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Veterinarians' use of the Talking Physical Exam as a communication tool

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OBJECTIVE
To describe veterinarians' communication of the companion animal physical exam (CAPE) to veterinary clients and to identify factors associated with the number of physical exam components communicated by veterinarians to clients.

SAMPLE
376 video-recorded veterinarian-client-patient interactions, involving 60 veterinarians.

PROCEDURES
18 CAPE components were studied in relation to veterinarians' use of 7 communication-related parameters. A mixed linear regression model was used to assess veterinarian, patient, and appointment factors associated with the number of components conveyed by a veterinarian.

RESULTS
Veterinarians conveyed 1,566 of 2,794 (56.1%) of the components that they examined to clients, as having been examined. Of those components that were examined and conveyed by veterinarians, the impact of the finding was communicated for 496 of 1,566 (31.7%) of the components. Visual aids and take-home literature were each used in relation to an examined component during 15 of the 376 interactions (4%). A significant association was found between number of CAPE components conveyed and gender of the veterinarian (females conveyed 1.31 more), as well as the type of appointment (2.57 more were conveyed in wellness appointments and 1.37 more in problem appointments, compared to rechecks).

CLINICAL RELEVANCE
Findings identify an opportunity for veterinarians to further emphasize components of the CAPE, which may in turn increase clients' perceived value of the CAPE due to understanding the benefits for their pet. This may be accomplished with the Talking Physical Exam, in which veterinarians discuss CAPE components findings with clients in real time, and the relevance of the findings to the patient's health.

Veterinarian-client communication skills are essential to primary care veterinary practice.[1,2] The quality of veterinarian-client communication has been associated with client satisfaction,[3] client adherence to a veterinarian's recommendations[4] and veterinarian satisfaction.[5] Along with the aforementioned evidence-based studies, an association between veterinarian-client communication and patient health has been theorized.[1] With this developing evidence base, additional aspects of veterinarian-client communication require investigation to further inform the future practice of veterinary medicine.[6]

One gap in communication that has been identified between veterinarians and their clients occurs around services performed by veterinarians.[7] A fundamental service performed by veterinarians is the companion animal physical exam (CAPE).[8] Often dogs and cats presenting for wellness exams have disease conditions of which their owners are completely unware.[9] This illustrates the importance of the CAPE. While veterinarians are aware of the significance of the CAPE,[10] the results of previous research suggest that the performance and value of the CAPE may not be well communicated to veterinary clients. In a study[7] in which 1,400 veterinary clients were surveyed, only 8% of dog owners and only 7% of cat owners mentioned that their pet was examined when asked which services were provided during a veterinary visit. The study authors speculated that these low percentages may be because veterinarians are not making clients aware that an examination was being performed and suggested that veterinarians could better emphasize the value of the CAPE. Further, in a survey of 2,188 owners, of those who were taking their pet to a veterinarian less often than they had in the past, 63% and 68% of dog and cat owners, respectively, reported that they saw no need for an annual examination.[11] Concerns

regarding the lack of communication about the value of the CAPE are further supported by a study of 833 dog owners and 1,110 veterinary professionals that asked both parties if a dental exam was typically performed at every appointment.[6] Only 77.2% of the dog owners responded "yes" whereas 95% of the veterinary professionals responded "yes" to the same question. Understanding veterinarians' current communication to veterinary clients about the CAPE will assist in identifying communication protocols that may be used to improve veterinary clients' understanding and perceptions of the value of the CAPE.

The Calgary-Cambridge Guide (CCG) is an evidence-based framework for skills-based veterinary communication.[1] Explaining the process and findings of the physical exam is one of the 71 clinical communication skills identified by the CCG. It is noteworthy that, according to this guide, this skill is performed prior to the decision-making section of the appointment. A protocol to communicate the performance and value of the CAPE to clients is to describe the physical exam as it is being performed, including both normal and abnormal findings and their significance, to veterinary clients. This process, termed the Talking Physical Exam (TPE), engages the client in their pets' veterinary care, and is likely to increase a client's understanding of the importance of their pet's CAPE. This technique has specific relevance for emphasizing the importance of the CAPE during preventive health care appointments. Pet owners indicate they would take their pet to a veterinarian more often if they knew it could prevent problems and expensive treatment later or if they were convinced it would help their pet live longer.[11] The TPE offers an opportunity for veterinarians to convey to clients the importance of an annual CAPE in keeping their pet healthy and supporting their pet in living longer. In addition, a Canadian study found 51% of appointments were wellness appointments,[12] which suggests annual preventive health care appointments can be a substantial source of revenue for veterinary practices. The TPE has the potential to impact client satisfaction, veterinarian satisfaction, patient health, and veterinary practice sustainability.

