

Health Literacy and Client Compliance

Bruce J. Novotny

Charles J. Wayner

*“What we have here is (a) failure to communicate.”
The movie Cool Hand Luke*

HEALTH LITERACY

Introduction

According to the 1993 National Adult Literacy Survey (NALS), the average educational attainment of adults in the United States is above the 12th grade level (Kirsch et al, 1993). However, educational level doesn't translate into a corresponding level of reading or comprehension. Forty to 44 million adults surveyed have difficulty locating the expiration date on a driver's license, determining the location of a meeting on a form or reading a medicine label. Another 50 million Americans have only marginal literacy skills; these people have difficulty locating an intersection on a street map and identifying and entering background information on a Social Security application. Unfortunately, despite increasing education, the average reading skills of U.S. adults are between the 8th and 9th grade levels (Stedman and Kaestel, 1991).

Much of health care information, including insurance forms and advertising, is often written far above the high school level. Several studies report that the reading level of patients with various chronic diseases falls between grade levels six and 10, whereas the readability of health materials prepared for them falls between seven and 13 (IOM, 2004). More than 300 studies, conducted over three decades assessed various health-related materials (e.g., informed consent forms and medication package inserts), found that a mismatch exists between the

reading levels of the materials and the reading skills of the intended audience. Most of the assessed materials exceeded the reading skills of the average high school graduate (Rudd et al, 2000). **Table 3-1** lists several problems associated with inadequate health literacy (Zarcadoolos et al, 2006).

Implications to Veterinary Medicine

For the most part, pet owners mirror the general population. That being the case, it is highly likely that the same issues the human health care system faces related to health literacy reside in the pet-owning population. Unfortunately, this has never been studied to any great degree in veterinary medicine, but the ramifications of this revelation are alarming.

Clients depend on our medical expertise and our ability to translate that skill into information they can relate to and act upon. The pet's health and well-being depend on our ability to effectively communicate our intended meaning to the owner. Although we may believe we are communicating with pet owners, we may in fact be adding substantially to their confusion, uncertainty and frustration about doing what's best for their pet.

Poor communication with clients can result in less than optimal short- and long-term care. As preventive and therapeutic medical advocates for pets, veterinarians and other health care team members have an obligation to help pet owners make informed decisions about their pet's care. Providing accurate information about proper pet nutrition is

Table 3-1. Problems caused by inadequate health literacy.*

Improper use of medications
 Inappropriate use or no use of health services
 Poor self-management of chronic conditions
 Inadequate response in emergency situations
 Poor health outcomes
 Lack of self-efficacy and self-esteem
 Financial drain on individuals and society
 *Adapted from Zarcadoolas C, Pleasant AF, Greer DS. Advancing Health Literacy. San Francisco, CA: Jossey-Banks, 2006.

Table 3-2. Examples of skills needed for health.*

Promote and protect health and prevent disease
 Understand, interpret and analyze health information
 Apply health information over a variety of life events and situations
 Navigate the health care system
 Actively participate in encounters with health care professionals
 Understand and give consent
 Understand and advocate for rights
 *Adapted from IOM. (Institute of Medicine.) Health Literacy: A Prescription to End Confusion. Washington, DC: National Academies Press, 2004; 1-322.

as necessary as appropriate medicine and surgery. It is a sobering thought to consider that the number of pet deaths attributable to poor communication may meet or exceed surgical or anesthetic-related deaths.

Because there is little in the way of insights about this problem in veterinary medicine, issues about the human health literacy crisis will be discussed. Readers should associate these data to the client-pet-veterinary and veterinary team interface and challenge themselves to make a concerted effort to enhance communication skills to better care for the pets and people they serve.

Definitions

Health literacy may be defined as “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions” (Ratzan and Parker, 2000; Healthy People 2010). A 1999 report from the Council on Scientific Affairs of the American Medical Association refers to functional health literacy as “the ability to read and comprehend prescription bottles, appointment slips and other essential health-related materials” (AMA, 1999).

Other proposed definitions include:

- Health literacy is a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment (AMA Ad Hoc Committee).
- Health literacy has three levels: 1) functional health literacy, which refers to the communication of information, 2) interactive health literacy, which deals with the develop-

ment of personal skills and 3) critical health literacy, which is needed for personal and community empowerment (Nutbeam, 1998).

Understanding Health Literacy

Health literacy includes more than simply obtaining information. Health literacy embraces writing, numeracy, listening, speaking and conceptual knowledge (IOM, 2004). Health literacy emerges when expectations, preferences and skills of individuals seeking health information meet equivalent goals of those providing information and services (IOM, 2004). Education, language and culture mediate health literacy skills (IOM, 2004). Equally important are the communication and assessment skills of health care professionals. Furthermore, their patients must navigate the media, marketplace and governmental agencies to obtain health information (IOM, 2004).

Even people with strong literacy skills may have trouble obtaining, understanding and using health information; for example, an accountant may not know when to schedule a pap smear and a chef may be unable to prepare health conscious meals (IOM, 2004).

As mentioned above, 90 million adults (47% of the adult population) may lack the literacy skills to effectively use the U.S. health care system (IOM, 2004). The majority of these adults were born in the U.S. and speak English. Literacy levels are lower among elderly persons, those who have lower educational levels, those who are poor, minority populations and groups with limited English proficiency such as recent immigrants (IOM, 2004). The gap between knowledge and practice is widened by inadequate health literacy. People who lack an understanding of health care usually present with more advanced disease, receive fewer preventive care services and have poorer health outcomes (IOM, 2004). As one example, diabetics with poor health literacy were more likely than patients with adequate health literacy to have poor glycemic control and reported more retinopathies (Schillinger et al, 2002).

In its report Healthy People 2010, the U.S. Department of Health and Human Services included improved consumer health literacy as Objective 11-2, and identified health literacy as an important component of health communication, medical product safety and oral health. The 2003 Coalition for Allied Health Leadership team completed a national survey of allied health professionals and educators to assess awareness and needs concerning health literacy. Approximately one-third of all respondents were unaware of the issues surrounding health literacy, or that health literacy resources were available; denied knowledge of an impact of health literacy on patient care for their specific profession or had no institutional policy or goals to address health literacy. The article states that inadequate health literacy adversely affects health care outcomes and the quality of life of 90 million Americans. The cost to the health care system is \$73 billion annually (Health Literacy Survey, 2004).

“Literacy” provides the skills that enable individuals to understand and communicate health information and concerns. As mentioned above, educators do not associate literacy

Box 3-1. Health Literacy in an Older Man.

