



Short Communication

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Clinical examination and weighing of patients in small animal consultations

N. J. Robinson, M. L. Brennan, M. Cobb, R. S. Dean

IN medicine, detecting disease before the onset of clinical signs could lead to improved management for some conditions (Del Mar and others 2006) and clinical examination may play a role in this early detection. Clinical examination was found to detect underlying disease during a case series of canine geriatric screening appointments (Davies 2012). Some studies have suggested concurrent disease is common in patients of all ages (Banyard and others 1998, Robinson and others 2014a) so the clinical examination may have a wider role in the early detection of disease. Clinical examination may also have an important role in the management of some ongoing conditions allowing the response to treatment to be monitored. Understanding the current clinical examination practices, including weighing of the patient, is the first step in determining the role of these procedures in the consultation. The aim of this study was to describe clinical examination and weighing of patients during first opinion small animal consultations.

Data collection took place over 16 weeks (two weeks each at eight practices) as part of data gathered for a larger project (Robinson and others 2014a). A previously developed data collection tool (Robinson and others 2014a) was used to record consultation data by direct observation. Consultations were categorised into: First (patient not examined for the presenting problem in the past year); Review (patient examined for the presenting problem in the past year); Preventive medicine (presenting problem related to preventive health); Elective euthanasia. Type of clinical examination performed was categorised into: Full (minimum of: assessment of coat/condition; examination of the eyes/ears/mouth; auscultation of the chest; palpation of the abdomen); Focused (examination focused on a particular body system/s); None. Clinical examination abnormalities which were detected and discussed with the owner during the consultation were recorded. Whether the patient was weighed, either during the consultation or on the way to or from the consultation room, was also recorded. The number of problems discussed was

recorded, including both preventive medicine and specific health problems, for all consultations.

Descriptive statistics (frequencies, medians and IQRs) were carried out using IBM SPSS V.21. The chi-squared test was used to compare categorical variables such as clinical examination type and consultation type. The Mann-Whitney U test was used to compare numerical (non-parametric) and binary variables, such as the number of problems discussed and clinical examination type. Statistical significance was set at $P=0.05$. Ethical approval was obtained from the ethics committee at the School of Veterinary Medicine and Science, The University of Nottingham.

In total, 1901 patients were presented, including 1235 dogs, 525 cats, 90 rabbits and 51 patients of other species. Data on clinical examination were complete for 99.4 per cent ($n=1889/1901$) patients. A full clinical examination was performed in 60.6 per cent ($n=1145/1889$) of patients and a focused examination in a further 31.4 per cent ($n=594/1889$). No clinical examination was performed for 7.9 per cent ($n=150/1889$) of patients. Of the patients who received a full or focused examination, at least one clinical examination abnormality was detected in 77.2 per cent ($n=1343/1739$). A median of two abnormalities were detected per patient examined (IQR 1–3; range 0–11). Approximately half of the patients presented were weighed ($n=897/1889$; 47.5 per cent).

A median of three problems (IQR 2–4) were discussed for patients receiving a full examination, while a median of one problem (IQR 1–2) was discussed for patients receiving a focused examination. Significantly more problems were discussed when a full compared with a focused examination was performed ($P<0.001$).

Full examinations and weighing were performed most frequently in preventive medicine consultations (Table 1). Both clinical examination type ($P<0.001$) and weighing ($P<0.001$) differed significantly between consultation types. Data were also recorded for 18 elective euthanasia consultations, of which three received a focused examination and 15 received no examination.

Full examinations and weighing were performed most frequently in cats (Table 2). There was a significant difference between species in terms of type of clinical examination ($P<0.001$) and weighing ($P<0.001$).

Clinical examinations, though not always complete, were performed on the majority of patients. The detection of abnormalities, often many per patient, was common during examination and a more complete examination appeared to be associated with the discussion of more problems. This supports previous findings that concurrent disease is common (Banyard

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TABLE 1: The distribution of clinical examination type, clinical examination abnormalities and weighing of patients among different consultation types

Consult Type	Clinical exam type			Weighed?		
	Type	n	Per cent	Yes/No	n	Per cent
First	Full	287	59.3	Yes	250	51.7
	Focused	191	39.5	No	234	48.3
	None	6	1.2			
	Total	484	100.0		484	100.0
Revisit	Full	258	35.5	Yes	245	33.7
	Focused	370	50.9	No	482	66.3
	None	99	13.6			
	Total	727	100.0		727	100.0
Preventive medicine	Full	600	90.9	Yes	402	60.9
	Focused	30	4.5	No	258	39.1
	None	30	4.5			
	Total	660	100.0		660	100.0

