THE COLLEGE OF FAMILY PHYSICIANS OF CANADA

LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

The OA Tool Webinar

November 20, 2018

Presented by: Dr. Julia Alleyne

Welcome

- Webinar Housekeeping
  - Polling Slides
  - Question Period
- This group learning program has been certified by the College of Family Physicians of Canada for up to one (1) Mainpro+ credit
- Recording for Asynchronous session tomorrow

Faculty/Presenter Disclosure

- **Faculty/Presenter: Dr. Julia Alleyne**
- **Where we get Personal $: Volunteer**
- **Where we get Grant/ Program $: CFPC Canada is supporting this program.**

- **Relationships with commercial interests:**
  - **Grants/Research Support: None**
  - **Speakers Bureau/Honoraria: None**
  - **Consulting Fees: None**
  - **Other:** None **(or alternative)**

Partners in the OA Tool Development

College of Family Physicians of Canada

Arthritis Alliance of Canada

Centre for Effective Practice

OA Tool Webinar Working Group

- Dr. Julia Alleyne (Chair)
- Dr Pierre Frémont
- Dr. Sahil Jain
- Dr. Matthieu Lafontaine-Godbout
- Dr. Victor Lun

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Learning Objectives for Webinar

1. To **describe** the need for the OA tool in clinical practice
2. To **utilize** the Osteoarthritis Tool to determine diagnosis and stage of disease through patient history and physical examination.
3. To **educate** patients with evidence based management recommendations
4. To **apply** appropriate criteria for investigations and referrals

Polling Question: Practice Needs

What percentage of your patients make an appointment to discuss osteoarthritis symptoms and/or management?

- ❑ 2-5% of my patient visits
- ❑ 10-15% of my patient visits
- ❑ 20-25% of my patient visits
- ❑ 25-35% of my patient visits

What percentage of your patients make an appointment to discuss OA symptoms and/or management?

2 - 5% of my patient visits

10 - 15% of my patient visits

20 - 25% of my patient visits

25 - 35% of my patient visits

What is Osteoarthritis?

- A disorder of synovial joints
- Most commonly affects:
  - Knee
  - Hip
  - Hand – First CMC, DIPs, PIPs
  - Cervical and Lumbar spine
  - First MTPs

Why an OA tool ? What's the issue?

- Osteoarthritis is common and affects most often the hip, knee and hand. 30% of Canadian adults will have OA in at least one of these joints
- The prevalence in Primary care is 14% and expected to reach 25% in the next 30 years
- Patients with OA have
  - 15-25% lower quality of life
  - Increased long term disability
  - 2-3 times higher health care costs

Despite the Facts;

- Underdiagnosed
- Undertreated
- Delay in seeking care
- Missed opportunities for pain management with both pharmacological and non-pharmacological interventions
- Sub-optimal function, mobility and independence

Quick Self-Assessment: Question 1

True or False?

Weight reduction among the obese (BMI ≥30) population in Canada is a prevention strategy for Hip, Knee and Hand Osteoarthritis.

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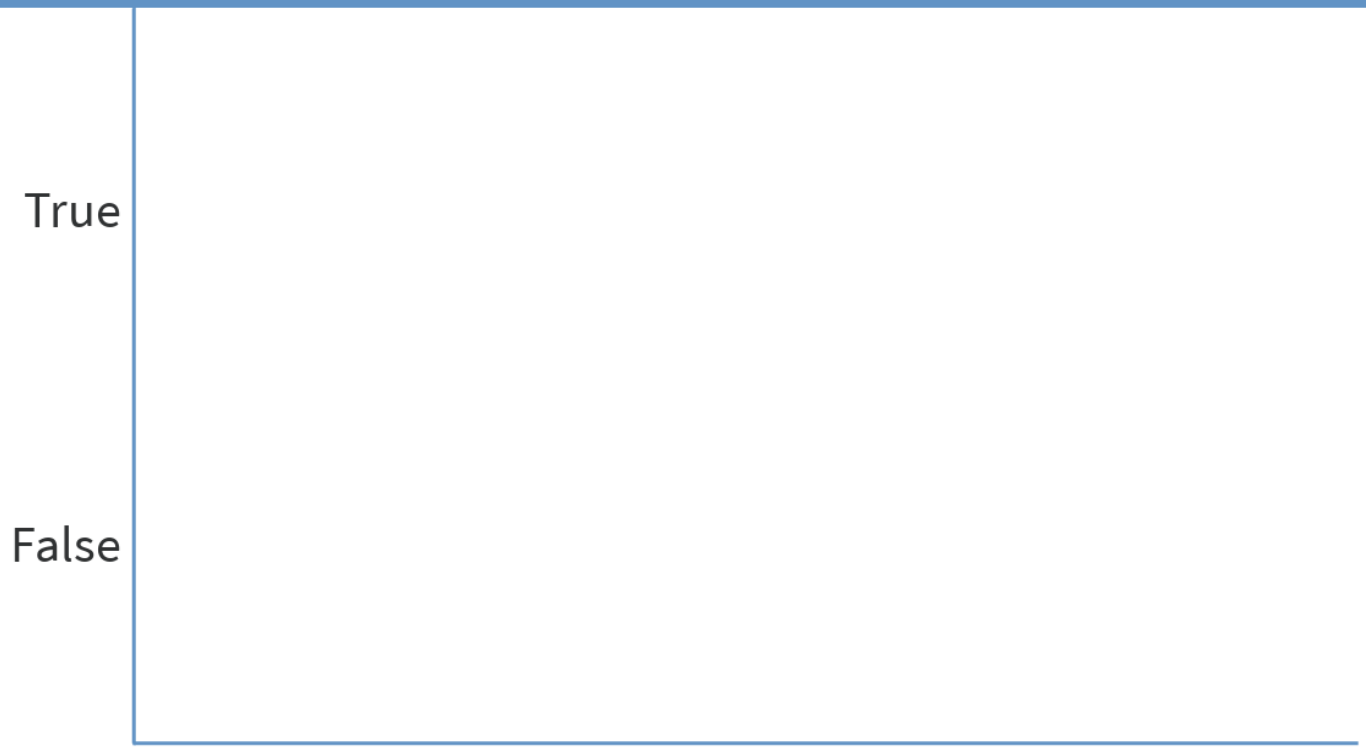

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True or false?

Weight reduction among the obese (BMI ≥30) population in Canada is a prevention strategy for Hip, Knee and Hand Osteoarthritis.

Fact: The impact of programs resulting in **weight reduction** among the obese (BMI ≥30) population in Canada would lead to the **prevention** of more than 200,000 new cases of OA over the next 30 years with **cumulative savings of more than $212 billion** to Canadian society, which is a reduction of $48 billion in direct costs and $164 billion in indirect costs. Further research is needed to improve on current strategies for preventing and treating obesity.

Impact of Osteoarthritis in Canada, 2011, Arthritis Alliance of Canada

Question 2

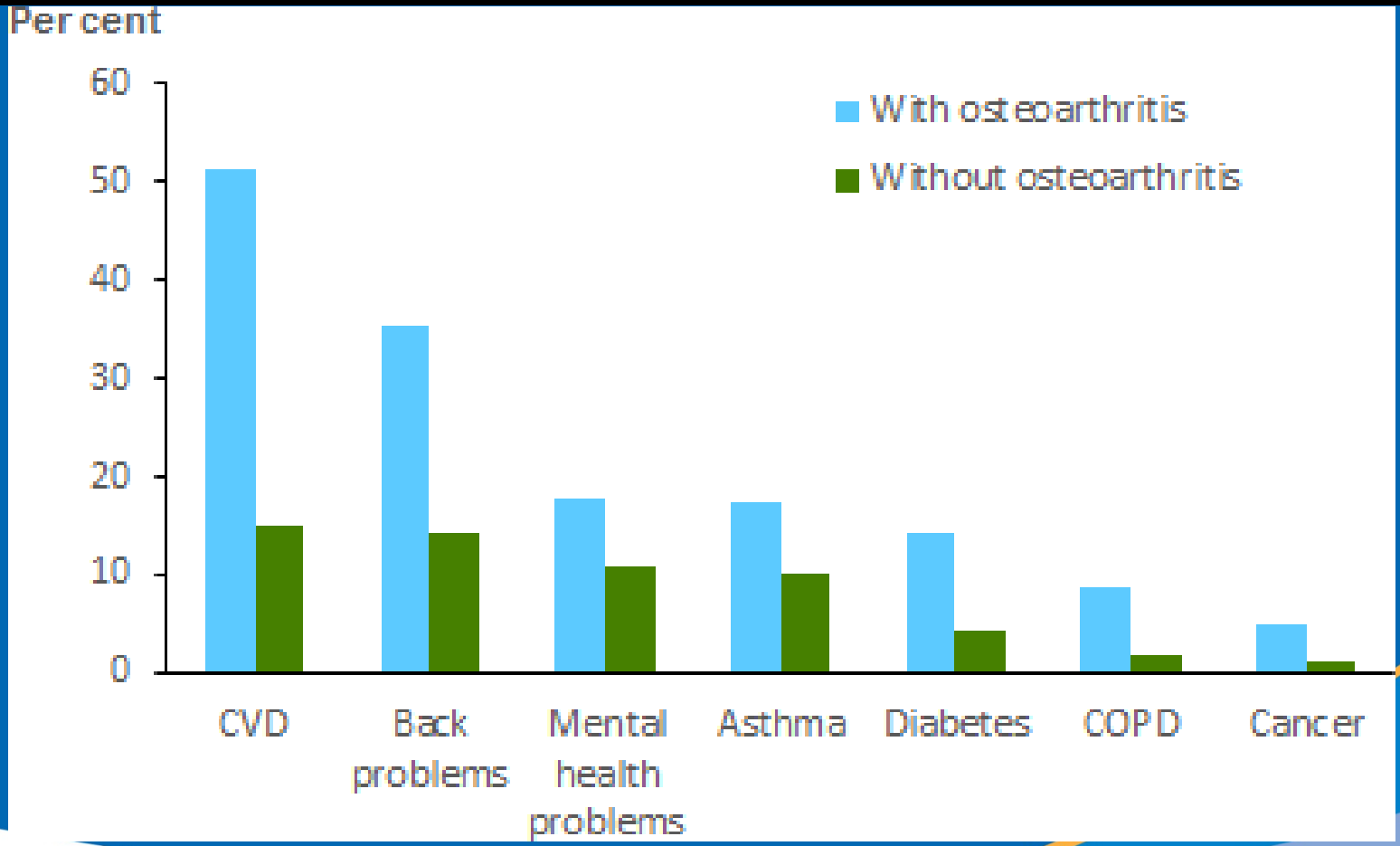
Osteoarthritis has been identified as a direct cause of which of the following condition(s)? Select all that apply.

