



BY VETOQUINOL  
**XPERTISE**  
IN OSTEOARTHRITIS MANAGEMENT

**XPERTISE**  
SCIENTIFIC COMMITTEE  
RECOMMENDATIONS

**vetoquinol**  
ACHIEVE MORE TOGETHER



On Feline Osteoarthritis Management

## A word from the Chairman

“

For the second year, Vetoquinol continues to support and sponsor the Xpertise program: an updated informative and training program on osteoarthritis, dedicated to veterinary practitioners.

Built by a Scientific Committee of international experts, the Xpertise program aims to share innovative information and practical experiences on an annual basis, dedicated this year to the **management of feline osteoarthritis (OA)**.

As the Chairman of the Xpertise Scientific Committee, it is with pride that, on behalf of the whole team, I present to you the second issue of our educational brochure collection presenting our advices and opinions, through key messages and formalized consensual recommendations for care.

This year's issue focuses on 6 topics that we believe are essential for the correct management of feline OA. We hope that this document will provide you useful tips for a better management of feline OA and that you will enjoy reading it.

Yours,

Professor Francesco Staffieri,  
Xpertise Programme Chairman



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## 1 Disease Challenges and Diagnosis



Dr. Grzegorz Wąsiatycz



Dr. Jamie McClement

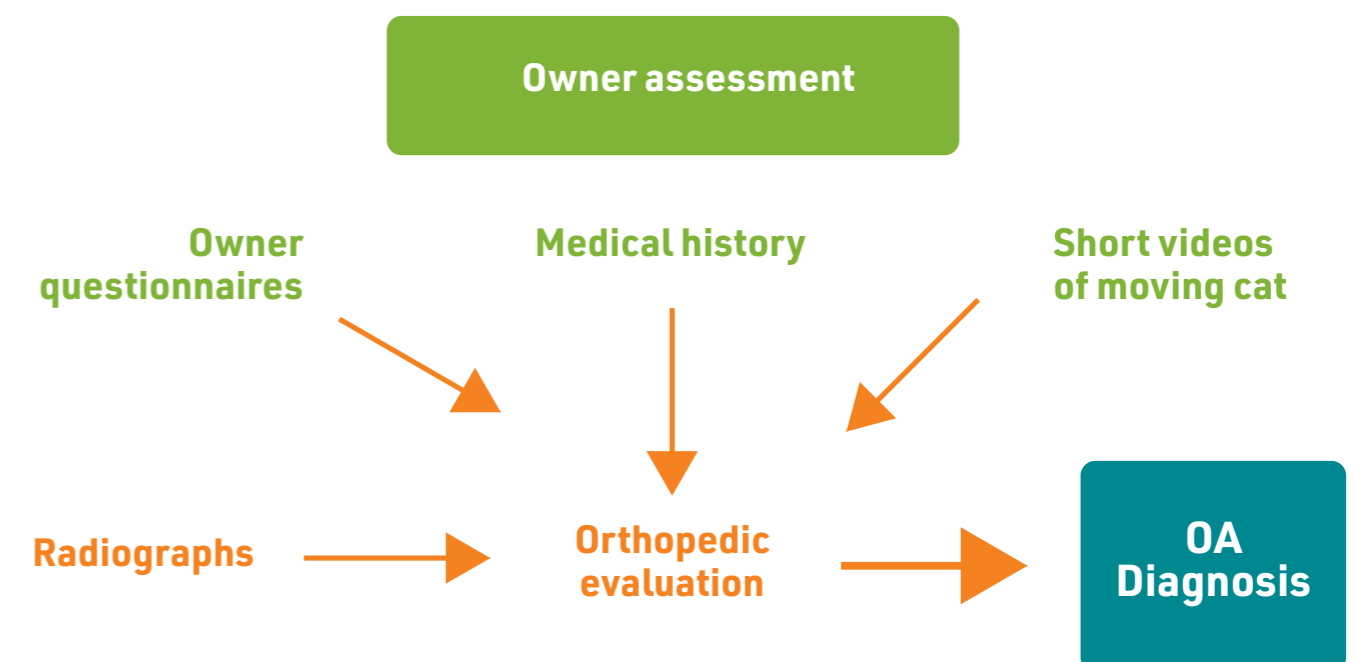
**Osteoarthritis (OA)** = a **progressive** articular disease characterized by the gradual development of **joint pain, stiffness** and the **limitation of motion** <sup>1</sup>

### Context <sup>1-4</sup>

- **Cats** are **harder to assess** for **pain** than some other species
- **Joints are often affected bilaterally**, and a single lameness is less common, so less easy to observe
- Gradual progression of signs and age at onset are frequently assumed to be signs of ageing
- **Longer living cats** means more chronic diseases like osteoarthritis in the future

