सत्यमेव जयते

Ministry of Ayush
Government of India

STANDARD TREATMENT GUIDELINES
ON

MANAGEMENT OF COMMON MUSCULOSKELETAL DISORDERS

IN
HOMOEOPATHY SYSTEM OF MEDICINE

AYUSH VERTICAL
DIRECTORATE GENERAL OF HEALTH SERVICES
Government of India

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सत्यमेव जयते

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FOREWORD

The Ministry of Ayush remains steadfast in its commitment to the promotion and propagation of the Ayush system of medicine. Over the past two decades, significant strides have been made in providing public health services through our extensive network, comprising approximately 3844 Ayush hospitals, 36848 Ayush dispensaries, and over 7.56 lakh registered practitioners nationwide. The increasing acceptance of the Ayush system among the populace underscores the necessity for mainstreaming and standardizing these traditional practices to ensure standardized and evidence-based care throughout India.

In pursuit of this goal, the Ministry of Ayush recently unveiled the Indian Public Health Standards for Ayush healthcare facilities, a crucial step towards ensuring the delivery of high-quality public healthcare services. Furthermore, the initiative undertaken by the Ayush vertical under the Directorate General of Health Services to publish a series of Standard Treatment Guidelines (STGs) for various disease conditions within the Ayush system represents a significant stride in our commitment to providing quality and standardized healthcare services.

I extend my sincere gratitude to Dr. Atul Goel, DG, Directorate General of Health Services, for spearheading this endeavor under his guidance. I also commend the dedicated efforts of the Ayush vertical under DGHS, as well as the contributions of various experts from National Institutes, Research Councils under this Ministry, and experts from the Orthopedics Department of RML Hospital and Lady Hardinge Medical College. Their invaluable support has been instrumental in incorporating modern perspectives on musculoskeletal disease conditions into the STGs, thus bringing forth this initiative.

I am hopeful that this series of Standard Treatment Guidelines, starting with the guidelines on Musculoskeletal Disorders, will serve as a valuable resource for Ayush healthcare providers. It will empower them to deliver optimal care to individuals suffering from musculoskeletal disorders and complement the Indian Public Health Standards for Ayush healthcare services.

(Rajesh Kotecha)

01st April, 2024.
New Delhi

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Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services

Foreword

In the past two decades, there has been a resurgence of traditional medicine globally, including the Ayush system in India. Advocates of the Ayush system of medicine, including practitioners and scientists, have consistently highlighted its personalized predictive approach and diversity of Ayush formulations and therapies. As we traverse the terrain of healthcare, necessity of a holistic treatment approach becomes increasingly important. Ayush system of medicine, with its centuries-old wisdom and emphasis on natural healing modalities, offers a distinct perspective on managing musculo-skeletal disorders. Its approach, centered on restoring an equilibrium of mind, body, and spirit, complements modern medicine, thereby widening the care available to patients.

Publication of Standard Treatment Guidelines (STGs) on Management of Musculo-skeletal Disorders by Ayush system of medicine represents a significant footstep towards our commitment to comprehensive healthcare for our citizens. These guidelines, curated by experts in the field, are a testament to efficacy and relevance of Ayush in addressing public health. In order to ensure clarity and accessibility for all stakeholders, conventional terminology has been seamlessly integrated throughout the document. Each disease condition is introduced alongside its corresponding ICD classification, providing a clear clinical narrative that enhances understanding for all stakeholders.

I appreciate the Ayush vertical of this directorate, as well as contributions of various experts from National Institutes and Research Councils under the Ministry of Ayush, in bringing forth this initiative. Additionally, my gratitude to experts from orthopedics department of ABVIMS and LHMC for their invaluable support in incorporating modern perspective on musculo-skeletal disease conditions into the STGs. By bridging gaps between traditional and modern medicine, we attempt to foster inclusivity and collaboration between various systems of medicine for benefitting patients.

I sincerely hope that these guidelines will serve as a valuable resource for Ayush healthcare practitioners, empowering them to deliver optimal care to individuals afflicted with musculo-skeletal disorders.

03 April 2024

(Atul Goel)

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ABBREVIATIONS

ACPA	Anti-Citrullinated Peptide Antibody
ACR	American College of Rheumatology
ACS	Adhesive Capsulitis of Shoulder
AIDS	Acquired Immune Deficiency Syndrome
ANA	Anti-nuclear Antibody
Anti-CCP	Anti-cyclic Citrullinated Peptide
AP	Anterio-Posterior
ASES	American Shoulder and Elbow Society
BMI	Body Mass Index
CBT	Cognitive-Behavioral Therapy
CCR6	Chemokine Receptor 6
CHC	Community Health Center
CPPD	Calcium Pyrophosphate Dihydrate
CRP	C- Reactive Protein
CS	Cervical Spondylosis
CT	Computed Tomography
CTLA4	Cytotoxic T-lymphocyte associated Protein 4
CWP	Chronic Widespread Pain
DAS28	Disease Activity Score 28
DIP	Distal Interphalangeal Joints
DMARDs	Disease-modifying Antirheumatic Drugs
EMG	Electromyography
ESR	Erythrocyte Sedimentation Rate
ESWT	Extracorporeal Shock Wave Therapy
FBC	Full Blood Count
FM	Fibromyalgia
GI	Gastrointestinal
HLA	Human Leukocyte Antigen
HLA-B27	Human Leukocyte Antigen B27
HLA-DRB1	Human Leukocyte Antigen Class II Histocompatibility, D Related Beta Chain
HTLV-1	Human T-Lymphotropic Virus Type 1
IFT	Interferential Therapy
IL2RA	Interleukin-2 Receptor a
IRF5	Interferon Regulatory Factor 5
JSN	Joint Space Narrowing
LBP	Low Back Pain

LM	50 Millesimal Potency
LS	Lumbar Spondylosis
MCP	Metacarpophalangeal Joints
MMTP	Multidisciplinary Modal Treatment Plan
MRI	Magnetic Resonance Imaging
MSG	Monosodium Glutamate
NCV	Nerve Conduction Velocity
OA	Osteoarthritis
PADI4	Protein-arginine Deiminase Type-4
PHC	Primary Health Center
PIP	Proximal Interphalangeal joints
PTPN22	Protein Tyrosine Phosphatase Non-Receptor Type 22
RA	Rheumatoid Arthritis
RF	Rheumatoid Factor
ROM	Range of Motion
SLR	Straight Leg Raise
SS	Symptom Severity
STAT4	Signal Transducer and Activator of Transcription 4
TENS	Transcutaneous Electrical Nerve Stimulation
TFT	Thyroid Function Test
TRAF1	TNF receptor-associated Factor 1
USG	Ultrasound
WPI	Widespread Pain Index

1 OSTEOARTHRITIS

1

OSTEOARTHRITIS

(ICD 10 code: M15- M19)
(ICD 11 code: FA00-FA05)

CASE DEFINITION

Osteoarthritis (OA) is a degenerative joint disease mainly affecting the articular cartilage. It is mostly associated with ageing and will most likely affect the joints continually stressed throughout the years, including the knees, hips, fingers, and lower spine region.[1]

INTRODUCTION (*incidence/ prevalence, morbidity/mortality)*

- In India, nearly 80% of the population shows OA among the patients who claimed knee pain, of which approximately 20% reported incapability in daily activities.[2]
- 80% of those with osteoarthritis have limitations in movement, and 25% cannot perform their major daily activities.[3]

DIAGNOSTIC CRITERIA

Osteoarthritis is of two types:

- **Primary OA** refers to cases where the disease is not related to any prior condition or event affecting that joint but occurs due to wear and tear of the joints and relates to ageing.
- **Secondary OA**[4] includes causes such as congenital, trauma, metabolic, endocrine, joint disease, neurological, vascular, and bone disease.

  Causes of Secondary OA:

Congenital	Localized diseases (e.g., congenital hip dislocation, Legg-Calve˙-Perthes disease, slipped femoral epiphysis). Bone dysplasias (e.g., multiple epiphyseal dysphasia, Spondyloepiphyseal dysplasia, malposition (varus/valgus))
Trauma	Both acute and chronic involving the joint or nearby bone causing mal-alignment
Metabolic	Ochronosis, haemochromatosis, Wilson's disease (hepato-lenticular degeneration), calcium pyrophosphate dihydrate disease (CPPD), Rickets
Endocrine	Acromegaly, Diabetes mellitus, Obesity
Joint diseases	Septic arthritis, Rheumatoid arthritis, Gout

Neurological	Charcot's arthropathy (Tabes dorsalis, diabetes, syringomyelia and Charcot-Marie-Tooth disease)
Vascular	Avascular necrosis
Bone	Paget's disease of bone (osteitis deformans)

The diagnosis of OA is clinico-radiological and is made after a complete medical history and physical examination.

ACR Diagnostic Guidelines for Osteoarthritis of Knee, Hip, and Hand[5]

Items required for the presence of OA	
HAND	
Clinical 1. Hand pain, aching, or stiffness for most days of the prior month 2. Hard tissue enlargement of ≥ 2 of 10 selected hand joints 3. MCP swelling in ≤ 2 joints 4. Hard tissue enlargement of ≥ 2 DIP joints 5. Deformity of ≥ 1 of 10 selected hand joints	1, 2, 3, 4 or 1, 2, 3, 5
HIP	
Clinical and radiographic 1. Hip pain for most days of the prior month 2. ESR ≤ 20mm/h (laboratory) 3. Radiograph femoral and/or acetabular osteophytes 4. Radiograph hip joint-space narrowing	1, 2, 3 or 1, 2, 4 or 1, 3, 4
KNEE	
Clinical 1. Knee pain for most days of the prior month 2. Crepitus on active joint motion 3. Morning stiffness ≤ 30 min in duration 4. Age ≥ 38 years 5. Bony enlargement of the knee on examination	1, 2, 3, 4 or 1, 2, 5 or 1, 4, 5
Clinical and radiographic 1. Knee pain for most days of the prior month 2. Osteophytes at joint margins (radiograph) 3. Synovial fluid typical of OA (laboratory) 4. Age ≥ 40 years 5. Morning stiffness ≤ 30 min 6. Crepitus on active joint motion	1, 2 or 1, 3, 5, 6 or 1, 4, 5, 6

DIP: distal interphalangeal joints, PIP: proximal interphalangeal joints; MCP: Metacarpophalangeal joints

CLINICAL EXAMINATION[5]

During the physical exam, the examiner should look at the following points: Look, feel, and move each joint, evaluating it for swelling, warmth, or tenderness; the range of motion; the pattern of affected joints (such as one knee, both knees, knuckles, wrists, or shoulders). Often,

the pattern of joints affected can help to tell the difference between osteoarthritis and other types of arthritis; any bony knobs (osteophytic changes) on joints (especially the fingers).

During physical findings in osteoarthritic joints, the examiner should look at Joint line tenderness, bony enlargement, crepitus, effusions, and decreased range of motion. Pain on passive motion is also common. Erythema (unusual except in DIP and PIP joints), and effusion (unusual except in the knee joints), suggest active inflammation. If hands are involved, particularly the distal and proximal interphalangeal joints, the examiner should look at bony enlargements such as Heberden's and Bouchard's nodes.

Figures[6]:

Figure 1: Patient with right hip OA, showing fixed flexion and external rotation deformity.

Figure 2: Heberden's nodes (thumb, middle, ring, and little finger DIP joints), Bouchard's nodes (index finger PIP joint), and lateral radial/ulnar deviation (index PIP joint, ring DIP joint) in the left hand of a person with nodal OA.

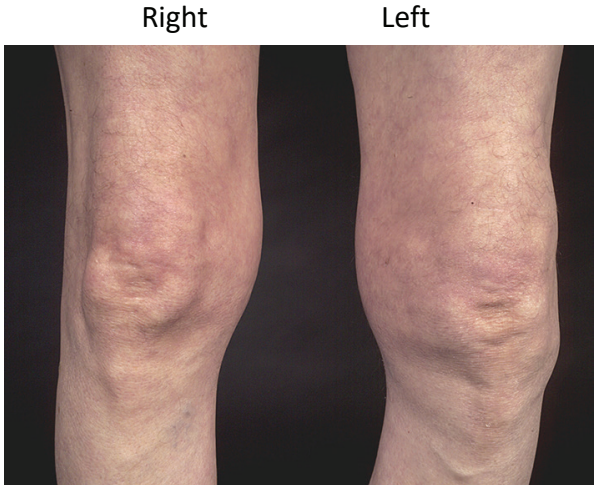


Figure 3: Unilateral knee OA: swollen left knee with varus and fixed flexion deformity in a 63-year-old man with a prior history of knee trauma. On palpation, there was marked crepitus, restricted flexion, bony swelling, and a small effusion. The cruciates were intact, but there was minor varus/valgus instability on stress testing.

SUPPORTIVE INVESTIGATIONS

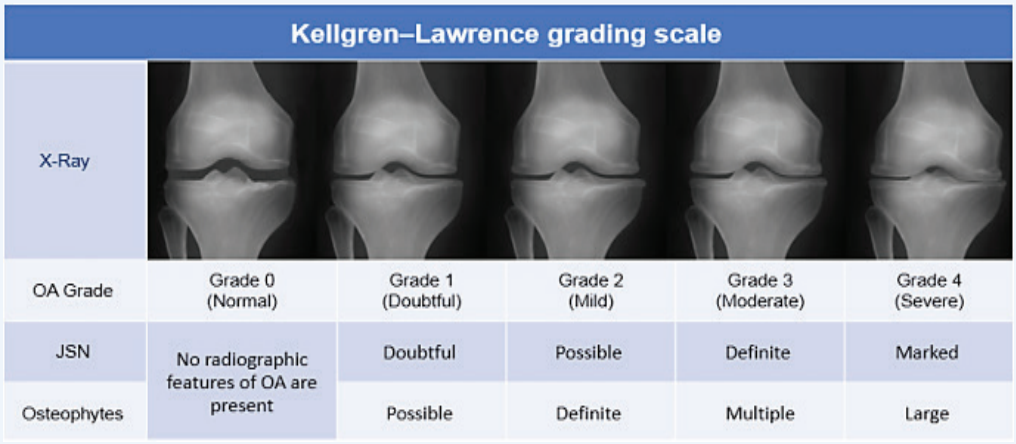
Osteoarthritis is a diagnosis made on clinical and radiological grounds. A plain X-ray is usually the only helpful investigation. Furthermore, radiographic changes of OA are commonly present but often asymptomatic. OA does not trigger the acute phase response and therefore has no impact on the FBC, ESR or CRP[7]. However, investigations may be necessary to exclude alternative diagnoses or predisposing diseases.

Essential:

Investigation	**Findings**
X-ray	Osteophyte formation and joint space narrowing (JSN). The classification[8] of X-ray findings is as follows:

Grade 0	no radiographic features of OA are present
Grade 1	doubtful joint space narrowing (JSN) and possible osteophytic lipping
Grade 2	definite osteophytes and possible JSN on the anteroposterior weight-bearing radiograph
Grade 3	multiple osteophytes, definite JSN, sclerosis, possible bony deformity
Grade 4	large osteophytes, marked JSN, severe sclerosis, and definite bony deformity

Figure 4[9]:



Advanced:

Investigation	**Findings**
Magnetic resonance imaging	It is more expensive than X-rays but will provide a view that offers better images of cartilage and other structures to detect early abnormalities typical of osteoarthritis. The MRI is required only in selected cases.
Joint aspiration	It is not mandatory due to the danger of possible infection. However, if done, the fluid is examined for evidence of crystals or joint deterioration. This test helps rule out other medical conditions or other forms of arthritis.
Synovial fluid	Synovial fluid examination usually shows mild leucocytosis (< 2000/mm^3) with mononuclear cell predominance to predict disease progression.

DIFFERENTIAL DIAGNOSIS[6,7,10]

Condition	Differential Features
Bursitis	• Tenderness directly over the bursa with pain elicited by any active motion that employs muscles adjacent to the involved bursa
Rheumatoid arthritis	• Arthritis of three or more joint areas • Symmetrical arthritis • Morning stiffness (> 1 hour) • Positive rheumatoid factor • Positive anti-CCP antibody • Elevated ESR and CRP
Psoriatic arthritis	• Onset usually between 25 and 40 years of age • Most commonly in patients with current or previous skin psoriasis (70%) • Affection of the DIP joints of the hands. However, unlike hand OA, psoriatic arthritis may target just one finger, often as dactylitis, and characteristic nail changes are usually present • HLA-B27 Positive
Gout	• Most commonly affects the first metatarsophalangeal joint in over 50% of cases-'podagra' • Typical attacks of pain with an extremely rapid onset, reaching maximum severity in just 2-6 hours, often waking the patient in the early morning with florid inflammation and erythema • Large MSUM crystal deposits as irregular firm nodules ('tophi') at the usual sites for nodules around extensor surfaces of fingers, hands, forearm, elbows, achilles tendons and sometimes the helix of the ear, unlike OA • Elevated serum uric acid levels (>0.42 mmol/l or 7.1 mg/dl) • Monosodium urate crystals in synovial fluid
Calcium pyrophosphate crystal deposition (CPPD) disease	• Involves multiple joints, frequently involving peripheral joints of the upper and lower extremities, including the wrists and metacarpophalangeal (MCP) joints, as well as the knees and elbows • Nearly symmetrical arthritis • Radiographic articular chondrocalcinosis • CPPD crystals in synovial fluid
Hemochromatosis	• Affects mainly the MCP joints and wrists • Men are most affected • Characteristic radiologic findings are squared-off bone ends and hook-like osteophytes in the MCP joints, particularly the second and third MCP joints • Increased plasma iron levels • Increased serum ferritin levels

Condition	Differential Features
Infectious arthritis	• Joint pain that progresses from day to day with inflammatory signs (eg, effusion, increased warmth, erythema) • Diagnosis is established by culturing the pathogen from the synovial fluid or from the blood • Elevated ESR and CRP
Soft tissue trauma and peri-articular Disorders	• History of overuse, typically involving sports with jumping or sudden direction change • Pain increases with activity and decreases with rest
Neurological Disorders (e.g., radiculopathy or neuropathic pain)	• Often associated with paresthesias or an "electric" sensation • Typically radiates along the course of the nerve

PRINCIPLES OF MANAGEMENT

Red Flag Signs of OA:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine.

- Sudden Severe Pain
- Buckling of the Knee
- Swelling and Warmth
- Knee Locking
- Persistent Pain
- Consistent Knee Pain even After Surgery

Patients should be educated on their diagnosis. Misconceptions exist about OA. Patients are concerned about possible progression to disability. There should be an emphasis on the natural history of OA. Therapeutic options need to be discussed that emphasise lifestyle changes such as exercise and weight control that might be helpful. Lifestyle changes should be individualised, minimising limitations in activities of daily living.

(A) Prevention management[5,11]

Primary, secondary, and tertiary prevention strategies are necessary to prevent increasing rates of OA resulting from an ageing population and increasing rates of obesity and physical inactivity. These include non-pharmacological approaches such as changes in diet and lifestyle, weight management, yoga, exercise, patient education, psychosocial measures, support devices, thermal modalities, and alterations in activities of daily living. Reassurance, counselling, and education may minimise the influence of psychosocial factors. Thermal modalities are potentially helpful in decreasing joint stiffness, alleviating pain, relieving muscle spasms, and preventing contractures.

(B) Interventions

<u>At Level 1</u>- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The diagnosis of OA is primarily clinical and made after a complete medical history and physical examination. However, investigations, like a complete hemogram and X-ray, may be done.

Management

Various studies on OA in homoeopathy reveal the potential role of homoeopathic medicines in the symptomatic management of patients with OA [12-17] and help to improve the activity of daily living[18]. Many remedies are listed in homoeopathic literature to treat this condition; however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient. Because of the chronicity of the disease, a single dose may not be sufficient. Repetition of doses, change of potency, and change of a remedy during follow-up are based on the totality of symptoms, miasmatic cleavage, Kent's 12 observations and other homoeopathic principles.

Some of the commonly prescribed medicines are as follows:[19]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Bryonia alba	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Tissue remedies: • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Rhus toxicodendron					
3.	Lycopodium clavatum					
4.	Calcarea carbonica					
5.	Calcarea fluoricum					
6.	Thuja occidentalis					
7.	Causticum					
8.	Sulphur					
9.	Pulsatilla nigricans					
10.	Medorrhinum					
11.	Graphites					
12.	Kali carbonicum					
13.	Syphilinum					
14.	Sepia succus					
15.	Rhododendron					

Do's and Don'ts while taking homoeopathic medicines[20]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

Recommended diet and lifestyle [21,22,23,24,25]

Exercise - Advise people with osteoarthritis to exercise as a core treatment irrespective of age, co-morbidity, pain severity or disability. It covers both muscle strengthening and aerobic exercises[26].

S.no.	*Exercises*	
1.	**Knee flexion and Extension** Lying on your back with your knee straight. Slowly bend the affected knee as far as comfortable. Hold the position for 10 seconds and then slowly return to a straightened position. Repeat 10 times.	
2.	**Inner Range Quadriceps** Place a small rolled-up towel under your knee. Tighten your thigh muscles and straighten your knee (keep the knee on the towel and lift your foot off the floor). Hold for 5-10 seconds and slowly relax. Repeat 10 times.	
3	**Quadriceps Strengthening—Sit to stand** Sit on a chair with your arms folded. Slowly stand up without using your arms. When upright, return slowly to the chair again without using your arms. Repeat 10 times.	
4.	**Quadriceps Strengthening—Mini Squat** Using a chair for balance, squat down bending both knees but keeping the back straight. The squat should be no more than 45 degrees. Repeat 10 times.	

S.no.	Exercises	
5.	**Calf strengthening - Heel Raises** Using a chair for balance, push up onto your tip toes and back down again. You can do this just on your affected leg if you are able to balance. Repeat 10 times.	
6.	**Step up** Stand in front of a step. Step up 10 times with one leg leading and then repeat with the other leg leading.	
7.	**Clam** Lie on your side with your knees bent. Tighten your buttocks. Lift your top knee as far as you can, without letting your pelvis rotate forward or back. Keep your feet together and back straight during the exercise. Lower slowly back down. Repeat 10 times.	
8.	**Hamstring Stretch** Stand upright and place the foot of your affected leg on a step. Slowly lean forward at your hips until you feel a stretch at the back of your thigh. Keep your back straight. Hold for 20—30 seconds, repeat 5 times.	
9.	**Quadriceps Stretch** Stand upright, holding on to a firm support. Loop a towel around the ankle of your affected leg. Keeping your back straight, use the towel to pull your heel towards your bottom to feel a stretch at the front of your thigh. Hold for 20-30 seconds. Repeat 5 times.	

S.no.	Exercises	
10.	**Calf Stretch** Stand in a walking position with the affected leg straight behind you and the other leg bent in front of you. Take support from a wall or chair. Lean forwards until you feel the stretching in the calf of the straight leg. Hold for 30 seconds, repeat 5 times.	

Yoga[27]: Various yoga practices are helpful for the management of patients with OA. These include *kriyas (kunjal and kapalbhati), simple joint movements, practices of sukshma vyayama, yogasanas (tadasana, katichakrasana, konasana, urdhwa hastottanasana, uttana padasana, gomukhasana, marjari asana, ushtrasana, bhadrasana, bhujangasana, makarasana, shavasana), pranayama (nadishodana pranayama, suryabhedi pranayama, bhramari), yoga nidra practice and meditation.*

Weight loss- Each kg increases the loading across the knee three to six-fold. Thus, weight loss, if substantial, may lessen the symptoms of knee and hip OA.

Nutrition- Adequate nutrition should be taken. A diet rich in vitamins A, C, E, and K helps reduce the risk of osteoarthritis. Consumption of long-chain n-3 fatty acids (oily fish/fish oil supplements), should be increased, which may improve pain and function in OA patients.

Restricted diet and lifestyle[25,28]

- Don't overeat. Avoid foods that worsen the signs and symptoms of OA, such as sugar, deep-fried foods, saturated fats, full-fat dairy, trans fats, refined carbohydrates, alcohol, and preservatives like monosodium glutamate (MSG).
- Don't smoke. Smoking speeds up the process of general wear and tear of our bones and muscles. This might increase your risk of developing osteoarthritis or other chronic diseases. Men with knee osteoarthritis who smoke sustain more significant cartilage loss and have more severe knee pain than men who do not smoke.
- Don't do vigorous and repetitive exercises.
- Avoid exercising during flare up or acute pain.
- Avoid jobs requiring knee bending and carrying heavy loads

Follow-up (every 7 days or earlier as per the need)

Reviews[29] should include:

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.

