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NEWSLETTER

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APSF Workshop Recommends New Standards

"When the pulse oximeter is utilized, the variable pitch pulse tone and the low threshold alarm must be audible. When capnography is utilized, a capnograph alarm for hypoventilation must give an audible signal."

by Michael A. Olympio, MD

On Friday, October 22, 2004, the APSF Board of Directors' Workshop, which I moderated, was convened at the Riviera Hotel in Las Vegas, NV. A host of distinguished speakers presented their cases in consideration of an APSF initiative regarding the use of the audible beep tone from the pulse oximeter and one other audible physiological alarm. Together with leadership from the APSF Corporate Council, 6 breakout groups debated the proposal that these be recommended as a new standard of care for intraoperative monitoring. A unanimous endorsement of the APSF initiative was obtained. Based on the deliberations of the Workshop, the APSF Executive Committee met the following day and drafted recommendations regarding audible alarms for consideration by those organizations that produce standards, guidelines and practice advisories in anesthesia.

The workshop began with a dramatic introduction by APSF President Dr. Robert K. Stoelting, who presented testimonials regarding anesthesia practitioners who silenced all audible tones and alarms, such actions leading to the occurrence of death or brain damage. Reference was made to a published account of such tragedies as detailed by Dr. Ann S. Lofsky, member of the Board of Governers and chairperson of the Insurance Committee at The Doctors Company of Napa, CA. Dr. Stoelting pointed out that the ASA Standards for Basic Anesthetic Monitoring do not address audible tones and alarms except for one: disconnection of the breathing circuit. He charged the workshop participants to complete their deliberations with a recommendation that the ASA Committee on Standards of Care adopt a new standard for using the audible tone and one other audible physiological alarm. Dr. Stoelting then played a portion of the CBS *20/20* documentary "Deep Sleep," recorded some 20 years ago, which is dramatically pertinent today in its rendition of horrible anesthetic disasters that went undetected for the lack of audible monitors.

Dr. Robert A. Caplan, well known for his work on the ASA Closed Claims Project, and member of the APSF Executive Committee, presented new closed-claims data for this workshop that outlined the significance of the problem. Of 6,448 reviewed cases from 1970 to 2002, there were 26 alarm-related injury claims and the pulse oximeter was frequently involved. Most (88%) of the incidents occurred in the operating room and during routine surgical procedures. In 54% of the cases the alarm was turned off, while in 31% the monitor was absent or broken. In 71% of cases, the monitor was on, but the alarm had been turned off. In an additional 29% of cases, both the alarm and monitor had been turned off. Of the 26 alarm-related injuries, 88% resulted in death or brain damage with a median payment of $449,941. In 5 out of 7 claims since 1990, the alarm was either turned off, or the audible tone was turned off at the surgeon's request. Dr. Caplan pointed out that, statistically speaking, the alarm-related injury was an infrequent problem, but it carried a large liability. He emphasized, however, that the next increment of statistical benefit to our patients would be achieved with the use of the audible tones and alarms from SpO_2 and $EtCO_2$ monitoring. In other words, if both the monitors and their audible tones were used, the percent of cumulative mistakes eliminated would increase from 31 to 88%.

We were pleased to announce the next speaker, Dr. Thomas Lavell, representing the JCAHO. He immediately addressed the decision by the JCAHO to rescind its 2003 National Patient Safety Goal to "Improve the effectiveness of clinical alarm systems," an explanation of which was published at: http://www.aami.org/publications/AAMINews/2004September/0904.jcaho.html. Dr. Lavell stated

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Dr. Robert Stoelting, APSF President, introduces New Clinical Alarms Initiative at the APSF workshop in Las Vegas, NV, on October 22, 2004.

President Reports on State of APSF

by Robert K. Stoelting, MD

As President of the Anesthesia Patient Safety Foundation (APSF), it is my privilege to report annually on the activities of the foundation during the past calendar year. I am pleased to report that 2004 has been a year of successes and advancement of exciting safety initiatives as APSF strives to fulfill our mission that no patient shall be harmed by anesthesia.

Current patient safety initiatives include 1) audible information signals on physiologic monitors, 2) Long-term outcome following anesthesia and surgery, 3) High Reliability Organization Theory as applied to the perioperative period, and 4) automated information systems and a common terminology, which is being created by the Data Dictionary Task Force.

Audible Information Signals

Monitoring the patient's physiologic function during anesthesia is intended to facilitate, but not replace, the vigilance of the anesthesia professional. In this regard, monitors may be viewed as adding an additional "safety net" to the constant vigilance during patient care. APSF believes that use of audible alarms on physiologic monitors should be incorporated into the monitoring standards of the American Society of Anesthesiologists and the American Association of Nurse Anesthetists. In October 2004, the APSF Board of Directors sponsored a workshop on the use of "Audible Tones and Alarms" during the perioperative period. Participants included clinicians and representatives of industry. Based on the discussions at this workshop, the APSF Executive Committee supports the use of the 1) audible variable pitch pulse tone from the pulse oximeter, 2) audible low threshold alarm from the pulse oximeter, and 3) when capnography is utilized, a capnograph alarm for hypoventilation that gives an audible signal.

Long-Term Outcome

The APSF sponsored an Expert Panel conference in September 2004, in Boston, MA, to discuss factors during anesthesia and surgery that might influence outcome months later. Thirty experts representing anesthesiology, surgery, cardiology, immunology, epidemiology, government, and accreditation agencies participated in the 2 days of discussions. David M. Gaba, MD, APSF secretary, served as principal investigator for the Expert Panel. The group arrived at areas of agreement that will serve as the basis for future analysis and action. These include 1) the need to reconsider the notion that the impact of anesthesia ends with the discharge from the Postanesthesia Care Unit, 2) the need for studies of large numbers of patients to better identify risk factors for adverse long-term as well as short-term outcomes, and 3) the need to better understand the role of inflammation, genetic profile of individual patients, impact of certain drugs on immune function, and anesthetic management on postoperative outcome. The APSF views the convergence of so many specialties focusing intensely on critical questions surrounding anesthesia and surgery as an important first step in better understanding patient safety factors that may ultimately influence long-term postoperative outcome.

High Reliability Organization Theory

The APSF introduced this initiative with a special issue of the *APSF Newsletter* and a Board of Directors Workshop in October 2003. A High Reliability Organization (HRO) accomplishes its mission while avoiding catastrophic events, despite significant hazards, dynamic tasks, times constraints, and complex technologies. Many of the features that characterize an HRO are applicable to the operating room environment and perioperative care. The APSF believes that anesthesia patient safety may be improved by applying HRO concepts and strategies to the practice of anesthesiology.

Automated Information Systems and Data Dictionary Task Force

The goal of the Data Dictionary Task Force (DDTF) (Terri G. Monk, MD, chair), has evolved from the task of creating a standardized terminology for use in automated information systems in the United States to one of creating a standardized terminology for anesthesia in the English-speaking world. The APSF and the Systematized Nomenclature of Medicine (SNOMED) have announced a collaboration agreement to utilize the DDTF to enhance the anesthesia content currently available in SNOMED Clinical Terms. The terms will be integrated into SNOMED's core content and will be available through the National Library of Medicine. The APSF is committed to encouraging the adoption of automated information systems as a key to providing better anesthesia care and collection of data that will contribute to best anesthesia practices and improved patient safety. The APSF believes that development of standardized clinical terminology will support documentation in the operating room, and thus improve real-time data collection and analysis to reduce anesthetic errors.

APSF Newsletter

During the past year, the *APSF Newsletter* with Robert C. Morell, MD, as editor, has undergone a number of innovations including conversion to a four-color format. A "Safety Information Response System" column known as *Dear SIRS* has been enthusiastically received by both clinicians and industry. New members of the editorial board include Rodney Lester, CRNA, PhD; Lori Lee, MD; and Glenn Murphy, MD. During the past year special articles in the *Newsletter* included a 2-part series on "Long-Term Outcome following Anesthesia and Surgery" and discussions of postoperative visual loss. In a future issue, the *Newsletter* will feature a discussion of fatigue and distractions in the operating room.

American Association of Nurse Anesthetists

As President of APSF, it has been my goal that all anesthesia professionals have access to the patient safety information contained in the quarterly publications of the *APSF Newsletter*. Beginning with this issue, the *APSF Newsletter* is being made available to all members of the AANA. I personally wish to acknowledge the efforts of AANA leadership, including Immediate Past President Tom

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APSF Appreciates Continued Support

"President," From Preceding Page

McKibban, CRNA; President Frank T. Maziarski, CRNA; and Executive Director Jeffery M. Beutler, CRNA, in making it possible for this to occur.

Continued Research Support

Sponsorship of anesthesia patient safety-related research continues to be a high priority for the APSF. In 2004, the APSF Committee on Scientific Evaluation, Sorin J. Brull, MD, chair, reviewed a total of 31 grant applications, and 4 grants were funded for up to $65,000 each. The APSF has decided to increase the maximum grant award to $75,000 beginning in 2005. As in the past, one of the grants received an additional $5,000 as the Ellison C. Pierce, Jr., MD, Research Award recipient.

Support of Future Initiatives

Financial support of the APSF is key to continued successes in pursuing patient safety initiatives. Contributions from individuals, corporations, anesthesia groups, national, and state societies are critically important. The generous financial support from our founding sponsor, the American Society of Anesthesiologists, is vital for the continued ability of APSF to provide education, support research, and distribute information related to anesthesia. All donors and their level of support are recognized in the *APSF Newsletter*. I believe that all can be proud of the results of their continued support of APSF.

As in the previous annual report, I wish to again reiterate the desire of the APSF Executive Committee to provide a broad-based consensus on anesthesia patient safety issues. We welcome comments and suggestions from all those who participate in the common goal of making anesthesia a safe experiences. There is still much to accomplish and everyone's participation is important and valued.

Best wishes for a prosperous and rewarding year 2005.

Robert K. Stoelting, MD
President, Anesthesia Patient Safety Foundation

The APSF wishes all a Happy Holiday Season and a Healthy New Year

TURN YOUR ALARMS ON!

Reprinted with permission from The Doctors Company.
by Ann S. Lofsky, MD

With the advent of sophisticated anesthesia machines incorporating comprehensive monitoring, it is easy to forget that serious anesthesia mishaps still can and do occur.

When patients sustain brain damage or die because of a major error by an anesthesiologist, these cases may properly be termed anesthetic "disasters." Reviews of recent disastrous cases have revealed many similarities. One striking finding is that most of these cases would probably never have occurred had the anesthesiologist activated and responded to the standard alarms on the pulse oximeter and end-tidal carbon dioxide monitors.

