Section 1

Overview

1.1

Overview of Pet-Specific Care

Lowell Ackerman, DVM, DACVD, MBA, MPA, CVA, MRCVS

Global Consultant, Author, and Lecturer, MA, USA

BASICS

1.1.1 Summary

Pet-specific care is a practice philosophy in which veterinary care is transformed from a reactive model to a more proactive version in which veterinary teams provide solutions rather than just services, and pet owners become more engaged with the veterinary team in the pet care process. Pet-specific care encourages active, ongoing veterinary care throughout a pet's life as a continuum of care, rather than just a passive transaction-based process. The approach can result not only in happier, healthier pets, but also healthier families, practices, and communities.

For veterinary medicine to provide real value to pet owners and derive real success for veterinary practices, there is a need to focus on being proactive, appreciating risk factors, detecting problems early, closing compliance gaps, and managing through evidence-based guidelines.

1.1.2 Terms Defined

Care Pathway: A step-by-step approach to the management of specific conditions in specific patient populations.
Companion Diagnostics: A method to test safety and efficacy of a drug specific to a target patient group, breed, or otherwise identified individual (biomarkers, genetic markers, etc.).
Continuum of Care: The delivery of healthcare over a period of time, such that intervention at any point on the timeline affects quality of life in the period afterwards.
Healthspan: The portion of a pet's life in which it is considered generally healthy, in contradistinction to lifespan which is the quantity of time a pet is alive.
Level of Care: The intensity, appropriateness or competence of care provided.
P4 Medicine: The clinical face of systems medicine, P4 medicine is Predictive, Preventive, Personalized, and Participatory. Its two major objectives are to quantify wellness and demystify disease.
Pet Parent: A term used to designate that the relationship between individuals and their pets is more than just ownership. Such individuals endeavor to do what is best for their pets and seek to maximize the benefits of the human–animal bond for both parties.
Spectrum of Care: The availability and accessibility of veterinary medical care regardless of the socioeconomic status of the pet owner.
Stratified Medicine: An approach to medical care designed to segment or stratify patients into groupings with similar disease profiles, attributes, or presumed response to specific therapies.
Theranostics: A combination of diagnostics and therapy in which specific targeted therapy is based on specific targeted diagnostic tests.
Toxgnostics: The identification of genetic variants that predict adverse reactions to specific drugs.

MAIN CONCEPTS

Pet-specific care is about providing customized care for pets (based on breed, lifestyle, medical history, other risk factors, etc.), and constitutes an important and

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

value-added healthcare experience for pet owners. It could be considered as "the right care, for the right pet, at the right time."

Pet-specific care involves approaches that allow predictions to be made as to an individual's susceptibility to disease, its possible prevention, prospects for early detection, the course of that disease, and the disease's likely response to treatment.

The goal of pet-specific care is to prevent disease, if at all possible, or to decrease the impact of the disease on the patient, thereby improving the pet's quality of life. This is typically accomplished by identifying risk factors so that veterinary teams and pet owners can be proactive in instituting lifestyle modifications and increased veterinary surveillance so that problems can be detected at the earliest opportunity, hopefully while they are still subclinical, and when there are typically the most options available for successful management.

Pet-specific care is also known by several other terms, including:

- Personalized medicine
- Precision medicine
- Pet-centric care
- Client-centric care
- Lifelong care
- Theranostics
- Stratified medicine
- Predictive medicine
- Patient-specific medicine
- P4 medicine
- Genomic medicine
- Individualized medicine.

1.1.3 Why Pet-Specific Care?

The fundamental premise of pet-specific care is that each pet has unique attributes (genetic and otherwise) that make them susceptible to health issues and that by better understanding this uniqueness, we can more specifically tailor care to the needs of the specific pet and owner. At the present time, most of the research has focused on being able to predict susceptibility to disease, but the potential exists to also predict which medical treatments are most likely to be safe and effective, and which are best avoided in an individual. It might even be possible to predict which diets would be most appropriate for specific pets.

Pet-specific care has the potential to change the way we consider, identify, and approach medical management issues and it can not only streamline evidence-based care, but can help us minimize harmful side effects, ensure more beneficial outcomes, and even help clients save money on their veterinary care by avoiding processes less likely to be successful.

In the current veterinary business model, most veterinary practices engage in routine examinations, vaccinations, and parasite control, but otherwise assume a reactive posture to healthcare issues, waiting for the onset of clinical disease before intervening. Once a clinical disease condition is recognized, the prudent approach would be to recommend an evidence-based approach to management (see 2.1 Evidence-Based Veterinary Medicine and Personal Bias) with facilitated compliance, but in many hospitals, the approach, even for very basic conditions, is left up to the individual clinician. The problem with this approach is that veterinary businesses like to tout the exceptional level of care they provide to their clients, but without consistency of care (see 9.8 Ensuring Consistency of Care), there can be no assurance to clients about the level of care provided; it will vary based on the experience and expertise of each individual veterinarian in the practice.

Pet-specific care adopts a more comprehensive approach to the situation, concentrating preferentially on health management, risk assessment, prevention, early detection, appropriate treatment, facilitated compliance and then patient management over the long term (concentrating on healthspan rather than lifespan).

Let's illustrate this philosophy with a common example – osteoarthritis. Most veterinarians diagnose osteoarthritis when a pet has lameness or displays discomfort when getting up or lying down. Diagnostic testing at this stage may indicate fairly advanced osteoarthritis evident on radiography. We might be content that we have correctly diagnosed the problem, but our human physician counterparts would likely consider this a Pyrrhic victory – their goal would have been to identify the problem much earlier and seek to change the course of the disease process, preferably so the individual never goes on to have chronic pain and mobility issues. At that point, the physician would make recommendations according to accepted guidelines, and if the patient was not responding as anticipated, would refer the patient to a specialist in a systematic fashion.

Could we do a better job in veterinary medicine? Absolutely! The first step is to create a risk profile for each individual pet during puppy and kitten visits, using information at our disposal but that often does not get the attention it deserves (see 2.7 Risk Assessment). For example, while osteoarthritis can be recognized in virtually any dog or cat, there are many breeds that have a higher prevalence of the condition, and underlying conditions that increase risk, so such pets should have screening to identify cases earlier, hopefully when they are subclinical and

we have the most options for changing the trajectory of the disorder.

Are there other situations that should make us more vigilant for the increased probability of osteoarthritis in our clinic populations? Yes! In addition to underlying problems that may be heritable (such as hip dysplasia), pets with prior history of trauma, those with co-morbidities that may predispose to osteoarthritis and even those with weight management issues may be at increased risk and would benefit from early screening. These risk factors should prompt us to evaluate for osteoarthritis earlier and more consistently, but since all pets can develop osteoarthritis, and it usually presents in young adult to middle-aged pets, routine screening should also be done for all pets earlier than typical profiles that get initiated in senior patients.

Interestingly, pet-specific care is about much more than just medical competence, since it also impacts customer satisfaction and retention. It should not be surprising that pet owners actually expect this level of care from veterinary teams, and believe they are already paying for this level of excellence. Consider for a moment the pet owner who dutifully brings in their pet for evaluation and pays for that visit. Is it fair that they expect the veterinary team they are entrusting with their pet's care to actually know the problems to which their pet is prone, and act accordingly? Is it fair that the pet owner of a Cavalier King Charles spaniel expects the veterinary team to know that their pet is prone to a variety of ills, including mitral valve disease, keratoconjunctivitis sicca, macrothrombocytopenia, primary secretory otitis media, and syringomyelia (among others), and that the veterinary team is prepared to counsel and assess accordingly (see 11.4 Heritable Health Conditions – by Breed)? While most veterinary practices will admit that they are not actually providing this level of service, most will reluctantly acknowledge that it is fair for paying clients to expect it. It is a commitment to pet-specific care that creates the framework in which this can happen consistently.

Similarly, is it reasonable for clients to expect that the veterinary team will take every precaution to determine if certain drugs could cause adverse effects in their individual pet (toxgnostics) or know that a pet that travels with its owners warrants different preventive care strategies, or that pets that engage in specific activities might have altered risk profiles? In the future, we will also likely be able to engage in what is currently being referred to as companion diagnostics, which is a way to test safety and efficacy of a drug specific to a target patient group, breed, or otherwise identified individual (biomarkers, genetic markers, etc.). So, there may come a time when we are able to screen individuals at risk (for example, for potential idiosyncratic reactions such as to nonsteroidal antiinflammatory drugs). We just need a system in place to take advantage of these developments, and pet-specific care can be that system.

Pet-specific care is also client centric since decisions are ultimately made by caregiving pet owners. While it is important that veterinary teams focus on standards of care (see 9.4 Standards of Care), care pathways (see 9.6 Care Pathways), and regarding intervention on a continuum of care (see 9.7 Continuum of Care and Convergence Schedules), it takes more than that to deliver pet-specific care. To deliver pet-specific care effectively, veterinary teams need to also provide a specified level of care, which in turn is dependent on consistency of care (see 9.8 Ensuring Consistency of Care) within the practice. In addition to standards of care and level of care, veterinary teams also need to be aware that not all clients can afford recommended services, so a spectrum of care may be needed. Affordability of veterinary services is a real concern for some pet owners (see 2.10 Affordability of Veterinary Services), but options are still available (see 10.14 Providing Cost-Effective Care for Those in Need; 2.2 The Role of Incremental Care; 7.8 Providing Care for Those Unable or Unwilling to Pay; and 6.5 Opportunities and Challenges of Providing Services for Low-Income Families).

1.1.3.1 Why Pet-Specific Care Rather than Pet-Specific Medicine?

While the goal of pet-specific care is better health outcomes, and there are many medical aspects to healthspan, it is also true that some of the most important aspects of success with pet-specific care involve owner engagement in health management rather than disease management. Pet owners need to play an active role in keeping their pets healthy, not just bringing those pets in for veterinary care when something goes wrong.

The nomenclature is not yet fixed, but pet-specific care suggests that there are many important aspects to care that are not necessarily medical in nature. A commitment by pet owners to feed a nutritious and balanced diet, to promote appropriate behaviors, to ensure their pet remains within a normal body condition score, and to provide regular at-home oral care are all very important health factors. So is ensuring pets have regular exercise, socialization, and access to enrichment in their environments. Some may even say that promoting behavioral health is one of the best ways of ensuring medical health, since behavioral issues are more likely to result in relinquishment than medical problems (see 6.9 Preventing Behavior Problems).

Pet owners need to consider home issues such as fencing and shelter, pet-proofing their home to avoid mishaps, making plans for someone to care for their pets when they are away, as well as making financial decisions for how to

care for their pet in sickness and in health. They also need to do more than just go to the veterinarian and buy recommended products. Compliance and adherence are critical factors, and owners need to be prepared to follow veterinary recommendations at home, when they are not under direct medical supervision (see 9.17 Improving Compliance and Adherence with Pet-Specific Care). For all these reasons and many more, the term *pet-specific care* is preferred (at least currently) over the variety of other synonyms that are being used.

Veterinary healthcare teams definitely facilitate pet-specific care, but owners must be engaged in the process and willingly accept their healthcare guardian role and take the responsibility seriously.

While all pet owners should aspire to pet-specific care, it is reasonable to predict that not all will embrace the topic initially, as well as be prepared to pay for it. Early adopters are likely to be owners of new pets, and the market segment known as pet parents. These are the early adopters, but when success is achieved with these individuals, it is possible to leverage that success across the entire hospital population. However, even a small contingent of proponents can have a powerful impact on pets and the teams that care for them. According to Pareto's principle, if 20% of clients embrace pet-specific care, they can contribute to 80% of positive outcomes (see 10.2 The Importance of Practice Differentiation).

1.1.4 Risk Assessment

Pet-specific care is all about managing risks, so the very first step typically involves assessing pets for risks based on their individual circumstances (see 1.2 Providing a Lifetime of Care). In most cases, this first happens during puppy and kitten visits, often at around 8 weeks of age.

All animals have certain risks that pertain to their individual circumstances. By acknowledging and prioritizing risks, we can craft meaningful personalized action plans for our patients (see 1.3 Personalized Care Plans). In addition, once we have identified risks, pet owners can decide how they might best manage the financial aspects of those risks, including pet health insurance (see 10.16 Pet Health Insurance).

For most pets, family history, genotype, and breed predisposition are significant contributors to disease susceptibility (see 11.4 Heritable Health Conditions – by Breed). This is true whether the pet is purebred, hybrid, or mixed-breed. In many instances, when a pet is mixed-breed and the parents have not been identified with certainty, it may be difficult to discern any type of predisposition without performing breed composition genetic testing. Whether purebred, hybrid or mixed-breed, both genotypic and phenotypic testing are important to detect disease susceptibility (see 3.11 Integrating Genotypic and Phenotypic Testing).

Exposure risks constitute another significant contributor to disease susceptibility. For example, a pet exposed to many other pets will be at increased risk for infectious diseases and, potentially, parasite transmission. A pet that is taken for walks in wooded areas may be exposed to ticks that are enzootic to the region and may introduce tick-related infections to the pet.

Susceptibility to medical problems is also influenced by life stages and preexisting conditions. For example, an umbilical hernia is more likely to be congenital and evident in a juvenile pet, while most cases of hypothyroidism present during adulthood. Regarding preexisting conditions, a pet with early evidence of hip dysplasia will be more likely to develop osteoarthritis later in life.