a) Chronic Pain Syndrome
b) Depression
c) Decreased outcome in Cardiac Rehabilitation
d) COPD
e) Sub-optimal outcomes in Diabetes Management

Osteoarthritis has been identified as a direct cause of which of the following condition(s)? Select all that apply.

- Chronic Pain Syndrome
- Depression
- Decreased outcome in cardiac rehabilitation
- COPD
- Suboptimal outcomes in diabetes management

All of the Above

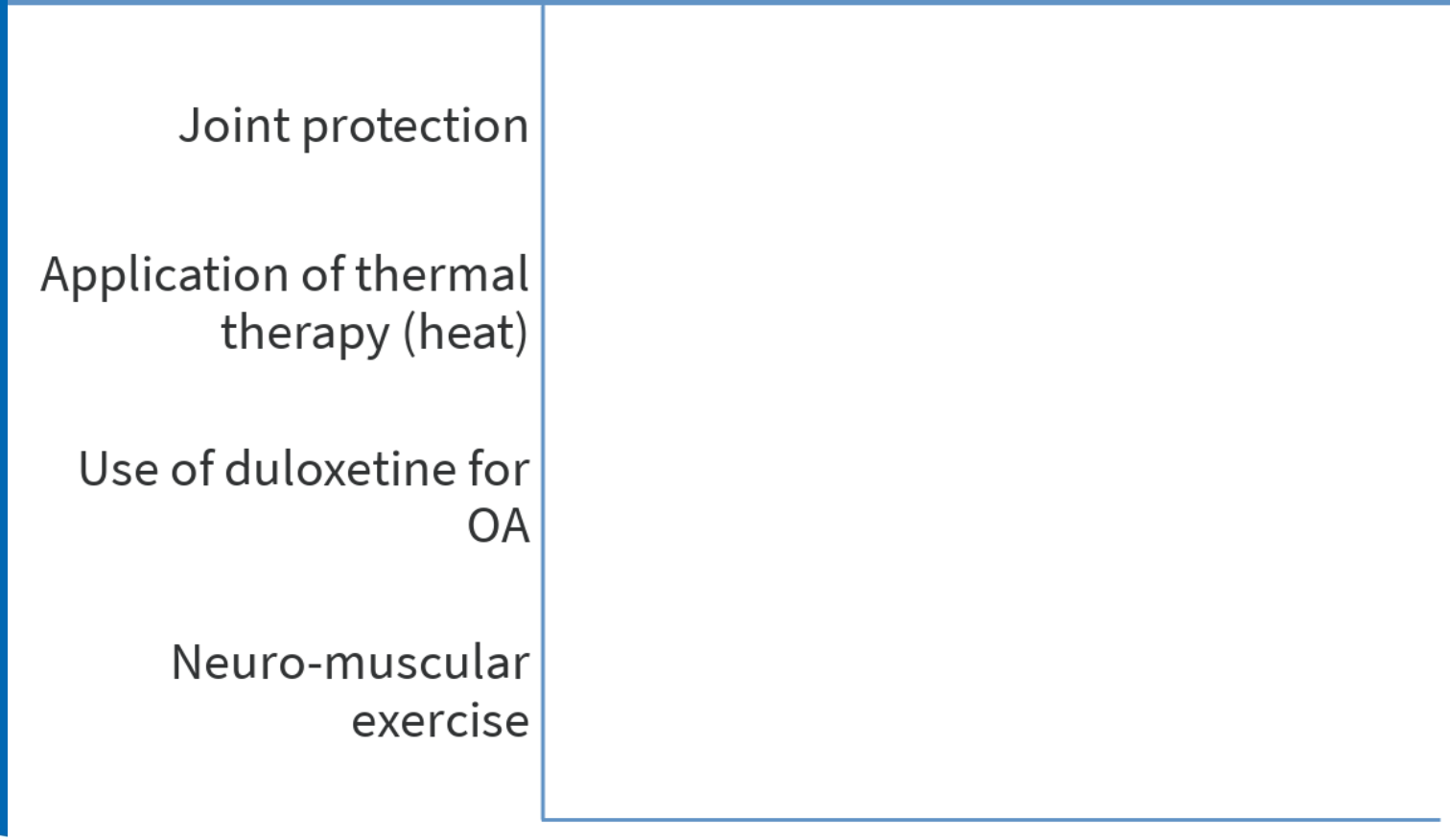


Key Competencies

Which of the following evidence-based management strategies for Osteoarthritis do you offer to your patients?

1) Joint Protection
2) Application of Thermal Therapy(Heat)
3) Use of Duloxetine for Osteoarthritis
4) Neuro-muscular exercise

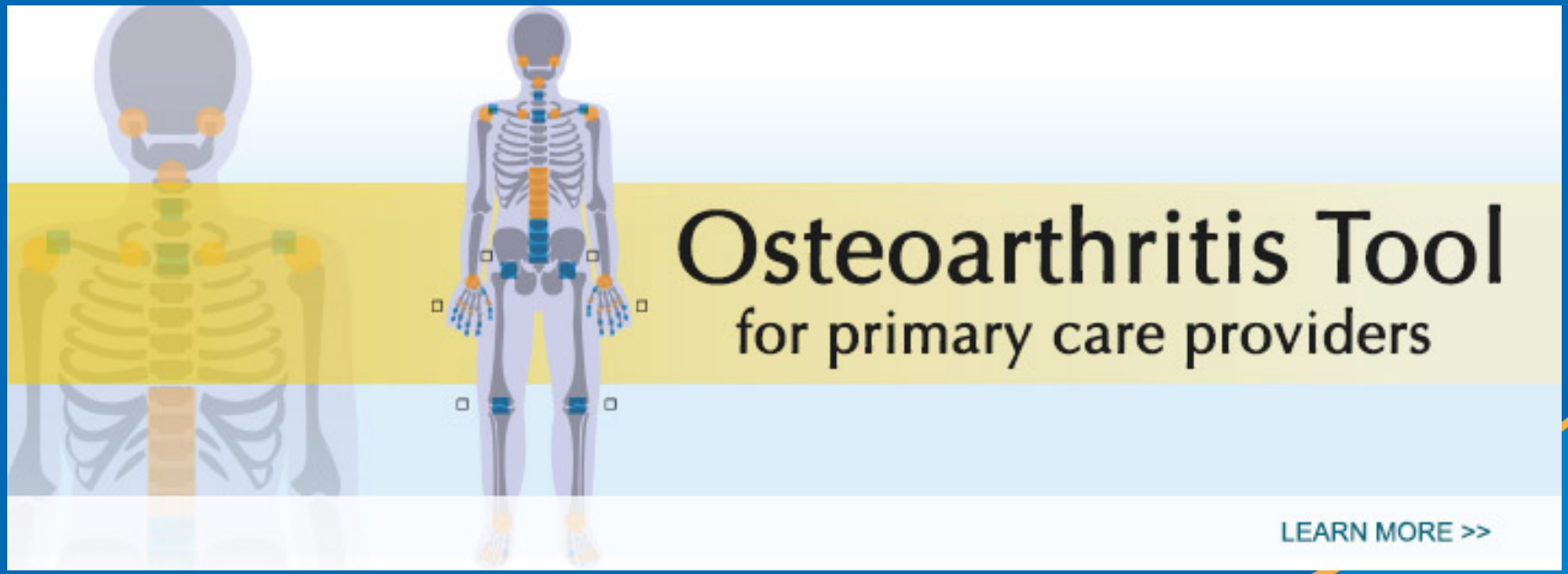
Which of the following evidence-based management strategies for OA do you offer your patients?



Practice Impact of Osteoarthritis

- ✓ 28 year old with ACL tear needs to be educated on Osteoarthritis prevention
- ✓ 45 year old with recurrent intermittent knee pain and normal x-ray and exam, need to be advised on weight management and stabilizing exercise
- ✓ 62 year old with early osteoarthritic signs and symptoms needs a comprehensive assessment and ongoing maintenance plan for optimal osteoarthritis care
- ✓ 75 year old with diabetes & history of cardiac has difficulty with rehab due to joint pain.

