

Diabetes mellitus is an endocrine disorder characterised by persistently elevated blood glucose levels. Diabetes may result from dysfunction or loss of pancreatic beta cells, or resistance to the action of insulin in the tissues. The clinical signs can include polyuria, polydipsia, polyphagia and weight loss. Studies of diabetes risk in a range of species have suggested that multiple antibiotic courses and/or prior glucocorticoid treatment may increase diabetes risk.



This study explored glucocorticoid and antibiotic use as risk factors for the development of diabetes mellitus in some key dog breeds using information from anonymised veterinary clinical records from the VetCompass™ Programme.

Two-year period prevalence of diabetes mellitus during 2016-17

Number of dogs included in case control study

Average age at first diagnosis with diabetes mellitus

Breeds in which 10 or more incident diabetes cases were identified

0.38%

(1,808 cases from 480,469 dogs aged 4 years or older)

2,744

(565 cases, 2,179 controls)

10.0

years
(interquartile range: 8.4-11.5)

14

breeds

(Analysis of antibiotic and glucocorticoid risk performed in these breeds)

Exposure to glucocorticoids

The frequency of exposure to glucocorticoids in the 6 weeks prior to diabetes mellitus diagnosis (or a random date for the controls linked to electronic patient record entries) varied widely across dog breeds as well as between cases and controls.

Exposure to glucocorticoids in the 6 weeks prior diabetes mellitus diagnosis was documented in 9.0% of cases and 2.7% of controls.

The breeds with the most frequent glucocorticoid use were West Highland White Terriers, Tibetan terriers and Cavalier King Charles Spaniels.



West Highland White Terriers
20.7%* of cases
6.8% of controls



Tibetan Terriers
20.0% of cases
3.6% of controls



Cavalier King Charles Spaniels
13.6% of cases
3.5% of controls

*% of dogs receiving glucocorticoids within 6 weeks prior to diagnosis of diabetes mellitus or to a random date in controls

The analysis accounted for breed because controls were frequency matched to cases by breed

Breeds with no reported exposure to glucocorticoids in the 6 weeks prior to diabetes diagnosis included Cairn Terriers and Cocker Spaniels for cases and Border Collies for both cases and controls.



Cairn Terriers
0.0% of cases
2.1% of controls



Cocker Spaniels
0.0% of cases
1.3% of controls



Border Collies
0.0% of cases
0.0% of controls

Dogs with diabetes mellitus had over **4 times** the risk of exposure to **glucocorticoids** in the 6 weeks prior to diagnosis compared to controls.

Exposure to antibiotics

Dogs prescribed at least one unique antibiotic course accounted for 39.3% of all cases, and 41.4% of controls.

Clavulanate potentiated amoxicillin was the most commonly prescribed antibiotic overall (50.1% and 42.9% of all courses prescribed to cases and controls, respectively).

There was no clear association between multiple antibiotic courses and diabetes mellitus risk.



Conclusions

There was a substantially increased risk of developing diabetes mellitus after glucocorticoid exposure. This suggests exposure is needed in prescribing glucocorticoids to dogs. These risks are especially high for entire females and older (≥ 7 years old) dogs in the breeds analysed in this study.

Dogs receiving multiple courses of antibiotics did not show increased odds of diabetes mellitus compared to dogs receiving no reported courses. Further work is required to explore the association of antibiotic therapy and diabetes mellitus.

The study highlights the need to further understand the mechanisms involved in the development of diabetes mellitus in dogs and to determine whether specific populations are more at risk than others.

[CLICK TO READ THE FULL STUDY](#)

Heeley, A. M. et al. (2023) "Assessment of glucocorticoid and antibiotic exposure as risk factors for diabetes mellitus in selected dog breeds attending UK primary-care clinics"

RVC VetCompass <https://www.rvc.ac.uk/vetcompass> carries out welfare research based on anonymised clinical information shared from over 30% of UK veterinary practices. We are very grateful to the owners and veterinary professionals who contribute to VetCompass research.