A pet's gender as well as its neuter status also influence risk (see 4.2 Gender-Related Considerations). Some diseases are sex-limited in nature (such as prostatic disease in males or pyometra in females), but there are also sex predispositions for a variety of disorders. For example, there may be a modest sex predisposition in females regarding cutaneous lupus erythematosus, while adrenal sex hormone imbalance (also known as alopecia X) may be more commonly diagnosed in males. This is different from disorders that are transmitted genetically on the sex chromosomes. For example, hemophilia is more often clinically evident in males because the condition is transmitted on the X chromosome as a sex-linked recessive condition, and since males only have one X chromosome (they are said to be hemizygous; the other is a Y chromosome), they are more likely to manifest the condition. Neuter status also affects risk. Bitches spayed before their first estrus have a reduced prevalence of mammary cancers; neutered males have a lowered risk for prostatic hyperplasia. New guidelines even suggest the most appropriate age for neutering on a pet-specific basis.

Geography also plays a significant role in disease susceptibility, partially because it influences infectious diseases that are present in the area or the vectors that are associated with their transmission. Accordingly, when creating health plans, it is important to take into consideration whether or not the pet may travel outside its residential region.

Even conformation and nondisease traits can be associated with predisposition to disease. For example, cats with white fur may be at higher risk for developing squamous cell carcinoma; color dilution alopecia is more common in dogs with diluted coloring patterns, such as "blue" Dobermans, etc.

1.1.5 The Need

It makes sense for veterinary teams to embrace a pet-specific care model, in which diseases that can be prevented are prevented, especially through comprehensive vaccination and parasite control protocols, diagnostic screening is done as part of a sensible surveillance system, preferably even identifying animals in a subclinical state when there are the most options available for management, and finally, treating animals over an appropriate time period and according to evidence-based guidelines, and helping to facilitate owner compliance. In this manner, acute diseases may be treated over days or weeks, while chronic problems, such as osteoarthritis, atopic dermatitis, diabetes mellitus. and many others. are managed on a continuum of care over the remainder of the pet's life (see 9.7 Continuum of Care and Convergence Schedules).

To be successful in this regard, standards of care are critically important for hospitals (see 9.4 Standards of Care). While personal freedom for veterinarians to treat as they wish is aspirational, it may not allow practices to deliver consistent quality of care to pets and their owners. At least when it comes to basic preventive care, there is value in determining protocols for vaccination and parasite control, and care pathways for the best evidence-based approaches to the most common chronic conditions managed by the practice, such as osteoarthritis, atopic dermatitis, periodontal disease, etc. Diligence is particularly important for these chronic diseases, since how these conditions are managed when an animal is young will greatly affect its quality of life as it gets older.

A suitable starting point is to consider what risk factors might influence the decision-making process through use of health risk assessments (see 2.7 Risk Assessment), which involve client-focused questionnaires, taking a thorough medical history, and performing a skilled physical examination. The process can then continue by evaluating which strategies should be employed for prevention, early detection, appropriate treatment, and optimized compliance for an individual pet. Ongoing monitoring of the process is critical to determine gaps in the anticipated quality of care provided by the hospital.

Our major preventive strategies include vaccination, parasite control, optimal nutrition, and physical activity for each life stage, behavior counseling, sensible exercise programs, breeding recommendations (to help prevent hereditable conditions), optimal reproductive control, oral hygiene, and even counseling on pet selection to minimize the risk that a pet will later be relinquished to a shelter, abandoned, or euthanized for nonmedical reasons.

Currently, many pet owners only associate the need to see a veterinarian with vaccination or serious illness. This failure to grasp the true value of preventive medicine and regular pet-specific care and the positive impact both can have on pets and pet owners can adversely affect the health of pets and the financial health of veterinary practices.

Diagnostic screening tests should provide baseline values and facilitate long-term monitoring to establish trends that may help to identify subclinical disease. Without early detection and management, many of these conditions can lead to a significant decrease in a pet's quality of life. Such periodic testing of otherwise healthy animals is indicated to help identify affected individuals before clinical manifestations become evident. Selecting appropriate tests can be facilitated by performing health risk assessments periodically and screening for conditions that might be considered higher risk because of breed predisposition, family history, lifestyle, or geographic considerations.

Early therapeutic intervention tends to offer the best chance of successful long-term management of many conditions. Clearly distinguishing between curing a medical condition and long-term management is important when discussing the many benefits of intervention and management of disease states with pet owners.

Early intervention in primary conditions can also reduce the risks of secondary problems. Periodontal disease is among the most common conditions affecting dogs and cats, yet it is often ignored by pet owners or undertreated by veterinary teams. When existing periodontal disease is comprehensively managed, the risk of debilitating sequelae is often reduced (see 4.9 Periodontal Disease).

In addition, prevention, detection, and treatment of pain (as well as ensuring compliance and adherence) should be provided to all patients. Through this process, patient quality of life, pet owner satisfaction, and perceived value of veterinary care are more likely to improve while patient stress, recovery time, and potential for exacerbation of co-morbidities will likely decrease.

1.1.6 Fundamental Drivers of Pet-Specific Care

To facilitate the adoption of pet-specific care principles in practice, veterinary teams need to understand the major "drivers" of pet owner engagement in the process – the human–animal bond, communication skills, value, and customer service – in addition to maintaining a high level of clinical competence (see 8.1 Delivering Pet-Specific Care as a Team).

EXAMPLES

Bella is an 18-month-old spayed female golden retriever who presented to ABC Animal Hospital with evidence of licking and chewing at her paws. Her owners recognized that this might be early evidence of atopic dermatitis, because the veterinary team had described this during puppy visits as something relatively common in the breed. When the owners asked if anything could be done prior to problems being recognized, the hospital team introduced them to behavioral approaches to condition Bella to willingly accept bathing and ear cleaning, so the medicated baths now recommended were not going to be an issue. A DNA panel taken at 12 weeks of age indicated that Bella was a carrier for a specific form of progressive retinal atrophy seen in golden retrievers, but since it is a recessive trait it was not a clinical concern, and since Bella had been spayed, it would not affect future generations. Bella was due for orthopedic screening in a few months, and the owners were very dutiful about providing care according to the health schedule recommended by the veterinary team.

TAKE-AWAYS

- Pet-specific care provides customized care for pets and constitutes an important and value-added healthcare experience for pet owners.
- Pet-specific care involves approaches that allow predictions to be made as to an individual's susceptibility to disease, the course of that disease, and the disease's likely response to treatment.
- The goal of pet-specific care is to prevent disease if at all possible, or to decrease the impact of disease on the patient, thereby improving the pet's quality of life.
- The fundamentals of pet-specific care involve prevention, early detection of issues, appropriate management, and facilitated compliance.
- The ultimate success of pet-specific care relies on pet owner engagement in the healthcare process, and a commitment to play an important role in their pet's care.

MISCELLANEOUS

Abbreviation

DNA Deoxyribonucleic acid

Recommended Reading

Ackerman, L. (2011). *The Genetic Connection: A Guide to Health Problems in Purebred Dogs*, 2e. Lakewood, CO: AAHA Press.

Ackerman, L. (2019). An introduction to pet-specific care. *EC Vet Sci* 4 (1): 1–3.

Ackerman, L. Personalized medicine improves outcomes. Today's Veterinary Business, 2018. https://todaysveterinarybusiness.com/personalized-medicine-improves-outcomes

Ackerman, L. (ed.) (2020). Pet-specific care. In: *Five-Minute Veterinary Practice Management Consult*, 3e, 260–263. Ames, IA: Wiley.

Ackerman, L. (2020). Proactive pet parenting: Anticipating pet health problems before they happen. Problem Free Publishing.

American Animal Hospital Association (2012). *Evolving to a Culture of Prevention: Implementing Integrated Preventive Care*, 1–23. Lakewood, CO: AAHA.

Hamburg, M.A. and Collins, F.S. (2010). The path to personalized medicine. *New England Journal of Medicine* 363 (4): 301–304.

Harris, D.L., Rosenthal, K., and Hines, A. (2019). Thinking like a futurist could help the veterinary profession. *Journal of the American Veterinary Medical Association* 255 (5): 523–524.

Mealey, K.L., Martinez, S.E., Villarina, N.F., and Court, M.H. (2019). Personalized medicine: going to the dogs? *Human Genetics* 138 (5): 467–481.

Stull, J.W., Shelby, J.A., Bonnett, B.N. et al. Barriers and next steps to providing a spectrum of effective health care to companion animals. *Journal of the American Veterinary Medical Association* 253 (11): 1386–1389.

1.2

Providing a Lifetime of Care

Lowell Ackerman, DVM, DACVD, MBA, MPA, CVA, MRCVS

Global Consultant, Author, and Lecturer, MA, USA

BASICS

1.2.1 Summary

Much of veterinary care delivered today is based on short-term goals, either providing care for a defined period (e.g., puppy and kitten care) or addressing issues as they present themselves, and often defaulting to treating conditions when they arise rather than trying to be proactive. In fact, it is not unusual that pet owners are seen regularly for puppy and kitten visits and then there is a drop-off in regular care until pets become senior or otherwise develop medical issues that bring them into the veterinary hospital.

Veterinary teams would be well advised to spend time with clients, understanding their needs and concerns, explaining in advance what the likely healthcare process will be, including expenses to be anticipated along the way and when changes in healthcare requirements will likely occur. Then, the entire healthcare team should endeavor to deliver lifelong pet-specific care on an evidence-based schedule.

1.2.2 Terms Defined

Adherence: The extent to which patients take medications as prescribed, which involves the pet owner in filling and refilling the prescription, administering the correct dose, timing and use, and completing the prescribed course.
Advocate: Someone who speaks or takes action on behalf of another.
Compliance: The extent to which pets receive a treatment, screening, or procedure in accordance with veterinary healthcare recommendations.
Continuum of Care: The timespan over which all care is provided.
Convergence Schedule: In veterinary medicine, the coming together of different processes into the same continuum of care
Genotype: The underlying genetic constitution of an individual.
Healthspan: That portion of the lifespan during which the pet remains in good general health.
Pet-Specific Care: An approach that tailors veterinary care to individual pets based on their predicted risk of disease and likely response to intervention.
Phenotype: The outward observable characteristics of an individual, resulting from the interaction of its underlying genetic constitution with environmental factors.
Telomere: Structure at the end of a chromosome that protects DNA data. Telomere shortening is associated with aging.

MAIN CONCEPTS

To provide care that will last a lifetime, the veterinary healthcare team needs to be able to consider the needs of the individual across that lifetime, not just at specific points in time that correspond to scheduled office visits.

It is now possible to predict the needs of pets, from the time of puppy and kitten visits well into their senior years, realizing that this is a dynamic process and the model will need to be updated and tweaked throughout the pet's life (see 6.4 Creating a Pet-Specific User's Manual).

When considering pet-specific care across a pet's lifetime, it is also important to keep in mind that the goal is

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

somewhat different from that of the standard model of disease treatment. In pet-specific care, the goal is to keep the pet healthy, focusing on prevention and early detection, just as is done in human healthcare. Thus, our goal is not just to treat animals when they are sick, but to guide owners on the path to keeping their pets healthy and optimizing their pet healthspan, not just their lifespan (see 9.7 Continuum of Care and Convergence Schedules). The process starts with understanding the factors that most affect health, and that begins with appreciating risk.

1.2.3 Risk (Needs) Assessment

To truly appreciate an animal's need for appropriate care, it is important to first discern which factors may impact its healthcare risks, either positively or negatively (Figure 1.2.1). Some of these risks can be determined very early in an animal's life (some even before birth) by evaluating genotypic and phenotypic assessment of the animal, its parents, and/or close relatives.

Other assessments can be made based on local risk factors in the particular geographic area in which the animal lives. Location typically impacts the prevalence of many infectious diseases, environmental risks (snakebite, heat stroke, frostbite, toxicities, etc.), and other factors of significance. It is important not only to appreciate risks in the place of residence, but also in other environments in which the pet may find itself (e.g., travel, boarding, grooming, activities, etc.).

Assessing lifestyle information helps a practice determine the relative risks of one animal versus another in the same locale. Given a pet's risk factors from genetics, family history, and lifestyle, it is possible to discuss a lifelong customized healthcare plan that can be shared with the pet owner, so they can better anticipate the healthcare intervention that will be needed throughout a pet's life (see 2.7 Risk Assessment). A personalized pet profile can then be created to customize care for animals on an individualized basis (see Figure 1.3.1).

1.2.4 Risk Management

Once owners can appreciate the veterinary care that will be needed by animals over their anticipated lifespan, they can also better plan how they are going to pay for such services. Owners can use several risk management strategies to financially prepare for such veterinary care, including pet health insurance (see 10.16 Pet Health Insurance), payment plans (see 10.17 Payment and Wellness Plans), and third-party payers (see 10.18 Financing Veterinary Care).

It is important for the veterinary healthcare team to reiterate that if pet owners want the most benefit from pet health insurance it should be initiated as quickly as possible, typically by 8 weeks of age, before there are any issues that could be considered preexisting.