OA is therefore **underdiagnosed** and **undertreated**

### Diagnosis - overview



# 1 Feline Osteoarthritis Diagnosis

## History / Owner observations<sup>5-9</sup>

- Cats are **unlikely** to **exhibit normal behaviour in the consultation room environment**, therefore **detailed understanding of their behaviour in their home environment is of great importance**
- Alteration in **levels of activity** (and therefore body weight), **ability to jump** or **use stairs**
- Alteration in **eating, soiling, aggression** (to cats, dogs, humans)
- Changes in **coat/grooming**

All may be interpreted as **behavioural**, or **related to other medical conditions**

### How to do it with owner ?

- Detailed and focused questioning
- Video footage of cat in home environment
- Movement sensors
- CMIs/Questionnaires

**Home videos** are really helpful

## Veterinarian direct observation<sup>6</sup>

- Time spent in the waiting room should be reduced to the minimum (cats should be separated from dogs if possible)
- Isolate the consultation room from outside noises
- Allow cat to explore consultation room before examination:
  - Start with them on the floor rather than on the table
  - Allow option to jump/walk, observe behaviour
- Assess gait (if possible), posture, ability to rise from sitting/lying
- Body weight (obese cats are more likely to present joint pain)

# 1 Feline Osteoarthritis Diagnosis

## Orthopaedic examination<sup>6</sup>

- **More challenging in cats**
- After observation, examine on the table with **minimal restraint**, both standing (assess weight bearing, palpation of limbs and musculature) and in lateral recumbency (joint manipulation)
- Assess for **pain, range of motion, crepitus, joint swelling, muscle atrophy**  
Pain on palpation of the joint can be variable
- In some cases, full examination without chemical restraint may not be possible – **discuss benefit/risk with client**
- **Need for patience, knowledge of anatomy, and patient cooperation**

**Detailed and accurate** clinical examination is **mandatory!**

## Imaging Techniques<sup>10,11</sup>

- **Radiography**
- Magnetic Resonance Imaging (MRI)
- Computerized Tomography (CT-scan)
- Ultrasonography

“ **But OA pain does not correlate well with radiographic disease** ”

**Imaging** is not a substitute for **careful orthopaedic examination**

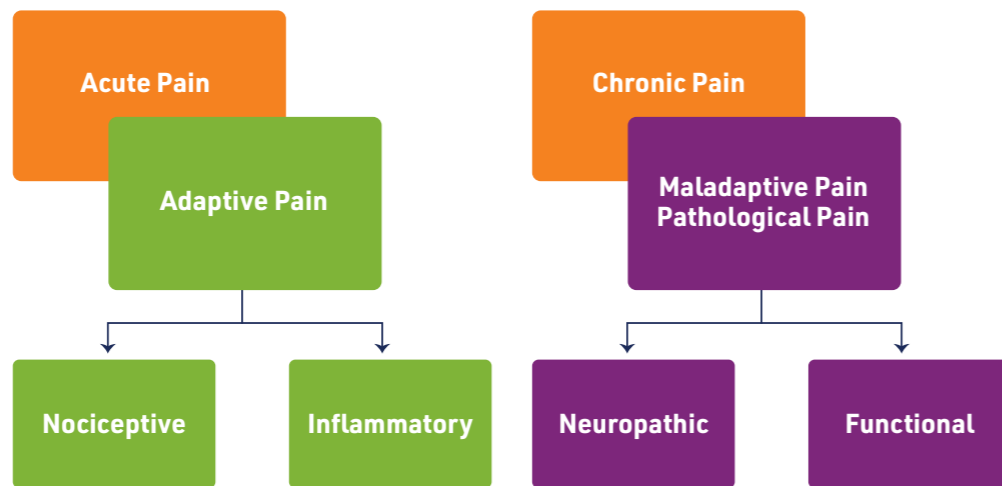
## 2 Current & Future Medical Opportunities #1 : NSAIDS



