



# AUA

Association of University Anesthesiologists

# Update

Winter 2009

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## AUA's Strategic Plan

Ronald G. Pearl, M.D., Ph.D.  
 AUA President  
 Professor and Chair  
 Stanford University

During the past year, the AUA Council has worked on developing and implementing a strategic plan that will help chart the future of the society and guarantee that we meet our members' needs in the years ahead. The decision to create a strategic plan was based on changes that have occurred since the society was founded in 1953. The strategic plan reflects the Council's view that the four major aspects of AUA's mission are to 1) promote scholarship in anesthesiology education, 2) encourage original investigations in basic translational and clinical science, 3) advocate for academic anesthesiology, and 4) foster the open and informal exchange of ideas among practitioners in the field.

In order to achieve this mission, the Council has identified eight specific goals (described in the summer 2009 newsletter – see table on page 2). Many of these goals relate to the Annual Meeting. During the past several years, there have been concerns regarding aspects of the meeting, including the length, the specific days, the host location, the host program, and the program content and speakers. We will therefore create an ad hoc committee chaired by Kevin Tremper, M.D., to review all aspects of the Annual Meeting. Although the Scientific Advisory Board and the Educational Advisory Board are responsible for the majority of the content of the Annual Meeting, coordination of their activities and those of the society has been limited. We will therefore propose a bylaws amendment so that the chairs of these two committees are official members of the Council.

The society is its members. Criteria for membership were revised several years ago, developing a quantitative scoring system as a guide for assessment of nominations and extending criteria to include educational scholarship and major administrative roles in addition to traditional scientific research

[www.auahq.org/criteria.htm](http://www.auahq.org/criteria.htm).

Based on several years of experience with these criteria, a Membership Committee chaired by Christine Stock, M.D., will review whether the new criteria have achieved their goals, a discussion which will include assessing the optimal size of AUA. It is important that our members be involved, and an improved Annual Meeting should increase participation.

Junior faculty, fellows and residents are the future of anesthesiology and of the AUA. In order to increase their involvement in AUA, we will create an ad hoc committee chaired by John Ulatowski, M.D., which includes junior faculty, fellows, residents, program directors and members of the FAER Academy of Research Mentors and the ASA Committee on Academic Anesthesiology. We will also charge the ad hoc committee on the Annual Meeting with developing programs to attract junior faculty, fellows and residents. Finally, AUA will continue to fund research through our annual contribution to FAER.

The strategic plan is designed to increase our society's visibility and value in academic anesthesiology. A Web Site Committee chaired by Andy Kofke, M.D., will expand the content of our Web site. We will increase our collaboration with the ASA, with FAER, and with anesthesiology journals. Although the Council did not want the AUA to become a political advocacy society, we will develop white papers in cooperation with other stakeholders on issues relevant to academic anesthesiology and will ask our members to support initiatives that directly affect such issues.



Ronald G. Pearl, M.D., Ph.D.

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Finally, the Council recognized that implementation of a strategic plan is difficult with rapid turnover in leadership. In contrast to most societies, Council members serve limited terms, and there is no succession plan from Council to officer or from officer to president. Thus, the president-elect often has not had recent active involvement in the society's leadership. A Bylaws Committee chaired by myself will be created to develop a succession plan to allow greater organizational continuity.

Implementing the strategic plan will therefore require developing a new Annual Meeting Committee, Membership Committee, Bylaws Committee, Web Site Committee, and a Committee on Junior Faculty. I encourage members to participate, and I welcome nominations for these roles.

Please plan on attending our next Annual Meeting, which is hosted by the University of Colorado in Denver on April 8-10.

## AUA Strategic Goals

1. Institute succession planning in the AUA leadership structure to achieve more organizational continuity.
2. Increase coordination among the Council, Educational Advisory Board (EAB) and Scientific Advisory Board (SAB).
3. Review the format, structure, and content of the Annual Meeting and make improvements as indicated.
4. Review criteria for AUA membership and make any changes deemed warranted.
5. Increase the participation of AUA members in the activities of the Association.
6. Increase opportunities for junior academic anesthesiologists, fellows and residents interested in careers in academia to become involved in the Association.
7. Increase AUA's visibility and improve its image in the academic and scientific community.
8. Conduct advocacy activities on behalf of academic anesthesiology.