1.2.5 The First Visit

Ideally, the first veterinary visit might be made even before the new pet is acquired (see 3.10 Advising Clients on Selecting an Appropriate Pet). If a specific breed has been selected, the veterinary team should be able to counsel the owners on possible breed-related conditions to be aware of (see 11.4 Heritable Health Conditions – By Breed), and what documentation would be worthwhile from the provider of the animal (e.g., hip joint certification of parents, DNA testing of parents, etc.). Armed with this information, the situation is established where the veterinary team is the healthcare advocate, and this helps cement an appropriate doctor–client bond.

The veterinary practice will also want to evaluate the previous healthcare that the animal received. For example, many young animals are "dewormed," have had some initial vaccinations, and perhaps other treatments. As the healthcare advocate, the veterinary team will want to safeguard the owner from any zoonotic conditions, protect any animals at home from infectious diseases (quarantine may be needed), and determine the appropriateness of any treatments to date.

Apart from thorough physical examination, the first visit is a great time to discuss overall healthcare strategies for the months and years ahead. Sometimes this is easier to discuss if the subject matter is broken down into routine healthcare, breed-related concerns, behavioral counseling, neutering, dental care, nutrition, life stage issues, and unexpected care (emergencies, specialist consultations, etc.). Providing a written healthcare plan streamlines the process and means that the client can listen to instructions and appreciate the "big picture" without trying to take exhaustive notes. Although this might seem overwhelming to the client at first, it does set the stage for the anticipated care of the pet that will span a lifetime. This also helps owners budget accordingly and consider other ways to manage the costs of pet healthcare such as buying pet health insurance (see 10.16 Pet Health Insurance).

Many pet owners have unrealistic expectations of pet care because they have never been exposed to optimal care and never had anyone detail pet-specific care guidelines for them (see 9.3 Guidelines). Most are appreciative of these clear-cut guidelines and the ability to plan in advance for realistic costs as well as which risk management strategies might be most appropriate.

Canine Risk Assessment Form

Name: Date of Birth:

Breed: Neutered ☐ Y ☐ N

Has genetic testing been run on your pet or its parents? ☐ Y ☐ N
If so, what were the results?

Has this pet or its parents been included in a breed registry screening for heritable diseases (hip dysplasia, eye diseases, etc.)? ☐ Y ☐ N

What other diagnostic testing has been done to date?

Any family history of the following (please check all that apply)?
☐ Atopic (allergies) ☐ Glaucoma ☐ Heart disease ☐ Kidney disease
☐ Osteoarthritis ☐ Seizure disorders ☐ Thyroid issues ☐ Urinary tract "stones"

Is there a family history of any other specific medical conditions? ☐ Y ☐ N
If so, which condition(s)?

What food are you currently feeding?

What medications/supplements arc you currently giving?

What parasite control are you providing?

Are you doing any home dental care (brushing, rinses, etc.)? ☐ Y ☐ N

Do you consider your pet: ☐ Below ideal weight ☐ Ideal weight ☐ Above ideal weight

		Comments
Does your pet ever sleep with you, or share your bed?	☐ Y	☐ N
Does your pet ever travel outside this immediate region?	☐ Y	☐ N
Does your pet come in contact with other people's pets?	☐ Y	☐ N
Does your pet ever visit a groomer or boarding facility?	☐ Y	☐ N
Does your pet ever go to dog shows or pet events?	☐ Y	☐ N
Does your pet ever go to parks/fields/gardens?	☐ Y	☐ N
Does your pet go to any other veterinary hospitals?	☐ Y	☐ N
Does your pet ever experience motion sickness?	☐ Y	☐ N
Does your pet ever have an opportunity to drink from water outdoors. such as ponds, puddles. water bowls. rivers, or creeks?	☐ Y	☐ N
Is there wildlife in your area, including mice, deer, squirrels, birds, raccoons. possums. hedgehogs, skunks, etc.?	☐ Y	☐ N

What other types of pets do you have in your household?
☐ Dogs ☐ Cats ☐ Birds ☐ Rabbits ☐ _____

Which of the following exist in your area?
☐ Fleas ☐ Ticks ☐ Mosquitoes ☐ Lice ☐ Slugs ☐ _____

Figure 1.2.1 Example of a canine risk assessment form.

1.2.6 Subsequent Visits

Subsequent visits are opportunities to reinforce the healthcare plan and make any alterations needed on the basis of those visits, diagnostic testing, or treatments. Healthcare plans are dynamic and flexible and may be changed to reflect the realities of the situation. For example, if a Doberman pinscher is screened for von Willebrand disease and found to be at significant risk, this will likely change the process at the time of surgery, as well as the charges associated with such surgery. The identification of cardiomyopathy will change the previous plan regarding the interval between scheduled clinical examinations, and recommendations for ongoing monitoring.

Throughout the process, it is important to have ongoing conversations with pet owners about the important concepts of compliance and adherence. It is not enough that clients be prepared to purchase products from us for use in their pets. They need to understand the critical importance of following directions at home. There is often a lot to discuss with pet owners, and typically limited time during office visits, so successful veterinary teams often rely on convergence schedules to ensure effective communication and owner engagement (see 9.7 Continuum of Care and Convergence Schedules).

Care is often delivered on the basis of life stages, and while this varies considerably between individuals, it can be helpful to use approximations based on age and weight (Tables 1.2.1 and 1.2.2); in the future there will likely also be ways to assess genetic aspects of aging (e.g., telomeres, DNA methylation, etc.).

EXAMPLES

Mrs Stewart presented Brodie, an 8-week-old Border collie, for examination. Brodie had an uneventful physical examination, but given his breed and family history, a few recommendations were made.

Mrs Stewart was surprised to learn that Border collies were at increased risk for hip dysplasia, as she had mistakenly assumed it was only a large-dog disease. Brodie's parents had not been screened for hip dysplasia, so any family history was uncertain. A recommendation was made to do a preliminary assessment of hip laxity at 6 months of age during neutering surgery, and then a more complete radiographic evaluation at 2 years of age.

A sample was also collected to submit for genetic testing. The single panel was capable of screening Brodie for a variety of disorders, including black-haired follicular dysplasia, cobalamin (vitamin B12) malabsorption, collie eye anomaly, degenerative myelopathy, malignant hyperthermia, hereditary myotonia, ivermectin sensitivity (mdr1 mutation), neuronal ceroid lipofuscinosis, primary lens luxation, trapped neutrophil syndrome, and others. The staff discussed other phenotypic testing that would be done in the future, and provided a link to the website where Brodie's personalized pet profile would be created.

The staff also discussed pet health insurance options with Mrs Stewart, and reiterated that it would be important to select a policy in the very near future if she wanted to ensure that there would be no preexisting problems that could be excluded from coverage.

TAKE-AWAYS

- Client engagement is heightened when the client plays an active role in their pet's health, and is committed to the prospect of keeping their pet healthy.
- By examining risk factors for specific pets, it is possible to plan for a lifetime of care on the basis of their specific risk factors.
- Genotypic screening (DNA testing) is typically done early, often around 12 weeks of age, and phenotypic testing is then conducted throughout the pet's lifetime according to a sensible schedule.
- Health is a dynamic process, so action plans need to be updated on a regular basis.
- Veterinary healthcare teams are critical to being able to provide a lifetime of care, and are often the driving force behind such efforts.

MISCELLANEOUS

Pet owners are at a disadvantage compared to parents of children, who tend to have a large variety of resources at their disposal for the anticipated care and expenses of child dependents. Armed with this knowledge, emphasis is placed on routine medical visits, preventive care, proper socialization, education, and risk management to mitigate the costs of medical care. For too many years, pet owners have been trained to expect that a one-time neutering surgery, occasional vaccinations, and periodic veterinary visits are all that is needed unless their animal is ill. Ensuring continued excellence in pet healthcare requires engagement of pet owners and a veterinary team committed to pet-specific care, education, and advocacy (see 8.1 Delivering Pet-Specific Care as a Team).

Table 1.2.1 Approximation for converting "dog" years to relative human years, as well as matching life stages based on adult weights

	<10 kg		10–20 kg		20–30 kg		30–40 kg		40–50 kg		>50 kg	
Age	Life Stage	Relative Human Age (Years)	Life Stage	Relative Human Age (Years)	Life Stage	Relative Human Age (Years)	Life Stage	Relative Human Age (Years)	Life Stage	Relative Human Age (Years)	Life Stage	Relative Human Age (Years)
3 months	Puppy	4	Puppy	4	Puppy	3	Puppy	3	Puppy	3	Puppy	3
6 months	Puppy	7	Puppy	7	Puppy	6	Puppy	6	Puppy	6	Puppy	6
9 months	Young	11	Young	11	Puppy	9	Puppy	9	Puppy	9	Puppy	9
12 months	Young	15	Young	15	Puppy	12	Puppy	12	Puppy	12	Puppy	12
18 months	Young	19	Young	19	Young	16	Young	16	Puppy	16	Puppy	16
2 years	Young	24	Young	24	Young	19	Young	19	Young	19	Young	19
3 years	Mature	28	Mature	28	Mature	25	Mature	26	Mature	26	Mature	27
4 years	Mature	32	Mature	32	Mature	30	Mature	32	Mature	33	Mature	35
5 years	Mature	36	Mature	36	Mature	36	Mature	38	Mature	40	Senior	42
6 years	Mature	40	Mature	40	Mature	42	Senior	46	Senior	47	Senior	50
7 years	Mature	44	Senior	45	Senior	48	Senior	53	Senior	54	Senior	56
8 years	Senior	48	Senior	49	Senior	53	Senior	57	Senior	58	Senior	61
9 years	Senior	52	Senior	53	Senior	58	Senior	62	Senior	64	Senior	68
10 years	Senior	56	Senior	57	Senior	63	Senior	67	Senior	69	Senior	75
11 years	Senior	61	Senior	62	Senior	68	Senior	72	Senior	74	Senior	82
12 years	Senior	66	Senior	67	Senior	73	Senior	77	Senior	79	Senior	89
13 years	Senior	71	Senior	73	Senior	78	Senior	82	Senior	83	Senior	91
14 years	Senior	76	Senior	78	Senior	83	Senior	87	Senior	88	Senior	96
15 years	Senior	81	Senior	83	Senior	89	Senior	92	Senior	94	Senior	101
16 years	Senior	86	Senior	88	Senior	95	Senior	98	Senior	100	Senior	106
17 years	Senior	92	Senior	94	Senior	100	Senior	103	Senior	105	Senior	111
18 years	Senior	98	Senior	100	Senior	104	Senior	107	Senior	111	Senior	116
19 years	Senior	104	Senior	105	Senior	108	Senior	111	Senior	113	Senior	121
20 years	Senior	108	Senior	109	Senior	112	Senior	116	Senior	118	Senior	
21 years	Senior	112	Senior	114	Senior	116	Senior	120	Senior		Senior	
22 years	Senior	116	Senior	120	Senior	122	Senior		Senior		Senior	
23 years	Senior	120	Senior		Senior		Senior		Senior		Senior	
24 years	Senior		Senior		Senior		Senior		Senior		Senior	
25 years	Senior		Senior		Senior		Senior		Senior		Senior	

Table 1.2.2 Approximation for converting "cat" years to relative human years and applicable life stages. Life stages are based on AAFP-AAHA Feline Life Stage Guidelines

Age of Cat	Life Stage	Relative Human Age (Years)
3 months	Kitten	4
6 months	Kitten	10
9 months	Junior	12
12 months	Junior	15
18 months	Junior	21
2 years	Junior	24
3 years	Prime	28
4 years	Prime	32
5 years	Prime	36
6 years	Prime	40
7 years	Mature	44
8 years	Mature	48
9 years	Mature	52
10 years	Mature	56
11 years	Senior	60
12 years	Senior	64
13 years	Senior	68
14 years	Senior	72
15 years	Geriatric	76
16 years	Geriatric	80
17 years	Geriatric	84
18 years	Geriatric	88
19 years	Geriatric	92
20 years	Geriatric	96
21 years	Geriatric	100
22 years	Geriatric	104
23 years	Geriatric	108
24 years	Geriatric	112

1.2.7 Cautions

It is not possible to predict all health outcomes for pets, and this needs to be explained to owners. The purpose of planning is to detail anticipated needs and expenditures and to allow owners to plan accordingly. It is also possible that some clients will be overwhelmed with the information provided and elect to only engage with a very basic level of service. This does not negate the value of informing clients about what to logically expect but it might serve as a reminder that different approaches might be needed for different clients.

Abbreviation

DNA Deoxyribonucleic acid

Recommended Reading

Ackerman, L.J. (2011). *The Genetic Connection*, 2e. Lakewood, CO: AAHA Press.

Ackerman, L. (2020). Proactive pet parenting: Anticipating pet health problems before they happen. Problem Free Publishing.

American Animal Hospital Association/American Veterinary Medical Association Preventive Health Guidelines Task Force (2011). AAHA/AVMA Preventive Healthcare Guidelines. *J. Am. Vet. Med. Assoc.* 239 (5): 625–629.

Bartges, J., Boynton, B., Vogt, A.H. et al. (2012). AAHA canine life stage guidelines. *J. Am. Anim. Hosp. Assoc.* 48: 1–11.

Giuffrida, M.A., Brown, D.C., Ellenberg, S.S., and Farrar, J.T. (2018). Development and psychometric testing of the canine owner – reported quality of life questionnaire, an instrument designed to measure quality of life I dogs with cancer. *J. Am. Vet. Med. Assoc.* 252 (9): 1073–1083.

