



Telemedicine: From Your Exam Room to Their Living Room

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It is the year 2025. You are sitting in your office and your certified veterinary technician (CVT) has just video conferenced you from the living room of a longtime client of yours. The patient in question is Willow, a 7-month-old female spayed Mastiff with an area of alopecia on her head. The CVT completes and shares with you her thorough physical exam and you both determine no other significant findings. She performs a deep skin scraping of the area, examines the slide through the microscope in her truck, and finds *Demodex* mites. You prescribe Ivermectin for the puppy and, since it is a commonly used pharmaceutical, your technician is able to dispense it from her truck. The client will schedule a video-conference recheck in three weeks. As you hang up from the call, your second technician buzzes in right on time for your next appointment.

Telemedicine in the Human World

The scenario above depicts the future for veterinary medicine general practice. In fact, it is already a current practice in the human medical realm. There is actually an organization called the American Telemedicine Association (ATA) whose members are physicians, academicians, policy makers, and others who promote the safe and effective use of telemedicine to promote the health and well-being of people. They define telemedicine as "the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status."²

The ATA developed practice guidelines for primary and urgent care as part of their mission to establish standards promoting patient safety and quality services provided via telemedicine.⁶ These guidelines include rationale for the use of telemedicine in a primary care setting, and they have determined that both acute and chronic medical conditions can be managed effectively by video-based telemedicine. These conditions include – but are not limited to – allergies, dermatologic issues, genitourinary conditions, otitis media, upper respiratory infections, congestive heart failure, and diabetes, a list that sounds all too familiar, also being common conditions seen in veterinary medicine general practice. The difference, however, is that with organizations such as the ATA, telemedicine is generally accepted and more developed in human medicine than it is in veterinary medicine.

The smart phone revolution has provided the human medical world with a powerful set of tools. Many of these tools are taking the form of mobile applications: ECG monitoring and analyzing, mental health monitoring, and rash diagnostics – plus apps with attachments, such as those needed to perform an eardrum exam. Wireless sensors can track pulse, oxygen, glucose, blood pressure, and heart rhythm. Pending FDA approval, the equivalent of an intensive care unit monitoring system can even exist on a person's wrist. Patients can also demand video consultations with a physician at any time of night for a comparable price of a regular copay.¹³

Some may argue that human medicine is a more justified arena for establishing telemedicine as a standard practice. In human medicine, the patients can communicate their problems to their physicians, whereas in veterinary medicine we cannot rely on our patients to verbally communicate with us. Talk can be cheap, though. Talk can be a distraction. Patient evaluation consists of much more than simply communicating complaints and feelings, and that philosophy is at the heart of veterinary medicine.

State of Affairs

The American Veterinary Medical Association (AVMA) does not have an official stance on telemedicine, but they have included in their Model Practice Act that “a veterinarian-client-patient relationship cannot be established solely by telephonic or other electronic means.”¹ Included in the requirement of a valid VCPR is “a timely examination of the patient by the veterinarian.” Both sections, interpreted together, conclude that a VCPR is only established when the veterinarian physically examines the patient. States that have adopted this stance on telemedicine in their practice acts include Oklahoma, Idaho, Iowa, Illinois, Mississippi, Tennessee, Texas, Utah, and California. Hawaii has elaborated to specify that a VCPR is established via telemedicine only when one has already been established in person regarding the same illness in question electronically. However, the majority of practice acts have no specific mention of telemedicine as a practice of veterinary medicine whatsoever.⁸

Many would defend the language in current practice acts on the basis that veterinary medicine would be impossible without a physical exam – and the physical exam is indeed an important component in the evaluation of a patient. However, it is not the only factor that drives a diagnosis. Access to the medical records, clinical history, and laboratory test results are all important components that help veterinarians come to a complete assessment. Others may argue that the lack of a veterinarian-driven physical exam may increase the rate of misdiagnoses, but complaints and malpractice suits against veterinarians already exist with the current standard of care. The reality is that, depending on the set of circumstances and the medical condition, a physical exam may not even be necessary. Note that the purpose of this discussion is not to belittle the physical exam or defend that it is overrated, but to offer an eye-opening perspective on how the profession can grow – because the truth is that veterinary medicine is already changing.

Plus, it's important to recognize that real-time telemedicine already exists in veterinary medicine through many well-established mediums. Resources such as Ask.vet and Vet24Seven allow clients and veterinarians to communicate via websites and mobile applications, making it easier for clients to connect with veterinarians outside the exam room.⁴ Other services such as poison control hotlines exist to determine whether certain problems require immediate medical attention.

