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# Is Robenacoxib Superior to Meloxicam in Improving Patient Comfort in Dog Diagnosed With a Degenerative Joint Process?

A Knowledge Summary by

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## KNOWLEDGE SUMMARY

**Clinical bottom line**

At normal clinical doses, there is no evidence that robenacoxib would provide superior patient comfort, compared to meloxicam.

### Question

In dogs diagnosed with chronic degenerative joint disease, is robenacoxib superior to meloxicam in improving patient comfort?

### Clinical scenario

You are presented with a 9 year old, male neutered Labrador with a 2 month history of stiffness after rest and a strange gait at exercise. On clinical examination you note pain on extension of both hind limbs. The dog is moderately overweight (BCS 7/9) with no other significant abnormalities detected. Haematology and routine biochemistry are unremarkable. You take pelvic radiographs which confirm your suspicion of bi-lateral hip dysplasia with secondary osteoarthritis. You wish to prescribe a non-steroidal anti-inflammatory for the dog, which the client is happy for you to do. However, your practice has recently added a new anti-inflammatory, robenacoxib, to the pharmacy following a recent 'lunch and learn' with the local drug rep. Normally, you would have just used memloxicam but now you are unsure as to which would provide the best clinical outcome for this patient.

### Summary of the evidence

| **Schmid et al** (2009) | |
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| **Population:** | Clinically healthy beagle dogs with experimentally induced acute synovitis of one stifle. |
| **Sample size:** | Eight dogs; four of each gender (n=8). |
| **Intervention details:** | All dogs were subjected to each intervention in a cross-over design. Each dog was assessed before inducing synovitis using uric acid in either the left or right stifle and then re-assessed once clinical signs developed. The investigators alternated between the left and right stifle with each round of testing. The doses used were: placebo, meloxicam 0.2mg/kg sub-cutaneously (SC), robenacoxib 0.25mg/kg SC, 0.5mg/kg SC, 1mg/kg SC, 2mg/kg SC, 4mg/kg SC. |
| **Study design:** | Randomised cross-over experimental trial |
| **Outcome studied:** | • To establish a dose-response and a blood concentration-response relationship for both the analgesic and anti-inflammatory effects of robenacoxib<br>• To compare the efficacy of robenacoxib compared to meloxicam in acute, induced synovitis in the dogs. |

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| **Main findings: (relevant to PICO question):** | • On forceplate analysis looking at the vertical peak force generated there was no significant difference between meloxicam and either 0.5mg/kg, 1mg/kg or 2mg/kg robenacoxib SC.<br>• Both products were significantly more effective than placebo.<br>• The duration of onset was similar for meloxicam (1hr) and robenacoxib (1.5hrs for 1mg/kg SC, 1hr for 2mg/kg SC). A higher dose led to a more rapid onset of robenacoxib.<br>• On examination, there was no significant difference in pain on palpation of the joint and the degree of reduction joint swelling was similar in the period 0-6hr, but robenacoxib provided swelling reduction in the period 0-12hr too. This effect however was not marked. |
| **Limitations:** | • Only eight dogs took part in this study.<br>• No power calculation was performed meaning the significance of the results is not fully known<br>• The study assessed the effects on an experimentally induced synovitis which may differ from the disease process seen in naturally occurring joint diseases. - The duration of efficacy was not fully assessed as both products are thought to be effective for 24 hours per dose. Inflammation due to the uric acid is thought to resolve after approximately 12-16 hours.<br>• This study was funded by Novartis, who commercially produce and sell robenacoxib for use in dogs |

## Appraisal, application and reflection

Whilst only a single relevant paper was available for review, the study did directly compare the two drugs under identical conditions allowing a good assessment of clinical efficacy to be made between them. However, whilst the study did look at and compare many variables relating to meloxicam and robenacoxib no power calculation was demonstrated. One cannot help but be wary of the advanced statistics presented in this study given there were only eight dogs in the study. Also, this study was conducted by authors working for Novartis; the company producing the commercial brand of robenacoxib (Onsior). Finally, whilst experimental conditions were well matched, only efficacy in the acute stages of a joint inflammation were assessed. The study does not asses efficacy in naturally occurring disease and so there could be other factors (such as central sensitisation and patient physical abnormalities such as joint incongruity) affecting the perceived efficacy of the different products in the “real world”which were not considered here. Overall however this study would be useful when considered in the general practice situation as the two products have been compared directly and useful efficacy data has come from it. This usefulness would likely be reduced though should similar studies using patients with naturally occurring disease be available for review. When searching the literature, papers in which meloxicam and robenacoxib were not directly compared were excluded. Whilst these studies provided evidence of efficacy for both meloxicam and robenacoxib individually, they did not provide evidence for which drug would be more effective in the clinical setting and so would not suitably address the clinical question. Ideally larger studies are needed with power calculations to validate these results in patients with naturally occurring disease. Should sufficient data be available, a meta-analysis may also provide valuable data with regards to the clinical question posed. Given the prevalence of degenerative disease seen in practice, there would certainly be an appetite for such research.

## Methodology Section

| Search Strategy | |
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| Databases searched and dates covered: | The following search terms were applied to the Pub Med database, accessed via the NCBI website (1910-2015), and CAB abstracts database (1973-2015), accessed on the OVID platform.. |
| Search terms: | (dog OR dogs OR canine OR bitch OR bitches) AND (Onsior OR robenacoxib) AND (meloxicam OR metacam OR inflacam OR loxicom OR meloxidyl) AND (joint* OR arthrit* OR osteoarthrit* OR arthros* OR hip* OR stifle* OR elbow*) |
| Dates searches performed: | 18th January 2016 |

| Exclusion / Inclusion Criteria | |
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| Exclusion: | Articles not written in the English language, papers that did not directly compare the efficacy of the two products, conference proceedings or book chapters |
| Inclusion: | Original research articles which directly compared the efficacy of robenacoxib and meloxicam with regards to musculoskeletal pain |

**Search Outcome**

| Database | Number of results | Excluded – non- English language publication | Excluded – did not answer the PICO question | Total relevant papers |
|---|---|---|---|---|
| PubMed | 2 | 0 | 1 | 1 |
| CAB Abstracts | 3 | 1 | 1 | 1 |
| **Total relevant papers when duplicates removed** | | | | **1** |

## REFERENCES


1. Schmid, V.B. et al (2009) Analgesic and anti-inflammatory actions of robenacoxib in acute joint inflammation in dog. *Journal of Veterinary Pharmacology and Therapeutics,* 33(2) pp 118-131. http://dx.doi.org/10.1111/j.1365-2885.2009.01117.x

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