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CPD MODULE

module 235

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Welcome to the two hundred and thirty fifth module in the *Pharmacy Magazine* Continuing Professional Development Programme, which looks at osteoarthritis and rheumatoid arthritis.

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for this module

GOAL:

To provide an overview of the prevalence, symptoms, diagnosis and management of osteoarthritis and rheumatoid arthritis.

OBJECTIVES:

After studying this module you should be able to:

- Explain the disease processes of osteoarthritis and rheumatoid arthritis
- Differentiate between the symptoms of the two conditions
- Provide information and advice on non-pharmacological measures that can be taken in each condition.



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Osteoarthritis and rheumatoid arthritis

Contributing author: **Asha Fowells MRPharmS**, specialist clinical pharmacy writer

Introduction

According to the charity Arthritis Care, around 10m people in the UK are living with arthritis. Often thought of as a disease of advancing years, arthritis can affect people of all ages. In the UK,

approximately 27,000 arthritis sufferers are under 25 years of age and, of these, around 12,000 are children. This module concentrates on the commonest types of arthritis in the UK – osteoarthritis (OA) and rheumatoid arthritis (RA). They are just two of the approximately 200 forms of joint inflammation that exist.

Community pharmacists have a significant role to play in dealing with patients with OA and RA, not only in dispensing prescriptions and providing advice on OTC medicines and lifestyle measures that can be taken to ease symptoms, but also in the provision of clinical services.

For example, in England and Wales, medicines use reviews are likely to be appropriate for this patient group – particularly individuals who are on NSAIDs, which are considered high-risk medicines, and those who also suffer from, or are at risk of, cardiovascular disease.

In Scotland, many patients with arthritis could benefit from the chronic medication service, with the high-risk medicine initiative applicable to those on methotrexate, for example.



In Northern Ireland, patients with arthritis may well be eligible for the Managing Your Medicines review service, perhaps because they are on a high-risk medicine or because they are struggling with adherence issues.

More generally, pharmacy schemes such as prescription collection and delivery, and repeat dispensing, may also be beneficial to patients.

Osteoarthritis

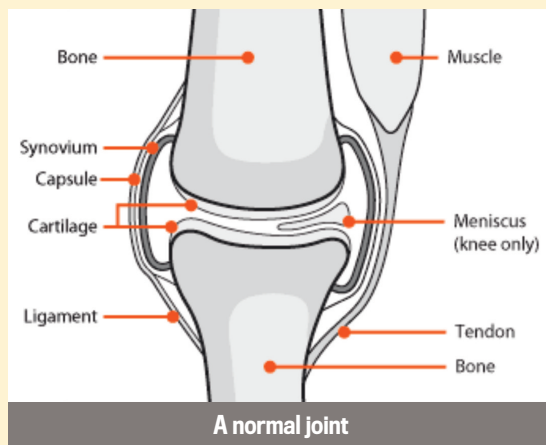
Osteoarthritis (OA) is the commonest form of arthritis, affecting around 8.75m people in the UK and is a leading cause of pain and disability worldwide. The main symptoms are joint pain and stiffness, which develop gradually over time and can make everyday tasks difficult to carry out. Any synovial joint of the body can be affected, but problems are commonest in the knees, hips and hands.

OA develops as a result of changes in the cartilage, which becomes rough in appearance, thinner than normal and therefore brittle. This means that the cartilage cannot perform its usual function of protecting the bone, which becomes thickened, with growths forming at the outer edges of joints in an attempt to compensate for the dysfunctional cartilage. These growths are known as osteophytes and make the joint look knobby.

In turn, the synovial membrane and joint capsule also broaden and more synovial fluid is produced. This leads to reduced space inside the joint, which causes stiffness and swelling, sometimes accompanied by pain and inflammation. More pain may be caused if part of the cartilage shears away from the bone and the bone ends rub against each other, straining and weakening ligaments in the process and altering the shape of the joint.

This process of joint trauma and repair explains the huge variability in clinical presentation and disease progression between people who have OA, and also in different joints of the same person. Some individuals may have severe symptoms with only relatively small physiological changes, whereas others with severe structural changes may be asymptomatic.

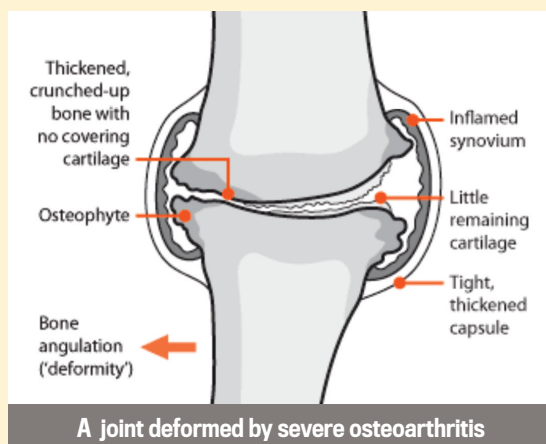
There is no specific cause of OA; rather there are several factors that are known to increase the risk of the condition developing, including the following:



