

From The Editor A Year in Review

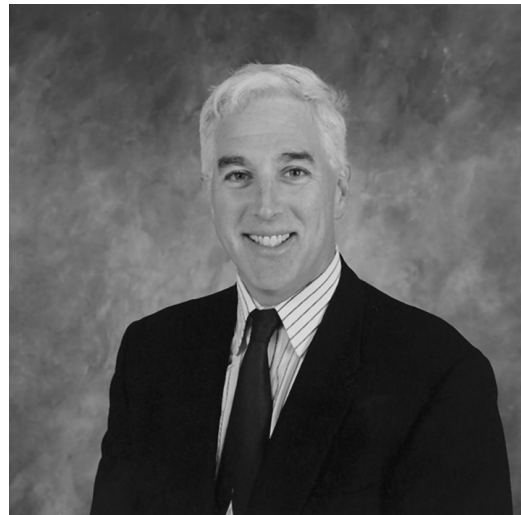
With the coming of the holidays we are once again reminded of the richness of life's many challenges. As perfusionists we are often called to perform our functions to critically ill people who require advanced medical care to assist them in dealing with their vascular disease or similar ailment. This we do by incorporating complex medical techniques that rely on a combination of artificial devices with knowledge gained from constant review of current practice with new developments. The dedication we demonstrate to these mandates is rewarded with improvements in outcome as opposed to the replication of older methodologies that often do little to promote outstanding care.

This year the field of extracorporeal circulation saw many advances while some techniques purported to be beneficial in the recent past fell by the wayside, or are being reevaluated for their applicability and efficacy in day-to-day medicine. Some of the promising changes include:

- a. A reevaluation of warming and cooling techniques to incorporate lower rates of both during bypass, with reduced gradients across heat exchangers
- b. An expansion in the types of modified circuitry moving away from heparin-coatings into more biologically promising alternative surface treatments
- c. A reexamination of the methods of treating and processing shed-blood from mediastinal and intracardiac locations
- d. An alteration in myocardial protection solutions and delivery techniques to enhance recovery and sustain function in the post-cardiotomy period
- e. New cannulae that offer cerebral protection by the removal of particulate and gaseous emboli, or that expand the use of minimally invasive surgery
- f. The development and expansion of new generation devices that produce platelet-rich-plasma for the enhancement of wound healing through the application of platelet-bound growth factors at wound sites
- g. A miniaturization of traditional circuitry and/or endogenous use of patient blood volume to prime extracorporeal circuits, both as an effort to reduce prime volumes and reduce the deleterious effects of hemodilution

Likewise, a number of technologies that initially seemed promising but have either not (yet?) been found to offer significant benefits to patients or perfusionists, or have raised questions concerning their safe incorporation. These include:

- a. Miniaturized of traditional circuitry that reduce the overall safety of bypass at the expense of reduced prime volumes
- b. Use of assisted venous return that may increase the risk of gaseous emboli production and transmission to patients, or increase cellular activation resulting in damage to formed element of blood
- c. Alteration in anticoagulation protocols, mainly through the reduction of heparinization, to improve outcomes



And of course there remain the many items that are debatable and require further securitization. These include:

- a. Determination of 'appropriate' hematocrit levels to achieve during bypass along with other indices of allogeneic transfusion requirements
- b. The utility of leukocyte reducing filters during routine bypass
- c. The necessity of right ventricular unloading during off-pump coronary revascularization procedures

It is a natural human tendency to reduce all systematic review to a dichotomous classification of benefit based on good and bad, black and white, yea or nay. All of us can appreciate that few items in any of the lists above can be so classified, and instead, need to be reevaluated for their effectiveness across a variety of applications. Finding the right niche for these interventions requires further case study with the ultimate goal of performing carefully controlled randomized evaluations in appropriately powered clinical studies. Until these are achieved judgment of the patient-to-patient benefit must be carefully evaluated with the ultimate decision resting in the hands of both patient and clinician.

In all, 2003 has been a remarkable year for the field of extracorporeal circulation. Future advances in bioengineering that incorporate molecular biology and the results from the ongoing human genome project will ultimately change our thoughts on extracorporeal circulation. Our education in these areas, and the careful examination of such technologies through scientific evaluation, will determine what entries are included in end-of-year lists in the future.

From all on the editorial staff of the Journal, we wish all a joyous holiday season and a wonderful New Year.

Sincerely,
Alfred H. Stammers, MSA, CCP
Editor