- Monitoring the long-term course of the condition.
- Management of osteoarthritis in terms of exercise, and physiotherapy.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Self-management support.

Referral criteria

- Nonresponse to treatment
- Evidence of an increase in severity/complications
- Substantial impact on their quality of life and activities of daily living
- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as diabetes, hypertension or associated cardiac disease.

At Level 2 (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray**)**

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh case must be evaluated thoroughly for any complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- Haemogram
- X-ray
- Magnetic resonance imaging
- Joint aspiration
- C-reactive protein
- Synovial fluid examination
- Serum uric acid
- RA Factor
- S. alkaline phosphatase

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Other procedures:

- Physiotherapy including exercises, massage, transcutaneous electrical nerve stimulation (TENS), thermotherapy, and braces may be done as per the case's need under a physiotherapist's guidance.
- Occupational Therapy: Therapeutic activities and exercises to promote gross and fine motor control, range of motion, endurance, and strength, thereby improving functional abilities with daily tasks such as self-care, home management, and work and leisure activities under the guidance of an occupational therapist.
- Orthosis/mechanical aids- These protect joints and help reduce pain by statically holding the joint(s) in place. They decrease the load by positioning the affected joint(s) and by supporting the joint(s) to prevent distortion from deforming forces. In knee osteoarthritis, shock-absorbing footwear reduces the impact of a load on the knee. Heel wedging improves proprioception and reduces pain in osteoarthritis of the knee.

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 1, plus
- Failure of acute exacerbation to respond to initial medical management
- Advanced stages of disease like severe effusion, contractures, osteoporosis, or deformities.

At Level 3 (Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.

Clinical Diagnosis: Same as Levels 1& 2.

Confirm diagnosis and severity with the help of investigations like magnetic resonance imaging, joint aspiration, and synovial fluid examination.

Management: Same as Levels 1 & 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has a number of uncommonly prescribed medicines that can ease pain and other symptoms in

patients with end-stage osteoarthritis or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycemic agents, or antihypertensives. Homoeopathic medicines can be prescribed as a part of supportive management based on the sphere of action or keynote symptoms in these disorders as well as other advanced pathological states. As part of integrative therapy, additional therapies including massage, cupping, acupressure, and acupuncture may also be utilised simultaneously to lessen pain and improve flexibility. A few homoeopathic medicines which can be considered as per indications are given below:[19]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Ruta graveolens	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x **Ointments:** • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Phytolacca decandra					
3.	Kalium iodatum					
4.	Sticta pulmonaria					
5.	Sanguinaria canadensis					
6.	Ferrum metallicum					
7.	Angustura vera					
8.	Solanum lycopersicum					
9.	Guaiacum officinale					
10.	Salicylic acid					
11.	Natrum phosphoricum					

Recommended diet and lifestyle: Same as Levels 1& 2

Restricted diet and lifestyle: Same as Levels 1 & 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 2, plus
- Other modalities can be considered depending on the case and to rehabilitate properly.

References

1. WHO. Chronic Rheumatic condition [Internet]. Department of Chronic Diseases and Health Promotion. [cited 29 mar 2019]. Available at: http://www.who.int/chp/topics/rheumatic/en/
2. Azad CS, Singh AK, Pandey P, Singh M, Chaudhary P, Tia N, et al. Osteoarthritis in India: An epidemiological aspect. International Journal of Recent Scientific Research.2017 Oct.; 8(10):20918-22
3. Osteoarthritis. National Health Portal of India. Available at: https://www.nhp.gov.in/disease/musculo-skeletal-bone-joints-/osteoarthritis
4. Adatiaa A, Rainsford B K. D., Keana W.F. Osteoarthritis of the knee and hip. Part I: aetiology and pathogenesis as a basis for pharmacotherapy. Journal of Pharmacy and Pharmacology, Royal Pharmaceutical Society; 2012; 64: 617–25
5. Dennison E, Cooper C. Osteoarthritis: epidemiology and classification, Osteoarthritis and related disorders. In Hochberg MC, Silman A, Smolen JS, Winblatt ME, Weisman MH (ed). Rheumatology. 3rd edn. United Kingdom, Mosby Publications, 2004
6. Doherty M, Abhishek A. Clinical manifestations and diagnosis of osteoarthritis. Characteristics of specific joint involvement. In *up to date*. Post TW (Ed), UpToDate, Waltham, MA. (Accessed on August 11, 2022.) Available from: https://wolterkluwer.ccrhlibrary.in/contents/clinical-manifestations-and-diagnosis-of-osteoarthritis?Search=osteoarthritis&source=search_result&selectedtitle=2~150&usage_type=default&display_rank=2
7. Doherty M, Lanyon P, Ralston SH. Musculoskeletal Disorder. In Boon NA, Colledge NR, Walker BR. (Ed.) Davidson's Principles & Practice of Medicine; 21st edition. Philadelphia. Elsevier Ltd. 2010
8. Kellgren JH, Lawrence JS. Radiological assessment of osteoarthrosis. Ann Rheum Dis. 1957; 16:494–502
9. Bany Muhammad, M., Yeasin, M. Interpretable and parameter optimized ensemble model for knee osteoarthritis assessment using radiographs. *Sci Rep* 11, 14348 (2021). https://doi.org/10.1038/s41598-021-93851-z .
10. Diagnosis, Osteoarthritis: Care and Management in Adults. Clinical guideline CG177 Methods, evidence, and recommendations. February 2014. National Clinical Guideline Centre, 2014. [cited 02 Apr. 2019]; Available at: https://www.ncbi.nlm.nih.gov/books/NBK333067/
11. Roos, E., Arden, N. Strategies for the prevention of knee osteoarthritis. Nat Rev Rheumatol 12, 92–101 (2016). https://doi.org/10.1038/nrrheum.2015.135
12. Birnesser H, Klein P, Weiser M. A Modern Homeopathic Medication Works as well as COX 2 Inhibitors. Der Allgemeinarzt 2003;25(4):261–4
13. Van Hasleen RA, Fisher PAG. A randomized controlled trial comparing topical piroxicam gel with a homoeopathic gel in osteoarthritis of knee. Rheumatology. 2000(39):714-9
14. Bhanumurty K, Raveender Ch, Sahgal GC, Singh B, Singh K, Vichitra AK, et al. Clinical Evaluation of Predefined Homoeopathic Medicines in the management of osteoarthritis. Clinical Research Studies. Series II. CCRH, New Delhi.2009:77-84
15. Kumar NR, Iyer NH. An observational study on the effect of individualised homoeopathic medicine administered based on the totality of symptoms vis-à-vis personality in cases of osteoarthritis knee. Indian J Res Homoeopathy 2021; 15:103-12.
16. Kundu C, Ahmed Z, Das S. Homoeopathic medicine *Gettysburg water* in osteoarthritis: A case series. Indian J Res Homoeopathy 2022;16(2):125-131.
17. Mohanty N, Sahoo AR, Gautam P, Ghosh P. A Randomised Placebo-Controlled Clinical Trial of Homeopathic Medicines on Osteoarthritis. Homœopathic Links. 2023 Mar;36(01):012-5.
18. Motiwala FF, Kundu T, Bagmar K, Kakatkar V, Dhole Y. Effect of Homoeopathic treatment on Activity of Daily Living (ADL) in Knee Osteoarthritis: A prospective observational study. Indian J Res Homoeopathy 2016; 10:182-7
19. Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory. New Delhi. B Jain publishers (P) Ltd.: 2007

20. Fischer P, Scott D.L. A randomized controlled trial of homeopathy in rheumatoid arthritis. Rheumatology 2001;40: 1052-1055
21. Thomas S, Browne H, Mobasheri A, Rayman MP. What is the evidence for a role for diet and nutrition in osteoarthritis? Rheumatology (Oxford). 2018 May 1;57(suppl_4):iv61-iv74.
22. Neogi T, ZhangY. Osteoarthritis. Prevention. Curr Op in Rheumatol. 2011; 23(2): 185–191.
23. Vincent HK, Heywood K, Connelly J, Hurley RW. Weight Loss and Obesity in the Treatment and Prevention of Osteoarthritis. PM R. 2012; 4(5 0): S59–S67.
24. Felson DT and Zhang Y. An update on the epidemiology of knee and hip osteoarthritis with a view to prevention. Arthritis &Rheumatism;1998;41(8):1343-55
25. Haq I, Murphy E, Dacre J. Osteoarthritis. Postgrad Med J, 2003, 79:377–83.
26. The Royal orthopaedic hospital. NHS Foundation trust. Exercises for Osteoarthritis of the Knee Your Rehabilitation Programme. Version 175/01 Review: October 2022. Available at: https://www.roh.nhs.uk/patient-information/knees/19-exercise-for-oa-of-knee/file
27. Morarji Desai Institute of Yoga. Yogic management of arthritis. Dolphin printo publishers. p:6-7 Available from: http://www.yogamdniy.nic.in/WriteReadData/LINKS/5_Yogic%20Management%20of%20Arthritis98b73c5e-4900-44dd-b4f7-1ce7b45e7219.pdf
28. Amin S, Niu J, Guermazi A, Grigoryan M, Hunter DJ, Clancy M, et al. Cigarette smoking and the risk for cartilage loss and knee pain in men with knee osteoarthritis. Ann Rheum Dis [Internet]. 2007; 66:18–22. Available from: www.annrheumdis.comhttp://ard.bmj.com/
29. Ministry of Health & Family Welfare, Government of India. Standard Treatment Guidelines. Management of Osteoarthritis Knee. Macro Graphics Pvt. Ltd. August 2017.

2 RHEUMATOID ARTHRITIS

2

RHEUMATOID ARTHRITIS

(ICD 10 code: M06.9)
(ICD 11 code: FA20.0)

CASE DEFINITION[1,2]

Rheumatoid Arthritis (RA) is a progressive, disabling, chronic multi system disease which is characterized by pain, swelling and stiffness of the synovial joints, often worse in the morning and after periods of inactivity. It exhibits symmetrical, destructive, and deforming polyarthritis affecting small and large synovial joints with extra articular manifestations, including fatigue, subcutaneous nodules, lung involvement, pericarditis, peripheral neuropathy, vasculitis, and hematologic abnormalities. It is associated with systemic disturbance and presence of circulating antiglobulin antibodies.

INTRODUCTION (*incidence/ prevalence, morbidity/mortality, risk factors)*

- The reported prevalence of RA in Indian population as per criteria of revised American College of Rheumatology (ACR) is 0.75%.[3]
- RA affects approximately 0.3–1% of the adult population worldwide with a peak onset of the disease between 40 years and 70 years of age and the prevalence rises with age.[4] In 2019, 18 million people worldwide were suffering from rheumatoid arthritis[5].
- It occurs more commonly in females than in males with a ratio of 3:1.[2] About 70% of people living with rheumatoid arthritis are women, and 55% are older than 55 years[4].
- Risk factors include female sex, genetic factors (HLA-DRB1, PADI4, PTPN22, CTLA4, IL2RA, STAT4, TRAF1, CCR6, IRF5), environmental factors such as exposure to tobacco smoke, air pollution, occupational dust (silica), asbestos, textile dust, P. Gingivalis, high sodium, red meat and iron consumption, obesity, low vitamin D intake and levels. [6,7]

DIAGNOSTIC CRITERIA[1,2,5]

The clinical diagnosis of RA is largely based on signs and symptoms of a chronic inflammatory arthritis, with laboratory and radiographic results. 2010 American College of Rheumatology criteria (ACR) is used for early diagnosis of RA.

2010 ACR/ EULAR DIAGNOSTIC CRITERIA FOR RA*

Criterion	Score
Joint affected	
1 Large joint	0
2-10 large joint	1
1-3 small joints	2
4-10 small joint	3
>10 joints including at least one small joint	5
Serology	
Negative RF and ACPA	0
Low positive RF and ACPA	2
High positive RF and ACPA	3
Duration of symptoms	
<6 weeks	0
>6 weeks	1
Acute phase reactants	
Normal CRP and ESR	0
Abnormal CRP or ESR	1
Patients with a score ≥ 6 are considered to have definite RA	

*European League Against Rheumatism/ 2010 American College of Rheumatology criteria (RF= Rheumatoid factor, ACPA= Anti-Citrullinated Peptide Antibody; CRP= C- Reactive protein; ESR = Erythrocyte Sedimentation Rate)

The presence of radiographic joint erosions or subcutaneous nodules may confirm the diagnosis in the later stages of the disease.

This criterion does not take into account whether the patient has rheumatoid nodules or radiographic joint damage because these findings occur rarely in early RA.

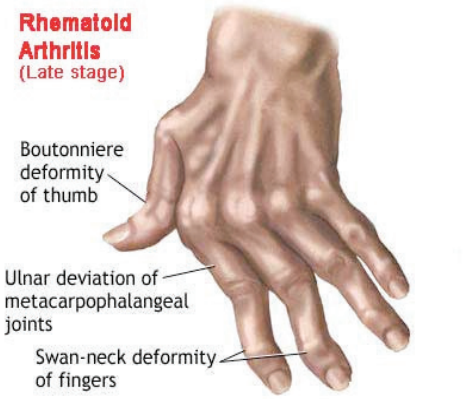
CLINICAL EXAMINATION[1,2,5]

The typical presentation is with pain, swelling and morning stiffness affecting the small joints of hands, feet, and wrists. The most frequently involved joints are wrists, Metacarpophalangeal (MCP) and Proximal interphalangeal (PIP) joints. However, Distal interphalangeal (DIP) joint involvement may occur in RA, but it usually is a manifestation of co existent osteoarthritis [5]. Flexor tendon tenosynovitis is a frequent hallmark of RA and leads to decreased range of motion, reduced grip strength, and 'trigger' fingers.[1]

During the physical exam, the examiner should look for following signs/ symptoms:

- Joint pain

- Early morning joint stiffness lasting for more than 1 hour that eases with physical activity.
- Joint tenderness
- Swelling of joint
- Redness of joint
- Limited range of motion



The examiner should look for the deformities exhibited in RA, as follows:

- Ulnar drift of the hand,
- Boutonniere deformity,
- Swan neck deformity,
- Flexion deformity,
- Hallux valgus,
- Hammer toe etc.

RA may result in a variety of extra articular manifestations during its clinical course, even prior to the onset of arthritis. Some extra articular manifestations are as follows:[1,2,8]

EXTRA-ARTICULAR MANIFESTATIONS	
• **Systemic**	• Fever • Weight loss • Fatigue • Susceptibility to infection
• **Musculoskeletal**	• Muscle wasting • Tenosynovitis • Bursitis • Osteoporosis
• **Haematological**	• Anaemia • Thrombocytosis • Neutropenia • Eosinophilia • Lymphoma
• **Neurological**	• Cervical myelopathy • Peripheral neuropathy • Cervical cord compression
• **Occular**	• Keratoconjunctivitis sica • Episcleritis • Scleritis
• **Lymphatic**	• Felty syndrome • Splenomegaly

EXTRA-ARTICULAR MANIFESTATIONS	
• **Cardiac**	• Pericarditis • Myocarditis • Endocarditis • Ischemic heart disease
• **Pulmonary**	• Nodules, • Pleural effusion • Bronchiolitis • Interstitial lung disease
• **GI**	• Vasculitis
• **Endocrine**	• Hypoandrogenism
• **Skin**	• Rheumatoid nodules • Purpura • Pyoderma gangrenosum

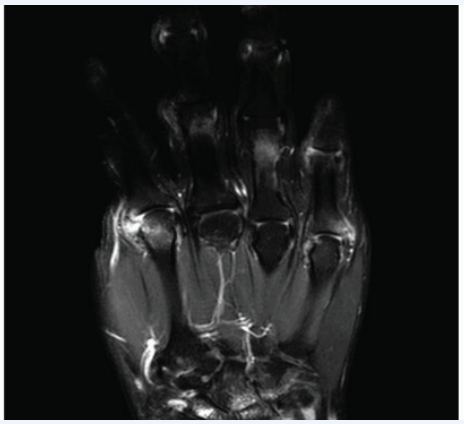
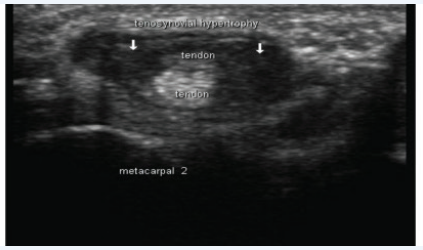
SUPPORTIVE INVESTIGATIONS[1,2,9]

Essential:

INVESTIGATION	FINDINGS
RF (Rheumatoid factor)	• Positive • Nonspecific and may be positive in other conditions • RF is a relatively good biomarker for establishing the diagnosis of RA
ACPA (Anti- Citrullinated Peptide Antibody)	• Positive • It is highly sensitive and specific serological marker of RA
CRP (C- Reactive protein)	• Elevated
ESR (Erythrocyte Sedimentation Rate)	• Elevated

Advanced:

INVESTIGATION	FINDINGS
X-ray	• It shows reduced joint space, erosion of articular margins, subchondral cysts, juxta-articular rarefaction, soft tissue shadow at the level of the joint because of joint effusion or synovial hypertrophy, deformities of hand and fingers
MRI (Magnetic Resonance Imaging) It may not be required in every case.	• Detect erosions earlier than an X-ray
Ultrasound	• Ultrasound (US) is able to provide high resolution multiplanar images of soft tissue, cartilage, and bone profiles • Ultrasound is not done for routine monitoring of disease activity in adults with RA

Radiographic features of Rheumatoid Arthritis[10]	
Fontal radiograph of both hands demonstrating bilateral symmetrical disease, marked periarticular osteopenia; widespread joint space narrowing; erosions of the radius, ulnar and carpal bones (worse on left hand); and subluxation of the second metacarpophalangeal joint on the right	
Proton density-weighted fat-saturated coronal magnetic resonance imaging showing multiple areas of enhancement of the bones corresponding to the regions of bone oedema and synovial enhancement in the second metacarpophalangeal joint	
Transverse ultrasound image at the level of the second metacarpal demonstrating tenosynovitis of the extensor tendons of the hand	

DIFFERENTIAL DIAGNOSIS[1,2,11,12]

Condition	Differential Features
Systemic Lupus Erythematosus	• Arthralgia, often associated with early morning stiffness. • A butterfly-shaped facial (malar)rash • Photosensitivity • Oral ulcers
Chronic Lyme disease	• Joint and muscle pain • Fever and headache, night sweats • Irregular red rash • Sensitivity to light
Osteoarthritis	• Insidious onset over months or years begins later in life i.e., over the age of 45, but more often over 60years. • It commonly affects large weight bearing joints such as hip and knee joint

Condition	Differential Features
	• Symptoms tend to improve substantially after 30 minutes of moving around • Joint pain is mainly related to movement and relieved by rest
Septic Arthritis	• Fever in the range of 101-102° F and sometimes higher is common • Acute or subacute monoarthritis, especially knee and hip joints • The joint is usually swollen, hot and red, with pain at rest and on movement • Decreased range of motion
Psoriatic Arthritis	• Inflammatory arthritis that characteristically occurring in individuals with psoriasis • Inflammation of DIP (Distal interphalangeal) joint • Asymmetric oligo-arthritis and Symmetric polyarthritis • Nail changes in the fingers or toes
Sjogren syndrome	• Joint pain, swelling and stiffness with onset between 40 and 50 years • Dry mouth, dry eyes; Sandy or gritty feeling under the eyelids • Fatigue
Sarcoidosis	• Arthralgia • Erythema nodosum • Photophobia, blurred vision, dry eyes, and increased lachrymation
Fibromyalgia	• Fibromyalgia usually causes pain, stiffness, and tenderness in muscles and connective tissues throughout the body • A person feels pain when the doctor applies pressure to the 18-24 tender joints associated with the condition • Symptoms impact all four quadrants of the body • Symptoms have lasted for at least 3 months without a break
Viral arthritis	• Very acute, self-limiting pain and other symptoms associated with the particular virus involved
Crystalline arthritis (gout and pseudogout)	• Patient over the age of 50 presenting with an inflammatory mono- or oligoarthritis • Urate or calcium pyrophosphate crystals, in synovial fluids. • The hallmark of a crystalline arthritis is its self-limited nature[13]

Condition	Differential Features
Reactive arthritis	• Monoarthritis or oligoarthritis following a recent infection (e.g., urethritis, enteric) • Asymmetric pattern of joint involvement • Symptoms or signs of enthesopathy, Keratoderma blennorrhagica or circinate balanitis • Radiologic evidence of sacroiliitis and/or spondylitis • The presence of human leukocyte antigen (HLA) B27
Carpal tunnel syndrome	• Symptoms of hand swelling, burning, or numbness, typically at night or in the morning • A positive Tinel or Phalen sign, thenar wasting, and/ or demonstrate poor hand dexterity or weakness in the "pinch test" [14]

PRINCIPLES OF MANAGEMENT [1,2,5]

Red Flag Signs:

These signs should be assessed before initiating treatment for need for management through modern medicine.

- More visible swollen and tender joints
- Symmetrical pain
- More frequent flares
- Increased stiffness and difficulty bending joints
- Less range of motion
- Rheumatoid nodules
- Elevated inflammation markers
- Feeling more fatigued or weaker
- Having more trouble with daily activities
- Numbness/ tingling in fingers
- Extra-articular manifestations

The main goal is to control inflammation, relieve pain and reduce disability associated with Rheumatoid arthritis. Patients should be educated on their diagnosis, eating a well-balanced diet, achieving, and maintaining a healthy body weight and regular physical activity. In patients with established RA or those in whom remission can't be achieved, an alternative target of therapy would be low disease activity. If the patient is already under standard care, the physician may advice to continue the same along with add-on homoeopathy and can be assessed for the same in the follow ups for tapering or discontinue the treatment in consultation with conventional physician.

(A) Prevention management[15]

1. Patient education: Educating Patient about the disease condition and its prevention.

2. Rest
3. Exercise: Exercises can improve and maintain range of motion of the joints.
4. Physiotherapy: This consists of:
    (i) Splintage of the joints in proper position during the acute phase
    (ii) The application of heat or cold can relieve pain or stiffness.
    (iii) Joint mobilization exercises to maintain joint to maintain joint functions.
    (iv) Muscle building exercises to gain strength.
5. Occupational therapy: Role of occupational therapy is to help the patient cope with his occupational requirements in the most comfortable way, by modifying them.
6. Nutrition and dietary therapy: Weight loss may be recommended for overweight and obese people to reduce stress on inflamed joints. Obesity is a risk factor for more rapid progression of joint damage. This should be explained to obese patients and strategies must be offered on how to lose and maintain an appropriate weight.

(B) Interventions

At Level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The clinical diagnosis of RA is largely based on signs and symptoms of chronic inflammatory arthritis, with laboratory and radiographic results. Physicians must do a physical examination to check all the joints for swelling and to assess their movement. Also, look for any nodules on the skin. Blood tests like ESR and CRP can be done to assess levels of inflammation in the body.

Management

Research studies indicate that homoeopathic medicines play a considerable role in reducing the symptoms of joint inflammation, its frequency, duration and severity of the attacks in *Rheumatoid arthritis* and delay the onset of complications.[16-24] Homoeopathic constitutional similimum improves the quality of life of patients with RA by reducing intensity of pain, limiting disability and reducing disease activity.[25] Thus, the use of homoeopathic medicines causes improvement of the disease condition and limits the need of analgesics and Disease-modifying antirheumatic drugs (DMARDs) in RA.