A normal joint



A joint with mild osteoarthritis



A joint deformed by severe osteoarthritis

- Age is a major factor, with OA rare – although not unknown – in people aged under 45 years. The bodily changes associated with the ageing process – for example, putting on weight, weaker muscles and slower healing – are thought to be responsible for the increased incidence of OA in older people
- Gender is influential, with women more likely to suffer from OA than men – particularly OA

of the hands and knees. Women also frequently experience more severe symptoms, with the hormonal changes that occur during the menopause likely to be at play

- Obesity is well documented as causing OA due to the extra pressure borne by weight bearing joints such as the hips, knees and spine. Carrying extra weight also increases the odds of OA worsening
- Genetics plays a part in certain types of OA – notably nodal OA, which particularly affects the hands of middle-aged women – although in other forms it is more associated with increasing or decreasing susceptibility to the onset of the disease
- Bone density, both high and low, has an impact on OA, with high bone density a risk factor for the condition's development and low bone density a risk factor for disease progression, particularly for OA that affects the knee or hip
- Injury, both physical and as a result of another disease such as rheumatoid arthritis, can lead to OA developing in affected joints later in life. This is termed secondary OA.

Other suggested causes of OA have been debunked as myths. Damp weather, for example, can temporarily affect symptoms of OA, but the fact that the incidence of the condition is the same the world over points to the fact that climate doesn't affect the disease itself. Similarly, diet is not thought to affect OA, other than if it contributes to obesity.

Symptoms and diagnosis

The early signs of OA can be very mild (e.g. slightly stiff and uncomfortable joints) and therefore easy to miss. The stiffness is generally relieved to a certain extent by resting, although the joint may not move as freely or to the same extent as normal, particularly first thing in the morning, and may make a creaking or cracking noise.

The pain is usually worse while exercising the joint and at the end of the day. Joints may also appear swollen. Some patients experience symptoms for a few weeks or months, followed by a better period. However, it is important to seek medical advice, as an early diagnosis can go a long way towards preventing unnecessary damage and limiting problems in the future.

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If OA has been present for some time, the patient may present with joint deformity, wasting and weakness of the muscles associated with the affected joint, and concerns about disability, both present and future.

The joint that is affected by OA tends to dictate the impact it has on the sufferer. OA in the fingers, thumbs and wrist can make everyday jobs such as opening jars, picking up small things, doing buttons and even writing quite tricky, whereas someone with OA of the knees, ankles or spine may notice a reduction in their mobility.

OA of the hips can cause problems with tasks such as putting on shoes and socks, and women may find that sex becomes difficult and painful. An individual's perception of the bearing their joint problem is having on tasks is likely to dictate how soon they seek medical help.

Sleep may be adversely affected because of pain, and low mood and depression are not uncommon. OA also increases the risk of developing certain conditions, notably gout and chondrocalcinosis (the formation of calcium pyrophosphate crystals in joints affected by OA, which can increase the severity of OA itself and cause an attack of gout-like symptoms). The reduced mobility associated with some forms of OA can be problematic in itself, increasing the potential impact of falls, for example.

OA is usually diagnosed based on the symptoms experienced and a physical examination of the affected joint. A blood test may be conducted to exclude other forms of arthritis and an x-ray or magnetic resonance imaging (MRI) scan carried out to confirm that nothing else is at play, such as a fracture.

Differential diagnoses include inflammatory arthritis (more likely if morning stiffness lasts longer than 30 minutes, pain is worse at night, or stiffness and pain are relieved by activity), fibromyalgia, septic arthritis, fracture of a bone adjacent to the joint, ligament injury, bursitis and cancer.

Non-pharmacological management

There are many steps that people with OA can take to ease symptoms and prevent the condition worsening (see NICE pathway diagram opposite). NICE refers to these as "core treatments" and says they should be tried ahead of pharmacological interventions:

ICE MNEMONIC

The ICE mnemonic is a good starting point for assessing patients with OA:

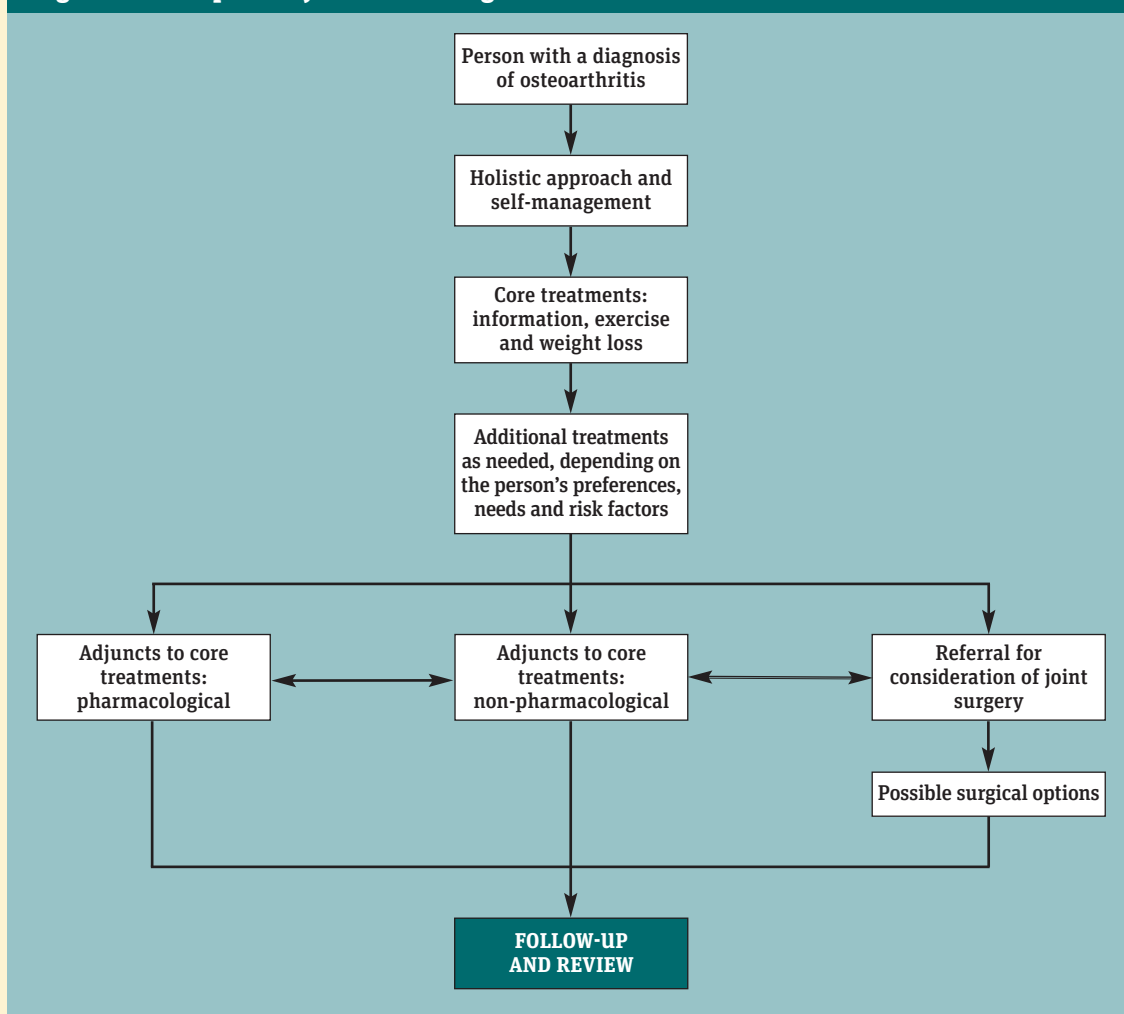
- I**deas – what does the patient know about OA?
- C**oncerns – what are they worried about?
- E**xpectations – what do they want to happen?

- Education, advice and access to information about the condition and its management are vital (see ICE panel above). This should be offered repeatedly, as patients are likely to have different concerns and questions at different times
- Exercise is one of the most important things an OA patient can do, as it builds muscle and strengthens joints, thereby improving both mobility and symptoms. Both strengthening and aerobic activities should be undertaken.

Although some OA sufferers may worry that starting to exercise may make their OA worse, very few people can't exercise at all, and there is something for everyone, regardless of age or fitness level. A physiotherapist is the best person to advise on what is suitable and will be beneficial

- Weight reduction is one of the most significant measures an overweight or obese OA sufferer can take. Exercise will help this ambition, as will a balanced, healthy diet. Any other weight management measures should only be initiated by a GP
- Pacing is key as OA symptoms can flare up or worsen. Instead of tackling physically demanding chores one after another, they should be interspersed with gentler tasks and rest periods if needed

Figure 1: NICE pathway for the management of osteoarthritis



You can complete this module online at pharmacymagazine.co.uk and record your learning outcomes and the impact on your practice on your personal learning log





Arthritis can affect people of all ages, not just the elderly



Reflection exercise 1

What support is available in your local area for arthritis sufferers and their carers? Make sure you have an up-to-date list of services so you can signpost those who ask or who you feel might benefit from them.

- Relaxation techniques play an important part in relieving tension from the body, which can all too easily build up in someone who is in pain or frustrated because of mobility problems
- Assistive devices can help with specific requirements; for example, someone with OA in the lower limbs is likely to benefit from wearing footwear with thick supportive soles, such as trainers, and an individual with OA of the knee may find the strain on the joint is eased by using a walking stick (in the opposite hand) and a handrail when climbing stairs. A patient with OA in the hands may find certain devices (e.g. tap turners for kitchen and bathroom sinks) make tasks that had become difficult manageable once more. Pharmacists and their teams have a valuable role in providing advice on the importance of many of these measures, and highlighting interventions that patients may not be aware of,

such as getting annual influenza jabs and other vaccinations (e.g. pneumococcal and shingles) that they may be eligible for.