A 23-year-old healthy male presented for a laparoscopic bilateral inguinal hernia repair. It was the first such procedure this hospital had performed, so they decided to film it. It was an uneventful general anesthesia induction, and the patient was paralyzed with atracurium and maintained with isoflurane gas. At some point the anesthesiologist left the head of the bed so that he could watch the procedure on the video monitors and chat with the film crew. When the surgeon paused momentarily to switch sides, the anesthesiologist returned to the head of the bed and announced to everyone that the patient was in cardiopulmonary arrest. Unnoticed, the breathing circuit had become disconnected at the Y-connector under the drapes. All the alarms were flashing on the anesthesia machine, but they had apparently been silenced. This patient sustained severe permanent brain damage.

Many anesthesiologists today do not routinely use esophageal or precordial stethoscopes. If you are not looking directly at the monitors and their alarms have been silenced, you are essentially performing without a net. Frequently, alarms are intentionally silenced at the end of cases to prevent them from false-alarming when patients are disconnected for transport to recovery. Many monitors have alarms that must be manually reactivated at the beginning of a new anesthetic or else they will remain in the silent mode. Failure to perform this step can apparently be a fatal mistake.

A 32-year-old woman had a laparoscopic cholecystectomy performed under general anesthesia. At the surgeon's request, a plane film x-ray was shot during a cholangiogram. The anesthesiologist stopped the ventilator for the film. The x-ray technician was unable to remove the film because of its position beneath the table. The anesthesiologist attempted to help her, but found it difficult because the gears on the table had jammed. Finally, the x-ray was removed, and the surgical procedure recommenced. At some point, the anesthesiologist glanced at the EKG and noticed severe bradycardia. He realized he had never restarted the ventilator. This patient ultimately expired.

Today's operating rooms are routinely noisy, activity-filled spaces with plenty of distractions. It is common for people and equipment to move in and out of the OR while music plays and phone calls are answered. Despite our best attempts, no one can expect to remain 100 percent vigilant at all times. Your pulse oximeter and CO_2 alarms are your best defenses. Do not neglect them.

A 54-year-old man underwent an open reduction of an ankle fracture under spinal. The patient was spontaneously breathing, but snoring loudly. Toward the end of the case, the spinal appeared to be wearing off, and the patient was quite agitated. The anesthesiologist gave additional fentanyl and midazolam and silenced the pulse oximeter alarm because the patient kept knocking it off and it was alarming. He then went to the foot of the bed to see how much longer the case would be. He became engaged in a discussion with the surgeon while watching him close the incision. When the drapes were removed at the end of the case, the patient was noted to be profoundly cyanotic. There was an agonal rhythm on the EKG. This patient was resuscitated, but he sustained profound brain damage.

Leaving the head of the bed and turning off the pulse oximeter alarm appear to be a particularly dangerous combination. After reviewing cases like these over and over, I personally turn my pulse oximeter alarm on the instant a patient comes into the operating room, and I refuse to turn it off for anything. If it false-alarms because of Bovie or electrical interference, I stand with my finger on the alarm until the interference stops. If you think cases like these could never happen to you, think again. The anesthesiologists involved in the cases above all had good reputations within their hospitals and had never before been sued. Many anesthesiologists are understandably devastated after cases like these, and when interviewed make statements such as: "I just got distracted. It seemed like such a short time."

For the sake of your patients, your own peace of mind, and your careers—

TURN YOUR ALARMS ON!

Dr. Lofsky is a member of the Board of Governors and chairperson of the Insurance Committee of The Doctors Company of Napa, CA.

APSF Grant
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Abstracts on Patient Safety Presented at the 2004 American Society of Anesthesiologists Annual Meeting

by Glenn S. Murphy, MD, and Jeffery S. Vender, MD

Over 1,600 abstracts were presented at the 2004 American Society of Anesthesiologist Annual Meeting in Las Vegas, NV. As in previous years, a number of these abstracts examined issues directly related to patient safety. This brief review will highlight some of the important abstracts discussed at the meeting.

Postoperative Neurocognitive Dysfunction

Several investigators examined the incidence and causes of postoperative neurocognitive decline in elderly patients undergoing anesthesia and surgery. In an ongoing prospective study in 130 orthopedic patients older than 65 years of age, Jankowski et al. (A-40) examined the predictors and consequences of postoperative delirium. Neuropsychological and functional testing were performed preoperatively and 3 months postoperatively, and patients were examined daily throughout the hospital stay for the presence of postoperative delirium. Patients who developed postoperative delirium tended to be older and had fewer years of formal education. In addition, an association between postoperative delirium and other major complications (myocardial infarction, dysrhythmias) was observed. An investigation from the University of California (San Francisco) examined the influence of pain medications on postoperative delirium in patients ≥65 years of age scheduled for major noncardiac surgery (A-39). A structured interview was conducted preoperatively and for the first 2 days following surgery to detect the presence of delirium. Multivariate logistic regression analysis revealed age >80 and lower education level were independently associated with increased delirium risk. The use of oral narcotics was associated with a decreased risk of delirium (OR 0.44, CI 0.23-0.85); narcotics administered by other routes did not affect delirium risk. These findings suggest that the method of postoperative pain relief may influence the occurrence of delirium.

Monk and colleagues conducted a prospective, longitudinal study to evaluate the long-term effects of postoperative neurocognitive dysfunction in elderly patients (A-62). Using a battery of tests, the investigators examined 354 patients undergoing major noncardiac surgery preoperatively, at hospital discharge, 3 months, and 2 years after surgery. The cognitive deficit rate was 59% at hospital discharge, 34% at 3 months following surgery, and 42% at the 2-year measurement period. Analysis of the data revealed that cognitive decline at discharge was a significant predictor of long-term cognitive impairment. This well-designed study reveals that many elderly patients are discharged from the hospital with neurocognitive dysfunction, and that this dysfunction may persist for up to 2 years.

Investigators from Parma, Italy, conducted a prospective, randomized trial to evaluate the impact of interventions to improve regional cerebral oxygen saturation (rSO_2) on cognitive dysfunction in elderly patients presenting for abdominal surgery (A-61). In the intervention group, rSO_2 was maintained above 75% of preinduction values by increasing blood pressure, $PaCO_2$, and FiO_2, and by decreasing brain oxygen consumption with a bolus of propofol. In the control group, clinicians were blinded to rSO_2 data. In the intervention group, the incidence of postoperative cognitive decline was reduced (35%) and length of stay shortened (9 days), compared to the control group (54% and 13 days, respectively). The authors conclude that techniques to increase rSO_2 can potentially improve outcomes in elderly patients.

Use of Perioperative Beta-Blockers

The use of beta-blockers in the perioperative setting has been shown to reduce cardiac morbidity and mortality. Despite clear scientific evidence of the benefit of beta-blockers in appropriate patient populations, few hospitals have protocols for administration of beta-blockers, and many patients at risk for cardiac events do not receive these agents. Two studies from Yale University School of Medicine examined whether the publication of guidelines promoting the use of perioperative beta-blockade increased the use of the drugs at the institution. In the first investigation, data were collected on a cohort of patients (n=230) scheduled for intermediate-to high-risk noncardiac surgery prior to the publication of ACC/AHA guidelines (A-1302). These patients were compared to a similar cohort of subjects operated on following the publication of the guidelines. Nearly half of the patients in each group who were eligible to receive perioperative beta-blockers did not receive them. Approximately three-quarters of each cohort was evaluated by a medical service prior to surgery, yet beta-blocker therapy was recommended by only 51% of consultants. In a similar investigation, the medical records of patients undergoing major vascular surgery were reviewed prior to (n=172) and after (n=197) the publication of the ACC/AHA guidelines (A-204). As demonstrated in the previous investigation, only about one-half of eligible patients received beta-blockers perioperatively in each cohort. In addition, only a small percentage of patients in each group achieved target heart rates ≤60 bpm (22-29%) as recommended by the ACC/AHA. Vigoda et al. examined the resting heart rate of high-risk patients receiving beta-blockers in a preoperative clinic, and compared this to their average heart rate in the operating room (A-1381). Only 27% of patients on chronic beta-blocker therapy had resting heart rates ≤60 bpm in the preoperative clinic, and only 19% had a resting heart rate ≤60 and average intraoperative heart rate <66 bpm. These studies demonstrate that there has been little improvement in the use of beta-blockers in patients at risk for adverse cardiovascular events, and that only a minority of patients receiving this therapy are adequately beta-blocked.

Trace Anesthetic Gases

Current recommendations from OSHA and the ASA state that trace anesthetic gases should be monitored at all anesthetizing locations. Ohmura and colleagues measured trace gases in the patient wards of a cancer institute, a large general hospital, and a small community hospital (A-1329). Measurements were obtained in the morning and afternoon of 3 consecutive days in the operating rooms and in patient wards above and below the ORs. The highest levels of sevoflurane detected in the OR areas were 1.1-1.3 ppm, and in the patient wards, 1.2-1.6 ppm. Trace gases were consistently detected in the wards, even on floors several levels above and below the ORs. The results suggest that other areas of the hospital should be monitored for trace anesthetic gases.

Sleep Apnea

Patients with sleep apnea are at risk for adverse cardiovascular and respiratory events in the perioperative period. Previous studies suggest that a large percentage of patients with sleep apnea remain undiagnosed. In a study from Ontario, Canada, the authors examined the prevalence of sleep apnea in patients presenting for elective surgical procedures (A-13). The Berlin questionnaire was used in patients at a preoperative assessment clinic. This 9-item questionnaire has a high sensitivity and specificity for identifying patients at high-risk for sleep apnea in the primary care setting. The Berlin questionnaire identified 23.9% of all patients at the preoperative clinic as being high-risk for sleep apnea. It also identified all patients in whom a previous diagnosis of sleep apnea had been made. The authors conclude that approximately one-quarter of surgical patients are at high-risk for sleep apnea, and that the Berlin questionnaire can be used to identify those at risk.

Central Line Infection

Berenholtz et al. conducted a prospective cohort study in an intensive care unit setting to determine whether the introduction of a multifaceted systems intervention would reduce the incidence of catheter-related blood stream infections (A-3). All

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Guidelines Published for Determining Anesthesia Machine Obsolescence

by Jerry A. Dorsch, MD

(Reprinted with permission from the American Society of Anesthesiologists, Inc. ASA Newsletter, *September 2004, Volume 68, issue 9.)*

The Committee on Equipment and Facilities has developed guidelines for determining if an anesthesia machine is obsolete and therefore not be used.

