Osteoarthritis (OA) is the commonest form of arthritis and is a clinical syndrome of joint pain and functional limitation. OA affects 8.5 million people in the UK, with almost three quarters of these individuals reporting constant pain. OA is the reason for two million GP consultations per year in the UK and is the 11th highest contributor to global disability. Advancing age and obesity in our population are important risk factors for developing OA and therefore the prevalence and burden of this syndrome will certainly increase.

OA represents a failure of joint tissue repair and the ability of cartilage and bone to effectively dissipate load. The loss of joint homeostasis results in ‘whole joint failure’ with varying degrees of cartilage loss, bone remodelling, synovial inflammation and joint instability with muscle atrophy. Pathology in a number of these tissues contributes to peripheral nociceptive drive and OA symptoms. The phenotype and natural history of joint OA depends on the extent of this joint failure and hence varies broadly between individuals in terms of pain, functional loss and reduced quality of life.

This review will focus on recent advances in the diagnosis and management of OA, given recent updated evidence-based guidelines from the American College of Rheumatology (ACR), the European League Against Rheumatism (EULAR), NICE and the Osteoarthritis Research Society International (OARSI).

**Diagnosis**

EULAR and NICE guidelines recommend that OA can be diagnosed clinically with appropriate symptoms, clinical findings and age at onset. Patients over the age of 45 with activity-related joint pain and with less than 30 minutes of morning joint stiffness can be considered to have OA without further investigation. The presence of risk factors for OA incidence also increases the likelihood of a diagnosis of OA. In general...
these risk factors include increasing age, obesity, female sex, postmenopausal state, a family history of OA, joint injury and occupation- or recreation-related usage. Clinical findings at specific joints, eg knee crepitus or Heberden’s nodes in the hands, may also increase the accuracy of the diagnosis (see Figure 1). X-rays and laboratory tests of blood and synovial fluid are not required for the diagnosis of OA. However, if atypical features such as prolonged morning stiffness of more than one hour, rapid worsening of symptoms or a hot swollen joint are present, such tests may be used for differential diagnosis of inflammatory arthritis, septic arthritis or malignant bone pain.

A normal joint radiograph does not exclude osteoarthritis

The utility of X-rays in diagnosing OA is limited due to their insensitivity in detecting structural pathology. In adults over the age of 50 years with normal knee X-rays, up to 89 per cent had evidence of OA on knee magnetic resonance imaging (MRI).

There is also a poor correlation between the extent of radiographic structural disease and the severity of reported clinical symptoms. Consequently few tests are usually required for the clinical diagnosis of OA.

Management

Initial holistic assessment

The management of OA should be tailored to the needs of the individual and should begin with a comprehensive assessment to ensure a robust and personalised management strategy is achieved. A patient-centered multidisciplinary approach with a package of interventions, including self-management, is associated with better pain and functional outcomes. The baseline physical status assessment should describe the severity and distribution of joint involvement and body mass index. The involvement of multiple joints and concomitant obesity is common and confer a worse prognosis. Functional ability assessment should detail the consequences of the joint problems on activities of daily living and employment. Health beliefs, health-education needs and impetus for self-management determine the individualised strategy required to teach and encourage the importance of exercise and lifestyle changes.

The treatment of OA consists of nonpharmacological and pharmacological interventions, often used in combination. Table 1 summarises recent recommendations.

Nonpharmacological interventions

OA management guidelines unanimously recommend providing health education and to encourage self-management. An individual with OA should understand the nature of their arthritis (a repair process usually arising due to several joint insults), their personal aetiological factors and their prognosis. This information should be reinforced at subsequent reviews and with written and electronic resources. Every patient with clinical OA should be offered advice on exercise focusing on local muscle strength first, then general aerobic fitness.
Exercise programmes should consider the severity of the presenting problem and start with an exercise that an individual can perform and at a level the individual can tolerate. For example, a patient unable to do a straight leg raise with knee OA pain is unlikely to benefit fully from walking without quadriceps strengthening first; walking laps in a swimming pool or other low-impact exercises such as exercise bike are good starting points for people with considerable muscle weakness. The exercise ‘dose’ should be titrated up according to the individual’s capability. Dietary advice or a dietitian review should be provided for those overweight or obese individuals. Appropriate footwear includes thick shock-absorbing soles with adequate plantar arch support and no heel elevation.