Landsberg, G., Hunthausen, W., and Ackerman, L. (2013). *Behavior Problems of the Dog and Cat*, 3e. Edinburgh: Elsevier.

Partners for Healthy Pets: www.partnersforhealthypets.org

Urfer, S.R., Wange, M., Yang, M. et al. (2019). Risk factors associate with lifespan in pet dogs evaluated in primary care veterinary hospitals. *J. Am. Anim. Hosp. Assoc.* 55: 130–137.

Vogt, A.H., Rodan, I., Brown, M. et al. (2010). AAFP-AAHA Feline Life Stage Guidelines. *J. Am. Anim. Hosp. Assoc.* 46: 70–85.

1.3

Personalized Care Plans

Lowell Ackerman, DVM, DACVD, MBA, MPA, CVA, MRCVS

Global Consultant, Author, and Lecturer, MA, USA

BASICS

1.3.1 Summary

Conventional veterinary medicine sometimes considers all pets to have the same needs on a species basis. So, by this reckoning, all dogs might warrant the same medical approach based on life stage and where they reside, and the same might be considered true for cats. However, this does not even begin to appreciate the differences between mixed-breeds and purebreds, between different breeds, and even between individuals of the same breed.

Today's pet owners are educated consumers, and with access to the internet, it doesn't take much time for them to discover that the medical needs of a golden retriever are significantly different from those of a shih tzu, a Siberian husky, or a Cavalier King Charles spaniel. It's time for the profession to acknowledge and convey that pets deserve personalized care plans for their specific care – owners value them, and practices can benefit from providing the customized care that pets need and deserve.

1.3.2 Terms Defined

Adherence: The extent to which patients take the medications prescribed, which requires the pet owner to fill and refill the prescription, administer the correct dose, timing and use, and complete the prescribed course.
Compliance: The extent to which pets receive a treatment, a screening, or a procedure in accordance with accepted veterinary healthcare practices.
Epigenetics: The study of heritable changes in genetic expression caused by mechanisms other than those attributable to underlying DNA sequences.
Mixed-Breed: An animal of unknown or mixed parentage. Mixed-breed dogs are sometimes referred to as mutts or mongrels; mixed-breed cats are sometimes referred to as moggies or mutt-cats.
Off-Label: Pharmaceuticals prescribed, dispensed, or administered for an unapproved indication. Also referred to as extra-label drug use.
Pedigreed: An animal whose ancestry is recorded by a registry organization.
Pet-Specific Care: An approach that tailors veterinary care to individual pets based on their predicted risk of disease and likely response to intervention.
Purebred: An animal bred from parents of the same breed or variety; one whose ancestry contains members of the same breed.

MAIN CONCEPTS

1.3.3 Premise of Pet-Specific Care

All pets have risk factors pertaining to their specific circumstances. Pets have genetic risks associated with their genotypic predispositions to a variety of disorders [1]. In some cases, genetic testing is available. Like humans, pets can also have family histories in which there are breed predilections, even if genotypes cannot be identified (Table 1.3.1). The environment can also affect expression of traits, and certain environmental "shocks" can leave imprints on the genetic material in eggs and sperm, which

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

Table 1.3.1 Some common breeds and a few of the conditions to which they are predisposed [1]

Breed	Breed predispositions
Labrador retriever	Centronuclear myopathy[a], cystinuria[a], degenerative myelopathy[a], elbow dysplasia, exercise-induced collapse[a], hip dysplasia, nasal parakeratosis[a], osteochondrosis dissecans, progressive rod-cone degeneration[a], skeletal dysplasia type 2[a], tricuspid valve dysplasia
German shepherd dog	Acral lick dermatitis, elbow dysplasia, degenerative myelopathy[a], exocrine pancreatic insufficiency, hemophilia A[a], hip dysplasia, hyperuricosuria[a], masticatory myositis, perianal fistula[a], renal cystadenocarcinoma/nodular dermatofibrosis[a]
Golden retriever	Atopy, elbow dysplasia, hemophilia A, hip dysplasia, hypothyroidism, ichthyosis[a], juvenile cellulitis, muscular dystrophy[a], patella luxation, progressive retinal atrophy (GR_PRA1 and GR_PRA2)[a], progressive rod-cone degeneration[a], sensory ataxic neuropathy
English bulldog	Anasarca, brachycephalic syndrome, entropion, factor VII deficiency, fold dermatitis, hip dysplasia, hyperuricosuria[a], hypothyroidism, laryngeal paralysis, multifocal retinopathy (CMR1)[a], pulmonic stenosis, sacrocaudal dysgenesis, ventricular septal defect
Beagle	Cataracts, cryptorchidism, diabetes mellitus, factor VII deficiency[a], glaucoma (POAG)[a], hip dysplasia, juvenile polyarthritis, Musladin–Leuke syndrome[a], night blindness[a], patellar luxation, pulmonic stenosis, pyruvate kinase deficiency[a], retinal dysplasia
French bulldog	Atopic dermatitis, brachycephalic syndrome, cataracts[a], corneal ulcers, factor VIII deficiency[a], factor IX deficiency[a], histiocytic ulcerative colitis, necrotizing meningoencephalitis, hyperuricosuria[a], multifocal retinopathy[a], cone-rod dystrophy I[a]
Poodle	Cataracts, epilepsy, factor VIII deficiency, Legg–Calvé–Perthes disease, mucopolysaccharidosis[a], neonatal encephalopathy[a], organic aciduria, oxalate urolithiasis, progressive rod-cone degeneration[a], sebaceous adenitis, von Willebrand disease[a]
Rottweiler	Cervical vertebral instability, cruciate ligament rupture, fragmented coronoid process, gastric dilation/volvulus, leukodystrophy, membranous glomerulopathy, myotubular myopathy[a], patent ductus arteriosus, polyneuropathy and neuronal vacuolation[a], short tail[a]
Yorkshire terrier	Atlantoaxial instability, cataracts, cryptorchidism, L2-hydroxyglutaric aciduria[a], lymphoproliferative disease, necrotizing meningoencephalitis, patellar luxation, patent ductus arteriosus, primary lens luxation[a], progressive rod-cone degeneration[a]
Boxer	Brachycephalic syndrome, cardiomyopathy[a], cystinuria, factor II deficiency, hyperadrenocorticism, neoplasia, progressive axonopathy, pulmonic stenosis, short tail[a], sphingomyelinosis, subaortic stenosis, ulcerative colitis

[a] DNA testing is available.

can be passed on to future generations (so-called epigenetics). Epigenetic marks can switch genes on or off, affecting disease risk, and they can be passed on to offspring [1].

Lifestyle also plays a role in determining risk for pets, including the part of the country in which they live, their exposure to other animals (boarding, grooming, social activities, etc.), the protection they are already being provided (e.g., parasite control, vaccination, etc.), and their role in the family – pets in close contact with family members need more rigorous preventive care (for parasite control, etc.) than animals without such contact. This is often best determined by risk assessment (see 1.2 Providing a Lifetime of Care).

Testing can also identify risk (see 4.7 Embracing Early Detection). In some cases, it is genetic testing as previously mentioned, but in many other cases we rely on phenotypic testing to identify risk. Thus, if we perform radiographs as part of routine patient screening and identify that a pet has hip dysplasia, we know this increases the risk that the pet will develop osteoarthritis later in life.

Armed with all this information, the veterinary team is in a much better position to determine pet-specific care that is relevant to the pet and client and allows for earlier intervention, when the best clinical outcome is typically achievable (see 5.10 Discussing Pet-Specific Care).

1.3.4 Practice Pet Populations

To personalize care for clients, it is first necessary to determine the breeds most represented in a practice, and this can be achieved through appropriate fields in the practice management software system. In the United States, approximately 54% of dogs are purebreds and 46% are mixed-breeds [2]. For cats, the vast majority seen in practice are mixed-breeds, often referred to by terms such as domestic shorthair or domestic longhair (see 3.19 Mixed-Breed Considerations). Although many purebred animals might be pedigreed and have their family lineage documented

with a registry organization, many others are purebred in name only and are without such documentation. Others might have documentation from a breed registry but bear little resemblance to the breed standard.

Among the mixed-breed dogs in a practice, it is often tempting to identify them based on perceived physical characteristics (e.g., beagle x) but this practice is to be discouraged because it is wrong at least as often as it is right, and it might lead to inappropriately associating risk factors that don't belong and missing ones that do belong [3]. Within the medical record, if the owners don't know with certainty which breeds contributed to their pets and if DNA testing has not been done to determine likely heritage, then the pet should be recorded as a mixed-breed or other suitable term. This should only be done proactively with new pets, and the medical record not changed for existing clients unless DNA testing has been done and there is a valid reason to change the medical record, with a copy of the DNA results maintained in the medical record to substantiate a medico-legal reason for amending the record.

1.3.5 Components of Personalized Pet Care Plans

Prevention is the cornerstone of personalized pet care and fundamental to the concept is that diseases should preferably be prevented whenever possible, on a risk/benefit basis (see 1.1 Overview of Pet-Specific Care). Not only is it easier to prevent problems than it is to treat them, but from a client perspective it is also more cost-effective to prevent disorders than to try to manage them. For example, heartworm can be effectively prevented with either injectable medications (with ensured compliance) or with monthly oral or topical medications (which practices should remind clients to administer to improve adherence). Compliance and adherence are critical in this regard, because prevention is only as good as the assurance that the pet has received the medication as directed (see 9.17 Improving Compliance and Adherence with Pet-Specific Care).

Vigilance is involved in the early detection component of our personalized pet care (see 4.7 Embracing Early Detection). As a wellness initiative, vigilance involves reviewing the risk factors for an individual pet and performing screening tests to identify problems while still subclinical and before more permanent damage has taken place (see 11.4 Heritable Health Conditions – By Breed). For example, in an animal with a family history of hip dysplasia, radiographic assessment is warranted, typically by 2 years of age at the latest, to determine if the animal shows early evidence of the disease. An animal with a breed predisposition for von Willebrand disease (vWD) would benefit from DNA testing during puppyhood, and certainly clotting evaluation before any surgeries might be performed. A kitten with genetic testing suggesting risk of polycystic kidney disease will warrant enhanced scrutiny for kidney disease and monitoring of renal function. For all animals, it is worth performing routine testing from time to time (e.g., hemogram, biochemistries, urinalysis, radiography, blood pressure, etc.) just to be aware of unanticipated risks that might be developing, even if still subclinical. Recommended tests to consider on a breed basis are available for both dogs (www.ofa.org/browse-by-breed) and cats (https://icatcare.org/advice/cat-breeds).

Management of diagnosed conditions must also be personalized. Practices should have protocols for dealing with the most common entities treated, and care pathways for sensible management of chronic disorders, such as diabetes mellitus, osteoarthritis, atopic dermatitis, and others (see 9.4 Standards of Care and 9.6 Care Pathways). However, for many conditions, treatments are customized to the needs of a particular patient. For example, for a pregnant English bulldog, natural delivery may not be possible and cesarean section is often needed. Avermectins might be considered for the management of some conditions, but should be used only cautiously in animals with multidrug resistance (MDR1) genetic mutations.

1.3.6 Genetic Testing and Personalized Care Plans

With pet-specific care, the goal is to be proactive and address potential issues at the earliest possible opportunity, preferably when problems are still subclinical. DNA testing can be very useful for this purpose, as it can be run very early in life, even as early as 1 day of age (see 3.4 Predicting and Eliminating Disease Traits).

Genetic testing is a useful tool as long as veterinary teams have realistic expectations. The purpose of genetic tests is not necessarily to confirm a diagnosis, but to understand risk factors that could be relevant for an individual pet, even issues that may develop much later in life [4]. So, it is extremely important that veterinary team members understand the difference between *association* and *causation* when it comes to such testing.

The vast majority of DNA tests are not absolutely predictive because any one variant detected may not actually be causing the disease in its entirety (see 11.3 Heritable Health Conditions – By Disease). Most often, they just indicate suspected "risk" based on the statistical association of a

variant to clinical disease, and it is up to the veterinary team to put such risks in perspective. For example, the skin condition dermatomyositis is often described as being autosomal dominant with variable expressivity (more on this term later), and confirmation of the diagnosis in affected individuals (usually collies, Shetland sheepdogs and their crosses) is based on biopsy. There are at least three different genetic variants "associated" with dermatomyositis risk, and when considered in aggregate, pets can often be classified as high risk, moderate risk, and low risk for developing dermatomyositis. This can be extremely useful for counseling owners of at-risk pets, even if the predictive ability is not absolute. For some conditions in which there is genetic risk, there can also be future testing indicated. For example, a pet that has a relevant glaucoma variant detectable on genetic testing (in a breed at risk for this variant) doesn't mean that the pet will necessarily develop glaucoma, but it does suggest that further glaucoma screening by periodically evaluating intraocular pressure (IOP) is warranted for consideration. Based on the breed, a personalized care plan can incorporate such testing at appropriate intervals.