Let's look at the Tool



How was the Tool developed?

Planning and Preparation

- Identify Key Resources
- Establish working Groups

Evidence Collection and Needs Assessment

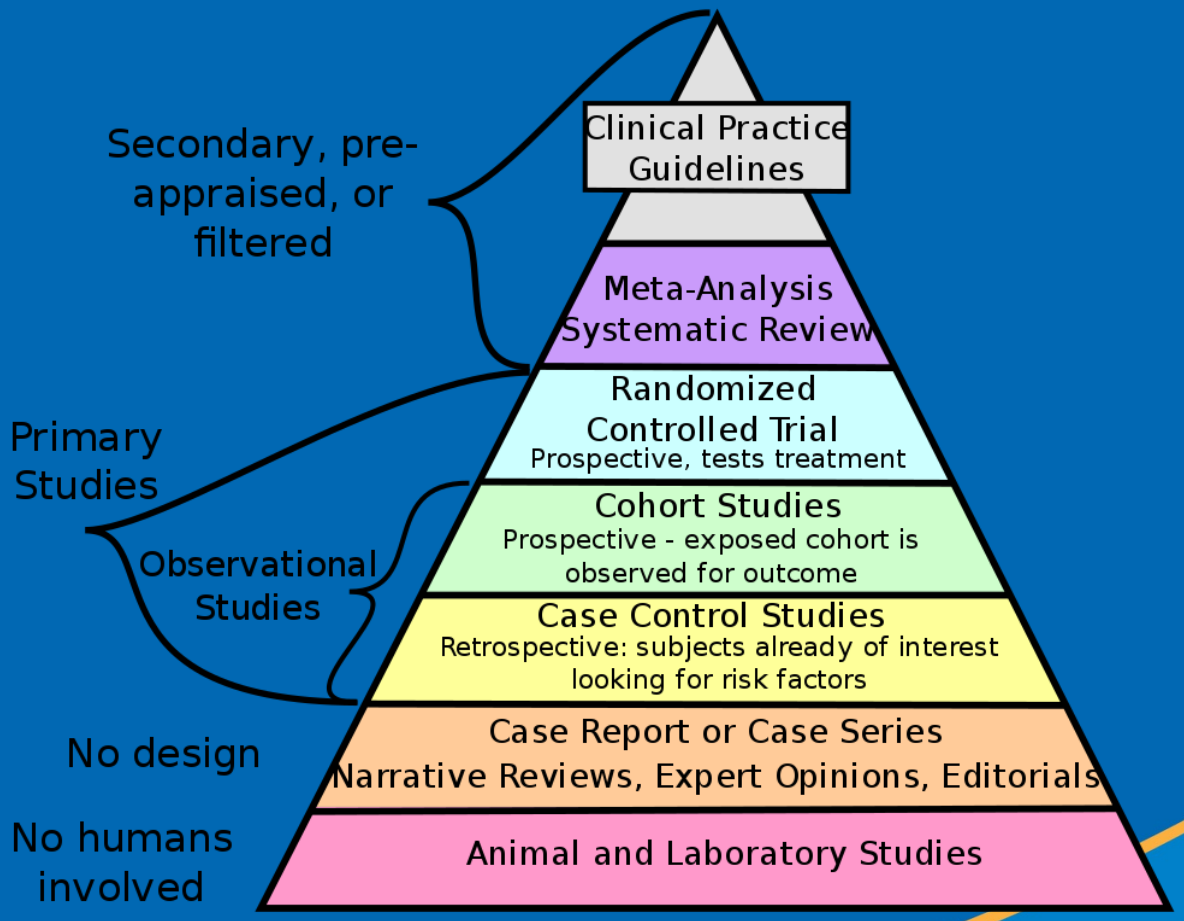
- Literature Search
- Agree II Principles
- Environment San
- Focus Groups

Content Development and Prototyping

- Usability Interviews and Application

Dissemination and Evaluation

What is the Evidence ?



Who are the Guideline Experts ?

Guideline Based Knowledge Translation

- American College of Rheumatology (ACR)
  - www.rheumatology.org
- Osteoarthritis Research Society International (OARSI)
  - www.oarsi.org
- European League Against Rheumatism (EULAR)
  - www.eular.org
- Health Quality Ontario, New Standards
- British Columbia, General Practice Services Committee, Practice Support Program
  - www.bcguidelines.ca

American College of Rheumatology - 2012 Pharmacologic/ Non-Pharmacologic - Hip and Knee

Non-Pharmacological

- Exercise (aerobic, aquatic, resistance)
- Tai chi
- Weight Loss
- Alignment assistance
- Walking aids
- Heat
- Self Management
- Psychosocial Support
- Physical Modalities

Pharmacological

- 1st Line
  - Acetaminophen/ NSAID's/ Cortisone Injection/ Tramadol
- 2nd Line
  - Duloxetine/ Hyaluronate injections
- Failed Medical or Medically Non-Surgical
  - Opioids

Let's not forget the hand

- Joint Protection
- Splints/ Supports
- Heat
- NSAID's- Oral/Topical
- Tramadol
- Capsaicin
- Cortisone Injections Not recommended

2014 – Knee Non-Surgical

- OARSI guidelines for the non-surgical management of knee osteoarthritis
- Recommended
  - Emergence of Duloxetine 2nd line
- Inconclusive
  - Opioids
  - Tramadol
- Not Recommended
  - Electrical Modalities
  - Risedronate

Evidence-based treatment for knee OA does not include arthroscopy

Arthroscopic knee debridement or meniscal surgery **should not be performed** for people with radiographic osteoarthritis (including patellofemoral osteoarthritis).

Arthroscopic knee lavage is not an acceptable treatment.

Health Quality Ontario; Ministry of Health and Long-Term Care. Quality-based procedures: Clinical handbook for knee arthroscopy. Toronto: Health Quality Ontario; 2018 July. 69 p. Available from: http://www.health.gov.on.ca/en/pro/programs/ecfa/funding/hs_funding_qbp.aspx

Arthroscopy Association of Canada Position Statement Concerning Arthroscopy of the Knee Joint (2017) http://coa-aco.org/wp-content/uploads/2017/09/AAC-position-statement-Knee-Arthroscopy-2017Sept.pdf

Siemieniuk et al. BMJ 2017: Arthroscopic surgery for degenerative knee arthritis and meniscal tears: a clinical practice guideline https://www.bmj.com/content/357/bmj.j1982

Choosing Wisely Canada: Top 10 Things Orthopaedic Surgeons Should Question (2018)

OARSI.org
Osteoarthritis Research Society International

A systematic review of recommendations and guidelines for the management of osteoarthritis: The Chronic Osteoarthritis Management Initiative of the U.S. Bone and Joint Initiative (2014)

- Recommended:
  - Education/ Self Management/ Exercise/ Weight Loss, Canes, Heat
  - Acetaminophen/ NSAIDS – Topical/Oral / Cortisone Injection(Hip/ Knee)
  - Joint Replacement
- Inconclusive
  - Acupuncture, Knee Braces, Heel Wedges, Intra Articular Hyaluronans, Glucosamine/ Chondroitin
- Not Recommended
  - Arthroscopy with Debridement

EULAR – 2017 Recommendations

European League Against Rheumatism

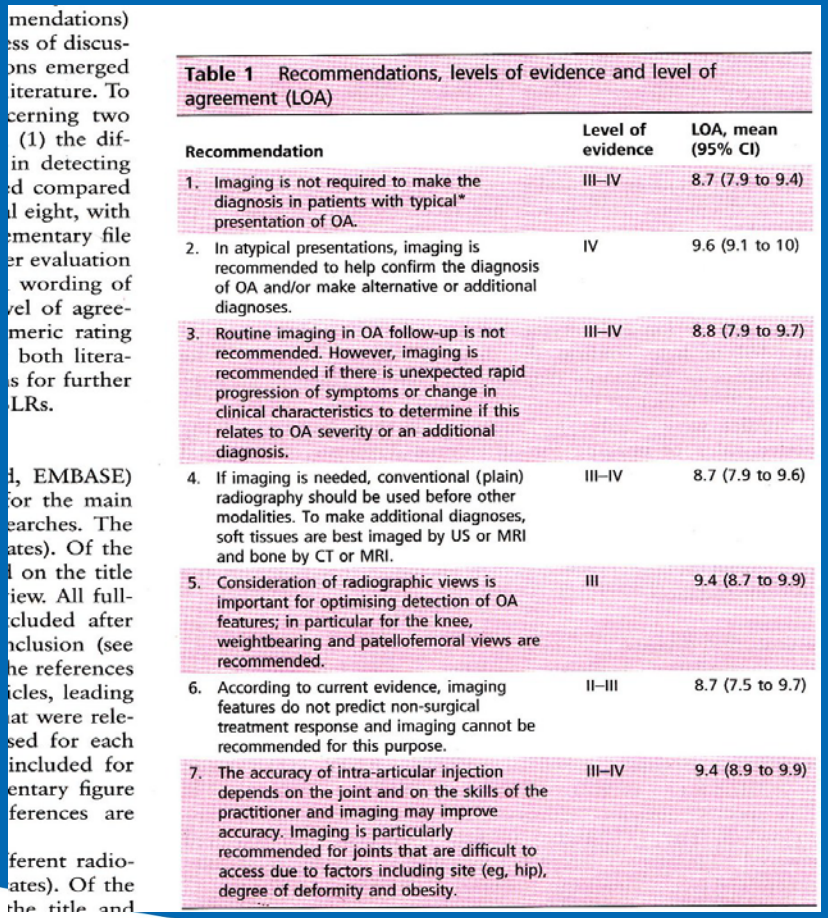


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Table 1 Recommendations, levels of evidence and level of agreement (LOA)

