QUICK REFERENCE

Management Of Osteoarthritis
(Second Edition)

This Quick Reference provides key messages and a summary of the main recommendations in the Clinical Practice Guidelines (CPG) Management of Osteoarthritis (Second Edition).

Details of the evidence supporting these recommendations can be found in the above CPG, available on the following websites:

Ministry of Health Malaysia: www.moh.gov.my
Academy of Medicine Malaysia: www.acadmed.org.my
Malaysian Society of Rheumatology: www.msr.my

CLINICAL PRACTICE GUIDELINES SECRETARIAT
Health Technology Assessment Section
Medical Development Division
Ministry of Health Malaysia
4th Floor, Block E1, Parcel E, 62590 Putrajaya
Tel: 603-8883 1246    E-mail: htamalaysia@moh.gov.my
KEY MESSAGES

1. Osteoarthritis (OA) is a progressive joint disease due to failure in repair of joint damage & is one of the major causes of disability in adults.
2. Identifying the modifiable risk factors may help in prevention of OA & its progression.
3. Diagnosis of OA is mainly clinical. Blood investigations & synovial fluid analysis are seldom required.
4. Plain radiography is the standard imaging for disease assessment. Classical features include narrowed joint space, subchondral bone sclerosis, osteophytes & subchondral cysts.
5. Patient education should form an integral part of OA management.
6. Lifestyle modification such as weight reduction, physical activity & exercise is beneficial in hip & knee OA.
7. The aim of pharmacological treatments in OA is for symptom relief. The medications include simple analgesic, non-steroidal anti-inflammatory drugs (NSAIDs), cyclo-oxygenase-2 (COX-2) inhibitors, glucosamine and diacerein.
8. NSAIDs or COX-2 inhibitors should be avoided in patients with previous gastrointestinal (GI) complications & used with caution in the elderly & those with hypertension, cardiovascular disease, renal or hepatic impairment.
9. Surgery is considered if the symptoms of the affected joints significantly affect patient’s quality of life & interfere with the activity of daily living (ADL) despite medical therapy.
10. Expert opinion should be sought for evaluation of arthritis with unclear diagnosis.

RISK FACTORS

<table>
<thead>
<tr>
<th>Non-modifiable</th>
<th>Modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Advancing age</td>
<td>● Body mass index (BMI) &gt;25 kg/m²</td>
</tr>
<tr>
<td>● Female</td>
<td>● Previous knee injury</td>
</tr>
<tr>
<td>● Genetic</td>
<td>● Joint malalignment</td>
</tr>
<tr>
<td>● Heberden’s nodes in hand OA</td>
<td></td>
</tr>
</tbody>
</table>

DIAGNOSIS OF KNEE OA

- **Background risk**
  - Risk factors
    - Age
    - Gender
    - BMI
    - Occupation
    - Family history of OA
    - History of knee injury
  - Symptoms
    - Knee pain
    - Brief morning stiffness
    - Functional limitation
  - Signs
    - Crepitus
    - Restricted movement
    - Bony enlargement
  - Radiographic changes
    - Osteophyte
    - Joint space narrowing
    - Subchondral sclerosis
    - Subchondral cysts

Knee OA
### DIAGNOSTIC CRITERIA BASED ON AMERICAN COLLEGE OF RHEUMATOLOGY

#### a. Hand OA

<table>
<thead>
<tr>
<th>Diagnosis Criteria</th>
<th>Clinical only 1,2,3 + 4a or 4b</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hand pain, aching or stiffness</td>
</tr>
<tr>
<td>2</td>
<td>Hard tissue enlargement of ≥2 of 10 selected joints (2nd and 3rd DIP, 2nd and 3rd PIP, 1st CMC joints of both hands)</td>
</tr>
<tr>
<td>3</td>
<td>Fewer than 3 swollen MCP joints</td>
</tr>
<tr>
<td>4a</td>
<td>Hard tissue enlargement of ≥2 of DIP joints OR Deformity of ≥2 of 10 selected joints</td>
</tr>
<tr>
<td>4b</td>
<td></td>
</tr>
</tbody>
</table>

**Sensitivity** 92%

**Specificity** 98%

DIP = distal interphalangeal  
MCP = metacarpophalangeal  
PIP = proximal interphalangeal  
CMC = carpometacarpal

#### b. Hip OA

<table>
<thead>
<tr>
<th>Diagnosis Criteria</th>
<th>Clinical, Laboratory and Radiographic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Must have hip pain + at least 2 from 3 of the following</td>
</tr>
<tr>
<td>2</td>
<td>ESR &lt; 20 mm/hr</td>
</tr>
<tr>
<td>3</td>
<td>Femoral and acetabular osteophytes on X-ray</td>
</tr>
<tr>
<td>4</td>
<td>Axial joint space narrowing on X-ray</td>
</tr>
</tbody>
</table>

