

There is so much we don't know in medicine that could make a difference. Sometimes, it will be dealing with this week's news headlines that will bring patients flocking. Sometimes, when focusing on the big things, the little things can get forgotten. Our weekly Pearls attempt to cut through the clutter and focus on the important issues we shouldn't miss or that make our lives easier!

Osteoarthritis

“My knee’s playing up again, doc. No, I’ve not been taking regular painkillers. I don’t want to get immune to them before I really need them, and I worry about exercising because that will wear out my joints faster. My family says I’m in awful pain and should get a wash out at least, or perhaps a replacement.”

This article has been updated using an excellent Lancet seminar (Lancet 2019;393:1745). Other articles and guidelines are specifically referenced as they appear. This is the first part of our written resource on osteoarthritis; further FAQs and top tips will be discussed on the webinar.

Headlines

- Osteoarthritis is rapidly growing in prevalence due to ageing and obesity.
- It is a **clinical diagnosis** and imaging is often overused.
- Core treatments are self-management, education, exercise and weight loss.
- Surgery should be reserved for when these core treatments have failed.
- It commonly co-exists as part of a multimorbidity picture, and is associated with increased mortality.

What’s the problem?

Osteoarthritis is a huge and growing problem. The combined effects of an ageing population and rising levels of obesity have created a perfect storm for global rising prevalence.

The medical cost of osteoarthritis is estimated to be between 1 and 2.5% of GDP in high-income countries, with hip and knee replacements representing a high proportion of this cost.

Indirect costs of disability, e.g. work lost, early retirement, are likely even higher.

What is osteoarthritis?

Humbling though it is, we don’t fully understand this! The correlation between symptoms and clinical/radiological findings is poor!

Understanding of the pathogenesis of osteoarthritis is evolving (Lancet 2019;393:1745). The knee is the most commonly-affected joint, followed by the hands, then the hip. It should be considered as a ‘syndrome’ rather than a single disease.

- It is now recognised to be a disease of the **whole joint** affecting bone, cartilage, ligaments, capsule, synovium and muscle.
- There is no evidence of **systemic** inflammation, but local inflammatory factors *may* be created as chondrocytes attempt to repair damaged cartilage. Changes in local metabolic processes, e.g. fat metabolism, may also be a factor.
- It is not passive ‘wear and tear’ but rather an imbalance between repair and destruction of joint tissue: the disease model is one of **overuse/overload, flare and repair**. The repair process is slow and usually results in a pain-free, but structurally-altered joint.
- If there is an overwhelming insult, the repair process does not compensate fully, leading to continuing tissue damage with loss of function, pain and, eventually, ‘joint failure’.

It can also be seen as a persistent pain syndrome and we will explain why shortly! The key message is there is no single medication or intervention that will address this syndrome, rather a complex interplay of lots of little interventions.

Risk factors and prevention

It is worth being aware of the modifiable risk factors.

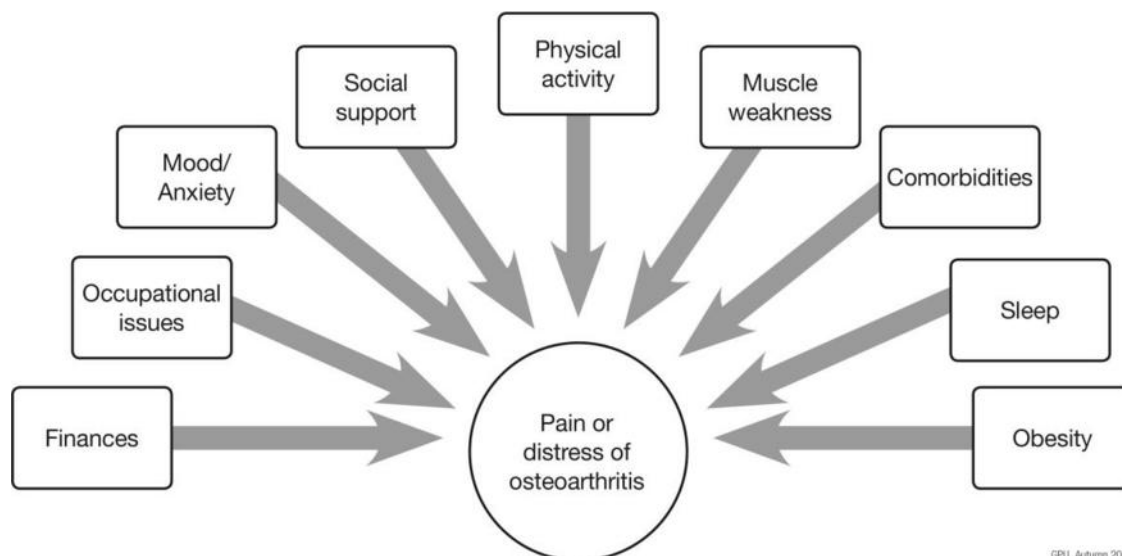
Modifiable	Non-modifiable
Knee injuries	Genetic tendency
Obesity	Female sex (not for hip)