Recommendation	Level of evidence	LOA, mean (95% CI)
1. Imaging is not required to make the diagnosis in patients with typical* presentation of OA.	III–IV	8.7 (7.9 to 9.4)
2. In atypical presentations, imaging is recommended to help confirm the diagnosis of OA and/or make alternative or additional diagnoses.	IV	9.6 (9.1 to 10)
3. Routine imaging in OA follow-up is not recommended. However, imaging is recommended if there is unexpected rapid progression of symptoms or change in clinical characteristics to determine if this relates to OA severity or an additional diagnosis.	III–IV	8.8 (7.9 to 9.7)
4. If imaging is needed, conventional (plain) radiography should be used before other modalities. To make additional diagnoses, soft tissues are best imaged by US or MRI and bone by CT or MRI.	III–IV	8.7 (7.9 to 9.6)
5. Consideration of radiographic views is important for optimising detection of OA features; in particular for the knee, weightbearing and patellofemoral views are recommended.	III	9.4 (8.7 to 9.9)
6. According to current evidence, imaging features do not predict non-surgical treatment response and imaging cannot be recommended for this purpose.	II–III	8.7 (7.5 to 9.7)
7. The accuracy of intra-articular injection depends on the joint and on the skills of the practitioner and imaging may improve accuracy. Imaging is particularly recommended for joints that are difficult to access due to factors including site (eg, hip), degree of deformity and obesity.	III–IV	9.4 (8.9 to 9.9)

Clinical Interpretation

- Imaging is only indicated in atypical presentations or aggressive progression
- X-ray image is ideal for bone, weight-bearing views for knees
- US/MRI for soft tissue diagnosis
- US guided injections for complex presentations

GUIDELINES & PROTOCOLS
ADVISORY COMMITTEE

Ministry of Health Services

SUMMARY OF GUIDELINE

Effective Date: September 15, 2008

Osteoarthritis in Peripheral Joints – Diagnosis and Treatment

For full Guideline please go to website: http://www.BCGuidelines.ca

DIAGNOSIS

- OA is a clinical diagnosis
- Consider history, physical exam, exclusion of other diagnoses and impact of disease
- Early diagnosis is important for modifiable factors (weight loss, exercise programs and self-management)

INVESTIGATIONS

- No test is reliable for diagnosis
- X-rays may indicate OA, but may not relate to symptoms
- X-rays are generally not useful except for alternate diagnosis or orthopaedic referral
- When x-rays are necessary, specify they are for OA*
- Lab tests do not diagnose OA and are used mainly to monitor medications
- Joint aspirations may be used to rule out other conditions

MANAGEMENT

Patient education
- Explain OA as a chronic disease process
- Encourage self management & provide resources
- Encourage weight loss and diet plan if needed

Rehabilitation
- Recommend exercise programs (ROM, strengthening & aerobic) with joint protection
- Recommend assistive devices when needed

Medications
- There is no evidence that NSAIDs alter the natural course of arthritis. They provide symptom relief but are associated with some risks (GI & CV). Avoid long-term daily NSAID therapy
- Begin with monotherapy PRN and add/substitute medications depending on response and side effects
- Mild or moderate symptoms:
  - Acetaminophen max 4 g/day (lower dose where there is liver disease, alcohol abuse and for the elderly)
  - NSAIDS/Cox-2 inhibitors. Match adverse effects with patient history. Avoid long term daily use
  - Consider risks and benefits of gastroprotection
  - Joint aspiration and/or hyaluronic acid injections
  - Topicals (capsaicin or NSAIDs)
- Severe symptoms:
  - Use combination therapy as above and reassess
  - Intra-articular corticosteroid injections
  - In complex or difficult cases, consider referral to a rheumatologist for assistance with medication and analgesia titration, complex aspiration/injection procedures, and/or corticosteroid or hyaluronic acid injections

Indications for Referral:
- Internist or Rheumatologist – for red flag conditions, complex/difficult cases, complications
- PT– for assessment and specific exercise recommendations
- OT– for assistive devices and home or work adaptations
- Dietician – for weight management
- Orthopaedic Surgeon – failure of non-operative program, increasing function restrictions, significant abnormal findings on exam, progression of disease on x-ray, considering use of opiates & intra-articular injections. The indications for arthroscopic knee surgery in patients with OA are similar to patients without arthritis.

Follow-up regularly and coordinate care

* Indicate that the x-rays are for OA – For knees they must include standing AP, lateral, and skyline. For hip, specify OA hip series including lateral view of the affected hip and upper 1/3 of femur.

OVER →

Quality Statements in brief

QUALITY STATEMENT 1:
Clinical Assessment for Diagnosis

People who have persistent, atraumatic, movement-related joint pain or aching, and/or morning stiffness lasting less than 30 minutes, are diagnosed with osteoarthritis based on clinical assessment. Radiological imaging is not required to make a diagnosis in people aged 40 years or older if their symptoms are typical of osteoarthritis.

QUALITY STATEMENT 2:
Comprehensive Assessment to Inform the Care Plan

People who have been diagnosed with osteoarthritis receive a comprehensive assessment of their needs to inform the development of their care plan.

QUALITY STATEMENT 3:
Patient Education

People with osteoarthritis are offered education to facilitate a self-management plan. This education is provided in accessible formats.

QUALITY STATEMENT 4:
Patient Self-Management Plan

People with osteoarthritis are supported to develop an individualized, goal-oriented self-management plan that evolves to address ongoing symptom management and access to resources and supports.

QUALITY STATEMENT 5:
Therapeutic Exercise

People with hip or knee osteoarthritis are strongly encouraged to participate in progressive neuromuscular training, muscle strengthening, and aerobic exercise of sufficient frequency, intensity, and duration to maintain or improve joint health and physical fitness.

QUALITY STATEMENT 6:
Physical Activity

People with osteoarthritis are strongly encouraged to optimize their physical activity and minimize sedentary activity, and are offered information and support to help them toward these goals.

Quality Statements in brief

QUALITY STATEMENT 7:
Weight Management

People with osteoarthritis who are overweight or obese are offered patient-centred weight-management strategies, and people at a normal weight are encouraged to maintain their weight.

QUALITY STATEMENT 8:
Pharmacological Symptom Management

People with symptomatic osteoarthritis are offered pain-relieving medication options when nonpharmacological treatments are insufficient to control their symptoms.

QUALITY STATEMENT 9:
Referral to a Health Care Professional with Additional Skills in Osteoarthritis Management

People with osteoarthritis, when clinically indicated, are referred by their primary care provider to a health care professional with additional skills in osteoarthritis management.

QUALITY STATEMENT 10:
Referral for Consideration of Joint Surgery

People with osteoarthritis whose symptoms are not sufficiently controlled through nonsurgical management and whose quality of life is negatively impacted by their joint-related symptoms should be referred for consideration of joint surgery.

What are the gaps?

2. Identification of Clinical Gaps
    - Common approach for multiple joints
    - Clinical Approach for office based practice
    - Integration of Patient Key Messages
    - Evidence based management approach
    - How do we stages without imaging
    - What are the Non-pharm interventions

Questions

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The OA Tool - Practice Principles

Focus on Hand, Hip and Knee

Use Non-Pharmacological and Pharmacological Approach

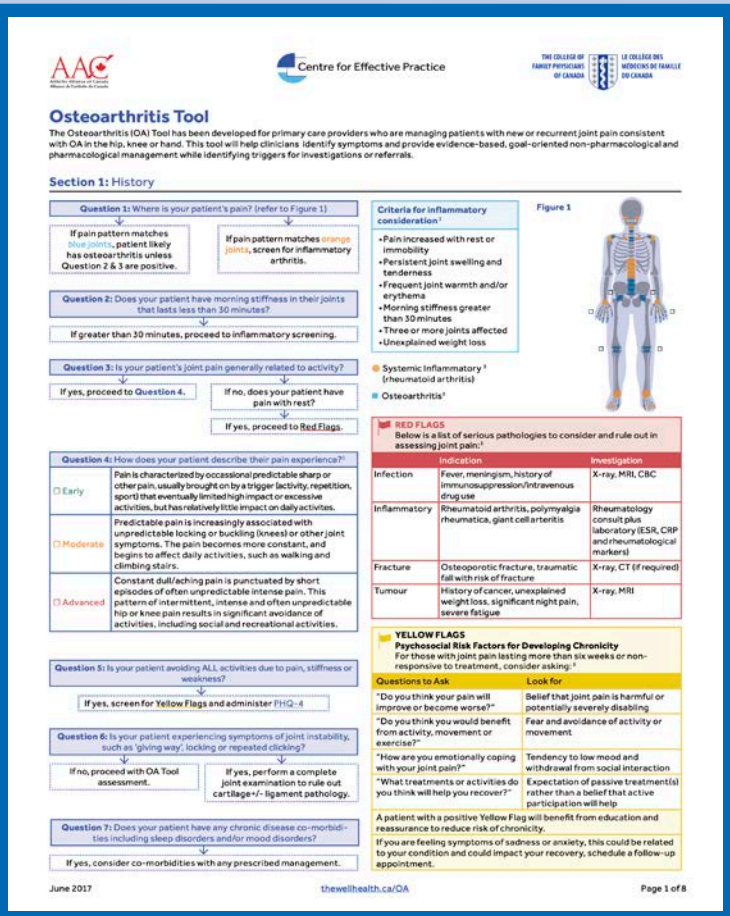
Diagnostic approach based on **clinical staging** of signs and symptoms

Evidence informed treatment is based on **Education and Exercise**

Comprehensive approach to whole person chronic disease

Integrated Key messages for Provider and Patient

Where to find it



Centre for Effective Practice

Osteoarthritis Tool

The Osteoarthritis (OA) Tool has been developed for primary care providers who are managing patients with new or recurrent joint pain consistent with OA in the hip, knee or hand. This tool will help clinicians identify symptoms and provide evidence-based, goal-oriented non-pharmacological and pharmacological management while identifying triggers for investigations or referrals.