Dr. B. Duncan X. Lascelles

### Context - Adaptive and Maladaptive Pain<sup>12</sup>

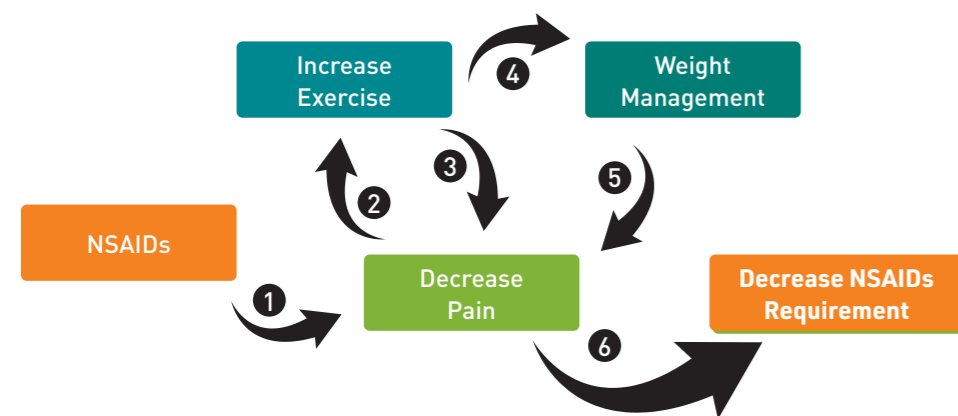
Long-standing osteoarthritic pain is 'Mixed Pain' – a mixture of all these types of pain



- As prostaglandins (PG) are involved in both adaptive and maladaptive pain, NSAIDs produce predictable pain relief by anti-PG actions in the periphery and central nervous system

- NSAIDs are effective for feline OA-associated pain but analgesic effects have been difficult to measure (placebo effect is very high)

### Practical considerations with NSAIDs<sup>13-15</sup>



- Duration of treatment with NSAIDs?** => ongoing field of research in cats, but appropriate monitoring should be in place

- Dose reduction** (often practiced based on reducing the chance of side effects) can be considered

Ongoing work will help define effects of NSAIDs, and may lead to individualized recommendations (with respect to safety)

## 2 Current & Future Medical Opportunities #1 : NSAIDS

### Practical considerations with NSAIDs - Safety<sup>15-18</sup>

- A high proportion of cats with OA suffer from **chronic kidney disease**
  - NSAIDs do not necessarily make CKD worse
  - Case selection likely important
  - Evidence of bidirectional clinical effects of NSAIDs on renal parameters
  - Growing 'basic' clinical data showing NSAIDs are well tolerated in (the right) CKD cases
  - Paucity of comprehensive data on renal function and measures of renal health
- Concomitant Analgesics** that can be used safely together with NSAIDs
  - Gabapentin, Amantadine, Tramadol, Polysulfated glycosaminoglycans (PSGAGs)*
- Combined use of NSAIDs and **diuretics** appears to be safe in **healthy cats**, but further research is needed regarding cats with CKD
- All **non-drug therapies** can be used concomitantly with NSAIDs

**CARE** is required with any drugs or treatments that may compromise **renal function**

### Clinical recommendations

#### Prior using NSAIDs

- Obtain a complete medical history, list of treatments and physical examination
- Perform initial laboratory evaluation (renal and hepatic systems, along with plasma proteins and hematocrit, eventually surrogate markers of GI bleeding and/or mucosal damage)
- Select patient carefully (dehydration, hypovolemia...; renal, cardiac, or hepatic dysfunction)
- Communicate effectively to the owner the risk/benefits and possible adverse effects

#### While using NSAIDs

- Recognize the earliest signs of adverse effects and withdraw NSAID treatment immediately
- Perform laboratory monitoring
- Optimize dose when possible
- Consider washout periods if switching due to adverse effects, but not necessarily for lack of efficacy.

