

# The NICE guideline on osteoarthritis: treatment and management in primary care

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## Background

Osteoarthritis is the most common form of arthritis.<sup>1</sup> It can occur in any synovial joint; the commonest sites being the knees, hips, and small hand joints. Consequences of osteoarthritis include pain, reduced function, and restriction in daily activities. Management is made complex because structural changes can occur without the patient displaying any symptoms.<sup>2</sup>

Osteoarthritis is the most common cause of disability in the UK,<sup>3</sup> with up to 8.5 million people complaining of joint pain that is thought to be due to the condition.<sup>4</sup> Fifty percent of adults aged 50 years and over who have knee symptoms have X-ray evidence of osteoarthritis.<sup>5</sup> In the UK, the prevalence of painful, disabling knee osteoarthritis in people aged over 55 years has been estimated at approximately 10%.<sup>6</sup>

Osteoarthritis is not a result of wear and tear,<sup>7</sup> but it is an active ongoing process in which the whole joint is involved, including cartilage, bone, and synovium. The first process is the loss of cartilage and increased bone formation, which gives the radiographic

features of joint space narrowing and osteophytosis.<sup>2</sup>

Symptomatic osteoarthritis is not a result of ageing, although the prevalence of joint pain increases with age.<sup>2</sup> Pain is the most common way osteoarthritis presents, and it can be described as:

- episodic
- related to movement
- present all the time.

The pain can cause sleep disturbance, which can lead to loss of restorative sleep when muscles relax. This in turn can cause daytime fatigue, lack of conditioning of muscles, and musculoskeletal pain similar to that found in chronic widespread pain syndromes, including fibromyalgia.<sup>2</sup> Some patients then go on to develop chronic pain, which is now known to be maintained by several pathophysiological mechanisms that are currently not very well controlled due to lack of suitable modalities of treatment.<sup>2</sup> The risk factors for osteoarthritis are listed in Table 1.

**Table 1: Risk factors for osteoarthritis**

• Genetic factors	• High bone density
• Ageing	• Joint injury
• Female sex	• Occupational factors

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Many treatment modalities have been advocated for osteoarthritis; (see Table 2).

**Table 2: Treatment options for osteoarthritis**

Physical treatments	Pharmacological treatments
Acupuncture	Capsaicin
Exercise	Chondroitin
Joint replacement	COX-2 NSAIDs
Lavage	Glucosamine
Local heat	Non-specific NSAIDs
Manipulation and stretching	Opiates
Supports and braces	Paracetamol
Surgical treatment	Topical NSAIDs

COX-2=cyclooxygenase-2; NSAID=non-steroidal anti-inflammatory drug.

GPs should advise all patients with clinically symptomatic osteoarthritis on the following core treatments:<sup>2</sup>

- Access to information
- Activity and exercise therapy including weight loss (if overweight/obese).

## Education and self management

General information should be given to patients, including an overview of the condition, to aid their understanding and facilitate future discussions about changes in their health status.<sup>2</sup> Specific information (e.g. Arthritis Research Campaign leaflets) should be given to encourage and improve patient self-management. Both verbal and written information should be given to the patient to improve their understanding of the condition and its treatment. It is important to address misconceptions about osteoarthritis, for example that it inevitably progresses and cannot be treated.<sup>2</sup>

## Why was a guideline needed?

As osteoarthritis is such a common disease with a large variety of treatment options, NICE in conjunction with a large number of stakeholders, developed a guideline to clarify the best practice for treatment and management of adults with osteoarthritis.

The NICE guideline development group defined peripheral joint osteoarthritis as '*constant joint pain worse with use, in those aged 45 and over, with morning stiffness lasting no more than half an hour*'.<sup>2</sup>

## Holistic approach

A holistic approach to care that considers the overall needs of an individual should be used. Consideration should be given to social and psychological factors that affect quality of life and the ability to carry out activities of daily living.<sup>2,8</sup>

To deliver this holistic approach, patients should be encouraged to consider a range of factors (including family, leisure activities, their mood and environment) that can enhance their self-management strategy to coping with their condition.<sup>2</sup>

Individual self-management strategies should be agreed between healthcare professionals and the person with osteoarthritis. Self-management plans should target positive behaviour changes such as:<sup>2</sup>

- appropriate use of exercise
- weight loss
- wearing appropriate footwear
- pacing of activities.

## Non-pharmacological management

### Exercise

Exercise should be a core component of therapy, irrespective of age, co-morbidity, pain severity, and disability. Exercise should have two components:<sup>2</sup>

- local muscle strengthening
- general aerobic fitness to improve the overall range of movement, strength, and stamina.