Section 1: History

Question 1: Where is your patient's pain? (refer to Figure 1)

- If pain pattern matches blue joints, patient likely has osteoarthritis unless Question 2 & 3 are positive.
- If pain pattern matches orange joints, screen for inflammatory arthritis.

Question 2: Does your patient have morning stiffness in their joints that lasts less than 30 minutes?

- If greater than 30 minutes, proceed to inflammatory screening.

Question 3: Is your patient's joint pain generally related to activity?

- If yes, proceed to Question 4.
- If no, does your patient have pain with rest?
  - If yes, proceed to Red Flags.

Question 4: How does your patient describe their pain experience?[2]

☐ Early	Pain is characterized by occassional predictable sharp or other pain, usually brought on by a trigger (activity, repetition, sport) that eventually limited high impact or excessive activities, but has relatively little impact on daily activites.
☐ Moderate	Predictable pain is increasingly associated with unpredictable locking or buckling (knees) or other joint symptoms. The pain becomes more constant, and begins to affect daily activities, such as walking and climbing stairs.
☐ Advanced	Constant dull/aching pain is punctuated by short episodes of often unpredictable intense pain. This pattern of intermittent, intense and often unpredictable hip or knee pain results in significant avoidance of activities, including social and recreational activities.

Question 5: Is your patient avoiding ALL activities due to pain, stiffness or weakness?

- If yes, screen for Yellow Flags and administer PHQ-4

Question 6: Is your patient experiencing symptoms of joint instability, such as 'giving way', locking or repeated clicking?

- If no, proceed with OA Tool assessment.
- If yes, perform a complete joint examination to rule out cartilage+/- ligament pathology.

Question 7: Does your patient have any chronic disease co-morbidities including sleep disorders and/or mood disorders?

- If yes, consider co-morbidities with any prescribed management.

Criteria for inflammatory consideration[1]

- Pain increased with rest or immobility
- Persistent joint swelling and tenderness
- Frequent joint warmth and/or erythema
- Morning stiffness greater than 30 minutes
- Three or more joints affected
- Unexplained weight loss

Figure 1

- Systemic Inflammatory [3] (rheumatoid arthritis)
- Osteoarthritis[3]

RED FLAGS

Below is a list of serious pathologies to consider and rule out in assessing joint pain:[1]

	Indication	Investigation
Infection	Fever, meningism, history of immunosuppression/intravenous drug use	X-ray, MRI, CBC
Inflammatory	Rheumatoid arthritis, polymyalgia rheumatica, giant cell arteritis	Rheumatology consult plus laboratory (ESR, CRP and rheumatological markers)
Fracture	Osteoporotic fracture, traumatic fall with risk of fracture	X-ray, CT (if required)
Tumour	History of cancer, unexplained weight loss, significant night pain, severe fatigue	X-ray, MRI

YELLOW FLAGS

Psychosocial Risk Factors for Developing Chronicity

For those with joint pain lasting more than six weeks or non-responsive to treatment, consider asking:[2]

Questions to Ask	Look for
"Do you think your pain will improve or become worse?"	Belief that joint pain is harmful or potentially severely disabling
"Do you think you would benefit from activity, movement or exercise?"	Fear and avoidance of activity or movement
"How are you emotionally coping with your joint pain?"	Tendency to low mood and withdrawal from social interaction
"What treatments or activities do you think will help you recover?"	Expectation of passive treatment(s) rather than a belief that active participation will help

A patient with a positive Yellow Flag will benefit from education and reassurance to reduce risk of chronicity.

If you are feeling symptoms of sadness or anxiety, this could be related to your condition and could impact your recovery, schedule a follow-up appointment.

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Centre for Effective Practice
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Arthritis Alliance of Canada
www.aac.org

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The Osteoarthritis Tool: Algorithm

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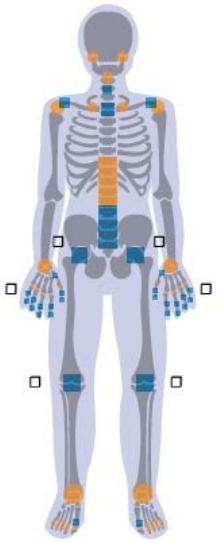

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The Osteoarthritis Tool: Algorithm

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The Osteoarthritis Tool: Algorithm

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↓

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↓

If no, proceed with OA Tool assessment.

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↓

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YELLOW FLAGS
Psychosocial Risk Factors for Developing Chronicity
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If you are feeling symptoms of sadness or anxiety, this could be related to your condition and could impact your recovery, schedule a follow-up appointment.	

Considering the Alternatives

And all other common musculoskeletal conditions like mechanical back pain, patello-femoral syndrome, rotator cuff injuries, trochanteric bursitis, and others.

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- If no, proceed with OA Tool assessment.
- If yes, perform a complete joint examination to rule out cartilage+/- ligament pathology.

Squeeze Test for Multiple Joint Pain[10]

If painful, consider multiple joint etiology.

Criteria for inflammatory consideration[2]

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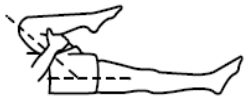
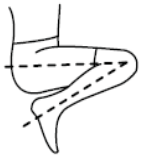
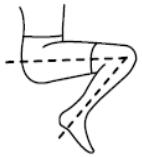
- Persistent joint swelling and tenderness
- Frequent joint warmth and/or erythema
- Morning stiffness greater than 30 minutes
- Three or more joints affected
- Unexplained weight loss

Meniscus Testing: Use the Thessaly Test[9]

- Screen for discrete meniscal pathology, may change management
- A positive test is indicated by reports of pain on the joint line or by joint locking or catching
- If positive do a full meniscal testing and imaging
- The Thessaly test has higher sensitivity and specificity compared to the sensitivity and specificity of the Apley's test when assessing for meniscal tears

Hip and Knee Physical Exam

Function & Strength: Sit to Stand Test[7]		
		
Early: Able to complete greater than 15 repetitions in 30 seconds	Moderate: Able to complete one to three repetitions in 30 seconds	Advanced: Unable to complete one repetition where neurological and cardiac function are normal
Hip Flexion		
		
Early: > 115 degrees	Moderate: > 90-115 degrees	Advanced: < 90 degrees
Hip Internal Rotation[8]		
		
Early: Normal range with pain	Moderate: 5-10 degrees	Advanced: Neutral position
Knee Flexion Knee flexion can be assessed sitting, standing or laying. Patella joint pain is best assessed in the standing quarter flexion		
		
Early: > 115 degrees	Moderate: > 90-115 degrees	Advanced: < 90 degrees

Hand Examination

B. HAND EXAMINATION

Function & Strength: Grip & Pinch[10]

Grip

Pinch

Score	Muscle Response	Score Grip	Score Pinch	Osteoarthritis Stage
5	**Maximum muscle contraction** **Grip:** Examiner cannot pull thumb away from patient grip **Pinch:** Examiner unable to separate thumb pinch position			Normal to early
4	**Good muscle contraction** **Grip:** Examiner can partially slide thumb from patient grip **Pinch:** Examiner can partially separate thumb pinch position			Early to moderate
3	**Moderate muscle contraction** **Grip:** Examiner can slide thumb from patient squeeze **Pinch:** Examiner can separate thumb pinch positions			Moderate
2	**Weak muscle contraction** **Grip:** Patient unable to fully squeeze examiner's thumb **Pinch:** Patient unable to hold a circular position between thumb and finger			Advanced
1	**Flicker of activity**			Not consistent with osteoarthritis
0	**No muscle contraction**			Not consistent with osteoarthritis

If painful, consider multiple joint etiology.

Positive: Pain with ulnar deviation of the wrist
If positive, treat specifically and consider association with inflammatory arthritis.

Negative: No pain with ulnar deviation
If negative, proceed with osteoarthritis management.

Imaging of Affected Joints

Imaging
Has your patient had previous x-rays or MRI of the affected joints?

