



# MANAGEMENT OF OSTEOARTHRITIS KNEE



AUGUST 2017



Ministry of Health & Family Welfare  
Government of India







# STANDARD TREATMENT GUIDELINES

## MANAGEMENT OF OSTEOARTHRITIS KNEE

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Government Of India

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# LIST OF ABBREVIATIONS

OA	: Osteoarthritis
STG	: Standard Treatment Guidelines
NICE	: National Institute of Health and Care Excellence, United Kingdom
AAOS	: American Association of Orthopaedic Surgeons / American Academy of Orthopaedic Surgeons
OARSI	: Osteoarthritis Research Society International guidelines
AP View	: Anterop-posterior view
PA View	: Postero-anterior view
JSN	: Joint space narrowing
JSW	: Joint space width
KL grading	: Kellgren-Lawrence grading
TKR	: Total Knee Replacement
TKA	: Total Knee Arthroplasty
UKA	: Unicompartmental knee arthroplasty
NSAID	: Nonsteroidal anti-inflammatory drug
COX 2	: Cyclooxygenase-2 (COX-2 Inhibitors – a type of NSAID)

- PPI : Proton Pump Inhibitors (Pantoprazole, Omeprazole, Rabreprazole)
- TENS : Transcutaneous electrical nerve stimulation (Type of electrotherapy)
- DVT : Deep Vein Thrombosis

# SCOPE

## SCOPE POPULATION

### Groups Covered

Adults with suspected Osteoarthritis (OA) of Knee  
Persistent joint pain that becomes worse with use  
Predominantly in people age 45 years or older  
Morning stiffness lasting no more than half an hour

### Pathology

Primary OA Knee  
Secondary OA  
Post traumatic  
Healed sequelae of infection or inflammatory disease

### Groups Not Covered

Acute/subacute Infection : TB, Pyogenic septic arthritis, Fungal, Hansen  
Acute Trauma  
Acute Inflammatory diseases : RA, AS, Psoriatic, seronegative arthritidis,  
Spondyloarthropathy

Crystal arthritis (gout or pseudo-gout)

Hemophilic arthropathy

Bone and soft tissue tumours

## Health Care Settings

### Primary Health Care

Management : Pharmacology, Physiotherapy

### Secondary

Management : Pharmacology, Physiotherapy, Occupational Therapy, Orthosis

### Tertiary

Management : Pharmacology, Physiotherapy, Occupational Therapy, Orthosis, Surgery

## Management Issue not covered

Alternative therapies (Ayurvedic, Unani and Homeopathic medications) and Yoga, Tai Chi

# INTRODUCTION

## DEFINITIONS

### Burden of disease

Knee OA is one of the leading causes of global disability and the real burden of osteoarthritis (OA) has been underestimated. The global age-standardized prevalence of knee OA was reported as 3.8%, higher in females than males (Cross et al, 2010).

The prevalence of OA knee in India in a report by ICMR in 2012 was 3.28% in Delhi ; 5.81% in Dibrugarh and 6.52% in Jodhpur (ICMR study, 2012). However a community based cross sectional study across five sites in India conducted in big city, small city, town, and village was reported in 2016 to be as high as 28.7% (Pal et al, 2016).

### Morbidity and mortality

CDC has reported an annual average of 0.2 to 0.3 deaths per 100,000 population due to OA. OA deaths are likely highly underestimated. For example, gastrointestinal bleeding due to treatment with NSAIDs is not counted (Sacks et al, 2004).

The hospitalization rate per 100,000 in the US, for total knee replacement increased by 217% from 1992 to 2011 from 203.6 to 645<sup>5</sup>.

OA of the knee is one of five leading causes of disability among non-institutionalized adults<sup>6</sup>. About 80% of patients with OA have some degree of movement limitation. About 25% cannot perform major activities of daily living (ADL's), 11% of adults with knee OA need help with personal care and 14% require help with routine needs and about 40% of adults with knee OA reported their health "poor" or "fair."

## CURRENT PRACTICES IN INDIA

Pharmacological modalities like analgesics, NSAID's, topical applications, supplementations like glucosamine along with physiotherapy including exercises, massage, TENS, thermotherapy and braces along with acupuncture and ayurvedic as well as homeopathic and other alternate therapies are widely used by different care givers.