The first step in exploring the role of the TPE is to describe its current use in veterinary practice. The objectives of this study were to describe veterinarians' communication about the CAPE (ie, the TPE) using direct observation, and to identify factors associated with the number of physical exam components conveyed by veterinarians to clients.

Materials and Methods

This study was approved by the University of Guelph Research Ethics Board (REB#17-08-009).

Participant recruitment

Participant recruitment has been previously reported.[13,14] In brief, a random sample of veterinarians practicing within 150 km of the Ontario Veterinary College in Guelph, ON, Canada was used. A list was created from the College of Veterinarians of Ontario's publicly available website (www.cvo.org). From the defined geographic area, 2,234 veterinarians were randomly listed using a random number generator (www.random.org). Veterinarians were invited to participate if they were English-speaking, were over the age of 18 years, and practiced companion animal medicine. It was possible for more than one veterinarian to participate per veterinary clinic. A convenience sample of clients were recruited, from the reception area of the practice, for each participating veterinarian. Clients were included if they spoke English, were 18 years old or older and gave consent in writing. Veterinarian-client interactions were excluded if euthanasia was a possible outcome or if a child under 18 years old attended the appointment. Written consent was obtained from all those involved in the videos.

An initial questionnaire was completed by each participating veterinarian, within 24 hours of starting participation in the study. This questionnaire included demographic questions such as year of graduation and gender of the veterinarian. At the end of each appointment, the veterinarian completed a questionnaire with questions regarding the appointment. These questions included the type of appointment (reason for presentation), the number of patients in the appointment and the species of the patient. Each veterinarian completed an exit questionnaire that included the following questions: "Do you think that being videotaped interfered with your clinical performance" and "Do you think you could be yourself in front of the camera" scored on a scale of 0 to 100 (0 = definitely not; 100 = definitely). As previously described,[14] the veterinarian-client interactions were recorded using a GoPro (Hero5 edition; GoPro Inc) mounted in the corner of the exam room.

Study design

This cross-sectional study combined data from direct observation of videos and the questionnaires completed by participating veterinarians and clients. Using a total of 909 recorded veterinary appointments, 400 videos were randomly selected using a random number generator (www.random.org) for the present study. The 2 inclusion criteria for videos were a physical exam was observed during the video and that the exam was performed on a dog or cat. When more than 1 patient was present, 1 was selected a priori using the random number generator (www.random.org) for inclusion. Type of appointment (ie, wellness, problem, or recheck) was based on the answer the veterinarian recorded in the survey they completed after each appointment. Species of patient was recorded based on the video itself.

A rubric for evaluating veterinarians use of the TPE was developed based on a previous Delphi study in which 25 CAPE components were identified by an expert panel as being required for a baseline, best practice CAPE.[15] The 25 components were reduced for the present study to 16

CAPE components, collapsing components where the coder (JCDC) had difficultly discerning from the video-recording among the components being examined (eg, the 3 components mucous membrane color, capillary refill time and hydration status were combined into 1 component called membrane color, capillary refill time, hydration for the present study). Additionally, 2 CAPE components, that almost reached the 90% consensus cut point during the Delphi study (ie, muscle condition score [MCS] at 85.7% and neurologic assessment at 81.0%), were also included. Although body temperature did not approach consensus during the Delphi study, it is historically recognized as a vital component of a physical exam within the veterinary literature,[10,16] and for this reason was added, producing a rubric containing 19 components with which to evaluate the video-recordings. In the final analysis, data on thyroid palpation for older cats was excluded because it did not pertain to all examinations (ie, dogs). Therefore, the analyzed results were based on 18 components of the CAPE.