In most instances, it is practical to perform genetic screening at about 12 weeks of age. At that time, the pet should be well into vaccination and parasite control protocols, and hopefully enrolled in pet health insurance. Once again, the goal is not to try to diagnose disease in a healthy puppy or kitten with such screening, but to help prepare a risk profile for the animal so that pet-specific recommendations can be made regarding prevention and early detection programs. For example, knowing a pet's multidrug resistant (mdr1) genetic status can help inform whether certain medications might be problematic if administered. Knowing the genotypic status for vWD can prove very useful if surgical intervention is being considered (including neutering). If veterinary teams consider that the point of genetic testing is to better appreciate potential risk, they will be able to relay more appropriate information to pet owners, and determine what future screening should be taking place in the personalized care plan.

1.3.7 Putting DNA Testing in Perspective

Whether a practice decides to embrace the concept of genetic testing depends on its strategy for delivering healthcare. There is no doubt that more validation is needed in both human and pet genetic health screening, but that doesn't negate the real value in providing such a proactive resource for pet owners.

When it comes to matching DNA from an individual with the likelihood of disease development in the future, it very much depends on the specificity of the genetic variant being measured, and the individual being tested. That's why it takes a veterinary team to help interpret DNA test results, counsel pet owners accordingly (see 3.8 Genetic counseling), and develop a relevant personalized care plan.

Part of the reason that disease detection is not simple is that diseases and traits can be influenced by a variety of different genes, as well as environmental factors. Atopic dermatitis (environmental allergy), for example, is a skin condition that tends to run in families and there are definite breed predispositions, but that doesn't mean that any one DNA test developed will be able to predict onset with any certainty in all pets and all breeds. The body has a lot of redundant systems in place, so even if there is a genetic issue somewhere, it may be possible for the body to compensate through mechanisms elsewhere. Another important point to consider is that genes themselves don't cause diseases. Genes provide the blueprint for creating proteins, and it is typically defective and poorly functional proteins that lead to the clinical picture that we interpret as disease ... often with significant environmental influences.

At this point in time, there are a few hundred genetic variants known to affect the health of pets, but new associations are being uncovered on a regular basis. The important thing to remember with such testing is that the most predictive tests will be for medical conditions controlled by a single gene pair (such as vWD type I in the Doberman pinscher, progressive retinal atrophy-rcd1 in the Irish setter, or ichthyosis-A in the golden retriever). The vast majority of diseases seen in pets (such as atopic dermatitis, heart disease, diabetes mellitus, obesity, periodontal disease, seizure disorders, etc.) actually have a more complicated pattern of inheritance, and may involve multiple genes as well as environmental influencers, and genetic tests developed for these types of conditions should be expected to be less predictive, even if they still contribute useful information [4]. Even for conditions such as hip dysplasia, heritability is important, but environmental influences often have more impact on clinical expression of the disorder than does genetics (heritability ~0.25). Genetic variants may also have some association with disease in one breed but not necessarily in others and this is not a fault of the testing, but just a reality of pet-specific care and breed-specific risk.

Because of the complexity of biological systems, just because there is a genetic mutation that leads to a poorly functional protein doesn't mean that the animal will definitely develop disease. We often describe this as *penetrance*,

the likelihood that a given mutation in an animal will result in clinical disease. Not surprisingly, we don't have enough of this information for many genetic tests, nor for those tests in different breeds. Yet another form of variation is known as *expressivity*. This refers to the variability in clinical presentation that can be seen in individuals, with some animals with the same genotype being more severely affected, and others less so.

Part of the complexity of such testing is also a great opportunity for veterinary teams. If genetic testing didn't require any expertise or interpretation, there would be little reason for pet owners to want to work with veterinary teams to keep their pets healthy. It is this ability to counsel and coach that makes the veterinary team critical to the success of such programs, and to the evidence-based creation of personalized care plans.

1.3.8 Putting It All Together

The personalized care plan is just a customized maintenance schedule that helps pet owners see the type of veterinary intervention that is anticipated over a pet's lifetime (see 6.4 Creating a Pet-Specific User's Manual). Part of that schedule will be based on life stages (see 1.2 Providing a Lifetime of Care); those life stages should reflect the pet's breed or, in the case of mixed-breed animals, their adult weight (see 11.5 Life Planning by Breed). Cats tend to be of more uniform size, so more generalizations can be made based on life stages alone.

Without genetic testing, a personalized care plan will start out with just basic recommendations relevant to all members of a species within the practice locale, as well as predispositions that can be inferred based on breed, conformation, lifestyle, etc. Superimposed on that will be information from health risk assessment (see 2.7 Risk Assessment), which might include pertinent risks on the basis of exposure (travel, boarding, grooming, activities, etc.) and history (preexisting issues detected that could lead to other co-morbidities in the future). Even without genetic testing, a certain amount of risk information can be inferred on the basis of breed predisposition (see 11.4 Heritable Health Conditions – By Breed). Even in a mixed-breed, if likely breed composition can be determined, potential genetic risks can be predicted, and certain early detection screening can be added to the personalized care plan. In general, there are also likely to be nutritional recommendations made specific to each pet (see 9.15 Nutritional Counseling).

It's important to remember that while genetic testing provides some objective criteria on which to base further diagnostic recommendations, it is possible to build personalized care plans just from information available based on history, physical examination, signalment, and risk assessment. That alone could prompt recommendations that could populate a personalized care plan (Table 1.3.2, Figure 1.3.1).

While veterinary teams want to provide the right recommendations to pet owners, it is very difficult to accomplish this without having a plan in place to match risk to action items (see 9.7 Continuum of Care and Convergence Schedules).

EXAMPLES

Rocky Goodwin is a young Doberman pinscher and his owners would like to plan for his anticipated healthcare needs. As part of your assessment, you create a personalized pet care profile for Rocky. The owners are impressed but also a bit worried, because there seems to be a lot that could go wrong with Rocky that they had not considered.

You explain that most of the issues are fairly routine and common for all pets, such as parasite control and vaccinations, but that each pet does carry some unique risks for health issues, and that the best way to deal with these is to diagnose them as early as possible, when there is the best chance for effective management. The owners consent to a lifetime of optimal care for their pet, and decide that pet health insurance is a good mechanism for managing some of their concerns regarding the costs of Rocky's healthcare (see 10.16 Pet Health Insurance).

TAKE-AWAYS

- A personalized pet care plan or profile is just a maintenance schedule of anticipated care expected for a pet over its lifetime.
- Other than routine preventive care, early detection screening is added to the plan based on risk factors specific to the individual pet.
- The care plan should be dynamic and will be altered as new medical findings (including medication monitoring) are added to the schedule.
- The pet care plan can act as a sort of user's manual, alerting the pet owner to care anticipated for a pet over its lifetime.
- Genetic screening during puppy and kitten visits can help inform both veterinary teams and pet owners about additional testing to be considered in a pet's future.

Table 1.3.2 Further testing that might be indicated based on perceived risk

Disorder	Testing indicated
Oral care	Periodic periodontal score; radiography; charting; occlusion assessment
Orthopedic conditions (hip dysplasia, etc.)	Radiography; distraction; palpation; gait assessment
Infectious diseases; parasitism	Heartworm testing, fecal assessment, antigen testing, titers
Clotting abnormalities	Buccal mucosal bleeding time, DNA testing (vWD, hemophilia, etc.), activated coagulation time, prothrombin time, activated partial thromboplastin time, thrombin time, clotting factors
Baseline values	Periodic hemograms, biochemistries, urinalysis
Hypothyroidism	Thyroid profile (e.g., cTSH, free and total T4, T3, autoantibodies, etc.)
Glaucoma	DNA testing (some breeds); periodic intraocular pressure determination
Keratoconjunctivitis sicca	Schirmer tear test
Progressive retinal atrophy	DNA testing (some breeds), electroretinogram, indirect ophthalmoscopy
Kidney disease	DNA testing (polycystic kidney disease, hereditary nephropathy, etc.), urinalysis, urea, creatinine, SDMA, imaging, etc.
Urolithiasis	Periodic urinalysis; DNA testing (e.g., cystinuria 2,8-dihydroxyadenine, etc.)
Heart disease	DNA testing (some breeds), electrocardiogram, Holter monitoring, wearable technology, biomarkers (troponin 1, NT-ProBNP, etc.)
Hypertension	Periodic blood pressure determination
Adverse drug reactions	DNA testing (e.g., mdr1, malignant hyperthermia, etc.)
Inflammation	Biomarkers (C-reactive protein, serum amyloid A, homocysteine[?], etc.)
Senior status	Age-specific screening (laboratory, imaging, cardiac assessment, etc.)

NT-ProBNP, N terminal pro B-type natriuretic peptide; TSH, thyroid-stimulating hormone.

MISCELLANEOUS

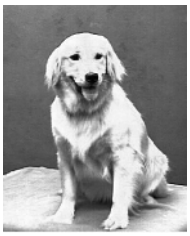
1.3.9 Cautions

No matter how vigilant we are, it is impossible to identify all risk factors for an animal, and it is important not to misrepresent this situation to clients. Personalized care plans are meant to address the most common disorders likely to affect an individual. Routine veterinary visits and vigilant screening and monitoring are critical to ensuring that even unanticipated disorders can be diagnosed and managed with some expediency.

Abbreviation

DNA Deoxyribonucleic acid

Personalized Pet Profile: Marilyn



Age	Human Age (Approx.)	Needs
2–8 weeks		Fecal parasite testing; parasite control
8 weeks		Congenital disease screening (cataracts, umbilical hernia, malocclusion, patellar luxation, heart murmur, persistent pupillary membranes, etc.); Risk Assessment; Start monthly parasite prevention; Microchipping; Start pet health insurance
6–16 weeks		Initial vaccination series
12 weeks		Genetic screening (including GR-PRA 1 & 2, progressive rod-cone degeneration, Ichthyosis A, dystrophic epidermolysis bullosa, neuronal ceroid lipofuscinosis, osteogenesis imperfecta, skeletal dysplasia, degenerative myelopathy, etc.)
16 weeks		Create Personalized care plan based on risk assessment, genotypic and phenotypic assessment
26 weeks	6 years	Coagulation function testing, fecal parasite testing; heartworm prevention
36 weeks	10 years	Neutering surgery, dental evaluation, congenital disease screening
1 year	12 years	Adult re-evaluation; vaccine boosters/titers as needed; parasite check; baseline hemogram, biochemistry, thyroid screening and urinalysis; cardiac evaluation; ophthalmic evaluation
1.5 years	16 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
2 years	19 years	Adult re-evaluation; vaccine boosters/titers as needed; parasite check; orthopedic screening (hips, elbows), cardiac and ophthalmologic evaluation; blood pressure determination
2.5 years	24 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
3 years	26 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; baseline hemogram, biochemistry, thyroid screening and urinalysis; cardiac evaluation; ophthalmic evaluation
3.5 years	28 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
4 years	32 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; ophthalmic evaluation
4.5 years	36 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
5 years	40 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; baseline hemogram, biochemistry, thyroid screening and urinalysis; cardiac evaluation; ophthalmic evaluation
5.5 years	44 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
6 years	48 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; senior evaluation; blood pressure determination
6.5 years	52 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
7 years	54 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; senior evaluation
7.5 years	56 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
8 years	60 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; senior evaluation
8.5 years	63 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
9 years	66 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; senior evaluation
9.5 years	69 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
10 years	72 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; senior evaluation
10.5 years	75 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
11 years	78 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
11.5 years	80 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
12 years	82 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
12.5 years	84 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
13 years	86 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
13.5 years	88 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
14 years	90 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
14.5 years	92 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
15 years	94 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
15.5 years	96 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
16 years	98 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation
16.5 years	100 years	Mid-year evaluation; dental evaluation with radiographs/cleaning as needed
17 years	102 years	Primary re-evaluation; vaccine boosters/titers as needed; parasite check; geriatric evaluation

Figure 1.3.1 Example of a personalized care plan.

References

1 Ackerman, L.J. (2011). *The Genetic Connection*, 2e. Lakewood, CO: AAHA Press.
2 American Veterinary Medical Association (2012). *US Pet Ownership & Demographics Sourcebook*. Schaumburg, IL: AVMA.
3 Simpson, R.J., Simpson, K.J., and VanKavage, L. (2012). Rethinking dog breed identification in veterinary practice. *J. Am. Vet. Med. Assoc.* 241 (9): 1163–1166.
4 Ackerman, L. What veterinary healthcare teams should know about genetic testing. AAHATrends, 2019.

Recommended Reading

Ackerman, L. (2011). *The Genetic Connection: A Guide to Health Problems in Purebred Dogs*, 2e. Lakewood, CO: AAHA Press.

Ackerman, L. Personalized medicine improves outcomes. Today's Veterinary Business, 2018. https://todaysveterinarybusiness.com/personalized-medicine-improves-outcomes

Ackerman, L. (2019). An introduction to pet-specific care. *EC Veterinary Science* 4 (1): 1–3.

Ackerman, L. (2020). Personalized pet profiles. In: *Five-Minute Veterinary Practice Management Consult*, 3e (ed. L. Ackerman), 268–271. Ames, IA: Wiley.

Ackerman, L. (2020). Proactive pet parenting: Anticipating pet health problems before they happen. Problem Free Publishing.

American Animal Hospital Association (2012). *Evolving to a Culture of Prevention: Implementing Integrated Preventive Care*, 1–23. Lakewood, CO: AAHA.