There are many medicines available in the homoeopathic literature which can be selected based on presenting totality of each case for the treatment of RA. Some of the commonly prescribed medicines are as follows: [26,27,28]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1	Bryonia alba	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Tissue remedies: • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2	Rhus toxicodendron					
3	Lycopodium clavatum					
4	Calcarea carbonica					
5.	Causticum					
6	Pulsatilla nigricans					
7	Medorrhinum					
8	Rhododendron					
9	Arnica montana					
10	Ruta graveolens					
12	Formica rufa					
13	Natrium muriaticum					
14	Phytolacca decandra					
15	Kalmia latifolia					
16	Phosphorus					
17	Kali iodatum					

Do's and Don'ts while taking homoeopathic medicine[20]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

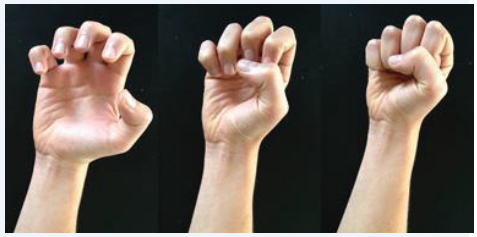
Recommended diet and lifestyle[29, 30]

Rest and exercise: Rest helps to decrease active joint inflammation, pain, and fatigue. In general, shorter rest breaks every now and then are more helpful than long times spent in bed. Exercise is important for maintaining healthy and strong muscles, preserving joint mobility, and maintaining flexibility. Exercise can help improve your sleep, decrease pain and maintain a healthy weight.

THE EXERCISE PROGRAM[31]

A: Knout the hand in three stages

Description: sitting with the arms resting on a table at elbow level with the palms turned upwards slowly bent each joint until a fist is formed. Strength all joint and repeated once more until full dosage has been achieved.

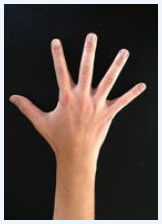


B: "walk" the finger 2 to 5 against the first finger one by one with the palmar side of the hand lying on a table

Description: Place the palm on a flat surface, levelled with the elbow. Move the thumb as far away from the hand as possible (abduction), then move the rest of the fingers one at a time towards the thumb. When all fingers are as fare to one side as possible, they are moved back one finger at the time starting with the little finger.

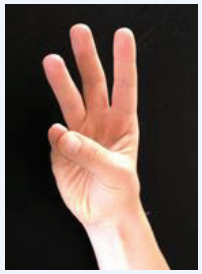
C: Spread the finger with the palmar side of the hand lying on a table

Description: Place the palm on a flat surface, levelled with the elbow. Spread all fingers out at the same time and draw then together again.



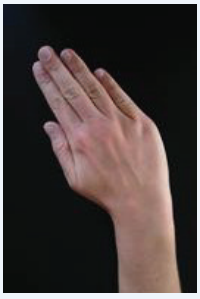
D: Put the tip of the first finger to the tip of the other 4 finger one by one

Description: Open your hand and lead thumb meet the little finger so to make a circle, repeat with the thumb and 4. finger, then thumb and middle finger and last thumb and the index finger. Remember to make a circle each time.



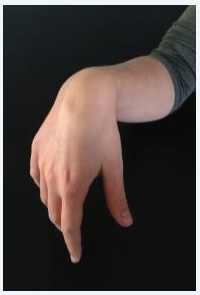
E: Bend the stretched hand from side to side

Description: place your palm and lower arm on a flat surface levelled with the elbow. Without moving the lower arm, bent the wrist to the left and then right, use approximately 2. Seconds to complete the movement.



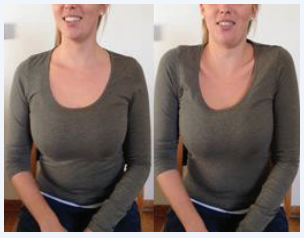
F: Make circles in the wrist joint

Description: The lower arm should be free of any support, now rotate the wrist around, change direction regularly.



G: Make circles with the shoulders

Description: Sit in a chair, with the back free of the chair and your hands placed in your lap. Look straight ahead and then lift your shoulders back, up and forward in a circle motion, after 8 repetitions go the other way around by starting with protraction of the shoulder than lift and then retraction.

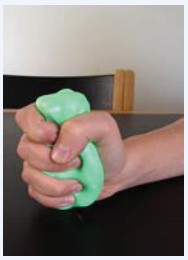


H: Put alternating from back of the head and the loin

Description: Sit in a chair with the back free of the chair, move one arm up and place the palm of your hand on the back of the head. The other arm is moved to the back and the back of the hand is placed at the loin. Simulations (If possible) shift the arms so the one that was placed on the loin now is at the back of the head and vice versa. Remember to keep the back straight. This exercise can also be done standing if this is deemed convenient.

I: Gross grip

Description: Form the theraputty as a ball and place it in the palm of your hand; now flex all fingers simultaneous and hold for 2-3 seconds. Then release the grip, reassemble the theraputty into a ball and repeat until desired sets and repetitions are reached.



J: Finger pinch

Description: Place the theraputting on a table, pinch thumb, index and middle finger together in a flexion patter for 2-3 seconds. Then release and repeat once more until desired sets and repetitions are completed. Then perform with the other hand. Remember to flex all joints in the three fingers during the exercise.

K: Finger adduction

Description: Make a ball of the theraputting (the size of a table-tennis ball) and place it between the index and middle finger. Place your hand on a table and squeezed the middle and index finger together around the theraputting for 2 seconds. Release move the theraputting to the middle and fourth finger and repeat the squeezed. Finish with a squeezed of the theraputting between the little finger and fourth finger. Repeat until the desired number of sets and repetitions has been reached.

L: Wrist extension

Description: Place the forearm at a horizontal level and elbow into the waist. Wrap the rubber band around both hands and tighten until there is tension when the hands are approximately 30 centimetres apart. While holding this position the wrist is extended on wrist at a time until desired numbers of sets and repetitions have been reached.

M: Wrist flexions

Description: Find a heavy table with a smoot surface underneath. Sit in a chair with the hands placed under the table. Lift the hands up and try to lift the table, hold for 5 seconds. Remember to keep the back straight and elbow at the waist to decrease stress on the shoulder joint.

N: Biceps

Description: sit in a chair with the back free. Place both feet in the middle of the rubber band end wrap each end around the hands. Sit with a straight back and shorten the rubber band until there is tension when the hands are besides the knees. Keep the elbows fixed to the waist and flex in the elbow joint until the palm of the hand reached the shoulder. You can do it with one hand or both at the same time. This exercise can also be done standing if desired.

O: Triceps

Description: Sit in a chair, as far out on the edge as possible. Place your feet in the middle of the rubber band and wrap each end of the rubber band around the hands. Straighten the back and bend forward, hold the back straight until 450 flexion of the hip is reached (if possible); stay in this position during each set. Let your arm fall to the ground and tighten the rubber band until there is a small tension. Pull the elbow joint to the waist, then extend the elbow joint and move the arm forward again. This is repeated with one arm at a time until the desired sets and repetitions are reached. Remember to rest the back between sets. This exercise can be performed in a standing position by placing one foot in front of the other. The foot in front stands on the middle of the rubber band and each end is wrapped around the hands. Slightly bend the knee to get a stable stand and straighten your back and ben in the hip joint until a 450 flexion of the hip joint, keep this position during each set. Stretch the arms and tighten the rubber band. Move the elbow to the waist and then straighten the elbow joint to full extension.

Yoga[32]: Various yoga practices are helpful for the management of patients with arthritis. These include *kriyas (kunjal and kapalbhati), simple joint movements, practices of sukshma vyayama, yogasanas (tadasana, katichakrasana, konasana, urdhwa hastottanasana, uttana padasana, vaksana, gomukhasana, marjari asana, ushtrasana, bhadrasana, bhujangasana, makarasana, shavasana), pranayama (nadishodana pranayama, suryabhedi pranayama, bhramari), yoga nidra practice and meditation.*

- ***Joint care:*** Using tools or devices that help with activities of daily living, using devices to help you get on and off chairs, toilet seats, and beds. Choosing activities that put less stress on your joints, such as limiting the use of the stairs or taking rest periods when walking longer distances and swimming can be adopted. Maintaining a healthy weight helps lower the stress on your joints.
- ***Stress management:*** Stress can make living with the disease more difficult. Stress also may affect the amount of pain one feels. Regular rest periods, Relaxation techniques such as deep breathing, meditating, or listening to quiet sounds or music, Movement exercise programs, such as yoga, swimming can help cope stress.

- ***Healthy diet:*** A healthy and nutritious diet that includes a balance of calories, protein, and calcium is important for maintaining overall health. A low-fat low-sodium Mediterranean diet rich in fruits, vegetables, whole grains, and nuts and poor in sugar-sweetened beverages, red and processed meat and trans fats, and the supplementation with omega-3 fatty acids, olive oil, non-essential amino acids, and probiotics[33] is recommended for RA.
- ***Physical therapy:*** can help regain and maintain overall strength and target specific joints.
- ***Occupational therapy:*** can help develop, recover, improve, as well as maintain the skills needed for daily living and working.

Restricted diet and lifestyle

- Smoking reduction/cessation seems to have positive effects in terms of disease progression and related outcomes.
- Avoid activities causing a flare-up, find an alternative for them.
- High-impact activities, such as running or contact sports like rugby and football, are more likely to cause problems, they must be avoided.
- Avoid activities that cause your joints to become warm and swollen, or it causes severe pain.
- Overweight: losing weight is suggested as it puts extra strain on joints.

Follow-up (every 7 days or earlier as per the need)

Reviews should include: [34,35]

- Monitoring the person's symptoms and impact of the disease on their daily activities and quality of life.
- Improving understanding of the patient about the condition and its management through verbal and written information and counter any misconceptions they may have.
- Explaining patients the importance of monitoring their condition, and seeking rapid access to specialist care if disease worsens or they have a flare.
- Participation in existing educational activities, including self-management programmes.
- Regularly measure C reactive protein to inform decision making about increasing treatment to control disease or cautiously decreasing treatment when disease is controlled. If the disease is of recent onset and active, measure these variables monthly until control reaches a level previously agreed with the individual.
- Assess disease activity, damage, and overall impact and to measure functional ability.

- Check for comorbidities such as hypertension, ischemic heart disease, osteoporosis, and depression.
- Assess symptoms that suggest complications, such as vasculitis and disease of the cervical spine, lung, or eyes.
- Assess the need for referral for surgery.

Referral criteria[36]

- Nonresponse to treatment
- Evidence of an increase in severity/complications
- Substantial impact on their quality of life and activities of daily living
- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as cardiovascular disease, lung disease, gastrointestinal disease, osteoporosis or osteopenia, malignancy.

At Level 2 (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray**)**

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh case must be evaluated thoroughly for any complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to confirm the diagnosis and investigate complications or exclude other differential diagnoses as follows:

- Haemogram
- X-ray
- Magnetic resonance imaging
- RA Factor
- ACPA (Anti- Citrullinated Peptide Antibody)
- C-reactive protein
- Synovial fluid examination
- Serum uric acid
- Ultrasound

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Other procedures: [24]

- **Physiotherapy:** Adults with RA should have access to specialist physiotherapy, with periodic review to improve general fitness and encourage regular exercise,

learn exercises for enhancing joint flexibility, muscle strength and managing other functional impairments, learn about the short-term pain relief provided by methods such as transcutaneous electrical nerve stimulators (TENS) and wax baths.

- **Occupational therapy:** Adults with RA should have access to specialist occupational therapy to overcome difficulties with any of their everyday activities, or problems with hand function.
- **Hand exercise programmes**: Consider a tailored strengthening and stretching hand exercise programme for adults with RA with pain and dysfunction of the hands or wrists.
- **Podiatry**: All adults with RA and foot problems should have access to a podiatrist for assessment and periodic review of their foot health needs. Functional insoles and therapeutic footwear can be used if indicated.
- **Psychological interventions:** Offer psychological interventions (for example, relaxation, stress management and cognitive coping skills [such as managing negative thinking]) to help adults with RA adjust to living with their condition.

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 1, plus
- Failure of acute exacerbation to respond to initial medical management.
- Suspected persistent synovitis of undetermined cause.
- If any symptoms or signs suggesting cervical myelopathy develop (for example, paranesthesia, weakness, unsteadiness, or extensor plantar)
- Advanced stages of disease like deformities etc.

At Level 3 (Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.

Clinical Diagnosis: Same as Levels 1& 2.

Confirm diagnosis and severity with the help of investigations like magnetic resonance imaging, ultrasound, joint aspiration, and synovial fluid examination.

Management: Same as Levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given

accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has a number of uncommonly prescribed medicines that can ease pain and other symptoms in patients with RA or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycemic agents, or antihypertensives. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms as a part of supportive management in these disorders as well as other advanced pathological states. As part of an integrative approach to therapy, complementary treatments like massage, cupping, acupressure, and acupuncture may also be used simultaneously to reduce pain and enhance flexibility. A few homoeopathic medicines which can be considered as per indications are given below[26,27,28]:

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Caulophyllum	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** • Calcarea Phos6x/12x • Calcarea fluor 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Guaiacum officinale					
3.	Stellaria media					
4.	Calcarea fluoricum					
5.	Formica rufa					
6.	Lithium carbonium					
7.	Chamomilla					

Recommended diet and lifestyle: Same as Levels 1& 2

Restricted diet and lifestyle: Same as Levels 1& 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at level 2, plus
- Other modalities can be considered depending on the case and to rehabilitate properly.

References:

1. Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. Harrison's Principles of Internal Medicine.17th edition vol. 2, New York: McGraw Hill; 2008. p. 1968-77
2. Colledge NR, Walker BR, Ralston SH editors. Davidson's principle & practice of Medicine, 22nd ed, New York: Churchill Livingstone, Elsevier, London. 2014: p 1096- 1103
3. Jha PK, Singh Ranawat N, Ranjan R, Ahmed RS, Avasthi R, Ahirwar AK. Interrelationship of Metabolic Syndrome and Rheumatoid Arthritis in North Indian Population. J Med Sci Health 2022; 8(1):52-58.
4. Løppenthin K, Esbensen B A, Østergaard M, et al. Morbidity and mortality in patients with rheumatoid arthritis compared with an age- and sex-matched control population: A nationwide register study. J Comorb 2019; 9: 223.
5. GBD 2019: Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. https://vizhub.healthdata.org/gbd-results/.
6. Deane KD, Demoruelle MK, Kelmenson LB, Kuhn KA, Norris JM, Holers VM. Genetic and environmental risk factors for rheumatoid arthritis. Best Pract Res Clin Rheumatol. 2017 Feb; 31(1): 3–18.
7. Chauhan K, Jandu JS, Brent LH, et al. Rheumatoid Arthritis. [Updated 2023 May 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441999/
8. Das S and Padhan P. An Overview of the Extraarticular Involvement in Rheumatoid Arthritis and its Management. J Pharmacol Pharmacother. 2017; 8(3): 81–86.
9. Šenolt L, Grassi W and Szodoray P. Laboratory biomarkers or imaging in the diagnostics of rheumatoid arthritis? BMC Med. 2014; 12: 49.
10. Kgoebane K, Ally MMTM, Duim-Beytell MC, Suleman FE. The role of imaging in rheumatoid arthritis. SA J Radiol. 2018 Jul 11;22(1):1316.
11. Chauhan K, Jandu JS, Brent LH, et al. Rheumatoid Arthritis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441999/
12. Toivanen A. Reactive arthritis. In: Rheumatology, Klippel, Dieppe (Eds), Mosby, London 1994. p.491.
13. McCarty DJ, Hollander JL. Identification of urate crystals in gouty synovial fluid. Ann Intern Med 1961; 54:452.
14. Bland JD. Carpal tunnel syndrome. BMJ 2007; 335:343.
15. Cunningham NR, and Zuck S K. Nonpharmacologic Treatment of Pain in Rheumatic Diseases and Other Musculoskeletal Pain Conditions. Curr Rheumatol Rep. 2013 Feb; 15(2): 306
16. Gibson RG, Gibson S, MacNeill AD, Watson Buchanan W. Homoeopathic therapy in rheumatoid arthritis: evaluation by double blind clinical therapeutical trial. Br J Clin Pharmacol.1980; 9:453–9.
17. Andrade LE, Ferraz MB, Atra E, Castro A, Silva MS. A randomized controlled trial to evaluate the effectiveness of homeopathy in rheumatoid arthritis. Scand J Rheumatol.1991; 20:204–8.
18. Gibson RG,Gibson SL,MacNeill AD, Gray GH, Dick WC, and Buchanan WW. Salicylates and homoeopathy in rheumatoid arthritis: preliminary observations. Br J Clin. Pharmacol. 1978 Nov; 6(5): 391-395.
19. Witt CM, Willich SN. Homoeopathic medical practice; long term results of a cohort study with 3981 patients. BMC Public Health 2005; 5:115
20. Fisher P. and Scott DL. A randomized control trial of homoeopathy in rheumatoid arthritis. Rheumatology 2001; 40:1052-1055
21. Brien S, Lachance L, Prescott P, McDermott C and Lewith G. Homeopathy has clinical benefits in rheumatoid arthritis patients that are attributable to the consultation process but not the homeopathic remedy: a randomized controlled clinical trial. Rheumatology 2011; 50:1070_1082.

22. Wassenhoven M. Retrospective study of rheumatological patients in a private homoeopathic practice. British Homoeopathic journal, Oct.1996, Vol.85,198-204.

23. Kundu N, De M, Singh S, Michael J, Nath A, Magotra N, Koley M, Saha S. Homeopathic Treatment of Rheumatoid Arthritis: An Open, Observational Trial. Homœopathic Links 2019; 32(04): 216-223.

24. Kundu T, Shaikh A, Jacob S. To evaluate the role of homoeopathic medicines as add-on therapy in patients with rheumatoid arthritis on NSAIDs: A retrospective study. Indian Journal of Research in Homoeopathy. 2014;8(24).

25. Rao P, Nagalakshmi P M. Immunological studies on Rheumatoid Arthritis treated with Homeopathic drugs: Results of the Pilot Study. Indian Journal of Research in Homoeopathy. CCRH New Delhi. Vol. 2, No. 4, October-December 2008.

26. Clarke JH. A Dictionary of Practical Materia Medica, large edition, New Delhi: B Jain Publishers Pvt Ltd;2005

27. Boericke W. Pocket Manual of Homoeopathic Materia Medica & Repertory,9th edn. New Delhi: B Jain Publishers (P) Ltd.: 2008

28. Allen HC., Allens Keynotes rearranged and classified with leading remedies of the Materia Medica and bowel nosodes, 9th edition. New Delhi: B Jain Publishers Pvt Ltd;2017

29. National Institute of Arthritis and Musculoskeletal and Skin Diseases. Rheumatoid Arthritis Basics: Diagnosis, Treatment, and Steps to Take [Internet]. NIAMS (Cited September 12, 2023) Available from: https://www.niams.nih.gov/health-topics/rheumatoid-arthritis/diagnosis-treatment-and-steps-to-take

30. Williams M, Williamson E, Heine P, et al. Strengthening And stretching for Rheumatoid Arthritis of the Hand (SARAH). A randomised controlled trial and economic evaluation. Health technology assessment. England.2015. 19. 1-222. 10.3310/hta19190.

31. Ellegaard K, von Bülow C, Røpke A, Bartholdy C, Hansen IS, Rifbjerg-Madsen S, Henriksen M, Wæhrens EE. Hand exercise for women with rheumatoid arthritis and decreased hand function: an exploratory randomized controlled trial. Arthritis Res Ther. 2019 Jun 26;21(1):158. doi: 10.1186/s13075-019-1924-9. PMID: 31242937; PMCID: PMC6595578.

32. Morarji Desai Institute of Yoga. Yogic management of arthritis. Dolphin printo publishers. p:6-7 Available from: http://www.yogamdniy.nic.in/WriteReadData/LINKS/5_Yogic%20Management%20of%20Arthritis98b73c5e- 4900-44dd-b4f7-1ce7b45e7219.pdf

33. Chehade L, Jaafar ZA, El Masri D, Zmerly H, Kreidieh D, Tannir H, Itani L, El Ghoch M. Lifestyle Modification in Rheumatoid Arthritis: Dietary and Physical Activity Recommendations Based on Evidence. Curr Rheumatol Rev. 2019;15(3):209-214.

34. Deighton C, O'Mahony R, Tosh J, Turner C, Rudolf M; Guideline Development Group. Management of rheumatoid arthritis: summary of NICE guidance. BMJ. 2009 Mar 16;338: b702. doi: 10.1136/bmj. b702. PMID: 19289413; PMCID: PMC3266846.

35. Ministry of Health, Gov. of Saudi. Guideline for Management of Rheumatoid Arthritis in Adult Patient [Internet] (cited September 12, 2023). Available from: chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.moh.gov.sa/Ministry/MediaCenter/Publications/Documents/Protocol-014.pdf

36. Kłodziński Ł and Wisłowska M. Comorbidities in rheumatic arthritis. Reumatologia. 2018; 56(4): 228–233.

3 CERVICAL SPONDYLOSIS

3

CERVICAL SPONDYLOSIS

(ICD 11 Code: FA80.0 – FA80.3)

CASE DEFINITION

Cervical spondylosis is a common progressive degenerative disorder of the human spine often caused by natural ageing. It is defined as "*vertebral osteophytosis secondary to degenerative disc disease*"[1]. Postural deviations, restricted movement in the affected joints, muscle issues, and neck pain characterize cervical spondylosis (CS)[2].

INTRODUCTION (*incidence/ prevalence, morbidity/mortality)*

- Cervical spondylosis (CS) typically manifests after an individual reaches their fifth decade of life[3,4]. Around 80-90% of individuals experience disc degeneration by the time they reach the age of 50 [5,6,7]
- Symptoms tend to occur more frequently in men than in women, with the highest incidence between 40 and 60. [8,9,10,11]
- In the adult population, the lifetime prevalence of CS is 48.5%.[12]
- In India, peak prevalence occurred in the 40-49 age group, with a male predominance[13].

DIAGNOSTIC CRITERIA

CS is typically diagnosed based on clinical assessment alone. While it mainly causes neck pain, it can radiate to various areas and worsen with neck movements. Neurological changes should be checked in the limbs, but they usually only appear when spondylosis is complicated by myelopathy or radiculopathy. Other causes like disc protrusion, thoracic outlet issues, brachial plexus disorders, malignancies, or primary neurological diseases should also be considered when assessing these symptoms. Postural deviations, restricted movement in the affected joints, muscle issues, and neck pain characterize CS.[14]

The changes in CS are primarily a result of the natural degeneration accompanying the ageing process.[15] Other risk factors include continual occupational trauma[16], a family history of neck pain, spondylosis, and congenital bone irregularities like blocked vertebrae and malformed laminae that stress nearby discs, smoking, anxiety, and depression[17]. The development of CS[18,19,20] follows a degenerative process that leads to biomechanical alterations within the cervical spine, resulting in the secondary compression of neural and vascular structures. CS primarily results from reduced disk height, which narrows the spinal canal due to herniated

disks. These degenerative changes collectively lead to a loss of cervical lordosis and reduced mobility, along with a decrease in the diameter of the spinal canal.

CLINICAL EXAMINATION

CS is often diagnosed on clinical signs and symptoms alone.[21] Neck pain radiating to the arm and fingers (based on affected dermatomes), accompanied by arm/hand tingling, numbness, muscle reflex reduction, sensory issues, and muscle weakness in corresponding dermatomes/myotomes.[14]

Signs:[15,22,23]

During the examination, the neck might appear slightly bent forward. The posterior neck muscles may be tender but not in spasm. There are often advanced degenerative changes with audible crepitation during movement.

- Poorly localised tenderness.
- Limited range of motion.
- Minor neurological changes (unless complicated by myelopathy or radiculopathy)

Symptoms:[22]

- Cervical pain aggravated by movement
- Referred pain (occiput, between the shoulder blades, upper limbs)
- Retro-orbital or temporal pain
- Cervical stiffness
- Vague numbness, tingling or weakness in upper limbs.
- Dizziness or vertigo
- Poor balance
- Rarely, syncope triggers migraine

Complications:[24]

- Myelopathy: Myelopathy results in hand clumsiness, gait issues, or both due to sensory ataxia or spastic paraparesis in the lower limbs, with later bladder problems.
- Radiculopathy: Nerve root compression, known as radiculopathy in CS, often happens at C5 and C7 levels, although higher levels can also be affected. Neurological symptoms are localized in the upper limb, with sensory issues like shooting pains, numbness, and heightened sensitivity being more prevalent than weakness. Reflexes typically decrease at the corresponding levels: biceps (C5/6), supinator (C5/6), or triceps (C7).