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TABLE 2: The distribution of clinical examination type and weighing for the three most frequently presented species

Species	Clinical exam type			Weighed?		
	Type	n	Per cent	Yes/No	n	Per cent
Dog	Full	722	58.9	Yes	486	39.6
	Focused	402	32.8	No	740	60.4
	None	102	8.3			
	Total	1226*	100.0		1226*	100.0
Cat	Full	366	70.0	Yes	337	64.4
	Focused	124	23.7	No	186	35.6
	None	33	6.3			
	Total	523*	100.0		523*	100.0
Rabbit	Full	50	56.2	Yes	50	56.2
	Focused	29	32.6	No	39	43.8
	None	10	11.2			
	Total	89*	100.0		89*	100.0

*Data are only shown for 1226 of 1235 dogs, 523 of 525 cats and 89 of 90 rabbits presented as data were missing for the remaining 12 patients

and others 1998, Robinson and others 2014a) and suggests clinical examination may be a useful tool in the detection of underlying disease. However, it is important to interpret these results with caution, as the cause and effect relationship between the number of problems discussed and the type of clinical examination performed is unknown. Previous research has suggested that number of problems discussed varies with both species and consultation type (Robinson and others 2014a) and more complex analysis would be needed to understand these relationships further.

Variation in the clinical examination type performed between species could reflect species differences in clinical presentation (Robinson and others 2014b) or could be indicative of the usefulness of a full clinical examination of each species. Differences in weighing practices between species could reflect accessibility of scales or could be due to the role of weighing in smaller species. Weighing could allow identification of small changes in weight, potentially an early indicator of disease, which may be particularly crucial for small species such as cats and rabbits. It could also ensure correct drug dosing to minimise poor efficacy, adverse effects and antimicrobial resistance (Ramsey 2008). However, full clinical examination and weighing of every patient may not be practical or even necessary (Radostits and others 2000), and future work could focus on identifying patient groups where thorough examination is likely to have a positive impact on long-term health outcomes.

Given the convenience sample of practices used, it is unclear whether the results are representative of UK veterinary practice.

A further limitation is that factors that influence the feasibility of clinical examination, such as patient temperament, were not recorded. Participant's knowledge of the purpose of the study could have influenced their behaviour, a phenomenon known as demand characteristics (McCambridge and others 2012). However, the results provide a valuable insight into clinical examination practices in a sample of UK veterinary practices and suggest further work is needed to understand how these practices can best be used to improve patient care.

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References

- BANYARD, M. R. C. (1998) Prevalence of intercurrent disease in dogs and cats presented for vaccination at a veterinary practice. *Australian Veterinary Journal* **76**, 600–601
- DAVIES, M. (2012) Geriatric screening in first opinion practice – results from 45 dogs. *Journal of Small Animal Practice* **53**, 507–513
- DEL MAR, C., DOUST, J. & GLASZIOU, P. (2006) Screening for disease, health promotion and disease prevention. In Del Mar, C., Doust, J. & Glasziou, P., eds. *Clinical Thinking: Evidence, Communication and Decision-Making* 99–113. 1st edn. Oxford: Blackwell.
- MCCAMBRIDGE, J., DE BRUIN, M. & WITTON, J. (2012) The effects of demand characteristics on research participant behaviours in non-laboratory settings: a systematic review. *PLoS ONE* **7**, e39116
- RADOSTITS, O. M., TYLER, J. D. & MAYHEW, I. (2000) The clinical examination. In Houston, D.M. & Radostits, O.M., eds. *Veterinary Clinical Examination and Diagnosis* 91–124. 1st edn. London: Elsevier.
- RAMSEY, I. (2008) *BSAVA Small Animal formulary*. 7th edn. BSAVA.
- ROBINSON, N. J., BRENNAN, M. L., COBB, M. & DEAN, R. S. (2014a) Capturing the complexity of first opinion small animal consultations using direct observation. *Veterinary Record*. Published Online First. DOI: 10.1136/vr.102548. <http://veterinaryrecord.bmj.com/content/early/2014/09/26/vr.102548.full>
- ROBINSON, N. J., DEAN, R. S., COBB, M. & BRENNAN, M. L. (2014b) Investigating common clinical presentations in first opinion small animals consultations using direct observation. Manuscript submitted for publication.



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