Utilize a **balanced, integrated** analgesic approach

## 2 Current & Future Medical Opportunities #2 : Others



Dr. Beatriz Monteiro



Prof. José María Carrillo

### Other pharmaceutical treatments

- Literature: few data in feline OA

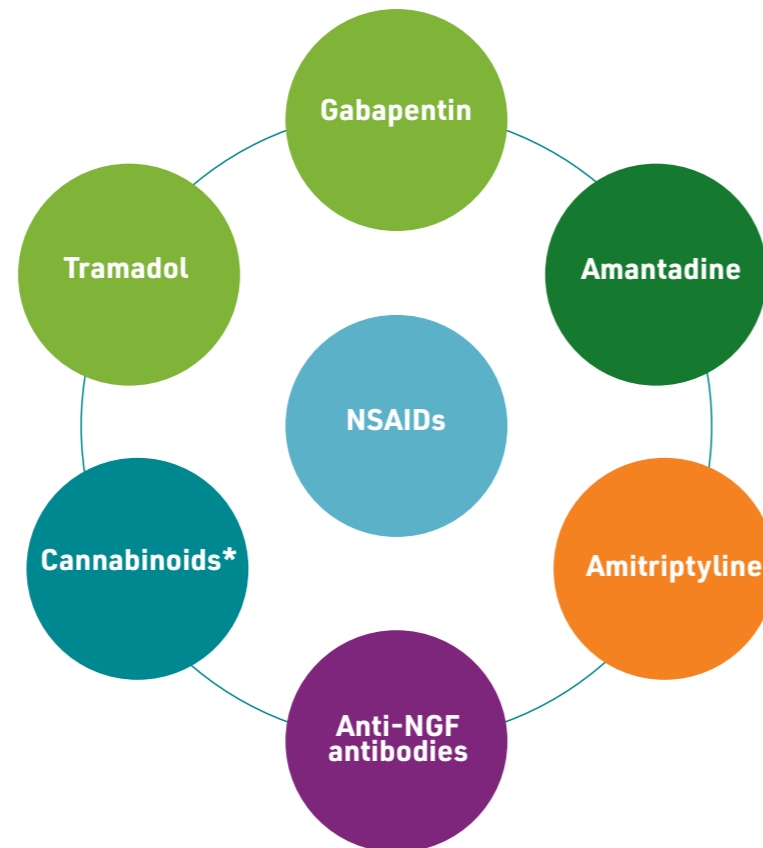
- Consider a personalized treatment approach

- Take into consideration

- The patient
  - The owner
  - The environment

Proceed by **trial and error**

\* Evidence-based recommendations are lacking. Future studies will elucidate optimal dosage regimens for efficacy and safety.



### Practical recommendations Pharmaceutical treatments in general <sup>19</sup>

- Integrate pharmaceutical treatments in a **multimodal approach** in combination with non-pharmacological treatments such as environmental enrichment
- Consider **OA severity**
- Pay attention to **renal function** when using treatments concomitantly
- Keep in mind the **personalized treatment** approach

## 2 Current & Future Medical Opportunities #2 : Others

### Practical recommendations Oral administration of drugs to cats <sup>20</sup>



Oral administration can be a source of stress and can have effects on human-pet bond

- Pilling** should always be followed by positive reinforcement (e.g. treats, petting, small amounts of soft food)
- Unpalatable medications (e.g. Tramadol, Amitriptyline) may be inserted into small capsules or compounded in palatable flavors
- Consider **owner education**
  - Step-by-step videos teaching how to administer oral medication to cats
  - Veterinary technicians are valuable for discussing these issues with owners and emphasizing the importance of stress-free administration of medication

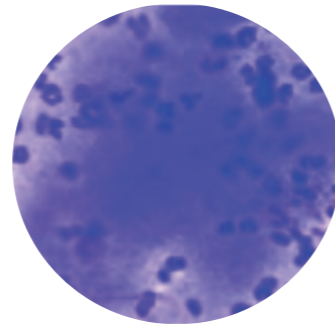
Emphasize the importance of **stress-free administration** of medication

## 2 Current & Future Medical Opportunities #2 : Others

“

Despite looking promising, the literature is relatively scarce on these products, and products are very variable amongst studies, manufacturer and animals. Thus **caution should be taken**. The following pages have been written by **experts experienced in their use with good knowledge of their product contents**. They provide tips for veterinarians considering the use of these products, but **authors advise it should be used in patients unresponsive to conventional therapies or referred to experienced clinicians**.

### Platelet-rich Plasma<sup>21-24</sup>



#### PRP

anucleate cytoplasmic fragments liberated from megakaryocyte

- Easy and fast
- Minimally invasive
- No need of theater
- No major Adverse effect reported
- Diversity of preparation available liquid / clot / fibrin

#### PRP protocol

- There is no consensus at this time about a standard obtention protocol of PRP in feline species.
- Other species protocol are used

#### Clinical use

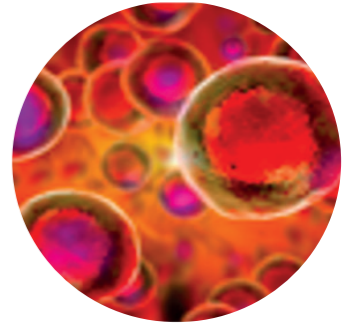
- Heterogeneity between studies and variability in PRP preparations.