The following is an abbreviated version of the guidelines. The complete text is available on the ASA Web site at: www.ASAhq.org/publicationsAndServices/machineobsolescense.pdf. Please share these guidelines with your colleagues and government and credentialing organizations, especially those that regulate office surgery.

Guidelines for Determining Anesthesia Machine Obsolescence

The following guidelines have been developed to assist anesthesia providers and other health care personnel, administrators and regulatory bodies in determining when an anesthesia machine is obsolete. Anesthesia equipment can become obsolete if essential components wear out and cannot be replaced. Equipment also may become obsolete as a result of changes in medical practices, changes in the training and experience of anesthesia providers and/or development of new safety features.

An anesthesia machine should not be considered obsolete solely because it has reached an arbitrary age. Furthermore a machine should not be expected to meet all of the performance and safety requirements specified in United States or international equipment standards published after the machine was manufactured. It is the responsibility of the anesthesia provider to determine if a machine's failure to meet newer standards represents a sufficient threat to patient safety to render the machine obsolete.

The **ASA Standards for Basic Anesthetic Monitoring** (www.ASAhq.org/publicationsAndServices/standards/02.pdf#2) apply to all anesthesia care. The equipment necessary to accomplish this monitoring may be integral to the anesthesia machine or separate from it. The criteria for defining obsolescence that are described in this document relate only to the gas and vapor delivery portion of the machine. Integral monitors (e.g., electrocardiograph, oxygen monitor, blood pressure monitor, pulse oximeter, carbon dioxide monitor) should be considered separately and are not addressed in these guidelines.

These guidelines apply only to existing machines and are not intended to unduly restrict the design of machines in the future. It is recognized that future machines may incorporate different safety mechanisms than those in use today to accomplish the same goals.

The guidelines are divided into absolute and relative criteria. Only the absolute criteria are presented here. If any of these criteria are present, the machine is by definition obsolete. The relative criteria are related to practice conditions. These relative criteria and the rationale for all the criteria can be found on the ASA Web site links mentioned above. These criteria should be shared with all component societies and other groups interested in anesthesia machine safety.

Absolute Criteria

An anesthesia machine shall be considered to be obsolete if any of the following criteria apply:

I. Lack of essential safety features

A. Minimum oxygen ratio device (O_2/N_2O proportioning system) on a machine that can deliver nitrous oxide;

B. Oxygen failure safety ("fail-safe") device;

C. Oxygen supply pressure failure alarm;

D. Vaporizer interlock device;

Note: This does not apply to an anesthesia machine that allows only one vaporizer to be mounted at a time.

Note: It may be possible to add a vaporizer interlock device to a machine.

E. Pin Index Safety System;

F. Noninterchangeable, gas-specific (e.g., Diameter Index Safety System [DISS]) connectors on the gas pipeline inlets.

II. Presence of Unacceptable Features

A. Measured flow (flowmeter-controlled) vaporizers (e.g., Copper Kettle, Verni-trol);

B. More than one flow control knob for a single gas delivered to the common gas outlet of the machine;

Note: This does not include the flow control knob for an auxiliary oxygen flowmeter.

C. Vaporizer with rotary concentration dial such that the anesthetic vapor concentration increases when the dial is turned clockwise;

Note: It may be possible to replace an unacceptable vaporizer without replacing the entire machine.

D. Connection(s) in scavenging system of the same (i.e., 15-mm or 22-mm) diameter as a breathing system connection.

Note: It may be possible to replace an unacceptable scavenging connection without replacing the entire machine.

III. Adequate Maintenance No Longer Possible

The manufacturer or certified service personnel will not or cannot service the machine with acceptable replacement parts so that it performs within the tolerances to which it was originally designed.

Note: Although a manufacturer may declare that its own subsidiaries will no longer service, support or certify a particular machine, the essential core components of the machine may still be serviceable.

Note: Obtaining acceptable replacement parts can be a problem. In some cases, it may be possible to obtain the parts from the party who supplied them to the machine manufacturer. Alternatively such parts may be obtained from machines that have already been taken out of service.

Note: When a manufacturer declares that it will no longer provide support for a machine, responsibility is typically transferred to the user (health care facility) and/or the third party who services the machine.

When it has been determined that a machine is obsolete, it should not be placed somewhere in the facility where it might be used clinically (for example, as an oxygen delivery device). A machine that has been determined to be obsolete should either be destroyed or donated to a worthy party (e.g., zoo, laboratory or developing country). If the latter course is followed, it would be prudent to obtain legal advice about potential liability relating to the donation. Also it is prudent to ensure that the recipient possesses the infrastructure (e.g., electrical power, medical gases), access to drugs and supplies (e.g., volatile anesthetics, circuits, replacement parts), technical expertise and training to safely use the machine.

Jerry A. Dorsch, MD, is Associate Professor Emeritus at the Mayo Clinic in Jacksonville, FL.

APSF Awards 4 Grants

by Soriin J. Brull, MD

The Anesthesia Patient Safety Foundation (APSF) is pleased to report that it continues to attract outstanding applications for funding. The scope of research areas continues to evolve, and this year the committee has made significant changes to the application process, while increasing the amount of research awards. The educational focus of APSF continues to include innovative methods of education and training to improve patient safety, development of educational content with application to patient safety, and development of testing of educational content to measure and improve safe delivery of perioperative anesthetic care.

The year 2004 witnessed several significant changes in the APSF: the website underwent a major redesign and with that, all of the applications to APSF starting with the funding cycle 2006 (application deadline of June 2005) will be accepted only electronically. The applications, as well as all the attachments, will be uploaded to the new APSF redesigned website, a process that will facilitate the application review by members of the Scientific Evaluation Committee, improve the timeliness of response, and facilitate transmission of reviewer feedback to the applicants.

Also of significance for the APSF grant application process is the increase in funding to $75,000 per accepted application. As in the previous funding cycle, and in addition to the **Clinical Research** and **Education and Training** content that is the major focus of the funding program, APSF continues to recognize the patriarch of what has become a patient safety culture in the United States and internationally, and one of the founding members of the foundation: Ellison C. "Jeep" Pierce, Jr., MD. The APSF Scientific Evaluation Committee continues to designate each year one of the funded proposals as the recipient of the prestigious **Ellison C. Pierce, Jr., MD, Research Award**. The award carries with it an additional, unrestricted prize of $5,000.

For the year 2004 (projects to be funded starting January 1, 2005), 4 grants were selected for financial support by the APSF Scientific Evaluation Committee (for names of committee members, please refer to the list in this issue). The APSF Scientific Evaluation Committee members were pleased to note that they reviewed 31 applications in the first round, 12 of which were selected for final review at the American Society of Anesthesiologists' (ASA) annual meeting in Las Vegas, NV. As in previous years, the grant submissions addressed areas of high priority in clinical anesthesia. The major objective of APSF is to stimulate the performance of studies that lead to prevention of mortality and morbidity from anesthesia mishaps.

Joseph J. Quinlan, MD, *Associate Professor, Department of Anesthesiology/CCM, University of Pittsburgh School of Medicine, Pittsburgh, PA.*

Geordie P. Grant, MD, *Associate Professor, Department of Anesthesiology, UMDNJ - New Jersey Medical School, Newark, NJ.*

Christopher M. Bernards, MD, *Virginia Mason Medical Center and Clinical Professor, Department of Anesthesiology, University of Washington School of Medicine, Seattle, WA.*

Samsun (Sem) Lampotang, PhD, *Associate Professor, Department of Anesthesiology, University of Florida, Gainesville, FL.*

A particular priority continues to be given to studies that address anesthetic problems in healthy patients, and to those studies that are broadly applicable and promise improved methods of patient safety with a defined and direct path to implementation into clinical care.

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Quinlan Wins E.C. Pierce, Jr., MD, Award

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The APSF Scientific Evaluation Committee met during the ASA annual meeting on October 23, 2004, in Las Vegas, NV, for final evaluation of the proposals. Of the 12 finalists, the members of the APSF Scientific Evaluation Committee selected 4 awardees:

Joseph J. Quinlan, MD — Associate Professor, Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA. His grant proposal is entitled *"Using Whole Task Human Simulation to Improve the Difficult Airway Management Skills of Practicing Anesthesiologists."* The objective of this proposal is to define a valid, reliable, and practical method of assessing competency in difficult airway management by practicing anesthesiologists.

Management of the difficult airway by practicing anesthesiologists is, fortunately, a low-frequency event, but one that carries with it significant patient morbidity and even mortality. Despite the great progress that has been made in the last decade in the armamentarium of equipment and techniques available to clinicians, and the addition of protocols and algorithms such as the ASA's "Guideline for Management of the Difficult Airway," there has been little formal study of the impact that these techniques, protocols, and algorithms have had on the frequency of morbidity and mortality of patients with difficult airways. Additionally, the process by which anesthesiology residents are trained in the management of the difficult airway, along with the associated airway management techniques, is highly variable, with the traditional "apprenticeship" method predominating.

The specific aims of this grant are to validate a whole-task, simulation-based evaluation method for determining difficult airway management competency; to use a described simulation evaluation method and assess the baseline skill levels of a large group of practicing anesthesiologists in difficult airway management; to objectively assess the effectiveness of instructing practicing anesthesiologists and clinically applying the ASA Difficult Airway Management Guidelines and its associated airway management techniques; and to describe a simulation evaluation method and assess the decay rate of difficult airway management skills over a subsequent 1- to 3-year period in order to determine the appropriate retraining period to maintain competency in airway management skills.

The proposal has significant patient safety implications since difficult airway management remains one of the leading causes of anesthetic deaths and malpractice claims in the United States. Developing a valid, reliable, and practical method for assessing competency in difficult airway management has significant patient safety implications and offers a premise for improved educational programs and evaluation methodologies. Other personnel listed in Dr. Quinlan's research proposal include Ryan Romeo, MD, coinvestigator; Thomas Dongilli, simulation specialist; and John Schaefer, MD, simulation expert.

In addition to receiving the requested funding of $65,000 for this project, Dr. Quinlan is also the recipient of the **Ellison C. Pierce, Jr., MD, Research Award**, which consists of an additional, unrestricted grant of $5,000.

