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From the Editor
2009: A Good Year

Robert Groom

A new era in perfusion education has finally arrived: high fidelity simulation in extracorporeal technology. Three of the 15 active perfusion education programs in the United States now use high fidelity simulation as part of their curriculum. The Australian and New Zealand College of Perfusion purchased a simulator and has made it available for use in the many simulation operating room suites and in operating rooms at heart centers Down Under.

According to Bruce Searles and Ed Darling at Upstate University Health System in Syracuse, NY, simulation standardizes both the experience and the evaluation process. Students may be subjected to a challenging clinical problem over and over again. Their recovery from the clinical problem can be accurately measured in terms of the precision of execution and lapsed time. With simulation, students experience coping with a challenging clinical problem while experiencing the cognitive challenge, the stress, and the physical demands. Perhaps the effectiveness of the simulator will be evident, if a student withdraws prior to ever stepping into an operating room.

In this issue of the *Journal*, Ninomiya and colleagues, from Hiroshima International University, report on their use of a virtual patient simulator, its role in basic training, and its use in periodic crisis management drills (1). On January 15 of this year, Captain Chesley "Sully" Sullenberger calmly executed the safe landing of a powerless 75-ton A320 Airbus in the Hudson River; it was the most amazing landing since the dawn of aviation. This was the first time that a major aircraft crash-landed in water with every passenger on board making it out alive. Years of experience and simulator training on how to handle calamities contributed to his ability to be calm, remain focused, and make good decisions. Perhaps in the future, we, as a profession, may likewise aspire to a similar standard of emergency preparedness.

Also in this issue, Stammers and colleagues from Geisinger Medical Center, explore the power of using microprocessor technology to enhance the measurement of clinical practice (2). They demonstrate how this technology may be used to provide a method of careful measurement of variation in practice beyond what was once thought possible. Like high fidelity simulation, microprocessor based data acquisition has the potential to accelerate improvement in processes and patient safety. Proper application of these systems will direct our attention to unwanted variation that occurs during cardiopulmonary bypass. Such information should prompt focused initiatives to redesign care. The use of electronic data acquisition systems is on the rise, and the day will come when, not only internal benchmarking, but also widespread benchmarking shall be carried out across centers.

On March 5, 2009, preliminary results of the SYNTAX Trial were published in *The New England Journal of Medicine* (3). One thousand eight hundred patients with severe triple vessel coronary artery disease were randomized to either a percutaneous coronary intervention (PCI) or coronary artery bypass surgery (CABG). Rates of major adverse cardiac or cerebrovascular events at 12 months were significantly higher in the PCI group (17.8% vs. 12.4% for CABG; $p = .002$) in large part because of an increased rate of repeat revascularization (13.5% vs. 5.9%, $p < .001$). At 12 months, the rates of death and myocardial infarction were similar between the two groups; stroke was significantly more likely to occur with CABG (2.2% vs. .6% for PCI; $p = .003$). These findings suggest that efforts should be focused on reducing the risk of stroke in CABG surgery. A good place to start may be the implementation of best practice guidelines to reduce stroke in this patient population. On November 4, the results of a Randomized On/Off Bypass (ROOBY) trial were reported in *The New England Journal of Medicine* by the United States Department of Veterans Affairs (4). Two thousand two hundred and three elective or urgent coronary artery bypass patients were randomized to either off pump or on pump surgery. At 1 year, the on pump group had significantly better composite scores (death, myocardial infarction, or repeat revascularization) than the off pump group (9.9% vs. 7.4%, $p = .04$). The overall rate of graft patency was lower in the off-pump group than in the on-pump group, as well (82.6% vs. 87.8%, $p < .01$). These two studies will inform patients, cardiologists, and surgeons in their decisions on the best possible treatment strategy.

With this issue, we complete the *Journal's* 41st year of continuous publication of science related to extracorporeal technology. This has been another exceptional year for the *Journal,* largely due to the volume of submissions and to our phenomenal editorial board. They devote countless hours to vetting manuscripts and they provide direction to this editor. Their efforts have resulted in the improvement of submitted work, the exclusion of questionable work, and the publication of quality work.

So, let it be said that 2009 has been a good year. I'm wishing you all the best in 2010!

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