QUICK REFERENCE

Management Of Osteoarthritis
(Second Edition)

Paracetamol ± Topical NSAIDs

Persistent symptoms

• Tramadol
• NSAIDs (lowest effective dose, for the shortest duration)
• Selective NSAIDs ± Proton Pump Inhibitor in patient with high GI risk

Consider intra-articular corticosteroids (especially if knee joint effusion present)

Referral to orthopaedics for evaluation of arthroplasty

Other considerations at any time:
• Glucosamine sulfate
• Diacerein
• Alternative treatments

Symptomatic osteoarthritis

ALGORITHM ON MANAGEMENT OF KNEE & HIP OSTEOARTHRITIS

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

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<thead>
<tr>
<th>Non-modifiable</th>
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<tr>
<td>- Advancing age</td>
<td>- Body mass index (BMI) &gt;25 kg/m²</td>
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<td>- Female</td>
<td>- Previous knee injury</td>
</tr>
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</tr>
<tr>
<td>- Heberden’s nodes in hand OA</td>
<td></td>
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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</td>
</tr>
<tr>
<td>4b</td>
<td>Deformity of ≥2 of 10 selected joints</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>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>Must have</td>
<td>Knee pain + Osteophytes on x-ray + At least 1 of 3 of the following</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Age &gt;50 years</td>
<td>Stiffness &lt;30 min</td>
<td>Stiffness &lt;30 min</td>
</tr>
<tr>
<td>3</td>
<td>Crepitus</td>
<td>Crepitus</td>
<td>Crepitus</td>
</tr>
<tr>
<td>4</td>
<td>Bony tenderness</td>
<td>Bony tenderness</td>
<td>Bony tenderness</td>
</tr>
<tr>
<td>5</td>
<td>Bony enlargement</td>
<td></td>
<td>Bony enlargement</td>
</tr>
<tr>
<td>6</td>
<td>No palpable warmth</td>
<td></td>
<td>No palpable warmth</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%

ESR = erythrocyte sedimentation rate  RF = rheumatoid factor  SF OA = synovial fluid signs of OA (clear, viscous or white blood cell count <2,000/mm³)
**QUICK REFERENCE FOR HEALTHCARE PROVIDERS MANAGEMENT OF OSTEOARTHRITIS (SECOND EDITION)**

**RADIOGRAPHIC CHANGES OF INTERPHALANGEAL JOINTS & TARGET SITES INVOLVEMENT OF OA AND OTHER ARTHRITIS**

<table>
<thead>
<tr>
<th>X-Ray changes</th>
<th>Osteoarthritis</th>
<th>Erosive OA</th>
<th>Psoriatic Arthritis</th>
<th>Rheumatoid Arthritis</th>
</tr>
</thead>
<tbody>
<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>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target sites</th>
<th>Osteoarthritis</th>
<th>Erosive OA</th>
<th>Psoriatic Arthritis</th>
<th>Rheumatoid Arthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lie flat in bed with your legs straight. Bend your ankles &amp; push the back of your knees down firmly against the bed. Hold for 5 seconds, then return to the original position &amp; relax.</td>
<td>Sit on a firm flat surface with one leg bend &amp; keep the other leg straight. Bend your ankle &amp; push the back of your knees down firmly against the bed. Hold for 5 seconds, then return to the original position &amp; relax.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lie flat in bed with a rolled towel/small cushion under your knee. Bend your ankle &amp; 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 &amp; relax.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sit on a chair. Straighten your knee &amp; bend your ankle. Hold for 5 seconds, then return to the original position &amp; relax.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.
<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>Non-selective NSAIDs</td>
<td>Ibuprofen</td>
<td>400 – 800 mg, 6 – 8-hourly Max: 3200 mg/day</td>
<td>Peptic ulcer GI bleed Platelet dysfunction Renal impairment Hypertension Allergic reaction in susceptible individuals Increase in CVS events</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></td>
<td></td>
<td></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>
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**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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**Drug Class**

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<tr>
<td>Weak opioid</td>
<td>Tramadol</td>
<td>50 – 100 mg, 6 – 8-hourly</td>
<td>Dizziness</td>
<td>Risk of seizures in patients with history of seizures &amp; with high doses</td>
<td>Interaction with Tricyclic Antidepressant, Selective Serotonin Reuptake Inhibitor &amp; Serotonin Norepinephrine Receptor Inhibitor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max: 400 mg/day</td>
<td>Nausea</td>
<td>In elderly, start at lowest dose (50 mg) &amp; maximum of 300 mg daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vomiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Constipation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drowsiness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination of opioid &amp; paracetamol</td>
<td>Paracetamol 325 mg + tramadol 37.5 mg (Ultracet®)</td>
<td>1 – 2 tablets, 6 – 8-hourly</td>
<td>Nausea</td>
<td>Hepatic impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max: 8 tablets/day</td>
<td>Vomiting</td>
<td>Renal impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drowsiness</td>
<td>Alcohol dependence</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Epilepsy</td>
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**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:
  - Diagnosis
  - Severity & its impact on ADL
  - Co-morbidities that might require further medical assessment
  - Relevant investigation results & current medications
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