The bottom-line issue: the language in many states' practice acts are inconsistent and ambiguous, which is problematic and puts many of these services on shaky ground legally. There is without a doubt a public need for on-demand veterinary services but, as a profession, we have done a poor job of making ourselves available to our clients via modern communication techniques. Dr. Ed Blach, co-founder of Vet24Seven, defends his site, noting that providing a convenient avenue for connectivity between clients and veterinarians promotes greater engagement, which in turn will help to generate client visits and consults.⁵ The truth is that practically every adult owns a cellular device and is using it multiple times a day. Our society is changing, and it is up to us as veterinarians to adapt and change along with modern communication methodologies.

Plus, when you consider the current education and examination standards for the veterinary medical board, it's a wonder why telemedicine is not already a standard of practice. Students are practicing telemedicine every day; for three years, we spend hours a day sitting in a classroom making assessments and creating treatment plans based on someone else's physical exams and diagnostics. Furthermore, the North American Veterinary Licensing Exam contains no practical component as a requisite for students to obtain their veterinary license. How can it be that, during their fourth year, veterinary students are evaluated on their abilities to make a diagnosis based on text, pictures, or video, but it is unlawful for an experienced clinician to give their medical opinions unless they have touched the patients?

Implications in Veterinary Medicine

The veterinary community has much to gain from incorporating telemedicine as a standard practice. In the small animal realm, telemedicine would act as an extension of the exam room, enabling veterinarians to improve efficiency and effectiveness while maintaining high quality care to a larger patient populations. Real time telemedicine would benefit all parties of the veterinary-client-patient relationship. Exotics and large animals would not be excluded, either, as their care would also advance with the implementation of telemedicine.

Perhaps the most substantial beneficiary would be the patients who rarely see the inside of a veterinary hospital. How many clients are unable to get their cats in for timely physicals because they run and hide at the sight of a carrier, or maybe the cat is stressed by simply being in the exam room surrounded by barking dogs? Results of the Bayer veterinary care usage study determined that feline resistance was one of the top factors

that clients cited for not taking their cat to the vet regularly.¹⁴ Geriatric, arthritic dogs are another potential concern, as their difficulties traveling may prevent owners from bringing them in as often as they should, and perhaps the dog-aggressive 100lb German Shepherd is also lacking in its preventative care. The Bayer study also determined that 40% of cats and 15% of dogs have not been to the veterinarian within a year. These patients are entitled to the regular health care that they deserve.

Not only would telemedicine provide substantial improvements in pet health care, but it would also provide convenience desired by the client. Imagine the elderly couple who hasn't been able to bring their pet in for its annual exam for the past three years, or the mother of four who finds it impossible to bring all of the kids and the pet to the clinic. House calls also reduce travel expenses and time commitments on the clients' end. The cost of veterinary care would also be reduced, as there would be less of a need to pay for as many brick and mortar expenses when the time and space needed to run a veterinary general practice was reduced. (Pet owners have cited the cost of veterinary care as a top contributor for decreased veterinary visits.)¹⁴

Telemedicine house calls would also expand the role of the veterinary technician. Sending technicians to the clients and video-conferencing with the veterinarian would provide them with autonomy. They could establish their own personal relationship with the clients and develop their physical exam skills. In conjunction with the veterinarian, they are responsible for triaging the patient and determining if there is a need for immediate medical attention. By entrusting them with greater responsibilities, it empowers and encourages them to do more for the practice and grow as a person.

The role that would change the most, though, is that of the veterinarian. It is difficult to imagine a world where the veterinarian provides his or her services via a Skype session. The truth of the matter, though, is that a veterinarian (owner or associate) has much to gain from telemedicine. Increasing efficiencies and cash flow to the practice would boost the bottom line. They could extend their reach and provide veterinary care across geographic and socioeconomic barriers.⁸

And, what about veterinary students? They are graduating with a tremendous debt load that has never been more evident. Increasing debt combined with lower salaries and fewer job offers is an increasing concern of many new graduates.¹⁰ More specifically, student loan debt has increased annually at an average rate of about 5%, while salaries have decreased at a rate of 0.9%.¹⁶ The veterinary profession is in need of reform to combat these issues and restore faith in a profession that has left many students feeling disheartened about their futures upon their graduation dates. Expanding veterinary services to reach more clients and serve more patients would undoubtedly improve overall morale in the veterinary community by improving performance and promoting higher wages.

It is important to emphasize, as mentioned above, that small animal medicine would not be the only arm of veterinary medicine to benefit from telemedicine. Our beloved exotic pets such as lizards, hamsters, birds, and so forth would benefit greatly from telemedicine consults. These exotics are known to stress easily with extensive handling and transport.^{11, 12}

This stress could have a profound impact on the animal's state of health and well-being. Why not offer the client the opportunity to leave their Komodo Dragon in the comfort of its terrarium while you evaluate it from afar? This would also be a good opportunity to inspect its husbandry arrangements, as poor conditions have historically impacted the health of these patients.^{11, 12}

Researchers at Kansas State University have developed an infrastructure to utilize telemedicine in the large animal realm. They use Bluetooth monitoring software to continuously assess the state of health of cattle in herds. Monitoring trends in physiological variables and cattle movement to feed and water are extremely helpful in identifying early warning signals for potential disease outbreaks. The implications from such software include improved financial stability of the industry as well as preparation for epidemiologic disasters.¹⁵

What about fish? They rarely have physical exams performed, and many diagnoses are made from videos and observation through different material substances. It's probably safe to assume that there have been many beloved fish who were flushed down the toilet because they "weren't swimming right," when maybe all they needed was a Metronidazole-infused fish food.