Knee extensor muscle weakness Heavy work activities, e.g. farming, construction High-impact sports (dose-dependent)	Advancing age Knee malalignment Congenital hip deformity
---	--

There is limited evidence to confirm whether intervention in modifiable risk factors makes a difference. A single RCT has shown that for overweight or obese patients who are able to lose 5kg or 5% of their body weight and sustain that loss, there is a 3-fold reduction in development of osteoarthritis 6 years down the line. Specific neuromuscular training programmes may reduce the risk of knee injury in high-risk sports, e.g. football.

What causes pain in osteoarthritis?

There is *no single* thing that causes pain in patients with osteoarthritis – it is best framed within a biopsychosocial model. An example of this is shown below:



The advantage of this model is that it shows multiple places where small interventions/self-management strategies can have impact. We need to consider these factors when we are assessing patients and use them to inform how we contextualise the core treatments recommended by NICE as we discuss below.

There are likely elements of nociceptive and neuropathic pain, the latter due to both peripheral and central sensitisation. Historically, studies have shown poor correlation between radiographic changes in osteoarthritis and reported pain experienced.

NICE guidance on osteoarthritis

In producing its guidance, NICE recognises that the evidence base is imperfect because of short-term studies, often limited to single joints, and the exclusion of frail patients with comorbidity. Most studies are done on a single intervention.

Osteoarthritis: care and management in adults (NICE 2014, CG177)

Risk factors

NICE reminds us that there are modifiable and non-modifiable risk factors.

- Obesity.
- Biomechanical, e.g. occupation, history of injury/fracture, postoperative.
- Genetic tendency.

Making a diagnosis

A working diagnosis of OA can be made **without an X-ray** if:

- Patient >45y.
- >3m joint pain that is worse with use.
- Any morning stiffness they might have lasts no more than half an hour.
- And an alternative diagnosis is unlikely.

We should rule out red flags including malignancy, infection or inflammatory arthritis.

MANAGEMENT OPTIONS

Non-drug treatments

Use a biopsychosocial approach. Offer all patients with osteoarthritis three core treatments:

- **Information:** written and verbal information about OA to counter misconceptions. This should be ongoing.
- **Exercise:** advice on exercise and physical activity (local muscle strengthening, stretching and general aerobic fitness).
- **Weight loss interventions (if appropriate).**

Consider:

- Manual therapy, supports, braces, insoles.
- Local heat/cold applications.
- TENS.

NICE does NOT recommend the following:

- Nutraceuticals such as glucosamine.
- Acupuncture.

Analgesia (and see discussion below)

Paracetamol	First line	NNT = 7 (CI 4–23)
Topical NSAID	First line (especially knee/hand)	NNT = 2–3
NSAID (oral) or COX-2	Second line (lowest dose, shortest duration)	
Opioids	Second line if paracetamol ineffective and NSAID not suitable/effective. N.B. since this guideline was published, there has been much more data on the role of opioids, and they should be used sparingly: see article on <i>Chronic pain (opiates)</i> .	

Joint injections

- Trial a steroid joint injection for appropriate joints (NNT = 5–8).
- Do not offer hyaluronan injections.