Surgical interventions besides intra-articular injections including arthroscopy, osteotomy, unicondylar and total knee replacements are commonly done by orthopaedic surgeons across the country specially in different cities.

# NEED FOR A STG/GUIDELINE PURPOSE

Osteoarthritis of the knee, a common chronic problem makes the patients try out a wide variety of therapeutic modalities hopping from doctors to physiotherapists to alternative therapists for pain alleviation and sometimes to avoid surgery even in advanced osteoarthritis.

This manuscript would be useful for the **patients** as well as the **primary level and secondary level health care professionals**, for diagnosing a case of osteoarthritis of the knee followed by guidelines regarding the non operative management with special reference to prevent unnecessary prescriptions of glucosamine or chondroitin products while emphasizing on self management strategies such as weight loss, exercise, suitable footwear, braces, walking aids and thermotherapy as well as other physiotherapy modalities including electrotherapy and acupuncture. Role of pharmacological management including analgesics, topical ointments and intrarticular injections of steroids and hyaluronan are also elaborated.

For the **tertiary level orthopaedic surgeons**, this manual would be a useful guideline for controversial and confusing trends sometimes practiced differently by various surgeons. These guidelines include indications of osteotomy and arthroplasty and unicondylar replacement versus osteotomy with no role of arthroscopic lavage and debridement. Details of arthroplasty including prognostic factors, intra-operative considerations of analgesia, nerve blocks, tourniquets, tranexemic acid, surgical drains as well as choice of implants, cement, bilateral replacement, navigation, patient specific instrumentation and post operative protocols of cryotherapy, CPM, rehabilitation and hospital stay guidelines would also be of interest to the orthopaedic and arthroplasty surgeons.



# RECOMMENDATIONS

## DIAGNOSIS OF OSTEOARTHRITIS KNEE

### Clinical features: symptoms and signs (Hasan and Shuckett, 2010)

Algorithm of approach to joint pain (Harrison, 19<sup>th</sup> Ed)

#### Symptoms

The main symptoms of OA include pain around the knee, stiffness, and altered joint function. Initially this tends to be worse with weight bearing and ambulation. Eventually this can progress to pain day and night once cartilage loss leads to bone-on-bone contact. In contrast to inflammatory arthritides such as rheumatoid arthritis, with their prolonged morning stiffness and worsened pain in the morning, OA tends to worsen as the day progresses.

The stiffness in OA is termed “inactivity stiffness” and contrasts with the prolonged “morning stiffness” of rheumatoid arthritis. Inactivity stiffness in osteoarthritic lower limb joints lasts about 5 to 10 minutes and occurs when the patient gets up and bears weight after prolonged immobility.

#### Signs

On physical examination, a small effusion with a fluid bulge sign can be present in OA of the knee. Larger effusions can occur but are less frequent than in the inflammatory arthropathies.

There may be cartilaginous crepitus or a crackling feeling on palpation of the knee with motion. Eventually there may be coarse bone-on-bone crepitus whereby the opposing bone ends, denuded of cartilage, seem to grate against one another.

There is often a loss of range of motion of the involved knee, particularly with progression of OA.

Loss of cartilage of the knee can lead to malalignment of the leg with a varus deformity or bow-legged positioning of the leg being evident. This angulation of the knee applies to medial compartment OA of the knees. Less commonly, patients may present with a valgus or knock-knee deformity, indicative of more advanced disease in the lateral compartment of the knee.

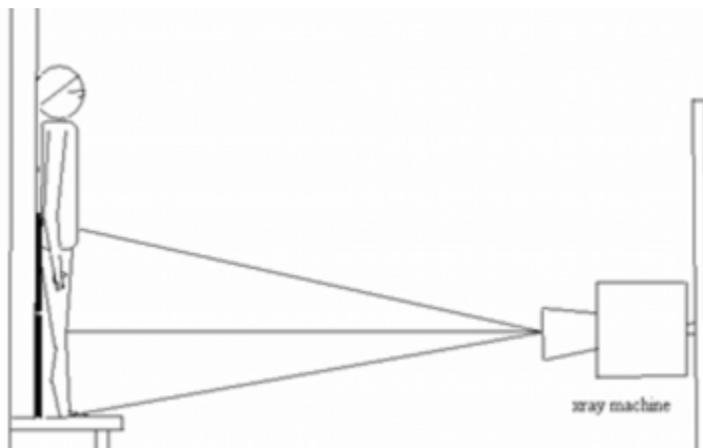
On occasion, and much less commonly, patients may present with isolated OA in the patellofemoral joint, which itself may be very symptomatic.