Seven communication related parameters were developed by the research team to further evaluate veterinarians' communication during of the TPE. If the coder identified that the veterinarian "examined" one of the 18 CAPE components, the coder further evaluated that component to determine the veterinarian's use of each of the 7 communication parameters. A detailed codebook describing each of the 7 communication parameters was developed a priori. The parameter 'Examined' was indicated if the coder could see or hear that the component was being examined. For the communication parameter 'Conveyed', the coder indicated this was completed when the veterinarian told the client that a CAPE component was about to be examined, was being examined or had been examined. If the veterinarian reported to the client that the examination of a component led to normal findings, then 'Normal' was scored (eg, "his ears look good") for that component. If a health problem was identified and reported to the client then 'Pathology' was scored (eg, "he has a heart murmur") for that component. If the veterinarian mentioned the significance of the normal finding or the pathology to the client, then 'Impact on patient' was scored (eg, "her teeth look great, continue brushing so she doesn't require going under a general anesthetic for a dental cleaning in the future"). 'Client option' was scored if the veterinarian conveyed to the client, after describing a normal or pathological finding, that the client had a choice regarding specific diagnostic tests or specific treatments or let the client know that not treating was a possible option (eg, "would you like the mass biopsied?"). 'Visual aid used' and 'Take-home literature' were scored if the veterinarian presented a visual aid (eg, a model of a dog's stifle used to explain a ruptured cranial cruciate ligament) or take-home literature was provided (eg, a handout on how to brush a dog's teeth), respectively, in relation to the examined component. The rubric was completed in Qualtrics, LLC (SAP American Inc).

Additional details on the camera position, veterinarians' use of ophthalmoscope, and/or veterinarians' use of otoscope, were also gathered during review of the video-recorded interactions.

Statistical analysis

Descriptive statistics were calculated. Mean, median, and range were calculated for continuous variables and percentages were calculated for categorical variables.

A mixed linear regression model was used to assess veterinarian, patient, and appointment level factors for an association with the outcome variable, which was the total number of CAPE components conveyed by a veterinarian. Veterinarian was included as a random effect to control for clustering of appointments by veterinarian. The independent variables assessed were veterinarian year of graduation, age of veterinarian at the time of the interaction, species of patient (dog/cat), type of practice (multiveterinarian/single veterinarian), gender of the veterinarian (male/female) and appointment type (wellness/problem/recheck). The presence of confounding was assessed by adding each of the independent variables back into the main effects model to test for a 30% or greater change in the measure of association of the statistically significant variables.[17] The likelihood ratio test was run to check significance of the null hypothesis that the random effect of veterinarian was not contributing to the variance of the model and the interclass correlation coefficient was calculated to describe the proportion of total variance attributed to the difference between clusters (appointments performed by the same veterinarian).

First, univariable analysis was performed between each factor and the total number of CAPE components conveyed during an appointment to assess for an unconditional association using a liberal P value of 0.20. Those predictor variables with an unconditional association were included in a full main effects model where backward elimination was used. Variables in the final main effects model were tested for plausible interactions. The goodness of fit of the final model was accessed by graphically checking for normality of the residuals and graphically checking homoscedasticity using the normality of the best linear unbiased predictors of the random effects. The model assumptions of normality and homoscedasticity were met. Outliers were assessed by removing them from the model and then checking the model for any significant change in direction of the coefficients.

All statistical analyses were performed in Stata (StataCorp 2019 version 16.1; StataCorp LLC) and used a significance level of $P < 0.05$.

Results

Demographic data

Although 61 veterinarians agreed to participate in the study, (19.2% [61/318]), 60 veterinarians had been

the sample size established a priori for the study, resulting in data collected for 60 veterinarians. The total corpus of video-recorded veterinarian-client interactions included for analysis was 376. Reasons for exclusion of videos included species of patient not being a dog or cat (eg, a bird or a ferret), as well as the patient was not present (eg, hospital discharges without the pet). Twenty-four of the appointments included multiple pets within the same appointment. Demographic details of participating veterinarians and species of patients were assessed during the interactions **(Table 1)**. Of the 376 appointments, participating veterinarians identified 189 (50.3%) as wellness appointments, 143 (38%) as problem appointments, and 44 (11.7%) as recheck appointments. The results of the exit questionnaire showed that the participating veterinarians felt that being filmed did not change their behavior. On a scale of 0 (definitely not) to 100 (definitely), participants responded that they could be themselves while being filmed with a median score of 93 out of 100 and that being filmed did not interfere with their clinical performance with a median score of 6.5 out of 100.