**Sensitivity** 89%

**Specificity** 91%

#### c. Knee OA

<table>
<thead>
<tr>
<th>Diagnosis Criteria</th>
<th>Clinical and laboratory</th>
<th>Clinical and radiographic</th>
<th>Clinical only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knee pain + At least 5 of 9 of the following</td>
<td>Knee pain + Osteophytes on x-ray + At least 1 of 3 of the following</td>
<td>Knee pain + At least 3 of 6 of the following</td>
</tr>
<tr>
<td>2</td>
<td>Age &gt; 50 years</td>
<td>Age &gt; 50 years</td>
<td>Age &gt; 50 years</td>
</tr>
<tr>
<td>3</td>
<td>Stiffness &lt; 30 min</td>
<td>Stiffness &lt; 30 min</td>
<td>Stiffness &lt; 30 min</td>
</tr>
<tr>
<td>4</td>
<td>Crepitus</td>
<td>Crepitus</td>
<td>Crepitus</td>
</tr>
<tr>
<td>5</td>
<td>Bony tenderness</td>
<td>Bony tenderness</td>
<td>Bony tenderness</td>
</tr>
<tr>
<td>6</td>
<td>No palpable warmth</td>
<td>No palpable warmth</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>ESR &lt; 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>RF &lt; 1: 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>SF OA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sensitivity** 92%  
**Specificity** 75%

**Sensitivity** 91%  
**Specificity** 86%

**Sensitivity** 95%  
**Specificity** 69% (if 3/6)  
**Sensitivity** 84%  
**Specificity** 89% (if 4/6)

ESR = erythrocyte sedimentation rate  
RF = rheumatoid factor  
SF OA = synovial fluid signs of OA (clear, viscous or white blood cell count < 2,000/mm³)
**RADIOGRAPHIC CHANGES OF INTERPHALANGEAL JOINTS & TARGET SITES INVOLVEMENT OF OA AND OTHER ARTHRITIS**

<table>
<thead>
<tr>
<th>Osteoarthritis</th>
<th>Erosive OA</th>
<th>Psoriatic Arthritis</th>
<th>Rheumatoid Arthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>X-Ray changes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image1" alt="Image A" /></td>
<td><img src="image2" alt="Image B" /></td>
<td><img src="image3" alt="Image C" /></td>
<td><img src="image4" alt="Image D" /></td>
</tr>
<tr>
<td>Focal narrowing, marginal osteophyte, sclerosis, osteochondral bodies</td>
<td>Subchondral erosion</td>
<td>Proliferative marginal erosion, retained or increase bone density</td>
<td>Non-proliferative marginal erosion, osteopenia</td>
</tr>
</tbody>
</table>

**Target sites**

- ![Image E](image5)
- ![Image F](image6)
- ![Image G](image7)
- ![Image H](image8)

- Common
- Uncommon

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**JOINT PROTECTION PRINCIPLES**

Joint protection principles include:-
- Resting inflamed joints by reducing load, duration of use and repetitive movement
- Using the largest unaffected muscles and joints to perform a task
- Using proper movement techniques for lifting, sitting, standing, bending and reaching
- Using assistive devices and modifications for home equipment to minimise stress on joints
- Plan and organise activities ahead
- Using biomechanics and ergonomics to best effect
- Simplifying tasks
- Recruiting others to help
- Making exercise a part of everyday life including exercises which improve joint range of movement, stamina and strength
- Exercise should also be for cardiovascular fitness and to maintain or improve balance
QUADRICEPS STRENGTHENING EXERCISE

**Figure A**

Lie flat in bed with your legs straight. Bend your ankles & push the back of your knees down firmly against the bed. Hold for 5 seconds, then return to the original position & relax.

**Figure B**

Sit on a firm flat surface with one leg bend & keep the other leg straight. Bend your ankle & push the back of your knees down firmly against the bed. Hold for 5 seconds, then return to the original position & relax.

**Figure C**

Lie flat in bed with a rolled towel/small cushion under your knee. Bend your ankle & push the back of your knee down firmly against the rolled towel/small cushion (keep knee on the towel/cushion). Hold for 5 seconds, then return to the original position & relax.

