February iTEE session gets rave reviews

By Gregg S. Hartman, MD

The second series of Introduction to Transesophageal Echocardiography (iTEE): The Basic TEE Exam for Non-cardiac Surgery commenced this past February in San Diego as a weekend course preceding the 13th Annual Comprehensive Review and Update of Perioperative Echocardiography. This course is designed to introduce the use of TEE to practitioners inexperienced in the modality and to serve as a starting point for those wishing to understand the fundamental principles of performing intraoperative TEE primarily for non-cardiac surgical indications. Both lecture and symposium-style interactive formats were utilized as well as an automated audience response system during the pre- and post-course assessments.

Prosected pig hearts were also available to help solidify the participants' knowledge of relevant cardiac anatomy and TEE imaging plane orientation. In addition, there were two mannequin-based TEE virtual simulators provided by Heartworks, which permitted attendants to have personalized hands-on instruction throughout the weekend course.

Despite a Northeast USA snowstorm, the attendance was very good, and the participants were enthusiastic. Evaluations from participants which included comments like "this is the best course I've attended in the past 20 years!", were a testament to the faculty's and SCA's commitment to providing a high quality course. The course is produced in collaboration with the American Society of Anesthesiologists (ASA) and will be repeated three more times this year: April 24-25 at the SCA's Annual Meeting in New Orleans, May 15-16 and October 30-31 in Orlando.

A pathway for National Board of Echocardiography (NBE) certification in Basic TEE has also been recently established. This year marks the first year a certification examination is offered by the NBE in Basic Perioperative TEE. This exam can be taken at multiple computer test centers this November 2010. Details pertaining to NBE certification and on-line registration for the examination can be found at www.echoboards.com. The deadline for registering is April 16, 2010.
Hematocrit on Cardiopulmonary Bypass and Outcome after Coronary Surgery in Nontransfused Patients


**Reviewer: Nanhi Mitter, MD**
Johns Hopkins Hospital

**Excerpt from Paper's Abstract**
Ranucci et al. retrospectively analyzed 3003 patients at a single institution undergoing isolated coronary artery bypass grafting (CABG) with cardiopulmonary bypass (CPB) who did not receive a blood transfusion during their hospital stay. The outcome variables measured were major morbidity (mechanical ventilation longer than 48 hours, surgical reoperation, mediastinitis, renal dysfunction or failure, and stroke) and operative mortality (death within the hospital or 30 days after discharge). Patients were divided into four groups: group I – preoperative hematocrit (HCT) > 40% and lowest HCT on CPB > 28%, group II – preoperative HCT ≤ 40% and lowest HCT > 28%, group III – Preoperative HCT > 40% and lowest HCT on CPB ≤ 28%, and group IV – preoperative HCT ≤ 40% and lowest HCT on CPB ≤ 28%. There were no significant differences with respect to priming volume, use of ultrafiltration, and duration of CPB between the four groups. Preoperative HCT and the lowest HCT on CPB were found to be independent risk factors for major morbidity. Neither were independent risk factors for operative mortality, and a preoperative HCT of 40% or less was not found to be a risk factor for major morbidity if the lowest HCT on CPB was maintained above 28%.

**Reviewer's Comments**
This is a timely analysis that brings us one step closer to better understanding the complex subject of preoperative anemia and intraoperative HCT on outcomes after CABG. According to the results of the study, if the lowest HCT on CPB is maintained above 28%, patients with preoperative HCT below 40% can have similar outcomes to patients with a preoperative HCT > 40%. This has potential implications for hemodilution, priming volume, use of closed circuits, and fluid restriction prior to CPB. These results highlight the fundamental principle of poor oxygen carrying capacity and its contribution to end-organ dysfunction. Prior studies have evaluated perioperative anemia and postoperative outcomes however, they have included transfused patients which may be a confounding variable.

There are a few limitations to this study. Firstly, it is single center and retrospective in nature. Secondly, the proportion of patients is predominantly male (85%), therefore the results cannot be readily extrapolated to a diverse patient population. Furthermore, the anesthetic technique was not standardized. Anesthetic technique has been revealed to have a significant impact on outcomes after cardiac surgery. [1-5] It would be interesting to see how this data would be affected with a higher population of females, patients with lower left ventricular ejection fractions and renal dysfunction or in patients undergoing valvular or combination CABG and valvular surgery.

