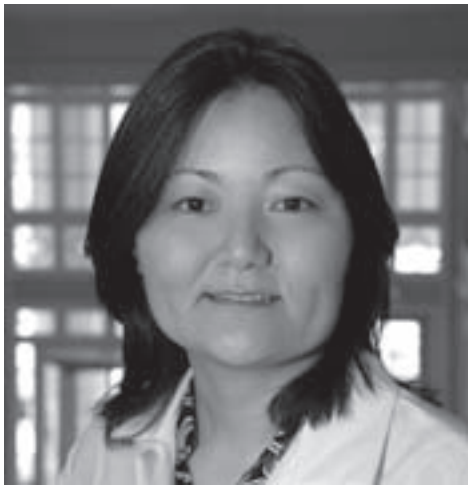
With a growing emphasis on intensive care medicine, ASCCA will increasingly have a more important role in relation to the broader specialty. Many anesthesiology trainees are concluding that the investment of an additional year of training in intensive care, or indeed in another subspecialty, increases general skill, opens doors and provides more options in a health care system whose future is somewhat opaque. The majority of residents in many programs are pursuing subspecialty fellowships. From the perspective of critical care anesthesiologists, the question posed to residents should be, "Why would you not pursue a critical care fellowship?" It is within this context that the ASCCA mentorship program assumes an ever-more important function. Residents who are interested in critical care are seeking role models who can advise them about fellowship opportunities and can provide them with guidance about the myriad career opportunities available to critical care anesthesiologists.

At previous ASCCA meetings, the mentorship program has received resoundingly positive feedback. As in previous years, residents will be actively encouraged and sponsored to attend the ASCCA Annual Meeting. Each resident will be paired with a critical care anesthesiologist who will engage him/her in discussion about the opportunities in critical care and the exciting and diverse lifestyle options open to critical care anesthesiologists. With exposure to inspirational mentors, many talented and enthusiastic residents will subspecialize in critical care. This will be to the benefit of patients in general, and to the subspecialty of anesthesiology critical care, as well as its parent specialty, anesthesiology. We encourage ASCCA members and residents interested in critical care to sign up for the mentorship program at this year's annual meeting.

In addition to the formal mentorship program, other innovations have been adopted to increase the participation and enjoyment of residents and fellows at the ASCCA annual meeting. This year, for the first time, ICU trainees will present a whole session at the meeting. The ASCCA's emphasis is on inclusiveness and expansiveness. We do not wish to be an exclusive club, and are determined that our ranks should swell and that the new generation of critical care anesthesiologists should have a major input into the future direction of the organization and the subspecialty. Similar to last year, the annual meeting will conclude with a feedback and brainstorming session, including all trainees and enthusiastic faculty.

See you all at the 2009 ASCCA Annual Meeting in New Orleans!

PRO: CCM Specialists Improve Clinical Outcomes in the ICU



Naomi Shimizu, M.D.
Clinical Fellow in Surgical Critical Care
Brigham and Women's Hospital and
Harvard Medical School
Department of Surgery
Boston, Massachusetts

Article:

Mitchell M. Levy, M.D.; John Rapoport, Ph.D.; Stanley Lemeshow, Ph.D.; Donald B. Chalfin, M.D., M.S.; Gary Phillips, MAS; and **Marion Danis, M.D.** Association between critical care physician management and patient mortality in the intensive care unit. *Ann Intern Med.* 2008; 148:801-809.

It is a widely held belief that outcomes are better for patients when patient care is provided by specialists. This belief is supported by both observational and cohort control studies of specialty practices. In the past decade, critical care has evolved into a subspecialty based on evidence associated with improved clinical outcomes in the ICU.

There are many published studies examining the effects of ICU physician staffing on ICU outcomes. A systematic review of 26 observational studies showed benefit in a high-intensity ICU physician staffing, defined as mandatory intensivist consultation or closed ICU format. Significant reductions in hospital and ICU LOS and mortality were seen in the high-intensity ICU with heterogenous patient population and hospital settings.[1]

Several studies on subspecialty ICU and disease-specific conditions support high-intensity ICU physician staffing in reducing complications and improving clinical outcome. Retrospective data on high-intensity staffing models were associated with improvements in 28-day mortality and LOS in patients in the oncology unit.[2] Similar studies have supported high-intensity ICUs on trauma patient mortality and resource use, particularly in elderly population.[3]

There also are publications in support of high-intensity ICU for disease-specific conditions. Patients with ischemic stroke, intracerebral hemorrhage or subarachnoid hemorrhage admitted to neuroscience ICU with a full-time neurointensivist had shorter hospital and ICU LOS and improved home disposition rates.[4] Patients with acute lung injury also have reduced mortality in high intensity ICUs.[5]

Challenging the evidence in supporting high-intensity ICU physician staffing is the 2008 meta-analysis by Levy et al. This study showed that high intensity ICUs had higher severity-adjusted mortality compared to low-intensity ICUs. Like any study, the results do need to be replicated by others and ultimately synthesized to improve patient outcomes in ICU.

We can speculate that future studies on critical care should be on the role of intensivists, the implementation of evidence-based protocols, the timing of interventions, and the structural organization of the ICU formats in preventing complications and medical errors.

References:

1. Pronovost PJ, Angus DC, Dorman T, et al. Physician staffing patterns and clinical outcomes in critically ill patients: A systematic review. *JAMA*. 2002; 288(17):2151-2162.
2. Hawari FI, Al Najjar TI, Zaru L, et al. The effect of implementing high-intensity intensive care unit staffing model on outcome of critically ill oncology patients. *Crit Care Med*. 2009; 37(6):1967-1971.
3. Nathens AB, Rivara FP, MacKenzie EJ, et al. The impact of an intensivist-model ICU on trauma-related mortality. *Ann Surg*. 2006; 244(4):545-554
4. Varelas PN, Schultz L, Conti M, et al. The impact of a neuro-intensivist on patients with stroke admitted to a neurosciences intensive care unit. *Neurocritical Care*. 2008; 9(3):293-99.
5. Treggiari MM, Martin DP, Yanez ND, et al. Effect of intensive care unit organizational model and structure on outcomes in patients with acute lung injury. *Am J Respir Crit Care Med*. 2007; 1;176(7):685-690.

CON: CCM Specialists Have No Better (or Perhaps Worse) Mortality Figures Than Non-Specialists Practicing in the ICU

Francis X. Dillon, M.D.
Clinical Fellow in Anesthesia Critical Care Medicine
Brigham and Women's Hospital and
Harvard Medical School
Department of Anesthesia,
Pain and Perioperative Medicine
Boston, Massachusetts

Article:

Mitchell M. Levy, M.D.; John Rapoport, Ph.D.; Stanley Lemeshow, Ph.D.; Donald B. Chalfin, M.D., M.S.; Gary Phillips, M.A.S.; and Marion Danis, M.D. Association between critical care physician management and patient mortality in the intensive care unit. *Ann Intern Med* 2008; 148:801-809.