Where possible exercise should be made part of the daily routine.<sup>2</sup> Manipulation and stretching of the muscles close to the affected joint should be considered in addition to core treatment, particularly for hip osteoarthritis.<sup>2</sup>

## Joint protection

Joint protection should be considered:<sup>2</sup>

- affected joints should be rested by reducing the amount of load, time the joint is in use, and the number of repeated activities a joint performs
- the largest muscles and joints that can do a job should be used, for example, standing up from a chair using the hips and knees rather than pushing up with hands
- appropriate techniques should be used for lifting, sitting, standing, bending, and reaching
- appliances, gadgets, and modifications to the home can be used to reduce stress on joints; examples include using a chair-raise, and using a smaller kettle with less water
- patients should plan their week and anticipate difficulties, simplify tasks, and obtain help from others—maintaining a good posture, aligning joints in the correct manner, and avoiding staying in one position for a long time will all help ease the discomfort
- topical local heat or cold therapy should be considered as an adjunct to core treatment.

## Weight loss

Interventions for weight loss should be instituted if a patient has a body mass index of more than 26.4 kg/m<sup>2</sup>.<sup>2</sup>

## Electrotherapy

Trans-cutaneous nerve stimulation (TENS) can be used as an adjunct to treatment for pain relief;<sup>2</sup> however, there was insufficient evidence to recommend the use of other electrotherapies (ultrasound, interferential, pulsed electromagnetic field, laser).<sup>2</sup> Also, electro-acupuncture should not be used to treat people with osteoarthritis.<sup>2</sup>

## Aids and devices

Appropriate footwear (including shoes with shock-absorbing properties) should be advised as core therapy in cases of lower limb osteoarthritis.<sup>2</sup> People with biomechanical joint pain or instability should be considered for a trial of either bracing, joint supports, or insoles as an adjunct to core therapy.<sup>2</sup> Assistive devices, for example walking sticks and tap turners,

should be considered as an adjunct for those who have specific problems with activities of daily living;<sup>2</sup> expert advice from an occupational therapist may be necessary in these cases.<sup>2</sup>

## Nutraceuticals

The use of glucosamine or chondroitin products is not recommended for the treatment of osteoarthritis.<sup>2</sup>

## Pharmacological management

Pain is a complex phenomenon. Full pain relief may require a number of pharmacological agents. Multiple pain pathways and processes make the management of osteoarthritis a challenge, and often two or more treatments are needed to work together on the various components of the pain response.<sup>2</sup>

## Simple analgesia

There is good evidence for paracetamol and it is recommended as a relatively safe pharmaceutical option. However, apart from in knee osteoarthritis, not much evidence exists on its use at other sites. It should be noted that the doses used in the studies were high.<sup>9,10</sup> There are good long-term safety data for treatment with paracetamol.

## Opioids

There are limited data on the efficacy of paracetamol in combination with other pharmacological therapies, and most of this information is from studies where paracetamol is used as 'escape' analgesia.<sup>2</sup> The evidence supporting the use of opioid analgesia in osteoarthritis is extremely poor, but it must be noted that there are virtually no good studies using these agents in patients who have peripheral joint osteoarthritis. There is, therefore, little evidence to suggest that dose escalation of these agents is effective. There is also little data comparing different opioid formulations or routes of administration. Opioids are only recommended if paracetamol and topical NSAIDs are insufficient, but the risks and benefits should be considered. Toxicity remains a concern with opioid use, especially in the elderly. Side-effects of opioids include:<sup>2</sup>

- constipation

- nausea
- itchiness
- drowsiness
- confusion.

### *Tricyclic antidepressants*

There is no good evidence for using low-dose tricyclic antidepressants for osteoarthritis pain. Patients with osteoarthritis are prone to developing sleep and mood disturbances and these should be assessed and treated.<sup>2</sup>

### *Topical non-steroidal anti-inflammatory drugs*

Although evidence for topical non-steroidal anti-inflammatory drugs (NSAIDs) is weak,<sup>11</sup> a number of studies, mainly on knee osteoarthritis, have shown short-term (less than 4 weeks) benefits from topical NSAID gels, creams, and ointments when compared with placebo.<sup>2</sup> No data are available on their long-term effectiveness when compared with placebo.<sup>2</sup> Despite this, the guideline recommends that topical NSAIDs should be an adjunct to treatment for knee and hand osteoarthritis.<sup>2</sup>

### *Capsaicin and other rubefacients*

There are some data that indicate capsaicin can be beneficial in knee osteoarthritis and, therefore, topical capsaicin is recommended as an adjunct to core therapy for knee and hand osteoarthritis;<sup>2</sup> rubefacients are not recommended.<sup>2</sup>

### *Non-steroidal anti-inflammatory drugs*

A large amount of clinical trial evidence supports the efficacy of both traditional NSAIDs and cyclooxygenase-2 (COX-2) selective agents in reducing the pain and stiffness of osteoarthritis.<sup>2</sup> All NSAIDs, irrespective of COX-1 or COX-2 selectivity, are associated with significant morbidity and mortality due to adverse effects on the gastrointestinal (GI), renal and cardiovascular systems.<sup>2</sup> For the purposes of this paper only the coxibs are considered COX-2 inhibitors.