Although the management of anemia perioperatively is complex, this study sheds some light on the management of patients presenting for CABG surgery with a low preoperative HCT.

2. De Hert SG, V.d.L.P., Cromheecke S, et al, Cardioprotective properties of sevoflurane in patients undergoing coronary surgery with cardiopulmo-

Assessment of Arterial Blood Pressure During Support With an Axial Flow Left Ventricular Assist Device


**Reviewers: Emmanuel J. Guerrero, MD and Dalia A. Banks, MD**
University of California, San Diego

**Background**
This study analyzed standard blood pressure measurements obtained by cuff and arterial lines and used these values to help establish guidelines for the safe operation of axial-flow left ventricular assist devices (IAD).

**Methods**
The study included 35 patients in New York Heart Association functional class IV heart failure who received a Jarvik 2000 (Jarvik Heart Inc, New York, NY) axial-flow LVAD as a bridge to cardiac transplantation. Blood pressure and echocardiographic data were collected as IAD pump speeds were adjusted through the range of 8,000 to 12,000 rpm.

**Results**
Increasing pump speed was associated with significant increases in diastolic, mean, and pulse pressure values (p<0.0001), but systolic blood pressure did not change. The arterial line and automated cuff machine did not correlate with respect to systolic, diastolic, and mean values (p<0.05), but the calculated pulse pressures did (p=0.33). A pulse pressure calculation of < 15mm Hg resulted in aortic valve opening 24% of the time, and a pulse pressure > 15 mm Hg was predictive of aortic valve opening 65% of the time.

**Conclusion**
Aortic valve opening minimizes the risk of complications and a safe threshold for most patients is a pulse pressure > 15 mm Hg. A calculated pulse pressure from an arterial line or automated cuff may be used to determine a safe zone of Jarvik 2000 operation, leading to fewer complications.

**Reviewer's Comments:**
The continuous unloading of the left ventricle and decreased pulsatility associated with axial-flow IADs has the potential to cause significant complications. At the root of these two issues is the IAD pump speed setting. Higher pump speeds can cause left ventricular collapse, right ventricular dysfunction, decreased aortic valve opening frequency and aortic root flow. Furthermore, a chronically closed aortic valve can promote commissural fusion and eventual valve dysfunction (1).

The goal of this study was to define hemodynamic parameters for the Jarvik 2000 that could be easily obtained and used to prevent the aforementioned complications. The authors recognized that aortic valve opening signified sufficient preload volume in the left ventricle (LV) to supply both the native outflow tract and the LVAD inflow cannula. By monitoring hemodynamics and aortic valve motion while adjusting IAD pump speeds, the authors eloquently...
demonstrated an inverse relationship between pump speed and pulse pressure as well as pump speed and aortic valve opening. From these observations, a value of 15 mm Hg was established as the threshold pulse pressure that ensured adequate aortic valve opening and hence left ventricular volume.

The study also addressed the question of which modality to use to obtain pulse pressure. Though the conclusion suggested either using an arterial catheter or an automated noninvasive blood pressure (NIBP) cuff, this study demonstrated that an automated NIBP cuff could not detect systolic and diastolic pressures with pump speeds of 10,875 ± 1,424 rpm.

In applying the results of this study, one must keep in mind that pump speed, LV contractility, preload and afterload all affect pulse pressure and aortic valve opening with a continuous axial-flow IVD. In order to provide a stable hemodynamic state, this study manipulated pump speeds and collected blood pressure values from patients at rest. However, unlike the study patients, the hemodynamics of patients under general anesthesia will be markedly different. The vasodilatory effects associated with intravenous and inhalational anesthetics will have to be counteracted in order to apply the findings of this study. As stated in the article, the practice of the study authors is to maintain mean arterial pressure between 65 to 75 mm Hg. Furthermore, in a patient with almost no IV function, pulse pressure will not be a reliable indicator of IV volume, and other modalities such as echocardiography will have to be utilized.