The authors made news one year ago when they "…hypothesized that CCM would be associated with improved outcomes in critically ill patients," but then, surprisingly, showed in their paper that the obverse was true: That intensivists with critical care training or its equivalent had, in fact, *worse* mortality figures in-hospital. This counterintuitive result prompted much commentary in the *Annals of Internal Medicine*. How could trained intensivists taking care of critically ill patients do worse than nonintensivists? Among the criticisms of Levy et al., raised by *Annals* readers:

1. There was no measure of *30- or 60-day* mortality, only *hospital* mortality (the other measures arguably might have supported the original hypothesis).
2. There was and is a natural tendency in ICUs everywhere for the "sickest" patients to be received by and cared for by the intensivists, leaving less complex patients for nonintensivists to care for (the authors made a number of adjustments in their analysis to try to compensate for this tendency).
3. Intensivists initiate discussions about goals of care with decision-makers and family members sooner rather than later. This would presumably lead to earlier institution of "comfort measures only" orders, i.e., expectant or palliative care, rather than continued active measures: Better mortality numbers from the nonintensivists might result from this but, arguably, no better care.
4. Well-run, protocol-driven ICUs with superb nurses and other caretakers could make for superior outcomes, rather than the quality of training, experience or decisions of the intensivists per se. In training hospitals with cycling newcomers, this is a phenomenon known to many: The 30-year critical care nurse guides the July 1 intern (or fellow) on how to work up the new arrival to the ICU.

Some points on the design of the study: The authors looked at 123 ICUs in the United States. They identified among all 123 ICUs six subgroups of patients, formed from combinations of A) the kind of ICU they were treated in (No-, Some-, and All-CCM-management units) and B) whether, in each unit, the patient was cared by an intensivist or not (No-intensivist-care, and All-intensivist-care). For each of these six groups, they calculated expected and actual mortality rates. The expected mortality rate was the mean SAPS II probability of mortality. The actual was simply the fraction who survived.

The essential result was that the crude odds ratio for hospital mortality was 2.13 (2.03-2.24); $p < 0.001$, *greater* for CCM versus non-CCM caretakers. Adjusting for SAPS II criteria narrowed the gap to an odds ratio of 1.42 (1.34-1.52); $p < 0.001$. And adjusting further with a "propensity score" for appropriateness of admission to the ICU narrowed the gap a little more to 1.40 (1.32-1.49); $p < 0.001$. At all times the differences were highly significant. Neither did controlling for location of discharge, home versus rehabilitation or other hospital, even out the difference. In other words, there was no way to "control out" the increased mortality that CCM caretakers had.

After thinking about the study for some time, several questions emerged about the design of the study. Could not the exact type of CCM training (ASA, ACS, ABA, on-the-job, etc.) and duration of training (zero years, one year, two years, four years, research, clinical or both) have been specified for such a large group of caretakers? It seems that the utility of, and dose-relatedness of, training could have been detected by such analysis.

Could not the design of the study have identified individual caretakers and their patients, rather than groups of patients cared for by an ICU with a certain percentage CCM care? This might also have identified certain "star" or "anti-star caretakers whose methods could have been scrutinized in subsequent papers.

Lastly, rather than dealing with the huge rubric "ICU patients," could not a few common, specific, ICD-9 diagnoses, or DRGs, have been used for specific outcome comparison? After all, some such studies have shown superior outcomes with intensivists caring for patients with specific diagnoses[1]. All of these things might have better defined the premises of the paper.

When all this is said and done, however, the *con* position just isn't difficult to support. And the reason is the *Annals* readers' point number two above: Sicker patients tend to gravitate toward the better-trained or more experienced caretakers, who may or may not be fellowship-trained intensivists in some ICUs. This is the overwhelming and perhaps intractable problem in constructing a study of this kind. The study would have been amazing if the CCM specialists were to have accomplished merely *equivalent* mortality figures as non CCM caretakers. This is because the sicker patients tend not to do as well as the less ill ones, even if the care in all cases is exemplary.

As one might imagine, the non-CCM caretakers might be surgeons or internists recovering routine postoperative patients who have softer admission criteria than the patients of the CCM caretakers. Non-CCM caretakers deal more with straightforward postoperative issues such as prolonged anesthesia, expected delayed emergence, myocutaneous flap observation, radical otolaryngologic procedures

Continued on page 15

PRO: Jugular Venous Oxygen Saturation Monitoring Should Be Established Soon After Admission in Salvageable Patients With Severe Traumatic Brain Injury

Seth Manoach, M.D.
Fellow, Anesthesia Critical Care
Assistant Professor of Emergency Medicine
SUNY Downstate Medical Center
Brooklyn, New York

Over the last 20 years, intensive care unit management of severe traumatic brain injury (TBI) has shifted from a focus on reducing intracranial pressure (ICP) to a more nuanced approach aimed at limiting secondary injury by optimizing cerebral blood flow (CBF) and coupling it to cerebral metabolic rate ($CMRO_2$). In general, this approach prioritizes maintenance of adequate cerebral perfusion pressure (CPP), with reversion to ICP-centered management in the minority of cases characterized by impaired cerebral autoregulation,[1] with mean arterial pressure (MAP)-sensitive ICP.[2] Unfortunately, secondary injury begins immediately after impact, and intracranial pressure monitors require expertise, time, and patient preparation that may not be available early in the patient's hospital course.[1] In contrast, jugular venous oxygen saturation ($SjvO_2$) monitoring can be employed shortly after the patient's arrival. The procedure requires only a slightly modified jugular venous catheterization technique and relatively inexpensive equipment.[3] Most importantly, the information derived from $SvjO_2$ can guide CBF-$CMRO_2$ optimizing therapy, while serving other important functions.[1]

The best-established use of $SvjO_2$ monitoring is predicting important patient-centered outcomes. Multiple low $SvjO_2$ readings (< 50-60 percent depending on the study) have been shown to correlate with death, persistent vegetative state, or severe disability in adults[4] as well as children.[5] The most persuasive data on this comes from Fandino et al.,[6] who demonstrated that multiple (> 2) $SvjO_2$ desaturations, and not other clinical or radiologic variables, independently predicted poor outcomes after TBI. Variables that were less robust than multiple $SvjO_2$ desaturations included many in which clinicians are apt to place much faith, including Glasgow coma score, pupillary response, CT presence of mass lesion, injury severity score, APACHE score, and CPP deterioration. In an era of hospital and ICU overcrowding, prognostic information derived from a relatively inexpensive intervention should easily offset its cost by encouraging earlier assessments of neurologic function that would in turn promote more efficient and humane triage and discharge planning.

At this point, the question of whether $SvjO_2$ monitoring improves outcomes remains unanswered. The only prospective interventional study, by Cruz, found dramatic effects for $SvjO_2$ monitoring in 353 "group matched" patients, with 9 percent mortality in the intervention group and 30 percent in the control group, as well as markedly better functional outcomes (difference in overall outcome measures $p< 0.00005$).[7] Although the outcome assessments were not blinded, the measures, mortality and ability to live independently, are not, as Cruz argues, susceptible to bias. Unfortunately, the study is markedly flawed in other ways. The principal flaw is that the group matching for CT evidence of diffuse brain swelling is not further described, so the reader is left with no idea how subsequent steps in group assignment ensured against bias. A clinical problem that is apparent only in light of data that were accumulating during the decade in which Cruz conducted the study is that patients were subject to hyperventilation that is excessive by today's standards.[8] While patients in the treatment group underwent CPP and $SvjO_2$/$CRMO_2$-guided "optimized hyperventilation" to $PaCO_2$ values between a range of "[approximately] 20-30 torr," patients in the control group were maintained at 30 torr. Because both groups were subject to some degree of hyperventilation, and because the hyperventilation may have been more extreme in the treatment group, the results might still be relevant. Unfortunately, the article does not provide the blood gas data that would allow one to ascertain this.