Bell, J.S., Cavanagh, K.E., Tilley, L.P., and Smith, F.W.K. (2012). *Veterinary Medical Guide to Dog and Cat Breeds*. Jackson, WY: Teton New Media.

Hamburg, M.A. and Collins, F.S. (2010). The path to personalized medicine. *N. Engl. J. Med.* 363 (4): 301–304.

World Small Animal Veterinary Association. Hereditary diseases. https://wsava.org/global-guidelines/hereditary-disease-guidelines/

1.4

Opportunities for Pet-Specific Care

Nan Boss, DVM

Best Friends Veterinary Center, Grafton, WI, USA

BASICS

Tailoring your healthcare recommendations to the wants and needs of individual patients and clients is good medicine and good business. It is easier (and less expensive) to make the most of the clients you already have than it is to find new ones. Chances are good you have the potential to grow your practice by offering more to your current clients – services that can increase the healthspans of the pets they love. As a bonus, clients who have been made to feel special and unique tend to refer others with a similar philosophy to pet care.

1.4.1 Terms Defined

Healthspan: The portion of a pet's life in which it is considered generally healthy, in contradistinction to lifespan which is the quantity of time a pet is alive.

MAIN CONCEPTS

1.4.2 Veterinary Teams are Teachers

There are dozens of factors that influence how an individual pet will be cared for. Most of these are out of our control. We don't choose the genetics of the animals (but we can counsel; see 3.4 Predicting and Eliminating Disease Traits), their lifestyles or how the client was raised to treat or care for pets. However, we do have influence over how we deliver information to our clients, and we choose the services and products we promote and market to them. We have hundreds of opportunities every week to teach our clients about what is available to them, why it's important for their pets, and how we can deliver it. The better the care we offer and the more customized it is to the needs of the specific pet, the longer our patients will live and the greater their healthspans will be.

We are responsible for the health and well-being of our patients. If a pet dies from a disease for which we had a preventive or a treatment that we never told the client about, that pet's death is at least partially our responsibility. It is our job to tell the client what products or services would benefit their pet – without judging, prejudging or making assumptions about what the pet owner wants or doesn't want done. It is their job to decide which services and products they want. We should be giving them enough information to make sound decisions. We create opportunity for ourselves by giving pet guardians choices as to levels of care. Ways to personalize care for each client and patient include:

- breed-specific programs and DNA testing (see 3.13 Breed Predisposition)
- Fear Free™ strategies (see 6.6 Fear Free Concepts)
- customized healthcare plans (see 1.3 Personalized Care Plans)
- multiple payment options (see 10.13 Approach to Pricing)
- offering house calls or virtual care (see 2.5 Virtual Care (Telehealth))
- offering compounded medications and home delivery (see 9.10 Dispensing and Prescribing)

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

- fostering personal relationships between clients and individual team members (see 5.1 Pet-Specific Customer Service)
- providing classes or seminars for clients
- developing good relationships with specialists or utilizing mobile specialists within your practice (see 10.10 Making Referrals Work)
- performing health risk assessments (see 1.2 Providing a Lifetime of Care and 2.7 Risk Assessment)
- customizing client education materials (see 5.14 Client Education Materials).

We waste opportunities to better care for our patients when we worry about rejection, being too assertive or spending too much of the client's money. Instead, we should be providing choices and giving every pet guardian the chance to take the best care possible of their furred or feathered family members.

By and large, our clients don't know all that much about medicine, whether animal or human. Nearly half of US adults are considered medically illiterate [1]. Many clients have difficulty following even simple instructions on a drug label or understanding a doctor's diagnosis and instructions. The majority of human patients don't know the names of their own medications. Even otherwise intelligent, well-educated people can become confused when dealing with information outside their area of expertise, particularly in times of stress.

Clients who don't understand the complexity of a problem or its solution will question the expense. This certainly applies to treating sick or injured animals but fear influences decisions about wellness care as well. Fear of anesthesia, fear that the pet won't be able to chew if you extract those teeth, fear of medication side effects, of overvaccinating, of chemicals in pet food and many other things.

Clients don't know how to judge risks and benefits, they don't understand the causes of diseases their pet might get ("Where would he have gotten THAT?" "He's an indoor cat, he doesn't need to see the vet every year") They don't know which of those medications they are giving is the one for the cough and which is the one for pain. They think that blood testing is a waste of money because they don't understand that we have medications or special diets to treat what we find.

Our clients are paying for our knowledge and guidance. They did not attend veterinary school, so it is our obligation to communicate that knowledge to them. Practicing medicine means being a teacher to pet owners. *Every* client interaction is an opportunity to teach about pet care, including what problems their pet might have or be susceptible to and how we could address them. Just think – we each have the opportunity to teach and influence thousands of people over our careers!

1.4.3 Wellness and Prevention are Key

Clients won't buy products and services if they don't know they are available or don't fully understand the benefits they provide. It is rare that a Great Dane owner comes into the practice whose previous veterinarian discussed gastric dilation volvulus (GDV) and gastropexy with them, nor bulldog owners who already are aware of brachycephalic syndrome and the availability of surgery for elongated soft palate. Many owners of senior pets still have never heard of senior screening and most have never received a specific nutritional recommendation. Most adult cats are overweight but only a fraction of those cats' owners have been told their cats are overweight.

Whose responsibility is it to teach them about these things if not ours? Every client should be given the opportunity to learn, and every pet should have an owner who knows how to take care of it for a long, healthy lifetime.

This is a different mindset from what we learned in veterinary school. We learned normals and then abnormals, typically from specialists. We learned very little about maintaining normal. Preventive care focused mostly on vaccinations and parasite control, with a bit of dentistry thrown in. We were not told that it was our responsibility to provide in-depth client education to every client in a pet-specific fashion.

Yet the general practitioner spends more than half of his or her time on wellness and preventive medicine: puppy and kitten visits, annual examination visits, spay/neuter services, dental prophylaxis, heartworm testing, etc. We pride ourselves on doing a good job working up cases yet often neglect the bread and butter of our profession – keeping pets from getting sick. There is nothing more awesome than a successful surgery. Yet, other than specialty surgical practices, only a small percentage of clients will benefit from our surgical expertise, compared to the number that will benefit from working on weight management, helping clients choose a good pet food, and preventing behavior problems.

1.4.4 Components of Individualized Care

Answer questions, give written materials or refer clients to credible websites. We cannot deliver pet-specific care until we have delivered client-specific care. What we are recommending should always be what we believe is in

the best interests of the patient. Your body language, eye-contact, and speech patterns need to project a caring message. It may be your 20th appointment today – it may be the client's only visit all year. To you it's another patient – to them it's a family member. These are important conversations!

In general, the vast majority of pet owners consider their pets to be members of the family. They consider their pets' health to be an important issue. They want veterinarians to help them do the right things right. For example, most pet owners actually want and expect nutritional advice from their veterinarian.

More specifically, though, every client has a different learning and communication style, different experiences with pets, and a different level of understanding. We have clients who are physicians and those who are truck drivers or office workers. The way we explain things to a medical professional is not the same as the way we would explain for someone with only a high school diploma. The majority of our clients may want nutritional advice – but the rest don't, and if you insist on talking about it anyway your advice may not be well received. We have to get a feel for who each person is, what level of knowledge they already have about pet health care, and what information and help they want from us.

This means we have to ask questions and listen to the answers. What has been your past experience with dogs? What role does your pet play in your family? How can I help you to feel more comfortable with this decision? Have I explained this well enough or do you still have questions?

What we choose to recommend or educate our clients about at a given visit is a combination of what the pet owner wants from us and what we want to discuss, based on our risk assessment for the pet (see 2.7 Risk Assessment). We often have to prioritize and we also need to be brief. Most people don't have the time or the attention span for a 40-minute discussion on flea control. However, you must also keep in mind that the vast majority of pet owners want their veterinarian to tell them about all the recommended diagnostic and treatment options for the pet, even if they cannot afford them.

1.4.5 Pet-Specific Care Takes Extra Time and Effort

The opportunity to deliver pet-specific care comes with an obligation to present care recommendations well. Take the time to explain and to coach your clients, whether the pet is well or ill. Clients will take better care of their pet if they understand its disease and treatment needs.

It takes thought and practice to change the way we work. Remembering a new protocol can be hard. Investing more time in each individual client may mean scheduling more time over the course of a year, team training, developing tools and doing performance evaluations and coaching. The opportunity to deliver pet-specific care comes at a cost. You cannot necessarily deliver high-quality care while remaining a low-cost provider, so some consideration is warranted.

Medical record keeping is very important if you are initiating a new program and a good electronic medical record (EMR) system can facilitate this (see 9.1 Medical Record Entries). We have been taught since childhood to fill in the blanks. Providing a place to document recommendations helps us to remember to make them. For example, let's say I want to start offering Schirmer tear testing (STT) for all my senior canine patients, to catch keratoconjunctivitis sicca (KCS) at an early stage. If an item is added to the exam template where the STT results are recorded, team members will remember to obtain that information.

If we want to offer a STT or a blood pressure screening to senior pet owners, we also need a handout or laminated sheet or some other tool to be sure we don't forget to do so. That's how we become consistent with client presentations and the care we deliver.

In addition, we need a plan or program for every type of routine visit. Protocol development includes not just how you will treat a particular patient but also how you will educate the client about the pet's care. You need to document every recommendation and provide written materials. Give your clients all their instructions in writing – every disease or problem, every diagnosis, every medication, every recommendation.

People comply better with their own physician's recommendations when there is sound education on why a medication or procedure is needed, and there is follow-up and follow-through. You have to do these things too, and train your staff to do these things.

1) Explain the recommendation, and why it is your standard of care.
2) Solidify the recommendation, by selling the product, scheduling the appointment for the procedure if you can, or calling back later.
3) Remember the 3 Rs. For every patient and every disease process there should be one of these: a Reminder entered for the next exam, vaccination or blood test; a Recheck appointment scheduled; or a Recall to contact the client again.
4) The client education, call-back and follow-up should be done in a kind, gentle, and professional manner by well-trained employees.

EXAMPLES

- Include STT with senior wellness panels for dogs.
- Include blood pressure measurement for every senior feline exam.
- Offer preanesthetic ECG screening for every patient, not just blood testing.
- Monitor blood pressure every six months for dogs on phenylpropanolamine.
- Offer ECG screening annually for every large-breed dog with genetic risk for cardiomyopathy, including boxers and Doberman pinschers. VPCs often precede heart failure in dogs of these breeds when cardiomyopathy is developing.
- Offer NT-ProBNP screening for giant breeds, which don't usually develop VPCs with their cardiomyopathy.

TAKE-AWAYS

- We have hundreds of opportunities every week to teach our clients about what is available to them, why it's important for their pets, and how we can deliver it.
- What we choose to recommend or educate our clients about at a given visit is a combination of what the pet owner wants from us and what we need to discuss, based on our risk assessment for the pet. We have to prioritize, and we also need to be brief.
- We need a plan or program for every type of routine visit, in order to maximize our opportunities.
- The pet owner has the right to make the decisions for their pet's care. It's our job to give clients the information they need to make responsible choices.
- The opportunity to deliver pet-specific care comes at a cost. You cannot necessarily deliver high-quality care while remaining a low-cost provider.

MISCELLANEOUS

Abbreviations

DNA	Deoxyribonucleic acid
ECG	Electrocardiogram
NT-proBNP	N-terminal pro B-type natriuretic peptide
VPC	Ventricular premature contraction

Reference

1 Institute of Medicine Committee on Health Literacy, Board on Neuroscience and Behavioral Health, and Institute of Medicine of the National Academies (2004). *Health Literacy: A Prescription to End Confusion*. Washington, DC: National Academies Press.

Recommended Reading

Baldwin, K., Bartges, J., Buffington, T. et al. (2010). AAHA nutritional assessment guidelines for dogs and cats (Canine & Feline). *Journal of the American Animal Hospital Association* 46: 285–296.

1.5

Feline-Friendly Care

Jane Brunt, DVM

Cat Hospital At Towson (CHAT), Baltimore, MD, USA

BASICS

1.5.1 Summary

Cats are the most unique and ubiquitous household pet. As a species, they are obligate carnivores and normally exhibit behaviors related to being both predators *and* prey, hunters *and* hunted. As such, cats are frequently lumped together as if they are all the same when, just like people, they are individuals with different experiences, different responses to external stimuli, and therefore different needs. A variety of so-called personalities are frequently described, including the widely used "scaredy-cat" descriptor. Pet-specific care is a practice philosophy involving transformation from the current reactive model to a proactive version of care. This must start with understanding normal behavior for cats as a species and recognizing individual expressions of behavior. This is the foundation for being both feline friendly and pet specific.

1.5.2 Terms Defined

Body Language (Feline): Communicating nonverbally through movements or position. When properly reading a cat's body language, veterinary team members and cat parents can recognize how cats feel. Body posture and facial expression, including ear set and whisker positions, provide significant information on a cat's level of arousal, distress, and pain. This is a key feature of being feline friendly because an astute observer of cats' body language can alter their interaction with the cat accordingly *in advance of* any necessary physical contact.

Environment Enrichment (Feline): Availability of resources for a cat to exhibit normal behavior where it lives, including physical, nutritional, elimination, social, and behavioral resources. Examples include providing adequate space and locations for eating and drinking, resting and sleeping, playing and perching, hiding and personal space, and elimination. Thoughtful, open-ended client queries can explore the number and location of food and water stations, toys, perches and resting areas, and litter box number, location, and substrate(s).