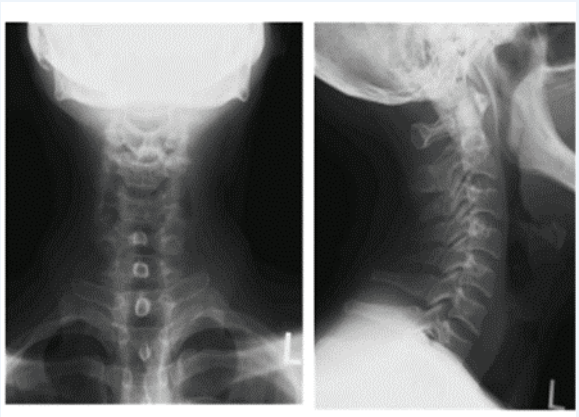
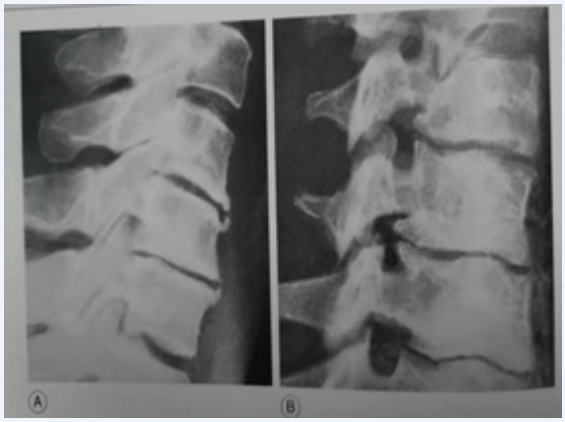
SUPPORTIVE INVESTIGATIONS:[25]

Essential Investigations:

Investigation	Findings
Plain or Digital x-ray CS (AP, Lat. Oblique)	• Narrowing the disc height • Presence of osteophytes arising from the disk margins • osteoarthritic changes in the posterior zygapophyseal joints. etc. • For patients with nontraumatic neck pain and no red flags, initial imaging typically starts with cervical spine radiographs. Recommended by ACR[25]
Blood test: Full blood count, ESR, CRP[20]	To exclude other pathologies or complications

Advanced Investigations:

Investigation	Findings
Magnetic resonance imaging (MRI)of the Cervical Spine	It's the preferred choice to rule out for myelopathy and radiculopathy

Normal Cervical Spine[26]	Cervical spondylosis
	 (Note the lateral view (A) of the narrowed intervertebral space, with marginal osteophyte formation, at C5-C6 and C6-C7. The oblique view (B) shows severe encroachment of osteophytes upon an intervertebral foramen)

DIFFERENTIAL DIAGNOSIS

Clinical Syndromes resembling CS[27]:

	Radiculopathy (Type I Syndrome)	Myelopathy (Type II Syndrome)	Axial Joint Pain (Type II Syndrome)
Acute	• Lateral Disc herniation • Brachial plexitis	• Central disc herniation • Pathologic fracture • Guillain-Barre Syndrome	• Cervical strain or sprain • Painful amphiarthrodial joint (disc) • Painful Diarthrodial joint (Facet joint)
Chronic	• Lateral disc herniation • Focal Facet hypertrophy **Shoulder pathology:** • Adhesive capsulitis • Recurrent anterior Subluxation and impingement syndrome **Entrapment neuropathy:** • Carpal tunnel syndrome • Thoracic outlet syndrome	• Central disc herniation • Cervical canal stenosis: Congenital, Metabolic, and Acquired • Spinal instability • Multiple sclerosis • Normal pressure hydrocephalus • Vitamin B_{12} deficiency • Neoplasm: Vertebral metastasis and • Infection: Discitis/ Osteomyelitis, Epidural abscess, Neurosyphilis and HTLV-1, • Syringomyelia • Arteriovenous malformation • Myopathies	• Fibromyalgia, • Nonorganic, Malingering and /or symptom magnification • Hypochondriasis and /or somatoform disorders, • Failed surgical fusion. • Referred visceral Pain: ➢ Angina pectoris ➢ Pancoast Tumour ➢ Sub-diaphragamatic pathologies.

- Other non-specific neck pain lesions-acute neck strain, postural neck ache or whiplash
- Fibromyalgia and psychogenic neck pain.
- Mechanical lesions-disc prolapsed or diffused idiopathic skeletal hyperostosis.
- Inflammatory disease-Rheumatoid arthritis, Ankylosing spondylosis, or Polymyalgia rheumatica.
- Metabolic diseases- Paget's disease, osteoporosis, gout, or pseudo gout. Infections-osteomyelitis or tuberculosis.
- Malignancy-primary tumours, secondary deposits, or myeloma.

PRINCIPLES OF MANAGEMENT

Red Flag Signs of Cervical Spondylosis:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine.

- Malignancy, infection, or inflammation
    - Fever, night sweats
    - Unexpected weight loss
    - History of inflammatory arthritis, malignancy, infection, tuberculosis, HIV infection, drug dependency, or immunosuppression
    - Excruciating pain
    - Intractable night pain
    - Cervical lymphadenopathy
    - Exquisite tenderness over a vertebral body
- Myelopathy
    - Gait disturbance or clumsy hands, or both
    - Objective neurological deficit—upper motor neurone signs in the legs and lower motor neurone signs in the arms
    - Sudden onset in a young patient suggests disc prolapse
- Other
    - History of severe osteoporosis
    - History of neck surgery
    - Drop attacks, especially when moving the neck, suggest vascular disease
    - Intractable or increasing pain

Patients need education about their CS diagnosis, as there are common misconceptions and concerns about potential disability. It's important to emphasize the natural course of CS and discuss therapeutic options, which include lifestyle changes like exercise and maintaining good posture when sitting and standing. These changes should be tailored to the individual to minimize disruptions in daily activities.

(A) **Prevention management**[28]

Prevention of CS is not possible, but lifestyle modification may help to reduce the risk of disease; these are as follows:

- Avoid excessive mental, emotional, and physical stress. Stress causes headache and worsens neck pain and stiffness.

- Keep the spine straight while sitting or standing.
- Avoid forward bending exercise and jogging, running, jerking vigorously and high pillows.
- Intake of a balanced diet and to be physically active.
- Avoid carrying heavy bags and lifting heavy weights.
- Avoid trauma to the neck.

Lifestyle modifications, particularly maintaining proper spinal alignment during sitting and standing activities, can prevent the progression of CS.[29]

Apart from this, preventative management of CS incorporates non-pharmacological strategies like lifestyle adjustments, weight control, yoga, exercise, patient education, psychosocial support, assistive devices, thermal treatments, and modifications in daily activities. Additionally, reassurance, counselling, and education can reduce the impact of psychosocial factors, while thermal modalities have the potential to alleviate joint stiffness, pain, and muscle spasms, and prevent contractures.

(B) Interventions

At Level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The diagnosis of CS relies primarily on clinical evaluation following a thorough medical history and physical examination. Occasionally, additional investigations such as a complete blood count and X-ray may be conducted.

Management

Studies suggest that Homoeopathy is effective for CS[30]. The Central Council for Research in Homeopathy conducted trials with predefined homoeopathic medicines, showing promising results in managing CS pain[31], especially with LM potencies over Centesimal potencies. Other research supports LM potency for pain relief.[32] Additionally, bowel nosodes may be beneficial[33], and *Calcarea fluorica* outperformed individual homoeopathic remedies in one survey[34].

In homoeopathic practice, various remedies are available for treating CS. However, the treatment approach relies solely on the patient's overall symptom picture. Given the chronic nature of the disease, a single dose of the indicated remedy might not be enough. The decision to repeat doses, adjust potency, or change remedies during follow-up is determined by evaluating the complete symptom profile, considering miasmatic aspects, Kent's 12 observations, and other fundamental homoeopathic principles.

Some of the commonly prescribed medicines are as follows[35]:

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Actaea racemosa	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Tissue remedies: • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Alumina					
3.	Bryonia alba					
4.	Causticum					
5.	Chelidonium					
6.	Calcarea fluorica					
7.	Calcarea phosphorica					
8.	Colchicum autumnale					
9.	Gelsemium sempervirens					
10.	Guaiacum officinale					
11.	Hypericum perforatum					
12.	Kalmia latifolia					
13.	Lachnanthes					
14.	Natrum muriaticum					
15.	Nux vomica					
16.	Phytolocca decandra					
17.	Radium bromatum					
18.	Rhus toxicodendron					
19.	Sanguinaria canadensis					
20.	Silicea terra					
21.	Sulphur					

Do's and Don'ts while taking homoeopathic medicines:[36]

Patients using homoeopathic remedies are typically instructed to refrain from eating, drinking, smoking, or brushing their teeth for at least 15 minutes to half an hour before and after taking their medication. Additionally, they should avoid all products containing menthol and camphor, as these guidelines align with standard British homoeopathic practice.

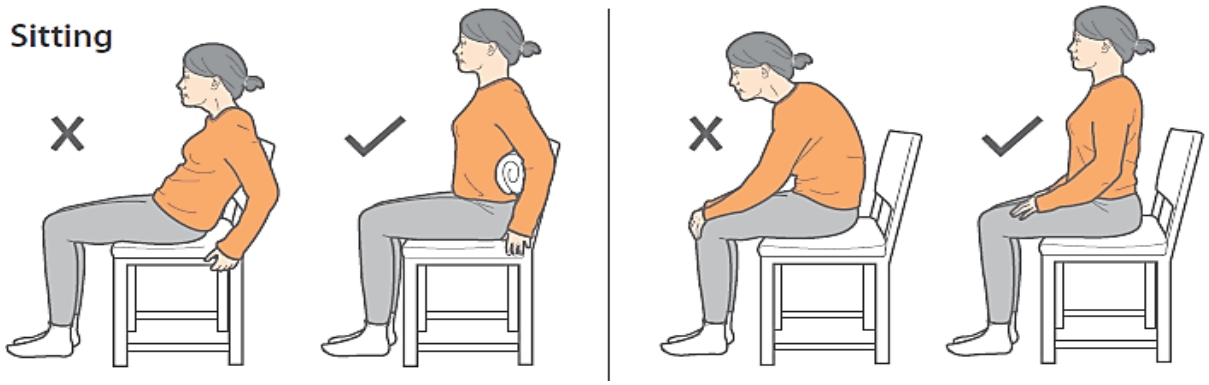
Recommended diet and lifestyle:[37]

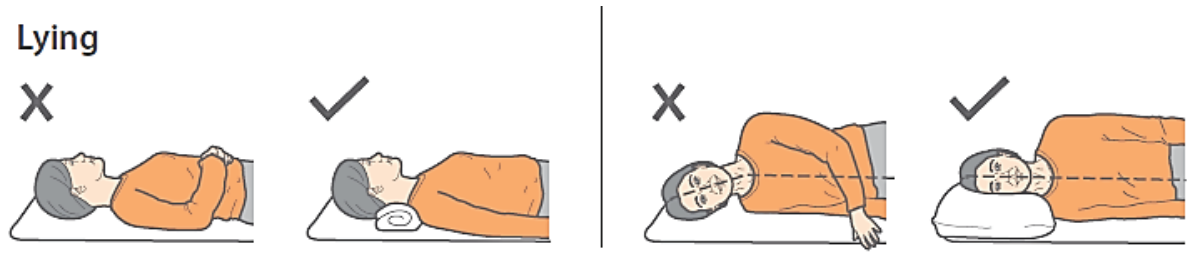
After a long period of inactivity, start a routine of gentle exercises, such as yoga, to stretch and strengthen your muscles and improve posture. Incorporate age-appropriate low-impact exercises to strengthen your upper back. Remember to always stretch before any strenuous physical activity.

- Whether at home or in the workplace, ensure that the work surface is at a comfortable and appropriate height.
- Sit on a chair with proper lumbar support, ensuring it is at the right height for the task. Maintain proper posture with your shoulders back. Alternate your sitting positions regularly and take periodic breaks to walk around or gently stretch your muscles to relieve tension. Rest your feet on a low stool if you must sit for extended periods.
- Wear comfortable, low-heeled shoes.
- To minimize spinal curvature, sleep on your side. Always choose a firm and flat surface for sleeping.
- Ensure proper nutrition and diet to mitigate and prevent excessive weight gain. A diet with adequate daily amounts of calcium, phosphorus, and Vitamin D supports healthy bone growth.

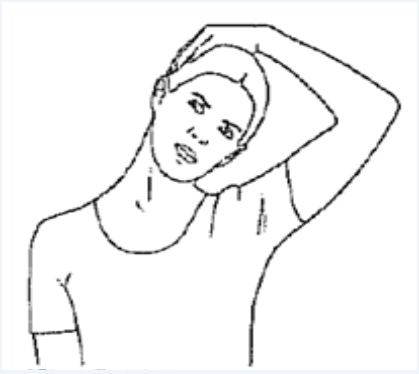
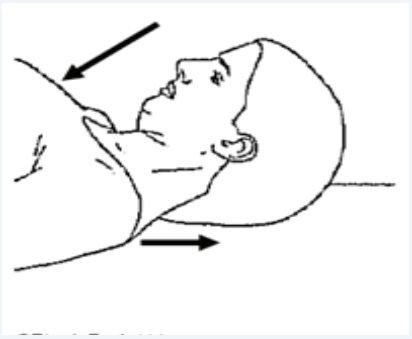
Posture[38]

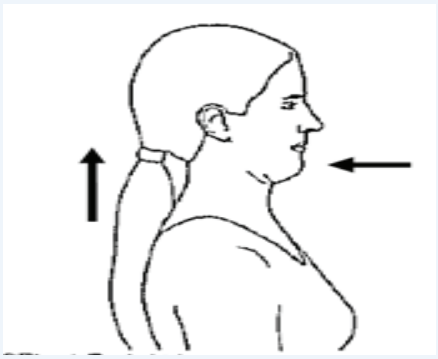
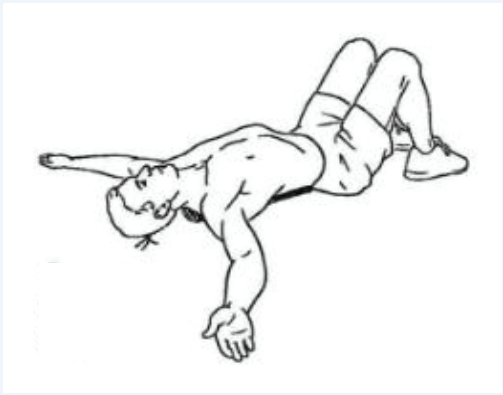
Posture is important when experiencing neck pain. Some examples of good and bad sitting and lying postures are as follows:

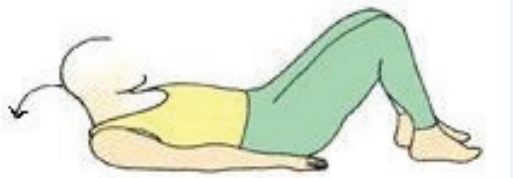
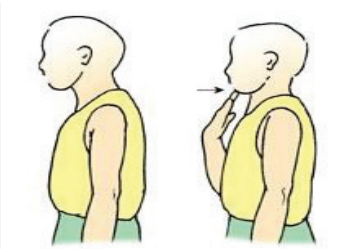
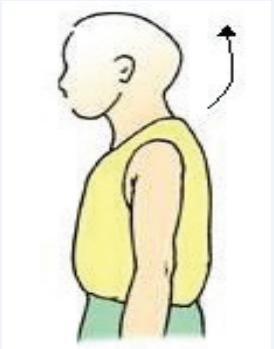




Exercises for CS:[38,39,40]

S.No.	Exercises	
1.	**Neck Rotation** • Sit on a chair or on the edge of the bed • Gently turn your head to look over your shoulder • Hold for 5-10 seconds • Turn your head back to the middle then turn to look over another shoulder • Hold for 5-10 seconds • Repetitions	
2.	**Lateral / Side Flexion** • Sit on a chair or on the edge of the bed • Tilt your head to lower your ear down towards your shoulder • Use your hand to gently pull your head further to the side • Feel a stretch on the opposite side • Hold for 5-10 seconds • Repetitions	
3.	**Flexion/Extension** **Flexion:** Sitting upright in a good posture, bend your head forwards gently pulling your chin closer to your chest. Hold for a count of 5 then relax. **Extension:** Sitting upright in a good posture, take your head slowly back until you are looking at the ceiling. Hold for a count of 5 then relax.	
4.	**Deep neck flexion** • Lie on your back with a thin pillow to support your head or do it in sitting • Nod your head downwards so your chin comes towards your chest • Hold for 5-10 seconds • Repetitions	

S.No.	Exercises	
5.	**Chin Retraction** • Sit on a chair or on the edge of the bed • Pull your chin in towards you keeping your neck and back straight (make a double chin) • Hold the end position and feel a good stretch in your neck for 5-10 seconds • Repetitions	
6.	**Scapula Setting** • Sit on a chair or on the edge of the bed • Place your fingers on your shoulders • Roll your shoulders back • Glide your shoulder blades down and together at the back • Hold this posture for 5-10 Seconds • Repetitions • You can progress this by lying on your tummy with your arms by your side, palms facing up and lifting them off the bed.	
7.	**Scalene Stretch** • Sit on a chair or on the edge of the bed • Place your right hand on your left shoulder • Tilt your head to the right, bringing your right ear to your right shoulder (make sure the shoulder is kept still). • Slowly rotate your head to the left keeping your right ear near your right shoulder to feel more of a stretch. • Hold stretch for 5-10 seconds • Repetitions	
8.	**Pectoralis Stretch** • Lie on your back with a rolled-up towel placed lengthways under your back • Slowly bring your arms out to the side into a Y-shape • Hold stretch for 5-10 seconds • Repetitions	

S.No.	Exercises	
9.	**Head lifts** • Lie on your back on a bed or on the floor (with a folded towel or pillow under your head, if more comfortable). • Gently press the back of your head towards the floor while pulling in your chin until you feel the stretch on your upper neck. • Hold in this position for 5 - 10 seconds then relax. • Repeat this 5 - 10 times. • Do not clench your teeth while doing this exercise.	
10.	**Chin tucks** • Sit or stand with good posture and tuck your chin in but don't look down. • Gently pull your head back as though nodding your head or trying to make a double chin. • You can put your hand on your chin for a guide if needed. • Hold in this position for 5 - 10 seconds then relax and repeat 5 - 10 times.	
11.	**Shoulder lifts** • Either sit or stand and lift your shoulder towards the back of your head in a shrugging motion then relax. • Repeat 5 times.	

Yoga practices for the management of CS[37]:

Yoga can effectively manage CS patients through various practices. Some asanas/kriyas are: *Tadasana, Urdhwa Hastottanasana, Katichakrasana, Ardha Matsyendrasana, Tirkonasana, Vajrasana, Ustrasana, Gomukhasana, Makarasana, Bhujangasana, Dhunarasana, Bharamari, Shalabasana, Shavasana, Meditation, etc.*

Restricted diet and lifestyle:[28,37]

- Refrain from lifting weights with improper posture.
- If driving, take regular breaks and avoid long hours behind the wheel.
- Use minimal pillows under your neck and shoulder while sleeping.
- Soft chair, bed should be avoided.

- Avoid leaning while standing or sitting. When standing, maintain balanced weight distribution on your feet. Reduced curvature in the back makes it better equipped to support weight.
- Stay clear of excessive stress and anxiety, as it amplifies pain intensity.
- Stop smoking. Smoking diminishes blood flow to the spine and leads to the degeneration of spinal discs.
- Avoid Fried foods, spicy, oily foods, excessive meats and refined foods like sweets, confectionery, bread, and other refined wheat products. These along with other factors contribute to the development of CS and bone demineralisation.

Follow-up (every 7 days or earlier as per the need)

Reviews should include

- Keep track of the individual's symptoms and how the condition affects their daily life and well-being.
- Continuously monitor the condition's long-term progression.
- Administer CS management through exercises and Yoga.
- Engage in discussions with the individual about their understanding of the condition, any worries or questions, personal choices, and access to necessary services.
- Regularly assess how well all treatments work and how well the individual can tolerate them.
- Provide guidance and support for self-management.

Referral criteria

- When treatment does not yield a positive response.
- When there is evidence of the condition worsening in severity or developing complications.
- When the condition significantly affects their quality of life and ability to perform daily activities.
- When there is uncertainty in making a diagnosis.
- When the condition remains uncontrolled despite efforts

At Level 2 (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray)

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh one, must be evaluated thoroughly for complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- Haemogram
- X-ray

- Magnetic resonance imaging
- C-reactive protein

Management: Same as Level-1. For the patients referred from Level-1, treatment given at Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Other procedures:

Physiotherapy Management:[41]

During acute painful episodes, prioritize rest, apply moist heat in cold weather, and use light massage to enhance paraspinal muscles' tone, circulation, and elasticity. Employ cervical traction with a 5-10-pound force, ensuring maximum comfort for the neck for 10-15 minutes. Consider ultrasonic treatment for painful trigger points in cervical and shoulder muscles and interferential therapy (IFT) for acute neck and back pain. For symptomatic relief, you can also use a removable soft cervical collar, back corset, or back belt. However, it's important to note that during acute painful situations, avoid exercise. In cases of chronic pain, focus on mobilization, strengthening exercises, moist heat, and cervical traction.

Cervical collar: Numerous authors affirm that utilizing a collar effectively reduces pain by minimizing motion and mitigating irritation of the nerve roots.[42,43]

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up: (every 7 days or earlier as per the need)

Referral criteria:

- Same as mentioned earlier at level 1, Plus
- When the initial medical treatment does not produce improvement during an acute exacerbation.
- Advanced stages of disease like Lateral or central disc herniation etc

At Level 3 (Ayush hospitals attached to teaching institutions, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.

Clinical Diagnosis: Same as Levels 1& 2.

Confirm diagnosis and severity with the help of investigations like magnetic resonance imaging.

Management: Same as Levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or

the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to Level 1 and Level 2 management strategies, Homoeopathy offers specific remedies to alleviate pain and other symptoms in patients with end-stage Cervical Spondylosis or those who haven't responded to treatment due to various reasons such as the absence of symptoms, coexisting medical conditions, or the use of other medications like immunosuppressive, oral hypoglycemic agents, or antihypertensive. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms for these conditions and other advanced pathological states. As part of an integrative approach to therapy, complementary treatments like massage, cupping, acupressure, and acupuncture may also be used simultaneously to reduce pain and enhance flexibility. Below are some medicines that may be considered based on their indications[35].

S. No	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Lac caninum	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Tissue remedies: • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus tox Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Paris quadrifolia					
3.	Rhododendron chrysanthum					
4.	Sticta pulmonaria					

Recommended diet and lifestyle: Same as Levels 1& 2

Restricted diet and lifestyle: Same as Levels 1& 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 2, plus
- Other modalities can be considered depending on the case and to rehabilitate properly.