Pharmacists and their support staff also have a crucial part to play in supporting patients with OA and their carers, who may at times struggle to cope and experience feelings of isolation. Signposting to support groups or patient charities may also be helpful in such cases.

Pharmacological management

Analgesia forms the mainstay of treatment for OA. Paracetamol, taken regularly if needed, and/or topical non-steroidal anti-inflammatory drugs (NSAIDs) are used first-line, with opioids considered if pain continues to be problematic. Topical capsaicin can be used as an adjunct for knee or hand OA, but rubefacients are not recommended.

If paracetamol and/or topical NSAIDs prove ineffective for pain relief, an oral NSAID or COX-2 inhibitor may be added or used as a substitute, although only at the lowest effective dose for the shortest possible period of time. Individual patient risk factors, including age, should be taken into account when choosing an oral NSAID or COX-2 inhibitor, as all are

considered to have analgesic effects of a similar magnitude but vary in their potential gastrointestinal, hepatic and cardio-renal toxicity.

In all cases, the patient should be regularly monitored and a proton pump inhibitor (PPI) concurrently prescribed. Analgesics other than NSAIDs or COX-2 inhibitors should be considered for OA patients who are taking low-dose aspirin.

Intra-articular corticosteroid – but not hyaluronan – injections can be used as an adjunct for the relief of moderate to severe pain. Joint surgery is an option for OA patients who experience symptoms such as pain, stiffness and reduced joint function that have a substantial impact on their quality of life and for whom non-surgical treatments appear refractory, ideally before pain and functional limitation have become severe and prolonged.

Pharmacists and their teams have an important role to play in supporting those who undergo surgery for arthritis. While physical therapy and post-surgical check-ups are a given, it is all too easy for pain management and related issues to be overlooked – so taking the time to ask whether analgesia is sufficient and side-effects such as constipation are under control can make a huge difference to a patient's wellbeing.

NICE says NHS provision of the nutraceuticals glucosamine and chondroitin are not recommended, but transcutaneous electrical nerve stimulation (TENS) and/or thermotherapy may be beneficial to some as an adjunct to other treatments.

There is some evidence supporting the effectiveness of acupuncture, but it is not considered sufficiently cost-effective to be funded by the NHS, although patients may want to explore this treatment option on a private basis. Similarly, those wanting to try supplementation should be advised that taking glucosamine 1,500mg once daily may confer a modest reduction in pain at best and the benefits should be reviewed after a three-month trial.



Reflection exercise 2

Would you feel confident discussing the pros and cons of NSAIDs and COX-2 inhibitors? If not, what could you do to enhance your understanding?

Monitoring OA patients

All patients with symptomatic OA should be reviewed regularly in order to:

- Keep an eye on symptoms and their impact, and the effectiveness and tolerability of treatments
- Enable the sufferer to raise any concerns or questions he/she has about their condition
- Highlight any relevant services they can access.

Reviews should be conducted annually for those on regular OA medication; with troublesome pain; more than one joint with symptoms; and more than one co-morbidity. Patients can be reassured that they can come back earlier if they experience any problems with their condition or treatments, or have any concerns.

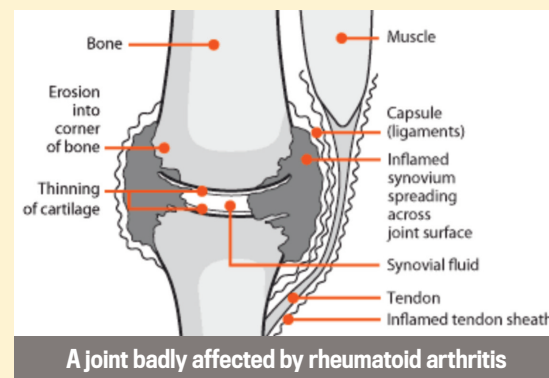
Rheumatoid arthritis

Rheumatoid arthritis (RA) is the second commonest form of arthritis in the UK and affects around 1 per cent of the population. It is an inflammatory disease that largely affects

the synovial joints of the body, such as the hands, feet and wrists, but is systemic so any part of the body can become involved, including the heart, lungs and eyes.

In RA, the synovium of the joint becomes inflamed (synovitis), which leads to fluid and cells accumulating and results in swelling, redness and pain. The inflammation also causes the synovium to become thickened, which in turn damages nearby bones, cartilage, tendons and ligaments. When the inflammation subsides, the joint capsule remains stretched, which makes the joint unstable and can result in it becoming deformed.