Even if one throws out the Cruz study, other data suggest that $SvjO_2$ monitoring may improve outcomes. Vigue et al. demonstrated that 37 percent of patients had initial $SvjO_2$ measurements less than 55 percent and that these values were closely correlated with low pretreatment CPP.[1] These readings were obtained seven hours after the trauma and three hours after hospital arrival. As mentioned above, a three-hour time window from hospital arrival may not be sufficient to place an intraventricular catheter and begin ICP monitoring. Because MAP did not differ significantly between patients with normal and low $SvjO_2$ (75+/-8 versus 81+/-9mmHg), simple MAP-targeted therapy in the absence of an ICP monitor would not have optimized resuscitation. It is notable that $SvjO_2$-targeted increases in MAP succeeded in raising CPP to 70mmHg without significantly increasing ICP in most patients. This finding suggests that an adequately powered comparative trial would show treatment benefit. Finally, hypocapnia is an important cause of jvO_2 desauration.[4,9,10] Although patients are no longer deliberately hyperventilated other than to temporize herniation, patients may overbreathe the ventilator, especially as we move toward forgoing neuromuscular blockade and lightening sedation when possible. Because hyperventilation is unlikely to cause concerning changes in MAP or ICP, continuous cerebral perfusion monitoring is the only way to recognize resulting ischemia as it occurs.

Clinicians employing $SvjO_2$ monitoring must recognize its limitations and complications. JvO_2 desaturations are not sufficiently sensitive to detect all episodes of cerebral ischemia,[9] and multiple desaturations are not sufficiently sensitive or specific to predict outcomes in the absence of other data.[4,6] Because the catheters may be subject to contamination from extracerebral blood, placement at the jugular venous bulb must be confirmed with plain films.[3] Movement artifact may cause inaccurate readings from the spectrophotometric sensors,[4,7] so readings should be periodically correlated with blood samples, and unexpected readings must always be verified.[4] Although rare, clinically significant[6] and subclinical[11] thrombosis must be considered, as must infection and inadvertent carotid artery puncture.[11] Compared to brain tissue oxygen probes,[9,12,13] jvO_2 catheters offer a favorable safety and cost profile while providing a better estimate of whole-brain resuscitation. Given the significant potential benefits,

Continued on page 15

CON: Safety, Efficacy and Efficiency Data Do Not Support the Routine Use of Jugular Venous Oxygen Saturation Monitoring in Traumatic Brain Injury

Jean Charchaflieh, M.D., M.P.H.
Associate Professor of Clinical Anesthesiology
SUNY Downstate Medical Center
Brooklyn, New York

Assessing cerebral oxygenation is extremely valuable in the management of critically ill neurosurgical patients, particularly those with traumatic brain injury (TBI). Jugular venous oxygen saturation ($SjvO_2$) and brain tissue oxygenation ($PbtO_2$) are two invasive means of assessing brain oxygenation. They are useful when used in conjunction with other measurements such as intracranial pressure (ICP), mean arterial pressure (MAP) and arterial oxygen saturation (SaO_2). Correct measurement of both $SjvO_2$ and SaO_2 is useful in assessing brain extraction of oxygen (EbO_2). Assessing the effects of maneuvers affecting both ICP and MAP on $SjvO_2$ and EbO_2 may have diagnostic, therapeutic and prognostic utility, particularly when implemented early (< 12 hour) in the course of TBI.[1-3] Factors that limit the utility of $SjvO_2$ monitoring include:

1. Catheter insertion-related complications such as infection, bleeding, thrombosis and inadvertent carotid artery puncture.[4]
2. Potential mal-position of catheter, resulting in contamination with extra-cerebral blood, as well as motion artifacts, which may render readings obtained by $SjvO_2$ unrelaiable.[5] Even accurate $SjvO_2$ measurements are subject to misinterpretation, since the readings are neither highly sensitive nor specific ($SjvO_2$ has lower sensitivity than $PbtO_2$).[6-8]
3. There is little or no evidence that $SjvO_2$ monitoring improves outcome. The only such trial demonstrating improved outcome has major flaws as outlined in the pro section of this debate.[9]
4. There are significant financial and labor costs associated with the use of $SjvO_2$. These resources would be better applied to interventions that are known to improve outcome.

Because of these limitations on the safety, efficacy and efficiency of $SjvO_2$ monitoring in assessing brain oxygenation, the search continues for a non-invasive alternative. Recently, near-infrared spectroscopy (NIRS) has emerged as a potential alternative to $SjvO_2$. Evidence of such potential utility comes from a recently conducted study that compared two non-invasive NIRS devices with two invasive methods of assessing brain oxygenation. The two NIRS devices were NIRO 200, which measures cerebral tissue oxygenation index (TOI), and INVOS 5100, which measures regional cerebral oxygenation index (rSO_2). The two invasive methods were jugular venous oxygen saturation (SjO_2) and superior vena cava oxygen saturation (SvO_2). The comparison was performed in 31 pediatric patients undergoing elective cardiac catheterization to assess congenital heart disease. Measurements from both NIRS devices were compared with those from both invasive methods. TOI was compared with both SvO_2 and left SjO_2, while rSO_2 was compared with both SvO_2 and right SjO_2. Both NIRS devices had excellent correlation with the invasive methods of assessing cerebral oxygenation. The results of this small trial in a pediatric population, without CNS pathology, require confirmation in larger trials of adults and children with CNS pathology. These preliminary findings suggest that a non-invasive means of assessing cerebral oxygenation (TIO and rSO_2) may provide a viable alternative to the more invasive SjO_2.[10] As outlined above, the insensitivity, potential for spurious results, and absence of efficacy data argue against $SjvO_2$ monitoring as we wait for NIRS or other noninvasive method to become established.

References:

1. White H, Baker A. Continuous jugular venous oximetry in the neurointensive care unit: a brief review. *Can J Anesth*. 2002; 49:(6):623-629.
2. Fandino J, Stocker R, Prokop S, Trentz O, Imhof HG. Cerebral oxygenation and systemic trauma related factors determining neurological outcome after brain injury. *J Clin Neurosci*. 2000; 7:226-233.
3. Vigue B, Ract C, Benayed M, et al. Early $SjvO_2$ monitoring in patients with severe brain trauma. *Intensive Care Med*. 1999; 25:445-451.
4. Coplin WM, O'Keefe GE, Grady MS, et al. Thrombotic, infectious, and procedural complications of the jugular bulb catheter in the intensive care unit. *Neurosurgery*. 1997; 4:101-107.
5. Gopinath SP, Robertson CS, Contant CF, et al. Jugular venous desaturation and outcome after head injury. *J Neurol Neurosurg Psychiatry*. 1994; 57:717-723.
6. Gopinath SP, Valadka AB, Uzura M, Robertson CS. Comparison of jugular venous oxygen saturation and brain tissue Po2 as monitors of cerebral ischemia after head injury. *Crit Care Med*. 1999; 27:2337-2345.
7. Rosenthal G, Hemphill JC III, Sorani M, et al. Brain tissue oxygen tension is more indicative of oxygen diffusion than oxygen delivery and metabolism in patients with traumatic brain injury. *Crit Care Med*. 2008; 36:1917-1924.
8. Valadka AB, Gopinath SP, Contant CF. Relationship of brain tissue PO2 to outcome after severe head injury. *Crit Care Med*. 1998; 26:1576-1581.
9. Cruz J. The first decade of continuous monitoring of jugular bulb oxyhemoglobin saturation: Management strategies and clinical outcome. *Crit Care Med*. 1998; 28:344-351.
10. Nagdyman N, Ewert P, Peters B, et al. Comparison of different near-infrared spectroscopic cerebral oxygenation indices with central venous and jugular venous oxygenation saturation in children. *Paediatr Anaesth*. 2008; 18(2):160-166.