Christopher M. Bernards, MD — Professor, Department of Anesthesiology, University of Washington School of Medicine, Seattle, WA; and Department of Anesthesiology, Virginia Mason Medical Center; Seattle WA. His grant proposal is entitled *"The Respiratory Effects of Opioids in Patients with Documented Obstructive Sleep Apnea."* The objective of this proposal is to measure all standard indices of obstructive sleep apnea (OSA) severity and to determine whether opioid administration worsens airway obstruction in subjects with OSA.

The specific aims of this proposal are to test the hypothesis that opioid analgesics increase the number and severity of episodes of airway obstruction in patients with documented OSA; to test the hypothesis that pain partially offsets the respiratory impact of opioid analgesics in patients with OSA; and to test the hypothesis that continuous positive airway pressure will effectively reverse the increased obstruction that occurs in OSA patients receiving opioid analgesics.

This proposal has significant patient safety implications, as it will begin to clarify the appropriate perioperative care of OSA patients by characterizing the respiratory effects of opioids in this at-risk patient population. Other personnel listed in Dr. Bernard's research proposal include Matthias Lee, MD, coinvestigator.

Geordie P. Grant, MD — Associate Professor, Department of Anesthesiology, UMDNJ-New Jersey Medical School, Newark, NJ. Her grant proposal is entitled *"The Effect of Position on Intraocular Pressure and Ocular Perfusion during Prone Spine Surgery."* The objective of this clinical proposal is an interdisciplinary effort to better define the factors that are responsible for ischemic optic neuropathy (ION) hypoperfusion syndrome during prone spine surgery.

The specific aims of this proposal are to determine the relationship between intraocular pressure and retinal oximetry as a measure of perfusion. The protocol will then compare the effect of a neutral head position to a 15-degree head-up tilt position on intraocular pressure and retinal oximetry in prone patients undergoing spine procedures lasting more than 5 hours. In addition, the investigators will test other factors that may impact on the incidence of ischemic optic neuropathy, such as preoperative hematocrit values, length of operation, mean arterial blood pressure during the operation, amount of blood loss, amount of serum hemoglobin and hematocrit levels, and the volume of crystalloid infused during the operation.

This proposal has significant patient safety implications, as it proposes to investigate a rare, but potentially devastating, intraoperative complication, that of ischemic optic neuropathy and postoperative blindness. Other personnel listed in Dr. Grant's research proposal include Roger Turbin, MD, Department of Ophthalmology, as coinvestigator; and Ben Szirth, PhD, Assistant Professor of Research, who will provide the ophthalmic measuring devices and the technical expertise with retinal oximetry.

Samsun (Sem) Lampotang, PhD — Associate Professor with Tenure, Department of Anesthesiology, University of Florida, Gainesville, FL. His education and training grant proposal is entitled *"Development and Evaluation of a Web Simulation and Workbook for the Anesthesia Machine Pre-Use Check."* The objective of this proposal is to address a very common omission, that of the failure to properly check the anesthesia machine prior to induction of anesthesia.

Dr. Lampotang proposes to implement a web-based, widely distributed simulation of the pre-use check that can be accessed without charge at the virtual anesthesia machine website. The investigator also proposes to create and make available, free of charge, a companion set of self-paced, structured exercises on the previous check that will become the second chapter of the anesthesia machine workbook. The evaluation component will be designed to answer 3 fundamental questions regarding the proposed educational material: its effectiveness, its usefulness, and its ability to alter anesthesia practice.

This proposal has significant patient safety implications, as multiple studies over the last 2 decades have shown that improper execution of the anesthesia machine pre-use check, as well as poor compliance with performing a pre-use check before induction of general anesthesia is one of the most common factors implicated in critical incidents. Other personnel listed in Dr. Lampotang's research proposal include David Lizdas, coinvestigator; Dietrich Gravenstein, MD, consultant; and Joachim S. Gravenstein, MD, consultant.

The members of the APSF Scientific Evaluation Committee wish to congratulate all of the investigators who submitted their work to APSF, whether or not their proposals were funded. We hope that the high quality of the accepted proposals and the important findings that will undoubtedly result from completion of these grant proposals will serve as a stimulus for others to submit research grants that will benefit all patients and our specialty.

Sorin J. Brull, MD, is chair of the APSF Scientific Evaluation Committee and Professor of Anesthesiology, Mayo Clinic College of Medicine, Jacksonville, FL.

APSF Booth Features Closed Claims Analysis of Central Line Injuries

by Joan M. Christie, MD

A closed claims analysis of injuries and liability related to central venous catheters was presented at the APSF/ASA booth during the October 2004 ASA meeting. The presentation was based on a paper which appeared in *Anesthesiology* in June 2004 by Domino, Cheney et al. Since 1988 the ASA Closed Claims Project has published evaluations of adverse anesthetic outcomes obtained from the closed files of US liability insurance companies. The adverse events occurred between 1970 and 2000 and reflect claims through 2002. The purpose of the review was to identify and describe patterns of injury and liability associated with central venous or pulmonary artery catheters.

Closed claim files contain source materials including medical records, depositions, peer and expert reviews, outcome reports, and so forth. A practicing anesthesiologist reviewer using standardized instructions extracts predefined information regarding the case and its outcome. All claims for injuries primarily resulting from a central catheter were analyzed. A primary damaging event involving a central catheter was identified by the on-site reviewer and confirmed by the Closed Claims Committee. The specific type of complication was next determined by 2 of the authors. Complications were subdivided into use/maintenance or access related. Access versus use complications were assessed for 4 periods: 1978-1983, 1984-1988, 1989-1993, and 1994-1999. Ultimately a statistical comparison before and after 1989 was made. Patient injuries were evaluated for theoretical preventability. While closed claims analysis does not directly measure risk, it does provide an opportunity to evaluate liability and injuries over time as practice patterns change.

The catheters were inserted by an anesthesiologist alone or with a surgeon in 90% of claims. Sixty-eight percent of claims for complications associated with use involved nonanesthesia providers. Compared to all other claims, central catheter (CC) claims occurred in more ASA 3-4 patients and involved a higher proportion of patients who died. The proportion of claims judged to be associated with substandard care was 45%.

Seventy-five percent of the complications were related to wire/catheter embolus, cardiac tamponade, carotid artery encroachment, or hemo/pneumothorax. Wire and catheter emboli occurred with both insertion and removal and were associated with more substandard care (82%) than other CC claims. Cardiac tamponade was more often associated with use/maintenance than insertion, and 81% resulted in the patient's death. In many claims the tamponade became symptomatic 1-5 days postoperatively. Thirty percent of the claims were in pediatric patients. In some cases an x-ray showing right atrial position of the catheter was obtained without subsequent adjustment by the anesthesiologist.

Carotid artery puncture/cannulation resulted in stroke, arterial surgery, and airway obstruction. Vessel recognition by ultrasound or transduction was not verified in any carotid artery case. Hemothorax occurred after subclavian and internal jugular cannulation resulting in a 93% death rate. Injuries to the subclavian vein/artery, innominate artery, and superior vena cava were seen. Pneumothorax had a lower proportion of death (15%) and frequently involved internal jugular cannulation. Pulmonary artery rupture involved a higher proportion of elderly women, was often not associated with cardiac surgery, and in all cases, resulted in death. The authors surmised that human factors were likely to be important in cases of wire/catheter embolus. They specifically observed an increased risk of cardiac tamponade in pediatric patients and stressed the importance of x-ray confirmation of catheter position after CC placement. Severe complications after cannulation of the carotid artery with even a 16 or 18 gauge cannulae were noted.

The proportion of claims for access injury increased and for use/maintenance decreased over the study decades. Almost half the CC claims were thought by the authors to be preventable. Techniques cited to possibly prevent injury included ultrasound guidance and pressure waveform monitoring during placement. Chest x-ray to detect wire/catheter fragments and confirm correct location was also suggested.

Thus the Closed Claims analysis presented at the Patient Safety Booth identified the types and severity of central catheter injuries resulting in claims over 3 decades. The analysis provides us with invaluable insight in an area of immense concern for anesthesiologists. The strength of the study lies in the conclusions regarding possible preventability and the resultant recommendations. We look forward to further efforts by the Closed Claims Study Group.

Dr. Christie is an Associate Professor of Anesthesiology at the University of South Florida's College of Medicine. She also serves on the APSF Board of Directors.

The APSF continues to accept and appreciate contributions.

Please make checks payable to the APSF and mail donations to:

Anesthesia Patient Safety Foundation (APSF)
520 N. Northwest Highway
Park Ridge, IL 60068-2573

Adherence to Protocol Can Reduce the Incidence of Catheter-Related Infections

"Abstracts," From Page 44

clinicians were educated about evidence-based infection control practices (hand hygiene, chlorhexidine skin prep, maximal barrier precautions, subclavian vein placement). In addition, a checklist to ensure adherence to these practices was used, a central line cart was created, providers were asked daily whether catheters could be removed, and nurses were empowered to stop the procedure if improper techniques were observed. The introduction of these interventions reduced the number of catheter-related blood stream infections from 11.3/1000 catheter days (prior to interventions) to 0/1000 catheter days. The findings from this study demonstrate that strict adherence to an evidence-based infection control policy can markedly reduce the incidence of catheter-related infections.

This brief review summarized only a small number of the important abstracts on patient safety presented at the 2004 Annual Meeting. To view other abstracts on patient safety, or to obtain further information on the abstracts discussed in this review, please visit the Anesthesiology website at www.anesthesiology.org.

Dr. Murphy is the Director of Cardiac Anesthesia at Evanston Northwestern Healthcare and an Assistant Professor at Northwestern University Medical School in Chicago. Dr. Vender is Chairman of the Department of Anesthesia at Evanston Northwestern Healthcare and a Professor at Northwestern University Medical School in Chicago.

Closed Claims Project Focuses on 3 Decades of Obstetric Complications

by Joanna M. Davies, MB BS, FRCA

Providing anesthesia to the obstetrical patient is a clinical challenge, due to both maternal physiologic changes as well as neonatal concerns. As the U.S. population has become increasingly obese over the past 30 years, obesity is becoming a common problem in the obstetric population and is associated with a higher complication rate.[1] More than 18% of American women have a BMI ≥30 kg/m^2.[1] The cesarean section rate is nearly three-fold in obese versus non-obese parturients, with a higher incidence of failed epidurals and difficult intubations.[1] We recently provided epidural anesthesia for a 640-pound woman undergoing an elective cesarean section. Despite considerable anxiety for the anesthesia team and a patchy block requiring ketamine sedation toward the end of the case, the mother and baby did well.