A 64-year-old man, with a history of noncompliance, was evaluated for a routine checkup. According to the resident, he hadn't taken his medications for diabetes or a heart problem for several weeks. Before leaving he received instructions about his medications, their importance and the proper doses. He disclosed he would see his doctor for follow-up, but couldn't remember the person's name. He was given a handwritten discharge summary.

He was seen five months later at a community clinic. He said he was taking his medications, but couldn't remember their names or dosages. The regimen was reviewed a second time; dates for blood tests were provided. He was scheduled for a recheck in two weeks.

When he returned, a medical student made a diagnosis that no one had considered: illiteracy. Many of his glucose values had been written for future dates and he was unable to read his list of medications. The man lived alone, dropped out of school in the second grade and had never learned to read.

Despite avoiding jargon and use of simple language, his medical team—comprised of many doctors, nurses and social workers—had not guessed he couldn't read.

This patient's problem is not uncommon. Fourteen percent of the adults in the U.S. have substandard prose ability: "ability to use printed and written information to function in society, to achieve one's goals and potential." According to The National Assessment of Adult Literacy (NAAL), these substandard skills "are no more than the most simple and concrete literacy skills: ranging from those completely illiterate to those who can identify short phrases.

Other facts: based on NAAL data, 12% of U.S. adults have "doc-

ument illiteracy." That is, they lack the ability to read and understand transportation schedules and food and drug labels. These people cannot read a television program to find what time a program will be aired. Twenty percent have below basic "quantitative literacy," the ability to perform fundamental quantitative tasks such as comparing ticket prices for two events. Older people (i.e., >64 years) fared the poorest on the NAAL; 23% had below average prose literacy, 27% below basic document literacy and 34% below basic quantitative skills.

Survey results indicate more than one-third of English-speaking patients and more than half of primarily Spanish-speaking patients at U.S. hospitals have low literacy. Often, these people present in the emergency room rather than a clinic because someone there will always write the information down so they don't have to do it themselves.

Patients with low literacy skills are often ashamed of their problem, with two-thirds never telling their spouses.

One clinician thinks that literacy screening should become a new vital sign. But that approach is controversial; no one wants to be embarrassed especially in front of his or her doctor. And there is little time to collect more information now in clinical practice. However, much has been written on the topic.

The patient described at the beginning of this case, with help, enrolled in an adult reading course, but it's still not clear if he takes all his medications as prescribed.

The Bibliography for **Box 3-1** can be found at www.markmorris.org.

with reading alone, but often consider literacy to represent a constellation of skills including reading, writing, basic mathematical calculations and speech and speech comprehension skills (Kirsch, 2001; Healthy People 2010) (Table 3-2).

Problems Associated with Inadequate Health Literacy

Individuals with inadequate health literacy (as currently measured) report less knowledge about their medical conditions and treatment, worse health status, less understanding and use of preventive services and a higher rate of hospitalization than those with marginal or adequate health literacy (Parker et al, 2003).

Inadequate health literacy is a hidden problem. People with limited health literacy skills may be embarrassed to discuss or even mention problems they encounter with the health care system (Baker et al, 1996; Parikh et al, 1996).

Health care personnel assume patients are telling everything, which is clearly not the case (Box 3-1). Studies show that a large percentage of patients are noncompliant and that health care professionals significantly underestimate how common noncompliance is (Hall et al, 1988).

Two recent studies demonstrated a higher rate of hospitalization and use of emergency services among patients with limit-

ed literacy. This higher use has been associated with higher health care costs (IOM, 2004). The Institute for HealthCare Advancement estimates that the average annual health care costs of people with very low health literacy may be four times greater than that of the general population (Sarason-Kahn, 2002). In a small Arizona study, patients with reading levels at or below third grade had mean Medicaid charges \$7,500 higher than those who read above the third grade (Weiss and Palmer, 2004).

Inadequate health literacy is particularly common among older adults and low-income patients. More than 66% of U.S. adults age 60 and older have inadequate or marginal literacy skills and about 45% of all functionally illiterate adults live in poverty (AMA Foundation, 2000).

A study of 2,659 outpatients at two hospitals found that 42% did not understand instructions to "take medication on an empty stomach." The same study found a 52% increase in the risk of hospitalization among patients with inadequate literacy compared with patients with adequate literacy (Williams et al, 1995). In the largest study of health literacy to date, one-third of English-speaking patients at two public hospitals were unable to read basic health materials. Twenty-six percent were unable to understand information on an appointment slip and 60% did not understand a standard informed consent docu-

Box 3-2. Health Literacy and Language Barriers.

Almost 50 million Americans (~19% of U.S. residents) speak a language other than English at home. A total of more than 22 million have limited English proficiency, speaking less than “very well” by their own admission. The decade leading up to 2000 experienced a 47% (more than 15 million people) increase in the number of people who spoke a language other than English at home.

Many patients who need medical interpreters have no access to them. Results of one study showed that no interpreter was used in 46% of emergency department cases involving people with limited English proficiency. Furthermore, few clinicians receive instructions with how to work with interpreters.

Language barriers and deficits can cause great harm. Patients are often nonadherent to medications, less likely to return for follow-up visits and have higher rates of hospitalization and drug complications. Two cases follow:

Case 1: A two-year-old girl was diagnosed with an inner ear infection and was prescribed an antibiotic. Her mother understood that her daughter should receive the prescribed medication twice daily. After carefully studying the label on the bottle and deciding it didn't tell how to administer the medication, the mother filled a teaspoon and poured the antibiotic into her daughter's painful ear.

Case 2: A young Spanish-speaking man stumbled into his girlfriend's house and said he was “intoxicado.” The Spanish-speaking paramedics took the word to mean “intoxicated.” The patient's intended meaning was “nauseous.” After 36 hours of being worked up for a drug overdose, the patient was reevaluated and found to have an intracerebellar hematoma with brainstem compression and a subdural hematoma. The young man became a quadriplegic.

Family members, friends and untrained members of the support staff are often used in these encounters, but commit more errors than those with more training. Much work needs to be done in this area given the changing dynamics of the U.S. population.

The Bibliography for **Box 3-2** can be found at www.markmorris.org.

ment (Williams et al, 1995).

Racial and ethnic differences can contribute to communication breakdowns (**Box 3-2**). As many as 20% of Spanish-speaking Latinos say they do not seek medical advice due to language barriers (IOM, 2002). A 2001 survey of 6,722 adults found that minority populations are more likely to have difficulties communicating with their health care providers compared with whites (Collins, 2001).