This combination of self-management, education and exercise should include setting achievable goals with regular re-evaluation and encouragement to maintain the necessary lifestyle changes.5

Pharmacological interventions
When selecting pharmacological treatments for an individual with OA, their age, existing medications, likely adherence and co-morbid gastrointestinal and cardiovascular risks should be considered. Issues such as dosing regimen including drug half-life should then be considered. Topical NSAIDs and paracetamol remain the first-line pharmacological treatment, although paracetamol may be a less effective analgesic than previously thought in OA,13 with more toxicity than is generally appreciated.14 After taking either paracetamol or ibuprofen three times a day for 13 weeks, 20 per cent of participants with knee OA in a randomised control trial lost over 1g per dl of haemoglobin.

Topical capsaicin is generally recommended as an adjunct in the treatment of hand and knee OA. Oral NSAIDs, selective COX-2 inhibitors and then opioids can be considered thereafter, acknowledging the increased risk of toxicity particularly with increasing age and co-morbidities. Nutraceuticals (glucosamine or chondroitin products) are generally not recommended due to the lack of certainty of clinically important analgesic benefits. Intra-articular corticosteroids are useful for moderate to severe OA pain, and may be useful for short-term pain reduction in order to facilitate muscle strengthening or exercise. The evidence supporting the use of duloxetine is limited to knee OA; however, the OARSI and ACR guidelines recommend its use in multijoint OA and knee OA respectively.4,9 This is a licensed treatment for musculoskeletal pain in the USA but not in Europe.

The NICE guideline does not recommend the use of hyaluronic acid; this contrasts with the ACR guideline, which conditionally recommends its use but only in people over the age of 74 with knee OA that is refractory to standard pharmacological treatments. There were some differences in the methodology involved in both guidelines, with the more recent NICE guideline (2014) informed by a systematic literature review and meta-analysis that incorporated 20 more clinical trial papers than the ACR guideline (2012).

Follow-up and review
In a novel recommendation, the recent NICE guideline suggested that individuals with symptomatic OA should be offered regular reviews. This is particularly important if the individual has refractory and problematic joint pain, more than one symptomatic joint, more than one co-morbidity and for those taking regular medications for OA (eg blood pressure monitoring and occasional monitoring of haemoglobin and renal function for those on NSAIDs). The timing of reviews should be agreed between the individual and clinician and should include monitoring the symptoms, joint involvement, impact on function and quality of life and overall progress in managing the OA.

Figure 1. OA can be diagnosed clinically with appropriate symptoms, clinical findings (eg Heberden’s nodes in the hands) and age at onset

Referral for consideration of joint surgery
Arthroscopic lavage and debridement are not recommended as part of OA treatment, unless a person with knee OA has a clear history of true mechanical locking. The clinical outcomes are not improved by such surgery even with symptoms of ‘giving way’ (usually a symptom of muscle weakness) or radiographic evidence of loose bodies.8,13

Should an individual with OA suffer persistent debilitating symptoms despite the medical interventions described above, joint surgery should be considered. A clinician should consider a referral for joint surgery, predominantly joint replacement, once the existing management and prospective surgical intervention have been discussed with both the individual with OA and the surgeon. The individual with OA should be provided with information to appreciate the benefits and risks of surgical and nonsurgical options including the implications of post-surgical rehabilitation. This ensures an individual has autonomy and their views and preferences are respected. This referral should not be precluded by co-morbidities, age, obesity, smoking and gender. Any such referral should be made before severe pain and an established functional limitation occur.8

Figure 1.
The individual’s insight into their OA along with their beliefs, concerns and expectations should be regularly assessed, together with the tolerability and efficacy of their treatments. Achievable goal setting and self-management should also be encouraged.