The ASA Closed Claims database has provided a wealth of information about malpractice claims involving anesthesia complications since the 1970s. We therefore used the Closed Claims database to examine complications in claims related to obstetric anesthesia and compared it with claims for non-obstetric patients.

Obstetric versus Non-Obstetric Outcomes

The proportion of obese patients in obstetric claims (25%) was greater than in non-obstetric claims (19%, $p<0.05$). The proportion of obese patients increased in both groups since the 1970s ($p<0.05$). Obstetric claims more often involved regional anesthesia (70%) than non-obstetric claims (20%, $p<0.05$). The proportion of claims associated with general anesthesia was lower in both groups in the 1990s (15% in obstetric and 65% in non-obstetric) compared to the 1970s ($p<0.05$). Eight percent of obstetric patients were ASA 3-5 compared to 24% of non-obstetric patients ($p<0.05$).

In the 1970s, maternal death accounted for 30% of obstetrics claims (Figure and Table). By the 1980s, the proportion of maternal death claims was reduced by 50% (not shown) and decreased even further by the 1990s (12%, $p<0.05$ vs. 1970s, Figure and Table). The proportion of claims for maternal brain damage was also lower in the obstetric group compared to the non-obstetric group in the 1990s (Table). Nerve injury became the most common complication in obstetric claims in the 1990s (20%), and had nearly doubled since the 1970s (11%, $p<0.05$, Figure and Table). Among obstetric claims, the number two complaint after nerve injury in the 1990s was headache (Figure and Table). Claims for back pain increased between the 1970s and 1990s ($p<0.05$, Table). On the other hand, the proportion of claims for aspiration pneumonitis in obstetric claims decreased significantly between the 1970s (9%) and the 1990s (1%, $p<0.05$, Figure and Table).

In the non-obstetric group, claims for patient death also decreased steadily but significantly over the decades (43% in the 1970s, 35% in the 1980s, and 23% in the 1990s, $p<0.05$), but still accounted for double that of maternal death in obstetric claims in the 1990s ($p<0.05$, Table). Nerve injury claims for the non-obstetric group increased in similar proportions to those in the obstetric group, while claims for headache, back pain, and aspiration pneumonitis remained low and stable over time (Table). In contrast, the proportion of claims for headache and back pain increased in the obstetric group, especially in the 1990s ($p<0.05$, Table).

Discussion

Proper interpretation of closed claims data requires the following caveat. The ASA Closed Claims database does not reflect the incidence of complications because the denominator (total number of anesthetics given) is unknown and the numerator (not all complications result in a claim) is incomplete. However, closed claims data do provide insight into the types and pattern of injuries that result in malpractice claims.

With the increasing use of regional anesthesia and the decreasing use of general anesthesia in obstetrics, it is not surprising that the proportion of claims for maternal death has dropped so dramatically since the 1970s. However, the proportion of claims for death in the non-obstetric group remained double that of the obstetric group in the 1990s. This may reflect the fact that the non-obstetric claims involved patients with more severe systemic disease and greater use of general anesthesia than in obstetric patients.

The introduction of sodium citrate, in the mid to late 1980s, to neutralize the acidity of stomach contents, and the decreased use of general anesthesia in obstetric anesthesia may be responsible for the small but significant drop in aspiration pneumonitis.

The increased use of regional techniques or nerve blocks throughout anesthesia practice may account for the similar increases in proportions of nerve injury claims over the decades in both the obstetric and non-obstetric groups. The anesthesiologist who administers any nerve block (neuroaxial or peripheral) may be implicated in a claim that is obstetric or surgical in origin.

Interestingly, obstetric claims involve a larger proportion of claims for more minor injuries, such as headache, back pain, and emotional distress, than in the non-obstetric population (Table). This may be related to the greater use of regional techniques for obstetric patients, but it may also reflect differing expectations between the 2 patient groups. Obstetric patients generally expect childbirth to be a joyous, natural, rather than medical experience, especially with modern methods of analgesia. One study reported, "It is clear that many of these patients were unhappy with the care provided and believed they had been ignored, mistreated, or assaulted."[2] Other studies have included the concepts that malpractice litigation may serve the purpose not only of reparation of injury and deterrence

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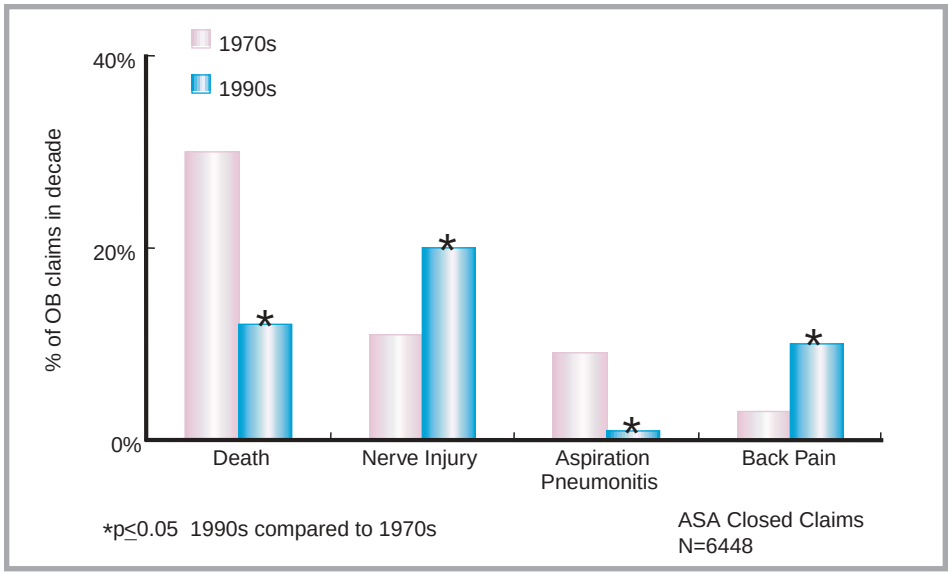
Trends in Complications in OB Claims 1970s vs. 1990s



Dear SIRS

Clinician Recognizes Importance of Machine Checkout

S AFETY
I NFORMATION
R ESPONSE
S YSTEM

Michael Olympio, MD, Chair of the APSF Committee on Technology and Co-Founder of the SIRS Initiative.

Dear SIRS refers to the **Safety Information Response System**. The purpose of this column is to expeditiously communicate technology-related safety concerns raised by our readers, with input and responses from manufacturers and industry representatives. This process was developed by Drs. Michael Olympio, Chair of the Committee on Technology, and Robert Morell, Editor of this newsletter. Dr. Olympio is overseeing the column and coordinating the readers' inquiries and the responses from industry. **Dear SIRS** made its debut in the Spring 2003 issue.

Dear SIRS:

I am an anesthesiologist in practice in Santa Barbara, CA. The issue I am concerned with involves both organization and anesthesia machines. We put into service 18 months ago 15 Datex-Ohmeda anesthesia machines, which equip every OR. At the time of rollout, we received 1 mandatory inservice training session. In the intervening 18 months we have spent a lot of time tweaking the automated record keeping system. We have not, however, paid any organized attention to further developing our familiarity with the machine.

I recently had 2 machine incidents that involved aborted checkout sequences. When I told others about this, some shrugged their shoulders and said they never use the machine checkout sequence; others were appalled that everyone did not know 3 ways to rapidly troubleshoot the machine.

I want to propose to my group that we really need to pay some organized, formal attention to increasing our facility with our machines. Our current, "If you need help, ask someone" approach seems to leave too many loose ends, and assumes we are aware of the gaps in our knowledge before they become apparent. I saw the "HRO" concept on one web page but was unable to pursue it. Can you suggest how I might propose to our group changing our approach? Do you have some personal experience in this, or could you direct me to some readings?

Thank you very much.

Michael Cox, MD
Anesthesia Medical Group of Santa Barbara, Inc.
Santa Barbara Cottage Hospital

Response:

Dear Dr. Cox:

Please allow me to assist you in your dilemma of providing adequate inservice to your anesthesia personnel. Having enjoyed teaching the anesthesia machine for a number of years, I will share some of my experiences below. I am forwarding your letter to my Committee members who might also share some of their expertise with you. In particular, Michael Dosch, CRNA, just lectured recently at the South Carolina Association of Nurse Anesthetists on troubleshooting your modern anesthesia machine. He might also send you some helpful hints.

1. Identify who is in charge of your capital equipment. If that person is not the one most interested in machine technology, then find someone who is. It is no secret that you must find someone who has the curiosity to ask how these machines function, and who enjoys knowing something "unique" that no one else does. Most people cannot or will not learn about their machine without guidance.
2. That person should be recognized for his service and contributions to the group either through academic or practice incentives, since he will provide a tangible benefit of safety and enjoyment in using and troubleshooting the machine (thus saving down-time).
3. Identify the responsible internal biomedical service person whom the hospital employs. If they do not employ such a person, then ask your hospital administrator to consider hiring one to participate in anesthesia technology maintenance. (This individual can receive biomedical factory service training.)
4. Once these key personnel are identified, I recommend a better relationship with the industry sales representative. Call them back for further inservice, if only for the education of your key persons. In fact, it might be more beneficial for the rep, or an official company service person, to spend all of their time with your key personnel alone. In the interest of patient safety, the hospital might even be willing to pay for several hours of the service technician's time to educate your staff person(s).
5. Keep in mind that the most highly knowledgeable technicians are usually those employed and trained directly by the manufacturer.
6. Before these representatives return to the hospital for additional training, learn as much as possible about your particular machine. Start with the website, which typically has introductory descriptions, and READ the USERS MANUAL! There is a tremendous amount of information there, and typically something about theory of operation. Ask the manufacturer if they have any special learning materials for your particular machine.
7. Read the ASA Refresher Course lectures that deal with anesthesia machines: Andrews, Eisenkraft, Olympio, Abenstein are well recognized authors who have recently contributed. Look at the APSF website presentation on Comparative Anesthesia Machine Breathing Circuits for an anatomical description of the newest circuits. Use the APSF sponsored Virtual Anesthesia Machine and Workbook program to learn the basics of the generic gas machine.
8. Consider sending your key individual to the ASA Annual Meeting for the express purpose of attending all machine technology lectures and workshops, and for attending the floor demonstrations.

