Canadian OA Treatment Guidelines Summary

AUTHORS

Charles Bruce
DVM, DACVS-SA, DACVS

Laurie Dunbar
BSc, DVM, CCRP

Tara Edwards
DVM, DACVSMR, CCRT, CVPP, cVMA

Thomas Gibson
BSc, BEd, DVM, DVSc, DACVSMR, DACVS

Conny Mosley
Dr. Med. Vet., DACVAA, CVA

Laura Romano
DVM, DACVSMR

Terri Schiller
BSC, DVM, DACVS, CCRT

Eric Troncy
DV, MSc, PhD, DUn, Knight of Ordre du mérite agricole (France), Director of GREPAQ

Geoffrey Truchetti
DMV, MSc, DES, DACVAA

The treatment guidelines are the result of a consensus among a group of Canadian experts in the field of OA. (Bruce, Dunbar, Edwards, Gibson, Mosley, Romano, Schiller, Troncy, Truchetti).

The Advisory Board was sponsored by Elanco Animal Health as part of their commitment to education and the orthopedic health and pain of dogs.

OA Treatment Guidelines by COAST Stage

The Canadian Advisory Board aimed to establish OA treatment guidelines to provide clinically practical and evidence-based treatment guidelines and considerations for the Canadian veterinary practitioner to treat and discuss osteoarthritis (OA) based on the different OA stages following the COAST staging tool.

Canine OsteoArthritis Staging Tool (COAST) is an established diagnostic tool providing clear guidance on how to decide on a dog's current OA stage based on owner input, orthopedic exam and radiographic findings. This tool helps veterinarians recognize and treat canine OA from its earliest stages[4].

HIGHEST GRADE EQUATES TO COAST STAGE

	COAST Stage	
Pre-clinical	0	Clinically normal. No OA risk factors.
	1	Clinically normal, but OA risk factors present.
Clinical	2	Mild OA
	3	Moderate OA
	4	Severe OA

The following recommendations are useful starting points for most animals at each stage. Serial monitoring of these patients is necessary and treatment should be adapted according to the patient's response. The recommendations are divided into core treatment recommendations and secondary treatment recommendations. Core treatment recommendations are evidence-based and were unanimously agreed on by all members of the advisory board to be included in any case with OA, within a specific stage. The advisory board members' recommendations for secondary treatment options were decided upon after consideration of the available research for a particular treatment and collective clinical knowledge and experience.

The following summarized guidelines are designed to be user friendly and a quick go to reference to ensure a thorough approach to OA treatments in a time efficient manner in the busy clinical settings. However, the full details on the treatments, available research, and reasoning behind inclusion within primary versus secondary category are available in a full-length document.

OA guideline considerations:

Please note, when reviewing the treatment guidelines, the considerations below may require adjustment of the therapeutic approach:

- Multiple joints affected requiring specific targeted therapies for an individual joint
- Additional comorbidities or concurrent medications
- Adverse events encountered in response to therapy
- Surgical therapies were beyond the scope of the guidelines, please consider surgical interventions as appropriate for the patient

Some of the suggested treatments are not licensed for the use in dogs. It is the veterinarian's duty to make a risk: benefit assessment for each patient prior to administering any treatment.

DISCLAIMER: Although every effort has been made to ensure the completeness and accuracy of the information provided herein, neither the authors nor Elanco Animal Health assumes any responsibility for the completeness or accuracy of the information. All information is provided "as is" without any warranties, either expressed or implied.

Stage 1 refers to a patient that is currently normal (preclinical) but has risk factors for developing OA.

Risk Factors:

- Genetic predisposition
- Participation in activity prone to injury
- Joint injury
- Surgery
- Excess body weight
- Age

CORE TREATMENT RECOMMENDATIONS

CLIENT EDUCATION	• Provide education on disease, disease progression, and risk factors for development of OA. • Provide guidance on specific training and exercises for injury prevention. • Discuss the general impact of nutrition and weight on OA. • Emphasis on the importance of regular assessments.
WEIGHT OPTIMIZATION & NUTRITION	• Efforts should be made to both achieve and maintain optimal weight[6] as obesity is a high-risk factor for contributing or compounding OA due to the additional joint load and metabolic contribution[8]. • Recommend joint health focused diets. • Recommend adequate OMEGA 3 fatty acids (FA) (minimum daily dose of 100mg/kg DHA/EPA) through diet or supplementation[10,15,16].
REGULAR EXERCISE	• Stress the importance of daily, regular exercise in order to maintain strength of the musculoskeletal system[7]. • Avoid high impact and repetitive activity. • Focus on well-balanced training for injury prevention.
PHYSICAL REHABILITATION	• Rehabilitation consultation can be initiated to focus on strengthening, joint health, and injury prevention strategies.

