Heartworm in dogs in Canada in 1991

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Abstract

In late November 1991, 1883 clinics in Canada were sent a questionnaire to assess the status of Dirofilaria immitis in dogs in 1991 and there was a 60.0% response. There were 344,031 dogs tested for heartworm (HW), 627 were found infected and the prevalence of HW infection was 0.18%. There were 417 dogs with HW in Ontario, 116 in Manitoba, 38 in Quebec, 53 in British Columbia, three in Alberta, and one in Nova Scotia. In British Columbia, all of the infected dogs but one were from the Okanagan valley which, as from 1991, is a new focus of infection in Canada. Most dogs with HW had not been on preventive medication in 1990, and the prevalence among dogs tested and unprotected was 0.59%. That prevalence was considerably higher in endemic areas. Companion dogs, over three years of age and maintained primarily outdoors in rural areas, were most frequently infected. One cat was diagnosed with D. immitis and 33 dogs had Dipetalonema reconditium.

n late November 1991, 1883 questionnaires were sent to small and mixed animal clinics and to institutional veterinarians in Canada to assess the prevalence in 1991 of heartworm (HW) infection, primarily in dogs, as had been done previously (1–3). In January 1992, clinics in Ontario, and Quebec that had not responded were approached again; in Ontario, each clinic was sent a copy of the questionnaire, and in Quebec, a telephone call was made to solicit answers to the questionnaire. The number of questionnaires returned was 1079, but 57 were not included in the analysis, because they were incomplete. The rate of response to the questionnaire was 60.0%. About 96% of the practitioners who responded indicated that they would complete a questionnaire if it was offered again.

There were 344,031 dogs blood tested for HW (274,064 in 1990) (Tables 1 and 2). There were 627 dogs diagnosed with HW (657 in 1990) and the prevalence of HW in dogs was 0.18% (0.24% in 1990). Some practitioners were unable to identify whether dogs tested in

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1991 had been on preventive medication in 1990. However, from the information submitted, most of the dogs tested (245,140) had been given preventive medication, most of the dogs with HW (579) had not, and the prevalence of HW among dogs tested in 1991 that were not on a preventive program in 1990 was 0.59%. In endemic areas, the prevalence was considerably higher. There were 48 dogs with HW that had been on preventive medication in 1990, and for 30 of these, the failure of the medication was attributed to lack of owner compliance.

The areas in Canada reporting dogs with HW are shown in Figures 1 and 2. In 1991 there was a new focus of infection namely the Okanagan Valley, British Columbia. In British Columbia the prevalence of HW was 0.26%, but in the Okanagan, where 52 of the 53 infected dogs in the province were diagnosed, the prevalence was 0.98%. Most of these dogs had never been on preventive medication and had never left the valley.

The major focus of the infection continues to be in Ontario (416 dogs with HW) where the prevalence was 0.16% (0.70% in unprotected dogs). Most of the infected dogs were in southwestern Ontario, but in the last few years, an increasing number of infected dogs are being diagnosed in eastern Ontario. The focus around Sydenham, seen first in 1990, appears to be enlarging and a new focus appears to be developing close to Ottawa. There were three dogs with HW in North Bay and Powassan; one of these dogs had been outside Canada and two had been in endemic areas in Ontario.

Two small foci are in Manitoba and Quebec. In Manitoba, where there were 116 dogs with HW, the prevalence was 0.80% (2.11% in unprotected dogs). The number of dogs found with HW in Manitoba has steadily increased over the last three years and the focus of infection continues to expand over the southern part of the province. In Quebec, where there were 38 dogs with HW, the prevalence was 0.09% (0.18% in unprotected dogs). In Alberta, two of the three dogs with HW had been outside Canada and the third had been in another province. In Nova Scotia, the history of movement of the one dog with HW was unknown.