See "Dear SIRS," Next Page

Educational Materials, Workshops Foster Use of Machine Checkout

"Dear SIRS," From Preceding Page

9. Your key person, having developed his own understanding of the machine, should be given additional time to learn how the machine responds to various perturbations, and I would recommend that the official service technician be present when so doing.
10. Next you must conduct a mandatory anesthesia machine workshop in your own institution, perhaps in lieu of an M&M conference or during a prolonged evening staff meeting. I have conducted several of these over the years, typically giving lectures for 2-3 hours one evening and then hands-on workshops the next day for another 3 hours or so. I have contests to see who could discover the "rigged" problems by following the official checkout recommendations. Company reps are also willing to participate in these type sessions. My students also find the "anatomy" lessons very helpful, whereby our biomedical service technicians take off the machine panels, and I label the internal parts with numbered tags. The students then have to identify the part, its function, and its "problem list" by referring to the schematic or my lecture materials.
11. Finally, once your key individual is recognized as the local expert, he should (and will) be informed of all machine problems, sometimes acutely if you have no in-house technician. You will soon be amazed at how often the great majority of problems are very simple to diagnose.

Unfortunately, there is no substitute for knowledge and the investment in knowledge, if you want to have a pleasant experience with your gas machine. And why shouldn't it be valued? You spend more time with it than you do driving your car, and it's essential for it to work properly. You need only explore the FDA Center for Devices and Radiological Health MAUDE (manufacturer and user device experience) website to read about dozens of near-catastrophes and even death/brain damage resulting from machine misuse or failure. Deliberate omission of the machine checkout is inexcusable and has had serious consequences. I hope this helps.

Dr. Mike Olympio

NOTE: These are the personal opinions of Dr. Olympio, and do not represent any official opinions of the Committee on Technology or the APSF.

Response:

Dear Dr. Cox:

I would add to Dr. Olympio's comments:

1. We devote a section of our regular department meetings to equipment issues. We try to benefit from each other's mistakes, humbling experiences, insights, and so forth. Our own individual practices sometimes benefit from being aired out in front of others.
2. You should do whatever you can to create a culture in which not checking machines is substandard practice, dangerous to your patients, and poor risk management. With the ADU in particular (but all machines truly), not checking is a recipe for inaccuracy at best, disaster at worst. Further, regular machine checkout helps one to learn each model's idiosyncrasies, and how to troubleshoot.

A fairly large section of the talk was about troubles encountered in checking ADU (as well as Aestiva). I would be happy to discuss; if you have specific questions please call.

Mike Dosch, CRNA, MS
Chair, Nurse Anesthesia
University of Detroit Mercy

Response:

Dear Dr. Cox:

I read Dr. Olympio's response to your email with great interest, and I could not agree more with his suggestions and observations.

An initial, thorough, in-service is invaluable. However, you do need a local "champion" who is willing to serve as the in-house technical expert on equipment, which probably represents a major investment for your institution. For that reason your institution, as Dr. Olympio points out, has to support that person in this role. In addition to the Operator's and Service Manuals, most vendors have ancillary training materials such as CD-ROMs and on-line training tools. However, it is your "champion" who will become your go-to person and make the experience with your equipment a rewarding and safe one, rather than a frustrating one. Lastly, and very significantly, your vendor must play a crucial role with continuing after-the-sale support. Don't hesitate to ask for it.

Abe Abramovich
Director, Anesthesia Systems Development
Datascope Corp., Patient Monitoring Division

Attending machine technology lectures and workshops can reinforce your training.

Response:

Dear Dr. Olympio:

My colleague forwarded your exceptionally thoughtful and thorough response to me. Since you have been educating residents for many years and have a personal interest in equipment and in educating, your approach to managing anesthesia delivery technologies in an ever-changing hospital environment is based on great experience. As the leading provider of anesthesia delivery systems in the world, we are currently in the process of developing educational programs that far exceed current standards. We are incorporating many of the concepts that you discuss about developing an in-hospital expert and resource.

Bonnie J. Reinke
General Manager, Anesthesia Delivery
GE Healthcare

Stunning Testimonials Warn of Death and Brain Damage

"Workshop," From Page 41

that within the JCAHO, there was a competition for goals, that the above goal did not disappear, but was rather transferred to another category which could still be graded during a site visit. Dr. Lavell indicated that important considerations behind the recommendation for alarms should include 1) the criticality of the situation, 2) the meaningfulness of the information provided, and 3) the response of the clinician to the alarm. He emphasized the importance of redundant alarms to improve the sensitivity of detection, and the importance of training ALL staff to recognize an alarm. He gave us good advice on how to analyze our own near-misses. Dr. Lavell encouraged and described the benefits of retrospective analysis and multidisciplinary teams. He explained that root-cause analysis end products were expected along with plans for strategic response to prevent recurrence. He also highlighted the importance of monitoring any new systems-based process to ascertain whether the problem was solved. Dr. Lavell commended our society for convening this workshop, and stated that such efforts could lead to elevation of this prior National Patient Safety Goal back to high priority.

Our next speaker was Dr. Julian Goldman, a member of the APSF Committee on Technology and coauthor of "Pulse-OX Tone Conveys Vital Information" with Dr. Fred Robertson (*APSF Newsletter* 2004;19;20,23). Dr. Goldman defined the problem as a lapse in vigilance causing a preventable adverse event. He described well-recognized problems with alarm systems including false alarms, nuisance alarms, competition for attention, and inopportune alarms such as those during resuscitative efforts. Goldman emphasized the intuitiveness of "sonification" of an alarm, using the example of a Geiger counter, and described the robust information on rate, rhythm, saturation, and perfusion that the pulse oximeter tone provides. He then raised the "more-than-semantics" question as to whether the pulse oximeter sound was a tone or an alarm, and ventured to state that indeed it could be defined as an alarm. However, as such, it has limitations in sensitivity to hypotension, for example. Dr. Goldman stressed that a common goal should be to improve the sensitivity of clinically useful alarms, and the elimination of false alarms. Such improvements could reduce lapses in vigilance, as clinicians rely more heavily upon their alarm systems.

The breakout groups were led by Abe Abramovich, APSF Corporate Advisory Council representing Datascope, Inc.; Roy Hays, APSF Corporate Council representing Spacelabs; Patricia McGaffigan, MS, RN, from the Coalition for Critical Care Excellence and Aspect Medical Systems; Dr. Margaret M. Parker, President of the Society for Critical Care Medicine; Dr. Frank E. Block, Committee on Equipment and Facilities of the ASA; and Dr. R. Scott Jones from the American College of Surgeons. Groups consisted of members of the audience, and included representation from the APSF, ASA, AANA, and our corporate sponsors. Points raised by the group discussions included

- definitions and purposes of alarms
- recognition of the robust nature of pulse oximeter tones
- novel ideas on how to convey the tones to the anesthesia clinician (with a light-weight headset)
- the use of visual alarm systems
- legal concerns about temporary silencing of the tone
- disagreement over context-sensitivity of the alarm and whether the clinician or the machine should provide it
- further discussion on the need for an SpO_2 alarm if indeed the SpO_2 tone is in use
- the importance of the capnogram as an apnea alarm
- the (improper?) ability of ancillary personnel to silence alarms in the absence of the anesthesia clinician
- the ability of manufacturers to provide unsilenceable tones
- the need for standardized tones
- communication between alarms and "smart" alarms to reduce noise
- need for "private" annunciation to the anesthesia clinician, and not necessarily to the entire OR team
- uniformity in supporting the initiative
- consideration of human factors in alarm recognition
- separate controls for pitch and alarm
- debate on requirement for variable pitch as opposed to low saturation alarm only, with consensus that variable pitch should be required
- inclusion of all anesthetizing sites
- alternative considerations for PACU/ICU environments because they contain multiple patients and might have greater need for alarm over tone
- ASPAN consideration of our initiative in developing their own standards
- need for greater focus on setting of alarms
- reconsideration of the recommended default of 90% for the SpO_2 alarm
- distinguishing suspension of tone/alarm from disabling of tone/alarm
- consideration of the technological prevention of disabling in the future
- consensus that end-tidal CO_2 audible alarm and pulse oximeter tone not be disabled
- other consideration should be given to non-intubated patients
- realization that the "robust" variable pitch may not be "robust" to all clinicians

Breakout groups consisted of members of the audience and included representation from APSF, ASA, AANA, JCAHO, SCCM, ACS, CCCE, and our corporate sponsors.

See "Workshop," Next Page

Workshop Groups Contribute Recommendations

"Workshop," From Preceding Page

- evidence that significant percentages of clinicians cannot hear the pitch change
- arguments that everyone in the room should be able to hear the tones/alarms
- acknowledgement of "special" situations in which the tone may be suspended
- legal implications of requirement that ancillary personnel hear the tone; does that make them liable for the patient outcome?

Despite these numerous considerations that the groups brought forward, all unanimously endorsed the APSF initiative to recommend that a new standard for the use of the pulse oximeter tone be promulgated.

Following the group sessions, Walter Heuhn, APSF Corporate Advisory Council representing Philips, spoke on Smart Alarm technologies. Existing and future technologies might include escalating tones or colors in the absence of clinician response. Smart alarms could bracket existing vital signs with either wide or narrow limits. Artifact rejection might recognize an arterial spike secondary to line flush, or dampening of the wave secondary to cuff inflation. A user might switch to profiles that define cardiopulmonary bypass, for example, which could temporarily suppress certain alarms. Other predefined events could trigger a higher resolution of data capture. Horizontal nominal displays could graphically depict an abnormality with deviation bars above or below the baseline. Mr. Heuhn emphasized, however, that true smart alarm technology would lead to analysis of integrated data, diagnosis, and decision support.

Representing the ASA Section on Professional Standards, Dr. Jerry A. Cohen as chairman, stated that a pulse oximeter beep tone could well be considered an alarm, defined as a signal that brings information about a change in condition. Creating new standards is hard work, said Dr. Cohen, since it requires wisdom and consensus to word such standards with simplicity, brevity, and definition. Using analogies to aviation, Dr. Cohen spoke highly of alarm systems which use voice technology to warn of dangerous or impending abnormal conditions. He stated that it was much easier to pass standards for binary alarms (those which give yes/no information) than it was to pass standards for alarms for exceeded ranges. Regarding alarm suppression, he commented that continuous intervention at cancellation should be required by the clinician. Passage of the APSF initiative was "imminently" do-able for several reasons, Cohen said. We have 20 years of experience and familiarity with it; it is a continuous monitor; and he considers it to be a binary (good/bad) alarm.

