Improving the standards of anesthesia and pain management across our entire profession was a goal in developing the AAHA Guidelines for Anesthesia and Pain Management. There are many areas to consider with considerable potential for practical, value-added improvement. Anesthetic care of veterinary patients has not gotten easier over the years. Really, has any part of medical care become “easier?” It is clear that anesthesia has become better and safer in that we are now able to provide successful anesthetic management for patients who would not have had a reasonable chance a few years ago. In many cases, these are even managed as outpatients, quickly returned to their owners in full recovery. Our choice of anesthetic drugs has greatly expanded, and safer anesthetic agents are indeed responsible for much of the improvement noted. The use of more sophisticated monitoring and better physiologic support has become widespread, with continued rapid growth apparent in this area. In spite of increased owner expectations and the fact that veterinarians now have sicker patients presenting with concurrent diseases, injuries, or debilitation, we can increasingly manage our patients successfully with the improvements in anesthesia and related perioperative care.

Better Training and Ongoing Training
This collection of proceedings on veterinary anesthesia helps to provide an update on current and developing methods. Continuing education seminars and numerous other contemporary publications attempt to further these same goals. The education of veterinarians and veterinary technicians now includes rather extensive attention to anesthesia and related topics. Veterinarians with advanced training in anesthesia and board certification by the American College of Veterinary Anesthesiologists are now involved in the training of new veterinary students at almost all North American colleges of veterinary medicine. Through the North American Veterinary Technician Association, licensed veterinary technicians may now pursue Veterinary Technician Specialist certification in anesthesia with advanced training and skills in veterinary anesthesia and membership in the Association of Veterinary Technician Anesthetists.

Monitoring and Attention to Detail
In addition to veterinarians, well-trained technicians continuously evaluate the patient throughout anesthesia. Awareness of the ever-changing condition of the anesthetized patient is a shared responsibility that can only be shared effectively and safely when the medical team works together. We intend to remain aware of even subtle changes in patient status under anesthesia. We must always recognize that challenges to the welfare of our patients come not only from their underlying illness or injury, but also as undesired effects that even the best anesthetic care may present.

Modern monitoring equipment is increasingly available at reasonable cost for veterinary use. We no longer need to rely upon out-of-date, poorly serviced, unsafe, and inappropriate equipment that has been discarded from human patient use. Fortunately, however, there is good quality equipment still available from the human patient market. Increasingly, that equipment now can be found with good warranty protection, recent service records, and, importantly, with design and function capabilities well suited to veterinary patient needs. There is also good quality equipment available specifically for the veterinary patient. Medical equipment sold exclusively for veterinary use does not receive the degree of oversight and approval required for human-use equipment. In spite of this, there is very good veterinary-specific medical equipment. The demands of veterinarians, and of the animal owners, for improved anesthetic delivery, monitoring, and support has fueled the growth of this industry.

No longer is the application of relatively advanced monitoring equipment and anesthesia machines limited to academic institutions or referral practices with heavy surgical caseloads. Monitoring of electrocardiogram, temperature, blood pressure, and pulse oximetry are rapidly becoming more routine, even in general veterinary practices. Airway monitoring of carbon dioxide and anesthetic gases in the breathing circuit is also becoming more popular. Proper use of these technologies requires a good working knowledge of the normal values, the significance of deviations, and an understanding of appropriate management options.

New Options in Anesthetics
Through the use of a good variety of injectable and inhalant anesthetics, great anesthetic safety and convenience is possible for our patients. Remarkable improvements for rapid and smooth recovery have developed in “outpatient” anesthesia. The recent popularity of several injectable anesthetics, most popularly propofol and our new injectable anesthetic, alfaxan, has greatly improved our options. Propofol shortages resulted from the removal of defective generic products, but we all managed that temporary supply and demand issue. Isoflurane has been the strongly predominant inhalant anesthetic for several years. The more newly available inhalant, sevoflurane, can be used to provide for a remarkably rapid, yet smooth induction and recovery from anesthesia, and can provide for a rapid change in the level of anesthesia as needed. Appropriate use of these new agents requires skill and knowledge and will be addressed more fully. All anesthetics have a limited therapeutic index, or margin of safety. All can depress vital functions, and inappropriate use can result in loss of life. It is useful to remember the old guideline: “There are no safe anesthetics, just safe anesthetists.”

While we enjoy a wealth of new options and opportunities in veterinary anesthesia, we must make changes in our anesthetic strategies carefully, recognizing that experience is necessary to identify any abnormal responses from those that should be expected. Careful and conservative use of any new anesthetic or technique is crucial. “Nobody likes an adventurous anesthetist!”

**Individualized Anesthetic Care**
Much more important than the choice of which specific anesthetic drugs or equipment we use, however, is the manner in which we select them and the skill and care with which they are used in our patients. Best use of various options requires an individualized approach to anesthetic management. In treating infectious diseases, veterinarians wouldn’t choose the same antibiotic for every patient or condition encountered. Similarly, the best choice among options in anesthetic care of individual needs and individual risks vary widely among veterinary patients. We recognize breed sensitivities and relative contraindications in choice of anesthetics. For many years, breed associations have provided warnings based on anecdotal reports. With continued research, some of these have been or will be substantiated. Others, perhaps, will be refuted. In the absence of clarifying data, caution dictates selection and use of the best anesthetics from among the many choices available. Patient differences that are important in anesthetic care are obviously not only those that relate to species, breed, and age differences. As a simple example, patients undergoing elective surgery or those traumatically injured both need analgesic therapy. Opioid analgesics, for instance, have varying efficacy and duration of action. The range of choices allows for brief, mild analgesia, such as for an outpatient neuter, all the way to profound analgesia for the care of a substantially traumatized animal.