Ethos: The distinguishing character, sentiment, moral nature, or guiding beliefs of a person, group, or institution. An ethical appeal using credibility and character.

Handling (Feline): The term and mindset which should replace the concept *and* the word "restraint" in all veterinary practices. Scruffing has been shown to be detrimental in handling cats due to the stress and distress it can cause.

Heightened Arousal (Feline): Arousal is a state of heightened activity in mind and body that makes individuals more alert. It manifests along a spectrum from low to high. An individual can be slightly aroused or extremely highly aroused. Arousal is the result of stimulation related to a change in places, people, and patterns with which a cat is familiar and is an outcome of stress, anxiety, fear, or a combination of all three. Fear aggression is a common sequela in cats, and it is important to avoid labeling it as mean and understand the cat is *scared*, which allows us to act with empathy.

Medicalization: The process by which conditions and problems come to be defined and treated as medical conditions, and thus become the subject of medical study, diagnosis, prevention, or treatment. Medicalization can be driven by new evidence or hypotheses about conditions; by changing social attitudes or economic considerations; or by the development of new medications or treatments. Medicalization is also a term used to describe the percentage of animals receiving veterinary care over a 12-month period.

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

MAIN CONCEPTS

1.5.3 The Data is for the Dogs

Companion cats outnumber dogs in the US, Canada, and many other nations, yet comprise only 25–40% of patients in typical companion animal veterinary practices. This trend was first recognized after the release of the 2007 AVMA US Pet Owner and Demographics Sourcebook [1] which showed a decline in the number of veterinary visits and expenditures for pet cats. Furthermore, compared to dogs, cats were twice as likely not to visit a veterinarian at all. At that time, it was also noted that households considering their cats as family members had a higher average number of veterinary visits (2.0) compared to households that viewed their cats as pets/companions (1.4) or as property (0.7). This insight is one of the reasons that supporting the human–animal bond is critical for cats (see 2.14 Benefits of the Human–Animal Bond). Unfortunately, the declining trends have continued and the 2017–2018 edition of the AVMA Pet Owner and Demographics Sourcebook [2] reported that 45.7% – nearly half of all cats – did not visit a veterinarian in the year the study was conducted. Of those, 41% cited the reason as their "cats did not get sick or injured." Only 16% cited "did not have the money. . ." to pay for a veterinary visit as the reason their cats didn't receive veterinary care.

While this and other data seem daunting, it creates a tremendous opportunity for the veterinary profession. To make this happen, hospital teams need to commit to creating, implementing, and sustaining a knowledgeable, feline-friendly mindset and environment. This will allow cat owners to feel comfortable and committed to getting their cats veterinary care, irrespective of their age or perceived health status.

Fortunately, as the realization of this opportunity occurred, several organizations began or increased their efforts to improve cat health. The CATalyst Summit brought together more than 50 people and organizations representing all stakeholders in cat care, including animal welfare organizations. Subsequent to the summit, the CATalyst Council was created, representing a unique coalition of cat health and welfare organizations, companies, foundations, and the media. The American Association of Feline Practitioners (AAFP) and American Animal Hospital Association (AAHA) developed Feline Life Stage Guidelines [3]. The AAFP and International Cat Care (ICC, known as Feline Advisory Bureau at the time) both began their efforts for their Cat-Friendly Practice and Cat Friendly Clinic initiatives. These organizations have robust online resources that practices should visit and take the needed steps to acquire the related designations and certifications. The tools provided by the AAFP and ICC as well as those from the Canadian initiative Cat Healthy and the Ohio State University's Indoor Pet Initiative for Cats [4] offer resources for veterinary teams, animal shelters, and pet owners.

As a profession, we must understand consumers' desires, for without them, companion cats will not benefit from evidence-based, feline-friendly, health and welfare knowledge that we have, must implement and share. Consumers become clients when the 45.7% of cat owners not currently obtaining veterinary care do so.

1.5.4 Cat Concepts in the Veterinary Clinic

Cats are unique pets because they are both predators and prey, hunters and hunted. When pet parents and healthcare providers understand that concept, everything else becomes obvious. Cats prefer familiar places, people, and patterns, and when faced with anything unfamiliar, they become fearful and may exhibit heightened arousal. To avoid (potential) conflict, their instinct is to flee (flight) and when they have no means of escape, as in a closed exam room, this heightened arousal may manifest as fear aggression. Unfortunately, this normal behavior has caused many cats to be labeled as "AGGRESSIVE" – which is frequently captured on the medical record in upper case letters and even numbers of exclamation points. Approaching cats with quiet observation, nonthreatening postures, and expressions (get low, turn and look sideways) and slow movements is less likely to cause additional arousal. Largely due to the lack of habituation to travel and carriers, most cats are far less accepting of transport and travel than dogs. As such, they are frequently aroused before they come in our doors. What would it look like if we could have a warm, quiet and calm exam room ready for a cat so they could bypass the reception area that has the sounds, sights, and scents of their most common and feared predators – unfamiliar dogs and people?

Preventive care for all ages includes health and lifestyle-appropriate vaccines, nutrition, parasiticides, and especially regularly scheduled wellness visits, annually at a minimum and semi annual or quarterly examinations are in the "well" cat's best interest, including juveniles and young adults with weight gain or red gums. Addressing changes early in the process to prevent future problems like obesity, diabetes mellitus, and oral disease is paramount to pet-specific and client-centered care (see 4.7 Embracing Early Detection). If verbiage used in veterinary practices

includes some version of "She only has a tiny bit of tartar so she might need a dental next year," there is an immediate opportunity to ask your co-workers why, and as a team explore how that cat, their owners and even the veterinary practice could be better helped with earlier care (see 4.9 Periodontal Disease). A single, simple circumstance such as that could provide the pivot point for all team members including owners and managers, veterinarians and veterinary nurses, assistants and caregivers to be aligned and on board with pet-specific care.

1.5.5 Feline Friendliness Starts at Home

The educated and engaged veterinary team is knowledgeable about helping owners understand cats' needs and environment enrichment by engaging in conversations using open-ended questions such as "How many litterboxes do you have. . . where are they. . .how often are you able to clean them. . .?" and "Tell me about mealtimes in your home. . ." Note: the most important part of asking open-ended questions is listening to the answers (see 9.2 Asking Good Questions). Therein are the clues for true patient status.

Regarding mealtimes, we know that cats are solitary hunters and as such, their normal feeding preference is without oversight or interruption by other animals, including cat housemates. If a client describes feeding their cats within eyesight of each other, during the nutritional assessment and recommendation, information on *how* to feed (location, frequency, puzzle/foraging feeders) is as important as *what* to feed.

It is also important to know that simple changes in a cat's routine have been shown to induce stress-related illnesses. Sickness behaviors have been documented and include gastrointestinal (vomiting, diarrhea) and lower urinary tract signs (feline interstitial cystitis) [5]. All are common presentations to veterinary clinics and environmental stress should be carefully explored in these cases.

Many cats will benefit from anxiety abatement in advance of collecting the cat for travel. Having carriers out in advance of transport, using synthetic facial pheromones in and around the carrier and bedding, nutritional supplements and diets to promote calmness, and even antianxiety therapeutics are examples of tactics and treatments used widely (see 6.6 Fear Free Concepts). Gabapentin can help prevent and diminish arousal and is routinely used in advance of travel for this purpose. It is important to recognize that tranquilizers merely diminish the cat's ability to respond to fear and arousal, and do not help the cat feel less stressed or fearful.

1.5.6 It's All About the Cat, and Their Person

As knowledgeable advocates for cats, veterinary teams that have made the sustained commitment to understanding cat behavior and handling cats appropriately represent the ethos of feline-friendly, client-centered, and pet-specific care. That, along with celebrating the bond between people and their cats, will help ensure lifelong care for cats with your practice.

EXAMPLES

Sunshine, a 12-year-old spayed female brown tabby DSH, presented for the first time to a feline-exclusive veterinary practice. She had received no veterinary care after her kitten vaccines and sterilization. She was reported to have a "good appetite and thirst," and the owner brought her in because she noticed she was losing weight. On subjective observation, she was emaciated, agitated, and vocalizing. On examination, she had a 2/9 body condition score (BCS), stage 3 periodontal disease, a grade 2/6 systolic murmur, and a unilateral thyroid nodule. The owner was counseled on the likelihood of hyperthyroidism, which is treatable, and could be the primary reason for her weight loss and heart murmur. Since the condition was treatable, the owner agreed to laboratory work to confirm the presumptive diagnosis. Sunshine was taken to the inpatient area of the clinic where the veterinarian and assistant performed a jugular venipuncture while holding the cat in sternal recumbency. Immediately upon completing the sampling, Sunshine collapsed, and did not respond to resuscitation.

It is important to consider that if Sunshine had been handled in a more feline-friendly manner, a better outcome might have been achieved.

TAKE-AWAYS

- The current undermedicalization of companion cats presents a significant opportunity for veterinary practice teams.
- Recognizing and understanding normal cat behavior is a critical skill in companion animal practice. Cats thrive when they can exhibit normal cat behaviors including hunting and hiding.

- Because of cats' unique relationships with their environment, feline-friendly care is the foundation of pet-specific care for companion cats.
- Transitioning our mindset from "diagnose and treat" to "predict and prevent" will enhance cats' well-being, health, and longevity, as well as client compliance and satisfaction.
- Caring for cats in feline-friendly ways enhances the human–cat bond, and it is the right thing to do.

MISCELLANEOUS

1.5.7 Cautions

1) "Look all ways before crossing…" In the context of cats – observation in advance of any intervention.
2) Think twice before laughing at viral videos showing cats and cucumbers.

Abbreviations

AVMA American Veterinary Medical Association
DSH Domestic short hair

References

1 AVMA (2007). *US Pet Owner and Demographics Sourcebook*. Schaumberg, IL: AVMA.
2 AVMA (2017–2108). *Pet Owner and Demographics Sourcebook*. Schaumberg, IL: AVMA.
3 Hoyumpa Vogt, A., Rodan, I., Brown, M. et al. (2010). AAFP/AAHA feline life stage guidelines. *Journal of Feline Medicine and Surgery* 12: 43–54.
4 Ohio State University Indoor Pet Initiative for Cat Owners. https://indoorpet.osu.edu/cats
5 Stella, J., Lord, L., and Buffington, C. (2011). Sickness behaviors in response to unusual external events in healthy cats and cats with feline interstitial cystitis. *Journal of the American Veterinary Medical Association* 238: 67–73.

Recommended Reading

American Association of Feline Practitioners. Cat Friendly Practices. https://catvets.com/cfp/cfp
Cat Healthy. http://www.cathealthy.ca
International Cat Care. Cat Friendly Clinic. https://catfriendlyclinic.org
Rodan, I. and Heath, S. (2016). *Feline Behavioral Medicine: Prevention and Treatment*. St Louis, MO: Saunders.

1.6

Adapting to a New Normal

Lowell Ackerman, DVM, DACVD, MBA, MPA, CVA, MRCVS

Global Consultant, Author, and Lecturer, MA, USA

BASICS

1.6.1 Summary

Life has changed for veterinary practices, the hospital team, clients, and even pets. Periodically, the world experiences events considered "shocks" that change the fundamental way we do things. These events can include such diverse things as war, terrorist attacks, financial crises, climate change, and pandemics. Even though the event may only occupy a finite span of time, the after-effects can last significantly longer. As economic shocks appear to be occurring with some regularity, it is important to adapt to the realities that follow.

1.6.2 Terms Defined

Economic Shock: An event that has a major impact on economic indicators, such as unemployment, inflation, consumer confidence, or consumption.
Formulary: An approved list of medications that may be stocked in a practice or are allowed to be prescribed.
New Normal: The changed state recognized following the occurrence of a major or catastrophic event that alters our routines.
Pet-Specific Care: An approach that tailors veterinary care to individual pets based on their predicted risk of disease and likely response to intervention.

MAIN CONCEPTS

1.6.3 Client Experience

The occurrence of COVID-19 may have been the latest notable economic shock, but there are bound to be others. In the immediate post-COVID era, even with vaccination, clients may continue to be wary of their interactions with staff, so it is a great opportunity to innovate. This includes rethinking how we engage with clients (even hand shaking), and how we articulate the value of our services. Clients have experienced new ways of dealing with their own physicians and the healthcare system and are bound to question why dealing with veterinary teams should be any different. It is important to consider the long-term applications of appropriate principles, because there are bound to be future pandemic concerns as well as other economic shocks that will affect the profession. It is important to adapt to such shocks and learn from them.

Immediately following a pandemic, clients are likely to have expectations when it comes to routine wellness visits, conditions that they believe could be handled virtually, preference for "curbside" services rather than coming into the hospital, home delivery of products, and much more. For a service industry such as veterinary medicine, it is important to articulate the value proposition in ways that make sense to consumers. This is a particularly great opportunity to consider pet-specific care, in which we take a more proactive and transparent approach to the care that

Pet-Specific Care for the Veterinary Team, First Edition. Edited by Lowell Ackerman.

pets will need over their lifetimes, and do so on a customized basis. It will also be important to curate resources used for client education, so we can be sure that pet owners are receiving consistent messaging about the care of their pets. We also need to ensure that such resources are deliverable in paperless forms and even contact-less, so direct contact can be minimized.