The study's limitations include the following: a small sample size; the absence of IV function evaluation in the study patients; and the inclusion of patients only with the Jarvik 2000 IVD. Unlike the Jarvik 2000, numerous continuous axial-flow IVDs insert their outflow cannula into the ascending and not the descending aorta. These different insertion sites will likely affect the relationship between intravascular pressures and aortic valve opening, in effect, limiting the application of this study's findings.

The United States Food and Drug Administration’s recent approval of a continuous axial-flow IVD for destination therapy reemphasizes the importance of IVD familiarity amongst anesthesiologists. An increasing number of critically ill patients will receive these devices, will live longer and will undoubtedly undergo general surgery procedures even after their IVD insertion. Anesthesiologists should be familiar with their operation and how our anesthetic management can impact the hemodynamics generated by these devices.

References

Mitral Repair versus Replacement for Ischemic Mitral Regurgitation: Comparison of Short-Term and Long-Term Survival

Julien Magne, PhD; Nicolas Girerd, MD; Mario Sénéchal, MD; Patrick Mathieu, MD; François Dagenais, MD; Jean G. Dumesnil, MD, Éric Charbonneau, MD; Pierre Voisin, MD; Philippe Pibarot, DVM, PhD, FAHA
Circulation, Sep 2009; 120: S104 - S111.

Reviewer: Richa Dhawan, MD
Fellow, Department of Anesthesia and Critical Care
University of Chicago Medical Center

Abstract Excerpt
This study is a retrospective review looking at postoperative outcomes of mitral valve repair (MVRp) versus mitral valve replacement (MVR) in patients whose etiology of mitral regurgitation (MR) was ischemic. The authors reviewed data for 370 patients with chronic ischemic MR who underwent mitral valve surgery with or without coronary artery bypass graft surgery in a 15 year period. Criteria that excluded patients from the study included acute MR, organic MR, nonischemic cardiomyopathy, aortic or pulmonic valve regurgitation or stenosis, severe tricuspid regurgitation, surgery on another valve with the MVR(p), or previous mitral valve surgery. The primary end points were operative mortality (defined as death within 30 days) and overall mortality within the 13 year period of the study.

Mitral valve repair was done in 186 patients and replacement in 184 patients. Overall mortality was 13.5% amongst both study groups. Without risk adjustment, operative mortality was significantly (p=0.03) lower in the MVRp group (9.7%) than the MVR group (17.4%). There was no difference in operative (p= 0.54) or overall mortality (p= 0.52) after propensity score adjustment for other risk factors between the two groups. Patients who had a MVR were more likely to have preoperative renal failure, heart failure, pulmonary hypertension, New York Heart Association functional class greater than III, and severe MR. These patients were also more likely to be operated on urgently and less likely to get concomitant CABG. Multivariate analysis revealed independent predictors of overall mortality and these included age, male gender, recent heart failure, reduced ejection fraction, renal and pulmonary disease, but not the type of procedure.

There was no statistically significant difference in operative or overall mortality among patients with ischemic MR that underwent mitral repair versus replacement after adjustment for preoperative risk factors and propensity score matching.

Reviewer's Comments
As opposed to organic MR, there is little evidence that mitral valve repair has a mortality benefit in patients with ischemic MR. Ischemic MR has a more complex and varied pathophysiology that is not well understood. Although there is no randomized controlled data, there are several observational studies that suggest equivalent late survival after repair versus replacement. Mode of presentation, severity of symptoms and degree of left ventricular dysfunction are more important determinants of survival rather than solely the surgical technique.

This study has limitations that all observational, nonrandomized studies are prone to, including selection bias. They identified patients who had an MVR as having more co-morbid conditions, yet the type of procedure was not associated with outcome. Propensity score matching was used to help eliminate bias with regard to preoperative differences. However this type of statistical matching can reduce large biases in large sample sizes but significant hidden biases may remain. This occurs because matching only controls for observed variables while other unobserved or variables not considered may be present. Another significant limitation of the study was that they did not identify patients who had a CABG and MVRp in comparison to CABG with MVR. This is important in the setting of ischemic MR, as revascularization on its own may help improve outcomes.