There are, of course, cases where telemedicine would be deemed inappropriate or unethical. Extensive training has provided veterinarians with the intuition to know which cases are to be managed on an urgent basis, so management and analysis on a case-by-case basis would be the best means to ensure that each patient receives the most appropriate care, and this could be held to current standards. Attention to clinical risk assessment is required so as to avoid any negative consequences from these practices.⁶

Recognizing that there is certainly a patient population that have never seen the inside of a veterinary hospital is a crucial step in appreciating the need for telemedicine in the veterinary world. How rewarding would it be to offer extraordinary veterinary care to animals who have never received it before?

Challenges Ahead

Telemedicine has a great potential to transform the ways that veterinary medical services are offered for the better, but it does not come without its own set of challenges. Perhaps one of the broadest challenges is reconsidering what veterinary medicine is without a face-to-face relationship with the veterinarian. But relationships are developed via the internet all the time. A study from the Proceedings of the National Academy of Sciences determined that 35% of marriages in America now begin online.³ That's over one-third of married people who may have never otherwise been married if it weren't for the advent of

online dating. Think of how that could extrapolate into veterinary medicine; the opportunities are endless!

Another challenge that telemedicine faces is adapting the legal and regulatory structure. There are several issues that would need to be addressed before telemedicine can legally become a standard of veterinary care, which would be reflected in changing the regulations in the practice acts. A major concern of telemedicine includes whether or not a proper veterinary-client-patient relationship exists through video and conference calls.⁷ As mentioned before, several states have scribed their practice acts reflecting the language in the AVMA Model Practice Act, stating that the VPCR cannot be established solely by telephonic or electronic means.¹ Must the VPCR be established with each visit? Each diagnosis? Once a year? Once in a lifetime?

Another issue exists in cross-state licensing. Certainly not every client resides in the same state as the veterinary practice. Should the veterinarian be licensed in every state in which he or she is providing medical care and advice? With the current language, it begs the question whether or not medical advice can even be transmitted via telephone on a day-to-day basis as is already occurring. Consults and recommendations are made over the phone every day in veterinary practices. The ambiguity of the laws are wide open to interpretation on a case-by-case basis, and opinions vary dramatically with the lawyer who is providing them.⁴

The AVMA has recognized the need to make recommendations on the issue of telemedicine practice in veterinary medicine. At the AVMA board meeting in September, 2015, they included it as one of the topics to be covered by the new AVMA Practice Advisory Panel. The Practice Advisory Panel is responsible for "protecting, promoting, and advancing the veterinary profession by strategically identifying, prioritizing, and processing" veterinary issues. They will work in conjunction with the Regulatory Advisory Panel that focuses on matters of veterinary regulations. These panels are part of a pilot program designed for a more efficient governance by the board, and the AVMA board hopes to work with the state boards and veterinary medical colleges to develop an official policy for telemedicine.⁹

Data protection is an important factor to consider for the future of telemedicine. Given the sensitive nature of information communicated via the virtual world, it requires a secure system through which this confidential information is transmitted. One could certainly imagine the possibility of an overzealous breeder in the small or large animal realm who would be interested in obtaining information about their competitors. The ATA recommends that data security be established by implementing encryption methods such as the Federal Information Processing Standard.⁶ Any session or device should have authorized access and timeout thresholds, as well as means of protecting contents in the event of loss or theft. Americans have long trusted mobile sources with their personal information, so there is no reason why pet health care cannot be the same, as long as meticulous measures are taken to protect the client and patient's privacy.

An additional challenge faced by the veterinary profession is how to adapt the technicians to their new roles. CVT education should involve thorough history-taking skills, detailed physical examination techniques, and extensive communication training specifically geared towards the purpose of telemedicine.⁶

None of these changes come easy, but we should not let the fear of change prevent us from adopting and accepting what will inevitably become the future of veterinary medicine. It is already established in the human health care setting, and our clients will expect the transition to the veterinary field for their pets. It is important to note that this would not be the first big change in veterinary medicine. Think electronic medical records, digital radiography, MRIs and CTs, and these are just a few examples of evolutions in the standard of care that were probably never even imagined decades ago. Technology, and thus societal standards, are changing on a near daily basis, and it is up to us as a profession to keep up with the times and the ever-changing expectations of our clients.

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