

# Health Survey, 1997

*Elsa Sell, Bearded Bulletin,*

Report on the 1996 Autoimmune Endocrine Health Survey

**1300 Bearded Collies participated. The survey form and content evolved over several years with input from the 94-95 and 95-96 health committees, the 95-96 board, and Drs. Jerry Bell, Jean Dodds and Margaret Slater. Data were collected by and entered into medical and pedigree databases by Elsa Sell. The data remain confidential. Environmental and medical data analysis was by Dr. Margaret Slater (Texas A&M University) and the genetic and pedigree data analysis was by Drs. Jerry Bell and Alice Moon (Tufts University). The information reported below and conclusions on the genetic topic come from those analysis. Waiver Notice: The survey focused on health problems, specifically autoimmune and endocrine diseases. So, the frequency of health problems reported herein is very likely higher than in the general Bearded Collie population. (See also C. Namey's note in the October Bagpipes).**

## **Survey Response and General Information**

**The survey form was mailed to BCCA members (n=872) in August 1996. An effort to have a random mailing of non-BCCA Bearded Collie owners did not work out. 290 (33%) members responded with 81% using the printed form. An additional 150 non-BCCA members participated; 71% used the printed form, the others answered via the web site.**

**Sex of the dogs was 45% male (intact 60%; neutered 40%) and 55% female (53.5 % intact; 46.5 % spayed). There were 19 rescue dogs. Overall, 60% were completely healthy; 40% had a medical problem, ranging from minor (e.g., ear infection) to serious, with 13% of the total having one or more autoimmune or endocrine problems. Age was calculated from the summer of 1996, shortly before the survey mailing. The average age was 5.6 years, with 47% being 4 years of age or less (as of 6/97 the average age would be 6.6 yr with 47% less than 5 years of age).**

**Average age at death varied with cause of death. This list shows the most common causes and average age at death: old age (# = 47; average age 14.4 yr); cancer (# = 44; average age 10.3 yr); other (# = 28; average age**

**7.1 yr); kidney disease (# = 22; av age 10 yr); Addison's and stroke (# for each = 11; av age Addison's 8.3 yr and stroke 13.3 yr); other autoimmune (# = 10; av age 7.8 yr).**

**I attempted to confirmed the diagnoses of the endocrine and autoimmune disorders in live dogs by contacting veterinarians and was successful in the majority of cases. The more common illnesses of both live and deceased dogs, are listed in order of decreasing frequency with number of cases: hypothyroidism, 75; cancer, 54; Addison's, 45; arthritis exclusive of autoimmune causes, 42; allergic skin disease, 37; infectious diseases, 30; hip dysplasia and kidney disease, 26 each; diarrhea, 23; bladder infection, 22; urinary tract infection, 20.**

**Flea and heartworm preventive use varied considerably with geographic location, with western states and Ontario having the least use. Flea preventives used were: Program 23%; Advantage/Frontline 4%; organophosphates 4%; various combinations 5%; other 5%; none 58%. Heartworm preventives used were: Interceptor 22%; diethylcarbamazine (e.g., Filaribits) 12 1/2%; Heartgard 10%; Heartgard-Plus 10%; Others 7 1/2%; None 38%.**

### **Autoimmune and Endocrine Illness**

**Among dogs with autoimmune and/or endocrine illnesses, hypothyroidism and Addison's were the most common. Others were: inflammatory bowel disease (n=13); systemic lupus erythematosus (n=11); nail problems and hemolytic anemia (n=10 each); autoimmune thrombocytopenia (low platelet count) (n=5); rheumatoid arthritis (n=4); Cushing's disease (n=3). Hypothyroidism was the least uniformly defined diagnosis from a laboratory perspective, because standards for testing have changed over the years. However, hypothyroidism is the most common endocrine disorder reported among other breeds, so our results are similar in that respect.**

**There were small and not statistically significant differences in the geographic distribution of Addison's disease and hypothyroidism (Western, middle, Eastern). Information was requested about antecedent events which might have been "triggers" to a disease. These events estrus, pregnancy, postpartum; illnesses; vaccination; flea and heartworm preventives; other medications; other (e.g., stress). Dogs with the more common autoimmune or endocrine**

problems had statistically significantly fewer total antecedent events as shown in the following table. (If the number of cases does not equal the total in the above list, it is because this item was not answered in the survey).

<u>Disease</u>	<u>With Antecedent</u>	<u>Without Antecedent</u>	<u>p value</u>
Hypothyroidism	21 (29%)	51 (71%)	.001
Addison's	20 (45%)	24 (55%)	.001
Inflammatory bowel disease	3 (33%)	6 (67%)	.001
Systemic lupus erythematosus	2 (25%)	6 (75%)	.002

Heartworm preventive use at the time of diagnosis was significantly less in the illnesses where there were enough cases for statistical comparison; namely Addison's (33 cases no preventive, 11 with); hypothyroidism (64 cases no preventive; 8 with); inflammatory bowel disease (7 no preventive; 2 with); systemic lupus erythematosus (8 no preventive; 0 with).