Most patients that have mitral valve surgery, in our practice, would fit into the exclusion group in this study. Thus the implications of this study, for our subset of patients, is unclear. Future direction in this area, include identifying patients who are at risk for MVRp failure and targeting surgical procedure to patient characteristics. Use of 2-D pre-operative echocardiography has been used to predict MVRp failure. It may be technically and ethically difficult to randomize patients with severe MR to replacement versus repair and we are unlikely to see this type of study being conducted. As surgical procedures continue to evolve, studies comparing different repair techniques or replacement valves may emerge. A better understanding of the pathophysiology and
mechanism of regurgitation in the ischemic ventricle will also tailor surgical efforts.

**A Randomized, Double-Blind, Placebo-Controlled, Dose-Escalation Study of Intravenous Adult Human Mesenchymal Stem Cells (Prochymal) After Acute Myocardial Infarction**

Joshua M. Hare, MD, Jay H. Traverse, MD, Timothy D. Henry, MD, Nabil Dib, MD, Robert K. Strumpf, MD, Steven P. Schulman, MD, Gary Gerstenblith, MD, Anthony N. DeMaria, MD, Ali E. Denktas, MD, Roger S. Gammon, MD, James B. Hermiller, Jr, MD, Mark A. Reisman, MD, Gary L. Schaer, MD, Warren Sherman, MD *J Am Coll Cardiol* 2009;54:2277–86

**Reviewers:** Yong G. Peng MD, PhD  
University of Florida, Gainesville, FL  
Hong Liu, MD  
UC Davis Health System, Sacramento, CA

**Background and Objective**

The goal of this study was to investigate the safety and efficacy of intravenous allogeneic human mesenchymal stem cells (hMSCs) in patients with myocardial infarction (MI). Bone marrow-derived hMSCs may ameliorate consequences of MI, and have the following advantages: ease of preparation, allogeneic use due to immunoprivilege, capacity to home to injured tissue, and extensive pre-clinical support.

**Methods**

A double-blind, placebo-controlled, dose-ranging (0.5, 1.6, and 5 million cells/kg) safety trial of intravenous allogeneic hMSCs (Prochymal, Osiris Therapeutics, Inc., Baltimore, Maryland) in reperfused MI patients (n = 53) was performed. The primary end point was incidence of treatment-emergent adverse events within 6 months.

Ejection fraction and left ventricular volumes determined by echocardiography and magnetic resonance imaging were exploratory efficacy end points.

**Results**

Adverse event rates were similar between the hMSC-treated (5.3 per patient) and placebo-treated (7.0 per patient) groups, and renal, hepatic, and hematologic laboratory indexes were not different. Ambulatory electrocardiogram monitoring demonstrated reduced ventricular tachycardia episodes (p = 0.025), and pulmonary function testing demonstrated improved forced expiratory volume in 1 s (p = 0.003) in the hMSC-treated patients. Global symptom scores in all patients (p = 0.027) and ejection fractions in the important subset of anterior MI patients were both significantly better in hMSCs versus placebo subjects. In the cardiac magnetic resonance imaging sub-study, hMSC treatment, but not placebo, increased left ventricular ejection fraction and led to reverse remodeling.

Conclusion: Intravenous allogeneic hMSCs are safe in patients after acute MI. This trial provides pivotal safety and provisional efficacy data for an allogeneic bone marrow-derived stem cell in post-infarction patients.

1) Cardiac arrhythmias may be the only area that hMSC treatment has demonstrated a favorable effect and the hMSC treatment group showed a 4-fold lower arrhythmia event rate.
2) The authors suggested that pulmonary function testing, including FEV1, was significantly improved after 6 months of treatment with hMSCs. However, it does not appear from the data presented that the two groups are statistically different.
3) LVEF improvement in both the hMSC and placebo groups were observed after six months. When a sub-group of patients was analyzed, the hMSC treatment group appeared to have significant LVEF improvement both by echocardiography and MRI assessment versus that of the placebo group. However, no clear criteria were given for selection of each group of patients for such a comparison. It makes one wonder if some bias factors may have contributed to these.
4) Patient global symptomatic status: This evaluation certainly can be a subjective or arbitrary finding, especially if both groups have recorded similar rates of adverse events. Even though both groups presented with similar hospitalization rates (31.6% vs 23.5%), the hMSC group showed average longer hospitalization days compared to the placebo group after discharge (66 days vs 120 days).
5) This preliminary study also lacks a quantitative measure to assess the amount of stem cells that were actually delivered to the injured myocardial site.
6) The follow up time was too short to evaluate the efficacy and safety of such a study.