## ROLE OF IMAGING

### X Rays

Since the 1970s, the standard view for radiographic assessment of the tibiofemoral joint has been the extended-knee radiograph, which is a bilateral antero-posterior image acquired while the patient is weight-bearing, with both knees in full extension.

**Fig 1 : Standing (weight bearing) AP view of both Knee**



The primary utility of radiography in the diagnosis of OA is for evaluation of joint space width (JSW). JSW and subsequent joint space narrowing (JSN) were originally assessed using manual techniques that required minimal additional equipment or processing software (Chondrometry, 1995; Ravaut et al,1996). However, these methods were time consuming and subjective and have since been largely abandoned in favour of automated assessment, which provides quick and precise measurements of joint space width (JSW). In addition to improving reproducibility of semi-quantitative scoring or manual measurements, automated assessment has also sparked additional characterizations of joint space, including minimum JSW, mean JSW, joint space area, and location-specific JSW (Roemer et al, 2011). Several studies have shown minimum JSW to be most reproducible and most sensitive to OA-related changes (Conrozier et al, 2001 ; Vignon, 2004).

On plain X-ray of an osteoarthritic joint, in addition to joint space narrowing, there tends to be subchondral sclerosis or an appearance of whitening of the subchondral bone.

### Kellgren and Lawrence Radiographic Criteria for Assessment of OA\*

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

Cooper C et al. In: Brandt KD, Doherty M, Lohmander LS, eds. Osteoarthritis. Oxford, NY: Oxford University Press, 1998:237-249.

\*Radiography does not reliably correlate with symptoms.

Osteophytes, which reflect a regenerative process with formation of fibrocartilaginous extensions or hooks at the joint margins, are common. Interestingly, the presence of osteophytes in one compartment, such as the lateral compartment in a patient with medial compartment OA, is not indicative of disease in that compartment. It is simply indicative of the body's reparative response to the abnormal stresses and presence of disease in the medial compartment.

Currently, the Kellgren-Lawrence (KL) grading scheme is the most widely used and accepted standard for diagnosis of radiographic OA (Kellgren and Lawrence, 1957 ; Bauer et al, 2006).

A KL grade of 0 indicates that no radiographic features of OA are present while a KL grade of 1 is defined as doubtful JSN and possible osteophytic lipping (Kellgren and Lawrence, 1957). Radiographic OA receives a KL grade of 2, denoting the presence of definite osteophytes and possible joint space narrowing (JSN) on anteroposterior weight-bearing radiograph (Kellgren and Lawrence, 1957). Further disease progression is graded as KL 3, characterized by multiple osteophytes, definite JSN, sclerosis, possible bony deformity and KL grade 4, which is defined by large osteophytes, marked JSN, severe sclerosis and definitely bony deformity (Kellgren and Lawrence, 1957). The KL grading scheme has been criticized for characterizing the progression of OA as a linear process and combining osteophyte and JSN measurements (Roemer et al, 2011). More recently, the Osteoarthritis Research Society International atlas has developed OA classification scores that evaluate tibiofemoral JSN and osteophytes separately in each compartment (Altman, 1995 ; Altman and Gold, 2007).

While radiography is useful for evaluation of JSW, a 2005 study by Amin et al. revealed that a significant number of symptomatic patients show cartilage loss on MRI even when JSN or disease progression is not visualized using radiography. In this study, radiographic progression was 91% specific but only 23% sensitive for cartilage loss (Amin et al, 2005).

In patients with suspected **posterolateral OA** with a mild valgus deformity, a **30 degree flexed standing posteroanterior (PA) view** with the beam directed 15 degrees from cephalad to caudad may be valuable in showing the disease in the posterior aspect of the lateral compartment of the knee (Leach et al, 1970 ; Cibere, 2006).

In early cases, a standard standing AP view may appear normal or indicate very mild OA, whereas the standing flexed PA view may show bone on bone contact.