☐ Yes	
Date:	**Results:**
Imaging Type:	

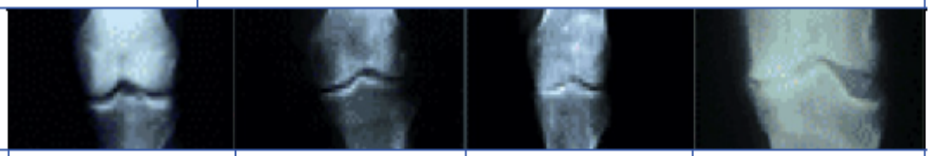
☐ Advanced

Consider x-ray in the following circumstance
- Failure to respond to evidence based management over 12 week period
- Referral to rheumatology or orthopedic surgery

Kellgren and Lawrence Radiographic Criteria for Assessment of OA*[22]

Correlation between clinical diagnosis and radiological staging may be useful when patients are not responding to treatment or potential surgical planning is required.

Mild/Early – Normal Joint space with definite osteophyte formation
Moderate/ Mid – Moderate joint space reduction/ moderate multiple osteophytes
Advanced/Severe – Joint space greatly reduced, subchondral sclerosis, large osteophytes, deformity of bone ends.



Radiographic grade	0	I	II	III	IV
Classification	Normal	Doubtful	Mild	Moderate	Severe
Description	No features of OA	Minute osteophyte; doubtful significance	Definite osteophyte: normal joint space	Moderate joint-space reduction	Joint space greatly reduced; subchondral sclerosis

*Radiography does not reliably correlate with symptoms

When to refer

	Referral

Outpatient Rehabilitation Provider	• Any one of the following:
	  • Absence of red flags
	  • Patient whose medical pain management has been optimized to be able to engage in active exercises
	  • Patient who is open to implementing new information and/or strategies into their management program (e.g., goal setting, self-management focus)

Sport & Exercise Medicine Physician	• Patients who require a complete assessment to evaluate musculoskeletal pathology • Patients who need an assessment of exercise capacity and recommendations • Patients who require an integrated rehabilitation strategy including pain management
Pain Specialist	• High constant pain levels that interfere with activities and function • Presence of Yellow Flags • Patient who identifies active goals for treatment and self-management • Patient who is open to implementing new information into their management program • Patient who is on escalating / high doses of pain medications (e.g., opioids)
Rheumatologist	• Patients at risk for inflammatory arthritis • Small and large joint polyarthritis symptoms • Systemic symptoms (weight loss, fatigue) • Non-articular features such as rash, inflammatory bowel disease, or psoriasis
Orthopaedic Surgeon	• Patients with escalating pain medication and/or reduced effectiveness of pain management • Patient with significant reduction of joint mobility impacting activities of daily living and quality of life. • Failure of a 12-week compliant evidence-based treatment program

Management Matrix
Non-Pharmacological/ Pharmacological

Hip/ Knee

Recommended

- Exercise – Neuromuscular, Cardio
- Walking Aids
- Joint Protection
- Thermal Therapy
- Analgesics + Duloxetine

Not Recommended

- Capaiscin, glucosoamine, chrondritin

Inconclusive

- Intra-articular PRP, Stem Cells, Hyaluronates
- Topical NSAID for Hip

Hand

Recommended

- Heat, Exercise and Joint Protection
- Topical NSAID's
- Capaiscin
- Analgesics
- Oral NSAID's

Not Recommended

- Intra-articular Injections for Hand OA

Inconclusive

- Intra-articular PRP, Stem Cells, Hyaluronates
- Topical NSAID for Hip

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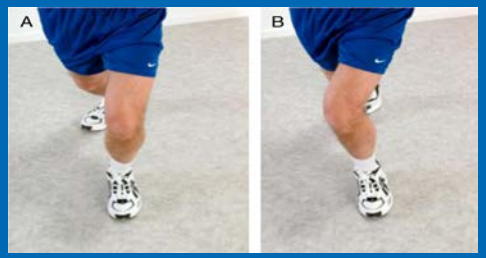
Options for Exercise

- Strength Training
- Aerobic Conditioning
- Stretching/flexibility
- Range of motion
- Neuromuscular exercise
- Mindful Movement
  - Yoga
  - Tai Chi
  - Qi Gong
- Structured Physical Activity
- Aquatic Exercise/Hydrotherapy



Exercise-what does the evidence say?

Exercise type	Evidence	Source
Land based exercise	• Land based exercises can decrease pain and improve function	(Fransen & McConnell, 2014; Fransen & McConnell, 2015)
Hydrotherapy/Aquatic	• Aquatic exercise offers short term benefit for hip and knee OA, long term effects have not been documented	(Bartels et al 2007; Waller et al 2014; Bartels et al, 2016)
Aerobic Resistance training Dynamic programs	• Aerobic walking reduces pain & disability in knee OA • Resistance training is safe & effective in OA • Combining strengthening, flexibility and aerobic are most likely to improve pain and function in OA	(Roddy et al 2005) (Regnaux et al 2015) (Uthman et al 2014)
Neuromuscular	• As effective as traditionally used strength or aerobic exercise for people with degenerative knee disease • GLA:D program has had significant impact on patient symptoms, function, intake of painkillers, sick leave for people with osteoarthritis, results maintained at one year	(Ageberg et al, 2015) (Skou et al, 2017)
Yoga Tai Chi	• Yoga- recommendations for improving pain & disability are weak in some studies on OA • Tai Chi is effective for pain reduction in knee OA	(Cramer et al, 2013) (Ye et al, 2014)

GLA:D™ CANADA

Good Life with osteoArthritis: Denmark
Adapted for Canada

Consists of 3 parts

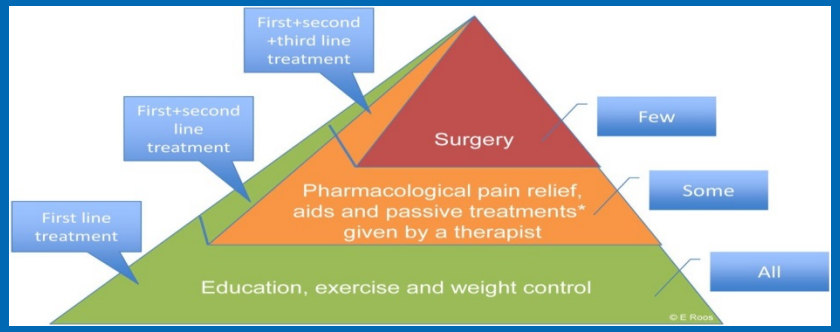
1) 2 Education sessions
2) 12 individually tailored NEuroMuscular Exercise (**NEMEX**) in a group setting
3) Database collects patient outcomes at baseline, 3 and 12months (quality monitoring)

For anyone who has a chief complaint of hip/knee osteoarthritis, or who is experiencing symptoms of hip/knee osteoarthritis.

In Denmark, over 25,000 people have access the program. Results show a 27% reduction in pain, 30% increase in self-reported physical activity levels, and reduced use of pain medication and days on sick leave.

(GLA:D® was piloted in Canada showing very similar results)

For more information, visit: www.gladcanada.ca www.glaid.dk



Roos and Juhl. Osteoarthritis and Cartilage, 2012

Canadian Orthopaedic Foundation

BONE and JOINT CANADA

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Questions

Clinical Decision Making

- Danielle is a 66-year-old woman who would like a cortisone injection for her right knee pain.
- Her previous doctor has retired and about 3 years but she did benefit from a cortisone injection for knee pain that had bothered her for 6 months. The cortisone lasted for at least a year and she has been managing with acetaminophen arthritis and some heat occasionally.

Applying the Evidence

1. What other related questions would you ask her?
2. Would you do any imaging?
3. Why pharmacological agents would you use for pain?

What other related questions would you ask her?

Red Flags – Yellow Flags

Question 4: How does your patient describe their pain experience?[1]	
☐ Early	Pain is characterized by occassional predictable sharp or other pain, usually brought on by a trigger (activity, repetition, sport) that eventually limited high impact or excessive activities, but has relatively little impact on daily activites.
☐ Moderate	Predictable pain is increasingly associated with unpredictable locking or buckling (knees) or other joint symptoms. The pain becomes more constant, and begins to affect daily activities, such as walking and climbing stairs.
☐ Advanced	Constant dull/aching pain is punctuated by short episodes of often unpredictable intense pain. This pattern of intermittent, intense and often unpredictable hip or knee pain results in significant avoidance of activities, including social and recreational activities.

Question 5: Is your patient avoiding ALL activities due to pain, stiffness or weakness?

↓

If yes, screen for Yellow Flags and administer PHQ-4

Question 6: Is your patient experiencing symptoms of joint instability, such as 'giving way', locking or repeated clicking?

↓

If no, proceed with OA Tool assessment.

If yes, perform a complete joint examination to rule out cartilage+/- ligament pathology.

Question 7: Does your patient have any chronic disease co-morbidities including sleep disorders and/or mood disorders?

↓

If yes, consider co-morbidities with any prescribed management.

