

**Library & Information Services**

**Journal Club Checklist**

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| **Title** | [**Assisting Decision-Making on Age of Neutering for 35 Breeds of Dogs: Associated Joint Disorders, Cancers, and Urinary Incontinence**](https://www.frontiersin.org/articles/10.3389/fvets.2020.00388/full)  Frontiers in Veterinary Science, 7, 388 |
| **What are the aims or objectives of the study?** | The authors state that the purpose of the study was to analyse the increased risks, if any, of a number of specified joint disorders and cancers associated with neutering male and female dogs at various ages, so as to increase the information available to pet owners and veterinarians for consideration when making decisions regarding neutering specific dogs.  They also state that a secondary, unforeseen, purpose was to document breed-specific differences in the increases in some cancers associated with removal of gonadal hormones, as an area for possible research on genetic aspects of cancer occurrence. |
| **Who carried out the research?** | The research was carried out by academics at University of California, Davis, and builds on previous work looking at the effect of neutering on joint disorders and cancers in Golden Retrievers, Labradors, and German Shepherd Dogs. |
| **Did the study address a clearly focused issue?**  **Do you think this is an important issue?**  **Can you identify the patients and risk factors being studied?**  **Is the study looking for a beneficial or harmful effect?** | The authors state that the issue they were attempting to address is the absence of breed-specific information on joint disorders and cancers associated with neutering.  The patients are dogs of the identified breeds.  The risk factors are breed and age at neutering.  The study is looking for both harmful (potential increased risk of certain cancers or joint diseases) and beneficial effects (potential decrease risks e.g. mammary cancer and pyometra). |
| **What methods did the researchers use?**  **Which disease conditions did they look at?**  **How was age at neutering determined?** | The researchers used the computerized hospital records from the Veterinary Medical Teaching Hospital (VMTH) at the University of California, Davis, which they say provides primary, secondary and tertiary care.  The researchers state that the study focused on proportional differences in disease occurrences between the neuter age groups (< 6 mo., 6–11 mo.,12 to < 24 mo. or 2–8 years) and intact dogs of the same breed and sex.  For all neutered dogs that developed a disease of interest, records were examined to confirm if the dog was neutered prior to the diagnosis or signs of the disease.  If the age at neutering was not included in the records, an attempt was made to obtain the information through telephone calls to the referring veterinary practice. However, the authors note that in many cases the information was not available so these animals were removed from the study. |
| **Is this methodology appropriate to the objectives or question?**  **What might be the benefits and problems with this approach?** | When studying risk factors for a condition the most appropriate types of study are cohort studies or case control studies, which follow a group of animals over time and measure exposure to risk and outcome \*.  This study has some features of a cohort or case control study. However, it is using medical records from the VMTH to review the information retrospectively and is looking at the proportional differences in disease occurrences between the neuter age groups and intact dogs of the same breed and sex. |
| **Is the study design described clearly enough to enable you to follow what was done?**  Is the type of patients clearly described?  What were the inclusion and exclusion criteria for participation?  Do you think that this “cohort” is likely to be representative of the general population? |  |
| **Are these patients relevant to your practice, if not what differences need to be considered?** |  |
| **Is the data collected clearly described?** | Although there is a general description of the data collected in the paper, it is necessary to look at Appendix 1 in the supplementary material to the paper, to see the data and results for each breed. |
| **Are the results of the study clearly described?**  **What do you think are the strengths and weaknesses of each format?** | The breed-by-breed findings are presented in three different formats.   * Table 1 – summarises the results and gives suggested guidelines for age of neutering for the 35 breeds. * A short paragraph on each breed summarises the findings for each breed. * Data summaries for each breed are provided in Appendix 1.   The authors also state that the raw data is available through figshare (the link is provided in the online paper)  Rather than try to look at all the data you may like to choose a small number of breeds and think about the results for that breed. |
| **Are the numbers of animals and cases included large enough to give you confidence in the results for all breeds?**  **Are the findings likely to be clinically, as well as statistically significant?**  **Do you believe the results? Do they fit with your knowledge and experience of the likelihood of these conditions occurring?** | There is variation in both the number of animals and the number of affected cases for each breed. For some breeds the number of animals and cases is large enough to provide reasonable confidence in the results.  In the breeds with only low numbers of cases do you think that the results could be due to chance? |
| **Limitations of the study**  **Can you think of any others?** | The authors note 2 limitations to the study:  First, relatively few breeds are covered compared to those included in the various breed registries of kennel clubs and canine organizations.  Second, no information is available as to the reasons the owners or others chose to neuter, or not to neuter their dogs. |
| **Do you think that there are any potential sources of bias in the paper?** | You may want to consider whether dogs that are seen at the VMTH are representative of the broader population.  The authors state that a dog was considered as having a disease of interest if the diagnosis was made at the VMTH, or by a referring veterinarian and later confirmed at the VMTH. Do you think that this will affect the results reported? |
| **Do the findings support or alter your current knowledge?** |  |
| **What are the implications of this study for the advice you will give to owners about neutering?**  Do the findings provide sufficient evidence for you to consider changing your current practice?  **Would there be any practical considerations in implementing changes based on this paper?** | If you think that breed specific recommendations may be too difficult to implement, you may like to look at the companion paper looking at recommendation by weight category.  Hart, B.L. et al. (2020) Assisting decision-making on age of neutering for mixed breed dogs of five weight categories: associated joint disorders and cancers. Frontiers in veterinary science, 7, p.472 <https://doi.org/10.3389/fvets.2020.00472>  <https://doi.org/10.3389/fvets.2020.00472> |
| **Are there any other sources of information you need to look at before making a decision?**  Recommendations from observational studies are stronger when supported by other evidence. | For further information you may like to look at the RCVS Knowledge In The Spotlight feature:  Benefits and risks of neutering pets – what is the evidence? <https://www.infocusvj.org/benefits-and-risks-of-neutering-pets-what-is-the-evidence/> |

* For further information about types of study you may like to look at the [EBVM Toolkit](https://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/ebvm-toolkit/)