RA is an autoimmune disorder and it is not known what the trigger is. A number of factors may contribute to the development of RA, including genetics, gender (women are affected more than men, which has been attributed to the effects of oestrogen) and smoking. The commonest age for RA to strike is between 40 and 60 years, but people of any age can be affected.



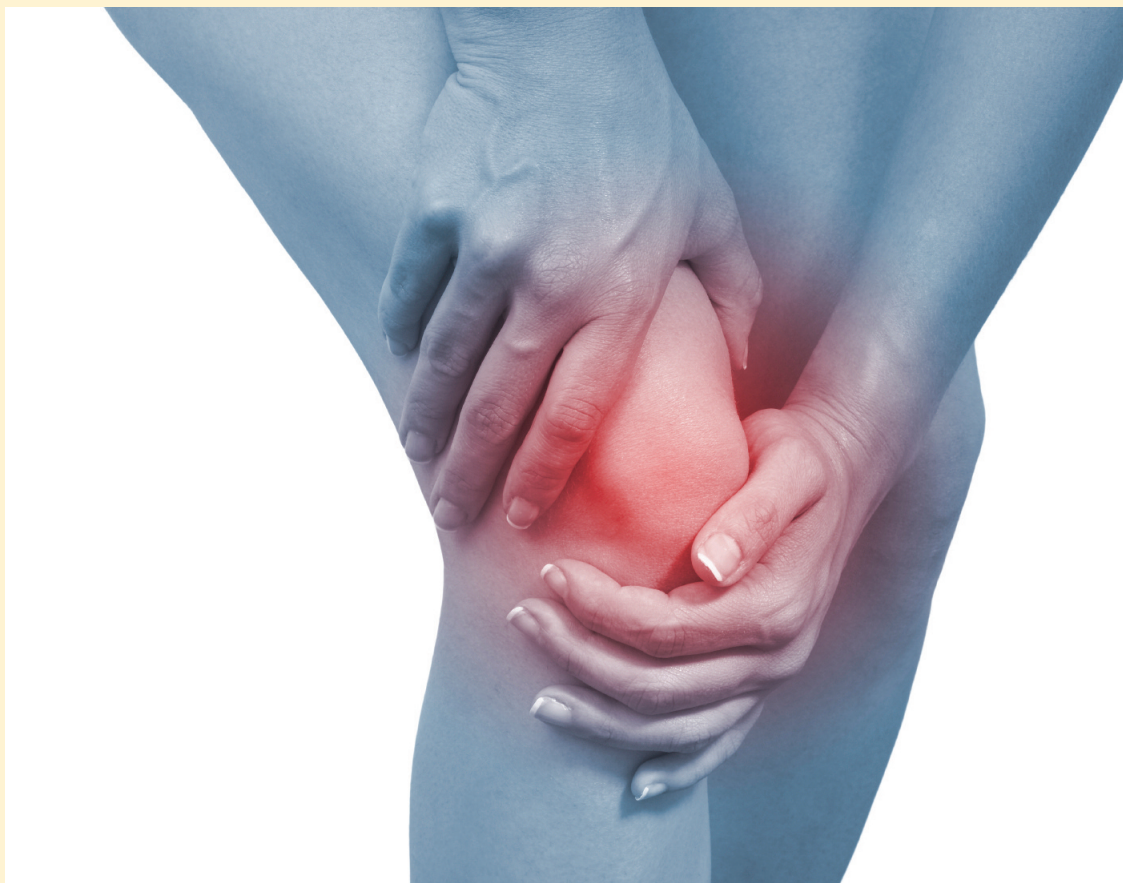
Symptoms and diagnosis

The symptoms of RA tend to develop gradually over the course of a few weeks or months, although some people experience a sudden onset over a few days. In both cases, the joints that are experiencing inflammation – most commonly the fingers, wrists or balls of the feet – become stiff (more severely so in the morning or after a period of inactivity), painful and swollen. The sufferer feels tired and unwell on a more general basis, perhaps suffering from a fever, sweating or appetite loss.

Systemic symptoms may also present, such as weight loss, dry eyes due to inflammation, the formation of rheumatoid nodules in the skin around the affected joints, and inflammation of other body parts including the heart (pericarditis), lungs (pulmonary fibrosis or pleurisy), nerves (neuropathy) and blood vessels (vasculitis). While symptoms are flaring, which is sometimes referred to as an RA attack, the condition is considered “active”.

Over time, if RA is not treated or controlled well, permanent joint damage can occur. Carpal tunnel syndrome is common in RA patients, because of joint swelling that compresses the median nerve. Tendon rupture can also occur. Cervical myelopathy is another potential complication of RA, in which the joints at the top of the spine become dislocated and may permanently damage the spinal cord.

As the underlying physiological process of RA is inflammatory, the condition is associated with an increased risk of premature death. This is due to the co-morbidities associated with the disease, which include an increased risk of osteoporosis, anaemia, infection, cardiovascular problems, malignancy (particularly lymphoma) and mental health conditions, such as depression and anxiety.