Literature Review: Procalcitonin as a Biomarker for Sepsis in Trauma Patients

Samuel M. Galvagno, Jr., D.O.
Clinical Fellow in Multidisciplinary Critical Care
Johns Hopkins Medical Institutions
Department of Anesthesiology and Critical Care Medicine
Baltimore, Maryland

Article:

Castelli GP, Pognani C, Cita M, Paladini R. Procalcitonin as a prognostic and diagnostic tool for septic complications after major trauma. *Crit Care Med*. 2009; 37 (6):1845-1849.

One of the holy grails in critical care medicine involves establishing highly sensitive and specific biomarkers for various diseases.[1] Biomarkers have important potential implications for prognosis, therapy and mortality. Sometimes, predictable changes in levels may be observed based on specific and relevant interventions.

The diagnosis of sepsis in trauma patients, owing to an associated systemic inflammatory response syndrome (SIRS) in over 90 percent of patients admitted to an intensive care unit, often presents a diagnostic conundrum. There is strong evidence that early and appropriate treatment with antibiotics improves outcomes, but diagnosis of infection in trauma patients is further delayed by long culture times and difficulties in isolation from local colonization.[2]

Procalcitonin (PCT), a "hormokine," is a prohormone propeptide of calcitonin that is produced and secreted by C cells of the thyroid gland. During periods of systemic bacterial infection or by stimulation with endotoxin or proinflammatory cytokines, PCT may have extrathyroidal origins and may increase 1,000-fold. The early production and sharp increase are the reasons that PCT has been proposed as a diagnostic tool for bacterial infection. Since PCT has a shorter half-life (22 hours) than other current biomarkers, it has been used to evaluate the evolution of infections and sepsis in critically ill patients. In a 2006 meta-analysis, Uzzan et al. concluded that PCT was superior to other current proposed biomarkers for the diagnosis of sepsis in critically ill patients after surgery or trauma.[3]

Castelli et al. sought to determine the diagnostic value of PCT and c-reactive protein (CRP) for septic complications after major trauma. In this prospective, unblinded study of 94 trauma patients admitted to an ICU, daily PCT and CRP levels were determined at admission and every day thereafter in addition to other standard data such as lactate, temperature and white blood cell count. Seventy six of the patients had multiple traumatic injuries, and 18 had head injuries that did not require surgery. Neurosurgical patients were excluded. Sepsis was defined only when a source of infection was established with a positive culture result. Patients received antibiotics or antifungals empirically at the time of suspected infection, and no steroids were administered.

Patients with major trauma who eventually developed septic complications had significantly higher PCT levels at admission (5.4 versus 1.6 ng/mL, $p<0.001$). Furthermore, in patients who developed sepsis, PCT levels significantly increased while CRP levels did not [Figure 1]. The area under the PCT receiver operating characteristic curve for the prediction of sepsis versus SIRS was 0.79 (0.68-0.89, SE 0.05). At a cutoff value of 1.09 ng/mL, PCT had 100-percent sensitivity and a 100-percent negative predictive value, while the specificity was 45 percent with a positive predictive value of 28 percent.

The authors concluded that daily PCT values may better help identify trauma patients at risk for septic complications. Unlike CRP, PCT decreases within one to two days after the initial injury and increases only during secondary systemic bacterial infections or for reasons commonly associated with elevated PCT (i.e., surgical reintervention).

The study has several limitations. The authors did not provide demographic information or data on the spectrum of trauma patients, and it is possible that different types of traumatic injuries may predispose to a higher or lower incidence of infections. While a high PCT level on initial ICU admission may indicate an increased risk of septic complications, as a prognostic tool for predicting organ dysfunction and failure, PCT correlated (r=.772) but did not radically outperform the SOFA scoring system. Some patients in the study may have been inadvertently misclassified as not having sepsis if microbiological cultures did not reveal proof of infection. Despite the significantly higher PCT levels found in patients who developed septic complications, no mortality benefit was apparent with early treatment, and no clinical decisions in the study were made as a result of the PCT value.

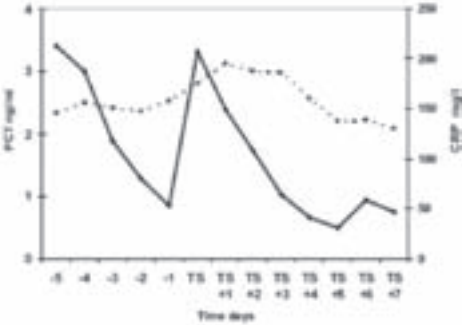


Figure 1: PCT and CRP time course in major trauma patients at the moment of septic complications *(TS)* did not present a significant increase in plasmatic CRP value, but rather an early and quick significant increase in PCT, as compared with concentrations measured 1 day before the diagnosis (-1). The x-axis represents time in days starting at days before the development of septic complications followed by days after diagnosis of sepsis and the y-axis represents plasma concentrations in mg/L for CRP *(dotted line)* and in ng/mL for PCT *(solid line)*. *PCT*, procalcitonin; *CRP*, C-reactive protein.

PCT may have both diagnostic and prognostic utility in trauma ICUs. The cost of PCT varies, but has been stated to be approximately $14-21 USD.[1] While no biomarker to date has demonstrated an unequivocal clinical benefit, initial and daily PCT values may be used to identify patients at risk of septic complications. These biomarkers may assist clinicians with stratifying postoperative care by helping to identify complex inflammatory and septic pathophysiological alterations before they escalate. In the near future, more sensitive and specific biomarkers are likely to emerge.

References:

1. Ackland GL, Mythen MG. Novel biomarkers in critical illness: Utility or futility? *Critical Care*. 2007; 11:175.
2. Uzzan B, Cohen R, Nicholas P, et al. Procalcitonin as a diagnostic test for sepsis in critically ill adults and after surgery or trauma: A systematic review and meta-analysis. *Crit Care Med*. 2006; 34:1996-2003.
3. Castelli GP, Pognani C, Cita M, Paladini R. Procalcitonin as a prognostic and diagnostic tool for septic complications after major trauma. *Crit Care Med*. 2009; 37 (6):1845-1849.

Literature Review: Sequential Organ Failure Assessment Score for Predicting Outcome in Patients With Severe Sepsis

Kevin W. Hatton, M.D.
Assistant Professor and
Associate Residency Program Director
University of Kentucky College of Medicine
Department of Anesthesiology
Lexington, Kentucky

Article:

Jones AE, Trzeciak S, Kline JA. The sequential organ failure assessment score for predicting outcome in patients with severe sepsis and evidence of hypoperfusion at the time of emergency department presentation. *Crit Care Med.* 2009; 37(5):1649-1645.