Fig 2 : Standing PA view of both Knee in flexed position for posterolateral osteoarthritis of knee with a mild valgus deformity

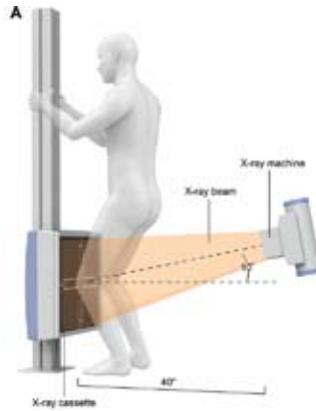


Fig 3 : Standing PA view of both Knee



Source: Khaied M, Elsayes, Sandra A. A. Oldham; Introduction to Diagnostic Radiology; www.accessmedicine.com  
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Fig 4 : Different positions for skyline view of patella-femoral joint, of which Knutsson view is most convenient.

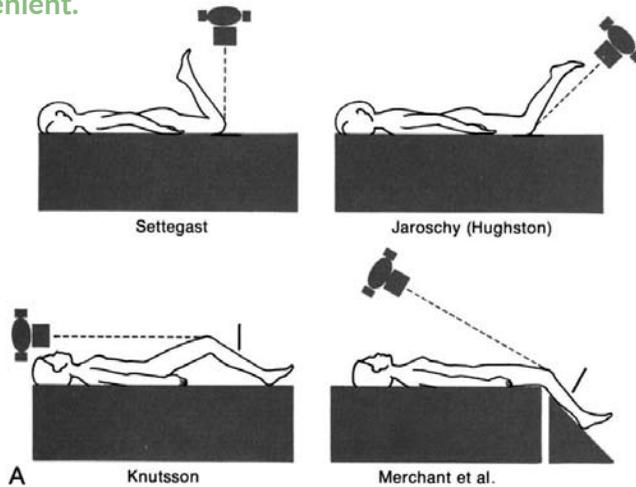


Fig 5 : Skyline view of patella-femoral joint



**Patellofemoral OA** of the knee cap is also a common finding, best diagnosed on a skyline X-ray view (Hasan and Shuckett, 2010). The Knutsson view is most convenient with the patient in supine position lying comfortably on the X Ray table.

X-ray is needed when considering surgery.

X-ray will identify radio-opaque loose bodies, a less frequent cause of locking. (Royal College of Radiologists Recommendations)

### Indications of Ultrasound

US is useful for anterior knee pain with suspected tendinopathy or associated bursitis. (Royal College of Radiologists Recommendations)

### Indications of MRI

MRI is useful for persistent undiagnosed pain of knee joint.

MRI is the investigation of choice to identify meniscal tears and loose bodies. (Royal College of Radiologists Recommendations)

MRI has emerged as an excellent modality for detection of OA when the plain radiographs indicate no disease or mild disease, and the patient's symptoms are out of keeping with the apparent severity of disease. MRI can detect large focal articular cartilage lesions that cannot be detected on plain films (Boegard et al, 1998)

# TREATMENT

## GENERAL CORE TREATMENT

### Patient Information

Offer accurate verbal and written information to all people with osteoarthritis to enhance understanding of the condition and its management, and to counter misconceptions, such as that it inevitably progresses and cannot be treated. Ensure that information sharing is an ongoing, integral part of the management plan rather than a single event at time of presentation.

### Patient self-management interventions

Agree individualised self-management strategies with the person with osteoarthritis. Ensure that positive behavioural changes, such as exercise, weight loss, use of suitable footwear and pacing, are appropriately targeted.

### Thermotherapy

The use of local heat or cold should be considered as an adjunct to core treatments.

### Exercise and manual therapy

Advise people with osteoarthritis to exercise as a core treatment. Advise people with osteoarthritis to exercise as a core treatment irrespective of age, comorbidity, pain severity or disability. Exercise should include:

1. Local muscle strengthening : Exercise has been found to be beneficial but the clinician needs to make a judgement in each case on how to effectively ensure participation. This will depend upon the person's individual needs, circumstances and self-motivation, and the availability of local facilities.
2. Manipulation and stretching : It should be considered as an adjunct to core treatments.

### Weight loss

Offer interventions to achieve weight loss as a core treatment for people who are obese or overweight.

## Electrotherapy

Should consider the use of transcutaneous electrical nerve stimulation (TENS) as an adjunct to core treatments for pain relief.

## Nutraceuticals

Do not offer glucosamine or chondroitin products for the management of osteoarthritis.

## Acupuncture

Do not offer acupuncture for the management of osteoarthritis.

