

# The Agria study on wheaten health in Sweden

Recently, a research project concerning dog health was conducted in Sweden. The largest dog insurance company, Agria, organized this study and provided the data for 1995 to 2002 (a follow-up study is presently being conducted). Professor Brenda Bonnett DVM at Guelph University, Canada, was engaged to perform the study. She has carried out a very informative set of analyses for the 100 most common breeds in the Agria data bases.

About 60% of all Swedish dogs are insured, and about 60% of these are in their turn insured at Agria. Thus, a total of approximately 200,000 dogs were included in the study. Of course, what we are interested in is mainly the data for wheatens. Today, about 2000 wheatens are insured at Agria, suggesting that there should be sufficient material for statistical accuracy.

**First, death risk will be discussed.** Since a life value insurance can be obtained only for dogs up to ten, this data is valid only for dogs under ten years of age. Fortunately, wheatens is a comparatively healthy breed: only an average of 2.3% of all insured wheatens died each year during 1995–2002, suggesting that most wheatens actually die of old age (or age-related diseases). Considerably fewer wheatens died compared to the average for pure-bred dogs in Sweden (3.5% of all insured dogs died each year during the same period). No less than 75% of all insured wheatens reached 10 years, as compared to an average of only 65% when calculated across all breeds.

## *Why dogs die*

According to the Agria material, the 20 most common causes, in descending order, for wheatens to die before the age of 10 years are as follows:

1. 'Renal disease', wheatens having an almost 50% higher risk than the average for all 100 breeds
2. 'Traffic injury', wheatens having only half the risk compared to all breeds
3. 'Change in behaviour', wheatens having a three times higher risk than all breeds
4. 'Progressive nephropathy, PNP' (JRD in North America and England) the average for 'all breeds' not reported but presumably much lower
5. 'Dead, no diagnosis', wheatens having only 25% of the risk compared to the average for all breeds
6. 'Temperamental faults', wheatens having at least three times higher risk than all breeds
7. 'Lymphoma/sarcoma', wheatens having a third of the risk of all breeds
8. 'Disk hernia', wheatens having somewhat less than 50% of the risk of all breeds
9. 'Epilepsy', wheatens having a third of the risk of all breeds
10. 'Mammary tumour', wheatens having somewhat less than 50% of the risk of all breeds
11. 'Outer ear infection', wheatens having a three times higher risk than all breeds
12. 'Disappeared', wheatens having the same risk as all breeds
13. 'Lung tumour', wheatens having the same risk as all breeds
14. 'Hepatitis', wheatens having a three times higher risk than all breeds

15. 'Elbow arthritis', wheatens having about 75% of the risk encountered by all breeds
16. 'Eosinophil gastr-/enteritis', wheatens having about twice the risk of all breeds
17. 'Symptom of tumour', wheatens having about twice the risk of all breeds
18. 'Tumour oral cavity or throat', average for 'all breeds' not reported but presumably much lower
19. 'Pyoderma', wheatens having half the risk of all breeds
20. 'Heart disease', wheatens having only 20% of the risk of all breeds

One of the major risks, traffic injury, cannot of course be blamed on breeders. However, of the other most common diagnoses, wheatens were clearly overrepresented for 'renal disease' (which could possibly mean JRD, PLN or whatever other poorly diagnosed kidney problem a dog may have) and 'progressive nephropathy', and for behaviour and temperament problems. The other causes of death for which wheatens were seriously overrepresented (outer ear infection, hepatitis, gastritis/enteritis and tumours especially in the oral cavity) were relatively uncommon. So, in conclusion, we need to concentrate our breeding efforts to improve the situation with kidneys and mentality!

### ***Importance of age and sex***

Risk of death of course increases as the dogs become older. From a yearly death risk of around 1% for dogs up to 6 or 7 years of age, we start to see an increase from 7 to just before 10 years when the yearly death risk is 5.5% for females and 7.7% for males. Males are also noted for higher values at 1–2 years (1.0% versus 0.3% for females), at 2–3 years (1.6% versus 1.0%) and at 3–4 years (1.3% versus 0.6%). Being a youngish males is thus almost twice as dangerous as being a youngish female. Are males more accident-prone? Probably not to a significant level since death risk due to 'traffic injury' was rather similar between the sexes, 0.1% for males and 0.08% for females. The largest difference was instead found for 'change in behaviour' and 'temperamental faults', where males run a death risk of 0.1% and 0.08%, respectively, whereas the corresponding values for females are so low that they do not register in the statistical evaluation. Interestingly, females do, however, have twice the death risk for 'renal disease' (0.21%) compared to males (0.1%) while males have a higher

risk for 'progressive nephropathy' (0.09%) compared to females (no value).