Multiple outcome prediction models exist to assess the illness severity and prognosis for patients admitted to the intensive care unit (ICU). These prediction models do not function accurately when applied to patients in the emergency department (ED). To that end, Jones and colleagues have designed a study to prospectively determine whether the static sequential organ failure assessment (SOFA) score at ED presentation or the change in SOFA score through time (SOFA) could predict hospital mortality for patients with severe sepsis.

In this prospective observation study of 248 adults with severe sepsis who were admitted through the ED of a busy tertiary-care teaching hospital, enrolled patients were treated with an institution-approved treatment protocol in both the ED as well as the intensive care unit. SOFA scores were then calculated from data collected in the ED (T0) as well as 72 hours post-admission (T72). The resultant data, although slightly skewed toward a low SOFA score, demonstrates that both T0 and T72 provide fair to good prediction of in-hospital mortality in these patients [Figure 1]. Additionally, the ΔSOFA also demonstrated a positive relationship with in-hospital mortality, where an increase in SOFA at T72 was associated with a 35-percent increase in hospital mortality, and a decrease in SOFA at T72 was associated with a 10-percent decrease in hospital mortality [Figure 2].

This study provides much-needed information to provide optimal care to patients based on information gathered early in the course of severe sepsis. It is important to understand the likely course of these patients as it might improve the delivery of early or more aggressive intervention to successfully change the natural progression of the disease process. The major limitations to this study include data collection from a single institution and relatively small patient sample size. Additionally, it is important to note that the area under the curve (AUC) for the T0 SOFA score is only 0.75 (the lowest AUC considered by many authors to be associated with discrimination power). Despite these limitations, these data provide a means for early prognostication of likely hospital outcome for early intervention and rationing of scarce health care system resources.

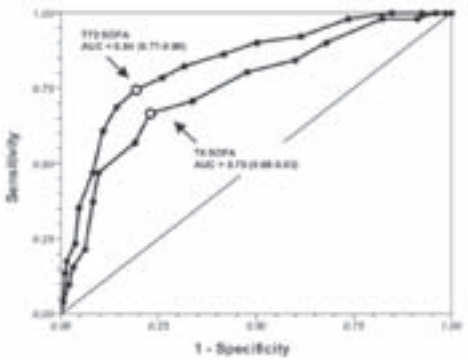


Figure 1: Receiver operating characteristic curves of T0 and T72 SOFA score for predicting hospital mortality in patients with severe sepsis. Reprinted with permission from Jones AE, Trzeciak S, Kline JA. The sequential organ failure assessment score for predicting outcome in patients with severe sepsis and evidence of hypoperfusion at the time of emergency department presentation. Crit Care Med. 2009; 37(5):1649-1645.

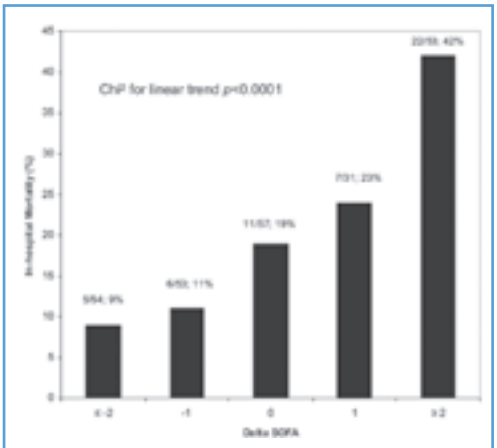


Figure 2: The relationship between ΔSOFA score and in-hospital mortality. Reprinted with permission from Jones AE, Trzeciak S, Kline JA. The sequential organ failure assessment score for predicting outcome in patients with severe sepsis and evidence of hypoperfusion at the time of emergency department presentation. *Crit Care Med.* 2009;37(5):1649-45.

Fellowship Review I: Vanderbilt University

William T. O'Byrne III, M.D.
Assistant Professor of Anesthesiology
Vanderbilt University Medical Center Anesthesiology,
Division of Critical Care
Nashville, Tennessee
Bill.obyrne@vanderbilt.edu

Welcome to Vanderbilt! The Critical Care Anesthesiology (CCA) fellowship at Vanderbilt University is a year-long comprehensive training program in adult surgical critical care.

Our Reach – Continually Expanding

Located in Nashville, Tennessee, Vanderbilt University Hospital (VUH) is the tertiary referral and Level I trauma center for middle Tennessee and parts of four surrounding states. Currently, the critical care units at VUH include a 23-bed Surgical Intensive Care Unit (SICU), a 26-bed Cardiovascular Intensive Care Unit (CVICU), a 24-bed Neuro-Care ICU (NCU), and a 10-bed, expandable Regional Burn Center ICU. Our faculty and fellows also staff the 13-bed Nashville VA SICU. The NCU and CVICU are staffed exclusively by CCA faculty, while the SICUs and Burn ICU have both anesthesia and surgical attending staffing.

In November 2009, Vanderbilt will unveil a 10-story, 170-bed, state-of-the-art Critical Care Tower. The tower will contain replacements for the SICU and NCU. The CVICU will expand to approximately 50 beds. The facility is designed for advanced remote patient monitoring to improve the timeliness and efficiency of patient care.

Your Curriculum – Innovative and Comprehensive

Vanderbilt's CCA fellowship is designed to meet the individual needs of each fellow in preparation for board certification and evidence-based critical care practice. CCA fellows organize teaching/work rounds, formulate care plans, and facilitate communication between the ICU team and surgical services, consultative services and family members. Fellows also serve as instructors for FCCS, ATLS and organize a monthly journal club. Additionally, they co-direct and teach portions of the Division of Critical Care's nationally-recognized Critical Care Skills Week, which exposes junior medical students to topics in anesthesiology and critical care and includes much simulation-based content.

The teaching curriculum includes weekly learning modules consisting of a didactic session and customized, Web-based learning activities. In addition, fellows participate in monthly simulation training at Vanderbilt's cutting-edge Center for Experimental Learning and Assessment (CELA). Fellow simulation sessions are designed to be integrated with the monthly curriculum. The sessions are unique in that they do not only focus on a single event or crisis, but also simulate the progression of a disease process, such as sepsis or stroke.

Your Electives – Expanding Horizons

The fellowship program offers a diverse array of electives. Standard rotations include trauma, MICU or a medical subspecialty (e.g., nephrology or cardiology). Other popular rotations include ICU nutrition and TEE. Fellows who have research interests are strongly encouraged to use elective time to develop and pursue clinical or basic science investigations and are expected to present their work at national conferences.

Additionally, the newly-established Vanderbilt International Anesthesiology (VIA) Program provides anesthetic and medical services to poorly-served countries in Africa. CCA fellows may take one elective month to participate in VIA. This program presents a singular opportunity for trainees to experience the challenges and rewards of practicing medicine in the developing world.

Our Mission – Best Training and Best Care

Vanderbilt's Anesthesiology Critical Care Medicine fellowship provides an unparalleled, innovative and in-depth critical care training opportunity in one of the country's best medical centers.