Table 1—Veterinarian participant demographic information (n = 60) and species of patient (376) for the analysis of use of the Talking Physical Exam in veterinary appointments.

Characteristic	Result
Gender of veterinarian	
Female	39 (65.0%)
Male	21 (35.0%)
Year of graduation	
Mean	1998
Standard Deviation	10.47
Range	1979–2016
Practice Type	
Multiple veterinarians	327 (87%)
Single veterinarian	49 (13%)
Species of patient in appointment	
Canine	285 (76%)
Feline	91 (24%)

Description of veterinarians' use of 7 communication parameters in relation to 18 components of the CAPE

Across the 376 veterinarian-client-patient interactions included in the present study, 2,794 CAPE components were examined based on coder visual identification or verbalization by the veterinarian. Of the components that were examined, the veterinarian conveyed to the client that the component was being examined for 56% (1,566 of 2,794) of the components **(Table 2)**. For the CAPE component 'general assessment', it was impossible to known whether the veterinarian had performed a non-verbalized general assessment if they did not verbalize it; thus, this CAPE component was recorded as examined for 100% of the appointments. When examined, the 2 components of the CAPE that were least frequently conveyed when examined were general assessment (10.1% [38/376]) and neck palpation (17.9% [10/56]; Table 2). The 2 most conveyed components when examined were MCS (100% [15/15]) and body weight/body condition score (95.7% [200/209]; Table 2). On average, participating veterinarians conveyed 4.2 components of the CAPE during an interaction (SD, 2.44; median, 4; range, 0 to 12; **Table 3**).

Table 2—Results of evaluation of the parameter "examined" and the 7 communication linked parameters for 18 companion animal physical exam components, during the 376 appointments.

Physical exam component	Exam done No. (%)	Conveyed exam done No. (%)	Client told normal finding No. (%)	Client told pathology present No. (%)	Impact on patient explained No. (%)	Visual aid used No. (%)	Client options provided No. (%)	Take-home literature provided No. (%)
General assessment	376/376 (100)	38/376 (10.1)	33/376 (8.7)	2/376 (0.5)	1/376 (0.3)	2/376 (0.5)	12/376 (3.2)	7/376 (1.9)
Oral cavity exam	278/376 (73.9)	208/278 (74.8)	70/278 (25.2)	115/278 (41.4)	99/278 (36.6)	3/278 (1.1)	34/278 (12.2)	1/278 (0.4)
Examine eyes	232/376 (61.7)	119/232 (51.3)	41/232 (17.7)	56/232 (24.1)	49/232 (21.1)	1/232 (0.4)	9/232 (3.9)	0/232 (0)
Examine ears	228/376 (60.6)	116/228 (50.9)	39/228 (17.1)	52/228 (22.8)	45/228 (19.7)	2/228 (0.9)	13/228 (5.7)	0/228 (0)
Palpate neck	56/376 (14.9)	10/56 (17.9)	6/56 (10.7)	4/56 (7.1)	2/56 (3.6)	0/56 (0)	2/56 (3.6)	0/56 (0)
Palpate lymph nodes	126/376 (33.5)	37/126 (29.4)	21/126 (16.7)	3/126 (2.4)	3/126 (2.4)	0/126 (0)	0/126 (0)	0/126 (0)
Cardiac assessment	293/376 (77.9)	187/293 (63.8)	105/293 (35.8)	32/293 (10.9)	21/293 (7.2)	0/293 (0)	3/293 (1.0)	0/293 (0)
Respiratory assessment	142/376 (37.8)	77/142 (54.2)	51/142 (35.9)	7/142 (4.9)	3/142 (2.1)	0/142 (0)	1/142 (0.7)	0/142 (0)
Palpate abdomen	225/376 (59.8)	107/225 (47.5)	46/225 (20.4)	34/225 (15.1)	25/225 (11.1)	3/225 (1.3)	14/225 (6.2)	2/225 (0.9)
Palpate masses	86/376 (22.9)	52/86 (60.5)	3/86 (3.5)	43/86 (50.0)	40/86 (46.5)	0/86 (0)	5/86 (5.8)	0/86 (0)
Check skin and haircoat	187/376 (49.7)	146/187 (78.1)	52/187 (27.8)	80/187 (42.7)	67/187 (35.8)	0/187 (0)	15/187 (8.0)	2/187 (1.1)
Palpate limbs	113/376 (30.0)	80/113 (70.8)	21/113 (18.6)	42/113 (37.2)	39/113 (34.5)	0/113 (0)	11/113 (9.7)	1/113 (0.9)
Check penis & testicles/vulva	69/376 (18.4)	45/69 (65.2)	19/69 (27.5)	15/69 (21.7)	12/69 (17.4)	0/69 (0)	6/69 (8.7)	2/69 (2.9)
Weight/BCS	209/376 (55.6)	200/209 (95.7)	74/209 (35.4)	82/209 (39.2)	66/209 (31.6)	3/209 (1.4)	10/209 (4.8)	0/209 (0)
Check MM/CRT/ hydration	41/376 (10.9)	28/41 (68.3)	23/41 (56.1)	5/41 (12.2)	6/41 (14.6)	0/41 (0)	0/41 (0)	0/41 (0)
Check temperature	109/376 (27.9)	95/109 (87.2)	44/109 (40.4)	13/109 (11.9)	10/109 (9.2)	0/109 (0)	0/109 (0)	0/109 (0)
Check MCS	15/376 (4.0)	15/15 (100)	11/15 (73.3)	4/15 (26.7)	5/15 (33.3)	0/15 (0)	0/15 (0)	0/15 (0)
Neurological assessment	9/376 (2.4)	6/9 (66.7)	1/9 (11.1)	3/9 (33.3)	3/9 (33.3)	1/9 (11.1)	1/9 (33.3)	0/9 (0)
Total	**2,794**	**1,566**	**660**	**592**	**496**	**15**	**136**	**15**