Referral for surgery

Before referral, ensure patients have been offered the core treatment options.

Decisions about referral should **not** be based on scoring tools but on the impact joint symptoms are having on quality of life (*though some scoring tools are based on this!*).

Referral should be considered before there is prolonged and established functional limitation and severe pain. Patient-specific factors such as age, sex, smoking, obesity and comorbidities should not be barriers to referral.

- Do not refer for non-replacement surgery (such as arthroscopic lavage or debridement) unless there is clear history of mechanical locking (NICE makes it clear that the radiological evidence of loose bodies or a history of the joint giving way do NOT count).
Evidence is ahead of this guideline and arthroscopy is no longer recommended.

Now we will answer some frequently asked questions and have a closer look at the evidence.

When are X-rays helpful?

Plain X-rays are the investigation of choice but **should only be done at a point when they will change management** (usually if there is diagnostic uncertainty or at the point of considering surgery). This is because the Framingham Osteoarthritis study showed (BMJ 2016;354:i3405):

- Many people with pain don't have X-ray changes.
- Many people with X-ray changes don't have pain.

Fundamentally, it is a clinical diagnosis.

What information do patients with osteoarthritis want?

The first core treatment that NICE recommends is offering information. There is consensus between patients and experts as to what information they would want to be offered (Lancet 2019;393:1745). This includes:

- Information about the disease, e.g. not an inevitable part of getting older.
- How to achieve regular physical activity.
- Individualised exercise plans.
- How to lose weight.
- That surgery is often **not** necessary.
- The reasons why imaging is not helpful.

How can we achieve this in practice?

We can deliver this in the initial consultation and support it with written information (see useful resources below). Some practices have used group consultations to deliver this information to patients with good effect. This is an area you could work together as PCNs to redesign care pathways and ultimately utilise first-contact physiotherapists to support this education package.

Exercise and osteoarthritis

Exercise has been shown to be beneficial for a range of important measures for people with hip and knee osteoarthritis (Cochrane Syst Rev 2018;4:CD010842). A range of different exercises including land and water-based, Tai Chi etc. can:

- Reduce pain by 6% (CI -9 to -4%).
- Improve physical function.
- Improve quality of life.
- Reduce depression (though it had no impact on anxiety).

There was also a qualitative component to the meta-analysis that considered how we can be more effective at delivering advice about exercise. The key points were:

- Promoting that exercise is safe and beneficial (*we need to be careful about the language we use – 'wear and tear' and 'degenerative' change do not sound very conducive to exercise!*).
- Tailor exercise advice to individuals' preferences and baseline. Pacing and grading can be important here to ensure patients don't get into a 'boom/bust' cycle.
- Provide ongoing support – perhaps through a coaching approach?

There are lots of free resources that our patients can use to access exercise programmes and pace and grade their activity levels. Links to some of these can be found below.

Weight loss for OA

Weight loss is a core treatment. For overweight patients, 5% weight loss is recommended because (BMJ 2016;354:i3405):

- There is good evidence that weight reduction improves pain and disability in knee osteoarthritis (there is less evidence of impact on pain and disability in hip osteoarthritis).
- It improves surgical outcomes for all joint replacements.

Analgesia for OA

There is no tablet that will cure osteoarthritis. Exercises to strengthen the muscles supporting the knee and hip have greater benefits on pain and disability than any analgesia.

Paracetamol

- Paracetamol is no better than placebo for hip and knee pain (there was benefit but it was clinically insignificant).
- There were no differences between placebo and paracetamol in adverse events, refuting NICE's concern that paracetamol was associated with significant adverse events (RR 1.0, CI 0.9–1.1).

It remains first line because it is safe and cheap, but will not work for most – so stop if no benefit (BMJ 2015;350:h1225).