References:

1. Shedid D, Benzel EC. Cervical spondylosis anatomy: pathophysiology and biomechanics. Neurosurgery. 2007 Jan 1;60(1): S1-7.
2. Connell MD, Wiesel SW. Natural history and pathogenesis of cervical disk disease. The Orthopedic clinics of North America. 1992 Jul 1;23(3):369-80.
3. Kuo DT, Tadi P. Cervical Spondylosis. StatPearls Publishing LLC [Internet]. 2020. Available at: https://www.ncbi.nlm.nih.gov/books/NBK551557/. Accessed on: 21.09.2023.
4. Bernabéu-Sanz Á, Mollá-Torró JV, López-Celada S, Moreno López P, Fernández-Jover E. MRI evidence of brain atrophy, white matter damage, and functional adaptive changes in patients with cervical spondylosis and prolonged spinal cord compression. European radiology. 2020 Jan; 30:357-69.
5. Theodore N. Degenerative cervical spondylosis. New England Journal of Medicine. 2020 Jul 9;383(2):159-68.
6. Brinjikji W, Luetmer PH, Comstock B, Bresnahan BW, Chen LE, Deyo RA, Halabi S, Turner JA, Avins AL, James K, Wald JT. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. American journal of neuroradiology. 2015 Apr 1;36(4):811-6.
7. Teraguchi M, Yoshimura N, Hashizume H, Muraki S, Yamada H, Minamide A, *et al*. Prevalence and distribution of intervertebral disc degeneration over the entire spine in a population-based cohort: the Wakayama Spine Study. Osteoarthritis Cartilage. 2014;22(1):104-110. doi: https://doi.org/10.1016/j.joca.2013.10.019.
8. Theodore N. Degenerative Cervical Spondylosis. N Engl J Med. 2020;383(2):159-168. doi: 10.1056/NEJMra2003558.
9. Kelly JC, Groarke PJ, Butler JS, Poynton AR, O'Byrne JM. The natural history and clinical syndromes of degenerative cervical spondylosis. Adv Orthop. 2012; 2012:393642. doi: https://doi.org/10.1155/2012/393642.
10. Lv Y, Tian W, Chen D, Liu Y, Wang L, Duan F. The prevalence and associated factors of symptomatic cervical spondylosis in Chinese adults: a community-based cross-sectional study. BMC Musculoskelet Disord. 2018; 19:325. doi: https://doi.org/10.1186/s12891-018-2234-0.
11. Singh S, Kumar D, Kumar S. Risk factors in cervical spondylosis. J Clin Orthop Trauma. 2014;5(4):221-226. doi: https://doi.org/10.1016/j.jcot.2014.07.007.
12. Tomar M, Bhowmik NC, Singh S, Sadhukhan S, Michael J, Parewa M, et al. Efficacy of Individualized Homeopathic Medicines in the Treatment of Cervical Spondylosis: A Double-Blind, Randomized, Placebo-Controlled Trial. Complementary Medicine Research. 2023 Feb 23;30(1):26-36.
13. RoseBist PK, Peethambaran AK, Peethambar GA. Cervical spondylosis: analysis of clinical and radiological correlation. International Surgery Journal. 2018 Jan 25;5(2):491-5.
14. Kuijper B, Tans JT, Schimsheimer RJ, Van Der Kallen BF, Beelen A, Nollet F, De Visser M. Degenerative cervical radiculopathy: diagnosis and conservative treatment. A review. European journal of neurology. 2009 Jan;16(1):15-20
15. Hamblen David L. Simson A Hamish R W. Raby Nigel, 'Adams's Outlines of Orthopaedics' 14th Edition Torento; Churchill livingstone; 2010; p-184-206
16. Moon MS, Yoon MG, Park BK, Park MS. Age-related incidence of cervical spondylosis in residents of Jeju Island. Asian spine journal. 2016 Oct;10(5):857.
17. Singh S, Kumar D, Kumar S. Risk factors in cervical spondylosis. Journal of clinical orthopaedics and trauma. 2014 Dec 1;5(4):221-6.
18. Choi SH, Kang CN. Degenerative cervical myelopathy: pathophysiology and current treatment strategies. Asian spine journal. 2020 Oct;14(5):710.
19. Ferrara LA. The biomechanics of cervical spondylosis. Advances in orthopedics. 2012 Feb 1;2012.

20. Kokubo Y, Uchida K, Kobayashi S, Yayama T, Sato R, Nakajima H, Takamura T, Mwaka E, Orwotho N, Bangirana A, Baba H. Herniated and spondylotic intervertebral discs of the human cervical spine: histological and immunohistological findings in 500 en bloc surgical samples. Journal of Neurosurgery: Spine. 2008 Sep 1;9(3):285-95.

21. Hoy D, Protani M, De R, Buchbinder R. The epidemiology of neck pain. Best practice & research Clinical rheumatology. 2010 Dec 1;24(6):783-92.

22. Alizada M, Li RR, Hayatullah G. Cervical instability in cervical spondylosis patients: significance of the radiographic index method for evaluation. Der Orthopade. 2018;47(12):977.

23. Shirole T. "Cervical Spondylosis - Causes - Symptoms - Diagnosis - Treatment - FAQs". *Medindia*. https://www.medindia.net/patients/patientinfo/cervical-spondylosis.htm [Accessed Oct 06, 2023.]

24. Binder AI. Cervical Spondylosis and Neck Pain. BMJ. 2007; 334(7592): 527–31

25. McDonald MA, Kirsch CF, Amin BY, Aulino JM, Bell AM, Cassidy RC, Chakraborty S, Choudhri AF, Gemme S, Lee RK, Luttrull MD. ACR Appropriateness Criteria® cervical neck pain or cervical radiculopathy. Journal of the American College of Radiology. 2019 May 1;16(5): S57-76.

26. Eguchi K, Tachikawa Y, Kashima R, Shinohara M, Fukushima F, Sato T, Takeda A, Numao T, Kario K, Shimada K. A case of vertebral artery dissection associated with morning blood pressure surge. Hypertension research. 2005 Oct;28(10):847-51

27. Voorhies RM. Cervical spondylosis: recognition, differential diagnosis, and management. Ochsner Journal. 2001 Apr 1;3(2):78-84.

28. Ravisankar P, Manjusha K, Sri VL, Lakshmi KR, Kumar BV, Pragna P, Kumar KA, Babu PS. Cervical Spondylosis-Causes and remedial measures. Journal of Pharm Research. 2015;5(08).

29. Young IA, Michener LA, Cleland JA, Aguilera AJ, Snyder AR. Manual therapy, exercise, and traction for patients with cervical radiculopathy: a randomized clinical trial [published correction appears in Phys Ther. 2009 Nov;89(11):1254-5] [published correction appears in Phys Ther. 2010 May;90(5):825]. *Phys Ther*. 2009;89(7):632-642. doi:10.2522/ptj.20080283

30. Gopinath N, Sugathan NV, Ajayan T, Sankar VH, Sheeba CS, Sowmya RS, Nair AR. Clinical Study Of Pain Management Of Cervical Spondylosis Using Homoeopathic Medicine And Homoeopathic Medicine Along With Physiotherapy: A Comparison. Turkish Journal of Physiotherapy and Rehabilitation.;32:3

31. Gupta J, Bawaskar R, Rao P, Shivadikar A, Sumithran P, Pal R, Ali S, Bindu H, Arya M. Homoeopathic therapy in cervical spondylosis pain management: a randomised, double-blind, placebo-controlled trial. Indian Journal of Research in Homoeopathy. 2020;14(4):242-50.

32. Nayak C, Singh V, Gupta J, Ali MS, Pal R, Arya MD, Bindu PH, Nayak D, Goswami P. Homoeopathic individualized LM-potencies versus Centesimal potencies for pain management of cervical spondylosis: A multicenter prospective randomized exploratory clinical study. Indian J Res Homoeopathy. 2012 Oct 1;6(4):16-23.

33. Nayak C. Study on effectiveness of homoeopathic bowel nosodes in the treatment of cervical spondylosis on the basis of stool culture report. Indian Journal of Research in Homoeopathy. 2008;2(1):42-8

34. Mohan GR, Jayalakshmi C, Devi AM. Cervical spondylosis—a clinical study. British Homeopathic Journal. 1996 Jul;85(03):131-3.

35. Boericke W. Boerickes new manual of Homoeopathic Materia Medica with Repertory. New Delhi. Third Revised & Augmented Edition Based on Ninth Edition. 40th impression: INDIA, B.Jain Publishers (P) LTD; 2017.

36. Fisher P, Scott DL. A randomized controlled trial of homeopathy in rheumatoid arthritis. Rheumatology. 2001 Sep 1;40(9):1052-5.

37. Morarji Desai National Institute of Yoga. Yogic management of Cervical Spondylosis. Available from:

http://www.yogamdniy.nic.in/WriteReadData/LINKS/11-Cervical%20Spondylosis6cb6345c-a226-4071-bc1c-e91467253672.pdf [Accessed 07 Sept.23]

38. Arthritis Research UK. Information and exercise sheet. Derbyshire. Spring 2011. Available from: https://kingstonhealthcentre.nhs.uk/wp-content/uploads/2018/09/Neck-Pain-Exercises.pdf [accessed 5th October 23]

39. Poole Hospital NHS Foundation Trust. Cervical Spine: Neck Exercises. 2019. Available from: https://www.uhd.nhs.uk/uploads/about/docs/our_publications/patient_information_leaflets/Childrens_therapy/Childrens_physiotherapy/Neck_ROM_exercises_done_2019.pdf [accessed 5th October 23]

40. Oxford Health. NHS Foundation Trust. Neck Exercises. Available from: https://www.oxfordhealth.nhs.uk/wp-content/uploads/2014/08/OP-153.15-Neck-exercises.pdf [accessed 5th October 23]

41. Health & Family Welfare Department, Gujarat Medical Services Corporation Limited Standard Treatment Guidelines A Manual for Medical Therapeutics; First Edition, Nov.2013 Chapter:15 p-311-312.

42. Dreyer SJ, Boden SD. Nonoperative treatment of neck and arm pain. Current Opinion in Orthopaedics. 1999 Apr 1;10(2):122-30.

43. Mazanec D, Reddy A. Medical management of cervical spondylosis. Neurosurgery. 2007 Jan 1;60(1): S1-43.

4 LUMBAR SPONDYLOSIS

4

LUMBAR SPONDYLOSIS

(ICD 11Code: FA80.0 – FA8Z)

CASE DEFINITION

Lumbar spondylosis may be applied nonspecifically to any and all degenerative conditions affecting the discs, vertebral bodies, and/or associated joints of the lumbar spine. Spondylosis is considered mechanistically, as the hypertrophic response of adjacent vertebral bone to disc degeneration creating clinical pain syndromes within the axial spine and associated nerves. The condition is said to be progressive and irreversible.[1,2,3]

INTRODUCTION (*incidence/ prevalence, morbidity/mortality)*

- Degenerative spine changes are remarkably common in population of aged 45–64 years to demonstrate osteophytes within the lumbar spine and as early as age of 39 and as late as age of 70 years.[1,4-6] Even younger persons are found with evidence of lumbar spondylosis. Degenerative changes have been found to be present in 3% of individuals aged 20–29 years. [2,3]
- Increased Body Mass Index (BMI), incident back trauma, daily spine loading (twisting, lifting, bending, and sustained non-neutral postures), and whole-body vibration (such as vehicular driving) to be factors which increase both the likelihood and severity of Spondylosis. [5,7,8]
- Genetic factors likely influence the formation of osteophytes and disc degeneration.[9-11]

DIAGNOSTIC CRITERIA

For the diagnosis of lumbar spondylosis, previous history taking, physical examination, imaging studies are performed.[12] The initial evaluation for patients with low back pain begins with an accurate history and thorough physical exam with appropriate provocative testing.[13]Pain within the axial spine at the site of these degenerate changes is due to nociceptive pain generators identified within facet joints, intervertebral discs, sacroiliac joints, nerve root dura, and myofascial structures within the axial spine.[1,14]

A constellation of pain symptoms encompassed in the term *neurogenic claudication* which include to varying extents lower back pain, leg pain, as well as numbness and motor weakness to lower extremities that worsen with upright stance and walking, and improve with sitting and supine positioning.[1,15]

Radiographic studies, whether plain X-ray film, CT or MRI, may provide useful confirmatory evidence to support an exam finding and localize a degenerative lesion or area of nerve compression.[13]

CLINICAL EXAMINATION

All physical examinations will include the evaluation of the neurologic function for strength, sensation and reflexes of the arms, legs, bladder, and bowels.[14-17]

Symptoms:[12,14,15]

- Lower back pain
- Stiffness after prolonged periods of inactivity
- Radiating pain from the lower back to legs or buttock region
- Reduced flexibility and movement in the lower back
- Abnormal sensations of tingling and numbness
- Weakness of leg muscles.
- Changes in sphincter capacity such as neurogenic bladder or neurologic loss can be the after-effect of spinal cord compression from extreme degeneration of lumbar spine

Signs:

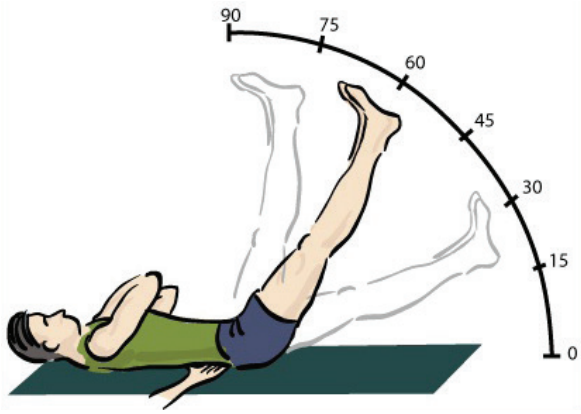
The Straight Leg Raise (SLR) test is commonly used to identify disc pathology or nerve root irritation, as it mechanically stresses lumbosacral nerve roots,hence useful for ruling out lumbo-sacral radiculopathy. It also has specific importance in detecting disc herniation and neural compression. It is also classified as a neurodynamic evaluation test as it can detect excessive nerve root tension or compression.[18]The SLR test is more sensitive than specific. Adding structural differentiation (e.g., neck flexion, ankle dorsiflexion, hip adduction) improves the reliability of the SLR test in clinical practice.[19]

- Inclusion of neck flexion in the SLR is documented as Hyndman's sign, Brudzinski's Sign, Linder's Sign, or the Soto-Hall test.
- Inclusion of ankle dorsiflexion in the SLR is documented as Lasegue's test or Bragard's test. Lasègue's sign is said to be positive if the angle to which the leg can be raised (upon straight leg raising) before eliciting pain is <45°.[20]
- Inclusion of great toe extension in the SLR (instead of ankle dorsiflexion) is documented as Sicard's Test.[21]

A true positive SLR test should include:

- Radicular leg pain (symptoms below the knee).

- Pain occurs when hip is flexed at 30^0 and 60^0 or $70^0$from horizontal. Neurological pain which is reproduced in the leg and lower back between 30^0-$70^0$of hip flexion is suggestive of lumbar disc herniation at the L4-S1 nerve roots.[19]



Waddell Signs[22]

A comprehensive examination should also include ruling out non-organic causes of low back pain/symptoms. When the clinician suspects potential psychological causes, consideration should be given to the following:

- Nonspecific description of symptoms or inconsistency, including superficial/non-anatomic sites of tenderness on examination
- Pain with axial load/rotational movements
- Negative SLR with patient distraction (one approach includes having the patient sit in a chair and reproducing the SLR "environment")
- Non-dermatomal patterns of distribution of symptoms
- Pain out of proportion on examination

Complications[22]

- Worsening symptoms of lumbar spondylosis
- Worsening neurological deficits
- Worsened intervertebral disc herniation
- Narrowing of spinal canal due to secondary osteophytes
- Affecting the patient's life in all aspects

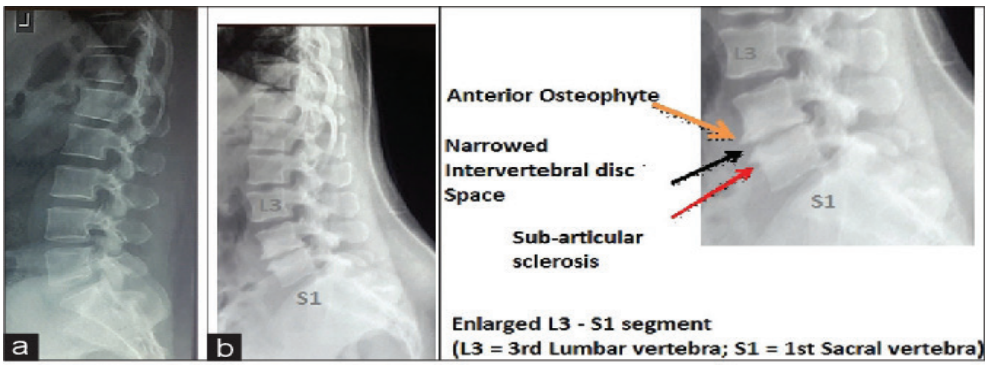
SUPPORTIVE INVESTIGATIONS:

Usually, clinical assessment is sufficient for diagnosis, but diagnostic imaging like X-rays, MRI, and EMG can confirm it, if necessary, demonstrating normal distal motor and sensory nerve

conduction studies.[23]Radiographic studies, whether plain X- ray film, CT or MRI may provide useful confirmatory evidence to support an exam finding and localize a degenerative lesion or area of nerve compression.[1]Plain X-rays are the first line of evaluation whereas CT and MRI are modalities for detailed investigation.

Essential Investigations:

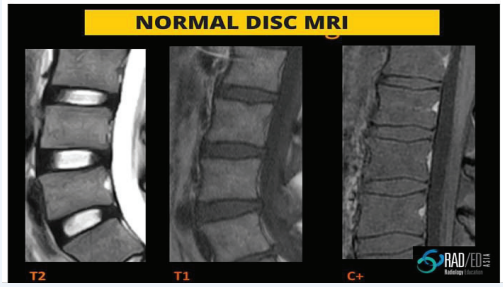
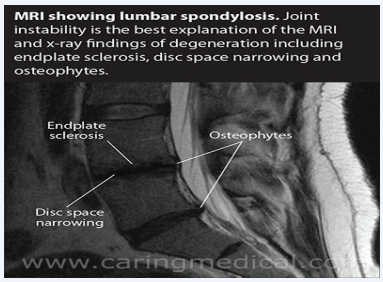
Investigation	Findings[2,3]
Plain or Digital x-ray Lumbar spine (AP, Lat.)	• Osteophytes • Thickening of facet joints • Narrowing of the intervertebral disc spaces.



Lateral radiograph of normal (a) and spondylotic (b) lumbo-sacral

Advanced investigations:

Investigation	Findings[2,3]
Magnetic resonance imaging (MRI)of the Lumbar Spine	It is the preferred choice for suspected serious conditions. With advancement, MRI is now considered as an ideal, accurate and reliable modality for the assessment and evaluation of lumbar spondylosis which involves features of degenerative disc disease, degenerative endplate changes, disc herniation, spinal compression, and consequences of instability in degenerative lumbar spondylosis. CT does not give this direct evaluation. On MRI images, diagnosis of desiccated vertebral discs and lumbar spondylosis is made by changes in the signal intensity of vertebral body end plate.[12]
Blood tests	Generally, blood tests are not required for diagnosis of lumbar spondylosis but to exclude other pathologies or complications full blood count, ESR, CRP, protein electrophoresis and other necessary tests, e.g., HLAB27.
Electromyography (EMG)	To exclude other pathologies or complications

MRI of Normal Lumbar Spine	MRI of Lumbar spondylosis[1]
	

Differential Diagnosis

Diagnosis with Specific Pathology	Differentiating features
Cauda equina syndrome [25]	• Back pain and sciatica as in lumbar spondylosis • Weakness and changes in sensation in the lower extremities • Bowel and bladder dysfunction • Sexual dysfunction in males • Saddle anaesthesia: Absence of sensation in the second-fifth sacral nerve roots, the perianal region
Ankylosing spondylitis [26]	• Back pain is common as in lumbar spondylosis • Onset of symptoms before the age of 40, gradual and insidious onset • Relief with exercise, lack of improvement with rest and nocturnal pain with improvement upon arising. • Spinal stiffness, limited mobility and postural changes, particularly hyperkyphosis. • Association of HLA-B27 • Elevated levels of acute phase reactants, such as erythrocyte sedimentation rate (ESR) and elevated C-reactive protein (CRP). • Radiographic features of squaring of vertebral bodies, bamboo spine sign.
Fibromyalgia / Muscle spasm [27]	• Poorly localized pain, difficult to ignore, severe in its intensity, & associated with a reduced functional capacity. • Fatigue, stiffness, sleep disturbance, cognitive dysfunction, anxiety, and depression.
Spinal cord tumor[28,29]	• Pain is the most common symptom which mimics lumbar spondylosis. • Common symptoms of spinal cord compression include muscle weakness, sensory loss, numbness in hands and legs, and rapid onset paralysis. • Bowel or bladder incontinence often occurs in the later stages of the disease.

Diagnosis with Specific Pathology	Differentiating features
Spinal infection[30,31]	• Back pain is the most common presenting symptom as in lumbar spondylosis • Neurologic impairment including sensory loss, weakness, or radiculopathy • Fever is common in viral infections • Pain may be elicited through palpation or percussion of spinous processes overlaying spinal epidural abscess. • Vertebral osteomyelitis, spinal epidural abscess, etc.
Lumbar Spondylolisthesis[32]	• Typically have intermittent and localized low back pain • Pain is exacerbated by flexing and extending at the affected segment, improve in certain positions such as lying in supine position. • Other symptoms like buttock pain, numbness, or weakness in the leg(s), difficulty walking, and rarely loss of bowel or bladder control.
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Diagnosis with Specific Pathology	Differentiating features
Lumbar Spondylolysis [33]	• Manifest symptoms constituting insidious onset of recurrent axial low back pain that increases with activity and exacerbated by lumbar hyperextension. • Increased lumbar lordosis, tight hamstrings, reduced trunk range of motion (particularly with extension), tenderness to palpation overlying the pars fracture site • A positive stork test (single leg hyperextension and rotation of the spine which reproduces the patient pain • Characteristic absence of any radiculopathy.
Intervertebral disc prolapse[34]	• Low back pain, sensory abnormalities, weakness at the lumbosacral nerve roots distribution as in lumbar spondylosis • Limited trunk flexion • Pain exacerbation with straining, coughing, and sneezing • Pain intensified in a seated position, as the pressure applied to the nerve root is increased by approximately 40% • Narrowed intervertebral space, traction osteophytes, and compensatory scoliosis on X-ray • Over 85 to 90% of patients with an acute herniated disc experience relief of symptoms within 6 to 12 weeks without any treatments

PRINCIPLES OF MANAGEMENT

Red Flag Signs of Lumbar Spondylosis:

These signs should be assessed before initiating treatment for need for management through modern medicine.

- Widespread weaknesses or loss of sensation (more than one myotome or dermatome)
- Anything that suggests myelopathy and these include: slow onset, neurological symptoms, difficulty walking, weak hand or foot movement, loss of bowel bladder or bowel function.
- Any lower motor neuron signs
- Any symptoms that suggest cancer
- History of cancer, AIDS, or infection
- Tenderness of low back vertebrae suggesting trauma or fracture
- History of violent trauma, before the low back pain
- Recent surgery of the low back

- Risk of osteoporosis (not exclusive to the low back)
- Vascular signs and symptoms such as dizziness, black outs and drop attacks.

Patients need education about their LS diagnosis, as there are common misconceptions and concerns about potential disability. Patients over-emphasize the value of radiological studies and have mixed perceptions of the relative risk and effectiveness of surgical intervention and conservative management. It's important to emphasize the natural course of LS and discuss therapeutic options, which include lifestyle changes like exercise and maintaining good posture when sitting and standing. The treatment is required for back pain and radicular pain rather than lumbar spondylosis. Simple first line care like advice, reassurance, and self-management with a review at 1-2 weeks is required and should be given non-pharmacologic treatments for pain relief such as lifestyle adjustments, weight control, yoga, exercise, patient education, psychosocial support, assistive devices, thermal treatments, and modifications in daily activities, etc. If patients need second line care, non-pharmacological treatments (e.g., physical, and psychological therapies) should be tried before pharmacological therapies. If pharmacological therapies are used, they should be used at the lowest effective dose and for the shortest period of time possible. Exercise and/or cognitive behavioral therapy, with multidisciplinary treatment may be required for more complex presentations.[35-37]If the patient is already under standard care (anti-inflammatory/analgesics/steroids), the physician may advise to taper the same gradually along with add-on homoeopathy and can be re-assessed in the follow-ups for discontinuing the standard treatment in consultation with a conventional physician.

(A) Prevention management [38,39]

While lumbar spondylosis is often associated with aging, there are some lifestyle modifications which can help to reduce the risk of disease:

- Avoid excessive psychological and physical stress. Stress may cause exacerbation of pain and stiffness.
- Maintain healthy body weight through balanced diet along with regular physical activity and exercises. Excess weight can place added stress on the spine.
- Maintain good posture, both while sitting and standing which can reduce strain on the lower back.
- Avoid forward bending exercise and jogging, running, jerking vigorously.
- Avoid carrying heavy bags and lifting heavy weights.
- Avoid trauma to the back.
- Avoid smoking. Smoking can contribute to disc degeneration.
- Proper ergonomics in the workplace and at home can reduce the risk of developing lumbar spondylosis.

(B) Interventions

At Level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The diagnosis of LS relies primarily on clinical evaluation following a thorough medical history and physical examination. Occasionally, additional investigations such as X-ray / MRI and a complete blood count.

Management

Various studies[40-44] suggest that Homoeopathy is effective for LS. In homoeopathic practice, various remedies are available for treating LS. However, the treatment approach relies solely on the patient's overall symptom picture. Given the chronic nature of the disease, a single dose of medicine might not be enough. The repetition of doses, change of potency, and change of remedy are based on the totality of symptoms, miasmatic cleavage, Kent's 12 observations and other homoeopathic principles.