Early symptoms of osteoarthritis, such as stiffness, can be mild and easy to miss





There is no cure for rheumatoid arthritis but joint inflammation can be reduced

Reflection exercise 3

Can you describe the differences between OA and RA? Could you recognise one from the other? If not, what could you do to build on your learning?

The costs attached to RA are considerable, not just in terms of the financial burden to the NHS and associated healthcare support services, but also to sufferers, their carers, and society as a whole. This is starkly illustrated by the fact that around a third of people stop work within two years of the disease first manifesting.

Much like OA, diagnosis starts with consideration of the symptoms and a physical examination of the affected joints. A blood test is usually conducted to check for inflammatory markers such as a faster than usual erythrocyte sedimentation rate, a raised C-reactive protein level, and the presence of rheumatoid factor and anti-cyclic citrullinated peptide (CCP). However, not everyone with RA will get a positive result for these last two tests, nor is the absence of either substance considered a negative result. Haemoglobin is also often measured because of the high prevalence of anaemia in RA patients.

Joint imaging, for example by x-ray, ultrasound or MRI scan, is often carried out to assess damage to the joint the patient is currently experiencing problems with. Other joints may also be checked, despite them causing the patient no problems – for example, the bones in the feet may feel fine but show signs of changes when imaged.

Other conditions that can cause synovitis (and differential symptoms) include:

- Septic arthritis (single hot, swollen joint plus signs of sepsis such as fever)
- Viral arthritis (an ongoing infection)
- Reactive arthritis (recent sore throat,

gastroenteritis or sexually transmitted infection)

- Seronegative spondyloarthritis (history of psoriasis, back pain or bowel problems)
- Polymyalgia rheumatica (shoulder pain and stiffness)
- Polyarticular gout (visible tophi)
- Connective tissue disease (signs of butterfly rash, scleroderma, or symptoms of Raynaud's disease).

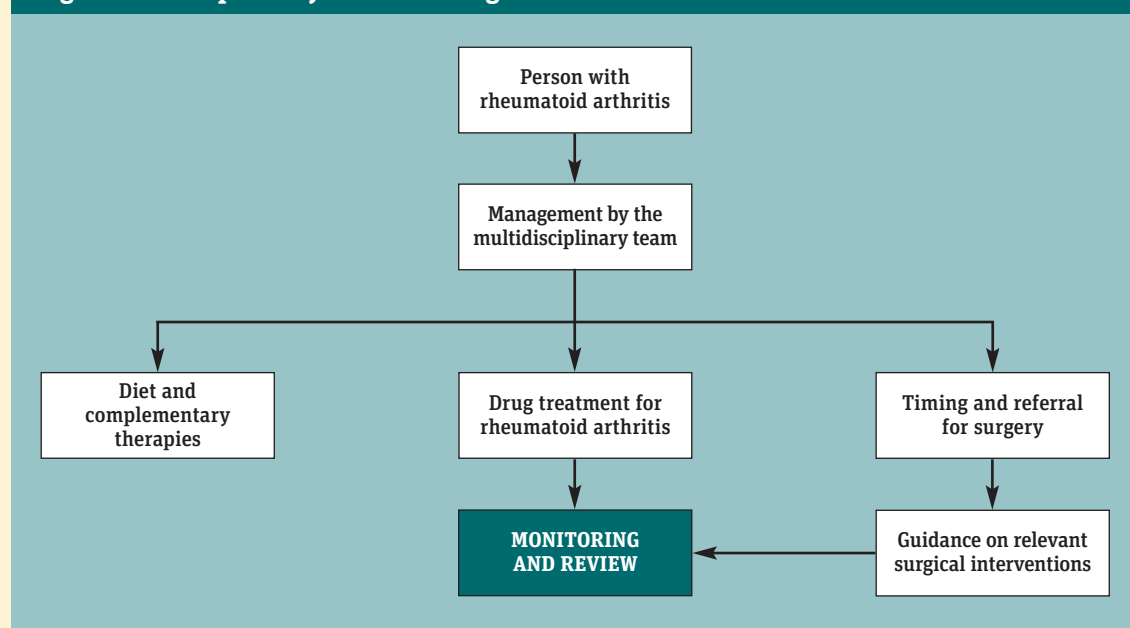
Management

There is no cure for RA, but treatment can help reduce joint inflammation and slow down or even prevent further damage, relieve pain and enable sufferers to live as full a life as possible (see NICE pathway diagram below).