For additional information, please contact the fellowship program director, Dr. Lisa Weavind, via the fellowship coordinator, Ms. Angela Brown, by telephone at (615) 343-6236 or by e-mail at **angela.brown@vanderbilt.edu**.

The VUH Critical Care Tower

Fellowship Review II: Anesthesia Critical Care Medicine Fellowship at Brigham and Women's Hospital, Boston

Francis X. Dillon, M.D.
Clinical Fellow in Anesthesia Critical Care Medicine
Brigham and Women's Hospital and
Harvard Medical School
Department of Anesthesia, Pain,
and Perioperative Medicine
Boston, Massachusetts

The one-year Anesthesia Critical Care Medicine Fellowship at Brigham and Women's Hospital (BWH) is directed by Nicholas Sadovnikoff, M.D., an intensivist-anesthesiologist-internist with research and teaching interests in medical ethics, renal failure, patient safety and sepsis.

A true strength of this ACGME-accredited (ACS and ASA) program is the multidisciplinary origin of staff, fellows and residents on the ICU services. As far as the fellows go, the clinical experience is identical for all stripes of participants: Surgery, anesthesia, emergency medicine, and obstetrics and gynecology were represented in the 2009 class. Also the ABIM fellows in pulmonary critical care participate equally in many ICU rotations with our fellows, lending their perspectives. With regard to the rounding attendings, they comprise trauma surgeons, heart and lung transplant surgeons, vascular surgeons, thoracic surgeons, oncologic surgeons, a cardiac surgeon, critical care anesthesiologists, several critical care pulmonologists, a critical care infectious disease specialist, and a critical care emergency physician. Each approaches patients from a somewhat different angle and treats with a particular emphasis. Over the course of the year, all the fellows benefit from seeing this variety of approaches.

A broad and comprehensive research component is an active and interesting part of the fellowship. It is known by the acronym STAR (Surgical ICU Translational Research Center). The organizer is intensivist-anesthesiologist-internist Georgy Frendl, M.D., Ph.D. The center is occupied with several translational surgical research projects, including a search for biomarkers of kidney injury in severe illness, metabolomic studies of CSF and blood following traumatic brain injury, and outcome studies on improving care and evaluating methods for assessing procedural competency among residents and fellows. Dr. Frendl is a founding member of the large collaborative U.S. Critical Illness and Injury Trials Group (USCIITG), and he and several STAR faculty investigators, research assistants, programmers and a biostatistician (who lectures on biostatistics at each STAR research meeting), participate in five or more ongoing clinical trials in addition to investigator-initiated studies. Fellows are mentored extensively in research during the fellowship year and encouraged to participate in all aspects of the research going on at BWH, including developing their own research topics. Several residents presented at national or international meetings during the year, aided by a very supportive STAR staff and a significant educational allotment for fellows.

The core clinical experience is 13 two-week rotations, each centered in one of three surgical ICUs, and alternating by fortnight with electives. The core ICU rotations take place in the General and Vascular Surgical ICU, the Trauma and Burn ICU, and the Thoracic ICU. There are several other obligatory two-week components in other ICUs: Neurosurgical-Neurological, Cardiac, and Pediatric. Electives make up the other half of the year: Some fellows did additional elective work in the units as a "fifth wheel"; others followed the trauma chief and his service; some did research and prepared manuscripts, others did nephrology, radiology, cardiac ultrasonography or anesthesia electives. Some fellows did electives in other countries, for example, Haiti, Angola and Brazil (mostly in developing environments). There is a tremendous amount of freedom in choice and execution of electives, and this is a third fundamental strength of the fellowship.

In the hospital at large, and the Departments of Anesthesiology and Surgery, more formal educational opportunities abound: Grand rounds may be attended in many disciplines. Distinguished visiting professors are everywhere. There are many series of formal and informal didactic lectures aimed at all levels. All this complements the fellowship lecture series itself, which is considerable and varied: Journal club, MICU-SICU combined rounds monthly, daily talks by faculty on fundamental ICU subjects, and weekly participation by a fellow in presenting talks to the smaller ICU group or the anesthesia department are noteworthy. Morbidity and mortality discussions take place in several environments at the ICU group and departmental levels.

Some great intangible bonuses of the fellowship are the very approachable and personable faculty and staff of all departments and the excellent camaraderie among BWH caretakers – doctors, nurses, respiratory therapists, social workers, etc. The fantastic nearby learning environments of the various Harvard University and Massachusetts Institute of Technology schools offer other opportunities for learning and collaboration. Beyond them, the Boston-Cambridge area is the world's largest college town – some 250,000 students add to the metropolitan population during academic terms. Overall, the fellowship experience is wonderful, a great opportunity for learning and getting a strong foundation in critical care medicine.

American Society of Critical Care Anesthesiologists 22nd Annual Meeting

Friday, October 16, 2009
Hilton New Orleans Riverside
New Orleans, Louisiana

This meeting is jointly sponsored by the American Society of Anesthesiologists (ASA) and is presented one day prior to the ASA 2009 Annual Meeting.

Annual Meeting Information

Learning Objectives

Upon completion of participating in the ASCCA 22nd Annual Meeting, attendees will be able to:

- Evaluate the current basic science and clinical applications relevant to the management of acute hepatic failure.
- Summarize the physiologic basis and clinical applications of non invasive methods to assess intravascular fluid balance and cardiac output.
- Debate the various methods to avoid further lung injury to patients with respiratory failure while maximizing benefits of current therapies.
- Outline the role of statins in the care of the critically ill.
- Identify interventions that both reduce and support neurological injury in various settings for critically ill patients.
- Review the regulatory/ quality issues germane to current critical care and what may be expected in the near future.
- Debate the role of electronic information systems in the Intensive Care Unit and their role in improving management of sepsis, bleeding and acute renal injury.
- Identify controversial management issues in caring for ICU patients with multiple organ dysfunctions.
- Evaluate the role of anesthesiologist/intensivists in the setting of large scale disasters.

CME Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American Society of Anesthesiologists and the American Society of Critical Care Anesthesiologists. The American Society of Anesthesiologists is accredited by the ACCME to provide continuing medical education for physicians.

The American Society of Anesthesiologists designates this educational activity for a maximum of 8.75 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

ASCCA Breakfast Panel at the ASA Annual Meeting

Genomics-Implications for Perioperative Management
Monday, October 19, 7-8:15 a.m.
Hilton New Orleans Riverside, Grand Ballroom B

Objectives: 1) Describe the basic science of genomics as it relates to perioperative stress; 2) Discuss the implications of genomics for perioperative care; 3) Identify opportunities to refine clinical management based on an understanding of individual patient genetic profiles.

Introduction
Brenda G. Fahy, M.D., FCCM, University of Kentucky College of Medicine, Lexington, Kentucky

The Future-Integrating Genomics and Clinical Medicine
Gyorgy Frendl, M.D., Ph.D., Brigham and Womens Hospital, Harvard Medical School, Boston, Massachusetts

From Molecules to Organ Systems-Genomics of Perioperative Stress
Andrew D. Shaw, M.B., Duke University Medical Center, Durham, North Carolina

Hotel Information

The host hotel for the ASCCA 22nd Annual Meeting is the Hilton New Orleans Riverside, Two Poydras Street, New Orleans, Louisiana 70130, telephone (504) 561-0500. The room rate is $249 for single/double occupancy. Hotel reservations must be made through the ASA Annual Meeting Housing Bureau at **www2.ASAhq.org** by September 25, 2009. Make your reservations early!