Topical NSAIDs

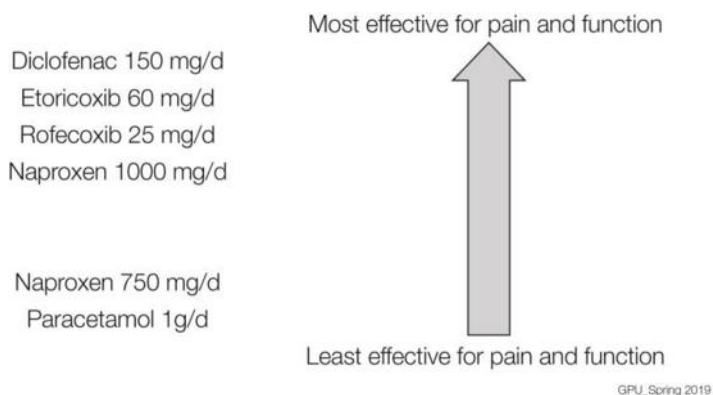
Older studies have demonstrated that for knee and hand osteoarthritis (but not hip), topical NSAIDs are as effective as oral NSAIDs and have fewer side effects – they should be considered first line (BMJ 2008;336:138). So far, no serious gastrointestinal or renal side-effects have been demonstrated (Lancet 2019;393:1745).

Oral NSAIDs in OA

Our patients are right....not all NSAIDs are equal!

A large meta-analysis of high-quality RCTs including more than 58 000 patients looked at the effectiveness of different NSAIDs and COX-2 inhibitors compared with paracetamol or placebo for the management of OA pain. **Importantly, the meta-analysis did not explicitly consider safety.** It used a measure called 'effect size' so it is not possible to calculate NNTs (Lancet 2016;387:2093). It found that:

- The effect of different NSAIDs varied greatly, and there was a dose-dependent effect on pain and function.



- Diclofenac 150mg/d was the most effective in terms of pain and function.
- Paracetamol and naproxen 750mg daily had almost no effect on pain or function.
- The meta-analysis suggests that a 'typical patient' with OA has a 100% probability of a clinically meaningful improvement when taking diclofenac 150mg/d, rofecoxib 25mg/d or etoricoxib 60mg/d.

The authors are quick to point out that these benefits must be considered alongside the risks that these drugs pose. This is explored in detail in the article *NSAIDs: effectiveness and safety* in our online handbook. However, in simple terms, diclofenac has the highest cardiovascular risk and naproxen has the lowest, though naproxen has a higher GI bleed risk than diclofenac.





What does this mean in practice?

NSAIDs vary widely in their effectiveness, with the most effective carrying the highest cardiovascular risks. Benefits must be weighed against harms, particularly in an elderly polypharmacy population – so, most of our OA patients. For low-risk individuals with significant pain and functional impact, diclofenac may still be a good choice!

Opiates

Opiates do not usually have a place in the long-term management of osteoarthritis or any long-term pain condition; for the vast majority of patients, the harms outweigh the benefits. But what about tramadol?

Tramadol is often seen as 'opiate-lite' but there is a good body of evidence now emerging that this is not the case. In the management of osteoarthritis, a large cohort study of nearly 90 000 patients has demonstrated an association between increased mortality at 1y in patients prescribed tramadol compared with an initial prescription of NSAIDs. There was no difference in mortality in comparison with people prescribed codeine. This is an association; causation cannot be determined, and the result may reflect the underlying comorbidities of patients in whom we choose a mild opiate rather than NSAID (JAMA 2019;321(10);969).