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Table 1. Results of a questionnaire sent to 1883 veterinarians or clinics in Canada in November 1991 computed from 1022 replies

			•						
1.	Does your professional activit YES 1000 NO 22	y include examination	of dogs, cat	s?					
2.	Which category fits your activ Small 713 Mixed 270 Specialty (ie Spay/Neuter clin	ity best? Research 10 Diag ic) 10 Other 8	nostic 0						
3.	Which techniques are used rou Clinical signs 22 Radiogra	utinely for diagnosis of aph 10 Blood Tests	heartworm s 97 Neo	(HW)? % cropsy 4					
4.	Which blood test technique(s) Microfilariae recovery: Knott Immunodiagnosis: Dirochek 1 Routinely submitted to a diagr Microfilariae recovery 11	is (are) <i>routinely</i> used 's 28 Filter 48 2 Assure 5 CI' <i>aostic lab for</i> : Immunodiagnosis 10	?% Smear 5 TE 14 U Other or	Microcapilla Jnitech 1 Unknown 3	ary 3				
5.	What time of year are most do Spring 86 Summer 41	gs tested for HW? % Fall 5 Winter 1							
6.	Number of dogs TESTED in 1	991.						344,	031
7.	Number of dogs TESTED in 1	991 and on a PREVEN	TIVE PROC	GRAM in 1990) .			245,140 (71.3	3%)
8.	Number of dogs DIAGNOSEI	D with HW in 1991							627
9.	Number of dogs with HW and Microfilaremic 527 (84.0 Diagnosed only at necropsy 8	were: %) Amicrofilaremi (1.3%)	ic 92 (14.7%))					
10.	D. Number of dogs with HW and with a history of: Six months or more prior to diagnosis was outside of Canada Six months or more prior to diagnosis was in another province Never left your area Visited endemic areas if your area is not known to be endemic Movement unknown							29 (4.6 9 (1.5 450 (71.7 12 (1.9 127 (20.3	5%) 5%) 7%) 9 %) 3%)
For to f	Questions 11 through 14 give th requencies where most frequen	e number of dogs with $I = 1$).	HW accordin	ig to the follow	ing classi	fications. (The numb	ers were conve	rted
11.	Domicile of Dogs	City Suburban Rural Unknown	2 3 1 4						
12.	Location of domicile	Primarily indoors Primarily outdoors Unknown	3 1 2						
13.	Age of Dogs	less than 1 year 1–3 years Greater than 3 years Age unknown	4 2 1 3						
14.	Principal activity of dogs	Companion dog Show dog Hunting dog Farm dog Unknown	1 5 4 2 3						
15.	Number of dogs with clinical s	signs.	-					144 (23	3%)
16.	For dogs with HW in 1991 and	in 1990 were on:		DEC		Ivermect	in	Milbemy	cin.
	Give the number with failure	Missed treat	ment	6		23		1	em
	of medication because of:	Inadequate d	losage	0		1		0	
17.	Number of dogs with HW that Advice refused Old age/Clinical signs	were NOT TREATED 38 29	because: Treatment to Other	oo expensive	64 30	17		0	
18.	Number of dogs with HW that	were NOT TREATED	but EUTHA	NIZED.					67
19.	Circle month(s) you diagnosed JAN FEB MAR	most HW cases in 199 APR MAY JU	01: % JN JUI	AUG	SEPT	ОСТ	NOV	DEC	
20		10 33 2	2.3 11	6	0	4	1	1	
20.	Do you recommend a preventiv	ve program for your are	ea? Yes					755 (76)%)
21.	Number of cats with HW in 19	91?							1
22.	Number of other animals with	HW in 1991?	·· · · · -						0
23.	Number of dogs diagnosed wit	h Dipetalonema recond	ditum in 199	1?					33