	Indication	Investigation
Infection	Fever, meningism, history of immunosuppression/intravenous drug use	X-ray, MRI, CBC
Inflammatory	Rheumatoid arthritis, polymyalgia rheumatica, giant cell arteritis	Rheumatology consult plus laboratory (ESR, CRP and rheumatological markers)
Fracture	Osteoporotic fracture, traumatic fall with risk of fracture	X-ray, CT (if required)
Tumour	History of cancer, unexplained weight loss, significant night pain, severe fatigue	X-ray, MRI

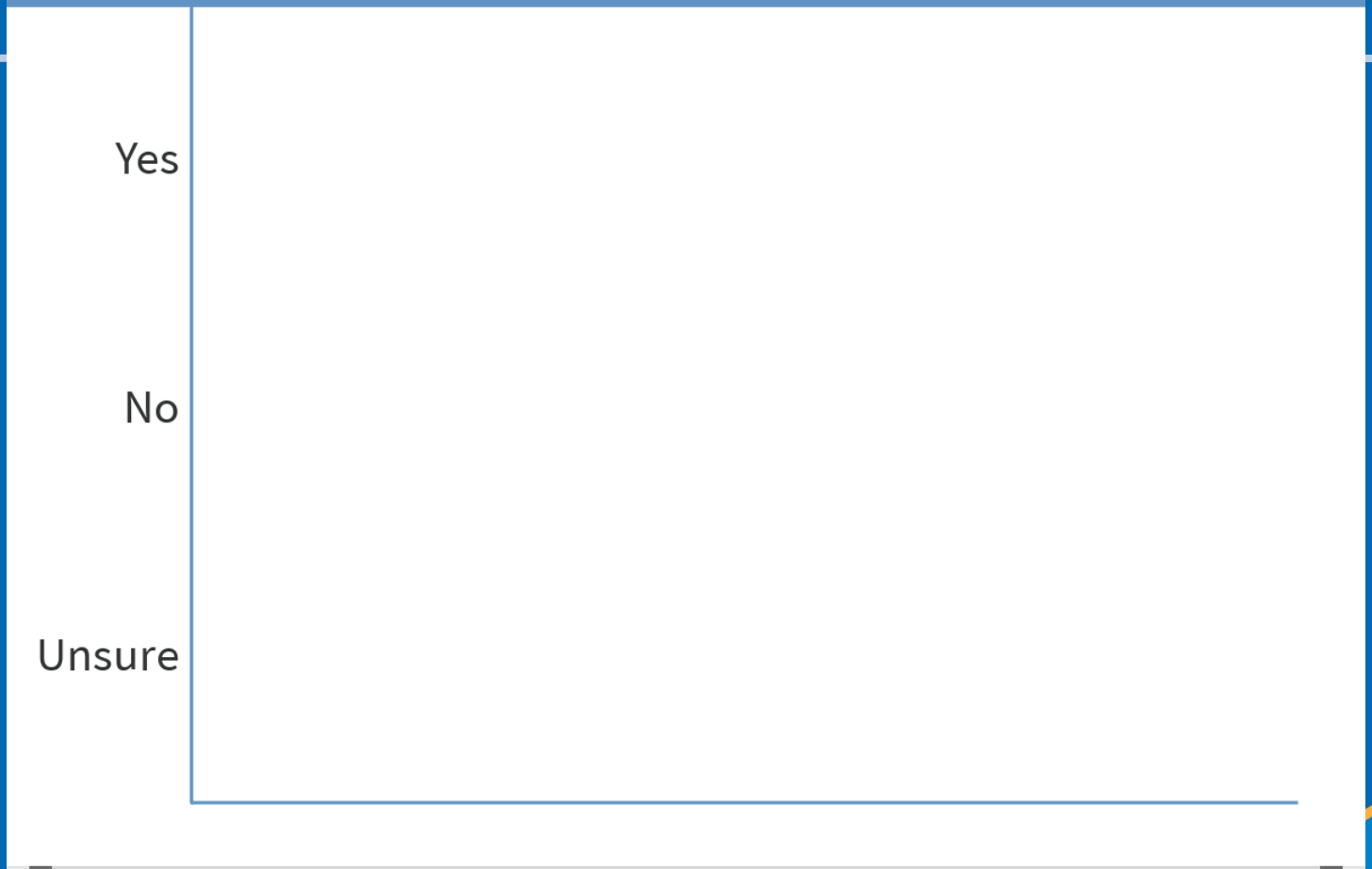
YELLOW FLAGS

Psychosocial Risk Factors for Developing Chronicity

For those with joint pain lasting more than six weeks or non-responsive to treatment, consider asking:[5]

Questions to Ask	Look for
"Do you think your pain will improve or become worse?"	Belief that joint pain is harmful or potentially severely disabling
"Do you think you would benefit from activity, movement or exercise?"	Fear and avoidance of activity or movement
"How are you emotionally coping with your joint pain?"	Tendency to low mood and withdrawal from social interaction
"What treatments or activities do you think will help you recover?"	Expectation of passive treatment(s) rather than a belief that active participation will help
A patient with a positive Yellow Flag will benefit from education and reassurance to reduce risk of chronicity.	
If you are feeling symptoms of sadness or anxiety, this could be related to your condition and could impact your recovery, schedule a follow-up appointment.	

Would you do any imaging?



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EULAR – 2017 Recommendations

European League Against Rheumatism

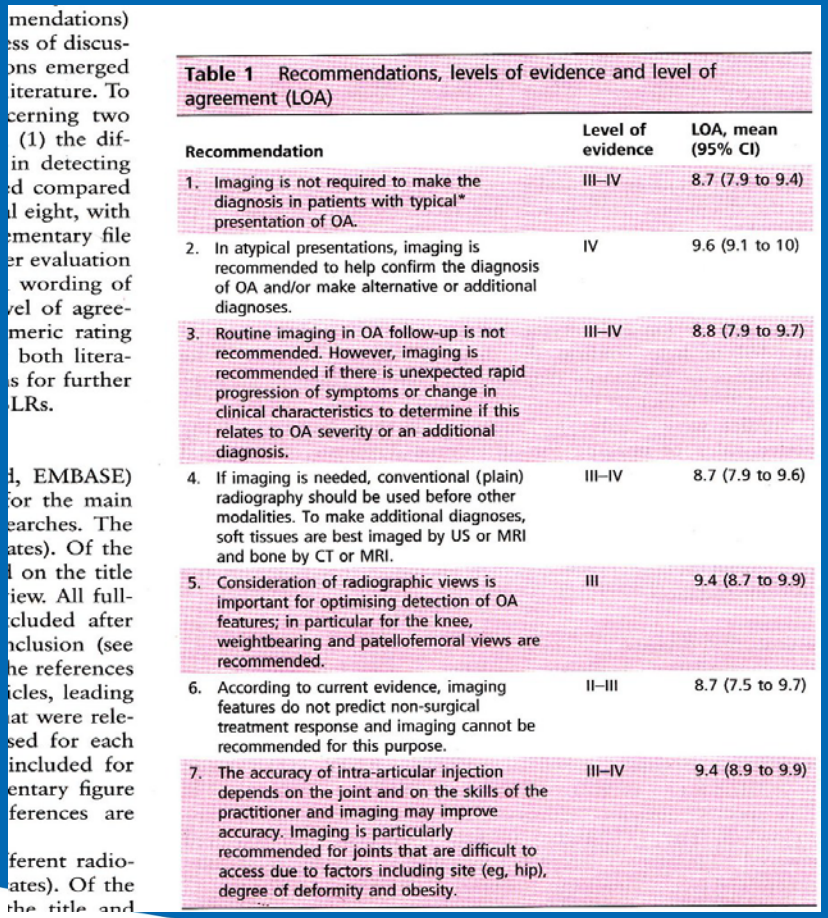

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Table 1 Recommendations, levels of evidence and level of agreement (LOA)

Recommendation	Level of evidence	LOA, mean (95% CI)
1. Imaging is not required to make the diagnosis in patients with typical* presentation of OA.	III–IV	8.7 (7.9 to 9.4)
2. In atypical presentations, imaging is recommended to help confirm the diagnosis of OA and/or make alternative or additional diagnoses.	IV	9.6 (9.1 to 10)
3. Routine imaging in OA follow-up is not recommended. However, imaging is recommended if there is unexpected rapid progression of symptoms or change in clinical characteristics to determine if this relates to OA severity or an additional diagnosis.	III–IV	8.8 (7.9 to 9.7)
4. If imaging is needed, conventional (plain) radiography should be used before other modalities. To make additional diagnoses, soft tissues are best imaged by US or MRI and bone by CT or MRI.	III–IV	8.7 (7.9 to 9.6)
5. Consideration of radiographic views is important for optimising detection of OA features; in particular for the knee, weightbearing and patellofemoral views are recommended.	III	9.4 (8.7 to 9.9)
6. According to current evidence, imaging features do not predict non-surgical treatment response and imaging cannot be recommended for this purpose.	II–III	8.7 (7.5 to 9.7)
7. The accuracy of intra-articular injection depends on the joint and on the skills of the practitioner and imaging may improve accuracy. Imaging is particularly recommended for joints that are difficult to access due to factors including site (eg, hip), degree of deformity and obesity.	III–IV	9.4 (8.9 to 9.9)

Clinical Interpretation

- Imaging is only indicated in atypical presentations or aggressive progression
- X-ray image is ideal for bone, weight-bearing views for knees
- US/MRI for soft tissue diagnosis
- US guided injections for complex presentations

What pharmacological agents would you use for pain?

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Medications

- **Oral NSAIDS**
  - Oral NSAIDs help ~60% but cause adverse events in ~ 20%. They are generally preferred vs acetaminophen.
- **Topical NSAID**
  - Effective as Oral NSAIDs (on hand/knee) with lower risks.
- **Steroid Injection**
  - Steroids are among the most effective therapy for 4 weeks of pain relief with little identified harms.