### ***Veterinary Care***

A second set of analyses were based on a different type of insurance at Agria, namely the veterinary care insurance. In order for a case to be included in the data base, the costs for treating a specific problem had to amount to approximately 200 US\$. Dogs up to 12 years can be covered by this type of insurance. On average, 18.8% of all wheatens visited a veterinarian at least once a year, while the average for all breeds is only 17.2%. The 20 most common diagnoses for cases receiving veterinary care were:



1. 'Skin tumour', wheatens having about 50% higher risk than average for all breeds
2. 'Mammary tumour', wheatens having about 30% higher risk than average for all breeds
3. 'Traumatic skin injuries' (e.g. from dogfights!), wheatens having about 50% higher risk than average for all breeds
4. 'Gastroenteritis', wheatens having about 30% higher risk than average for all breeds
5. 'Outer ear infection', wheatens having about 20% higher risk than average for all breeds
6. 'Acute tonsillitis', wheatens having about 30% higher risk than average for all breeds
7. 'Pyoderma', wheatens having about 30% higher risk than average for all breeds

8. 'Lame', wheatens having the same risk as breeds in general
9. 'Itching', wheatens having about 50% higher risk than average for all breeds
10. 'Atheroma', wheatens having a three times higher risk than the average for all breeds
11. 'Pyometra', wheatens having only half the risk of other breeds
12. 'Vomiting', wheatens having about 50% higher risk than average for all breeds
13. 'Skin disease, no cause', wheatens having about twice the risk of all breeds
14. 'Acute anal sack inflammation', wheatens having the same risk as breeds in general
15. 'Symptom of tiredness', wheatens having about 20% higher risk than average for all breeds
16. 'Acute dermatitis, unknown', wheatens having about twice the risk of all breeds
17. 'Atopy', wheatens having almost twice the risk of all breeds
18. 'Claw break', wheatens having the same risk as breeds in general
19. 'Polydipsia/polyuria', wheatens having the same risk as breeds in general
20. 'Symptoms of infectious disease', wheatens having about 50% higher risk than average for all breeds

The most common of the possibly heritable causes for which wheatens are overrepresented (at least 50% higher than breeds in general) are some stomach problems (gastroenteritis, vomiting), some skin problems (skin tumours, pyoderma, itching, atheroma, skin disease, and acute dermatitis), and possibly immuno-related problems (atopy, and perhaps also some of the skin and stomach problems belong here?). So, to conclude, beware of problems with skin and tummy – in some cases possibly connected with a sub-optimal immunosystem.

### ***Importance of age and sex***

Hypothetically, 'gastroenteritis' could be connected to PLE, but most cases are actually seen in very young dogs, i.e., 1.8% of dogs under one year, falling to only 0.6% of dogs that are 6–7 years. Only a small increase is then seen in older (7–9 years) dogs, 1.3%, followed by another decrease in even older dogs. An undulating pattern is, however, seen also for many other diagnoses in older dogs, presumably due to lower

numbers of insured dogs and thus less stable average values.

A similar pattern, with initial high values followed by a decrease, is found also for 'acute tonsillitis'. For 'outer ear infection' and 'itching', the decrease with age is even more dramatic, suggesting that dogs under one year, or their owners, are much more sensitive! 'Atopy' and 'acute dermatitis' are unusual diagnoses in the really young dogs but increase to reach their highest values in dogs that are around 2–3 years, and then decrease again as the dogs get older. This pattern is consistent with allergic reactions, which typically manifest at 1-3 years.

By contrast, some diagnoses instead increase with age, like 'mammary tumours', 'skin tumours', 'atheroma' and 'pyometra'. Interestingly 'polydipsia/polyuria', which one might believe to be connected with JRD, occurs in very small numbers until a sudden peak in 8-year old dogs. Moreover, the diagnosed dogs are almost exclusively female, suggesting that we are instead looking at age-related incontinence due to decreased hormonal levels.

Other sex-related diagnoses are of course 'mammary tumour' and 'pyometra' that are reported exclusively for females. Males are instead heavily overrepresented when it comes to 'traumatic skin injuries' (occurring in similar amounts regardless of age – apparently they never learn to stop fighting...). The males are also somewhat more prone to having problems with 'gastroenteritis' and 'vomiting', which is in contrast to PLE which is reportedly more common in females according to studies conducted in the US by Meryl Littman and co-workers.