## We Need Your Help for Newsletter and Web Site Committee!

W. Andrew Kofke, M.D., M.B.A.  
AUA Update Editor

The AUA Council has authorized the formation of an AUA Newsletter and Web site Committee. I don't have the wherewithal to do everything, and I know many AUA members have skills and interests that could be put to good use for the goals of this committee. We are looking for AUA members who would be willing to oversee or contribute to the following:

**Society reports:** Contact officers in other societies with potential impact on academic anesthesiology. Solicit reports from officers in a rotating fashion, keeping AUA members abreast of goings-on in other societies.

**Focus on members:** Conduct interviews with accomplished AUA members. Try to give the membership insights into their backgrounds, important influences on them, and generally what makes them tick. Give us the information we need to emulate their success. Once-a-year article.

**Tech tips:** Take responsibility for a short column written by you or commissioned by you on topics of interest to the membership that have to do with advances in computer and IT technology. Article for each issue.

**Cartoon editorials:** Make a point with a figure, photo or hand-drawn cartoon. One for each issue.

**Meeting reports:** Provide brief summaries of highlights of the annual AUA and ASA meetings.

**Academic anesthesiology in the news.** Canvass the Web for news items about or relevant to academic anesthesiology. Article for each issue.

**Political news and advocacy:** Keep the membership abreast of legislative and political events of interest to membership. Tell us any advocacy things we need to be supporting or doing. Articles as needed.

**Web site and high-tech communications overseer:** Work with AUA headquarters on Web site improvements. The ASA is offering to help with development of an AUA Facebook interface system.... for those really connected members. This and things like it could fall under this person's purview.

If you are interested, let me know at [kofkea@uphs.upenn.edu](mailto:kofkea@uphs.upenn.edu).



W. Andrew Kofke, M.D., M.B.A.

# Data Exchange in the Information Age: Creation of the Anesthesia Quality Institute

*Richard P. Dutton, M.D., M.B.A.  
Executive Director  
Anesthesia Quality Institute*

**T**he Anesthesia Quality Institute (AQI) is a non-profit 501(c)3 corporation formed with seed money from the American Society of Anesthesiologists (ASA) to serve as a clearing house of information for the specialty. The purpose is to leverage the tools and connectivity of the Information Age to improve the safety and efficiency of anesthesia practice. Unlike the Anesthesia Patient Safety Foundation (APSF), the Foundation for Anesthesia Education and Research (FAER) or the data projects of the subspecialty societies, the AQI is tasked with collection and dissemination of data across the breadth of anesthesia practice in the United States, including groups from the largest universities to the smallest private practices. This will be accomplished by creation and administration of the National Anesthesia Clinical Outcomes Registry (NACOR).

Unlike the National Surgical Quality Improvement Project (NSQIP) of the American College of Surgeons, the NACOR will be broadly inclusive in pursuit of anesthesia data. NSQIP conducts focused reviews and abstraction of randomly selected cases from participating institutions, at considerable cost in time and to workers. This has made it impractical for all but large centers to support. While the data gathered is useful, it does not represent surgical practice at the ground level. NACOR, in contrast, will be based on the continuous, passive capture of digitized information from anesthesia billing systems, quality management programs, hospital information technology platforms, and Anesthesia Information Management Systems (AIMS). Working through vendors of these products, NACOR will build a database that begins with simple practice and case demographic information and then works iteratively “upward” toward more sophisticated clinical outcome and risk adjustment information. In this way, it is intended to parallel — and to some degree, influence — the “digitization” of medicine.

At the level of the individual practitioner, the AQI will solve a number of pressing problems. It will provide a common data collection and reporting format that will meet the needs of MOCA recertification, the Surgical Care Improvement Project, hospital quality management efforts (including survey by The Joint Commission), participation in federal data collections, and subspecialty registry projects organized by the Society of Cardiovascular Anesthesia, the Society for Pediatric Anesthesia, the Society for Obstetric Anesthesia and Perinatology, the Society for Ambulatory Anesthesia, and others. The data itself will provide important benchmarking for both quality management and business applications, and participation in the AQI will open an educational channel that will be used to foster adoption of best practices across the specialty. For vendors of anesthesia information technology, the AQI will help to standardize formats and definitions and will encourage the dissemination of electronic

platforms for collecting and reporting data.