**Preanesthetic Evaluation and Screening**
Better anesthetic care also includes more thorough preanesthetic evaluation, which can fit nicely into a comprehensive approach of well-patient care and the work-up of the non-elective patient. Preanesthetic evaluations should be tailored to the needs of the patient. For example, the preanesthetic evaluation of a diabetic patient would include blood glucose determination(s) to help guide physiologic support as a part of the anesthetic care. Basic physical findings may lead to more extensive evaluations. For example, if a heart murmur is detected in a young cat, an echocardiogram may be performed to rule out cardiomyopathy before subjecting the animal to the stresses of anesthesia. Not all patients need the same level or intensity of preanesthetic evaluation or screening. Matching the process to the patient becomes cost-effective for the pet owner as well as for the practice owner.

**Geriatric Patient Care**
It is fortunate that the improved role of pets in our society has, in various ways, kept animals as a part of the family for more years. With an aging pet population, and with keen interest in keeping pets as very functional members of the family group, we have the opportunity to care for many more geriatric patients. These much-loved older pets often receive more extensive preanesthetic evaluation, which helps us identify marginal reserve function and any subclinical organ disease or dysfunction. Geriatric patients have dramatically reduced requirement for many anesthetics, and could be overdosed at standard recommended drug doses. Armed with this information, the veterinarian can individualize anesthetic care to minimize the risks of complications. Typical of this patient type would be the older dog presented for routine dental care. Through our improved care, we can extend not only the lifespan, but also the “healthspan” of these animals.

**Outpatient Anesthesia**
As human patients, we expect to have most minimally invasive medical procedures, and even many substantial surgeries, conducted on an outpatient or same-day basis. Reduced hospital costs are not the only concern driving this
change in human patient care. Everyone is happier and can return to daily routines more quickly when we are able to shorten hospital stays. This all applies to veterinary medicine as well. Better anesthetic care is a major component of this change. Clients personally experience it in their own medical care from the perspective of patients, and now they expect it in the veterinary care we deliver for their pets. Reliable, fast, and smooth recovery from anesthesia is a wonderful feature of many of the more modern anesthetic methods. While every patient differs, we’ve come to expect more and more of our patients to bounce back quickly.

Prior Preparation Prevents Problems
Readiness includes anticipation of contingencies and willingness to consider, and perhaps move along to, what we have in mind as the “Plan B” for that patient. This is recognition of whatever else might be likely to happen for this animal other than the expected course of events. Those who are ready for these contingencies can intercept developing problems before they reach the “crisis” stage. This requires attentiveness to warning signs. Good anesthetic monitoring and appropriate responses to changing patient status are much more successful strategies for patient care than would be any level of expertise in crisis management.

Pain Management
Our clients expect optimal control of animal pain. Clients expect the best in anesthetic survival and in relief of pain. Their most basic expectations are that their pet will survive and that it will not hurt. We do have the tools available to effectively manage procedural, traumatic, and perioperative pain. We also have increasingly fine methods for very effectively managing the more chronic pains of degenerative joint disease and cancer. The three principles of effective pain management are: 1. pre-emptive analgesia, 2. balanced analgesia, and 3. willingness to dose-to-effect. Application of these principles can help us devise very effective pain management for every patient. Smart use of analgesic strategies offers tremendous benefit through relief of unnecessary pain and suffering. Improvements in the areas of the recognition and management of animal pain have been arguably greater than in any other aspect of veterinary anesthesia. Benefits include improved patient comfort, but also reduced anesthetic requirements, shortened hospital stays, improved immune function, and reduced morbidity and mortality. Good quality pain relief is also very cost-effective.

Supportive Care
As an example of basic physiological support, the provision of fluid therapy and appropriate patient warming devices is increasingly commonplace in veterinary anesthetic care. Fluid therapy is an appropriate measure to compensate for the vasodilatation and hypotension that can commonly occur with the best of anesthetic techniques. We also recognize, through the increased use of blood pressure monitoring, that many of our patients can become hypotensive. Our older patients may be particularly susceptible to deleterious consequences of inadequate tissue perfusion. Patient warming devices that gently circulate warm air or warm water have replaced dangerous electric heating pads and bags or bottles of warm (or hot) water. All too often, electric heating pads and hot water bags and bottles have either burned animals or failed to properly prevent hypothermia. With individualized patient management, which includes physiologic support, those animals with particular needs or susceptibilities are better prepared for the rigors of anesthesia and surgery.

Summary
There seems to be little upper limit to the sophistication of medical care demanded by the pet-owning public. Improvements in all areas of veterinary medicine are being rapidly embraced. The standard of care is indeed moving forward in all of our profession, and that was the larger goal in establishing the AAHA Guidelines for Anesthesia and for Pain Management. As tools to facilitate incremental improvements, they aid the profession and each of us. Full implementation of the AAHA Guidelines is very practical for many of our hospitals. Our best clients assume that the veterinary anesthetic care and pain management their animals receive are already at a very high level of sophistication, perhaps even comparable to that afforded human patients. Our obligation to do the best we can for our patients and for our clients requires that we move forward and maintain very high standards in providing anesthesia and analgesia.

Recommended Reading