## Aids and Devices

1. Footwear: Offer advice on appropriate footwear (including shock-absorbing properties) as part of core treatments for people with lower limb osteoarthritis.
2. Brace/Insole : People with osteoarthritis who have biomechanical joint pain or instability should be considered for assessment for bracing/joint supports/insoles as an adjunct to their core treatments.
3. Walking Aid : Assistive devices (for example, walking sticks and tap turners) should be considered as adjuncts to core treatments for people with osteoarthritis who have specific problems with activities of daily living. If needed, seek expert advice in this context.

## PHARMACOLOGICAL MANAGEMENT

### Oral analgesics

**Paracetamol** for pain relief in addition to core treatments regular dosing may be required. Paracetamol and/or topical non-steroidal anti-inflammatory drugs (NSAIDs) should be considered **ahead of** oral NSAIDs, cyclo-oxygenase 2 (COX-2) inhibitors or opioids like tramadol.

### Usual Adult Paracetamol Dose for Pain

General Dosing Guidelines: 325 to 650 mg every 4 to 6 hours or 1000 mg every 6 to 8 hours orally. Paracetamol 500mg tablets: Two 500 mg tablets orally every 4 to 6 hours.

## Tramadol Dose : Drugs.com

### Immediate-Release:

- Initial dose: 25 mg orally once a day; titrate in 25 mg increments every 3 days to reach a dose of 25 mg four times a day; thereafter increase by 50 mg as tolerated every 3 days to reach a dose of 50 mg four times a day
- Maintenance dose: After titration, 50 to 100 mg orally as needed for pain every 4 to 6 hours
- Maximum dose: 400 mg per day

### Extended-Release:

- Initial dose (tramadol-naive): 100 mg orally once a day; titrate upwards in 100 mg increments every 5 days as needed and as tolerated.
- Maximum Dose: 300 mg orally per day.

If paracetamol or topical NSAIDs are insufficient for pain relief for people with osteoarthritis, then the addition of opioid analgesics should be considered. Risks and benefits should be considered, particularly in older people.

## Topical treatments

Consider topical NSAIDs and/or paracetamol ahead of oral NSAIDs, COX-2 inhibitors or opioids.

Topical capsaicin should be considered as an adjunct to core treatments for knee or hand osteoarthritis.

Do not offer rubefacients for treating osteoarthritis.

## NSAIDs and highly selective COX-2 inhibitors

Although NSAIDs and COX-2 inhibitors may be regarded as a single drug class of 'NSAIDs', these recommendations use the two terms for clarity and because of the differences in side-effect profile.

Where paracetamol or topical NSAIDs are ineffective for pain relief for people with osteoarthritis, then **substitution with an oral NSAID/COX-2 inhibitor** should be considered.

Where paracetamol or topical NSAIDs provide insufficient pain relief for people with osteoarthritis, then the **addition of an oral NSAID/COX-2 inhibitor** to paracetamol should be considered.

Use oral NSAIDs/COX-2 inhibitors at the **lowest effective dose for the shortest possible** period of time.

When offering treatment with an oral NSAID/COX-2 inhibitor, the first choice should be either a **standard NSAID or a COX-2 inhibitor** (other than etoricoxib 60 mg). In either case, **co-prescribe with a proton pump inhibitor (PPI)**, choosing the one with the lowest acquisition cost.

**All oral NSAIDs/COX-2 inhibitors have** analgesic effects of a similar magnitude but vary in their **potential gastrointestinal, liver and cardio-renal toxicity**; therefore, when choosing the agent and dose, take into account **individual patient risk factors**, including age. When prescribing these drugs, consideration should be given to appropriate assessment and/or ongoing monitoring of these risk factors.

If a person with osteoarthritis needs to take **low-dose aspirin**, healthcare professionals should **consider other analgesics** like tramadol before substituting or adding an NSAID or COX-2 inhibitor (with a PPI) if pain relief is ineffective or insufficient.

## Intra-articular injections

1. Intra-articular **corticosteroid** injections : Intra-articular corticosteroid injections should be considered as an adjunct to core treatments for the relief of moderate to severe pain in people with osteoarthritis.
2. Intra-articular **hyaluronan** : Do not offer intra-articular hyaluronan injections for the management of osteoarthritis.