At the national level, the AQI will provide demographic and “denominator” data to inform ASA leadership efforts and provide context for the more focused efforts of the APSF, FAER and the Closed Claims project. Data in hand, it will be possible to influence important discussions in the Centers for Medicare & Medicaid Services on the most appropriate performance standards for

perioperative care. In an era of steadily increasing enthusiasm (and federal pressure) for comparative effectiveness research and adoption of electronic health care records, the AQI and the NACOR will provide credibility to the ASA in its efforts to guide the debate toward sensible standards with the greatest chance of providing benefit to our patients. Linkage with the Surgical Quality Alliance, a similar project just launched by a consortium of surgical societies, and the data efforts of the Association of Operating Room Nurses will paint a picture of the perioperative experience that includes both detailed process data and long-term functional outcomes.

As a research tool, the NACOR will offer academic anesthesiologists a new and different resource for understanding clinical practice. In much the way that the National Trauma Data Bank and the Society for Thoracic Surgeons database have fostered an increased understanding of outcomes in the surgical specialties, the NACOR will provide a global look at anesthesia over time. Indeed, it is a strategy of the AQI to seek financial support through grants and contracts from federal agencies and private foundations anxious to build information technology infrastructure nationwide. This will lead to a series of hypothesis-driven studies leveraging the data-capture mechanics of NACOR to produce increased understanding of controversial areas of anesthesia practice. Examples include the comparative effectiveness of pain procedures, the benefit of monitoring standards in outpatient anesthesia and the appropriate threshold for blood transfusion during trauma and emergency surgeries. As a resource for contributing anesthesiologists and their practices, the NACOR will become the largest and most important “data mine” in our specialty, with the potential to contribute in part or whole to dozens of research projects in the next decade.

Although still in infancy, the AQI is growing rapidly. The technology for collecting and warehousing data is in place, alpha test sites are being recruited, data bridges are under



*Richard P. Dutton, M.D., M.B.A.*

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# Should Anesthesiologist Work Hours Be Limited?

Robert Gaiser, M.D., M.S.Ed.  
Professor of Anesthesiology and Critical Care  
Hospital of the University of Pennsylvania

The anesthesiologist has been frequently compared to an airline pilot. Both have safety in the forefront. Also, in both professions, the person receiving the service has little idea what is involved but does know it is risky. Many state that the similarity ends with the fact that if a mistake is made, the pilot also suffers the consequences, as compared to the anesthesiologist. However, there is also another important difference. To guard against pilot fatigue, which may result in unsafe flying conditions, the Federal Aviation Administration requires airlines to provide pilots with at least eight hours of uninterrupted rest in a 24-hour period. Unlike airline pilots, anesthesiologists are allowed to work more than 16 hours. It is surprising that two professions with so many similarities would have this one major difference.

## Patient Safety

Airline pilots have restricted duty hours for passenger safety. There is a perception that limiting the number of hours worked by a physician would improve patient safety. Chen et al. confirmed this perception by surveying 180 attending physicians concerning work hours, fatigue and quality of care.<sup>1</sup> Of the respondents, 73 percent felt that work-hour limitations would be beneficial to quality of life, and 60 percent felt that limitations would be beneficial to patient care. In this cohort of attending physicians, one-quarter reported medical errors due to fatigue while 30 percent reported incorrect orders being written due to fatigue. Based upon this survey, a significant number of patients were being harmed because of physician fatigue. As this study relied on self-reporting, it is not possible to determine the severity of the error.

This perception of the link between medical error and fatigue exists in the anesthesiology literature. In a survey sent to 22,000 anesthesiologists and anesthesiology residents and 24,000 nurse anesthetists in 1988, respondents were asked about duty hours and errors in management.<sup>2</sup> With an overall response rate of 3,000, the majority felt that they work occasionally beyond their perceived self-limitations. Even more impressive was the fact that 65 percent of respondents reported that they recalled having made an error in the administration of anesthesia that they attributed to fatigue. Clearly, the perception that fatigue increases the possibility of error is common among anesthesia providers. This perception is supported by responses to surveys. Does actual evidence beyond recall exist?