Registration is available online at www.ascca.org

ASCCA 22nd Annual Meeting Program

6:45 a.m .- 5:30 p.m. Registration

7:00 - 7:30 a.m. Continental Breakfast

7:25 - 7:30 a.m. Welcome and Introduction
Andrew L. Rosenberg, M.D.; Laureen L. Hill, M.D.

7:30 - 9:30 a.m. Clinical and Basic Science Topics 1
Moderator: James M. Blum, M.D.

- 7:30 - 8:10 a.m. Managing Acute Liver Failure: Biochemistry to Bedside
  Ali Al-Khafaji, M.D.
- 8:10 - 8:50 a.m. Physiologic Basis and Clinical Applications of Pulse Pressure and Stroke Volume Variation in Mechanically Ventilated Patients
  Azriel Perel, M.D.
- 8:50 - 9:30 a.m. Acute Lung Injury Update
  Daniel S. Talmor, M.D.

9:30 - 10:00 a.m. Lifetime Achievement Award
Presenter: Gerald A. Maccioli, M.D., FCCM
Recipient: Robert N. Sladen, M.B., Ch.B.

10:00 - 10:30 a.m. Break and Facilitated Poster Viewing
Moderators: Ronald G. Pearl, M.D., Ph.D.; Douglas B. Coursin, M.D.; Jeanine P. Wiener-Kronish, M.D.

10:30 - 11:25 a.m. The Most Influential Critical Care Articles in 2009
Moderator: Laureen L. Hill, M.D.
Sarah M. Cocoma, M.D.; Samuel M. Galvagno, Jr., D.O.; Breandan L. Sullivan, M.D.

11:30 - 11:40 a.m. Introduction of ASA President-Elect
Todd Dorman, M.D., FCCM

11:40 a.m. - noon ASA President-Elect Address
Alexander A. Hannenberg, M.D.

Noon - 1:00 p.m. Lunch and Lecture: "A Personal Journey during Katrina: Reflections of an Anesthesiologist during the Storm of the Century"
Alan D. Kaye, M.D.

1:00 - 3:00 p.m. Clinical and Basic Science Topics 2
Moderator: Theresa Hartsell, M.D., Ph.D.

- 1:00 - 1:40 p.m. Use of Statins in the ICU
  Mark E. Nunnally, M.D.
- 1:40 - 2:20 p.m. Modern Stroke Management: Early Interventions to Reduce and Support the Ischemic Penumbra
  Michael L. Ault, M.D.
- 2:20 - 3:00 p.m. What's on the Horizon for JCAHO, CMS, IHI and Other Regulatory/ Quality Agencies
  Brenda G. Fahy, M.D., FCCM

3:00 - 3:30 p.m. Young Investigator Award and Abstract Presentation
Presenter: Michael S. Avidan, M.B., Ch.B.

3:30 - 4:15 p.m. Break and Facilitated Poster Viewing
Moderators: Ronald G. Pearl, M.D., Ph.D.; Douglas B. Coursin, M.D.; Jeanine P. Wiener-Kronish, M.D.

4:15 -5:30 p.m. Interactive Pro-Con Panel
55 F, Post Cholectomy with Sepsis (CDS, EMR), Bleeding and AKI
Moderator: Andrew L. Rosenberg, M.D.
Andrew Gettinger, M.D.; Michael A. Gropper, M.D., Ph.D.; Andrew D. Shaw, M.B.

5:35 - 6:00 p.m. ASCCA Annual Business Meeting

6:00 - 7:45 p.m. Wine and Cheese Reception

Save this date for the ASCCA 23rd Annual Meeting
Friday, October 15, 2010 San Diego, California

Critical Care 2012

Continued from page 1

Question: *Will this cause a growth in the need for nurse practitioners and physician assistants?*

MEBA: *Signs point to yes.*

Comment: Critically ill and injured patients require a team of sufficient size, and so additional team members will be needed.

Question: *Will more patients be transferred to tertiary and quaternary care centers?*

MEBA: *Concentrate and ask again.*

Question: *Initially will more patients be transferred to centers capable of higher levels of care?*

MEBA*: You may rely on it.*

Comment: This will likely happen even if it is secondary to financial and not care considerations.

Question: *Will call become in-house, even when fellows are part of the program?*

MEBA: *Unclear.*

Comment: I do believe that immediate availability of the attending at the bedside will happen. Trying to provide in-house coverage in every ICU will not be cost-effective. The health system, which will be focused on controlling costs while trying to preserve or advance quality, will either have to consider a regional approach to ICU care or access to experts virtually. Both offer the ability to better leverage the number of certified intensivists, although I suspect the virtual solution may carry fewer political barriers than regionalization of care.

Conclusion

Although seeing into the future is fraught with an error rate we all find unsettling, not looking strategically forward and acting on the vision is usually followed by death of a field or a business. Given the costs associated with critical care and a growing concern that too much is being spent in the last years of life, critical care will be a focus of many of the health care reforms that will be considered. I hope my attempt to use a few rudimentary tools helps stimulate debate within our community so that we can see the change that is coming as an opportunity for us to help decide what will indeed happen to the critically ill and injured and to those providing the care for these patients. It may seem as though we are too late in becoming more active, but according to the crystal ball, the tea leaves and the magic 8 ball there is still time – but we must act now!

Call for Nominations for Burchardi Award

The Burchardi Award is jointly sponsored by ASCCA and the Society of Critical Care Medicine's (SCCM's) Anesthesiology Section. It was named after its first recipient, Dr. Hilmar Burchardi, a pioneer in the field, and a revered teacher and founding member of the European Society of Intensive Care Medicine, which he presided over from 1998-2000. The award was first established in 2002 at the SCCM Annual Congress and is presented every two years, alternately at an ASCCA or SCCM event. Nominations are solicited from members of either society, and the recipient shall be chosen by majority vote of both governing Boards.

Criteria for Nomination

The individual should be an anesthesia-based intensivist who has been practicing for at least 12 years and who has held a leadership position in at least one of the established national or international critical care societies/organizations. He/she should have made considerable contributions to the specialty, not necessarily in terms of research, especially in terms of ability to motivate and touch people. His/her greatness and leadership should be defined equally by competence, humility, humanity and a sense of humor; in short, this is a "Good Guy/Good Gal" award.

Nominees should be members of at least one, preferably both, of the sponsoring organizations and should have at least two letters of support from members of the societies.

Nominations and letters of recommendation and support are due by **October 1, 2009** to the President of ASCCA, Dr. Todd Dorman, at **tdorman@jhmi.edu** and to the Chair of the SCCM Anesthesiology Section, Dr. William Hurford, at **william.hurford@uc.edu.** This will allow the respective Boards to deliberate and vote on the matter at their next meeting.

Burchardi Award Recipients

2004	Hilmar Burchardi, M.D.	Goettingen, Germany
2005	Douglas B. Coursin, M.D.	Madison, Wisconsin
2006	Philip Lumb, M.B., B.S.	Los Angeles, California
2007/2008	Michael Breslow, M.D.	Baltimore, Maryland

CON: CCM Specialists Have No Better (or Perhaps Worse) Mortality Figures Than Non-Specialists Practicing in the ICU

Continued from page 5

with fresh tracheostomies, elderly patients with hip fractures, and cases where vascular monitoring is the primary indication for ICU admission.