There are two classes of drugs that are used to try and stop the condition's progress:

- Disease-modifying antirheumatic drugs (DMARDs), usually methotrexate plus at least one other (e.g. leflunomide, hydroxychloroquine, sulfasalazine) should be offered as first-line treatment as soon as possible after active RA is diagnosed. DMARDs are slow acting and can take several weeks for any benefit to be felt. Once the RA appears stable – and two or three different DMARDs may need to be tried before this happens – the dose should be reduced cautiously to the lowest possible level that still keeps exacerbations at bay
- Cytokine modulators (sometimes referred to as biological treatments and including agents such as etanercept, adalimumab, rituximab and infliximab) may be used in combination with methotrexate or another DMARD if DMARDs alone have not proved effective or

Figure 2: NICE pathway for the management of rheumatoid arthritis



Reflection exercise 4

What advice would you give to someone starting a DMARD or cytokine modulator? What things would you warn them to look out for and why?

side-effects have been intolerable. Cytokine modulators are much quicker acting than DMARDs, but can still take weeks or months for the gains to be felt and they should only be continued beyond six months if the benefits continue. Abatacept and anakinra are not recommended.

During a flare-up, short-term corticosteroids are often used to rapidly decrease inflammation while waiting for DMARDs or cytokine modulators to take effect. They may be used orally or injected into a joint or muscle.

Pain relief may also be needed, with paracetamol, codeine or a compound analgesic used first-line, replaced if necessary by an oral NSAID or COX-2 inhibitor at the lowest effective dose for the shortest possible time, plus a PPI.

Patients with RA should be managed by a multidisciplinary team, and with good reason: medication is just part of the puzzle and other approaches can make a substantial difference to symptoms.

- *Physiotherapy* can help improve fitness, flexibility and muscle strength, with therapists also able to advise on alternative pain relief methods such as heat or ice packs and TENS
- *Occupational therapy* can promote independent living by addressing difficulties that a RA sufferer may be experiencing with everyday

tasks, by perhaps using assistive devices, and offer advice on how to protect the joints (e.g. using splints)

- *Podiatry* is often necessary to assess and resolve any problems with the feet – so often affected in RA – such as providing shoe insoles to alleviate pain
- *Psychological interventions*, for example, stress management, cognitive coping skills and relaxation techniques, have a place in helping people with RA adjust to living with their condition.

RA patients should have a single named point of contact within the multidisciplinary team that is looking after them, ideally a specialist nurse who is responsible for co-ordinating their care.

There is no strong evidence that RA can benefit from dietary changes, although there is no harm in following the principles of a Mediterranean way of eating (more bread, fruit, vegetables, fish, and vegetable and plant oils, and less meat, butter and cheese). Similarly, there is little or no evidence supporting long-term use of complementary therapies, such as acupuncture or chiropractic, although some patients may feel they help in the short-term. Use of such alternative approaches should not affect or replace conventional treatments.

Surgery is usually only recommended when a joint has been damaged to such an extent that it is no longer functional or has become deformed, or if pain is not reduced despite trying other measures. Specialist referral is necessary.

Evolving NICE guidance

Osteoarthritis is covered in Clinical Guideline 177, which replaced Clinical Guideline 59 in February 2014.

The update addressed issues around when surgery is indicated and included new recommendations about diagnosis and follow-up, as well as recommendations based on new evidence about the use of nutraceuticals, hyaluronans and acupuncture.

A full update of the section on pharmacological management was not carried out due to an ongoing MHRA review into the safety of OTC analgesics, but will form the basis of a further guidance review in the future.

Rheumatoid arthritis is covered in Clinical Guideline 79, which replaced TA27 and TA72 in February 2009, and is currently undergoing review.

Much of the advice listed under 'Non-pharmacological management of OA' is applicable in RA – so while RA may feel more of a medicalised condition, pharmacists and their teams still have an important role to play in supporting and advising patients.

Monitoring

Patients with RA should have a check-up at least once a year – and considerably more often if they experience a flare-up or require therapeutic drug monitoring – to assess disease activity, functional activity and damage, check for co-morbidities such as osteoporosis, hypertension and depression, evaluate symptoms such as issues with the eyes, lungs or spine that might indicate complications, and consider whether any other services or surgery might be in order.

Blood tests and imaging should be repeated as a way of measuring disease progression. All patients should know when and how to get rapid access to specialist care if they experience a flare-up, and – as with all long-term conditions – should be given all the information and time they need to understand their disease, how it is managed and be involved in treatment decisions.

Useful websites

- NHS Choices: nhs.uk/conditions/osteoarthritis and nhs.uk/conditions/rheumatoid-arthritis
- Arthritis Research UK: arthritisresearchuk.org/arthritis-information/conditions
- Arthritis Care: arthritiscare.org.uk/AboutArthritis/Conditions
- NICE: nice.org.uk/guidance/cg177 (OA guidance); nice.org.uk/guidance/cg79 (RA guidance)
- NICE Clinical Knowledge Summaries: cks.nice.org.uk/osteoarthritis and cks.nice.org.uk/rheumatoid-arthritis
- The British National Formulary: medicinescomplete.com/mc/bnf/current
- National Rheumatoid Arthritis Society: nras.org.uk