“

“First option of the last options”

## 2 Current & Future Medical Opportunities #2 : Others

### Mesenchymal Stem Cells<sup>25-27,65</sup>



#### • adipose-derived MSC (aMSC)

- Allogeneic or autologous origin
- Self-renewal, multipotency, and ability to differentiate into diverse tissues
- Reduce the secretion of proinflammatory cytokines and protect against apoptosis
- Many efficacy and safety questions remain unclear, that should be clarified in the research field before clinicians can use these treatments on a wider scale
- **Clinical trials are needed as there is no standardized protocol**
- **Use is under individual responsibility**

#### • In the future they may represent a promising therapeutic alternative

### Anti-NGF antibodies<sup>28,29,66-68</sup>



- Involved in peripheral and central hypersensitization
- Upregulation of NGF in arthritic joints
- **Published studies demonstrate efficacy of anti-NGF mAb in cats with OA**
- **1 anti-NGF monoclonal antibody available for cats**
- **Once monthly treatment option for long-term pain alleviation in cats**

## 3 Surgery as an Option



Dr. Carlos Macias

### Issues & Context<sup>30-32</sup>

- **Radiographic Signs of Feline OA**
  - Similar to canine OA = Osteophytes
  - More prevalent on spine
  - Few reports on long-term trauma and its effect on OA
- **Surgeons**
  - Clear in treating articular fractures to restore function
  - Lack of attention to later development of OA
  - Lack or few information about long-term follow-up

Feline articular trauma and orthopedic surgery /diseases will lead to feline OA

### Surgical treatment as an option<sup>33-37</sup>

- **Hip dysplasia:** The most common orthopaedic disease in cats
  - **Prevalence varies from 15 to 30% depending on species**
  - **Similar features to canine hip dysplasia (HD)** large body mass correlates with increased heritability and severity of HD and symptoms
- **Genetic selection** for larger cats within the breeds **will increase** the prevalence and severity of FHD
- **Slipped Femoral Epiphysis :** Common cause for clinic consultation; Painful hip but not always
  - careful radiographic evaluation to reach the diagnosis

Surgical treatment is indicated in the **majority of cases** to restore adequate joint and limb function

## 3 Surgery as an Option

### What should be the standard of care ?<sup>38,39</sup>

#### Femoral Head Osteotomy

- Relatively easy
- Low cost
- Low expertise –equipment required
- Faster recovery
- Long-term efficacy

#### Total Hip Replacement

- Complex surgery
- High cost
- Complications rate are related to experience
- Careful post op care
- Long-term efficacy

#### • **Feline Cranial Cruciate Ligament Rupture (CCLR)**

Little is known of clinical outcomes in spontaneous CCLR but it is clearly related to stifle OA

- **Treatment:** Temporary transarticular pinning is very effective in restoring adequate function (no known effects on OA)

#### • **Medial Patellar Luxation:** Common condition, often not addressed surgically

**Longer follow-up is needed** to highlight the importance and progression-severity of feline OA



## 4 Non-Pharmaceutical Treatments



Dr. Kinley Smith

### Risk of obesity<sup>40,41</sup>

- Heavy cats **4.9 times** as likely to develop lameness requiring veterinary care
- Increased risk of 'arthritis'

**Weight loss** is crucial in **OA management**

### Weight loss through dietary management<sup>42-45</sup>

- **59.5%** cats in US are considered **obese**
- Reduction in calories can **alter maintenance energy requirements...** And **could lead to weight gain!**