BCS = Body condition score. CRT = Capillary refill time. MCS = Muscle condition score. MM = Mucous membrane color.

Table 3—The mean, median and range for 18 companion animal physical exam components in relation to the 7 communication-linked and being "examined" parameters, for the 376 study interactions.

Result	Exam done	Conveyed as exam done	Client told normal finding	Client told pathology present	Impact on patient explained	Visual aid used	Client options provided	Take-home literature provided
Mean	7.43	4.16	1.76	1.57	1.32	0.04	0.36	0.04
Median	8	4	1	1	1	0	0	0
Range	1–16	1–12	0–8	0–8	0–6	0–1	0–3	0–1

Of the interactions where the veterinarian conveyed to the client that a component was examined, the veterinarian communicated whether the examined component was normal 42% (660/1,566) of the time or had an identified pathology 38% (592/1,566) of the time (Table 2). Of the CAPE components conveyed, the least communicated in relation to being normal or having a pathology were body temperature (60.0% [57/95]) and lymph node palpation (64.9% [24/37]) and the most communicated components in relation to a normal or pathological finding were general assessment (92.1% [35/38]) and check skin and haircoat (90.4% [132/146]). When the veterinarian did communicate that a CAPE finding was either normal or pathological, the impact on the patient was most often communicated for palpation of superficial masses (76.9% [40/52]) and neurological assessment (50.0% [3/6]; **Figure 1**). The impact on the patient, was least often communicated for palpation of lymph nodes (8.1% [3/37]) and respiratory assessment (3.9% [3/77]). Overall, when a CAPE component was conveyed to a client as being normal or pathological, the impact of the finding to the patient was conveyed 39.6% (496/1252) of the time.