Dr. Jack L. Moore, chair of the ASA Committee on Standards of Care, concluded with the briefest and probably the most profound of all the presentations. He commended organizations such as the APSF because they are committed to high standards and as such, are valuable resources to the Committee on Standards. Moore stated that our workshop provided just what his committee needed to advance such standards; that those standards should apply to all anesthetics, not just those in the operating room; and finally, a resounding "YES," that the ASA should adopt further standards regarding the audible tone of the pulse oximeter.

In concluding remarks, Dr. Robert K. Stoelting said that he heard a consensus from the entire workshop and its speakers: the pulse oximeter tone has unanimous support with some caveats. He recognized greater difficulty in getting consensus on the additional standard for at least one other audible physiologic data alarm. He thought that we should not specify who in the operating theater is required to hear the tone. Although we should be flexible to evolving technologies, Stoelting said, we should still address our current technology now and change the standard in the future, as needed.

On the following day, the APSF Executive Committee drafted their audible alarms recommendation for consideration by those organizations that produce standards, guidelines, and practice advisories in anesthesia. That recommendation is as follows:

APSF Recommendation Regarding Audible Alarms

"When the pulse oximeter is utilized, the variable pitch pulse tone and the low threshold alarm must be audible.

"When capnography is utilized, a capnograph alarm for hypoventilation must give an audible signal."

To date, APSF is aware that committees in the American Society of Anesthesiologists and the American Association of Nurse Anesthetists are considering these recommendations.

Dr. Michael Olympio, MD, is a Professor of Anesthesiology and Vice Chair for Education at Wake Forest University School of Medicine. He also serves as Chair of the APSF Committee on Technology.

ANESTHESIA PATIENT SAFETY FOUNDATION (APSF)
GRANT PROGRAM

Guidelines for Grant Applications Scheduled to Begin on January 1, 2006

The *Anesthesia Patient Safety Foundation (APSF) Grant Program* supports research directed toward enhancing anesthesia **patient safety**. Its major objective is to stimulate studies leading to prevention of mortality and morbidity resulting from anesthesia mishaps.

NOTE: The Grand Award limit has been increased to $75,000 per project. Additionally, there have been changes in areas of designated priority, in requirements for materials, and specific areas of research. For the current funding cycle APSF is placing a specific emphasis on **PATIENT SAFETY EDUCATION.**

To recognize the patriarch of what has become an international model for patient safety, the APSF inaugurated in 2002 the **Ellison C. Pierce, Jr., MD, Research Award**. The APSF Scientific Evaluation Committee will designate one of the funded proposals as the recipient of this honor that carries with it an additional, unrestricted award of $5,000.

PRIORITIES

Highest priority is given to:

- Studies that address peri-anesthetic problems for relatively healthy patients or
- Studies that are broadly applicable AND that promise improved methods of patient safety with a defined and direct path to implementation into clinical care
- Innovative methods of education and training to improve patient safety.

AREAS OF RESEARCH

Areas of research interest include, but are not limited to:

- New clinical methods for prevention and/or early diagnosis of mishaps
- Evaluation of new and/or re-evaluation of old technologies for prevention and diagnosis of mishaps
- Identification of predictors of negative patient outcomes, and/or anesthesiologist/anesthetist clinical errors
- Development of innovative methods for the study of low-frequency events
- Measurement of the cost effectiveness of techniques designed to increase patient safety
- Development or testing of educational content to measure, develop, and improve safe delivery of anesthetic care during the perioperative period
- Development, implementation, and validation of educational content or methods of relevance to patient safety (note that both patient and care provider educational projects qualify).

SCORING

Studies will be scored on:

- Soundness and technical merit of proposed research with a clear hypothesis and research plan
- Adequacy of assurances detailing the proposed means for safeguarding human or animal subjects
- Uniqueness of scientific, educational, or technological approach of proposed research
- Applicability of the proposed research and potential for broad healthcare adoption
- Clinical significance of the area of research and likelihood of the studies to produce quantifiable improvements in patient outcome such as increased life-span, physical functionality, or ability to function independently, potential for reductions in procedural risks such as mortality or morbidity, or significant improvements in recovery time.

Priority will be given to topics that do not have other available sources for funding.

Proposals to create patient safety education content or methods that do not include a rigorous evaluation of content validity and/or benefit will be unlikely to attain sufficient priority for funding.

NOTE: *Innovative ideas and creativity are strongly encouraged. New applicants are advised to seek guidance from an advisor/mentor skilled in experimental design and preparation of grant applications. Poorly conceived ideas, failure to have a clear hypothesis or research plan, or failure to demonstrate clearly the relationship of the work to patient safety are the most frequent reasons for applications being disapproved or receiving a low priority score.*

BUDGET

The budget request must not exceed $75,000. Projects may be for up to 2 years in duration, although a shorter anticipated time to completion is encouraged. APSF funds may not be used for indirect costs (overhead).

ELIGIBILITY

Awards are made to a sponsoring institution, not to individuals or to departments. Any qualified member of a sponsoring institution in the United States or Canada may apply. Only one person may be listed as the principal investigator. All co-investigators, collaborators, and consultants should be listed. Applications will not be accepted from a principal investigator currently funded by the APSF. Re-applications from investigators who were funded by the APSF in previous years, however, will be accepted without prejudice.

Applications that fail to meet these basic criteria will be eliminated from detailed review and returned with only minimal comment. A summary of reviewers' comments and recommendations will be provided to investigators requesting it only for those applications that are given full committee review. Please refer to the Spring 1997 issue of the *Anesthesia Patient Safety Foundation Newsletter* for further advice about applications, or contact the Scientific Evaluation Committee Chairman, Sorin J. Brull, MD, by phone: 386-676-1158, fax: 386-676-9872, or email: sjbrull@cfl.rr.com.

AWARDS

Awards for projects to begin January 1, 2006, will be announced at the meeting of the APSF Board of Directors on October 22, 2005 (2005 ASA Annual Meeting, New Orleans, LA).

NOTE: No award will be made unless the statement of institutional human or animal studies' committee approval is received prior to October 1, 2005.

PAPERLESS APPLICATIONS

All applications and accompanying documents, including departmental chair support letter, the Institutional Review Board approval letter, and the applicant's acceptance form, will be accepted in ELECTRONIC form only. Electronic files in Microsoft Word, Microsoft Excel, or Adobe Acrobat PDF format are acceptable for all text, charts, and graphics, and must be uploaded to the APSF website: http://www.apsf.org/grant/application/applicant.

GUIDELINES FOR PREPARATION OF APPLICATIONS AND ELIGIBILITY REQUIREMENTS CAN BE OBTAINED FROM THE APSF WEBSITE: WWW. APSF.ORG.

The original application must be submitted electronically to the website and a notification of application must be received by the chairman of the APSF Scientific Evaluation Committee no later than Monday, June 20, 2004:

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Professor of Anesthesiology
Mayo Clinic College of Medicine
4400 San Pablo Rd, JAB-4035
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Medical Error Prevention Exhibit Earns E.C. Pierce, Jr., MD, Award

The recipient of the **2004 E.C. Pierce, Jr., MD, Award for the Best Scientific Exhibit,** at the 2004 ASA meeting, is Susanne Shamsolkottabi, MD, for her exhibit "Medication Error Prevention."

This exhibit consisted of a wonderful and well researched presentation describing the prevalence of medication errors, summarizing studies reporting these errors, picturing vials and ampules that are commonly involved in errors of types of drugs and concentrations of the same drugs. The presentation concluded with several solutions including system-based approaches to these frequently reported errors. There were also vials and ampules present on the exhibit to illustrate the similarities in packaging of very different drugs as well as different concentrations of the same drug, and to demonstrate how easy it might be to pick up and administer the wrong one. The authors are planning to make a CD of this presentation.

2004 E.C. Pierce, Jr., MD, Award Recipient Dr. Shamsolkottabi is pictured with committee members Susan L. Polk, MD, MSEd; R. Scott Jones, MD; Deborah Lawson, and Alan M. Harvey, MD, MBA (left to right), as her award is presented.

Obstetric Claims Summarized Over Time

"Obstetrics," From Page 49

of substandard care, but also of emotional vindication."[3,4] Alternatively, most non-obstetric patients having surgery expect some discomfort and appear to be more aware of the risks of their procedure. Improved obstetric patient education before labor and delivery and increased physician-patient communication, and interpersonal support after the delivery may reduce claims for minor injuries.

Summary

Over the last 3 decades, the proportion of claims for death has decreased and the proportion for nerve injury has increased in both obstetric and non-obstetric claims. The proportions of claims for death, brain damage, and aspiration pneumonitis were lower in obstetric claims, and the proportion of claims for minor complications (headache, backache and emotional distress) was increased in obstetric claims. Changes in anesthesia techniques, differences in patient fitness, or improvements in patient safety may account for these findings. However, due to the lack of denominator data, a decrease in the proportion of claims for death and serious injuries may also reflect an increase in the proportion of claims for less serious injuries. In addition, changing medico-legal strategies may contribute to these findings.

In all areas of anesthesia it is imperative that patients have realistic expectations and a full understanding of the potential major and minor complications associated with their procedure. A visit to the preanesthesia clinic for evaluation and education, together with further discussion between the anesthesiologist and patient on the day of surgery, aids this process. Postoperative visits often pick up the more minor complications, allowing the patient to be counseled and allowing follow-up to be arranged as necessary. Extending this approach to the obstetric patient may reduce anesthesia liability associated with providing anesthesia for labor and delivery. A team approach between obstetricians, anesthesiologists, and nurses, with good interpersonal communication, improves the patient's confidence and may make a claim less likely for an unexpected outcome.

Ms. Davies is an Assistant Professor of Anesthesiology at the University of Washington in Seattle.

Table 1: Most Common Complications – Obstetric vs. Non-Obstetric Trends Over Time

	1970s		1990s	
	Obstetric Claims n=94	Non-Obstetric n=573	Obstetric Claims n=310	Non-Obstetric n=2405
Maternal death	28 (30%)*,†	246 (43%)*,†	38 (12%)*,†	563 (23%)*,†
Maternal brain damage	9 (10%)	93 (16%)*	18 (6%)†	254 (11%)*,†
Nerve damage	10 (11%)*	88 (15%)*	61 (20%)*	512 (21%)*
Headache	11 (12%)†	4 (1%)†	44 (14%)†	57 (2%)†
Back pain	3 (3%)*	3 (1%)	31 (10%)*,†	57 (2%)†
Aspiration pneumonitis	8 (9%)*	11 (2%)	4 (1%)*,†	68 (3%)†
Emotional distress/fright	6 (6%)	10 (2%)	26 (8%)†	99 (4%)†

* p<0.05 1990s compared to 1970s within group (Obstetric or Non-Obstetric)

† p<0.05 Obstetric vs. non-obstetric within time period

Note: Newborn complications not shown.