There are several means to study the effect of fatigue upon medical care. One approach would be to examine the before-and-after effect of duty hour restriction upon patient outcome. In 2003, the Accreditation Council for Graduate Medical Education instituted duty hour restriction upon resident physicians. These restrictions included one day off in seven, 10 hours rest between shifts, and limit of hours involved in call. While the specialty of anesthesiology has not studied the effect of duty hour restriction, others have. In neurology, there was no change in outcomes following stroke in teaching hospitals after the

implementation of duty hours.<sup>3</sup> When otorhinolaryngologists examined 30-day readmission rate, in-hospital mortality and patient's length of stay, the implementation of duty hour restriction had no impact on these measures.<sup>4</sup>

Another means to study the impact of fatigue upon performance would be to observe a group of physicians following call. In a study of 33 anesthesiologists aged 26-42 years, reaction tests to various stimuli upon a computer were measured.<sup>5</sup> For these computer tests, there was a > 15 percent deterioration in response time and a marked decrease in accuracy. These anesthesiologists were not performing as well after a 24-hour duty shift. The major criticism of this study is that anesthesia is quite different than responding to a computer stimulus. The important question is whether this decrease in response accuracy translates to an effect on anesthetic management.

While the ability to measure the effect on patient care is difficult, it is possible to study anesthesiologists following a 24-hour call period in a simulated anesthetic. Twelve anesthesia residents performed a four-hour anesthetic rested and after a 25-hour continuous work shift.<sup>6</sup> The residents were tested for vigilance by responding to a stimulus and to changes in the patient's hemodynamic status. While non-patient care-related tasks demonstrated a decrease in performance, there was no difference in clinical management and response between the well-rested time period and the fatigued one. There was an impairment of mood, but it did not affect the clinical response. This finding was confirmed by another study in which anesthesiologists who worked 24-hour shifts were compared to surgeons and pediatricians who worked 36-hour shifts.<sup>7</sup> Simulator performance by anesthesia, surgical and pediatric physicians were not impaired by an on-call period. Despite the reporting of medical errors by anesthesiologists in surveys and attributing this error to fatigue, it was not possible to document the occurrence of medical errors in the simulator following a 24-hour call period.

Despite the failure of simulation to document an increase in error, there has been one area of anesthesia where an increase in patient harm was documented. In 1,489 consecutive epidural analgesics for labor, there were 12 dural punctures.<sup>8</sup> The risk of dural puncture at night was higher than during the day (RR 6.33; 95 percent Confidence Interval 1.39-28.80). While this statistic may raise the concern of the impact of fatigue upon the performance of epidural catheter placement, a closer examination of the data suggests otherwise. In this institution, night coverage was difficult to find and relied at times upon an intensivist who did not perform epidural catheter placement on a frequent basis. The majority of dural punctures occurred during this person's shift, suggesting it may not have been fatigue



Robert Gaiser, M.D., M.S.Ed

as the causative factor. It seems reasonable to conclude that experience was more influential on the greater dural puncture incidence at night.

## Physician Safety

Despite the perception that patients are harmed because of fatigue of the anesthesiologist, the data to confirm this finding is scant. In fact, simulation suggests that fatigue does not pose a risk to patient care. Although the patient may not be harmed, the other person in this relationship is not considered. Fatigue has a major impact on the wellness of the provider. The average amount of time spent sleeping has an inverse correlation with the risk of hypertension and stroke.<sup>9</sup> Those individuals who are sleeping less have a higher incidence of these two ailments. Fatigue affects not only physical health but also mental health. Sleep deprivation was a major source of stress for residents.<sup>10</sup> Stress has been linked to substance abuse. In a specialty with such a high incidence of substance abuse (such as in anesthesiology), factors that decrease the incidence should be endorsed. One means would be to limit work hours and call. Further proof of the effect of fatigue on health comes from the examination of cause-specific mortality risks of anesthesiologists.<sup>11</sup> When compared to internists, anesthesiologists had an increased risk of drug-related death (RR 2.79) and death from cerebrovascular disease (RR 1.39). Fatigue has been linked to stroke; fatigue in the anesthesiologist may account for the higher risk of mortality from cerebrovascular disease. In regard to substance abuse, the risk of drug-related death was highest in the first five years after medical school graduation. This time period is also the one with the greatest frequency of call due to scheduling or to volunteering for supplemental income. Such data suggest that limiting hours for anesthesiologists may improve wellness.