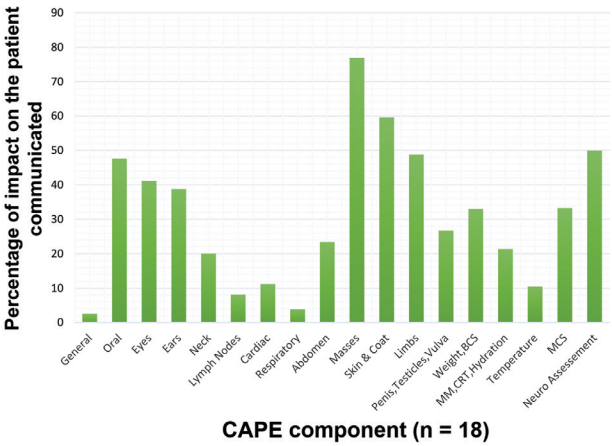

Figure 1—Percentage of each companion animal physical exam (CAPE) component for which the impact to the patient was communicated, of the total for each CAPE component that was conveyed as having been examined.

Visual aids and take-home literature were each used at least once in 4% (15/376) of all interactions examined. Ophthalmoscopes were used in 25.8% (97/376) and otoscopes were in 24.2% (91/376) of all appointments. Of the 189 wellness appointments, 72% (136/189) contained at least 1 medical concern communicated by the veterinarian to the client, meaning most presumably healthy dogs and cats presenting for preventive care had at least 1 pathology reported.

Factors associated with the total number of CAPE components conveyed by a veterinarian during an appointment

The results of the univariable analysis for each independent variable are presented **(Table 4)**. The final mixed-linear regression model included type of appointment and gender of the veterinarian **(Table 5)**. In summary, female veterinarians conveyed 1.31 more CAPE components to clients than male veterinarians when controlling for type of appointment. When controlling for gender of the veterinarian, in problem appointments 1.37 more CAPE components were conveyed by veterinarians to clients than during recheck appointments. For wellness appointments, 2.57 more CAPE components were conveyed by veterinarians to clients than for recheck appointments, and 1.20 more CAPE components were conveyed by veterinarians to clients during wellness appointments compared to problem appointment. The intraclass correlation coefficient was 0.18, which describes the correlation be-

Table 4—Univariable regression model data, with number of components conveyed per appointment as the outcome variable and veterinarian as a random effect

Independent variable	Coefficient	*P* value	95% CI
Age of veterinarian	−0.02	0.36	−0.05, 0.02
Gender of veterinarian*	1.32	< 0.0001	0.61, 2.02
Wellness appointment†	2.57	< 0.0001	1.89, 3.26
Problem appointment†	1.38	< 0.0001	0.67, 2.08
Species of patient‡	−0.34	0.21	−0.87, 0.19
Year of graduation	0.03	0.15	−0.01, 0.06
No. of veterinarians working at that practice§	−0.58	0.27	−1.60, 0.44

*The referent is male.
†The referent is a recheck appointment.
‡The referent is dog.
§The referent is a single veterinarian practice.

Table 5—Final Mixed Linear Regression Model, with Number of Components Conveyed per Appointment as the Outcome Variable and Veterinarian as a Random Effect

Independent variable	Coefficient	*P* value	95% CI
Gender*	1.31	< 0.0001	0.64, 1.98
Type of appointment†			
Problem	1.37	< 0.0001	0.67, 2.07
Wellness	2.57	< 0.0001	1.90, 3.25
Constant (Y, X = 0)	1.45	< 0.0001	0.66, 2.23

*The referent is male.
†The referent is a recheck appointment.

tween the interactions involving the same veterinarian. The likelihood ratio comparing the variance of at the appointment level versus the veterinarian level, of the final model, was significant at $P < 0.0001$, rejecting the null hypothesis that the random effect (veterinarian), was not contributing to the total variance.

Discussion

Findings of the present study provide novel insight into the current use of the TPE by veterinarians, which is a tool for informing clients about their animal's physical exam and the potential value of the CAPE. The TPE is also a possible means to provide structure to veterinary appointments by focusing both the veterinarian and the client on the process of the physical exam while it is occurring. The present study identified missed opportunities for veterinarians to communicate what they were doing during the CAPE and their reason for performing each component of the physical exam. The results of this study most likely overestimated the number of examined components conveyed because of the difficulties discerning at times if a component was being examined. Thus, it is likely that there were even more components being examined that were not explained to clients. Although the ideal number of physical exam components that need to be conveyed by a veterinarian to communicate value of the physical exam has not been identified, findings of the present study suggest possible opportunities likely exist for veterinarians to engage clients in the process of their animal's physical exam, including why examining specific components are important.