Stage 2 represents the early clinical stage of OA that results in mild clinical signs.

Clinical Signs:

- Can be inconsistent and subtle and can occur with or after activities.
- May affect gait, subtle changes/shifting in body weight distribution, and abnormal limb loading.

Examination:

- Range of motion (ROM) may be minimally reduced, but crepitus is unlikely at this stage.
- Mild osteophytosis and other early signs of OA may be visible on diagnostic images.

CORE TREATMENT RECOMMENDATIONS

CLIENT EDUCATION	• Provide education on disease, disease progression, and risk factors for development and progression of OA from mild to moderate stages. • Emphasis on the importance of regular assessments. • Provide guidance on specific exercise program for injury prevention suited for the patient. • Discuss the general impact of nutrition and weight on OA.
WEIGHT OPTIMIZATION & NUTRITION	• Efforts should be made to achieve and maintain optimal weight[6] as obesity is a high-risk factor for contributing or compounding OA due to additional joint load and metabolic contribution[8]. • Recommend joint health focused diets. • Recommend adequate OMEGA 3 FA (minimum daily dose of 100mg/kg DHA/EPA) through diet or supplementation[10,15,16].
REGULAR EXERCISE	• Stress the importance of daily, regular low to moderate exercise in order to maintain strength of musculoskeletal system[7]. • Avoid high impact and repetitive activity. • Focus on well-balanced training for injury prevention.
PHYSICAL REHABILITATION	• Rehabilitation consultation can be initiated to focus on strengthening, joint health, and injury prevention strategies. • Rehabilitation specialist can help create a plan to decrease risk factors and optimize muscle strength, posture, proprioception, and gait. • Initial assessment can be used as a baseline to evaluate the progression of disease and function, and identify factors that may contribute to hastening progression of disease.
PAIN MANAGEMENT	• NSAIDs are warranted as patient is demonstrating clinical signs. • NSAID trial for a minimum of 4 weeks at product labeled dose is recommended. • Schedule 1 week "follow-up" call to assess for any potential adverse effects. • Schedule 4 week visit for clinical reassessment to decide whether to continue or discontinue therapy. • A baseline CBC/Chem/urinalysis is recommended prior to initiating NSAID treatment and then every 3 - 6 months as needed, or earlier if concerns about the health of the dog arise.

SECONDARY TREATMENT OPTIONS

Due to the variability in clinical signs and individuality of patients, the secondary treatment options at this stage may vary among patients and clinicians. No consensus was reached on specific recommendations due to limited evidence and differing clinical approaches resulting from the inconsistency of case presentation.

Stage 3 refers to the clinical stage of OA with moderate clinical signs and moderate signs of discomfort.

Clinical Signs:
- Consistent and obvious at all gaits and activities. Noticeable changes in body weight distribution, limb loading and obvious reduction in use of affected limb(s). Some difficulties in rising or laying down.

Examination:
- Decrease in ROM, muscle atrophy, and possible joint thickening.
- Obvious osteophytes and signs of OA likely present on diagnostic imaging.

CORE TREATMENT RECOMMENDATIONS

CLIENT EDUCATION	• Provide education on disease, disease progression, and risk factors for development and progression of OA. • Provide guidance on specific training and exercises for injury prevention. • Discuss the general impact of nutrition and weight on OA. • Emphasis on the importance of regular assessments and tracking orthopedic changes • Discuss impact of OA on quality of life (QoL). • Ensure adequate pain control and educate owner to recognize signs of pain.
WEIGHT OPTIMIZATION & NUTRITION	• Efforts should be made to achieve and maintain optimal weight[6] as obesity is a high-risk factor for contributing or compounding OA due to additional joint load and metabolic contribution[8]. • Recommend joint health focused diets. • Recommend adequate OMEGA 3 FA (minimum daily dose of 100mg/kg DHA/EPA) through diet or supplementation[10,15,16].
REGULAR EXERCISE	• Stress the importance of daily regular and frequent short, low impact activities to help maintain joint mobility and muscle strength. • Specific exercises are encouraged to be added.
PHYSICAL REHABILITATION	• Recommend a formal rehabilitation program designed by a rehabilitation specialist. • A rehabilitation program will help to slow the decline in physical and mental condition related to chronic pain and disability, and provide support and guidance to the owner. • Regular assessments for pain and QoL are important part of a routine rehabilitation program.
HOUSEHOLD & LIFESTYLE MODIFICATIONS	• QoL and injury prevention can be addressed by providing assist devices (ramps, lift harnesses) and removing obstacles to mobility (improved footing, baby gates to block stairs).
PAIN MANAGEMENT	• The use of NSAIDs is recommended at this stage. • Prescribe NSAIDs (cornerstone of pharmaceutical treatment) to provide adequate anti- inflammatory therapy for OA[13,14]. Consider same protocol as described in stage 2. If patient tolerates NSAIDs well, long-term treatment is recommended with monitoring as expressed in stage 2. • Adequate pain management and regular pain assessments are of high importance. Multi-modal approach likely necessary in addition to NSAIDs (see secondary treatment options).