Fatigue also impacts the wellness of the anesthesiologist in other ways. A survey of 550 Finnish anesthesiologists was conducted.<sup>12</sup> The mean age of the respondents was 47 years with 69 percent respondents having on-call responsibilities (on average, call three times per month). The frequency and duration of call was associated with stress and burnout. A more concerning finding was that 25 percent of all respondents had thought of committing suicide and 2 percent had seriously planned it. Suicidal tendency was associated with frequency of call and hours worked. Call and long work hours may affect the potential for suicide. Perhaps the higher risk of suicide in anesthesiologists compared to internists (RR 1.45) may be linked to the stress and burnout from call and long work shifts.<sup>11</sup> Again, limiting work shifts may improve the wellness of anesthesiologists.

Finally, another argument for limiting work shifts concerns the safety of the provider and the general population. The concern for safety does not arise from the provision of anesthesia by a fatigued anesthesiologist, but rather when this fatigued anesthesiologist drives home following a 24-hour shift. In this case, the provider is operating a vehicle that may result in harm to the driver or to others. In emergency medicine residents, 75 percent of motor vehicle accidents and 80 percent of near crashes followed the night shift.<sup>13</sup> Simulation data confirms that the anesthesiologist may perform anesthesia at an acceptable level when fatigued but performs at a lower level for monotonous tasks. This decrease in response time may be applied to driving.

On a discussion board concerning fatigued driving, one woman whose son was killed by a fatigued driver stated, "Your job as a doctor is to SAVE lives, not take them. YOU have a CHOICE." The discussant was encouraging fatigued physicians to rest before driving. It may be better to prevent fatigue by limiting the length of shifts. Of note, several states have laws concerning fatigued driving. In the state of New Jersey, it is possible to be convicted of criminal homicide if a person drives following a 24-hour period without sleep and if the other person in the accident is killed. The implication of this law is that an anesthesiologist who works for 24 hours and is involved in a motor vehicle accident in which another is killed may be convicted of criminal homicide, a crime punishable by jail time. The anesthesia group who scheduled the individual to take the call is also liable. According to [insurancejournal.com](http://insurancejournal.com), the law raises the specter of corporate liability in cases of employees who work 24-hour on-call periods at their employer's request.

## Conclusion

Anesthesiologists are like airline pilots. Both are meticulous about safety. It is time to become even more like pilots by limiting work shifts for anesthesiologists. Interestingly, many feel that such a limitation improves patient safety. While surveys support such a contention, the data from simulation does not. Fatigued anesthesiologists are as capable as well rested anesthesiologists to provide anesthesia. The fatigued anesthesiologist does not perform as well when asked to perform monotonous tasks. Fatigue is responsible for motor vehicle accidents and places both the anesthesiologist and public at risk. If the anesthesiologist survives a motor vehicle accident following a 24-hour call but the other person does not, the anesthesiologist is at risk of being convicted of criminal homicide. Fatigue does not improve wellness. Fatigue is linked to physical ailments such as hypertension and cerebrovascular disease as well as emotional ailments, such as substance abuse, and suicide. It is known that these problems are much more common in anesthesiologists. It is time to take the important step toward the wellness of the anesthesiologist by limiting work shifts and to share another commonality with airline pilots. Many are thinking that such a drastic action will be expensive. Rather than thinking, "Can we afford it?", it is better to be asking, "Can we afford not to?"

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# Scientific Advisory Board Report: The Outcomes Research Consortium

Andrea M. Kurz, M.D.  
Professor & Vice Chair  
Anesthesiology Institute  
Outcomes Research  
Cleveland Clinic

**O**utcomes research seeks to understand the end results of particular health care practices and interventions. Outcomes include effects that people experience and care about, such as change in the ability to function. In particular, for individuals with chronic conditions — where cure is not always possible — end results include quality of life as well as mortality. By linking the care people get to end effects, outcomes research has become key to developing better ways to monitor and improve the quality of care. While 20 years ago most anesthesia research focused on immediate perioperative outcomes, mainly testing safety of anesthetics, there is increasing evidence that intraoperative anesthetic management has long-term consequences, affecting patients months and years after surgery. This is especially exciting considering that most patients are under our care only for a very restricted time period. It also highlights the importance of large, randomized, controlled trials, which are the gold standard for providing clinical evidence.

## Outcomes Research Consortium

The **OUTCOMES RESEARCH CONSORTIUM** was formed in 1990 at the University of California in San Francisco and is now a department of the Cleveland Clinic's Anesthesiology Institute. We have two decades of experience with clinical research.