Even highly skilled individuals may find the health care system too complicated to understand, especially when poor health, anxiety, effects of medication, etc. make them more vulnerable. Directions, signs and official documents, including

informed consent forms, social services forms, public health information, medical instructions and health education materials often use jargon and technical language that make them too difficult to use (Rudd et al, 2000).

Patients with inadequate health literacy and chronic illness have less knowledge of illness management than those with high health literacy (Kalichman and Rompa, 2000). Public hospital patients with inadequate health literacy had higher rates of hospitalization than those with adequate health literacy (Baker et al, 1996). Adults with limited health literacy have less knowledge of disease management and of health-promoting behaviors, report poorer health status and are less likely to use preventive services (IOM, 2004).

Adverse drug events are another aspect of inadequate health literacy. One report found that 10% of adverse drug events were linked to errors in the use of the drug as a result of communication failure (Leape et al, 1993).

Where do Patients Receive Health Care Information?

Socioeconomic status, education level and primary language all affect whether consumers will seek out health information, where they will look, what type of information they prefer and how they will interpret that information (IOM, 2004). There is no single reliable answer.

Between 62 and 69% of adults at all literacy levels reported obtaining information from family and friends. Between 94 and 97% of adults at all skill levels reported using radio and television to obtain information. Individuals with lower literacy levels were less likely than those with higher skills to use newspapers and magazines for health information (69.5 vs. 90%).

The National Cancer Institute conducted the Health Information Trends Survey (HINTS), one of the nation's first national surveys of health information sources in 2003 and 2005. HINTS databases are designed to provide information regarding pattern of information use and opportunities to inform Americans about cancer.

In a Gallup survey, the proportion of people who reported getting “a great deal” or “moderate” amount of health or medical information from these sources follows: doctors (70%), television (64%), books (56%), newspapers (52%), magazines (51%), nurses (49%) and the Internet (37%). The proportion of people who reported a great deal or moderate amount of trust and confidence in the health or medical information from the sources follows: doctors (93%), nurses (83%), books (82%), newspapers (64%), magazines (62%), the Internet (62%) and television (59%) (Gallup Organization, 2002).

People have more ways than ever to get information, including telephone, fax, e-mail, the Internet, television, radio, print media, family and friends, etc. More sources will be available in the future, including automated monitoring of vital signs and markers, increased use of wireless technology, among others. But how do people access information today and how accurate is that information? The National Cancer Institute sought to answer some of these questions through HINTS. Some results follow (Hesse, 2004):

- Where would you go for cancer information? Provider (50%), Internet (34%), Library (5%), Family (4%), Other (4%), Print media (3%).
- Where did you go for cancer information? Internet (49%), Print media (27%), Provider (11%), Library (6%), Other (4%), Family (3%).
- Trust information by gender? There were no gender differences. Doctors came in first, followed by television. No differences existed among family/friends, newspapers, magazines, radio, television and the Internet.
- Trust information by education? Those with no high school diploma tended to trust their doctors and television far more than family, friends, newspapers, magazines, radio and the Internet.
- When asked to agree or not with the statement “Everything causes cancer.” 51% strongly agreed or agreed; only 18% strongly disagreed.
- When asked to agree or not with the statement “There’s not much people can do to lower their chances of getting cancer.” 72% strongly disagreed or somewhat disagreed.
- When asked to agree or not with the statement “There are so many different recommendations about preventing cancer, it’s hard to know which ones to follow.” 77% strongly agreed or somewhat agreed.

Family and Friends

Personal stories may have the power to influence health behavior, especially in those with inadequate literary skills. One study found that many individuals with inadequate literacy more often obtained information about cancer from family and others who have had experience with a late-stage diagnosis rather than from reading about the disease (Friedell et al, 1997).

The Internet

The Internet is estimated to reach more than 70 million people living in the U.S. with health information. About 90% of 15- to 24-year-olds have been online; 75% of these have used the Internet at least once to obtain health information (Rideout, 2004). Inadequate English literacy and disparities in computer access decrease the likelihood that the information will be available to, and understood by, all health consumers (Houston and Allison, 2002). The quality and reliability of online content can be problematic. A meta-analysis of consumer health information on the Internet found that 70% of the studies analyzed concluded quality was a problem (Eysenbach et al, 2002).

Health Care Professionals

A number of studies demonstrate that patients remember and understand as little as half of what they are told by their physicians. In addition, because they have knowledge deficits, patients with inadequate health literacy may be less equipped to overcome discrepancies in understanding and memory when they are at home and experience difficulties reading or interpreting instructions (IOM, 2004).

Limited education, training, continuing education and prac-

tice opportunities to develop skills for improving health literacy exist for allied health professionals and educators at the national level (IOM, 2004).

Some evidence of a failure of communication exists with patients who have inadequate health literacy as currently measured. Patients with chronic diseases and inadequate health literacy have poor knowledge of their condition and its management, often despite having received standard self-management education (Williams et al, 1998, 1998a). Patients with inadequate health literacy have more difficulty accurately reporting their medication regimens and describing the reasons for which their medications were prescribed (Schillinger et al, 2003) and may have poorer compliance (Kalichman et al, 1999).

Communication between a health care provider and patient during outpatient visits may be hampered by several related factors. These include the relative infrequency and brevity of visits, language barriers, differences between providers’ and patients’ agendas and communication styles and other cultural barriers, lack of trust between the patient and provider, overriding or competing clinical problems and the complexity and variability of patients’ reporting symptoms and trends in their health status (IOM, 2004).

The average patient asks only two questions during an entire medical visit lasting an average of 15 minutes, according to the Bayer Institute of Health Care Communications. Studies show that most patients are relatively uninformed about their condition or the most appropriate treatment despite the fact that most patients state they want more information. Results of one study revealed that doctors imparted information to patients for an average of a little more than a minute during interviews that lasted an average of more than 20 minutes. When asked how much time they spent on patient education, the physicians overestimated by a factor of nine. The study also found that in 65% of the cases, physicians thought patients wanted less information than they actually did (Terry, 1994).

An Institute of Medicine (IOM) report clarifies the links between miscommunication and medical and health errors and adverse events (2002). A variety of problems can result if culture and language are not accounted for including failure to obtain accurate medical histories, failure to obtain informed consent, inadequate health knowledge and understanding of health conditions, inadequate treatment adherence (compliance), medication errors, decreased use of preventive and other health care services and poor patient satisfaction. Customized and tailored care based on patient needs and values and accommodating differences in patient preferences are integral to individualized care (IOM, 2001).