## SURGERY

### Indications and Referrals

1. Physicians from Primary and Secondary Health Care Centres while referring a person with osteoarthritis for consideration of joint surgery should ensure that the person has been offered at least the core (non-surgical) treatment options (mentioned above).

2. Decisions for surgery should be based after discussions between patient representatives, referring clinicians and surgeons, rather than using scoring tools for prioritization.
3. Consider **referral for joint surgery** for people with knee osteoarthritis with :
  - a. Knee Pain
  - b. Knee stiffness with restricted knee movements
  - c. Impaired or reduced knee function
  - d. Substantial impact on their quality of life and activities of daily living
  - e. Refractory to non-surgical treatment.
4. Refer for consideration of joint surgery before there is prolonged and established functional limitation and severe pain.
5. Patient-specific factors (including age, sex, smoking, **obesity and co-morbidities**) should **not be barriers** to referral for joint surgery.
6. When discussing the possibility of joint surgery, check that the person has been offered at least the core treatments for osteoarthritis and give them information about:
  - a. The benefits and risks of surgery and the potential consequences of not having surgery
  - b. Recovery and rehabilitation after surgery
  - c. How having a prosthesis might affect them
  - d. How care pathways are organised in their local area.

## Follow up and Review

Offer regular reviews to all people with symptomatic osteoarthritis. Agree the timing of the reviews with the person. Reviews should include:

- a. Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life
- b. Monitoring the long-term course of the condition

- c. Discussing the person's knowledge of the condition, any concerns they have, their personal preferences and their ability to access services
- d. Reviewing the effectiveness and tolerability of all treatments
- e. Support for self-management.

**Consider an annual review** for any person with **one or more** of the following:

- a. Troublesome joint pain
- b. More than one joint with symptoms
- c. More than one co-morbidity
- d. Taking regular medication for their osteoarthritis

## ARTHROSCOPY

**Do not refer for arthroscopic lavage and debridement** as part of treatment for osteoarthritis.

**Indication for arthroscopy** : If the person with knee osteoarthritis has a clear history of mechanical locking (as opposed to morning joint stiffness, 'giving way' or X-ray evidence of loose bodies).

## ARTHROPLASTY

### Prognostic Factors

1. BMI : Strong evidence supports that obese patients have **less improvement** in outcomes with total knee arthroplasty.
2. Diabetes : Moderate evidence supports that patients with diabetes are at **higher risk** for complications with total knee arthroplasty.
3. Pain : Moderate evidence supports that patients with select chronic pain conditions have **less improvement** in patient reported outcomes with TKA.
4. Anxiety : Limited evidence supports that patients with depression and/or anxiety symptoms have **less improvement** in patient reported outcomes with total knee arthroplasty.

5. Liver Function : Limited evidence supports that patients with cirrhosis or hepatitis C are at higher risk for complications with total knee arthroplasty.
6. Pre-op Physiotherapy : Limited evidence supports that **supervised exercise before** total knee arthroplasty (TKA) **might improve** pain and physical function after surgery.
7. Delayed surgery : Moderate evidence supports that an **eight month delay** to total knee arthroplasty (TKA) does not worsen outcomes.

## Intra-op Knee Arthroplasty Considerations

1. Local anaesthesia : Strong evidence supports the use of peri-articular local anesthetic infiltration compared to placebo in total knee arthroplasty (TKA) to decrease pain and opioid use.
2. Nerve block : Strong evidence supports that peripheral nerve blockade for total knee arthroplasty (TKA) decreases postoperative pain and opioid requirements.
3. Anaesthesia : Moderate evidence supports that neuraxial anesthesia could be used in total knee arthroplasty (TKA) to improve select perioperative outcomes and complication rates compared to general anesthesia.
4. Tourniquet and blood loss : Moderate evidence supports that the use of a tourniquet in total knee arthroplasty (TKA) decreases intraoperative blood loss.
5. Tourniquet and Pain : Strong evidence supports that tourniquet use in total knee arthroplasty (TKA) increases short term post-operative pain.

Limited evidence supports that tourniquet use in total knee arthroplasty (TKA) decreases short term post-operative function.

6. Tranexemic Acid : Strong evidence supports that, in patients with no known contraindications, treatment with tranexamic acid decreases postoperative blood loss and reduces the necessity of postoperative transfusions following total knee arthroplasty (TKA).
7. Bone Cement : Limited evidence does not support the routine use of antibiotics in the cement for primary total knee arthroplasty.