**Figure D**

Sit on a chair. Straighten your knee & bend your ankle. Hold for 5 seconds, then return to the original position & relax.
### SUGGESTED MEDICATION DOSAGES & SIDE EFFECTS

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Drug</th>
<th>Recommended Dosages</th>
<th>Side Effects</th>
<th>Caution &amp; Contraindications</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple analgesic</td>
<td>Paracetamol</td>
<td>0.5 – 1 gm, 6 – 8-hourly Max: 4 gm/day</td>
<td>Rare but hypersensitivity including skin rash may occur</td>
<td>Hepatic impairment Alcohol dependence</td>
<td>Preferred drug particularly in elderly patients</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-selective NSAIDs</td>
<td>Ibuprofen</td>
<td>400 – 800 mg, 6 – 8-hourly Max: 3200 mg/day</td>
<td>Peptic ulcer GI bleed</td>
<td>Gastroduodenal ulcer Asthma Bleeding disorder Renal dysfunction Ischaemic heart disease Cerebrovascular disease Inflammatory bowel disease</td>
<td>Physicians &amp; patients should weigh the benefits &amp; risks of NSAIDs therapy</td>
</tr>
<tr>
<td></td>
<td>Mefenamic acid</td>
<td>250 – 500 mg, 6 – 8-hourly Max: 1500 mg/day</td>
<td>Platelet dysfunction Renal impairment Hypertension Allergic reaction in susceptible individuals Increase in CVS events</td>
<td></td>
<td>Meloxicam is a selective COX-2 inhibitor at 7.5 mg daily but not 15 mg daily</td>
</tr>
<tr>
<td></td>
<td>Diclofenac sodium</td>
<td>50 – 150 mg daily, 8 – 12-hourly Max: 150 mg/day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meloxicam</td>
<td>7.5 – 15 mg daily Max: 15 mg/day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naproxen</td>
<td>250 – 500 mg, 12-hourly Max: 1500 mg/day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naproxen sodium</td>
<td>275 – 550 mg, 12-hourly Max: 1650 mg/day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selective COX-2 inhibitors</td>
<td>Celecoxib</td>
<td>200 mg daily Max: 200 mg/day (Recommended daily maximum dose is 200 mg for OA dan 400 mg for inflammatory arthritis)</td>
<td>Renal impairment Allergic reaction in susceptible individuals Increase in CVS events</td>
<td>Ischaemic heart disease Cerebrovascular disease Contraindicated in hypersensitivity to sulfonamides</td>
<td>Associated with a lower risk of serious upper GI side effects Physicians &amp; patients should weigh the benefits &amp; risks of coxib therapy</td>
</tr>
<tr>
<td></td>
<td>Etoricoxib</td>
<td>60 mg daily Max: 90 mg/day</td>
<td>Hypertension Renal impairment Increase in CVS events</td>
<td>Uncontrolled hypertension Ischaemic heart disease Cerebrovascular disease</td>
<td></td>
</tr>
</tbody>
</table>
Background risk

Symptoms

Knee pain
Brief morning stiffness
Functional limitation

Signs

Crepitus
Restricted movement
Bony enlargement

Risk factors

Age
Gender
BMI
Occupation
Family history of OA
History of knee injury

Radiographic changes

Osteophyte
Joint space narrowing
Subchondral sclerosis
Subchondral cysts

KEY MESSAGES

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● Genetic
● Joint malalignment
● Heberden’s nodes in hand OA

Drug

Class

Recommended Dosages

Side Effects

Caution & Contraindications

Comments

Weak opioid

Tramadol

50 – 100 mg, 6 – 8-hourly
Max: 400 mg/day

Dizziness
Nausea
Vomiting
Constipation
Drowsiness

Risk of seizures in patients with history of seizures & with high doses
In elderly, start at lowest dose (50 mg) & maximum of 300 mg daily

Interaction with Tricyclic Antidepressant, Selective Serotonin Reuptake Inhibitor & Serotonin Norepinephrine Receptor Inhibitor

Combination of opioid & paracetamol

Paracetamol 325 mg + tramadol 37.5 mg (Ultracet®)

1 – 2 tablets, 6 – 8-hourly
Max: 8 tablets/day

Nausea
Vomiting
Drowsiness

Hepatic impairment
Renal impairment
Alcohol dependence
Epilepsy

REFERRAL

Rheumatology Referral

Rheumatology opinion should be sought for evaluation of arthritis with unclear diagnosis.

Orthopaedic Referral

Referral should be made when the patient does not experience satisfactory improvement in terms of pain, stability or function despite adequate pharmacological & non-pharmacological treatment.

• Referral to either rheumatology or orthopaedic clinic should provide the following information:-
  o Diagnosis
  o Severity & its impact on ADL
  o Co-morbidities that might require further medical assessment
  o Relevant investigation results & current medications
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