The concept that no one size fits all is fundamental to the understanding of health literacy. Complex problems are rarely resolved by simple solutions. However, scientific investigations of interventions to minimize the impact of health literacy and promote the development of health literacy skills are in its infancy (IOM, 2004). Evidence-based approaches show promise for contributing to better outcomes (Chapter 2).

Health literacy must be understood and addressed in the context of culture and language (IOM, 2004). Competing sources

of health information (including the national media, the Internet, product marketing, health education and consumer protection) intensify the need for improved health literacy.

Improving Health Literacy

Health literacy is fundamental to quality care (IOM, 2004). Without improvements, the effect of many advances to improve health outcomes will be diminished. Consequently, the IOM of the National Academies (U.S.) has identified improving health literacy as one of two crosscutting issues in health care requiring attention (IOM, 2003). The IOM reports that enabling patients to understand their condition and its treatment, to make the best decisions for their care and to take the right medications at the right time in the intended dose; that is, to act in their own interest remains a neglected, final pathway to high-quality health care (IOM, 2004).

A 1998 report from the U.S. Department of Health and Human Services provided evidence from accumulated studies that health, morbidity and mortality are related to income and educational factors (Pamuk et al, 1998). Life expectancy and death rates from cancer and heart disease, incidence of diabetes and hypertension and use of health services were related to family income. Death rates from chronic diseases, communicable diseases and injuries were inversely related to education (i.e., those with lower educational achievement were more likely to die of a chronic disease than those with higher educational achievement). In essence, the lower one's income or educational achievement, the worse one's health (IOM, 2004).

Approaches that appear to successfully improve health literacy include:

1. Provision of simplified/more attractive written materials
2. Technology-based communication techniques
3. Personal communication and education
4. Combined tailored approaches
5. Partnerships (collaborative measures between patient and the health care team).

In all of these, using plain language (common words, defining unusual words, writing the way people talk); simple, specific and direct sentences; active, inflective voice; sequencing ideas clearly and logically; being attentive to and respectful of culture enhance the patient's ability to understand and retain information. It is also imperative to be cognizant of overt and covert messages and to improve skills, materials and processes. This includes changing outdated approaches and encouraging professionals to improve verbal and written communication skills, including work with the adult education sector, etc. (Rudd, 2002).

Professionals are also encouraged to write legibly or type, and use simplified language with more white space, improved format and pictograms (See below.) or other graphic devices. Pictograms may be especially useful for communicating information to consumers who speak English as a second language and to those with lower reading ability levels (IOM, 2004).

The telephone can be a great means of delivering interventions such as health-related counseling and reminders, if the caller has competent verbal communication skills. Tailored

print communications can improve health outcomes, but research also shows that they are less effective at influencing individuals who are not serious about making a behavioral change (Revere and Dunbar, 2001; IOM, 2002).

Arcane language and jargon that are common to health care workers are usually indecipherable to patients. Adults who have difficulty reading or understanding written materials are often embarrassed and devise ways to hide their inability to understand. If health care professionals invested more time to ask their patients to explain exactly what they understand about their diagnoses, instructions and bottle labels, the caregivers would find many gaps in knowledge, difficulties in understanding and misinterpretations (IOM, 2004). These problems are exacerbated by language and cultural variation, by technological complexity in health care and by intricate administrative documents and requirements.

Female primary care physicians tend to engage in longer visits and have more "patient-centered" consultations than their male counterparts (Roter et al, 2002). Female physicians engage in significantly more active partnership behaviors, positive talk, psychosocial counseling, psychosocial question asking and emotionally focused talk. Medical visits with female physicians are, on average, two minutes (10%) longer than those with male physicians.

Distinguishing between noncompliance and inadequate literacy may be difficult unless health care providers regularly ask patients questions such as, "Was I clear?" "Is there anything you'd like for me to go over again?" These types of questions put the burden of responsibility on the speaker rather than on the listener. Researchers and the American Medical Association advocate the importance of teachback. For example, asking "Just so we both agree, why don't you tell me what you would do if XYZ happens?" or to demonstrate how the patient would do something, like monitor blood glucose concentration.

In veterinary medicine, this simple approach of having pet owners relate back their understanding (without feeling like they've been put on the spot) can have dramatically positive ramifications for pet care. Speaking clearly and being an attentive listener can express that you care. Empathy goes a long way in building trust and establishing a relationship so that communication is successful. Focus on using basic words and making the message clear.

A meta-analysis of 41 research studies showed that giving patients more information is associated with increased patient satisfaction, better compliance and better recall and understanding of medical conditions (Rankin and Stallings, 1996).

Technology-Based Communication

It's very hard to cover all the complex information needed to make decisions in spoken and written words. Covering some information with tools such as CD-ROMs before patients meet with their doctors has increased satisfaction in at least one study in human medicine.

According to the Memorial Sloan-Kettering Cancer Center, "New technology (i.e., a CD-ROM educational tool) can save nurses' time by eliminating the need for repetitive

teaching, and enrich patient teaching by allowing the nurse more time to address individual concerns” (Ginty and Sullivan, 2001). A second study conducted at the same center discussed the benefits that were realized after nurses used an educational CD-ROM to supplement their teaching to pre- and postoperative cancer patients. According to the center, “The nurse is responsible for doing preoperative teaching, much of which is standard and the same for every patient. Nevertheless, it must be repeated for each patient.” The CD-ROM covering standard pre- and postoperative topics was very effective; 78% of patients who completed a follow-up quiz had one or no answers wrong. Nurses estimated that the program significantly decreased the time it took them to do standard preoperative teaching, allowing them to focus on patient-specific questions and concerns. The study concluded that “patients stated the animation, narration and photographs on the CD-ROM reinforced their understanding and decreased anxiety” (Vaziri and Gallagher, 2001).

Professional and public awareness of the health literacy issue must be increased, beginning with education of medical students and physicians and improved patient-physician skills (Schillinger et al, 2004). Such training of veterinary students, veterinarians and all health care team members would no doubt be of great benefit to pets and pet owners as well.