Some of the commonly prescribed medicines are as follows:[45]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Rhus toxicodendron	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** •Calcarea Phos 6x/12x •Calcarea fluor 6x/12x •Magnesium phos 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum,Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Bryonia alba					
3.	Ruta graveolens					
4.	Causticum					
5.	Lachesis					
6.	Magnesia phosphorica					
7.	Medorrhinum					
8.	Pulsatilla nigricans					
9.	Sulphur					
10.	Syphilinum					
11.	Colocynth					
12.	Calcarea fluorica					
13.	Conium maculatum					
14.	Sepia officinalis					
15.	Kali carbonicum					
16.	Nux vomica					
17.	Zincummetallicum					

Do's and Don'ts while taking homoeopathic medicine:[46]

Patients using homoeopathic remedies are typically instructed to refrain from eating, drinking, smoking, or brushing their teeth for at least 15 minutes to half an hour before and after

taking their medication. Additionally, they should avoid all products containing menthol and camphor, as these guidelines align with standard British homoeopathic practice.

Recommended diet and lifestyle:[47]

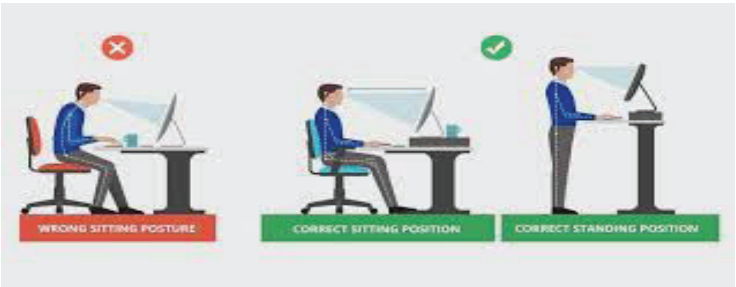
After a long period of inactivity, start a routine of gentle exercises, such as yoga, to stretch and strengthen muscles and improve posture. Incorporate age-appropriate low-impact exercises to strengthen the lower back. Remember to always stretch before any strenuous physical activity.

- Whether at home or in the workplace, ensure that the work surface is at a comfortable and appropriate height.
- Sit on a chair with proper lumbar support, ensuring it is at the right height for the task. Maintain proper posture with shoulders back. Alternate sitting positions regularly and take periodic breaks to walk around or gently stretch muscles to relieve tension. Rest feet on a low stool if one must sit for extended periods.
- Wear comfortable, low-heeled shoes.
- To minimize spinal curvature, sleep on the side. Always choose a firm and flat surface for sleeping.
- Ensure proper nutrition and diet to mitigate and prevent excessive weight gain. A diet with adequate daily amounts of calcium, phosphorus, and Vitamin D supports healthy bone growth.

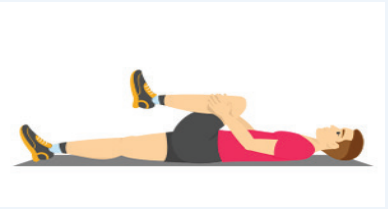
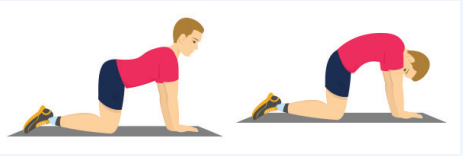
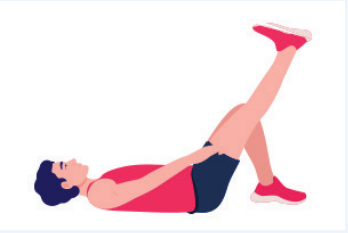
Posture[48]

Posture is important when experiencing neck pain. Some examples of good and bad sitting and lying postures are as follows:

Prolonged sitting is generally accepted as an important risk factor, and it is frequently suggested that a lordotic posture should be maintained in the lumbar spine while sitting.



Exercises recommended for LS:[49,50]

Exercises	Procedure	Demonstration
Pelvic - tilt	• Lie on your back with your knees bent. • Tighten your stomach muscles and push your lower back towards the floor. • Hold for 5-10 seconds. • Relax. • Repeat 10 times.	
Knee-Chest	• Lie on your back with your knees bent • Bring one knee towards your chest • Hold for 5-10 seconds • Repeat with the other knee • Repeat 10 times for each knee	
Cat – cow Stretches	• Start on your hands and knees • Arch your back and look up (cow stretch) • Round your back and look down (cat stretch) • Repeat 10 times	
Hamstring Stretch	• Lie on your back with one leg straight and the other bent • Keep the straight leg raised and hold onto the back of your thigh • Hold for 10-15 seconds • Repeat with the other leg	
Bridging	• Lie on your back with your knees bent • Lift your hips up towards the ceiling • Hold for 5-10 seconds • Lower down • Repeat 10 times	

Yoga practices for the management of LS:[51-53]

Various yoga practices are helpful for the management of patients with low back pain. Some of the asanas are *Dhanurasana, Natarajasana, Setu Bandhasana, Matsyasana, Naukasana, Marjarisana, Ardha Setu Bandhasana, Shashankasana, Anahatasana, Paschimottanasana, Bhujangasana, Malasana, etc.*These asanas are helpful in strengthening lower back and abdominal muscles, increasing flexibility of the spine, enhancing the blood circulation in hip joints.

Restricted diet and lifestyle:[38,49,54]

- Do not take excess of salt, sweets, dessert, hydrogenated fat, soft drink, refined grain, tea and coffee.
- Do not take stress.
- Avoid food that causes overweight.
- Avoid exercising during flare up or acute pain.
- Do not sit on a low soft couch with a deep seat and when getting up from sitting, keep the normal curves in back.
- Avoid half bent positions while standing.
- Avoid lifting heavy weights.
- Do not sleep on stomach.
- Seat must be close enough to the wheelto keep the natural curves of the back.
- Avoid Fried foods, spicy, oily foods, excessive meats and refined foods like sweets, confectionery, bread, and other refined wheat products. These along with other factors contribute to the development of CS and bone demineralization.

Follow-up (Every 7 days or earlier as per the need of the patient)

Reviews should include:

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.
- Monitoring the long-term course of the condition.
- Management of LBP in terms of exercise, and physiotherapy.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Self-management support.

Referral criteria

- Non-response to treatment
- Evidence of an increase in severity/complications such as progressive or severe neurological deficit in the lower extremity
- Substantial impact on their quality of life and activities of daily living

- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as diabetes, hypertension or associated cardiac disease.

At Level 2 (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray)

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh one, must be evaluated thoroughly for complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- Haemogram
- X-ray
- Magnetic resonance imaging
- C-reactive protein

Management: Same as Level – 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Other procedures:

Physiotherapy:[1]

- **Transcutaneous electrical nerve stimulation (TENS):** A 'TENS' unit is a therapeutic modality involving skin surface electrodes which deliver electrical stimulation to peripheral nerves in an effort to relieve pain noninvasively.
- **Lumbar supports:** Lumbar back supports may provide benefit to patients suffering chronic LBP secondary to degenerative processes through several potential, debated mechanisms. Supports are designed to limit spine motion, stabilize, correct deformity, and reduce mechanical forces. They may further have effects by massaging painful areas and applying beneficial heat.
- **Traction:** Lumbar traction applies a longitudinal force to the axial spine through use of a harness attached to the iliac crest and lower rib cage to relieve chronic low back pain. The forces, which open intervertebral space and decrease spine lordosis, are adjusted both with regard to level and duration and may closely be measured in motorized and bed rest devices.

- **Spine manipulation:** Spine manipulation is a manual therapy approach involving low-velocity, long lever manipulation of a joint beyond the accustomed, but not anatomical range of motion.
- **Massage therapy:** Massage therapy for chronic LBP appears to provide some beneficial relief.

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up: (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at level 1, Plus
- When the initial medical treatment does not produce improvement during an acute exacerbation.
- Advanced stages of disease like lateral or central disc herniation etc.

At Level 3 (Ayush hospitals attached to teaching institutions, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.

Clinical Diagnosis: Same as Levels 1& 2.

Confirm diagnosis and severity with the help of investigations like magnetic resonance imaging.

Management: Same as levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to Level 1 and Level 2 management strategies, Homoeopathy offers some uncommonly prescribed medicines to alleviate pain and other symptoms in patients with end-stage lumbar spondylosis. In those who haven't responded to treatment due to various reasons such as the absence of symptoms, coexisting medical conditions, or the use of other medications like immunosuppressive, oral hypoglycemic agents, or antihypertensive, homoeopathic medications can be prescribed as a part of supportive management based on the sphere of action or keynote symptoms for these conditions and other advanced pathological states. As part of an integrative approach to therapy, complementary treatments like massage, cupping, acupressure, and acupuncture may also be used simultaneously to reduce pain and enhance flexibility. Below are some medicines that may be considered based on their indications. [45, 55, 56]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Aesculus hippocastanum	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				***Tissue remedies:*** •Calcarea Phos 6x/12x •Calcarea fluor 6x/12x •Magnesium phos 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Ammonium muriaticum					
3.	Berberis vulgaris					
4.	Butyric acid					
5.	Cimicifuga					
6.	Cobaltum metallicum					
7.	Gnaphalium					
8.	Guaiacum officinale					
9.	Kali iodatum					
10.	Bacillus proteus					
11.	Radium bromatum					
12.	Viscum album					
13.	Xanthoxyllum					
14.	Cimex lectularius					

Recommended diet and lifestyle: Same as Levels 1&2

Restricted diet and lifestyle: Same as Levels 1& 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at level 2, plus
- Other modalities can be considered depending on the case and to rehabilitate properly.

References:

1. Middleton K, Fish DE. Lumbar spondylosis: clinical presentation and treatment approaches. Curr Rev Musculoskelet Med. 2009 Jun;2(2):94-104.
2. Schneck CD. The anatomy of lumbar spondylosis. Clin OrthopRelat Res. 1985;193:20–36.
3. Gibson JNA, Waddell G. Surgery for degenerative lumbar sondylosis. Spine. 2005;20:2312–20.
4. Symmons DPM, van Hemert AM, Vandenbrouke JP, et al. A longitudinal study of back pain and radiological changes in the lumbar spines of middle aged women: radiographic findings. Ann Rheum Dis. 1991;50:162–6.
5. O'Neill TW, McCloskey EV, Kanis JA, et al. The distribution, determinants, and clinical correlates of vertebral osteophytosis: a population based survey. J Rheumatol. 1999;26:842–8.
6. Heine J, Ûber die Arthritis deformans. Virchows Arch Pathol Anat. 1926;260:521–663.
7. Videman T, Battié MC. Spine update: the influence of occupation on lumbar degeneration. Spine. 1999;24:1164–8.
8. Toshinori Sakai, Koichi Sairyo, Naoto Suzue, Hirofumi Kosaka, Natsuo Yasui, Incidence and etiology of lumbar spondylolysis: review of the literature, Journal of Orthopaedic Science.2010;15(3):281-288.
9. Spector TD, Mac Gregor AJ. Risk factors for osteoarthritis: genetics. Osteoarthritis Cartilage. 2004;12(Suppl A):S39–44. doi: 10.1016/j.joca.2003.09.005.
10. Videman T, Battié MC, Ripatti S, et al. Determinants of the progression in lumbar degeneration: a 5-year follow-up study of adult male monozygotic twins. Spine. 2006;31(6):671–8.
11. Battié MC, Videman T, Gibbons L, et al. Determinants of lumbar disc degeneration: a study relating lifetime exposures and MRI findings in identical twins. Spine. 1995;20:2601–12.
12. Maha Munir Mir, *et al* (2021). Prevalence and Radiological Evaluation of Lumbar Spondylosis on Magnetic Resonance Imaging. EAS J Radiol Imaging Technol, 3(2), 57-65.
13. Boswell MV, Trescot AM, Datta S, et al. Interventional techniques: evidence-based practice guidelines in the management of chronic spinal pain. Pain Physician. 2007;10(1):7–111.
14. Bogduk N. The innervation of the lumbar spine. Spine. 1983; 8:286–93.
15. Snyder DL, Doggett D, Turkelson C. Treatment of degenerative lumbar spinal stenosis. Am Fam Physician. 2004;70(3):517–20.
16. Leerar PJ, Boissonnault W, Domholdt E, Roddey T. Documentation of red flags by physical therapists for patients with low back pain. Journal of Manual and Manipulative Therapy. 2007; 15(1):42-9.
17. Snider KT, Snider EJ, Degenhardt BF, Johnson JC, Kribs JW. Palpatory accuracy of lumbar spinous processes using multiple bony landmarks. Journal of manipulative and physiological therapeutics. 2011 Jun 1;34(5):306-13.
18. Ropper AH, Zafonte RD. Sciatica. The New England journal of medicine. 2015;372(13):1240–8.
19. Nee RJ, Coppieters MW, Boyd BS. Reliability of the straight leg raise test for suspected lumbar radicular pain: A systematic review with meta-analysis. Musculoskeletal science & practice. 2022;59:102529–102529.
20. Kamath SU, Kamath SS. Lasègue's Sign. J Clin Diagn Res. 2017 May;11(5)
21. Tawa N, Rhoda A, Diener I. Accuracy of clinical neurological examination in diagnosing lumbo-sacral radiculopathy: A systematic literature review. BMC musculoskeletal disorders. 2017;18(1):93–93.
22. Donnally III CJ, Hanna A, Varacallo M. Lumbar Degenerative Disk Disease. 2023 Aug 4. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan–Mar.
23. Fairbank JC, Pynsent PB. "The Oswestry Disability Index." Spine 2000: 25(22):2940-2952
24. Lamer TJ. Lumbar spine pain originating from vertebral osteophytes. Reg Anesth Pain Med. 1999;24(4):347–51.

25. Okpala, Francis Osita. "Radiographic lumbar spondylosis: Gender and age group prevalence in Nigeria." *Annals of Tropical Medicine and Public Health* 10 (2017): 1199 - 1204.
26. Griffith JF, Wang YX, Antonio GE, etal. Modified Pfirrmann grading system for lumbar intervertebral disc degeneration. Spine. 2007;32 (24): E708-12.
27. Urrutia J, Besa P, Campos M, et al. The Pfirrmann classification of lumbar intervertebral disc degeneration: an independent inter- and intra-observer agreement assessment. Eur Spine J. 2016;25(9):2728-2733.
28. Korse NS, Pijpers JA, van Zwet E, Elzevier HW, Vleggeert-Lankamp CLA. Cauda Equina Syndrome: presentation, outcome, and predictors with focus on micturition, defecation, and sexual dysfunction. Eur Spine J. 2017 Mar;26(3):894-904.
29. Nambiar, Mithun; Kavar, B (2012). "Clinical presentation and outcome of patients with intradural spinal cord tumours". Journal of Clinical Neuroscience. 19 (2): 262–6.
30. Zimmerli W. Clinical practice. Vertebral osteomyelitis. N Engl J Med. 2010 Mar 18;362(11):1022-9.
31. Sharfman ZT, Gelfand Y, Shah P, Holtzman AJ, Mendelis JR, Kinon MD, Krystal JD, Brook A, Yassari R, Kramer DC. Spinal Epidural Abscess: A Review of Presentation, Management, and Medicolegal Implications. Asian Spine J. 2020 Oct;14(5):742-759.
32. Tenny S, Gillis CC. Spondylolisthesis. [Updated 2023 May 22]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430767/
33. McDonald BT, Hanna A, Lucas JA. Spondylolysis. [Updated 2023 Aug 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK513333/
34. Al Qaraghli MI, De Jesus O. Lumbar Disc Herniation. [Updated 2023 Aug 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023.
35. Yelland MJ, Schluter PJ. Defining worthwhile and desired responses to treatment of chronic low back pain. Pain Med. 2006;7(1):38-45.
36. Traeger A, Buchbinder R, Harris I, Maher C. Diagnosis and management of low-back pain in primary care. CMAJ. 2017 Nov 13;189(45):E1386-E1395.
37. Bardin LD, King P, Maher CG. Diagnostic triage for low back pain: a practical approach for primary care. Med J Aust. 2017;206(6):268-273.
38. Pasdar Y, Hamzeh B, Karimi S, Moradi S, Cheshmeh S, Shamsi MB, Najafi F. Major dietary patterns in relation to chronic low back pain; a cross-sectional study from RaNCD cohort. Nutr J. 2022 May 12;21(1):28.
39. Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. Prog Neuropsychopharmacol Biol Psychiatry. 2018 Dec 20;87(Pt B):168-182.
40. Prakash A, Bhowmik NC, Singh S, Sadhukhan S, Rai S, Singh S, Kumar U, Rahim F, Balamurugan D, Bhar K, Singh NK, Koley M, Saha S. Individualized Homeopathic Medicines for Low Back Pain in Lumbar Spondylosis: Double-Blind, Randomized, Placebo-Controlled Trial. Homeopathy. 2023 Nov;112(4):240-250.
41. Sonny R. Case of lumbar spondylosis treated with Homoeopathic medicine Calcarea fluorica. Indian J Res Homoeopathy. 2019;13:125-30.
42. Pathrikar AD. International Journal of Research Publication and Reviews. 2022 Oct; 3 (10): 732-740.
43. Das BTR, Jintumol A, Shakira S. Homoeopathic management of lumbar disc prolapse with spondylosis: A case report. International Journal of Homoeopathic Sciences. 2023;7(1):419-423.
44. Choubey G, Debnath D, Roja, V, Gupta, J., & Banerjee, A. (2020). Managing pain and stiffness through individualized homoeopathy in lumbar spondylosis: Results of a prospective consecutive case series. International Journal of Homoeopathic Sciences, 4(2), 92–97.
45. Boericke W. New Manual of Homoeopathic Materia Medica with Repertory. New Delhi. B Jain publishers (P) Ltd.: 2007
46. Fischer P, Scott DL. A randomized controlled trial of homeopathy in rheumatoid arthritis. Rheumatology 2001;40: 1052-1055.

47. Altug Z. Lifestyle Medicine for Chronic Lower Back Pain: An Evidence-Based Approach. Am J Lifestyle Med. 2021 Jul 21;15(4):425-433.

48. Cho IY, Park SY, Park JH, Kim TK, Jung TW, Lee HM. The Effect of Standing and Different Sitting Positions on Lumbar Lordosis: Radiographic Study of 30 Healthy Volunteers. Asian Spine J. 2015 Oct;9(5):762-9.

49. Do's and Don'ts with Low Back Pain. Health Information Translations. The Ohio State University Wexner Medical Center. [Online]. 2017 May 4. Available from https://jhansiphysiotherapy.com/images/DoDontLowBack%20(1).pdf [accessed on 05-09-23]

50. CB Physiotherapy, pain, mobility and wellness solutions. Integrated Physio care. [Online]. Available from https://cbphysiotherapy.in/exercise/top-5-exercises-for-lumbar-spondylosis [accessed on 16-11-23]

51. Sharda Ayurveda. Yoga Asanas For Lumbar Spondylosis To Get Relief From Lower Back Pain, [Online]. Available from https://www.drshardaayurveda.com/blogs/yoga-asanas-for-lumbar-spondylosis-get-relief-from-lower-back-pain. [accessed on 16-11-23]

52. Pushpika Attanayake AM, Somarathna KI, Vyas GH, Dash SC. Clinical evaluation of selected Yogic procedures in individuals with low back pain. Ayu. 2010 Apr;31(2):245-50.

53. Allow these yoga poses for lower back pain to heal you. Art of Living. [Online]. Available from https://www.artofliving.org/in-en/wellness/physical/pain-relief/yoga-poses-to-heal-lower-back-pain [accessed on 05-09-23]

54. Almhdawi KA, Kanaan SF, Khader Y, Al-Hourani Z, Al-Jarrah MD, Almomani F,Alqhazo MT. Mental and physical health-related quality of life and theirassociated factors among students of a comprehensive allied health institution.Work. 2021;70(1):63-73.

55. Clarke JH. A dictionary of Practical Material Medica. Reprint edition. New Delhi: B Jain Publishers (P) Ltd; 2007.

56. Allen HC. Keynotes and Characteristics with comparisons of some of the leading remedies of the Materia Medica added with other leading remedies & Nosodes. Reprint ed. New Delhi. Indian Books & Periodicals Publishers; 2007: 402-404.

5 FIBROMYALGIA

5

FIBROMYALGIA

(ICD-11 code MG30.01)

CASE DEFINITION

Fibromyalgia (FM) is a syndrome characterized by chronic widespread pain (CWP) of musculoskeletal origin and tenderness without any specific underlying organic disease. Although FM is defined primarily as a pain syndrome, patients also commonly complain of associated neuropsychological symptoms such as fatigue, unrefreshing sleep, cognitive dysfunction, anxiety, and depression.[1,2]

INTRODUCTION *(Incidence/prevalence, morbidity/mortality)*

- The prevalence of Fibromyalgia (FM) in the general population varies between 2% and 8%[3,4] In India, it is estimated to be 0.05% (Rural-3.77% and urban-1.7%).[5]
- The disease has a female: male ratio of 2:1, similar to other chronic pain conditions.[3,4]
- Age of onset is typically between 20 and 60 years, with an average age of 35 years. Prevalence increases with age and the risk also appears greater in women.[6]

DIAGNOSTIC CRITERIA [6,7]

Fibromyalgia is a chronic pain syndrome diagnosed by the presence of widespread body pain (front and back, right, and left, both sides of the diaphragm) for at least 3 months in addition to tenderness (digital palpation at an approximate force of 4 kg) of at least 11 out of 18 designated tender point sites as defined by the American College of Rheumatology 1990 classification criteria.

However, the newer 2016 ACR diagnostic criteria define FM as a CWP condition associated with a patient satisfying the following diagnostic criteria:

1) Widespread pain index (WPI) > or =7 and symptom severity (SS) scale score > or =5 or WPI 4–6 and SS scale score > or =9. (Tables 1 and 2)

Table 1: The WPI scoring index is as per the 5 areas and 19 points to identify pain:

*Left upper region	*Right upper region	*Axial region	*Left lower region	*Right lower region
L jaw	R jaw	Neck	L Hip (buttock/trochanter)	R Hip (buttock/trochanter)
L Shoulder girdle	R Shoulder girdle	Upper back	L upper leg	R upper leg
L Upper arm	R Upper arm	Lower back	L lower leg	R lower leg
L Lower arm	R Lower arm	Chest		
		Abdomen		

*Total score will be between 1-19. Each point is scored as 1.

Table 2: Symptom Severity Index is as below:

Fatigue	Waking unrefreshed	Cognitive symptoms
0 = No problem	0 = No problem	0 = No problem
1 = Slight or mild problems; Generally mild or intermittent	1 = Slight or mild problems; Generally mild or intermittent	1 = Slight or mild problems; Generally mild or intermittent
2 = Moderate; considerable Problems; often present and/or at a moderate level	2 = Moderate; considerable Problems; often present and/or at a moderate level	2 = Moderate; considerable Problems; often present and/or at a moderate level
3 = severe: pervasive, continuous, Life disturbing problems	3 = severe: pervasive, continuous, Life disturbing problems	3 = severe: pervasive, continuous, Life disturbing problems

2) Generalized pain: pain in 4/5 regions.
3) Symptoms have been present > or = 3 months.
4) The fibromyalgia diagnosis can now be made irrespective of other diagnoses (no need to rule out all other conditions that could explain the symptoms, if criteria 1-3 are all met).

CLINICAL PRESENTATION [1]

Pain and tenderness: Patient commonly report "pain all over" which is poorly localized, difficult to ignore, severe in its intensity, & associated with a reduced functional capacity (see figure 1).

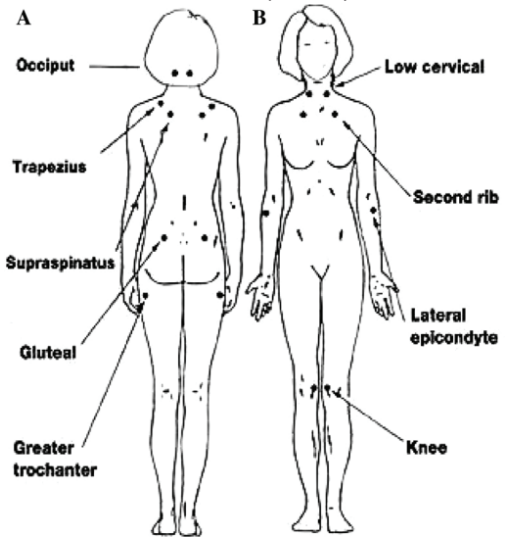


Figure 1: Tender points assessment in patients with fibromyalgia [4]

Neuropsychological symptoms: In addition to widespread pain, fatigue, stiffness, sleep disturbance, cognitive dysfunction, anxiety, and depression.