Table 1. Concluded

{The	data for	Q9-19	could not be g	generated	ł							
Q5 50	Q7 29	Q8 43	Q9–Q14	Q15	Q16	Q17	Q18	Q19	Q21 40	Q22 40	Q23 40	
5. Woul	d you be	interes	ted in the resu	ults of this	question	naire?	%	Yes	s 96	No) 2	
6. Woul	d you be	interes	ted in information	ation on H	W? %			Yes	s 85	No	8	
7. Are n	ews rele	ases on	HW helpful t	o the publ	ic?			Yes	s 93	No	o 1	
8. Did y	ou respo	ond to la	st year's ques	stionnaire	results?	%		Yes	5 74	No	o 17	
9. Did y	ou see la	ast year'	s questionnai	re results	? %			Yes	s 81	No) 12	
0. Woul	d you re	spond to	the question	naire if it	was offer	ed again?	%	Yes	s 96	No) 0	
1. Other	comme	nts? If y	es, submit wi	th this que	estionnair	e. %		Yes	\$ 15	No	85	



Figure 1. Locations in Canada, except Ontario, with diagnoses of heartworm infection in one or more dogs in 1991.

- Areas with dogs that had been outside of Canada and presumed infected before returning or with dogs whose movements were unknown
- + Areas with dogs some of which had never left Canada

Figure 2. Locations in Ontario with diagnoses of heartworm infection in one or more dogs in 1991.

- Areas with dogs that had been outside of Canada and presumed infected before returning or with dogs whose movements were unknown
- + Areas with dogs some of which had never left Ontario



Table 2. Number of clinics orlaboratories in the provinces reportingthat they had blood-tested dogs andthe number of dogs diagnosed withheartworm in 1991

Province	Number clinics reporting	Number o BT	of dogs HW
	reporting		
British Columbia	111	20,570	53
Alberta	69	21	3
Saskatchewan	16	154	0
Manitoba	37	14,451	116
Ontario	524	262,165	416
Quebec	144	41,365	38
Nova Scotia	21	880	1
New Brunswick	8	1127	0
Prince Edward Island	6	67	0
Newfoundland	3	31	0
TOTAL	939	344,031	627

HW = infected with heartworm

Table 3. Locations in Canada with two or more dogs diagnosed with heartworm in 1991, the history on movement of those dogs, and the use of the preventive medication

	Number of dogs				
Location	Had been outside Canada or movement unknown	Never left Canada			
British Columbia					
Oliver	0	32			
Osoyoos	1	14			
Penticton	2	2			
Alberta					
Calgary	2	1			
Manitoba					
Balmoral	0	3			
Oakbank	0	20			
Portage La Prairie	0	3			
Selkirk	27	37			
Steinback	2	0			
Stonewall	3	0			
Winnipeg	4	14			
Ontario					
Amherstburg	0	11			
Aylmer	0	3			

Table 3. Concluded

	Number of dogs		
	Had been outside Canada or	Never	
ocation	movement unknown	Canada	
Brantford	10	21	
Bright's Grove	0	3	
Cambridge	0	5	
Carleton Place	1	1	
Chatham	0	5	
Cobourg	0	2	
Don Mills	2	0	
Dunnville	0	3	
Essex	25	19	
Etobicoke	2	0	
Fisherville	0	2	
Forest	0	5	
Fort Erie	2	0	
Glencoe	0	3	
Hagersville	0	24	
Holland Landing	2	2	
Keswick	0	6	
Kingston	2	5	
Kingsville	0	4	
London	2	2	
Morpeth	ō	2	
Mount Brydges	Ő	5	
Newmarket	1	ĩ	
North Bay	1	1	
Norwich	ò	3	
Orangeville	ŏ	2	
Parry Sound	2	õ	
Pembroke	0	3	
Peterborough	° 2	12	
Port Colborne	2	5	
Samia	4	2	
Saima	4	20	
Stratford	0	50	
Sutton West	1	1	
Sution west	3	12	
Teoumach	U	12	
Tilleenhuse	U	2	
Terente	1	20	
1 OFORIO Wetford	4	5	
wattord Wollord	U	2	
w elland	0	4	
wneatiey	12	12	
windsor	12	20	
Zueidec	1	•	
JUIIEILE	I	2	
L Assomption	0	4	
Lachute	0	4	
Laval	0	3	
Mascouche	0	3	
Montreal	2	2	
St. Jerome	0	3	
St. Jovite	0	2	
	1	1	
Ste. Adele	1	•	