Clinical presentation of Addison's disease is non-specific. Therefore, a veterinarian must suspect the disease to do the definitive diagnostic tests. Each Bearded Collie owner should be aware of the more frequent symptoms reported in dogs with Addison's, so that you can suggest this as a potential problem to your vet. Do not worry if your vet seems offended that you have this knowledge. Here's the list: lethargy/depression (95%); no appetite (90%); vomiting (75%), weakness (75%); weight loss (50%); dehydration (45%); diarrhea (40%); waxing/waning course (40%). The usual age of onset is 4-6 years; our youngest was <3 years and the oldest 10 yrs. (Veterinary Clinics of North America, March 1997, pp 349-357.)

### **Addison's Disease - Is the Problem Genetic?**

The following factors are considered by geneticists when evaluating whether a disease could be of genetic origin and when attempting to differentiate among the possible modes of inheritance: (1) Frequency of the illness, (2) Family history and litter information, (3) Inbreeding coefficients, (4) Closest common ancestor. For the

**analysis, I provided 22 pedigrees containing 45 dogs affected with Addison's disease, and a chart of inbreeding coefficients on a reference population of Bearded Collies (the best of breed entries for the 92-96 national specialties). The age of affected dogs ranged from deceased to less than 3 years at diagnosis. My impression is that dogs diagnosed more recently have significantly longer life spans and much better quality of life; I think this is in great part due to early diagnosis, often due to owner's having insisted that their veterinarian check for Addison's disease! The following information was taken from the report by Drs. Jerry Bell and Alice Moon after study of these pedigrees.**

**Frequency of Addison's disease was 3.4% for dogs entered in the survey and 0.6% for all AKC registered Bearded Collies for the years 1986-1995 (probably a better estimate). (Be aware that an additional 21 dogs were reported with Addison's disease, without veterinary confirmation, without survey forms, and they WERE NOT included in the data analysis. If these cases were confirmed, the frequency of Addison's would be concomitantly higher!) By any frequency calculation, the frequency of Addison's disease in Beardies is higher than in the general dog population (0.1%), which is suggestive of a breed-related genetic disorder.**

**There were no significant differences in frequency of Addison's between the sexes based on either sex or reproductive status at the time of diagnosis. Among the 22 litters with full litter information, there were 29 affected dogs in 161 litter mates. This is a rate of 18.5% of 1/5.6. Two litters had 3 affected offspring; 4 litters had 2 affected offspring. Most affected dogs came from normal parents. Four affected parents produced affected offspring, including breeding to different mates. Full sibs (clinically normal) to affected dogs produced affected offspring. Normal dogs produced affected offspring in multiple breedings to different mates. These patterns are seen with a hereditary disease.**

**The frequency found in litter mates is not compatible with either a simple autosomal recessive or dominant gene. But, then, I was unable to obtain complete litter information from some breeders. It is inappropriate to speculate what the data would look like if we had that additional information. In the event there were either an autosomal recessive or dominant controlling gene, there would have to be incomplete penetrance occurring to give the data currently calculated.**

The inbreeding coefficients were similar between sexes, in the reference population, and in the Addison's affected (Addison males 20.9%; Addison females 20.6%; reference males 21.3%; reference females 21.9%). This finding suggests that if there is a major recessive gene involved it is widely distributed in the population. The search for a closest common ancestor can be useful in differentiating a recessive from a dominant genetic disorder. The survey data indicated the same ancestral individual in both analysis, so it was not helpful in distinguishing between the two pure type of controlling genes. Again, this finding is interpreted to suggest a widely dispersed gene contributing to Addison's disease, rather than involvement of just a few "lines".

#### **Conclusions:**

- (1) Hereditary Addison's disease exists in the Bearded Collie population.**
- (2) As in other less populous breeds, unless a test is developed to confirm otherwise, it must be considered that all affected dogs have hereditary Addison's.**
- (3) The gene or genes responsible for Addison's are widely distributed in the gene pool.**
- (4) Therefore, Addison's can strike any dog, and should be of concern to all breeders.**

#### **Suggestions:**

- (1) Continue gathering information on:**

- a. **Non reported cases of Addison's**
- b. **New cases of Addison's**
- c. **Litters of affected dogs**
- d. **Other matings of parents of affected dogs**

- (2) Fill in missing pedigree information on affected kindreds.**

**My (Elsa's) thoughts - people, please consider this report seriously. I implore you to understand the importance of getting each and every case of Addison's (live AND deceased) into the database. I've got the time. You've got the data. Please be responsible breeders and owners and consider providing the information. Also, a word of caution: I have learned that the statement "as far as I know there are no cases of Addison's in the family " is sometimes incorrect. The problem is that I cannot tell anyone what I know because of the survey's confidentiality rules. So, each breeder and sire owner has t**