Pictographs

Pictographs (e.g., like simple drawings on road signs) have been used in non-literate societies to help people remember spoken instructions. Pictographs are designed to help people understand information quickly. One small study tested the hypothesis that pictographs can improve recall of spoken medical instructions. Twenty-one junior college students listened to lists of 38 actions for managing fever and 50 actions for managing sore mouths. One of the action lists was accompanied by pictographs during listening and recall whereas the other was not. Subjects did not see any written words during the intervention and therefore, relied entirely on memory of what they heard. Mean correct recall was 85% with pictographs and 14% without ($p < 0.0001$) (Houts et al, 1998).

Impact of Health Literacy on Compliance

Health literacy has only recently reached the national agenda in human medicine and for the most part, hasn't at all in veterinary medicine. Logically, many of the 90 million Americans with inadequate health literacy own pets. It would be imprudent to assume that they understand preventive protocols, diagnoses and treatments for their pets any better than they do for themselves.

There is very little information about the exact relationship between compliance and health literacy in human medicine and none in veterinary medicine. Studies show, however, that a large percentage of patients are noncompliant and that health care professionals significantly underestimate the scope of noncompliance (Hall et al, 1988). Likewise, compliance is a major problem in veterinary medicine (See below.) (AAHA, 2003).

Conclusion

Health literacy is fundamental to quality care (IOM, 2004). A former surgeon general recently stated that “health literacy can save lives, save money and improve health and well being of millions of Americans...health literacy is the currency of success for everything I am doing as Surgeon General” (Carmona, 2003).

People's prior knowledge, beliefs and experiences influence the way they interpret and use health information. Furthermore, America's increasing cultural diversity challenges health communication activities. Until now, we've known little about how people seek health information or how to bridge the substantial discrepancies between the information they want and need and what they receive (Croyle, 2004). Several books are available to provide information about improving health literacy and compliance (Table 3-3).

Health literacy must be actively addressed by the medical profession, and likewise, the veterinary profession should take an aggressive approach to enhance veterinary health literacy.

CLIENT COMPLIANCE

Introduction and Background

Around 400 BCE, Hippocrates supposedly observed that some of his patients failed to comply with medical instructions, thus prolonging their recovery. He subsequently counseled his students that some patients would be less than honest about taking medication. In the early 1900s, tuberculosis patients who failed to follow medical instructions were called “defaulters” (Jaret, 2001). Patients were subsequently described as “faithless,” “untrustworthy” and “unreliable” over the following half century when they failed to follow their physician's orders (Steiner and Ernst, 2000). Unfortunately, noncompliance with medical instructions remains a huge problem more than 2,400 years after Hippocrates' warning.

Improving communication is an important aspect of improving compliance. The Food and Drug Administration (FDA) supports higher-quality health information for the public. An FDA study in 1999 found that 56% of people who saw a consumer-directed print advertisement for a prescription drug said they read the brief summary “not at all” or “a little.” In a follow-up study in 2002, that number increased to 73%. During the same three-year span, those saying they read “almost all” or “all” decreased from 26 to 16%. Based on these data, the FDA wants manufacturers to present key risk information in consumer-directed print advertisements in more consumer-friendly ways, including use of clearer, less cluttered formats for presenting risk information. The FDA also encourages manufacturers to focus their risk disclosures on the most important and the most common risks and to do so in language easily understood by the average consumer (FDA, 2004).

Preventive and therapeutic noncompliance is a major issue in human health care and, as we'll show, in veterinary medicine. The number one problem in treating illness today is patients' failure to take prescription medications correctly, regardless of patient age (AmericanHeart.org, 2004). Failure to take medica-

Table 3-3. Additional resources for improving health literacy and compliance.

| Titles | Publishers |
|---|---|
| Health literacy resources | |
| Health Literacy | Institute of Medicine National Academies Press 500 5th Street NW, Lockbox 285 Washington, DC 20055 |
| Understanding Health Literacy: Implications for Medicine and Public Health | American Medical Association 800-621-8335 www.amapress.com |
| Health Literacy in Primary Care: A Clinician's Guide | Springer Publisher Company 11 West 42nd Street New York, NY 10036 www.springerpub.com |
| Health Literacy from A to Z: Practical Ways to Communicate Your Health Message | Jones and Bartlett Publishers 40 Tall Pine Drive Sudbury, MA 01776 www.jbpub.com |
| Advancing Health Literacy: A Framework for Understanding and Action | Jossey-Bass 800-956-7739 www.josseybass.com |
| Compliance resources | |
| The Path to High-Quality Care: Practical Tips for Improving Compliance | American Animal Hospital Association 12575 West Bayaud Avenue Lakewood, CO 80228 800-883-6301 www.aahanet.org |
| Veterinary Clinics of North America: Small Animal Practice (March 2006; 36(2): 419-436) | WB Saunders Co. 6277 Sea Harbor Drive Orlando, FL 32887 877-839-7126 www.usjc@elsevier.com |
| Journal of the American Veterinary Medical Association Evaluation of client compliance with short-term administration of antimicrobials to dogs. (Feb. 15, 2005; 226(4): 567-574) | American Veterinary Medical Association 1931 N. Meacham Rd, Suite 100 Schaumburg, IL 60173 847-925-8070 |

tions as directed costs the U.S. economy \$100 to \$300 billion annually (Fortune, 2004). In the U.S. today, the annual consequences of noncompliance include (epill.com):

- An estimated 125,000 deaths.
- 23% of nursing home admissions (380,000 patients/\$31.3 billion) are the result of patients failing to take prescription medications accurately.
- 10% of hospital admissions (3.5 million patients/\$15.2 billion) are the result of patients failing to take prescription medications correctly.
- Reduced productivity (absenteeism, impaired work performance [20 million workdays/\$1.5 billion]).
- Lengthened hospital stays (4.2 days) due to medication noncompliance.

The American Heart Association presents the following facts on its website to further define the scope of noncompli-

ance (AHA, 2004): Almost 49% of Americans use prescription drugs and 30% use nonprescription medications.

- Almost 29% stop taking their medicine before it runs out.
- 22% take less of the medication than is prescribed on the label.
- 12% don't fill their prescriptions at all.
- 12% don't take medication after they buy the prescription.
- At any given time, up to 59% of patients on five or more medications are taking them improperly, regardless of age.
- Adverse drug reactions may be the fourth to sixth leading cause of death. Serious adverse drug reactions occur in 6.7% of hospitalized patients.

The above data deal with health care compliance in the U.S. Similar data exist for other developed countries. The World Health Organization has published an excellent review about the difficulties of compliance: *Adherence to Long-Term Therapies: Evidence for Action* (WHO, 2003). Compliance data from developing countries is even lower.