	<p>Osteoarthritis</p> <ul style="list-style-type: none"> • Osteoarthritis is a condition of overuse, flare and repair. • X-rays are not needed for diagnosis. • Assess and address pain from a biopsychosocial perspective. • All patients with OA should receive education and exercise advice and lose weight. • Analgesia may be helpful for 'flares' (paracetamol and topical NSAID first line, then oral NSAIDs)- but avoid opiates. • Walking sticks do help and need to be the correct size.
	<p>Reflect: do you routinely consider the pain of osteoarthritis within a biopsychosocial model? If not, try this out for 3 consultations. What impact did it have? Did it change your management?</p> <p>Look back on the last 10 patients you saw with arthritis:</p> <p><i>Did you order an X-ray, and, if so, why? Which of the 3 core treatments did you recommend?</i></p>
	<p>A questionnaire to assess biopsychosocial impact is MSK-HQ, and it can be a good basis to start discussions. You can get a licence to use this for free at this link: https://innovation.ox.ac.uk/outcome-measures/musculoskeletal-health-questionnaire-msk-hq/</p> <p>This is an excellent patient information book that is free to download: https://www.keele.ac.uk/media/keeleuniversity/ri/primarycare/pdfs/OA_Guidebook.pdf</p> <p>Versus Arthritis produces good patient leaflets on exercises: follow links from: https://www.versusarthritis.org/media/3093/osteoarthritis-exercise-sheet.pdf</p> <p>Escape Pain also delivers self-management exercise programmes to patients with chronic pain conditions: http://www.escape-pain.org/</p> <p>The NHS fitness studio has lots of options for patients who want to exercise at home: https://www.nhs.uk/conditions/nhs-fitness-studio/</p> <p>Information to support patients with pacing and grading activity can be found here: https://www.paintoolkit.org/pain-tools/pacing</p> <p>Shared decision-making tools: https://musculoskeletal.cochrane.org/sites/musculoskeletal.cochrane.org/files/public/uploads/What%20are%20my%20options%20for%20managing%20hip%20or%20knee%20osteoarthritis%20%20June%202015.pdf</p>
	

We make every effort to ensure the information in these pages is accurate and correct at the date of publication, but it is of necessity of a brief and general nature, and this should not replace your own good clinical judgement, or be regarded as a substitute for taking professional advice in appropriate circumstances. In particular check drug doses, side effects and interactions with the British National Formulary. Save insofar as any such liability cannot be excluded at law, we do not accept any liability for loss of any type caused by reliance on the information in these pages.

About Versus Arthritis

In 2017, Arthritis Research UK and Arthritis Care joined forces so that we could achieve more for people with arthritis. In September 2018, we became Versus Arthritis.

Join our [professional network](#) and become part of a growing community working together to change the face of MSK care. We'll keep you connected with the latest developments in MSK health and care, you'll receive bulletins containing practical tips, and development opportunities as well as the latest Versus Arthritis patient information. <https://www.versusarthritis.org/about-arthritis/healthcare-professionals/the-professional-network/>

For you...

- If you're looking to gain some hands-on, practical training in MSK then check out our [Core Skills in Musculoskeletal Care](#). Core Skills is designed specifically for GPs to help you feel confident and knowledgeable in managing patients with MSK conditions. Our e-learning is free to access and then if you want to build on this with some hands-on learning then come along to one of our practical workshops running across the UK. Led by a team of GPs with special interest in MSK, they'll help you get the basics right in examination and consultation skills. <https://www.versusarthritis.org/about-arthritis/healthcare-professionals/core-skills-in-musculoskeletal-care/>
- We provide all UK medical schools with accessible, relevant, evidence based [educational resources](#). Our study guide and series of educational videos support medical students and healthcare professionals to build their skills and confidence in assessing people with musculoskeletal conditions in order to deliver effective care. <https://www.versusarthritis.org/about-arthritis/healthcare-professionals/clinical-assessment-of-the-musculoskeletal-system/>

For your patients...

- [Order or download patient information leaflets](#) free of charge <https://www.versusarthritis.org>
- Encourage your patients to call the free [Versus Arthritis helpline](#) <https://www.versusarthritis.org/get-help/helpline/>
- Signpost to our [arthritis virtual assistant](#), a 24/7 tool that provides fast, easy to access information <https://www.versusarthritis.org/get-help/arthritis-virtual-assistant/>
- Explore our [online community](#) which will connect your patients with real people who share the same everyday experiences <https://arthritiscareforum.org.uk>
- Connect to local groups and find out [what's going on where your patients are](#) <https://www.arthritiscare.org.uk/in-your-area>
- [Join the growing community of healthcare professionals](#) today and, together we can push back against arthritis. <https://www.versusarthritis.org/about-arthritis/healthcare-professionals/the-professional-network/>
- For more information contact professionalengagement@versusarthritis.org

**VERSUS
ARTHRITIS**