Structure modification
Attempts have been made to slow or stop the structural deterioration of knee cartilage in a number of trials. Randomised placebo controlled trials of chondroitin, glucosamine sulphate and strontium have reported slowing of radiographic joint space narrowing. However, there are methodological limitations in these trials and strontium has recently been associated with an increase in acute coronary syndrome. Neither OARSI nor NICE recommend nutraceuticals therapies for structural modification. Currently there are no licensed structural-modifying therapies.

Conclusion
The diagnosis of OA can be accurately made on the basis of symptoms and clinical findings without the need for radiographs and laboratory tests. These tests can be used to identify co-existing inflammatory arthritides when atypical features are present.

The management of OA should include a holistic and biopsychosocial assessment with a patient-centred package of pharmacological and nonpharmacological interventions including self-management to achieve better symptomatic outcomes and improvement of an individual’s ability to participate in valued activities.

References

**Declaration of interests**
None to declare.

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### Resources

**Guidelines**


**Osteoarthritis: care and management in adults. CG177. NICE, February 2014.**


**Prescriber articles**


### Prescription review

In 2013, GPs in England wrote 15.5 million prescriptions for NSAIDs (for all indications) at a total cost of £77.4 million. This continues the gradual fall in volume (down 4 per cent over 2012) and cost (8 per cent) of the past six to seven years.

Other trends continue. Following a 15 per cent increase in prescriptions since 2012, naproxen has now overtaken ibuprofen (28 per cent market share) and diclofenac (15 per cent) as the most frequently prescribed NSAID, accounting for 42 per cent by volume.

Naproxen is also one of the cheapest NSAIDs (third behind meloxicam and ibuprofen) even though its average cost is inflated by liquid specials at £200–£300 per prescription. The plain and enteric coated generic 250 and 500mg tablets of naproxen are the least expensive, but the generic 375mg enteric coated tablets cost almost as much as the branded alternative.

**Table 1.** Number and cost of prescriptions for the treatment of OA, England, 2013; a potassium salt; b sodium salt

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CPD: Management of osteoarthritis

Answer these questions online at Prescriber.co.uk and receive a certificate of completion for your CPD portfolio. Utilise the Learning into Practice form to record how your learning has contributed to your professional development.

For each section, one of the statements is false – which is it?

1. OA is a clinical syndrome that:
   a. is associated with pain in one quarter of people with OA in the UK
   b. is more likely to affect people with advancing age or who are obese
   c. represents a failure of joint tissue repair and the ability of cartilage and bone to effectively dissipate load
   d. involves cartilage loss, bone remodelling, synovial inflammation and joint instability with muscle atrophy

2. When diagnosing OA:
   a. a diagnosis can be made in a patient >45 years old with activity-related joint pain and <30 minutes of morning joint stiffness
   b. X-rays are necessary to confirm the diagnosis
   c. in a patient with atypical features, the differential diagnosis includes inflammatory arthritis, septic arthritis or malignant bone pain
   d. there is a poor correlation between the extent of radiographic structural disease and the severity of reported clinical symptoms

3. Nonpharmacological interventions for OA should:
   a. encourage self-management
   b. include exercise that focuses first on local muscle strength
   c. include education about the nature of OA, personal aetiological factors and the prognosis
   d. be provided at diagnosis but discontinued when drug treatment is established

4. In the pharmacological treatment of OA:
   a. Topical NSAIDs and paracetamol are the first-line treatment
   b. paracetamol may relieve pain less effectively than previously thought
   c. drug selection should take into account likely adherence
   d. a drug’s half-life is therapeutically irrelevant

5. In the pharmacological treatment of OA:
   a. topical capsaicin may be recommended for knee OA
   b. there is insufficient evidence to recommend glucosamine or chondroitin
   c. opioids should not be prescribed
   d. intra-articular corticosteroids may be useful to facilitate muscle strengthening or exercise

6. When considering other management options for OA:
   a. clinical outcomes can usually be improved by arthroscopic lavage and debridement
   b. referral for surgery should be made before severe pain and an established functional limitation occur
   c. referral for joint surgery should be considered for an individual with persistent debilitating symptoms despite medical interventions
   d. NICE does not recommend hyaluronic acid