**Reviewer’s Comments**

Using human bone marrow-derived stem cells (BMCs) as an alternative therapy to treat acute myocardial infarction (AMI) has shown significant interest in recent years. However, most of the published studies so far have lacked efficacy and safety profiles. Several concerns have been raised from these studies, including non-specific stem cells lodged into unwanted organ locations; significant heterogeneity among hMSCs and unpredictable stem cell proliferation post-administration; tumor genesis and stem cells that obstructed microvasculature which led to ischemia of other vital organs, etc. The current investigation was a randomized, double-blinded placebo-controlled, multi-center prospective study. There were 53 patients qualified for the study and they were randomly assigned into hMSCs versus placebo in a 2:1 ratio. Each cohort received three different doses of hMSCs (0.5, 1.6, and 5 million cells/kg) and the patients were followed for 6 months. The purpose of the study was intended to address the efficacy and safety concerns of allogeneic human mesenchymal stem cells (hMSCs) intravenously administered to patients after AMI.

The advantages of hMSCs over BMCs include the following: these cells can be delivered to the patient intravenously and they can specifically migrate into injured myocardial sites; they will not cause an anti-inflammatory response or rejection, since they lack cell surface antigens; this preparation can provide an adequate amount stem cells with therapeutic properties. The current study concluded that using hMSCs to treat patients with AMI demonstrated some efficacy and safety features in four specific areas. However, further analysis of the study reveals results that were not as convincing as they first appear for the following reasons:

1) Cardiac arrhythmias may be the only area that hMSC treatment has demonstrated a favorable effect and the hMSC treatment group showed a 4-fold lower arrhythmia event rate.
2) The authors suggested that pulmonary function testing, including FEV1, was significantly improved after 6 months of treatment with hMSCs. However, it does not appear from the data presented that the two groups are statistically different.
3) LVEF improvement in both the hMSC and placebo groups were observed after six months. When a sub-group of patients was analyzed, the hMSC treatment group appeared to have significant LVEF improvement both by echocardiography and MRI assessment versus that of the placebo group. However, no clear criteria were given for selection of each group of patients for such a comparison. It makes one wonder if some bias factors may have contributed to these.
4) Patient global symptomatic status: This evaluation certainly can be a subjective or arbitrary finding, especially if both groups have recorded similar rates of adverse events. Even though both groups presented with similar hospitalization rates (31.6% vs 23.5%), the hMSC group showed average longer hospitalization days compared to the placebo group after discharge (66 days vs 120 days).
5) This preliminary study also lacks a quantitative measure to assess the amount of stem cells that were actually delivered to the injured myocardial site.
6) The follow up time was too short to evaluate the efficacy and safety of such a study.

Overall, the evidence provided by this current study is weak. Further research and long-term follow up are warranted to validate the therapeutic potential of hMSCs in treating patients with AMI.
Inhibition of bacterial disulfide bond formation by the anticoagulant warfarin


Reviewers: David S. Palilla, MD and Theodore A. Alston, MD, PhD
Massachusetts General Hospital, Harvard Medical School

Abstract
This lab report does not directly pertain to anesthesia, but it should be of general interest to clinicians dealing with the science of blood coagulation in cardiovascular patients. Researchers at Harvard are attacking tuberculosis (TB) mycobacteria with warfarin. It turns out that TB microbes and humans both have a need for normal vitamin K function.

The target enzyme for warfarin is vitamin K epoxide reductase (VKOR). Genetic deletion of this enzyme caused stunted growth of mycobacteria on rich medium in vitro and completely blocked growth on simple medium. In genetically normal organisms, mycobacterial growth was similarly effected by warfarin inhibition of the enzyme.