Danielle… Retired Accountant

- Over the last 3 months, she has noticed intermittent swelling accompanied by aching and occasional swelling that occurs towards the end of the day and is located at the anterior knee.

- She has not noticed any giving way, locking or buckling. knee is weak and she can't trust it so she holds onto railing and on a bad day.

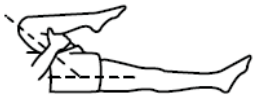
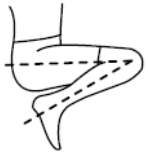
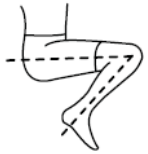
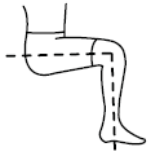
- She was previously an avid skier and runner but now her activity is a daily walk with her dog for about 15 minutes. She recalls having a bad right knee injury that was a ski accident that occurred in her early twenties. She recalls seeing a doctor in the emergency room and going for some physio for a few months.

What Stage of OA ?

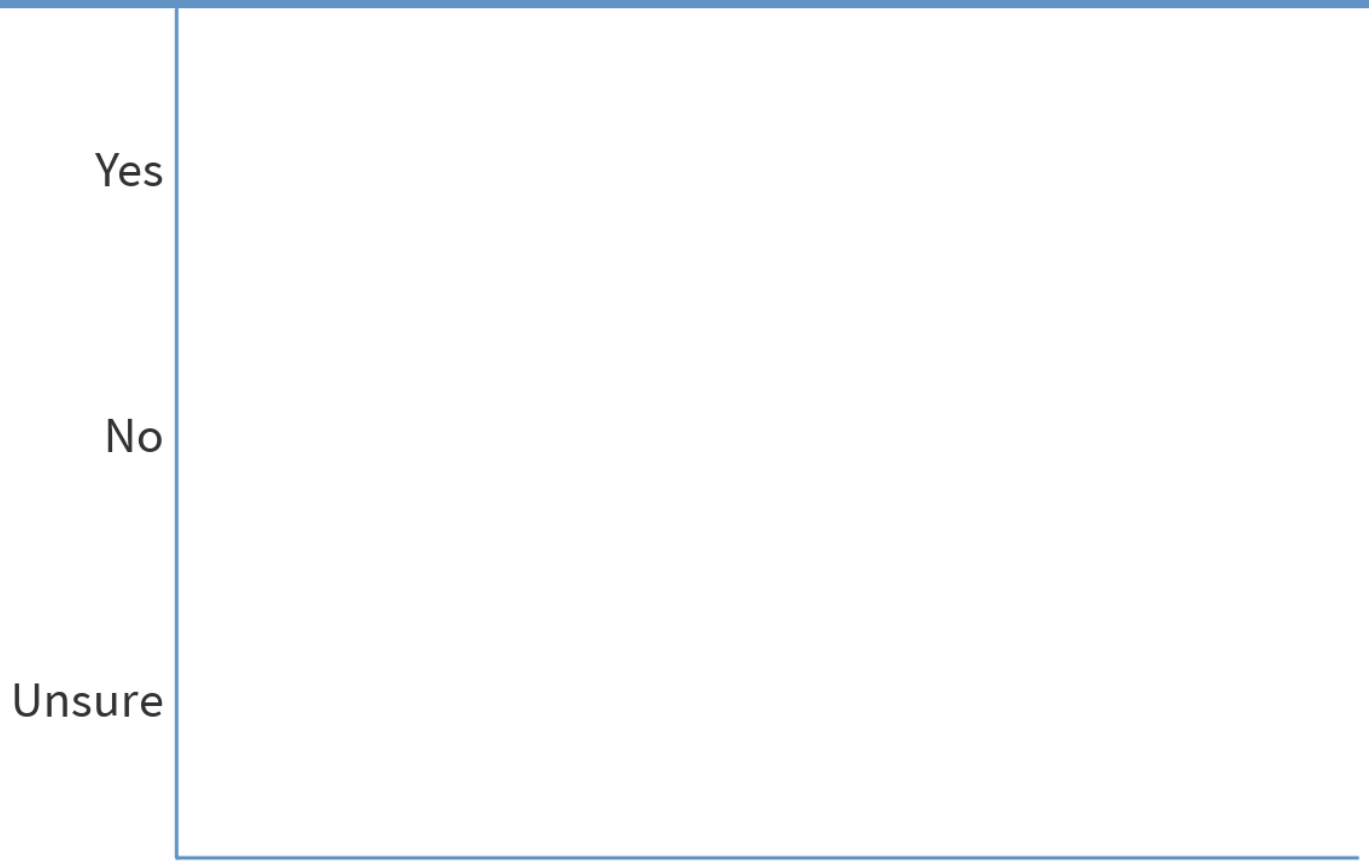
1. What stage is she symptomatic for?
2. Do you need more information?
3. What examination findings do you expect?
4. What non-pharmacological management could you offer?

What stage of OA is she symptomatic for?

What Stage is She?

Function & Strength: Sit to Stand Test[7]		
		
Early: Able to complete greater than 15 repetitions in 30 seconds	Moderate: Able to complete one to three repetitions in 30 seconds	Advanced: Unable to complete one repetition where neurological and cardiac function are normal
Hip Flexion		
		
Early: > 115 degrees	Moderate: > 90-115 degrees	Advanced: < 90 degrees
Hip Internal Rotation[8]		
		
Early: Normal range with pain	Moderate: 5-10 degrees	Advanced: Neutral position
Knee Flexion Knee flexion can be assessed sitting, standing or laying. Patella joint pain is best assessed in the standing quarter flexion		
		
Early: > 115 degrees	Moderate: > 90-115 degrees	Advanced: < 90 degrees

Do you need more information?



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Differential Diagnosis

- Inflammatory arthritis (e.g., Rheumatoid arthritis, Psoriatic arthritis, ankylosing spondylitis, arthritis associated with IBD, reactive arthritis, Sarcoidosis)
- Soft tissue pathology
- Avascular necrosis
- Fracture (traumatic versus pathologic)
- Septic arthritis
- Diseases that can predispose to OA:
  - Metabolic diseases (Hemachromatosis, ochronosis)
  - Endocrine diseases (acromegaly, hyperparathyroidism)
  - Hypermobility (Ehler's Danlos)
  - Crystal arthropathy (Gout, CPPD)
  - Neuropathic joints
  - Chondrodysplasias
  - Diffuse Idiopathic skeletal hyperostosis (DISH)

What examination findings do you expect?

Physical Examination

- Mild Limp
- Active flexion is 90 degrees/ passive flexion is 95 degrees
- Active extension is minus 15 degrees/passive is painful with no further movement
- Pain with patellar compression
- Pain with ¼ squat in standing
- Pain with squat and abandons because she can't do it.
- No Effusion today
- Unable to do sit to stand from the chair
- Hip ROM full and does not cause knee pain
- Meniscal testing is negative

Danielle… Retired Accountant

- Over the last 3 months, she has also become concerned about aching of fingers. Somedays are better than others. May be worse on cloudy days.
- Hands are stiff in the morning, but somewhat better with activity. However, has discomfort with hobbies:
  - Took up knitting 15 years ago but now is finding discomfort and mobility limits.
- As the appointment progresses she points to her knuckles reporting some are slowly increasing in size and "they look awful."
- She has bony growth at DIP on 2nd, 3rd and 4th on both hands with Right slightly > Left; as well as some bony growth at PIP 3rd on both.
  - There is some reduced extension deformity in 3rd and 4th.
- No real redness and no clear swelling in joint itself.
- Minima tenderness across joints.

What non-pharmacological agents would you use?

Non-Pharmacological: Hand

Neuromuscular training

- Aim for 8 repetitions of exercise, increase to 15-20 repetitions, 1-2 times per day
- Take a day off after strengthening
- Examples: Make a fist, spread fingers, opposing thumb to each fingertip

Self-Management

- Psychosocial interventions (example CBT) may help
- Refer to a mental health counselor if available

Assistive Devices

- Hand or thumb splints can improve hand function and decrease pain, consider referral to therapies

Joint Protection (Examples of behavior)

- Reduce the effort needed to do a task – use labour saving equipment and avoid heavy lifting
- Pace yourself, rest for 30-60 seconds every 5-10 minutes when stretching, or moving joints
- Identify activities that worsen pain, then plan activities to minimize pain
- Distribute weight over several joints - example spread the load between 2 hands
- Avoid strain on thumb(s), repetitive thumb movements, and/or prolonged grip position
- Use a large grip as possible

Thermal Therapy

- Parrafin Wax
- Heat pad: 10 minutes on, 10 minutes off or 15-20 minutes on

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Evidence Based Treatment

Recommended

- Exercise – Neuromuscular, Cardio
- Walking Aids
- Joint Protection
- Thermal Therapy
- Analgesics + Duloxetine

Not Recommended

- Capaiscin, Glucosoamine, Chrondritin

Inconclusive

- Intra-articular PRP, Stem Cells, Hyaluronates
- Topical NSAID for Hip

Where does Danielle go from here?

1) Self Management
2) Advice on Emerging Symptoms for follow-up
3) Integrated Follow up with usual care
4) Focus on Functional abilities for further referrals
5) Provide ongoing resources like GLA:D or credible websites

Osteoarthritis is a Partnership

Joint Custody

Questions