Overlapping syndromes: Headaches, facial/jaw pain, regional myofascial pain particularly involving the neck or back, and arthritis.

Co-morbid conditions: FM is often co-morbid with chronic musculoskeletal, infectious, metabolic or psychiatric conditions.

Psychosocial considerations: Symptoms often have their onset and are exacerbated during periods of high-level real or perceived stress.

Functional impairment: Functional assessment should include physical, mental and social domains.

Many assessment tools are widely used for the diagnosis and evaluation of improvement of FM and the core symptom domain in the process of the treatment [4,8]

SUPPORTIVE INVESTIGATIONS [6]

Essential:

There is no x-ray or laboratory test for fibromyalgia; the diagnosis is strictly a clinical one.

Advanced:

If the patient does not meet clinical criteria for a diagnosis of fibromyalgia, then the following tests can be done for further evaluation:

- CBC and ESR
- TFT
- CRP
- Vitamin D levels
- Rheumatoid factor (RF)
- Anti-cyclic citrullinated protein antibody (anti-CCP antibody)
- ANA may be obtained if patients have a history suggestive of an inflammatory disorder.

Note: - The positive results of the above-mentioned investigations do not rule out fibromyalgia, if the patient meets the clinical criteria/diagnostic criteria for fibromyalgia. Instead, a positive test would indicate that another disorder is also present.

DIFFERENTIAL DIAGNOSIS [6]:

Several disease conditions cause pain, muscle aches, and fatigue just like FM as below:

Disease	Features not present in fibromyalgia	Pitfalls in diagnosis
Rheumatoid arthritis	Joint swelling, elevated ESR and CRP	"False positive" rheumatoid factor in FM occasionally
Systemic lupus erythematosus	Rash and renal, cardiac, pulmonary, and neurologic features	"False positive" antinuclear antibody in some with FM and many symptoms
Polymyalgia rheumatica	Severe stiffness in the morning and when sedentary, elevated ESR and CRP, usual onset >60 years, rapid response to glucocorticoids	Like FM, often no abnormal physical findings in polymyalgia rheumatica
Polymyositis	Muscle weakness, elevated muscle enzymes, abnormal EMG/NCV	FM patients often feel weak (but have normal strength)
Spondyloarthritis	Restricted spinal motion, elevated ESR or CRP	May be no peripheral joint abnormality in spondyloarthritis
Lyme disease	Characteristic rash, joint swelling, serologic tests confirmatory	"Post-Lyme" FM symptoms, false positive serologic tests, early flu-like symptoms
Hypothyroidism	Abnormal thyroid function tests, pain not prominent	Hypothyroidism may present with a myopathy/mild myalgia
Neuropathy	Sensory or motor deficits, abnormal EMG/NCV	Subtle neurologic disorders, small fiber neuropathy in some with FM

ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; FM: fibromyalgia; EMG: electromyogram; NCV: nerve conduction velocity.

PRINCIPLES OF MANAGEMENT[9]

Red Flag Signs of Fibromyalgia:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine.

- Widespread pain
- Hypersensitivity to touch
- Muscle cramps
- Joint and muscle stiffness
- Persistent headaches or migraines
- Gastrointestinal (GI) disorders
- Elevated reaction to sensory triggers
- Severe fatigue and weakness
- Fibro fog
- Depression and anxiety disorders

As in other chronic conditions requiring ongoing management, education plays an essential role in fibromyalgia management and can be integrated into a treatment plan after diagnosis and continued throughout follow-up. Confirming the diagnosis and describing its clinical picture can positively impact patients with fibromyalgia, giving them validation and reassurance. It must be emphasized that FM is not a life-threatening disease and to be advised to continue an active lifestyle. Because widespread pain and tenderness, along with associated symptoms such as fatigue, sleep disturbance, cognitive difficulties, and mood disturbances, are characteristics of fibromyalgia, a multi-disciplinary treatment approach must be considered for a treatment plan [9]. Thus, a comprehensive multidisciplinary modal treatment plan (MMTP) is recommended, integrating (1) education to patients, (2) Intervention, and (3) non-pharmacological therapies [10].

Education of the patient: Patient education is an integral part of the treatment of FM. It should include the cause, course, and treatment information along with assurance. A one-time education is not sufficient, and the patient should periodically be given continuous education and reassurance in the follow-up visits regularly with a systematic approach. The focus should be on providing the right information and removing any myths and fears about the disease.[11]

(A) Prevention management[12]

Fibromyalgia is one of the most significant causes of chronic widespread musculoskeletal pain, heavily burdening both individual patients and the healthcare system. Hence, reducing the prevalence of the disorder is of paramount importance. There are numerous risk markers that are associated with an increased probability of the disease, such as obesity, psychological and physical stress, exposure to traumatic life events, and psychiatric disorders. Targeting preventable risk factors may suppress consequent emergence of fibromyalgia such as maintenance of a normal body mass index, regular physical exercise, and psychological techniques such as cognitive behavioral therapy.

(B) Interventions

At Level 1- Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited).

Clinical Diagnosis: Diagnosis of FM is primarily clinical and made after a complete medical history and physical examination. However, investigations, like a complete hemogram and X-ray, may be done to exclude the condition.

Homoeopathy has a plausible role to play in managing fibromyalgia. Research studies have shown the efficacy of homoeopathic medicines in managing the FM[13-20] and also overall improved the quality of life of patients. Many remedies are listed in homoeopathic literature to treat this condition; however, the totality of symptoms presented by the patient is the sole indication and guide for treating each patient. Because of the chronicity of the disease, a single dose may not be sufficient. Repetition of doses, change of potency, and change of remedy during follow-up is based on the totality of symptoms, miasmatic cleavage, Kent's 12 observations, and other homoeopathic principles.

Some of the commonly prescribed medicines are as follows [21, 22]:

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Rhus toxicodendron	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** •Calcarea Phos 6x/12x •Calcarea fluor 6x/12x •Magnesium phos 6x/12x Ointments: • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Bryonia alba					
3.	Calcarea carbonica					
4.	Arnica montana					
5.	Cimicifuga racemosa					
6.	Causticum					
7.	Rhododendron					
8.	Ruta graveolens					
9.	Kali carbonicum					
10.	Sepia officinalis					
11.	Arsenicum album					
12.	Natrum carbonicum					
13.	Sulphur					
14.	Natrum muriaticum					
15.	Staphysagria					
16.	Gelsemium sempervirens					

Do's and Don'ts while taking homoeopathic medicine:[23]

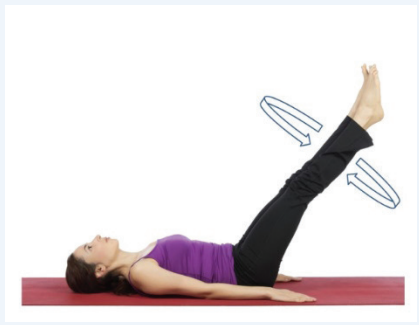
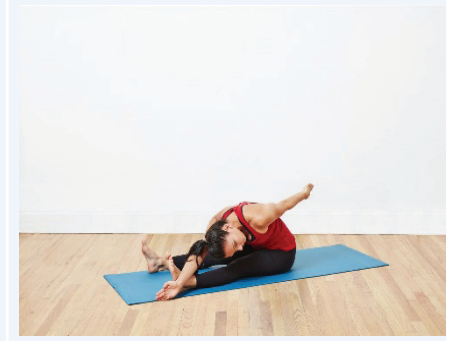
Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

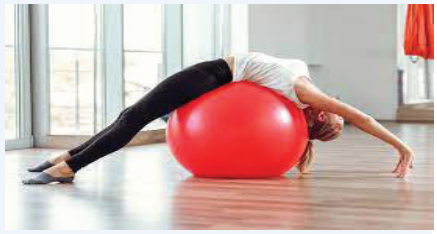
Recommended diet and lifestyle [24-27]**:**

The physicians may advice the patients as follows:

- High consumption of vegetables, fruits, vegetable/olive oils and nuts, and low consumption of red meats.
- To consume a gluten-free diet.
- To intake low carbohydrate and high protein diets that seems to alleviate pain.
- Yoga therapy primarily focuses on strengthening the muscles and stress relief through yoga practices. The patient when given special yoga postures under the supervision of trained yoga therapist improves the flexibility and movement of joints. Various practices that help are *Mountain pose (Vrikshasana), Standing forward asana (Uttanasana), Cat cow asana (Marjaryasana, Bitilasana), Child pose (Balasana)* increase the flexibility of the muscles and joints to free the movement and also corpse pose (Yoga nidra and meditation) help to calm the soul and improve sleep along with improved cognitive functioning.[24,25]
- Aerobic exercises such as swimming, running, walking, and stretching exercises along with Mat Pilates group exercises are found to be beneficial and are given below: [27,28]

S.no.	Exercise	Benefit	Posture
1.	**Swan** Lying on prone position, hands resting in the direction of the shoulders. Extend the elbows, keeping head aligned with the spine, stretching the trunk. Return back.	Strengthens the pectoral, triceps and anterior deltoid muscles	
2.	**One leg up-down** Lying on supine position, arms outstretched along the body. Raise the leg in extension with the feet in plantar flexion.	Strengthens the rectus femoris, iliopsoas and sartorius muscles	

S.no.	Exercise	Benefit	Posture
3.	**Leg circles** Lying in the supine position, arms outstretched alongside the body and supported on the ground. Raise the leg in extension, with the feet in plantar flexion. Make circles with the leg.	Strengthens the rectus femoris, sartorius, adductor and gluteus medius muscles.	
4.	**Single leg stretch** Lying in the supine position, flex the right leg by placing the left hand on the right knee and the right hand on the right ankle, flexing as much as possible towards the chest. The left leg will be extended at an angle of 30°. Slowly switch the leg	Strengthens the abdomen and stretches the glutes and the lumbar spine.	
5.	**Saw** Sitting with the back straight and the legs apart at hip width, and the arms extended and apart at shoulder height. Slowly from the waist, twist the spine to the left. Move the right arm towards the left foot and the left arm back at shoulder height. Return to the initial position and switch sides.	Stretches the trunk rotators, the hamstrings and the quadratus lumborum muscles. Strengthens the rectus abdominis, external and internal oblique muscles.	
6.	**Sidekicks front & back:** Lying straight in lateral decubitus, arm flexed and hand resting under the head. Keep your upper leg aligned with the hips and slowly bring the extended leg forward. Return to the initial position	Strengthens the rectus femoris, iliopsoas, sartorius, gluteus medius, gluteus maximus and abdominal muscles in isometry.	
7.	**The Hundred** Lying in the supine position, elbow extended with the shoulder, hips and knees at 90°. Knee extension at approximately 45°. Slight bending of the trunk (removing the shoulder blades from the mat) and chin towards the chest. 3. Return to the initial position	Strengthens the abdominal, oblique, transverse and rectus femoris muscles.	

S.no.	Exercise	Benefit	Posture
8.	**Pelvic lift on the ball** Lying in the supine position, legs flexed at 90°, with heels on the ball. Raise the hips from the mat, extending the legs. Return to the initial position.	Strengthens the gluteus maximus, biceps femoris, semitendinosus, semimembranosus, gastrocnemius, and quadriceps femoris muscles. Mobilises the spine.	
9.	**Sits up on the ball** Lying in the supine position holding the ball over the head and legs at 45°. Bring the ball towards the legs and hold it. Return to the initial position.	Strengthens rectus abdominis and external oblique muscles.	
10.	**Stretching on the ball** Lying in lateral, ventral and dorsal decubitus on the ball.	Stretching and muscle relaxation.	

Restricted diet and lifestyle: [26]

- Red meat consumption needs to be restricted.
- Avoid consumption of food additives.
- Avoid consumption of tinned and processed foods.
- Avoid consumption of genetically modified foods.
- Avoid severe exercises during episodes of pain.

Follow-up (every 7 days or earlier as per the need)

Reviews [29,30] **should include:**

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.
- Monitoring the long-term course of the condition.
- Management of FM in terms of yoga.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of ongoing treatment and if the patient is improving, continue treatment and if not, review the totality for further prescription.
- Self-management support.

Referral criteria

- Non-response to treatment.
- Evidence of an increase in severity/complications
- Substantial impact on their quality of life and activities of daily living
- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as diabetes, hypertension or associated cardiac disease.

At Level 2 - CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray)

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh case must be evaluated thoroughly for any complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- Haemogram
- X-ray
- Anti-CCP antibodies
- C-reactive protein
- Serum uric acid
- RA Factor
- ANA profile

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient. In addition, few other procedures may be helpful as given below:

- Physiotherapy including exercises, massage, transcutaneous electrical nerve stimulation (TENS), thermotherapy, and braces may be done as per the case's need under a physiotherapist's guidance.
- Cognitive Behavioural Therapy: Therapeutic activities to promote cognitive functioning thereby improving functional abilities with daily tasks such as self-care, home management, and work and leisure activities under the guidance of a clinical psychologist.

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 1 and in addition,
- Failure of acute pain exacerbations to respond to initial medical management.

At Level 3 - Ayush hospitals attached with teaching institutions, District level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities, and multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy units.

Clinical Diagnosis:

Same as Levels 1 & 2.

Management: Same as Levels 1 & 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has a number of specific remedies that can ease pain and other symptoms in patients with FM or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycemic agents, or antihypertensives. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms in these disorders as well as other advanced pathological states. A few homoeopathic medicines that can be considered as per indications are given below [21,22]:

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Argentum metallicum	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** •Calcarea Phos 6x/12x •Calcarea fluor 6x/12x •Magnesium phos 6x/12x **Ointments:** •Arnica montana •Ruta graveolens • Ledum Pal •Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Kalium muriaticum					
3.	Kalmia latifolia					
4.	Magnesium phosphoricum					
5.	Opium					
6.	Coffea cruda					
7.	Zincum phosphoricum					

Other non-pharmacological therapies [10]:

There are many therapies that can be given as an add-on to the pharmacotherapy to the FM patient. As part of integrative therapy, additional therapies including massage, cupping,

acupressure, and acupuncture may also be utilized simultaneously to lessen pain and improve flexibility. A few of them are as follows:

i) Mindfulness – meditation to maintain proper sleep hygiene.

ii) Hydrotherapy – for pain reduction, research evidence shows a moderate effect of this therapy on FM patients.[31]

Recommended diet and lifestyle: Same as Levels 1 & 2

Restricted diet and lifestyle: Same as Levels 1 & 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

Same as mentioned earlier at Levels 1 and 2.

References

1. Crofford LJ. Fibromyalgia. In Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J (ed) Harrison's principles of internal medicine. Vol. II, 19th ed. USA, McGraw-Hill Companies; 2015.
2. Maffei ME. Fibromyalgia: Recent Advances in Diagnosis, Classification, Pharmacotherapy and Alternative Remedies. *Int J Mol Sci*. 2020;21(21):7877.
3. Clauw DJ. Fibromyalgia: a clinical review. JAMA 2014; 311(15): 1547–1555.
4. Frederick W, Kathryn R, Janice A, Jon RI, LeisiHert. The prevalence and characteristics of fibromyalgia in the general population. Arthritis Rheum 1995;38(1):19– 28.
5. Marques AP, Santo ASDE, Berssaneti AA, Matsutani LA, Yuan SLK. Prevalence of fibromyalgia: literature review update. *Rev Bras Reumatol Engl Ed*. 2017;57(4):356-363.
6. Goldenberg DL. Differential diagnosis of Fibromyalgia. [Internet], cited 26 Oct. 2023. Available at https://www.uptodate.com/contents/differential-diagnosis-of-fibromyalgia
7. Wolfe F, Clauw DJ, FitzCharles M, Goldenerberg D, Häuser W, Katz RS, Russell IJ, Mease PJ, Russell A, Walitt B. 2016 Revisions to the 2010/2011 Fibromyalgia Diagnostic Criteria [abstract]. *Arthritis Rheumatol.* 2016; 68 (suppl 10).
8. Boomershine S Chad. A Comprehensive evaluation of standardized assessment tools in the diagnosis of fibromyalgia and in the assessment of fibromyalgia severity. 2012. Hindawi Publishing Corporation. Pain research and treatment. Volume 2012. 1-10. doi:10.1155/2012/653714.
9. Arnold LM, Clauw DJ, Dunegan LJ, Turk DC, and Fibro Collaborative, A Framework for Fibromyalgia Management for Primary Care Providers, Mayo Clin Proc. 2012 May; 87(5): 488–496.
10. Kundakci Burak, Kaur Jaspreet, Goh Siew Li, et al. Efficacy of nonpharmacological interventions for individual features of fibromyalgia: a systematic review and meta-analysis of randomised controlled trials. PAIN 2022; 163(8):1432-1445.
11. Goldenburg DL., Multidisciplinary Modalities in the treatment of Fibromyalgia: J Clin Psychiatry 2008;69 Suppl 2:30-34.
12. Patt YS, Amital H. Prevention of Fibromyalgia: Is It Possible? The Israel Medical Association journal: IMAJ. 2023 Mar;25(3):242-6.
13. Bell I R, Lewis D A II, Brooks A J, Schwartz G E, Lewis S E, Walsh B T, et al. Improved clinical status in fibromyalgia patients treated with individualized homeopathic remedies versus placebo. Rheumatology (Oxford). 2004. 43:577-582.
14. Bell I R, Lewis D A II, Lewis S E, Schwartz G E, Scott A, Brooks A J, et al. EEG alpha sensitization in individualized homeopathic treatment of fibromyalgia, Int J Neurosci. 2004.114(9):1195-1220.
15. Bell IR, Lewis D A II, Schwartz G E, Lewis S E, Caspi O, Scott A, et al: Electroencephalographic cordance patterns distinguish exceptional clinical responders with fibromyalgia to individualized homeopathic medicines, J Altern Complement Med. 2004.10(2):285-99.
16. Bell IR, Lewis DA 2nd, Brooks AJ, et al. Individual differences in response to randomly assigned active individualized homeopathic and placebo treatment in fibromyalgia: implications of a double-blinded optional crossover design. *J Altern Complement Med*. 2004;10(2):269-283.
17. Berman B M, Bausell Barker R. Use and referral patterns for 22 complementary and alternative medical therapies by members of the American College of Rheumatology: results of a national survey, Arch Intern Med. 2002.162:766-70.
18. Fisher P, Greenwood Alison, Huskisson E C, Turner Paul, Belon Philippe. Effect of homoeopathic treatment on fibrositis (primary fibromyalgia), BMJ 1989. 299:365-6.
19. Wahner-Roedler DL, Elkin P I, Vincent A, Thompson J M, oh TH, Loehrer LL et al: Use of complementary and

alternative medical therapies by patients referred to a fibromyalgia treatment program at a tertiary care center, Mayo Clin Proc 2005.80(1):55-60.

20. Murphy R. Homoeopathic Materia Medica - A Modern Alphabetical and Practical Repertory,3rd edition (revised), New Delhi, B Jain publishers, 2011.
21. Schroyens F., Synthesis, Repertorium Homeopathicum Syntheticum, Edition 7, London, Homeopathic Book Publishers 1997, pg 1648
22. Boericke William. Pocket Manual of Homoeopathic Materia Medica& Repertory. 9th ed. New Delhi: B.Jain Publishers (P) Ltd.; 2001.
23. Fischer P, Scott D.L. A randomized controlled trial of homeopathy in rheumatoid arthritis. Rheumatology 2001;40: 1052-1055.
24. Hennard J. A protocol and pilot study for managing fibromyalgia with yoga and meditation. *Int J Yoga Therap*. 2011;(21):109-121.
25. Verma A, Shete SU, Doddoli G. Yoga therapy for fibromyalgia syndrome: A case report. J Family Med Prim Care 2020; 9:435-8
26. Maddox EK, Massoni SC, Hoffart CM, Takata Y. Dietary Effects on Pain Symptoms in Patients with Fibromyalgia Syndrome: Systematic Review and Future Directions. *Nutrients*. 2023;15(3):716.
27. Bidonde J, Busch AJ, Schachter CL, et al. Aerobic exercise training for adults with fibromyalgia. *Cochrane Database Syst Rev*. 2017;6(6):CD012700.
28. de Medeiros SA, de Almeida Silva HJ, do Nascimento RM, da Silva Maia JB, de Almeida Lins CA, de Souza MC. Mat Pilates is as effective as aquatic aerobic exercise in treating women with fibromyalgia: a clinical, randomized, and blind trial. *Adv Rheumatol*. 2020;60(1):21.
29. Ann Bengtsson, Eva Bäckman, Bertil Lindblom & Thomas Skogh (1994) Long Term Follow-Up of Fibromyalgia Patients: Journal of Musculoskeletal Pain, 2:2, 67-80,
30. Tzadok R, Ablin JN. Current and Emerging Pharmacotherapy for Fibromyalgia. *Pain Res Manag*. 2020; 2020:6541798.
31. Langhorst J, Musial F, Klose P, Häuser W. Efficacy of hydrotherapy in fibromyalgia syndrome--a meta-analysis of randomized controlled clinical trials. *Rheumatology (Oxford)*. 2009;48(9):1155-1159.

6 ADHESIVE CAPSULITIS

6

ADHESIVE CAPSULITIS (FROZEN SHOULDER)

(ICD 10 Code: 75.0; ICD 11 Code: FB 53.0)

CASE DEFINITION

Adhesive capsulitis is characterized by pain and restricted movement of the shoulder and is also known as "Frozen Shoulder".[1] It is a condition of uncertain aetiology that occurs in the absence of a known intrinsic shoulder disorder.[2] The American Shoulder and Elbow Society (ASES) put forward a consensus definition of ACS as follows: "a condition characterized by functional restriction of both active and passive shoulder motion for which radiographs of the glenohumeral joint are essentially unremarkable".[3]

INTRODUCTION (incidence/prevalence, morbidity/mortality)

- A study from India reported that approximately 50% people suffering from shoulder pain and stiffness presents with diabetes.[4] Globally, prevalence of 10-22% is reported among diabetic patients.[5]
- Inflammatory markers such as an elevated C-reactive protein can be independent risk factors for adhesive capsulitis.[6]
- The peak incidence of onset is in between 40 and 60 years of age and seldom occurs outside this age group and in manual workers.[7,8] The mean age of onset of the disease is 55 years.[9]
- Adhesive capsulitis is slightly more common in women (1.4:1).[9]
- In about quarter of the patients, the disease is bilateral.[3]

DIAGNOSTIC CRITERIA

Frozen shoulder is classified into primary and secondary with secondary frozen shoulder further subdivided into intrinsic, extrinsic, and systemic categories.[10]

Primary/idiopathic frozen shoulder: An underlying etiology or associated condition cannot be identified.

Secondary frozen shoulder: An underlying etiology or associated condition can be identified.