The Consortium is not a society, foundation or company but rather an international academic collaboration of 95 university-based investigators with a common interest in anesthesia-related clinical research. An advantage of this broad collaboration is that we have access to every surgical and critical care population. Consequently, we are able to rapidly initiate and complete research protocols. The Consortium is currently involved in more than 100 clinical studies, including large multicenter outcome trials.

The Consortium publishes about 60 full papers each year, and consortium papers are cited more than 1,100 times each year [Figure 1, page 7].

Members of the Consortium have trained more than 80 research fellows and dozens of medical and graduate students (each for at least a full year). Most fellows have graduated to positions in academic institutions and four subsequently chaired anesthesia departments.

## Current Research Themes

Surgical treatment outcomes have improved considerably within the last decades in large part due to advances in anesthesia, surgical technique and perioperative care. More recently, dedicated anesthetic interventions were found to have a

major impact on short-term and long-term patient outcome. Our studies focus on generating evidence-based knowledge in regard to perioperative interventions likely to improve patient outcome.

### Perioperative Inflammation

Surgery and the associated tissue injury evoke myriad endocrine and metabolic changes collectively considered the surgical stress response. This systemic inflammatory response is associated with numerous systemic postoperative complications, including fatigue, mood disturbances, ileus, fever, hypercoagulability and hyperalgesia.

Various perioperative interventions ameliorate the surgical stress response and might therefore improve patient outcome. Interventions currently under investigation by our group (in a number of studies in different patient populations) are perioperative tight glucose control (NCT 00524472), depth of anesthesia, alpha agonists (NCT 00561678) and lidocaine (NCT 00840918) and steroid administration. Outcomes of interest include 30-day postoperative morbidity, atrial fibrillation, postoperative delirium and cognitive dysfunction, functional status and chronic pain.

### Wound Complications

Complications associated with wound infection and inadequate healing are common and serious consequences of anesthesia and surgery. Oxidative killing by neutrophils is the primary defense against surgical pathogens; good tissue oxygenation also improves scar formation. Treatments that increase tissue oxygen and perfusion might therefore reduce the risk of infection and related complications. Such treatments include normothermia, optimization of perioperative fluid management (to allow adequate perfusion of central and peripheral tissues) (NCT 00517127), hypercapnia (NCT 00273377), and prolonged postoperative supplemental oxygen administration. (NCT 00315822)

### Cancer Recurrence

At least three perioperative factors shift the balance toward progression of residual disease after potentially curative cancer surgery: 1) Surgery per se depresses cell-mediated immunity, reduces concentrations of tumor-related anti-angiogenic factors (e.g., angiostatin and endostatin), increases concentrations of pro-angiogenic factors such as VEGF, and releases growth factors that promote local and distant growth of malignant tissue. 2) Anesthesia impairs numerous immune functions, including



Andrea M. Kurz, M.D.

those of neutrophils, macrophages, dendritic cells, T-cell and natural killer cells. 3) Opioid analgesics inhibit both cellular and humoral immune function in humans, increase angiogenesis and promote breast tumor growth in rodents. Regional analgesia attenuates or prevents each of these adverse effects by largely preventing the neuroendocrine surgical stress response, eliminating or reducing the need for general anesthesia and minimizing opioid requirement. Animal and retrospective human studies suggest that regional analgesia may reduce the risk of cancer recurrence. We are thus currently conducting large outcome trials to test the hypothesis that regional analgesia reduces recurrence after breast (NCT 00418457), colon (NCT 00684229) and lung cancer surgery.

### Thermoregulation

Previous Consortium studies have shown that even mild perioperative hypothermia increases the risk of surgical wound infection, augments bleeding, and prolongs duration of recovery and hospitalization. Maintaining normothermia is thus included in the current Surgical Care Improvement Project and in the Physicians Quality Reporting Initiative. We continue to evaluate systems for measuring perioperative temperature and for keeping surgical patients warm. In contrast to the benefits of perioperative normothermia, there is now good evidence that mild hypothermia is therapeutic at least for asphyxiated neonates and cardiac arrest victims. We thus also evaluate pharmacologic approaches to inducing thermal tolerance.