Clients are quite aware when their world has changed, and it is likely that they have experienced stay-at-home isolation, so their attitudes toward social contact will likely be affected for some time. Expect that they will continue to be looking for assurances that they, their pets, and their families will be safe in their interactions with the veterinary team. Many of them will have been working from home, teleconferencing with work colleagues, family, and friends, doing much of their shopping online, downloading their entertainment, and receiving many of their purchases by home delivery.

Clients have also changed dramatically in terms of their knowledge of infectious disease transmissibility, hand washing, physical (social) distancing, premise disinfection, contact tracing, and the wearing of facemasks. This type of vigilance and anxiety tends to continue until they feel completely safe, and pet owners will be looking for some assurance that the veterinary hospital is a safe place to visit.

Some clients will have prolonged trepidation about visiting businesses, including their own physicians, and so veterinary hospitals should not consider themselves unaffected by this. Client anxiety may be heightened if they do not have access to a vehicle but are still hesitant about the inherent risks of using public transportation or ridesharing. This apprehension can be allayed if teams explain all the protocols in place to keep those anxious clients and their pets safe, and this might include telehealth options based on telephone triage with clients.

For pets that need to be seen in hospital, clients should receive instructions on how this can be done safely, and expectations should be established for how the visit will be conducted in a step-by-step manner. This might include instruction for the pet owner to wear a facemask (if indicated), access they may or may not have to the facility, whether they are allowed to accompany their pet for its veterinary visit, communication options with the veterinary team, and what is being done to ensure their safety. Even long after a pandemic has passed, some clients will likely have developed habits around hand washing, physical distancing, and the use of hand sanitizers, and everything possible should be done so they can feel comfortable seeking veterinary care for their pets.

In the immediate aftermath of a pandemic, there is also a great opportunity to introduce topics that might not have garnered much attention previously, such as One Health (see 2.19 One Health). This initiative that links the health of animals, humans, and the environment is a great way to highlight the interrelatedness of such concerns, and the need for clients to appreciate the "big picture" of caring for our pets, ourselves, and our planet.

1.6.4 Changing Practice Protocols

Veterinary staff are typically well educated and dedicated to animal health, but at the same time they want to protect themselves and their families from transmissible diseases, and their concern is legitimate. For the foreseeable future, we should expect that they will appreciate ongoing instruction on practice safety protocols, patient flow, and access to appropriate personal protective equipment (PPE). Because veterinary teams work collectively, there should be protocols in place for monitoring the health of individual staff

Source: Creative Commons. Public Domain.

members, having policies for isolation and quarantine, and supporting unambiguous and generous policies about which situations should prompt team members to leave the premises to preserve the health of others. It is also important to be aware of the additional stress experienced by staff and how that can take an immeasurable toll on productivity, commitment, and teamwork. Most veterinary hospitals have a relatively small contingent of team members, so without careful and considerate policies, staff could wrongly interpret that their physical and mental health is not a major concern of the hospital, which would be a very unfortunate conclusion.

While they were always appropriate, protocols for personal hygiene were not always followed in periods prior to pandemics, but are definitely critical afterwards. There should be hand washing between each patient visit and adequate time allowed not only for sanitization of the examination rooms, but also for more thorough disinfection. This includes not only surfaces used for pets, but also those that might have contact from owners as well. This will add time to appointments which might eventually need to be recouped through increased fees.

Veterinary staff are extremely valuable and their health is an important concern, so there should be ongoing dialogue about what steps the hospital is taking to keep everyone safe. Whenever possible, such protocols should be institutionalized as standards of care (see 9.4 Standards of Care) and staff should be counseled and coached as to what they should be doing to keep themselves and each other safe. It is important to consider even minor risks and work collectively to address concerns. When staff appreciate that their ongoing health is a major priority, and when it is reinforced by other team members, they can be confident that things are being done to mitigate their risks for getting sick. It is important to realize that fear is likely to persist long after a pandemic, so relaxing standards should only be contemplated after robust team discussions and the best available evidence.

1.6.5 Expectations for Telehealth

An increasing number of our clients have become quite familiar with teleconferencing in their daily lives. This comfort has extended to dealing with their physicians, and telehealth consulting with veterinary teams should be presumed to become a routine matter and perhaps even a preference for many clients (see 2.5 – Virtual Care (Telehealth)). The interaction can be synchronous (real-time) or asynchronous (respond following review) but the expectation of clients will likely be that there are many times when dealing with pet care virtually is preferred. It is not just a matter of personal safety, but many clients have found this to be convenient as well.

We should anticipate that many clients will be receptive to the practice of telehealth, and this is also a great way for pets to be triaged before exposing them to our facilities and hospital teams. Some conditions will be more amenable to virtual care than others, and clear guidelines should exist as to what can be attempted through this platform, and what should prompt a recommendation for the animal to be seen in the hospital.

Remote monitoring is also available for our patients, and a variety of clinical attributes can now be measured at home. This includes collars that can measure activity, heart rate, respiratory rate, and some aspects of body temperature, but other devices such as glucometers can also be used. This can be very helpful for hospice patients, postsurgical patients, and those with a need for routine monitoring.

Many clients are familiar with a variety of options for virtual connection, but hospitals should be comfortable with the privacy protections for any type of telehealth attempted, and it is best if the hospital designates only a few programs with which they are comfortable in this regard, and at which teams can gain proficiency. Because telehealth is likely to become a routine part of veterinary practice going forward, one of the most important things for veterinary teams to have in place are the criteria for telehealth visits, the structure of those visits, and the fees associated with telehealth consults. Telehealth need not be a money-losing proposition for the practice and can be as or more profitable than other types of services if instituted correctly.

1.6.6 Economic Insecurity

The impact of the pandemic was not felt equally across populations, as is often the case with economic shocks. Many clients had interruptions in their ability to work and earn money, some may have had to deal with personal tragedies, and the uncertainty of what might come next often influences spending decisions for many years. Thus, it is reasonable to expect that clients might be hesitant when it comes to large expenditures for their pets, typically for several years or until they no longer feel vulnerable. Others may prefer to postpone procedures that are not considered essential and immediate until they feel more financially secure.

Following any economic shock, such consumer attitudes are inevitable, and veterinary practices should anticipate this and plan their client messaging accordingly. There should be unequivocal communication about what services

should be prioritized and which can be delayed, not to scare clients but to help them make informed decisions for the care of their pets. It may also be advisable to consider credit terms for procedures that might be preapproved by the hospital, as well as payment plans that allow clients to do the work recommended but spread payment out over a longer interval (see 10.17 Payment and Wellness Plans). This is also a great time to promote pet health insurance as one way of "flattening the curve" when it comes to veterinary expenditures (see 10.16 Pet Health Insurance). If done correctly, these strategies can be profitable for the practice, as well as convenient for pet owners.

In times of turmoil, people often safeguard their cash reserves and postpone everything that is not considered essential. In an emergency situation, that might also necessitate postponing things that are actually essential, including rent, mortgage, groceries, and even healthcare. Because veterinary care is often considered a discretionary expense, it can become a low priority if there is not a system in place to help ensure funding for such care.

If at all possible, this is a time to consider the best ways to help pet owners manage their financial insecurity around pet expenditures. This can be done by recommending pet health insurance, if feasible, and also by considering payment plans (also known as wellness or concierge plans), which offer established fees charged intermittently (often monthly) for a defined basket of services. As mentioned previously, pet health insurance helps "flatten the curve" when it comes to unanticipated expenses, while payment plans "smooth the curve" for anticipated expenses (vaccines, parasite control, etc.). Both allow pet owners to budget more effectively for veterinary care without having to contend with periodic "spikes" in expenditures. Because most consumers will be anxious about pet care expenses, this can help pet owners plan for needed care without adversely affecting practices. If positioned correctly, both insurance and payment plans can be profitable for veterinary hospitals and a convenient and anxiety-reducing approach for pet owners.

1.6.7 Retail Considerations

If your clients were not used to making online purchases before the pandemic, that has likely changed, and they have now established a new comfort level for dealing with e-commerce and home delivery. Expect that this will continue, and many clients will also be considering and researching making online purchases for their pet supplies, foods, and medications.

This is the time to consolidate and promote online retail, as this is not only convenient for your clients but increases the safety of your staff as well (see 9.10 Dispensing and Prescribing). Veterinary hospitals might consider aligning with an online veterinary pharmacy and directing clients toward such purchases. It is important that veterinary practices price their products competitively, so clients can make a seamless transition to online purchasing without having to price shop for better deals elsewhere. It is possible for veterinary hospitals to do this profitably, because with online pharmacies and retailers there are no inventory costs for the practice. While it might seem that veterinary hospitals could stock and dispense products and keep a larger share of the revenue, it can actually be more satisfying to earn a profit margin without having to deal with all the costs of maintaining inventory.

In some countries, veterinary medicine still involves actual cash exchange, but following a pandemic expect that most customers will prefer cashless transactions, and even more likely contactless transactions, where there is not even the handling of credit or debit cards, or even receipts. It is important to consider payment options carefully, and this type of retail experience is likely to continue long into the future.

1.6.8 Vendor Relationships

Economic shocks can be extremely challenging, but they also provide opportunities to improve operations, and this is very true of our relationships with vendors. Rather than treat vendor visits as intrusions and assigning front office teams as gatekeepers, this is a great time to establish systems for prescheduling vendor visits (or even televisits), streamlining inventory to just those products needed, and leveraging vendor relationships to bring the most value to clients, the hospital team, and the hospital itself. This does not necessarily always favor the vendor with the lowest price, since value can be conveyed in other ways such as hospital support, continuing education, expedited delivery, and prioritization when supplies are in high demand but short supply.

As new products become available, rather than sales representatives visiting with any staff member who might be available, they can be requested to provide a packet of information to a formulary evaluation committee, in charge of making recommendations for what might be included in inventory. In general, if a product is recommended to be included in the hospital formulary, then the committee should also recommend which product in the same class of medications should be removed from the formulary, or only made available through the hospital's online pharmacy. If the committee evaluates a product and finds that it is not suitable to be included in

the practice formulary, those reasons should be recorded and conveyed to the hospital staff so the product does not need to be reevaluated every time a representative makes a sales call.

1.6.9 Changing Business Models

With every new economic shock comes opportunities for improving the veterinary business model to be more responsive to current market pressures. Following the most recent pandemic, some of the most acute problems to be addressed include embracing pet-specific care so that clients better understand the lifelong needs of their pets without requiring prompting by in-hospital visits; making it easier for virtual care to be delivered to clients; facilitating e-commerce and home delivery; and constructing a more profitable business model better able to withstand such economic shocks. Such crises should also convince practice owners of the importance of financial metrics and dashboards that allow clinics to be resilient and thrive despite challenging events. Veterinary care may be an essential service, but all veterinary practices are not recession proof.

Pet-specific care allows clients to understand the lifelong needs of their pets in advance, and to financially prepare for dealing with them (see 1.2 Providing a Lifetime of Care). Even in the case of economic shocks, clients can appreciate where care needs to restart when situations normalize, what is to be prioritized, and discussions to be had with the veterinary team either virtually or in person. There is no need to wait for regular appointments to resume before instituting appropriate care.

TAKE-AWAYS

- Economic shocks tend to have an impact on consumer behavior long after the actual shock has concluded.
- Consumer spending habits are often dramatically changed by an economic shock, and tend to persist as long as individuals feel vulnerable.
- It should be expected that clients will have a heightened sensitivity to hygiene following a pandemic, and will be concerned for their own health and that of their family.
- Hospital protocols need to change to reflect evidence-based standards of care, including ways to keep everyone in the hospital safe.
- Clients are likely to be receptive to services that allow them to interact with the hospital remotely, including telehealth, online purchasing, and home delivery.

MISCELLANEOUS

1.6.10 Cautions

Economic shocks are difficult to predict, but often have profound effects that last long after the precipitating event has concluded. Because most shocks are not anticipated, it is difficult for veterinary teams to be completely prepared from one crisis to the next. Each crisis tends to provide its own lessons for the future, and veterinary practices need to consistently adapt to remain relevant and vital.

Recommended Reading

Ackerman, L. (2019). Why should veterinarians consider implementing virtual care? *EC Veterinary Science* 4 (4): 259–261.

Ackerman, L. (2019). Why pet health insurance is important for the profession. *EC Veterinary Science* 2: 6–7.

Ackerman, L. (2019). Ready to partner with an online pharmacy? *AAHA Trends* 35: 49–53.

Ackerman, L. (2020). Bracing for the new normal. *EC Veterinary Science*. 5(9): 49–52.

Ackerman, L. (2020). The new e-commerce: E-commerce is more than just selling products online. AAHA Trends; 36(11): 51–54.

American Animal Hospital Association (2012). *Evolving to a Culture of Prevention: Implementing Integrated Preventive Care*, 1–23. Lakewood, CO: AAHA.

Hamburg, M.A. and Collins, F.S. (2010). The path to personalized medicine. *New England Journal of Medicine* 363 (4): 301–304.

Zigrang, T. and Bailey-Wheaton, J.L. (2020, March/April). Healthcare valuation implications of COVID-19. *Value Examiner*: 28–34.