Four strains of warfarin-resistant microbes were isolated with the aid of mutagenic chemicals. Interestingly, the four mutations corresponded to genetic variations of VKOR found in warfarin-resistant humans. Further study of the enzyme from TB bacilli will be facilitated by its functional cloning into nonpathogenic E. coli. The authors have accomplished the transfer, which is expected to facilitate the screening for warfarin analogs for improved activity as anticoagulants and/or antibiotics. In allied work toward that goal, the three-dimensional structure of the bacterial VKOR has been elucidated this year (Li W et al, Nature 2010 Jan 28;463:507-12).

Comments
A bacterial role for vitamin K makes sense since GI flora have long been suspected to be a source of the vitamin for human hosts. An antibiotic based on warfarin (and its effects on Vitamin K) would not necessarily result in anticoagulation in humans, but this potential side effect would need to be studied. There are other examples of pharmaceutical agents whose primary mechanism of action does not necessarily cause an expected side effect. Trimethaprim, for instance, was based on methotrexate but inhibits only microbial dihydrofolate reductase.

Though humans and bacteria both seem to require enzymatic reduction of vitamin K, bacteria are not known to carboxylate any of their proteins. Instead, vitamin K is involved in disulfide bond formation in bacterial proteins.

It would be interesting to learn if this function of vitamin K was also exhibited in humans as further studies examining this effect of warfarin are undertaken. Regardless, potential uses of warfarin in the future will include more than anticoagulation and rat extermination.
Reception to Raise Leadership Development Funds

One of the responsibilities of leaders is to guide the development of new generations of leaders. The vision of the future should be emphasized while always looking for potential leaders. This serves to bridge the gap between the past and the future, and helps to always be making the organization better.

– Joel A. Kaplan, M.D.

On April 25, the SCA Foundation invites you to a reception honoring an outstanding leader in cardiac anesthesiology, Joel A. Kaplan, M.D. and introducing the Kaplan Fellows Education Fund. As part of the SCA Annual Meeting, the reception will be held at the New Orleans landmark, Latrobe’s on Royal, 403 Royal Street in New Orleans from 6:30 pm – 8:30 pm. Proceeds from this event will benefit the Kaplan Fund.

In his long and distinguished career, Dr. Kaplan has been an educator, a mentor, and a leader, and has now established the Kaplan Fellows Education Fund, a leadership program designed for fellows and those beginning their careers in cardiovascular anesthesiology. The goal of the program is to provide training opportunities to enhance the leadership skills of cardiovascular anesthesiologists and develop the next generation of leaders for CV anesthesia and healthcare.

Joel A. Kaplan, M.D. currently is at the University of California San Diego Medical Center. Prior to this appointment he served as Chancellor of the Health Sciences Center, Vice President for Health Affairs, Dean of the School of Medicine and Senior Vice Provost for Academic Affairs at the University of Louisville. Dr. Kaplan also worked at New York’s Mount Sinai School of Medicine where he was the Horace Goldsmith Professor and Chairman of the Department of Anesthesiology, Senior Vice President for Clinical Affairs and President of Faculty Practice Associates.

Dr. Kaplan is a native New Yorker who grew up in Philadelphia. He received his medical degree from Jefferson Medical College and completed a residency in anesthesiology at the University of Pennsylvania under renowned chair, R. D. Dripps. After serving two years in the U.S. Army Medical Corps, Dr. Kaplan joined the faculty at Emory University in 1974, where he remained until 1983 when he was recruited to Mount Sinai School of Medicine.

He became a Diplomate of the American Board of Anesthesiology in 1973, a Diplomate of the American Board of Medical Management in 1996, and was designated as a Certified Physician Executive (CPE) by the American College of Physician Executives in 1997. Dr. Kaplan is a Fellow of the American College of Anesthesiology, the America College of Chest Physicians and the American College of Cardiology.

He has served as Editor-in-Chief of the Journal of Cardiothoracic and Vascular Anesthesia since 1986, and is past Editor-in-Chief of Seminars in Cardiothoracic and Vascular Anesthesia and Cardiothoracic and Vascular Anesthesia Updates. He is a prolific writer who has authored or co-authored over 200 manuscripts, textbooks and review articles. Dr. Kaplan is a Past President of the Society of Cardiovascular Anesthesiologists.