The CCM caretaker, on the other hand, would more likely deal with undiagnosed septic shock, complex pneumonia, congestive heart failure, and enigmatic transfers from other hospitals, etc. And the patient-physician triage to CCM caretakers versus non-CCM caretakers is conducted according to very nonlinear, human-nature-type rules that are nevertheless well known to us in the profession.

Like all seminal papers that scout out the first questions and find the first answers, this one posed the two most open-ended questions one could ask about our subspecialty: What are we trying to accomplish? Does our discipline matter? Levy et al. suggests more good questions: Do patients and families suffer less when end-of-life care is addressed earlier rather than later? How does one measure such suffering? Do septic patients, once diagnosed, fare better with CCM versus non-CCM care, or does protocol-driven care (e.g., Rivers et al.[2]) make all the difference? What causes delays in identifying changes in patient condition? Who identifies them first and best, the nearest caretaker or the one whose training lasted the longest?

In fact, the current direction of the CCM literature seems to be taking form along such lines as these. As our specialty addresses the shortage of CCM caretakers, it should look beyond the linear view of pumping out more "fellowship-trained CCM caretakers" and ask better questions about manpower, algorithm-driven care and overall unit efficiency. Levy et al. opens many doors in this regard.

References:

1. Pronovost PH, Henckes MW, Dorman T, et al. Organizational characteristics of intensive care units related to outcomes of abdominal aortic surgery. *JAMA*. 1999; 281:1310-1317.
2. Rivers E, Nguyen B, Havstad S, et al. Early goal-directed therapy in the treatment of severe sepsis and septic shock. *N Eng J Med*. 2001; 345:1368-1377.

PRO: Jugular Venous Oxygen Saturation Monitoring Should Be Established Soon After Admission in Salvageable Patients With Severe Traumatic Brain Injury

Continued from page 6

clinicians treating severe traumatic brain injury should initiate $SvjO_2$ monitoring as early as possible in the hospital course.

References

1. Vigue B, Ract C, Benayed M, et al. Early $SjvO_2$ monitoring in patients with severe brain trauma. *Intensive Care Med*. 1999; 25:445-451.
2. Howells T, Elf K, Jones PA, et al. Pressure reactivity as a guide in the treatment of cerebral perfusion pressure in patients with brain trauma. *J Neurosurg*. 2005; 102(2):311-317.
3. White H, Baker A. Continuous jugular venous oximetry in the neurointensive care unit: a brief review. *Can J Anesth*. 2002; (6)49:623-629.
4. Gopinath SP, Robertson CS, Contant CF, et al. Jugular venous desaturation and outcome after head injury. *J Neurol Neurosurg Psychiatry*. 1994; 57:717-723.
5. Pérez A, Minces PG, Schnitzler EJ, et al. Jugular venous oxygen saturation or arteriovenous difference of lactate content and outcome in children with severe traumatic brain injury. *Pediatr Crit Care Med*. 2003; 4:33-38.
6. Fandino J, Stocker R, Prokop S, Trentz O, Imhof HG. Cerebral oxygenation and systemic trauma related factors determining neurological outcome after brain injury. *J Clin Neurosci*. 2000; 7:226-233.
7. Cruz J. The first decade of continuous monitoring of jugular bulb oxyhemoglobin saturation: Management strategies and clinical outcome. *Crit Care Med*. 1998; 28:344-351.
8. Brain Trauma Foundation; American Association of Neurological Surgeons; Congress of Neurological Surgeons; Joint Section on Neurotrauma and Critical Care, AANS/CNS, Bratton SL, Chestnut RM, Ghajar J, et al. Guidelines for the management of severe traumatic brain injury. XIV. Hyperventilation. *J Neurotrauma*. 2008; 25:276-278.
9. Gopinath SP, Valadka AB, Uzura M, Robertson CS. Comparison of jugular venous oxygen saturation and brain tissue Po2 as monitors of cerebral ischemia after head injury. *Crit Care Med*. 1999; 27:2337-2345.
10. Matta BF, Lam AM, Mayberg TS, Shapira Y, Winn HR. A critique of the intraoperative use of jugular venous bulb catheters during neurosurgical procedures. *Anesth Analg*. 1994; 79:745-750.
11. Coplin WM, O'Keefe GE, Grady MS, et al. Thrombotic, infectious, and procedural complications of the jugular bulb catheter in the intensive care unit. *Neurosurgery*. 1997; 4:101-107.
12. Valadka AB, Gopinath SP, Contant CF, et al. Relationship of brain tissue PO2 to outcome after severe head injury. *Crit Care Med*. 1998; 26:1576-1581.
13. Rosenthal G, Hemphill JC, Sorani M, et al. Brain tissue oxygen tension is more indicative of oxygen diffusion than oxygen delivery and metabolism in patients with traumatic brain injury. *Crit Care Med*. 2008; 36:1917-1924.

ASCCA
American Society of
Critical Care
Anesthesiologists

520 N. Northwest Highway Park Ridge, IL 60068-2573

Officers

President
Todd Dorman, M.D., F.C.C.M.
Baltimore, Maryland

President-Elect
Heidi B. Kummer, M.D., M.P.H.
Carlisle, Massachusetts

Immediate Past President
Gerald A. Maccioli, M.D., F.C.C.M.
Raleigh, North Carolina

Secretary
Brenda G. Fahy, M.D., F.C.C.M.
Lexington, Kentucky

Treasurer
Michael F. O'Connor, M.D.
Wilmette, Illinois

Directors

Daniel R. Brown, M.D., Ph.D.
Chatfield, Minnesota

Miguel A. Cobas, M.D.
Miami, Florida

Christine A. Doyle, M.D.
San Jose, California

Aryeh Shander, M.D.
Demarest, New Jersey

Stephen D. Surgenor, M.D.
Lebanon, New Hampshire

Avery Tung, M.D.
Chicago, Illinois

Ex-Officio

ASA Delegate
Mark E. Nunnally, M.D.
Chicago, Illinois

ASA Alternate Delegate
Daniel R. Brown, M.D., Ph.D.
Chatfield, Minnesota

International Representative
Brian P. Kavanagh, M.B.
Toronto, Ontario, Canada

Committee Chairs

Communications
Christine A. Doyle, M.D.
San Jose, California
(Web site)

Michael H. Wall, M.D., F.C.C.M.
St. Louis, Missouri
(Newsletter)

Education
Laureen L. Hill, M.D.
St. Louis, Missouri

Andrew L. Rosenberg, M.D.
Ann Arbor, Michigan

Executive
Todd Dorman, M.D., F.C.C.M.
Baltimore, Maryland

Membership
Gregory H. Botz, M.D.
Houston, Texas

Michael S. Avidan, M.D.
St. Louis, Missouri
(Resident Chair)

Nominations*
Gerald A. Maccioli, M.D.
Raleigh, North Carolina

Past President's Council
Gerald A. Maccioli, M.D., F.C.C.M.
Raleigh, North Carolina

Research Awards
Brian Kavanagh, M.B.
Toronto, Ontario, Canada

* NOTE: This committee consists of the Immediate Past President (Chair of the Committee), the President and the President-Elect and at least one Director.