Participating veterinarians often conveyed to clients when they weighed a patient or took their body temperature. One possible explanation for the frequency of conveying the act of weighing and temperature measurement might be the necessary cooperation of pet owners for these procedures. Other CAPE components may be conveyed less often simply because the cooperation or direct participation of the client is not as likely needed for the veterinarian to complete the examination. Participating veterinarians least often let clients know that they were performing a general assessment of the patient. The general assessment has been described as a very important source of information for veterinarians during the CAPE, which has an important role in veterinarians' clinical decision making.[10,18] A veterinarian mentioning their thoughts on general assessment is an initial step in helping clients understand the process and significance of the CAPE and by employing the TPE protocol throughout may potentially increase clients' perceived value of the CAPE.

One of the recommendations that reached consensus during a Delphi study on improving the quality of canine and feline appointments was "during each preventive healthcare consultation, owners should be made aware of both normal and abnormal findings from a clinical examination."[19] In the current study, when veterinarians did convey that they had examined a CAPE component during an appointment, 20% of the time they did not mention whether the component examined was normal or if a pathology was present. This can impact client decision making and runs counter to informed owner consent,[20] which is upheld by veterinary regulatory bodies.[21] It is likely clients have difficulty making evidence-based decisions when they have not been given all the information regarding their pet's health status, including relevant CAPE findings. Further, from an analysis of malpractice claims, a list of categories for which veterinarian-client communication breakdowns caused claims included, "lack of comprehension of exam findings."[22] It is plausible that greater use of the TPE would better position clients for making informed decisions and help veterinarians uphold their obligations regarding informed owner consent.

Understanding the impact of a normal or pathologic finding on the patient can also influence client decision-making. This is true both for patients that present with health concerns and for those who are seemingly healthy upon presentation.[23,24] The impact of a normal or pathological finding becomes more significant when it is explained to a client to justify proceeding with preventive care, diagnostic tests or to proceed with medical or surgical treatments. While a baseline, best practice CAPE should be conducted during a veterinary appointment,[15] the goal of the TPE is not necessarily to discuss at length every CAPE component with the client, rather the goal is to convey to the client the most impactful normal and abnormal CAPE findings for the patient's health.

Communication between a veterinarian and a client is a human-to-human interaction, where psychological research has shown that visuals aids can be used to improve a person's understanding of a medical problem.[20] Surprisingly, visual aids and client handouts (ie, take-home literature) were rarely used in the present study to explain CAPE components. Further, veterinary clients participating in a focus group study expressed that the use of visual aids augments their understating of new medical information.[25] The veterinary client participants from the same focus group study further expressed an interest in receiving take-home literature from their veterinarian. Given that many malpractice claims are based on a client's lack of understanding of examination findings and the prognosis of the case,[22] it follows that the use of take-home literature and visual aids may enhance client understanding, and detailing the use in the medical record supports documentation of informed owner consent.

The TPE may be especially important for wellness appointments, which made up about one-half of the total appointments evaluated by the present study. Current vaccination frequency guidelines for many of the canine and felines vaccines recommend administration once every three years.[26,27] Clients should bring their pets in for annual wellness appointment which includes a CAPE, to ensure their health and wellbeing. It has been suggested veterinarians should facilitate clients' understanding of the health benefits to their pets and the economic benefits to the clients themselves of wellness appoint-

ments, which will likely bring their pets into veterinary practices more frequently.[11] The use of the TPE in wellness appointments could further improve clients understanding of the value of the annual CAPE between vaccine appointments, which could further support veterinary practice sustainability.

A noteworthy result from the present study is in about three-quarters of wellness appointments the veterinarian conveyed at least one pathological CAPE finding to the client. In another study, which did not identify the type of appointments included, only 7% of dogs and 10% of cats examined by primary care veterinarians were considered healthy.[28] The most common pathologies reported in the previous study were dental calculus and gingivitis. In another study involving one veterinary practice, 52% of dogs and cats presenting exclusively for wellness appointments, were found to have a pathology.[9] The many pathologies identified within the wellness appointments of the present study reinforces the need for and the value of wellness appointments, including performance of the CAPE during scheduled healthy animal appointments. As there are many health issues that can be addressed, training veterinarians on communication protocols to improve client's overall perceived value of preventive care, such as the TPE, is likely to be important for veterinary patients to receive the preventive healthcare they need and to support the sustainability of veterinary practices.