Dr. Kaplan has been married to his wife, Norma for 45 years, and they have one daughter, Ellen. Ellen is married to Joe Lovelace and they live in San Jose, California, where she runs her own Concierge Service.

On Sunday, April 25, you will have a unique opportunity to honor Dr. Kaplan. The $125 ticket price for the reception includes a donation to the SCA Foundation Kaplan Fellows Education Fund. Sponsored tables are also available. If you cannot join us in New Orleans, we invite you to honor Dr. Kaplan in absentia by sending a donation to the SCA Foundation. For more information, contact the SCA Foundation at foundation@scahq.org or at 804-565-6324. You can also obtain information on our events online at the SCA Foundation website (www.scahqgive.org).

Get Involved in FOCUS

New Sites Being Requested

James Abernathy, III, M.D.

As FOCUS moves into Phase II, which is to develop interventions to improve patient safety, we will need FOCUS sites to serve in both project development and as beta test sites. The first step is to develop a database of interested sites, capable of working on one or more of the following Phase II projects.

1. Develop a learning collaborative within the cardiac surgical teams to enhance patient safety. This process will use the Michigan Keystone model developed by Dr. Pronovost and the QSRG team that has been so successful in eliminating catheter based infections in the ICU setting. The FOCUS learning collaborative will use reduction in wound infections as the metric that will inform us of how we are doing.

2. Develop a peer-to-peer assessment tool that can be used by operating room teams to assess their own safety performance, or be used by an invited visiting team to provide feedback regarding areas for improvement in safety. This non-judgmental, for-internal-use-only, peer-to-peer assessment tool will be based on the highly successful WANO (World Association of Nuclear Operators) process that has made the nuclear industry a “highly reliable” industry.

3. Design the operating room of the future. Tackle the issues of equipment and OR design to improve the interfaces between humans and the machines they use to deliver patient care in the operating room.

Whether you work in a large academic center or an agile, efficient private practice, we ask that you consider participating as a research FOCUS site. If your institution is interested in participating, please complete the site application form found on the SCA Foundation’s website in the FOCUS Section. The deadline for submission is June 15, 2010. Those institutions that applied and or participated in Phase I are asked to complete the new application for Phase
II. There was a great response for Phase I and we are confident Phase II will garner the same amount of support from the SCA membership. Decisions will be made by the Site Selection Committee based upon the needs of each research project. For more information, you can contact me with the Site Selection committee or John Melleky with the SCA Foundation.

Support the SCA Foundation

Donate to the SCA Foundation and support our research grants, education programs such as the upcoming Kaplan Fellows Leadership program, the FOCUS Initiative, and the creation of a cardiovascular anesthesiology module for the STS database.

Donations to the SCA Foundation can be made directly to the SCA Foundation, 2209 Dickens Road, Richmond, VA 23230 or via online at our website, www.scahqgive.org.

The National Board of Echocardiography announces the 2010 administration of these three examinations:

**Basic PTEeXAM**

*Examination of Special Competence in Basic Perioperative Transesophageal Echocardiography*

**Application Deadline: April 16, 2010** • **Examination Date: Monday, November 8, 2010**

**Advanced PTEeXAM and RePTE**

*Examination of Special Competence in Advanced Perioperative Transesophageal Echocardiography and Recertification Examination*

**Application Deadline: April 16, 2010** • **Examination Date: Monday, November 1, 2010**

The NBE is pleased to offer a computer-based format multiple-choice examination through Prometric Testing Centers. Computer-based testing allows candidates to take his or her examination in a convenient testing center saving time and money. For additional information about the computer-based format and for an examination application, please visit our website at www.echoboards.org.

(Diplomates and Testamurs who passed the Advanced PTEeXAM in 1998-2001 are eligible to take the 2010 RePTE examination.)

NBE, Inc., 1500 Sunday Drive, Suite 102, Raleigh, NC 27607; Phone: (919) 861-5582; Email: info@echoboards.org