The information that follows summarizes much of the existing knowledge about compliance in small animal veterinary practice. Promoting awareness of poor compliance rates and acknowledging our ability and obligation to improve them are the first steps in improving adherence to recommended services and products and their associated outcomes for dogs and cats.

Definitions

Compliance has been traditionally defined as “the extent to which the patient (client in veterinary medicine) follows medical instructions” (Sabate, 2001). Unfortunately, this definition promotes a paternalistic relationship and suggests patients (or clients) should be passive participants in health care. Furthermore, this concept of compliance omits many nonmedical interventions that promote health including diet, exercise, routine dental care and avoiding or minimizing behaviors that increase the risk of illness. A better definition is the extent to which a person's (or pet owner's) behavior-taking (administering) medication, following a diet and/or executing lifestyle changes—corresponds with agreed recommendations from a health care provider (WHO, 2003). Another definition used in veterinary medicine: the pets in your practice are receiving the care that you believe is best for them (AAHA, 2003). Compliance is thus a behavior and a measure (Hasford, 1999). Veterinary clients are/will become surrogates for their pets in this regard.

Compliance will be used throughout this article because the term is firmly entrenched in the medical and dental literature and is gaining in awareness in veterinary medicine. As mentioned above, compliance, as defined in human medicine, suggests a paternalistic relationship and connotes blame (as do other terms such as control, adhere, prescribe, regimen, what's best for you and will power), whether it be of patients, clients or health care providers, and is associated with the outmoded concept that the client is the sole source of noncompliance. The concept of adherence may be a better way of capturing the dynamic and complex changes required over long periods to

maintain optimal health for people or pets with chronic diseases (WHO, 2004). Adherence requires that the patient (client in veterinary medicine) agree to treatment recommendations. Concordance takes the relationship further because it fosters the concept of agreement between clients and health care providers about whether, when and how medications should be taken. Adherence is used synonymously with compliance in this chapter.

Based on the 2003 AAHA Compliance Study, veterinarians strongly believe that compliance is all or mostly the client's responsibility. Forty-one percent of veterinarians said clients were responsible for noncompliance, whereas 19% said it was the veterinarians; 36% indicated that clients and veterinarians shared the responsibility (AAHA, 2003).

Compliance Research in Veterinary Medicine

The first compliance articles began to appear in the human medical literature in the 1950s. Since then, thousands of articles have been published and dozens of businesses and websites have been created to promote the concept of compliance. By comparison, only a handful of articles have appeared in the veterinary literature. A sampling of the relevant literature follows (Boxes 3-3 through 3-5).

In one study, 48% of the dogs visiting 36 veterinary clinics were placed on the recommended heartworm preventive program. These dogs received 78% of the medication required to fully comply with the clinics' recommendations (Cummings, 1995). In another study involving cats with stable chronic renal failure, compliance was not achieved in more than 40% of cats, although cats receiving dietary therapy (i.e., foods restricted in phosphorus and protein) were generally healthier and lived for three times longer, on average. Limited food intake by cats, owner resistance or both were cited as reasons for noncompliance (Elliott et al, 2000).

At least three studies measured compliance with short-term antibacterial therapy in dogs. In one study, investigators assessed compliance among 95 dog owners using a telephone survey. Forty-four percent reported 100% compliance with the treatment regimen and 88% reported a compliance level of 80% or more. Compliance was significantly higher when dog owners felt that the veterinarian spent enough consultation time. Compliance results were higher for dogs treated for gastrointestinal (GI) infections compared with those treated for other diseases (Grave and Tanem, 1999). In another study, electronic monitoring (e.g., Which may mean as little as the client opened a bottle with an electronic chip, whether the client gave the medication or whether the pet regurgitated the medication are variables.) showed owners administered an average of 84% (range 7 to 104%) of an antibiotic given for five to seven days. Return medication counts and client self-reports overestimated therapeutic compliance compared to electronic monitoring. The majority of owners (71%) claimed perfect compliance with the prescribed regimen (Barter et al, 1996). The third study reported that there was no difference in compliance for regimens that included twice or three times per day administration of an antibiotic (84%). However, only

Box 3-3. Human Oral Health Literacy Studies.

Eight objectives in Healthy People 2010 concern the oral health of U.S. adults, including goals to reduce dental caries, gingivitis, oral cancer and tooth loss, as well as to improve use of the dental care system. The Surgeon General recognized that "the majority of people who need such information most, those in low-income groups and those with lower education levels, also are the ones who lack the information and skills (oral health literacy) to ask for and obtain specific preventive services or treatment options."

One article in this review studied the readability of 24 educational materials for dental patients. The reading levels ranged from the third to 23rd grade levels, more than 40% of which were written above the seventh to ninth grade level. Many of the materials contained grammatical errors and obscure jargon.

A second article examined the readability and distribution of 20 printed materials containing oral health educational information. Ninety-one percent of the materials were written between the 9th and 15th grade levels.

A third article assessed the difficulty of dental words and tested the readability of selected dental health education materials. Adolescents were asked to read aloud and describe the meanings of 25 commonly used dental terms. Several words were poorly understood, including "gum disease," "oral hygiene," "fluoride tablets" and "gingivitis." The four dental health education brochures studied were written from 12.4 to 17.4 reading grade levels.

Yet another study assessed the readability of 19 oral cancer educational pieces. Five pieces tested at the sixth and seventh reading grade levels, nine at the eighth and ninth grade levels, and five at grades 10 through 13.

The Bibliography for **Box 3-3** can be found at www.markmorris.org.

34% gave doses within the designated optimal time period. Compliance tended to be better with the twice-daily regimen although the differences were insignificant (Barter et al, 1996a). It should be noted, however, that these percentages were self-reported.

In dental compliance studies, owners of dogs were given extensive instructions about brushing their dog's teeth. Six months later, 53% were still providing the minimum care necessary to prevent periodontal disease (Miller and Harvey, 1994). Another study compared three dental homecare regimens, including daily toothbrushing and two different dental foods, with a control group in 88 client-owned cats for six months after a professional cleaning. A large-sized kibble with dental properties was most efficacious in controlling calculus formation and development of gingivitis. Toothbrushing compliance was only 40% at the end of the six-month study (Theyse et al, 2002).

Box 3-4. Compliance in Human Medicine.