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OSTEOARTHRITIS & RHEUMATOID ARTHRITIS

assessment questions

- 1. Which statistic is TRUE?**
 - Over 12m people in the UK are living with arthritis
 - Around 10m people in the UK suffer from OA
 - Approximately 0.5 per cent of the UK population have RA
 - There are around 200 different types of arthritis
- 2. Which of the following does NOT happen in OA?**
 - Bones become brittle
 - The formation of osteophytes
 - Cartilage becomes rough and thin
 - The synovium becomes inflamed
- 3. Which statement about OA management is FALSE?**
 - Intra-articular corticosteroids may be used as adjunctive treatment
 - The first drug of choice is paracetamol and/or an oral NSAID
 - All patients should try and lose weight if obese, and undertake both aerobic and strengthening exercises
 - Topical capsaicin can be prescribed alongside paracetamol in hand or knee OA
- 4. Which is recommended in the NHS management of OA?**
 - Topical rubefacients
 - Acupuncture
 - Glucosamine and chondroitin
 - TENS
- 5. Which is NOT considered a complication of OA?**
 - Cardiac problems
 - Gout
 - Depression
 - Disturbed sleep
- 6. Which is NOT a symptom of RA?**
 - The joints most likely to be affected are the wrists, balls of the feet and knees
 - Patients may experience a raised temperature
 - Symptoms usually develop gradually, over weeks or months
 - Joints tend to be stiffer and more painful in the morning
- 7. Which statement about how RA is diagnosed is FALSE?**
 - Joint imaging may be conducted for parts of the body that the patient is not experiencing problems with
 - The absence of rheumatoid factor in a blood sample means that the patient does not have RA
 - A raised erythrocyte sedimentation rate is one of the inflammatory markers often checked for when a patient is suspected to have RA
 - Haemoglobin levels are usually checked
- 8. Which statement about the management of RA is false?**
 - Methotrexate plus at least one other DMARD should be offered first-line
 - Cytokine modulators are quicker acting than DMARDs
 - Abatacept is a good second choice treatment if DMARDs have not proved effective
 - Injectable or oral corticosteroids may be used short-term to relieve inflammation

Use this form to record your learning and action points from this module on **Osteoarthritis and Rheumatoid Arthritis** or record on your personal learning log at pharmacymagazine.co.uk. Any training, learning or development activities that you undertake for CPD can also be recorded as evidence as part of your RPS Faculty practice-based portfolio when preparing for Faculty membership. So start your RPS Faculty journey today by accessing the portfolio and tools at www.rpharms.com/Faculty

Activity completed. (Describe what you did to increase your learning. Be specific)
(ACT)

Date: _____ Time taken to complete activity: _____

What did I learn that was new in terms of developing my skills, knowledge and behaviours? Have my learning objectives been met?*

(EVALUATE)

How have I put this into practice? (Give an example of how you applied your learning). Why did it benefit my practice? (How did your learning affect outcomes?)

(EVALUATE)

Do I need to learn anything else in this area? (List your learning action points. How do you intend to meet these action points?)

(REFLECT & PLAN)

You can also record in your personal learning log at pharmacymagazine.co.uk

* If as a result of completing your evaluation you have identified another new learning objective, start a new cycle. This will enable you to start at Reflect and then go on to Plan, Act and Evaluate. This form can be photocopied to avoid having to cut this page out of the module. You can also complete the module at www.pharmacymagazine.co.uk and record on your personal learning log

ENTER YOUR ANSWERS HERE Please mark your answers on the sheet below by placing a cross in the box next to the correct answer. Only mark one box for each question. Once you have completed the answer sheet in ink, return it to the address below together with your payment of £3.75. Clear photocopies are acceptable. **You may need to consult other information sources to answer the questions.**

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| 1. | a. <input type="checkbox"/> | 2. | a. <input type="checkbox"/> | 3. | a. <input type="checkbox"/> | 4. | a. <input type="checkbox"/> | 5. | a. <input type="checkbox"/> | 6. | a. <input type="checkbox"/> | 7. | a. <input type="checkbox"/> | 8. | a. <input type="checkbox"/> |
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| | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> | | c. <input type="checkbox"/> |
| | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> | | d. <input type="checkbox"/> |

Name (Mr, Mrs, Ms) _____

Business/home address _____

Town _____ Postcode _____ Tel _____ GPhC/PSNI Reg no.

I confirm the form submitted is my own work (signature) _____

Please charge my card the sum of £3.75 Name on card _____ Visa Mastercard Switch/Maestro

Card No. _____ Start date _____ Expiry date _____

Date _____ Switch/Maestro Issue Number _____

Processing of answers
Completed answer sheets should be sent to Precision Marketing Group, Precision House, Bury Road, Beyton, Bury St Edmunds IP30 9PP (tel: 01284 718912; fax: 01284 718920; email: cpd@precisionmarketinggroup.co.uk), together with credit/debit card/cheque details to cover administration costs. This assessment will be marked and you will be notified of your result and sent a copy of the correct answers. The assessors' decision is final and **no correspondence** will be entered into.