### Comparative Effectiveness

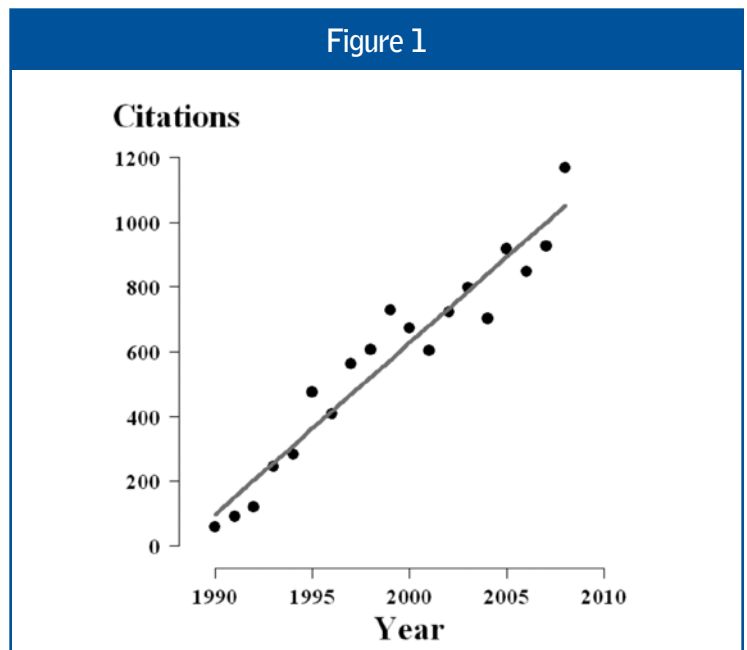
While randomized trials remain the gold standard for clinical evidence, results obtained from such efficacy trials often generalize poorly. Furthermore, conventional randomized trials are limited in that mortality and other serious complications are usually too rare to practically address. There is thus increasing interest in clinical effectiveness studies in which interventions are evaluated over an entire health care environment.

The usual approach to effectiveness studies are historically controlled effectiveness approaches. Benefits are evaluated, if at all, by comparing before-and-after results. Major difficulties with this approach include: 1) unrelated time-dependent practice changes that improve outcomes; 2) unrecognized confounding factors; and 3) the Hawthorne effect. Before-and-after comparisons are therefore inherently weak — with the consequence that effectiveness interventions are rarely rigorously

evaluated. We are thus exploring innovative randomized effectiveness studies in which decision support systems, combined with electronic anesthesia records, will be used to randomize nearly all surgical patients at the Cleveland Clinic Main Campus to various interventions.

We have observed that patients who are sensitive to anesthesia do poorly. For example, the combination of low MAC and low MAP is a strong predictor for mortality. When combined with low BIS, mortality was even greater. The combination of low MAC, low MAP and low BIS is thus an ominous “Triple Low” that is associated with a tripled risk of mortality at 30 days and doubled risk of mortality at one year. This result is especially concerning since the average low values for each state were well within the range that many anesthesiologists tolerate routinely. Our first randomized effectiveness trial will thus test the hypothesis that early intervention to maintain MAP reduces mortality.

Figure 1



Consortium papers are cited ~1,150 times per year. Among these, >450 citations per year are to papers in *Anesthesiology*. 22 papers have been cited more than 100 times; 60 others have been cited more than 50 times.

## Should Anesthesiologist Work Hours Be Limited?

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# AUA

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Association of University Anesthesiologists  
520 N. Northwest Highway  
Park Ridge, IL 60068-2573  
(847) 825-5586 fax (847) 825-5658  
[www.auahq.org](http://www.auahq.org)

## Data Exchange in the Information Age: Creation of the Anesthesia Quality Institute

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construction from half a dozen IT vendors, and the first case-specific data will begin accumulating in January 2010. Research fellowships with the AQI will be available in July, about the same time as the first NACOR reports come out. Change comes quickly in the Information Age, and knowledge is power. This is the vision of the AQI: Information. Knowledge. Change. The power to improve the care of our patients.

More information about the AQI and NACOR, including a contact address, is available through the ASA Web site, [www.ASAhq.org](http://www.ASAhq.org) then clicking on the "Anesthesia Quality Institute" button.

## Mark Your Calendar!

### April 8-10, 2010

### 57<sup>th</sup> Annual Meeting

### Grand Hyatt Denver Denver, Colorado

## Wash hands between cases!