Aim is to **preserve lean body mass** but **reduce body fat**

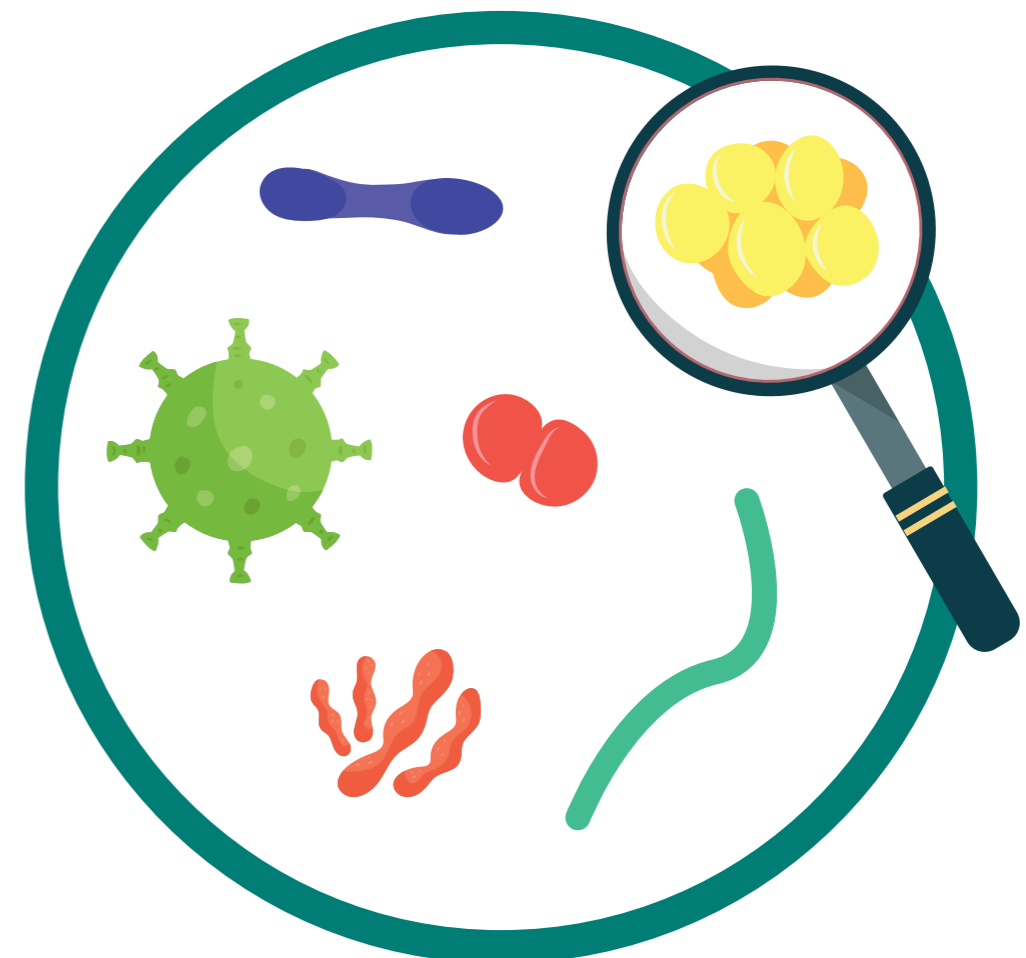
- **Low calorie diets with increased protein**
  - **Overweight cats increasing dietary protein from 35 to 45% of energy** can result in more than **10% greater fat loss**
  - Absolute lean body mass loss halved
  - Body weight maintained after diet despite higher calorie intake
  - Reduction in oxidative stress and measures of inflammation
- **Diet supplements for weight loss**
  - Soy isoflavones
  - Diacylglycerols
  - L Carnitine

## 4 Non-Pharmaceutical Treatments

### Osteoarthritis & Microbiome<sup>46-48</sup>

- **Microbiome may have a substantial influence on OA**
  - **Negative alterations** to the microbiome (dysbiosis) **can contribute to development of OA**
  - **Positive alterations** to the microbiome may slow the progression of OA

**Joint protective nutraceuticals** may act by altering the gut microbiome... Further studies would clarify the influence of microbiome on OA



## 5 Cat Manipulation & Behavior



Dr. Adeline Decambron

### Issues & Context <sup>1,49,50</sup>

- **Chronic pain** is the main expression of Osteoarthritis (OA) in cats. **Lameness** is **not easily identified** in cats and quite rare in OA cats and **behavioral changes** are the most frequent complaint.
- **Pain** assessment is mandatory but can be challenging: cats naturally tend to disguise signs of pain and disabilities and are often subject to **stress** at the veterinary clinic, thus **masking** OA symptoms  
→ Clinical examination can rely on **subtle** signs
- **OA-related** behavioral changes in cats
  - **Temperament**
    - *Unexplained aggression or irritability*
    - *Decreased socialization*
    - *Depression/loss of interest*
    - *Resents being touched, petted or brushed*
  - **Reduced mobility**

Detailed and accurate clinical examination is mandatory despite challenging!

### Cat Examination - 1st step - OA check list <sup>51</sup>

- **Owner questionnaire (CMI)**
  - **At home by the owner**
  - During observation in the consultation room
  - In the waiting room



Remember that time spent in the box is a source of stress for cats!

## 5 Cat Manipulation & Behavior

### Cat Examination - 2<sup>nd</sup> step - Observation

- **Home environment videos**
  - Ask the owner to record the cat doing things it finds difficult: for example playing, jumping or climbing stairs or the worst moment, such as after waking up
- **Exploration in the consultation room**
  - Check for lameness, reluctance to jump, sensitivity assessment

### Cat Examination - 3<sup>rd</sup> step - Observation <sup>50,52,53</sup>

- **1st contact in a cat friendly environment**
  - Keep his pillow, covers...
  - Hands in contact but not grabbing
  - Let the patient free to move
  - Ask the owner what he likes or dislikes
  - Stay calm, speak slowly
- **Coat/Claws**
  - Alopecia/areas of self-induced alopecia
  - Changes in toileting / scratching behaviour
  - Greasy and tangled coat
  - Unkempt claws
- **Axial palpation**
  - Start with gentle reassurance followed by a smooth and gentle stroking motion all over to pick up any areas of particular sensitivity
  - Axial muscle palpation, sensitivity assessment (skin rippling...), axial skeleton palpation, tail mobility