Several types of noncompliance exist. Initial noncompliance occurs when a patient receives a written prescription or calls a pharmacy, but doesn't wait or return to pick up the filled prescription. Patients who fail to present a prescription are also initial noncompliers. Varying compliance is used to describe the process of taking a prescribed medication at a level less than recommended. Hypercompliance occurs when a patient takes a medication at a level above that prescribed. The term "white coat compliance" is used to describe behavior in which a patient who has been noncompliant takes medication at or above the prescribed level around a recheck appointment. Accordingly, both the physician and the patient may incorrectly believe the patient is receiving therapeutic benefit. "Drug holidays" refers to the behavior in which patients repeatedly and abruptly discontinue and resume taking their medication.

Studies have shown that the amount of information forgotten by patients is a linear function of the amount presented and is correlated with the patient's medical knowledge, anxiety level, and possibly age, but not with intelligence. Therefore, a phased approach is preferable in patient education. Both oral and written information should be provided (e.g., patient education booklets, medication cards, etc.) and special materials should be developed to instruct patients with low literacy (e.g., picture schedule). Formal evaluation of patient education is imperative.

Failure to attend appointments is often one of the first signs that a patient is not complying with his or her treatment. Given the difficulty of monitoring compliance directly, health care professionals may want to monitor patients' attendance at clinic appointments as a proxy measure.

Asking patients to complete diaries about medication use has the advantage of providing details about how and when the product was taken. However, whether diaries improve compliance hasn't been proven.

The Bibliography for **Box 3-4** can be found at www.markmorris.org.

The American Animal Hospital Association Compliance Study

The American Animal Hospital Association conducted the largest, most significant compliance study in veterinary medicine, which was funded by a substantial educational grant from Hill's Pet Nutrition, Inc. Results of the study were reported in the book *The Path to High-Quality Care: Practical Tips for Improving Compliance* in 2003. This comprehensive study showed that millions of dogs and cats did not receive the best care they could have. Although most practice teams thought compliance with recommendations was high, few practices actually measured compliance and the level of compliance in almost all cases was significantly less than what practice teams believed; 78% of veterinarians indicated that they were satisfied with the levels of compliance in their practices (AAHA, 2003). Researchers visited 52 practices and/or conducted in-depth

interviews with practice teams. More than 1,000 pet owners were surveyed about the care they provided for their pets, their desires relative to the information and care provided by their veterinarian and their compliance with health care recommendations. Furthermore, data were gathered from the medical records of almost 1,400 cats and dogs. These data were used to quantify compliance and the opportunities that practices had to improve pet care by improving compliance (AAHA, 2003). The study quantified compliance in six areas:

- Heartworm testing and prevention
- Dental prophylaxis
- Therapeutic foods
- Senior screenings
- Canine and feline core vaccinations
- Preanesthetic testing.

Only dogs and cats seen by their veterinarian at least once during the past 12 months were included in the study; extrapolation accounts for 51 million dogs and 44.2 million cats falling into this category (AVMA, 2002). The AAHA compliance data do not include 10.6 million dogs and 22.7 million cats that were not seen at a veterinary practice during the previous year.

More than seven million dogs were not in compliance with their veterinarian's protocol for heartworm testing. Almost 21.5 million owners did not give their dog's heartworm preventive medication at all, failed to give medication for the number of days recommended by their veterinarian, or (and maybe most alarming) were never dispensed an adequate amount of preventive in the first place, or were never notified by the practice to purchase follow-up doses. In endemic areas, compliance for testing and preventive medication was 83 and 48%, respectively. The American Heartworm Association reported that more than 244,000 dogs tested positive for heartworms in 2001 (AAHA, 2003).

The AAHA Compliance Study found a dental prophylaxis compliance rate of 35% for dogs and cats with grade 2, 3 or 4 dental disease. Compliance was only 15% for those pets with grade 1 disease. The study concluded that almost 15.5 million dogs and cats with grade 2, 3 or 4 dental disease had not received dental prophylaxis. Based on chart review, 23% of those owners of pets with grade 2 or higher dental disease (3.6 million pets) did not receive a recommendation for treatment. Millions more cats and dogs had grade 1 disease. Interestingly, no grade was reported for 19% of the patients. The lack of a reported dental grade may indicate that no exam was given or poor medical record keeping (AAHA, 2003). The American Veterinary Dental College defines quality dental health care as completing a dental prophylactic procedure on any pet with grade 1 to 4 dental disease. Veterinary health care teams failed to adhere to these recommendations in a great many cases, which has resulted in less than the best care for many patients.

Compliance with feeding a therapeutic food for six canine conditions (i.e., kidney disease, bladder stones or crystals, food allergies, chronic GI disease, acute GI disease and obesity) and seven feline conditions (i.e., the same six canine topics plus feline lower urinary tract disease) was included in the survey.

Compliance with feeding therapeutic foods was 19% for dogs and 18% for cats. More than 11.6 million dogs and nine million cats with one of the diagnosed conditions were not fed an appropriate therapeutic food at all or were not fed the food for an appropriate period of time (AAHA, 2003). When all pets with diagnoses that could benefit from treatment with a therapeutic food were considered, overall compliance was 5 to 7%, which represented more than 52 million dogs and cats. The real potential for improvement for all foods combined could be as high as 20-fold. What was also disturbing is that 55% of pet owners who fed a therapeutic food also supplemented the recommended food with other foods or treats. The primary reason cited by clients was that they didn't know not to.

Thirty-five percent of the dogs and cats in a typical practice are considered senior (i.e., mature). Senior screenings minimally included blood work and a urinalysis. About 17.9 million dogs and 15.5 million cats considered to be senior had not received a diagnostic screening in the past year. Only 32 and 35% of the dogs and cats had diagnostic screening tests performed (AAHA, 2003).

Compliance for core vaccinations (i.e., distemper, hepatitis, leptospirosis, parainfluenza and parvovirus for dogs and viral rhinotracheitis, calicivirus and panleukopenia for cats) was 87%, which was higher than for any other condition studied. Still, 12.4 million dogs and cats were not protected against core diseases. Compliance with other vaccinations was not studied (AAHA, 2003).

Compliance with preanesthetic screening was 72% for dogs and 65% for cats. Compliance was 90% for practices that required preanesthetic blood work (AAHA, 2003).

Economic Aspects of Noncompliance

Poor compliance affects standards of care, overall pet health, client satisfaction and practice economics. Every veterinary health care team member and client is responsible for enhancing compliance. According to the AAHA Compliance Study, the total additional revenue opportunity per veterinarian per year is \$639,700 to \$660,700 for the conditions studied (2003). Other practice productivity data are available (Wayner and Heinke, 2006).