- ***Intrinsic:*** In association with rotator cuff disorders (tendinitis and partial-thickness or full-thickness tears), biceps tendinitis, or calcific tendinitis
- ***Extrinsic:*** In association with previous ipsilateral breast surgery, cervical radiculopathy,

chest wall tumour, previous cerebrovascular accident, or more local extrinsic problems, including previous humeral shaft fracture, scapulothoracic abnormalities, acromioclavicular arthritis, or clavicle fracture

- ***Systemic:*** Diabetes mellitus, hyperthyroidism, hypothyroidism, hypoadrenalism, etc.[10,11,12]

The diagnosis of shoulder pain is essential to direct intervention and inform prognosis.[13]

- Idiopathic frozen shoulder is characterised by spontaneous and sudden onset of severe pain and it may follow minor trauma.[14]
- Night pain is usually noticed in the affected shoulder that may interfere with sleep.
- On palpation, the shoulder is tender with restriction of both active and passive movement[1] (elevation <100°, external rotation >50% restriction).[3]
- Local tenderness is often felt anteriorly over the rotator interval.
- Loss of external rotation is the pathognomonic sign of frozen shoulder which differentiates it from rotator cuff disease.[14]

Clinical course:

The clinical course of frozen shoulder can be divided into three stages as follows:[2,14,15]

Stage 1 – Painful phase/freezing: This can last for 2–9 months. The severity of shoulder pain, especially at night, continues to increase and the patient uses the arm less and less. The very severe pain may often be unrelieved by analgesics.[14] This phase is characterized by an acute synovitis of the glenohumeral joint.[15]

Stage 2 – Stiffening/frozen phase: This can last for 4–12 months and is associated with a gradual reduction in the range of movement of the shoulder. The pain usually resolves during this period, although it is commonly felt as an ache, especially at the extremes of the reduced range of movement.[14] There is restriction of external shoulder rotation followed by shoulder flexion, and internal rotation.[15]

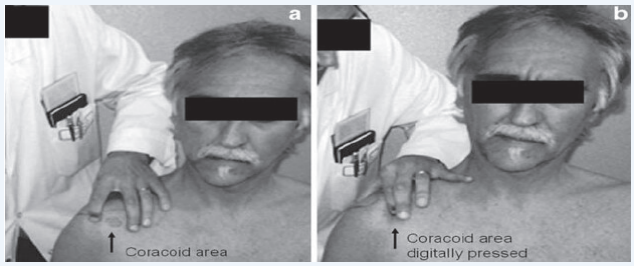
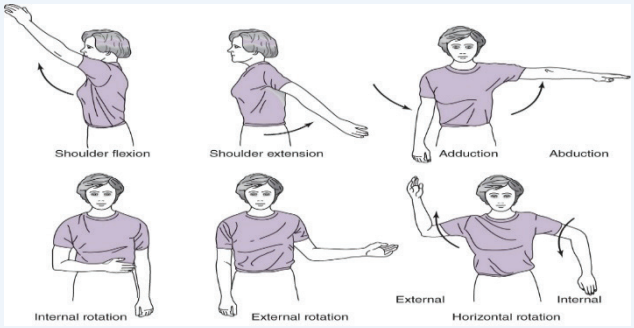
Stage 3 – Thawing phase: This lasts for a further 4–12 months and is associated with a gradual improvement in the range of motion.

The idiopathic frozen shoulder usually resolves without any long-term sequelae after running its clinical course runs over a period of 1–3 years.[14] In some cases it can persist, presenting symptoms like mild pain which is the most common complaint or with some limitation of shoulder motion.[2] However, secondary adhesive capsulitis will warrant further course of action keeping in mind the appropriate management of the underlying cause.

The clinical course resolves when the cause is idiopathic. However, if the cause is secondary it takes further course of action (this has to be done with appropriate management of underlying cause).

CLINICAL EXAMINATION[13]

Clinicians should measure pain, active shoulder Range of Motion (ROM), and passive shoulder ROM to assess the key impairments of body function and body structures. *It is often viewed as a diagnosis of exclusion.*

Coracoid Test	It is a highly sensitive and specific clinical examination finding for adhesive capsulitis.[16]	 Digital pressure on the coracoid area (fig b) evokes pain compared to other shoulder area (fig a)[16]
Shoulder Shrug Test	An inability to abduct the arm to 90° in the plane of the body and to hold that position briefly is considered positive.[17]	 The right shoulder shows a shrug sign; the left shoulder is normal. The patient had to elevate the shoulder girdle for the arm to reach 90° abduction.[18]
Glenohumeral External Rotation in Adduction	The patient is positioned in supine with the upper arm comfortably by the side and the elbow flexed to 90°. The examiner passively externally rotates the glenohumeral joint until end range is reached. ROM is measured by placing the axis of the goniometer on the olecranon process. The stationary arm is aligned with the vertical position. The movable arm is aligned with the ulnar styloid process.	 Shoulder Range of Motion[19]
Glenohumeral External Rotation in Abduction	External rotation ROM may also be measured with the shoulder abducted to 45° or to 90° in the frontal plane. Placement of the axis and arms of the goniometer is similar to what is used with the adducted position.	

Glenohumeral Internal Rotation in Abduction	The patient is positioned in supine, the shoulder abducted to 90°, and the elbow flexed to 90°. If glenohumeral abduction is less than 90°, a 45° abduction angle can be used. The examiner passively internally rotates the glenohumeral joint until end range is reached. Placement of the axis and arms of the goniometer is similar to what is used with the adducted position.	
Shoulder Flexion	The patient is positioned in supine with the arm comfortably by the side. The examiner passively flexes the shoulder until end range is reached. ROM is measured by placing the axis of the goniometer on the greater tuberosity. The stationary arm is aligned with the midline of the trunk. The movable arm is aligned with the lateral epicondyle.	
Shoulder Abduction	The patient is positioned in supine with the arm comfortably by the side. The examiner passively abducts the shoulder until end range is reached. ROM is measured by placing the axis of the goniometer on the head of the humerus. The stationary arm is aligned parallel with the midline of the sternum. The movable arm is aligned with the midshaft of the humerus.	

SUPPORTIVE INVESTIGATIONS:[20]

Adhesive capsulitis is primarily diagnosed by history and physical examination, but imaging studies are needed to exclude any underlying pathology. No single imaging study is diagnostic.

Investigation	Findings
Essential Investigations	
X-Ray	Plain radiographs (anteroposterior, lateral, and axillary views of the glenohumeral joint) are the preferred initial test to rule out other potential shoulder pathologies.[20] They are typically normal in adhesive capsulitis but can identify osseous abnormalities, such as glenohumeral osteoarthritis.[13] Radiographs of the shoulder show osteopenia.[1]

X-ray showing calcific deposits in suprsapinatus tendon[21]

DIFFERENTIAL DIAGNOSIS:[20]

The following conditions should be considered in the differential diagnosis when a patient presents with shoulder pain:

Condition	Differential Features
Posterior glenohumeral dislocation	• Usually occur after a traumatic event • Also traditionally attributed to electrocution or seizure. • Acute onset of pain and immediate severe loss of motion. • Posterior shoulder dislocation on axillary view plain radiograph.
Rotator cuff injury	• Pain is typically aggravated by overhead activities. • Decreased active range of motion on physical examination but should have normal or near-normal passive range of motion. • Pain and weakness on affected side elicited with provocative manoeuvres. • Shoulder radiographs are usually normal though MRI will show evidence of rotator cuff tear.
Subacromial rotator cuff impingement	• Pain with shoulder elevation between 60° and 120° • Painful arc syndrome. • Weakness due to pain. • Radiograph may show subacromial bony proliferation. • Shoulder MRI may show evidence of inflammation in the subacromial space.
Proximal biceps tendonitis	• Tenderness at bicipital groove. • Positive Speed test: Pain in the anterior region of the shoulder (resisted forward arm flexion with the elbow extended) • Positive Yergason test (resisted forward supination). • Shoulder radiographs are inconclusive. • MRI may reveal a subluxated long head of the biceps tendon or demonstrate degeneration within the proximal biceps tendon.

Condition	Differential Features
Superior labral tears	• Pain elicited with active compression test (resisted arm elevation with the arm 15° adducted, forward flexed parallel with the floor and maximal pronation). • Shoulder radiographs are usually normal though MRI or MR arthrograms demonstrate superior glenoid labral tears.
Acromioclavicular joint arthrosis	• Anterior shoulder pain. • Pain with cross arm adduction, and no limitation of passive range of motion. • Degeneration of the acromioclavicular joint, distal clavicle osteolysis, and cystic formation at the end of the clavicle on imaging. • Clinical examination can be normal.
Cervical spine neuropathy or myelopathy/ Degenerative cervical spine disease	• Accompanied by neck pain and/or radiating pain, numbness, or paraesthesia down the arm. • Weakness or difficulty with fine motor skills involving the hand. • Full sensory, motor, and reflex examinations will manifest symptoms and signs outside the shoulder. • Positive Spurling manoeuvre (one hand is placed on top of the patient's head while stabilising the shoulders, the neck is then hyperextended, and the head gently tilted towards the symptomatic site). • Degenerative changes in the cervical spine as well as vertebral body subluxation on X-Ray. • Evidence of cervical nerve root compression on MRI.
Glenohumeral arthritis	• Patients may note a sensation of "popping" or crepitus. • Decreased joint space and marginal osteophytes on X-Ray.

PRINCIPLES OF MANAGEMENT

Red Flag Signs of Adhesive capsulitis:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine

- Unexplained deformity, mass or swelling with associated lymphadenopathy
- Infection: red skin, fever, systemically unwell
- Trauma causing loss of rotation, abnormal shape
- Disabling pain and significant weakness
- Unexplained wasting
- Significant sensory or motor deficit

The main objective of all treatments for adhesive capsulitis should be early pain relief and functional restoration.[3] It is important to consider the patient's symptoms, stage of the condition, and patterns of motion loss when selecting a treatment method.[15] Treatment

of adhesive capsulitis requires a multi-faceted and individualized approach. A stepwise approach shall be adopted in which the physician shall begin with non-invasive treatment, and if it proves to be ineffective, then consider invasive interventions.[20] If the patient is already under standard care (anti-inflammatory/analgesics/steroids), the physician may advise to taper the dose of these medicines gradually along with add-on homoeopathy and the medication can be re-assessed further in the follow-up visits for discontinuing the standard treatment in consultation with a conventional physician.

(A) Prevention Management: Primary prevention consists of managing modifiable risk factors. Prolonged immobilization has been linked to adhesive capsulitis, especially following shoulder trauma. Early active and passive range of motion can help to prevent the development of adhesive capsulitis.[22,23] Good control of diabetes may help to prevent secondary adhesive capsulitis.[24,25]

(B) Interventions

At Level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The diagnosis of adhesive capsulitis is primarily clinical and made after a complete medical history and physical examination. However, investigations, like X-ray, may be done.

Management

A few research studies and case reports on homoeopathic treatment of adhesive capsulitis have been published.[26–29] Many remedies are enumerated in the homoeopathic Materia Medica to treat this condition; however, the totality of symptoms presented by the patient is the sole indication and guide for treating each patient.

The common polychrest medicines prescribed are as follows:[30–32]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1	Arnica montana	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** • Calcarea Phos 6x/12x • Calcarea fluor 6x/12x **Ointments:** • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron
2	Bryonia alba					
3	Calcarea phosphorica					
4	Causticum					
5	Ferrum metallicum					
6	Graphites					
7	Hypericum perforatum					
8	Kali carbonicum					
9	Lycopodium clavatum					
10	Medorhinum					
11	Nux vomica					
12	Phosphorus					

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
13	Phytolacca decandra					Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
14	Rhododendron ferrugineum					
15	Rhus toxicodendron					
16	Ruta graveolens					
17	Sanguinaria canadensis					
18	Staphysagria					
19	Symphytum officinale					
20	Syphilinum					
21	Sulphur					

Do's and Don'ts while taking homoeopathic medicine[33]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

Recommended diet and lifestyle

Patient Education: Patients should be educated in the chronicity of this condition. If they know and understand ahead of time that it can be several years before symptoms are completely resolved, apprehension and a feeling of urgency for functional return may be decreased.[34]

Exercise: A useful exercise that can be performed in the patient's home and with the therapist is known as the sleeper stretch, which works on improving internal rotation. In the lateral decubitus position (patient on side), with the affected shoulder down against the bed, the elbow is flexed 90° and the unaffected arm pushes it towards the bed.[20]

Yoga: Various yoga practices are helpful for the management of patients with adhesive capsulitis.[35] Yoga maintains existing joint function and prevents further loss of range of movements. Some of the asanas that may be helpful in adhesive capsulitis are *Garudasana* and *Dhanurasana.*[36] Few of the standing group of asanas that can be practices are *tadasana, tiriyakatadasana, katichakrasana, trikonasana, ardhakatichakrasana, dwikonasana, ardhachakrasana, natarajasana, Shashankasana etc.*

Nutrition: Vitamin C has anti-inflammatory properties, and it may be used to treat primary frozen shoulder at an early stage or to prevent secondary frozen shoulder.[37]

Restricted diet and lifestyle[20,38]

Diet: Avoid diet rich in saturated fats such as butter, cheese, red meat and other animal-based foods, and tropical oils, as hypercholesterolemia, particularly hyper-low-density lipoproteinemia have significant associations with primary frozen shoulder.

Activity modification: Patients should be advised to avoid exacerbating activities to interrupt the cycle of ongoing inflammation. This may necessitate significant time off work or away from leisure activities.

Follow-up (every 7 days or earlier as per the need)

Reviews should include:[20]

- Monitoring the patient's symptoms and impact on their daily activities and overall quality of life.
- Monitoring the clinical course of adhesive capsulitis over long-term.
- Management of adhesive capsulitis in terms of exercise.
- Discussing the concerns of the patients related to treatment, their knowledge of the condition, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Self-management support.

Referral criteria

- Non-response to treatment
- Evidence of an increase in severity/complications
- Substantial impact on their quality of life and activities of daily living
- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as diabetes, hypothyroidism etc.

At Level 2 (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray**)**

Clinical Diagnosis: Same as Level 1. The case referred from Level 1, or a fresh case must be evaluated thoroughly for any complications.

Investigations: The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- X-Ray
- Magnetic resonance imaging

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Other procedures:

Physiotherapy: Physiotherapy is the cornerstone of successful treatment and should be initiated as early as possible in the disease course.[39] Evidence suggests manual mobilisation techniques with exercise are effective for adhesive capsulitis.[15,38,40] Passive mobilisation and capsular stretching are two of the most commonly used techniques. Maitland technique (a high-grade mobilization technique in which to and fro movements or oscillations are applied to the affected areas) and combined mobilizations have proven beneficial effects in adhesive capsulitis.[41]

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at level 1, plus
- Failure of acute exacerbation to respond to initial medical management.
- Advanced stages of disease

At Level 3 (Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.)

Clinical Diagnosis: Same as Levels 1 & 2.

Investigations:

- Arthrography
- Magnetic resonance arthrography
- Computed tomography arthrogram

Management: Same as Levels 1 & 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has several uncommonly prescribed medicines that can ease pain and other symptoms in patients with adhesive capsulitis who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycaemic agents. Homoeopathic medicines can be prescribed based on the sphere of action or keynote

symptoms in these disorders as well as other advanced pathological states. As part of integrative therapy, extracorporeal Shock Wave Therapy (ESWT) and pulse radiofrequency stimulation of the suprascapular nerve (guided by ultrasound) combined with physiotherapy may be used for pain relief and improved range of motion.[42,43] Some of the rarely used specific medicines for adhesive capsulitis of shoulder are as follows: [31,32]

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	Ammonium phosphoricum	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Tissue remedies:** • Calcarea phos 6x/12x • Calcarea fluor 6x/12x **Ointments:** • Arnica montana • Ruta graveolens • Ledum Pal • Rhus Toxicodendron Other Schussler's biochemic remedies (Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	Asparagus officinalis					
3.	Elaps corallinus					
4.	Fagopyrum esculentum					
5.	Granatum					
6.	Guaiacum officinale					
7.	Indium metallicum					
8.	Myrica cerifera					
9.	Natrium arsenicosum					
10.	Radium bromatum					
11.	Sticta pulmonaria					
12.	Thiosinaminum					

Recommended diet and lifestyle: Same as Levels 1 & 2

Restricted diet and lifestyle: Same as Level 1& 2

Follow-up (every 7 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at level 2, plus
- Other modalities can be considered depending on the case and to rehabilitate properly.

References

1. Fauci A, Braunwald E, Kasper D, Hauser S, Longo D, Jameson J, et al. Harrison's Manual of Medicine. 17th ed. New York: Mc Graw Hill Education; 2008. 2184 p.
2. Chan HBY, Pua PY, How CH. Physical therapy in the management of frozen shoulder. Singapore Med J 2017;58(12):685–9.
3. Georgiannos D, Markopoulos G, Devetzi E, Bisbinas I. Adhesive capsulitis of the shoulder. Is there consensus regarding the treatment? A comprehensive review. Open Orthop J 2017; 11:65–76.
4. Wani SK, Mullerpatan R. Prevalence of shoulder dysfunction among Indian people with type II diabetes. Int J Diabetes Dev Ctries 2015;35(3):386–386.
5. Rai SK, Kashid M, Chakrabarty B, Upreti V, Shaki O. Is it necessary to screen patient with adhesive capsulitis of shoulder for diabetes mellitus? J Fam Med Prim Care 2019;8(9):2927–32.
6. Park HB, Gwark JY, Jung J, Jeong ST. Association Between High-Sensitivity C-Reactive Protein and Idiopathic Adhesive Capsulitis. The Journal of Bone and Joint Surgery 2020;102(9):761.
7. Ricci, M. Adhesive capsulitis: A review for clinicians. Journal of the American Academy of Physician Assistants 2021;34(12):12-14.
8. Uppal HS, Evans JP, Smith C. Frozen shoulder: A systematic review of therapeutic options. World J Orthop 2015;6(2):263–8.
9. Angelo JMS, Taqi M, Fabiano SE. Adhesive Capsulitis. In: Stat Pearls [Internet]. Stat Pearls Publishing; 2023. Available from: https://www.ncbi.nlm.nih.gov/books/NBK532955/
10. Tamai K, Akutsu M, Yano Y. Primary frozen shoulder: brief review of pathology and imaging abnormalities. J Orthop Sci Off J JpnOrthop Assoc 2014;19(1):1–5.
11. Zreik NH, Malik RA, Charalambous CP. Adhesive capsulitis of the shoulder and diabetes: a meta-analysis of prevalence. Muscles Ligaments Tendons J 2016;6(1):26–34.
12. Date A, Rahman L. Frozen shoulder: overview of clinical presentation and review of the current evidence base for management strategies. Future Sci OA 2020;6(10): FSO647.
13. Kelley MJ, Shaffer MA, Kuhn JE, Michener LA, Seitz AL, Uhl TL, et al. Shoulder pain and mobility deficits: adhesive capsulitis. J Orthop Sports Phys Ther 2013;43(5): A1–31.
14. Williams NS, Bullstrode CJ, O'Connell PR. Bailey & Love's Short Practice of Surgery. 25th ed. Vol. 92. London: Taylor and Francis Ltd; 2008
15. Jason JI, Sundaram S, Subramani M. Physiotherapy interventions for adhesive capsulitis of shoulder: a systematic review. Int J Physiother Res 2015;3(6):1318–25.
16. Carbone S, Gumina S, Vestri AR, Postacchini R. Coracoid pain test: a new clinical sign of shoulder adhesive capsulitis. Int Orthop 2010;34(3):385–8.
17. Hegedus EJ, Goode AP, Cook CE, Michener L, Myer CA, Myer DM, et al. Which physical examination tests provide clinicians with the most value when examining the shoulder? Update of a systematic review with meta-analysis of individual tests. Br J Sports Med 2012;46(14):964–78.
18. Jia X, Ji JH, Petersen SA, Keefer J, McFarland EG. Clinical Evaluation of the Shoulder Shrug Sign. Clinical Orthopaedics and Related Research 2008;466(11):2813-9.
19. McMahon PJ, Skinner H. CURRENT Diagnosis & Treatment Orthopedics. 6th ed. New York: McGraw-Hill Medical; 2021.
20. Provenche M, LeClere L, Smith J. Adhesive Capsulitis [Internet]. BMJ Best Practice. 2023. Available from: https://bestpractice-bmj.ccrhlibrary.in/topics/en-gb/1043

21. Kapadiya MM, Jain V, Dudhamal TS. Raktamokshana (wet cupping therapy) in the management of calcified supraspinatus tendinitis presenting as frozen shoulder: A rare case report. BLDE Univ J Health Sci 2022;7(1):163.

22. Jorat MV, Namayandeh SM, Mehdipour Namdar Z, Aslani A. Prevention of adhesive capsulitis following pacemaker implantation: A randomized controlled study. Pacing Clin Electrophysiol PACE 2020;43(9):1000–3.

23. Tanishima T, Yoshimasu N. Development and prevention of frozen shoulder after acute aneurysm surgery. Surg Neurol 1997;48(1):19–22.

24. Juel NG, Brox JI, Brunborg C, Holte KB, Berg TJ. Very high prevalence of frozen shoulder in patients with Type 1 Diabetes of ≥45 years' duration: The Dialong shoulder study. Arch Phys Med Rehabil 2017;98(8):1551–9.

25. Yian EH, Contreras R, Sodl JF. Effects of glycemic control on prevalence of diabetic frozen shoulder. J Bone Joint Surg Am 2012;94(10):919–23.

26. Sangtani R, Pawar S, Galande T. The Efficacy of Homoeopathic Remedy: A Case Report of Adhesive Capsulitis. Altern Ther Health Med 2023;29(7):456–61.

27. Magotra N, Sharma N, Michael J, Kundu N, Nath A, Saha S. Utility of homoeopathic medicines in treatment of frozen shoulder: An open, observational clinical trial. Natl Homoeo Rec 2018; 14:34–43.

28. Singh R, Singh AK, Mathur A, Sharma M. Role of homoeopathic medicines in cases of frozen shoulder. Int J Homoeopath Sci 2021;5(2):166–9.

29. Choubey G, Nahar L, Banerjee A, Roja V. Role of homoeopathy in the management of adhesive capsulitis: A pretest-posttest study. Indian J Res Homoeopathy 2022;16(1):31–40.

30. Allen H. Keynotes and characteristics with comparisons of some of the leading remedies of the materia medica with bowel nosodes. 8th ed. New Delhi: B Jain Publishers Pvt Ltd; 2013.

31. Boericke W. New Manual of Homoeopathic Materia Medica with Repertory. 9th ed. New Delhi: B Jain Publishers Pvt Ltd; 2010.

32. Clarke J. Dictionary of Practical Materia Medica. Reprint ed. New Delhi: B Jain Publishers Pvt Ltd; 2009.

33. Fisher P, Scott DL. A randomized controlled trial of homeopathy in rheumatoid arthritis. RheumatolOxf Engl 2001;40(9):1052–5.

34. Manske RC, Prohaska D. Diagnosis and management of adhesive capsulitis. Curr Rev Musculoskelet Med 2008;1(3–4):180–9.

35. Sharma N, Chauhan S, Kumar A. Effect of yogic asana on Adhesive capsulitis (frozen shoulder) to increasing the internal rotation. Int J Phys Educ Sports Health 2016;3(5):92–195.

36. Jadhav P, Singh TV. Study of anatomical effects of Yogasana in Frozen Shoulder. J Ayurveda Integr Med Sci 2022;7(1):229–32.

37. Feusi O, Fleischmann T, Waschkies C, Pape HC, Werner CML, Tiziani S. Vitamin C as a potential prophylactic measure against frozen shoulder in an in vivo shoulder contracture animal model. Am J Sports Med 2023;51(8):2041–9.

38. Sung CM, Jung TS, Park HB. Are serum lipids involved in primary frozen shoulders? : a case-control study. JBJS. 2014 Nov 5;96(21):1828-33.

39. Hanchard NCA, Goodchild L, Thompson J, O'Brien T, Davison D, Richardson C. Evidence-based clinical guidelines for the diagnosis, assessment, and physiotherapy management of contracted (frozen) shoulder: quick reference summary. Physiotherapy 2012;98(2):117–20.

40. Vermeulen HM, Rozing PM, Obermann WR, le Cessie S, Vliet Vlieland TPM. Comparison of high-grade and low-grade mobilization techniques in the management of adhesive capsulitis of the shoulder: randomized controlled trial. Phys Ther 2006;86(3):355–68.

41. Noten S, Meeus M, Stassijns G, Van Glabbeek F, Verborgt O, Struyf F. Efficacy of different types of mobilization techniques in patients with primary adhesive capsulitis of the shoulder: a systematic review. Arch Phys Med Rehabil 2016;97(5):815–25.

42. Chen CY, Hu CC, Weng PW, Huang YM, Chiang CJ, Chen CH, et al. Extracorporeal shockwave therapy improves short-term functional outcomes of shoulder adhesive capsulitis. J Shoulder Elbow Surg 2014;23(12):1843–51.

43. El Naggar TEDM, Maaty AIE, Mohamed AE. Effectiveness of radial extracorporeal shock-wave therapy versus ultrasound-guided low-dose intra-articular steroid injection in improving shoulder pain, function, and range of motion in diabetic patients with shoulder adhesive capsulitis. J Shoulder Elbow Surg 2020;29(7):1300–9.