Always be **gentle** with the patient, specially during **first contact**

## 5 Cat Manipulation & Behavior

### Cat Examination - 3<sup>rd</sup> step - Manipulation

- **Axial palpation**

- In the box/on a pillow/on the owner

- **Limb palpation**

- Limb by limb
- Check for crepitus, joint swelling, pain during mobilization, decrease in range of motion



Reassure the patient during palpation

Not all joints will be painful, and not all painful joints will have osteoarthritis

- **During palpation, patients can become aggressive!**

- Focus on specific joints if you have to!
  - ✓ Depending on patient's history
  - ✓ Depending on patient's observation
  - ✓ Frequency order: Elbow: 17 – 45%; Hips: 38 – 65%
- Sometimes you will have to wait or postpone the examination

Adapt to the patient's temperament

### Cat Examination - 4<sup>th</sup> step - Confirmation

- **Try to repeat to confirm the findings**

- False positive = cat being angry, fearful, or just uncomfortable (30-50% cases)
- False negative = cat not moving (30-60% of cases)
- Orthopedic examination depends on subtle signs, experience is needed
- Staging is based mainly on clinical signs in cats

Experience is **valuable**

## 6 Cat Owners - Involvement/Education/Treatment compliance



Prof. Susanne Lauer

Cat owners may have a **more substantial role** compared to dog owners

### Role of Cat Owner for OA Treatment <sup>9,54-57</sup>

- **Problem recognition**

- Symptoms frequently mistaken as “normal” age-related changes: Mobility, activity, grooming, behavior

- **Decision to seek veterinary care / Transport to veterinarian**

- **Stress reduction**

Familiarity with examiner & procedure **decrease stress**

- Raise team awareness for stress reduction strategies
- Use same doctor/nurse team (if possible)
- Ask for owner videos
- Preplan for feline acclimatization in exam room
- Optimize check-in
- Favorite toy/person/food

- **Learning about feline OA**

- **Explanation/discussion: veterinarian, veterinary team member, friends, neighbors, family**
- Brochures in veterinary practice
- Websites/online forums
- Magazines for cat owners
- **Newspaper/TV**
- **Apps & social media**

- **Veterinarians and other pet owners are the most trustworthy sources!**

- Owners wish, that veterinarians would discuss internet information more frequently and would make recommendations on high quality webpages on arthritis

- **A better learning about OA induces a better:**

- Decision-making, strategy
- Care giver treatments
- Problem solving, feedback
- Long term compliance

### Compliance/Adherence <sup>51,58,59</sup>

- “Consistency and accuracy with which a patient follows the regimen prescribed by veterinarian”
- **Implies that patient (caregiver) has a submissive role with the professional in a position of authority**
- How to increase adherence ?
  - Regular OA specific “check-up” calls
  - Regular re-scheduling strategies
  - Regular OA video assessments

Cat owner **education about OA** is key for successful OA management



### Caregiver Burden & Pet Owners Personality Differences <sup>60-64</sup>

- **Awareness of caregiver burden**
  - Greater ability to understand the client’s perspective
  - Appropriately tailored communications
  - Opportunities for an empathic response
- **Personality types**

Compared to self-identified dog persons, cat persons are:

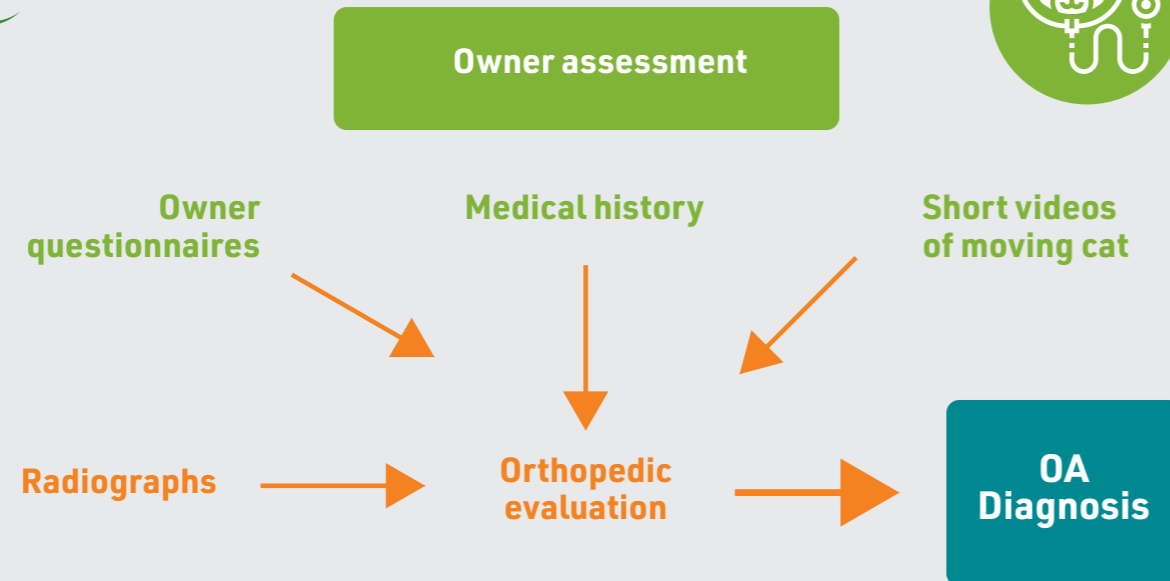
  - Less extroverted and conscientious
  - Considerably more open
- **Communication**
  - Prioritize: “reflective listening” and “asking permission”
  - Value open-ended questions
  - Value empathy with cat owners