SECONDARY TREATMENT OPTIONS

PHARMACEUTICAL:
- Gabapentin/Pregabalin: Usually added as a 2nd treatment, if core treatments are not sufficient to control clinical signs.
    - Gabapentin: 5-10mg/kg TID*
    - Pregablin: 3-5mg/kg BID[9,12]
- Anti NGF mAb[17]

NUTRACEUTICALS:
- Cannabinoids[5]
- Disease-modifying OA drugs (DMOAD) in form of chondroprotective products, collagen or combined multi-herbal/glucosamine/ omega 3 preparations[1]

MODALITIES:
- Laser[3]
- Acupuncture[2]
- PEMF (pulsed electromagnetic field therapy)
- Joint injections
- Steroid epidural

Stage 4 is a clinical stage of OA with significant clinical signs and a higher level of dysfunction and pain.

Clinical Signs:

- Obvious, constantly present, and significantly affecting the dog's QoL. Severely abnormal limb loading and shifting of weight distribution, reluctance & restlessness when standing; significant lameness, reluctance to move, marked difficulties in rising and laying down.

Examination:

- Limited ROM with crepitus, joint thickening, anatomical misalignment and extreme muscle atrophy.
- Diagnostic imaging will show advanced osteophytes and signs of bone remodeling.

CORE TREATMENT RECOMMENDATIONS

CLIENT EDUCATION	• Discuss QoL considerations and ensure appropriate pain management. • Ensure that owner is able to deal with the level of pet's disability and make appropriate modifications. • Recommend regular assessments every 3-6 months, in some cases more frequent.
WEIGHT OPTIMIZATION & NUTRITION	• Efforts should be made to achieve and maintain optimal weight[6] as obesity is a high-risk factor for contributing or compounding OA due to additional joint load and metabolic contribution[8]. • Joint health focused diets. • Recommend adequate OMEGA 3 FA (minimum daily dose of 100mg/kg DHA/EPA) through diet or supplementation[10,15,16].
REGULAR EXERCISE	• Daily, short but frequent low impact exercise (to tolerance of patient) even at this advanced stage is very important for maintenance of mobility, muscle strength, and mental health. • Specific home exercises as prescribed by a rehabilitation practitioner are recommended.
PHYSICAL REHABILITATION	• Recommend a formal rehabilitation program designed by a rehabilitation specialist. • A rehabilitation program will help to slow the decline in physical and mental condition related to chronic pain and disability, and provide support and guidance to the owner. • Regular assessments for pain and QoL are important part of a routine rehabilitation program.
HOUSEHOLD & LIFESTYLE MODIFICATIONS	• QoL and injury prevention will need to be addressed. • It is essential to provide adequate bedding, mobility assist devices (ramps, lift harnesses, carts) and prevent injury (improved footing, nail grips, ramps).
PAIN MANAGEMENT	• Adequate pain management and regular pain assessments are priority at this stage. • Use of NSAIDs is recommended at this stage for patient comfort & pain control, same protocol as stage 2. • If no co-existing diseases are present, lifelong NSAID administration may be necessary. • Assess for comorbidities, especially since patients at stage IV are likely older. • Consider anti NGF mAb therapy.[17] • Multimodal approach commonly required in addition to Core treatment options (see secondary treatment options). Pain management will require close observation with timely adjustments of additional treatments on an individual basis.

SECONDARY TREATMENT OPTIONS

PHARMACEUTICAL:

- Gabapentin: 5-10mg/kg TID*
- Pregabalin: 3-5mg/kg BID[9,12]
- Amantadine: Third line treatment in refractory pain cases, most often used in conjunction with an NSAID, 3-5 mg/kg BID[11]

NUTRACEUTICALS:

- Cannabinoids[5]
- DMOAD in form of chondroprotective products, collagen or combined multi-herbal/glucosamine/omega 3 preparations[1]

MODALITIES:

- Laser[3]
- Acupuncture[2]
- PEMF
- Joint injections
- Steroid epidural

*Dosing and treatment protocol based on consensus from clinical experience of Advisory Board members, as limited or inadequate available research, or lack of licensed product.