8. Implant Design : Strong evidence supports no difference in outcomes or complications between posterior stabilized and posterior cruciate retaining arthroplasty designs. Strong evidence supports use of either all-polyethylene or modular tibial components in knee arthroplasty (KA) because of no difference in outcomes.

Strong evidence supports no difference in pain or function with or without patellar resurfacing in total knee arthroplasty.

Moderate evidence supports that patellar resurfacing in total knee arthroplasty (TKA) could decrease cumulative reoperations after 5 years when compared to no patellar resurfacing in total knee arthroplasty (TKA).

Strong evidence supports the use of tibial component fixation that is cemented or cementless in total knee arthroplasty due to similar functional outcomes and rates of complications and reoperations.

Moderate evidence supports the use of either cemented femoral and tibial components or cementless femoral and tibial components in knee arthroplasty due to similar rates of complications and reoperations.

Moderate evidence supports the use of either cementing all components or hybrid fixation (cementless femur) in total knee arthroplasty due to similar functional outcomes and rates of complications and reoperations.

9. Cement : Limited evidence supports the use of either all cementless components or hybrid fixation (cementless femur) in total knee arthroplasty due to similar rates of complications and reoperations.
10. Bilateral Arthroplasty Indications : Limited evidence supports simultaneous bilateral total knee arthroplasty (TKA) for patients **aged 70 or younger or ASA status 1-2**, because there are no increased complications.
11. Unicompartmental Knee : Moderate evidence supports that total knee arthroplasty (TKA) could be used to decrease revision surgery risk compared to unicompartmental knee arthroplasty (UKA) for medial compartment osteoarthritis.

Limited evidence supports that unicompartmental knee arthroplasty might be used to decrease the risk of deep vein thrombosis (DVT) and manipulation under

anesthesia compared to total knee arthroplasty (TKA) for medial compartment osteoarthritis.

12. Unicondylar vs Osteotomy : Moderate evidence supports no difference between unicompartmental knee arthroplasty (UKA) or valgus-producing proximal tibial osteotomy in outcomes and complications in patients with medial compartment knee osteoarthritis.

13. Navigation : Strong evidence supports not using intraoperative navigation in total knee arthroplasty (TKA) because there is no difference in outcomes or complications.

14. Patient Specific : Strong evidence supports not using patient specific instrumentation compared to conventional instrumentation for total knee arthroplasty (TKA) because there is no difference in pain or functional outcomes.

Moderate evidence supports not using patient specific instrumentation compared to conventional instrumentation for total knee arthroplasty (TKA) because there is no difference in transfusions or complications.

15. Drains : Strong evidence supports not using a drain with total knee arthroplasty.

## Post op Knee Arthroplasty Considerations

1. Cryotherapy : Moderate evidence supports that cryotherapy devices after knee arthroplasty (KA) do not improve outcomes.
2. CPM : Strong evidence supports that CPM after knee arthroplasty (KA) does not improve outcomes.
3. Hospital Stay : Strong evidence supports that rehabilitation started on the day of the total knee arthroplasty (TKA) reduces length of hospital stay.
4. Rehabilitation : Moderate evidence supports that rehabilitation started on day of total knee arthroplasty (TKA) compared to rehabilitation started on postop day 1 reduces pain and improves function.

Moderate evidence supports that a supervised exercise program during the first two months after total knee arthroplasty (TKA) improves physical function.

Limited evidence supports that a supervised exercise program during the first two months after total knee arthroplasty (TKA) decreases pain.

Limited evidence supports that selected patients might be referred to an intensive supervised exercise program during late stage post total knee arthroplasty (TKA) to improve physical function.

## SUMMARY

**General Core Treatment :** Individualised self-management strategies with the person with osteoarthritis. Ensure that positive behavioural changes, such as exercise, weight loss, use of suitable footwear, braces, walking aids and pacing, are appropriately targeted.

**Do's : Weight loss, Thermotherapy, Electrotherapy (TENS), Physiotherapy (Exercises and manipulation and stretchings), Footwear, Braces, Walking Aids And Pacing**

**Don't's : Nutraceuticals (glucosamine or chondroitin), Acupuncture**

### Pharmacological Management

Consider topical NSAIDs and/or paracetamol ahead of oral NSAIDs, COX-2 inhibitors or opioids which should be given at the lowest dose for shortest period along with lowest cost PPI, taking into account individual patient risk factors.