Taking caregiver burden and personality into consideration strengthens your relationship with the patient owner

→ Optimal matching of pet owners with OA vets/nurses is crucial for a personalized medicine approach

# The Essential in a Nutshell

## 1 Disease Epidemiology and Diagnosis



- OA in cats remains underdiagnosed and undertreated
- OA diagnosis can be challenging in cats
- Imaging is not a substitute for careful orthopedic examination
- Encourage confidence in clinicians to use diagnostic techniques and justify them to owners
- Encourage use of measurable CMI's (Client metrology instruments) in practice
- Encourage owners to record videos of the cat regularly

## 2 Current & Future Medical Opportunities



### NSAIDs

- NSAIDs are effective for OA pain in cats, even in cats with renal impairment
- Obtain a complete medication history and physical examination before initiating treatment
- Select patients carefully (dehydration, hypovolemia; renal, cardiac, or hepatic dysfunction)
- Recognize the earliest signs of adverse effects and withdraw NSAID treatment immediately. Perform laboratory monitoring
- Utilize a balanced, integrated analgesic approach → consider dose optimization and washout periods if switching

# The Essential in a Nutshell

## Other treatments

- Integrate pharmaceutical treatments in a multimodal approach in combination with non-pharmacological treatments and consider OA severity
- Pay attention to renal function when using treatments concomitantly
- Emphasize the importance of stress-free administration of medication

## PRP / MSC

- Encouraging results... but no standardized protocols are available yet  
→ Refer to experienced clinicians
- Homogenization needed in research field to obtain solid conclusions
- Thus, caution is advised, and these therapies should only be used in patients unresponsive to conventional therapies

## 3 Surgery as an Option



- Feline articular trauma and orthopedic diseases will lead to feline OA
- Surgical treatment is indicated in most cases to restore adequate joint and limb function
- As there is no standard of care, take into consideration cost feasibility and long-term effect
- Longer follow-up is needed to highlight the importance and progression-severity of feline OA

## 4 Non-Pharmaceutical Treatments



- Obesity is a major risk factor  
→ Weight loss is crucial in OA management
- Weight management  
→ Aim is to preserve lean body mass but reduce body fat
- Influence of microbiome on OA should be clarified in the future  
→ potential new target in OA management ?

# The Essential in a Nutshell

## 5 Cat Manipulation & Behavior



- **Cats are subtle and tricky**
  - Always be gentle with the patient, especially during first contact
  - Provide a friendly environment
  - Adapt to the patient's temperament
- **Reassure the patient during palpation**
  - Take your time, speak slowly, go gently, feel safe
  - Keep eye and hand contact
- **Owners are helpful but need to be guided** → videos are crucial

## 6 Cat Owners - Involvement/Education/ Treatment compliance



- **Cat owners may have a more substantial role compared to dog owners**
- **Cat owner education about OA is key for successful OA management**
- **For cat owners, veterinarians and other pet owners are the most trustworthy sources**
- **Taking caregiver burden and personality into consideration strengthens your relationship with the patient owner**
- **Try to improve owner compliance with:**
  - Regular OA specific “check-up” calls
  - Regular re-scheduling strategies
  - Regular OA video assessments
- **Optimal matching of pet owners with OA vets/nurses is crucial for a personalized medicine approach**
  - a matching relation will improve:
    - Understanding
    - Owner satisfaction
    - Willingness to follow recommendations
    - Short-term outcome
    - Long-term compliance

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