References:

1. Beale B S. Use of nutraceuticals and chondroprotectants in osteoarthritic dogs and cats. Vet. Clin. North Am. Small Anim. Pract. 2004;34(1):271–289.
2. Baker-Meuten A, Wendland T, Shamir SK, Hess AM, Duerr FM. Evaluation of acupuncture for the treatment of pain associated with naturally-occurring osteoarthritis in dogs: a prospective, randomized, placebo-controlled, blinded clinical trial. BMC Vet Res. 2020 Sep 25;16(1):357.
3. Barale L, Monticelli P, Raviola M, Adami C. Preliminary clinical experience of low-level laser therapy for the treatment of canine osteoarthritis-associated pain: A retrospective investigation on 17 dogs. Open Vet J. 2020 Apr;10(1):116-119.
4. Cachon T, Frykman O, Innes JF, Lascelles BDX, Okumura M, Sousa P, Staffieri F, Steagall PV, Van Ryssen B; COAST Development Group. Face validity of a proposed tool for staging canine osteoarthritis: Canine OsteoArthritis Staging Tool (COAST). VetJ.2018 May;235:1-8.
5. Gamble LJ, Boesch JM, Frye CW, Schwark WS, Mann S, Wolfe L, Brown H, Berthelsen ES, Wakshlag JJ. Pharmacokinetics, Safety, and Clinical Efficacy of Cannabidiol Treatment in Osteoarthritic Dogs. Front Vet Sci. 2018 Jul 23;5:165.
6. Frank L, Mann S, Levine CB, Cummings BP, Wakshlag JJ. Increasing body condition score is positively associated interleukin-6 and monocyte chemoattractant protein-1 in Labrador retrievers. Vet Immunol Immunopathol. 2015 Oct 15;167(3-4):104-9.
7. Jurvelin J, Kiviranta I, Tammi M, Helminen HJ. Effect of physical exercise on indentation stiffness of articular cartilage in the canine knee. Int J Sports Med. 1986 Apr;7(2):106-10.
8. Koonce RC, Bravman JT. Obesity and osteoarthritis: more than just wear and tear. J Am Acad Orthop Surg. 2013 Mar;21(3):161-9.
9. KuKanich B. Outpatient oral analgesics in dogs and cats beyond nonsteroidal antiinflammatory drugs: an evidence-based approach. Vet Clin North Am Small Anim Pract. 2013 Sep;43(5):1109-25
10. Moreau M, Troncy E, Del Castillo JR, Bédard C, Gauvin D, Lussier B. Effects of feeding a high omega-3 fatty acids diet in dogs with naturally occurring osteoarthritis. J Anim Physiol Anim Nutr (Berl). 2013 Oct;97(5):830-7
11. Norkus C, Rankin D, Warner M, KuKanich B. Pharmacokinetics of oral amantadine in greyhound dogs. J Vet Pharmacol Ther. 2015 Jun;38(3):305-8.
12. Salazar V, Dewey CW, Schwark W, Badgley BL, Gleed RD, Horne W, Ludders JW. Pharmacokinetics of single-dose oral pregabalin administration in normal dogs. Vet Anaesth Analg. 2009 Nov;36(6):574-80.
13. Sokolove J, Lepus CM. Role of inflammation in the pathogenesis of osteoarthritis: latest findings and interpretations. Ther Adv Musculoskelet Dis. 2013 Apr;5(2):77-94.
14. KuKanich B, Bidgood T, Knesl O. Clinical pharmacology of nonsteroidal anti-inflammatory drugs in dogs. Vet Anaesth Analg. 2012 Jan;39(1):69-90
15. Raditic D., Gaylord L. Fish Oil Dosing in Pet Diets and Supplements. Todays Veterinary Practice. https://todaysveterinarypractice.com/fish-oil-dosing-in-pet-diets-and-supplements/ Accessed Sept 15 2021
16. How much Omega 3 fatty acids should I give my dog? CARE https://caninearthritis.org/article/how-much-omega-3-fatty-acids-should-i-give-my-dog/ Accessed Sept 15, 2021
17. Lascelles, B.D.X., Knazovicky, D., Case, B. et al. A canine-specific anti-nerve growth factor antibody alleviates pain and improves mobility and function in dogs with degenerative joint disease-associated pain. BMC Vet Res 2015 11, 101

Elanco and the diagonal bar are trademarks of Elanco or its affiliates. © 2021 Elanco. PM-CA-21-0527