Improving Compliance

The AAHA Compliance Study concluded that compliance is related to three factors: recommendation (by the veterinarian), acceptance (by the client) and follow through (by the veterinary health care team). This can easily be remembered as CRAFT, where Compliance = Recommendation + Acceptance + Follow Through. The AAHA study noted that: 1) compliance was much lower than veterinarians believed and 2) clients would very often comply if the practice made an effort to help them comply (2003). Furthermore, a significant element of noncompliance is due to the fact that practice team members often do not make recommendations to clients. Thus a positive compliance cascade cannot happen.

As part of the study, pet owners were asked to agree with one of these statements:

Box 3-5. What Veterinarians can Learn from Physicians about Communication.

The *Journal of the American Veterinary Medical Association* published an outstanding review titled "What can veterinarians learn from studies of physician-patient communication about veterinarian-client-patient communication?" (Vol. 224 [5], March 1, 2004, pp 676-684). Several relevant points follow:

- A gold standard does not exist for assessing physician-patient interactions, nor for an accepted definition of the physician-patient relationship.
- Communication style should be tailored to the individual patient.
- The most common model for the physician-patient relationship is still paternalism. Relationship-centered care, characterized as a partnership, in which negotiation and shared decision-making is suggested as optimal. The physician's role is suggested as an advisor or counselor.
- Communication skills and dealing with clients have been listed as the most important skills for success.
- Effective communication can significantly improve medical outcomes, including patient health and satisfaction, adherence to medical recommendations and physician satisfaction.
- A controlling style including behaviors that maintain the physician's power, status, authority and professional distance negatively affects patient satisfaction.
- Factors suggested to improve client compliance include establishing two-way communication and trusting relationships, a compassionate health care team, collaborative planning of the treatment regimen, provision of specific verbal and written instructions about medications and timely encouragement.
- Medical researchers have studied physician-patient interactions for 30 years. Four basic conclusions have emerged: physician-patient interactions have an impact on patient health, patient satisfaction, adherence to medical recommendations and physician satisfaction.

The Bibliography for **Box 3-5** can be found at www.markmorris.org.

- I want my veterinarian to tell me about all of the recommended treatment options for my pet, even if I may be unable to afford them.
- I want my veterinarian to tell me only about the recommended treatments for my pet that he or she thinks are not too expensive for me.

Ninety percent of respondents chose the first statement. Furthermore, only 7% declined dental care due to cost. Likewise, only 4% either discontinued or refused therapeutic foods and only 5% declined senior screenings due to cost. Cost was not a significant factor in the client's decision to accept or decline health care. Despite these findings, veterinarians overwhelmingly cited cost and insufficient client communication and education as the primary barriers to com-

pliance (AAHA, 2003).

The AAHA study lists several follow through components to augment recommendations. These include: scheduling procedures and follow-up appointments when the recommendation is made, providing clear instructions for at-home care and recheck exams (Almost 80% of pet owners indicated they wanted verbal and written instructions.), sending reminders (In the AAHA study, compliance was highest for core vaccinations, a service for which virtually every practice sends reminders. Few practices send reminders for medication or food refills. Sixty-five percent of pet owners said they would welcome multiple reminders by phone, mail, e-mail or a combination. Seventy-two percent said they would like to receive a phone call if they were overdue for a recommended treatment or preventive service.) and making follow-up phone calls. More than 82% of the pet owners surveyed indicated that they wanted to be able to discuss feeding and home care instructions with other members of the health care team, not just the doctors. Practices that consistently followed-up with clients whose pets were fed a new food reported a much higher percentage of patients staying on the new food and a much higher compliance with recommended feeding guidelines (AAHA, 2003).

The AAHA Compliance Study identified six steps to improving compliance and patient care:

- Measure current compliance
- Involve the entire health care team (and establish protocols that are agreed upon)
- Set compliance goals
- Implement new protocols
- Measure and track results
- Celebrate success.

The AAHA Compliance Study found that a major cause of veterinary care providers' failure to make health care recommendations was their misjudgment of the clients' willingness to take action. The following represent reasons veterinarians cited for noncompliance (AAHA, 2003):

- Cost (60%)
- Communication and client education (55%)
- Client time or convenience (40%)
- Perceived value (25%)
- Process error at practice (15%).

Despite these perceptions 75% of pet owners agreed or strongly agreed that their veterinarian made recommendations that were good for the pet. Only 10% of pet owners agreed or strongly agreed that their veterinarian's recommendations were motivated by a desire to make money. Cost wasn't a major barrier to adherence in the AAHA Compliance Study. However, lack of an effective recommendation and lack of reinforcement by the veterinary health care team were cited by clients as important barriers to compliance. For example, veterinarians claimed that they discussed nutrition and pet food with pet

owners during more than 90% of visits. Only 18 to 22% of pet owners recalled such discussions. Reasons cited for lack of client follow through include:

- Unclear diagnosis or need for follow-up care
- No one told me about the need for follow-up
- Follow-up appointment not made or was too difficult to make
- No reminders were sent.

As an example, client acceptance of dental recommendations doesn't depend on the degree of dental disease or the cost of the procedure. Clients cited these reasons for lack of compliance:

- Not enough education provided about the need for the service (45%)
- Follow-up visit not scheduled (15%)
- Veterinary health care team didn't tell me about it (8%)
- Pending appointment (5%)
- Unclear diagnosis (5%)
- Cat was too wild to catch (5%)
- Other (7%).

Several other sources bear consideration for improving compliance (Table 3-3).

Conclusion

It is obvious that adequate health literacy is a major obstacle to delivering optimal health care in human medicine. By extension, this issue is no less dramatic in veterinary medicine, and the processes for improved communications and health literacy cited in this chapter have direct relevance to pet care.

The health literacy issue is coupled to that of compliance/adherence. As defined in the AAHA Compliance Study, compliance in veterinary medicine is defined as, "the pets in your practice are receiving the care that you believe is best for them." That is; if you, the attending veterinarian, believe specific products and services are important for a particular pet's care, does your health care team effectively communicate your beliefs to the client in order for her/him to decide the next steps for the pet's care? Not all clients will take our recommendations, but research suggests that better communication improves medical care.

Health literacy, the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions (Ratzan and Parker, 2000; Healthy People 2010) cannot be assumed. Effective communication is paramount to practicing great medicine (Silverman et al, 2005; Cornell et al, 2007).

REFERENCES

The references for **Chapter 3** can be found at www.markmorris.org.