**Do's :** Topical capsaicin , Intra-articular corticosteroid injections

**Don't's :** Rubefacients , Intra-articular hyaluronan

**Warning :** Patient on low-dose aspirin, consider other analgesics before substituting or adding an NSAID or COX-2 inhibitor (with a PPI).

## Surgery

Appropriate referral for surgery in patients having pain, stiffness and reduced function that have a substantial impact on their quality of life and are refractory to non-surgical treatment.

**Do's :** Age, sex, smoking, obesity and co-morbidities not barriers for surgery. Explain before surgery the benefits and risks of surgery and the potential consequences of not having surgery, recovery and rehabilitation after surgery.

Osteotomy or unicondylar same outcome.

**Don't's : No surgery to be done without initial core treatment.** Arthroscopic lavage and debridement (unless mechanical locking of knee). Bilateral knee replacement above age 70 years or ASA status more than 2. Navigation and patient specific instrumentation has no difference in outcome.



# HOW THIS GUIDELINE WAS DEVELOPED

## OSTEOARTHRITIS KNEE STG SUBGROUP ESTABLISHED

### Background

December 2014: A Task Force was constituted to guide the development of Standard Treatment Guidelines (STG) in India. The Task Force subsequently approved the draft STG development manual of India (Part 1) for development of adapted guidelines. In addition, it approved a list of 14 topics recommended by a subgroup of the task force appointed to select prioritized topics for STG development. These 14 topics are from 10 clinical specialties for which the first set of STGs will be developed.

### Clinical Subgroup on Orthopaedics

Disease Condition – **Osteoarthritis Knee**

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Primary Care Practitioners	

None of the members report any conflict of interest in the development of this guideline and have all signed their declarations.

May 2015: NHSRC with technical support from NICE international carried out a training workshop to guide the STG group members and chairs on the methodology to follow in developing adapted STGs suitable for the Indian context. This workshop was conducted on 29th & 30th May, 2015 and two members (Dr. Anil Dhal, Dr. Kamat and Dr. Sumit Sural,) of the **Osteoarthritis Knee** STG team attended.

A search for guidelines on osteoarthritis Knee was performed on the National Guideline Clearinghouse (NGC) along with extensive google search for other guidelines like Royal College of Surgeons guidelines, American Academy of Orthopaedic Surgeons (AAOS), Osteoarthritis Research Society International guidelines (OARSI) and Australian Orthopaedic Association guidelines.

Extensive web search was done for high level evidence literature pertaining to Osteoarthritis of the knee, helped by Dr. Hari Kishan P, Senior Resident Orthopaedics, MAMC. A systematic approach was followed to ensure high quality of the process

The NICE (2008 and 2014) guidelines were the most comprehensive and appropriate among all the guidelines. The American Academy of Orthopaedic Surgeons (AAOS 2015) guidelines regarding surgical aspects were appropriate and hence the surgical guidelines of the recommendations were selected from it. After evaluating all the existing guidelines the process of adopt / adapt was performed as given below:

- a) **Adopted recommendation** - this entailed transferring a recommendation verbatim to the new STG.
- b) **Adapted a recommendation** - This included adapting the recommendation to ensure local compatibility with India or adding precisions to the wording to clarify the recommendation or changing of wording to active phrasing in order to ensure language consistency was maintained throughout the document. It was

ensured while adapting a recommendation that the evidence underpinning the recommendation remained intact.

After going through the available guidelines, the group adopted the majority of existing guidelines and only two guidelines were adapted from NISE.

For this process, the STG subgroup met initially twice at Maulana Azad Medical College and later 3 times at St. Stephen's Hospital where each time a video-conferencing was set up to include Dr. Suranjan Bhattacharya. One of the meetings was attended by Dr. Nikhil from the Ministry of Health and Family Welfare. The draft was written by Dr. Sumit Sural and all circulated on all experts on the e mail and subsequently the major recommendations were discussed point wise in the videoconferencing meetings.

An internal peer review meeting was held on 7<sup>th</sup> January 2016 attended by Dr. Sumit Sural and the draft was appropriately amended and circulated again on e mail to all concerned experts for their final comments.



# RESEARCH NEEDS

- a. Evidence of alternate therapies as comparative study for pain management.
- b. Future Recommendations :







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