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Letters to the Editor:

Surgeon's Experience is Part of Broader Problem

To the Editor:

I am heartsick about the surgeon's perioperative experience recounted in the summer 2004 issue of the *APSF Newsletter*. I take him at his word that he considers anesthesia a team member, a colleague, and that he did not receive a true consultant's expertise.

Unfortunately, the vast majority of surgeons want what I call "Nike Anesthesia"—Just Do It. They don't want to find out that the patient has trepidation and may be better off rescheduling for another day. Surgeons don't want to find out the their patient is a previously undiagnosed hypertensive or diabetic. Many surgeons do not do even vital signs in their offices before scheduling surgeries. I recall 1 surgeon arguing with me about an undiagnosed hypertensive with a diastolic of 140, rechecked multiple times, who was coming in for a knee scope. Another incident involved a middle-aged woman coming for blepharoplasty, who was clearly having angina and a left strain pattern on the EKG. When I stated I would cancel the case, the nurse administrator asked why we couldn't do the case under straight local. When the surgeon arrived, he thanked me and transferred the patient who underwent PTCA within hours. The administrator is always standing right behind the surgeon—more cases equal more billings. Meanwhile, anesthesia risk is increasing, production pressure is unbearable, and the system cannot continue this way.

We have only to look as far as Selye and the Yerkes-Dodson curve to know that we are on the path to destruction. The productivity levels business has enjoyed over the past 4 years are simply not sustainable. Now business is complaining about worker's compensation claims. Business blames the doctors, the ambulatory surgery centers, and the implant manufacturers, but they do not take a look inward at the stresses the workers are under. ACCIDENTS ARE A STRESS-RELATED DISEASE. Whether those accidents are as (thankfully) mild as a lack of common courtesy and consultation in this case, or as egregious as delivering a fatal dose of the wrong drug—accidents kill and maim every day. What we pay for in controlling hours worked and and in more flexible scheduling, along with surgeons abandoning the "Captain of the Ship" mentality, we will more than pay for in lower unemployment and higher morale—leading to fewer sick days and fewer accidents.

Stephanie Jo Dyer, MD

Surgeon's Experience Is Not An Isolated Case

To the Editor:

I noted with great interest the letter from the anonymous surgeon/patient about his poor experience with "anesthesia providers" and his appeal for "professionalism." I wish this were an isolated case. I know from years of both academic and private practice that it is not.

I have spent roughly half of my career in academic medicine, most recently in one of the premier anesthesia departments in the United States, at least as such things are judged. Usually academic ranking is centered on academic performance goals (grants, publications, residency pool, and so forth). Medical centers grade themselves, at least until recently, on aggregate patient outcomes. Only recently have "customer service" concepts been championed at large, prestigious university medical centers. My colleagues, brilliant men and women with an in-depth knowledge of the science of medicine and impressive academic resumés, are justifiably proud of the professional standing. However, they often act like the Rodney Dangerfield of medicine, complaining ad nauseam that they don't get the professional respect they deserve from patients and fellow physicians, especially surgeons. The letter from a colleague/patient explains, better than any words of mine, why this is something we frequently invite upon ourselves.

During the half of my career spent in small community hospitals, I have had the chance and the will to be an actively participating member of my hospital medical staff, the community it serves, the emergency medical system that provides urgent access to healthcare, and the process of evaluating every patient that presents for anesthesia care. I learned early (from some folks in academic practice--physicians and nurses alike) that the only person having "routine" anesthesia is me. Every patient, even our surgeon/author, is appropriately concerned about his or her welfare and wants us to demonstrate through words and actions that we are as well. Quite aside from the obvious fact that a cursory review of other people's assessment is not a safe practice, it smacks of casual disregard for the feelings of the person under our care. I cannot tell you the number of times an interview of substance (total time 10 minutes or less) reveals new information not obtained by anyone up to that point or casts important new light on available information. That chest pain diagnosis of reflux might seem inconsistent with lack of relief by acid inhibitors and occurs mostly with exertion described by the patient. Perhaps I'll consider a beta-blocker preoperatively. You get the idea.

We, as practitioners of medicine, can complain at every opportunity, change our description of ourselves (i.e., the whole "perioperative medicine" thing), and insist that others recognize and yield to our superior training. Until such time as we as individuals consistently comport ourselves as physicians, acquiring information directly through history and physical examination where indicated and caring for, not just taking care of, our patients, those efforts will be so much smoke in the wind. Technology is an important aid to medical practice and anesthesia in particular, but it is the "laying on of hands" and the demonstration of concern and compassion that define the art and profession of medicine. Respect is earned, not applied for.

Michael W. Russell, MD
Nags Head, NC

Reader Calls For Professionalism

To the Editor:

After reading the letter concerning the surgeon patient I felt like I would have PONV for him. That was a case of non-professionalism. I know that we are all short on time, but I always introduce myself as the anesthesiologist and ask if there are any questions before explaining the type of anesthetic to be used. The whole scenario was poor perioperative care.

Whenever I have a colleague as a patient, I try to do the case myself, just out of courtesy, but if I am unable to do it personally, I ask one of our senior residents to do the case.

My wife (also a physician) had a similar experience at one of the local hospitals, but the anesthesiologist came by to mention his name once. I had surgery 3 weeks ago at our hospital, and one of my colleagues put in the block and stayed with me for the entire case. It was truly great to have him present.

I would like to think that we are all professionals and not just technicians.

Joseph L. Skibba, MD, PhD
Albuquerque, NM

Letters to the Editor:

Perception May Be Problem Separate From Vigilance

To the Editor:

Regarding the article "Reading in the OR" in the Fall 2004 issue, have the authors considered that, under appropriate circumstances, reading might actually improve vigilance in the OR? In my opinion, and in my experience, reading can actually function as a means to keep one's mind alert during periods of mental hypo-activity.

Eschewing outside stimuli, such as music, conversation, reading, and so on, may seem at first glance to be the most rigorous and admirable way to maintain vigilance, but is that really the case? We all know that there are periods during the anesthesiologist's day when his or her mental capacity is not being fully utilized. The mind *will* occupy itself one way or the other: I would submit that daydreaming might be a greater hazard than other activities that actually encourage a more alert mental status.

Of course, it is incumbent on the practitioner who chooses to read, converse, check e-mail, or whatever in the OR to honestly assess his own level of vigilance during these activities. Perhaps one physician will find himself too distracted by certain kinds of music, another by a specific kind of reading (novels, for example), or another by engaging in political debate in the OR, while another will find that he loses track of time and lessens his vigilance if he does not engage in some additional mental activity while providing anesthesia care.

In each case, we must currently rely on the practitioner's self-assessment. Perhaps, rather than condemning certain activities out of hand, a better approach might be to devise a method for individual physicians to better assess their own mental capacity for vigilance during a variety of activities and in a variety of situations. I think this would be quite difficult, but it's worth considering.

The public relations aspect is a completely separate issue, in my opinion, and admittedly a significant one. But is it helpful when observers who "feel" that patient safety is compromised by reading in the OR publicly condemn the practice despite any evidence in support of their view? It's interesting that those who denounce OR reading are often engaged in the academic practice of anesthesia. Although they certainly have as much right to their opinion as anyone, in the absence of data I would give more credence to the intuition of those who have years of experience, day in and day out, providing safe, solo, hands-on anesthesia care to their patients.

Bryan Bohman, MD
Palo Alto, CA

APSF Executive Committee Invites Collaboration

From time to time the Anesthesia Patient Safety Foundation reconfirms its commitment of working with all who devote their energies to making anesthesia as safe as humanly possible. Thus, the Foundation invites collaboration from all who administer anesthesia, and all who provide the settings in which anesthesia is practiced, all individuals and all organizations who, through their work, affect the safety of patients receiving anesthesia. All will find us eager to listen to their suggestions and to work with them toward the common goal of safe anesthesia for all patients.

Varied Stimulus May Combat Boredom, Increase Awareness

To the Editor:

From the vantage point of the sharp end of the anesthetic care needle, the recent opinion letter from Drs. Monk and Giesecke generates a number of thoughts. Whatever the formal title, the person who lives within an arms length of an anesthesia machine usually spends 50% or more of his or her waking hours planted in a chair trying to create and maintain physiologic boredom. However, once this state has been achieved, this person must then deal with the very real, but underappreciated, stress of remaining vigilant despite little or no stimulus.

This is, with a quality anesthetic, akin to monitoring the curing of (admittedly precious) concrete. Music, conversation, moving about, and brief reading interludes all serve to energize the senses, and in fact I would submit increase, rather than decrease, situational awareness by prompting a re-scan of the data, rather than just staring at the colored numbers. However, while I am not swayed by the ethical resource of Bill Clinton, I realize that my view may not carry the day. If that is the case, realize that the reading time left at days' end is precious, priorities must be set, and some items, such as this very newsletter, may not make the cut.

C.F. Ward, MD
San Diego, CA

Improved APSF website:
www.apsf.org

Reader Applauds Attention to Fatigue

To the Editor:

Bravo to Dr. Ellis for his remarks regarding fatigue and long work hours in the Fall 2004 issue. Now one even has to make sure that a resident is not too tired to drive. Is this being done in other critical occupations? How much sleep does the President get before sending our troops into combat?

In my practice we are off the day after taking call; many practices that I am familiar with function in this fashion.

It always bothered me that surgeons could start long, elective cases late at night or work during the night, only to continue with their elective schedule the next day.

Unfortunately, many of the important changes to health care cannot occur because of lack of funding. When we do make a change it is at the discretion of JCAHO, and it often lasts for the duration of the inspection.

Steven Ginsberg, MD
Bridgewater, NJ

Hot News

EDITOR'S NOTE:
Stay tuned for an upcoming Special Issue of the *APSF Newsletter* addressing issues of fatigue, human performance, and patient safety with guest editor Steve Howard, MD.

Participants at the 2004 APSF Clinical Alarms Workshop use facilitated small group discussions to help develop recommendations.

The APSF is extremely pleased to announce that, beginning with this issue, the **APSF Newsletter** *will be mailed to all members of the AANA. Thank you to the AANA leadership for making this possible.*

Best Wishes for a Happy, Healthy, and Productive New Year!

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