A significant positive association was found between type of appointment and the number of CAPE components conveyed per appointment, which provided an indicator of participating veterinarians use of the TPE. In comparison to veterinarians conducting recheck appointments, veterinarians were more likely to convey components of their physical exam during problem appointments and even more likely to convey components during wellness appointments. A direct observation study investigating the differences specifically between wellness and problem appointments found more comprehensive examinations were conducted for wellness appointments than for problem appointments.[29] Another study[30] found veterinarians to be less rushed during wellness appointments and that veterinarians directed more biolifestyle-social statements toward the client during wellness appointments in comparison to problem appointments, even though there was not a significant difference in duration of the two types of appointments. This may begin to explain the greater likelihood of CAPE components being verbally conveyed as examined during wellness appointments. Further, it is intuitive that a more comprehensive physical exam would be conducted for problem and wellness appointments then for recheck appointments, since recheck appointments usually involve a follow-up on one specific problem and recheck appointments are usually shorter in length. Ideally, an effort should be made to use the TPE as a communication protocol for all types of appointments.

Findings of the present study also showed that participating female veterinarians conveyed 1.31 more CAPE components than participating male veterinarians. Another direct observation study found female veterinarians use more of a relationship-centered communication pattern, which focuses more on collaboration with the veterinary client.[31] Engaging clients in their animal's physical exam by conveying the CAPE components examined is consistent with a more collaborative approach to communication and may be consistent with female veterinarians' use of a more relationship-centered pattern of communication. Focus should be placed on training all veterinarians, regardless of their gender identity, on the potential benefits and use of the TPE.

For some of the CAPE components considered in this study, it was difficult to discern if they were being examined, due to the study methodology of direct observation of video recording. This problem may have resulted in a specific CAPE component being under reported as examined, resulting in an overestimation of the percentage of the component examined being conveyed to the client. For example, when a participating veterinarian was palpating a patient's spine, ribs and hips, the coder could not always be certain whether the veterinarian was assessing body condition score or MCS resulting in a possible underestimation of the assessment of MCS and therefore an overestimate of the proportion of MCS being conveyed as examined by the veterinarian. Having said this, the focus of this study was on the communication parameters associated with performance of the CAPE, not which components were examined. Another limitation of the study was the use of only 1 coder. A decision was made to only use 1 coder because of the coder's extensive firsthand experience as a primary care veterinarian and because the questions in the rubric were objective rather than subjective. Another limitation of the current study was the inclusion of only 7 predictor variables in examining for associations with veterinarians' use of the TPE, which was determined by the type of data collected by surveys completed by the participating veterinarians as part of the larger study.[13,14] Other predictor variables for use of the TPE that could be considered for future studies include time allocated by the veterinary practice for appointments and personality of the veterinarian. Participating veterinarians were asked in the surveys, "Do you have communication training" with the choices of only "yes" or "no", which did not provide specific enough detail on the nature of the training to use as a valid measure in the present study. Assessment of the type, content, and length of communication training could be expanded upon in future studies to provide more specific information on the nature of veterinarians' communication training and the impact of the training on the demonstrated communication of veterinarians, including use of the TPE.

The present study provides a description of the current use of the TPE by primary care veterinarians. Through this study, a potential opportunity was identified for increasing the application of the TPE by veterinarians to promote the value of the CAPE during all types of interactions, which in turn may lead to improved outcomes of veterinary care including clients' perception of the value of the annual CAPE,

client and veterinarian satisfaction, patient health and veterinary practice sustainability. Future research could examine the direct effect of the TPE on clients' perception of the value of the annual CAPE, as well as the TPE's effect on client satisfaction with a veterinary appointment. Additional studies could also investigate the association between use of the TPE and positive veterinary patient outcomes. The potential value offered by the TPE should be a consideration for including the TPE in current veterinary curriculum as well as continuing education seminars for veterinarians in practice.

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