Data is available that indicate certain COX-2 selective agents reduce the incidence of serious GI adverse events (such as perforations, ulcers, and bleeds) when

compared with less selective agents.<sup>2</sup> Dyspepsia, which is one of the most common reasons for patients to stop taking their medication, remains a problem with all NSAIDs, irrespective of COX-2 selectivity.<sup>2</sup> Aspirin can reduce the benefit seen with COX-2 inhibitors.

All NSAIDs can potentially cause fluid retention and can aggravate hypertension. Pro-thrombotic risk, including myocardial infarction and stroke, has been associated with COX-2 selective agents in some long-term studies, and there is some evidence for a dose effect.<sup>12, 13</sup> These studies also demonstrate an increased cardiovascular risk from older agents such as diclofenac, which has high COX-2 selectivity. However, naproxen, which is also an older agent, may not necessarily increase pro-thrombotic risk. All NSAIDs may adversely affect the cardio-protective effects of aspirin.<sup>2</sup>

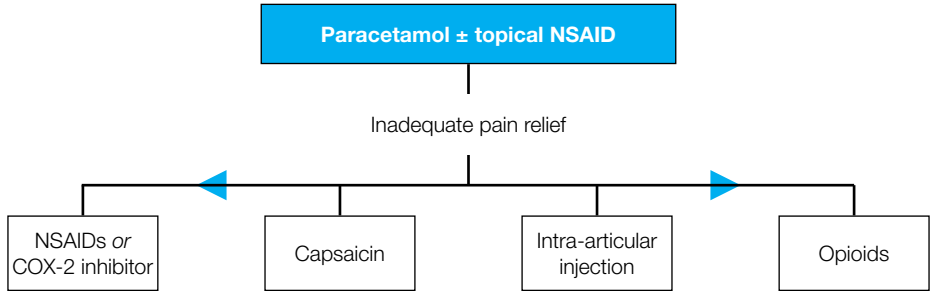
There is no question that there is a clinical role for NSAIDs/COX-2 inhibitors in the management of patients who are inadequately controlled with simple analgesia and who require further pharmacological treatment.

Allowing for the differences in individual patient response, the choice between NSAIDs and COX-2 inhibitors is mainly influenced by their different side-effect profiles, which tend to favour COX-2 inhibitors, and cost, which tends to favour NSAIDs.

The NICE guideline has now superseded the previous guidance on COX-2 inhibitors<sup>14</sup> by removing the age and GI risk restriction on the use of COX-2 inhibitors based on extensive health economic modelling, which included December 2007 tariff costs. This has led to an increased role of COX-2 inhibitors.

Therefore, when paracetamol or topical NSAIDs are not effective for pain relief in patients with OA, prescribing an NSAID/COX-2 is to be considered, either instead of, or in addition to, existing therapies (see Figure 1).

The incidence of the most common side-effect of NSAIDs—upper GI problems—can be reduced by the use of proton pump inhibitors (PPIs), and the guideline recommends them as a pragmatic way forward.<sup>2</sup> The guideline recommends that all patients

**Figure 1: Pharmacological management of pain in patients with osteoarthritis**

NSAID=non-steroidal anti-inflammatory drug; COX-2=cyclooxygenase-2; GI=gastrointestinal; PPI=proton pump inhibitor.

who are on an oral NSAID/COX-2 inhibitor should be coprescribed a PPI<sup>2</sup>

All oral NSAIDs and COX-2 inhibitors have analgesic effects of a similar magnitude, however, they vary in their potential GI and cardio-renal toxicity; individual patient risk factors should, therefore, be taken into account when selecting an appropriate agent and dose.<sup>2</sup>

### Surgical interventions

Referral for arthroscopic lavage and debridement should not be routinely offered in the treatment of osteoarthritis. Referral should be limited to people who have a clear history of mechanical locking.<sup>2</sup>

Intra-articular corticosteroid injections should be considered as an adjunct to core treatment for the relief of moderate-to-severe pain; however, intra-articular hyaluronan injections are not recommended in the guideline.<sup>2</sup>

Primary care clinicians who are responsible for referring patients with osteoarthritis for consideration of joint surgery should ensure that they are initially offered at least the core (non-surgical) treatment options. Referral for joint replacement surgery should be considered for patients who experience joint symptoms (pain, stiffness, reduced function) that impact substantially on their quality of life and that do not respond well to non-surgical treatment. Referral should be made before there is prolonged and established functional limitation and severe pain. Age, gender, smoking, obesity, and co-morbidities should not be a barrier to referral.<sup>2</sup>

Patients should be prioritised according to local discussions between patient representatives, primary care clinicians, and surgeons.<sup>2</sup>

### Summary

NICE has produced a comprehensive holistic guideline for the management of osteoarthritis. The key message is to treat the disease at multiple levels, thereby providing better control for a common and painful condition. Patient education and lifestyle adjustment have also been emphasised.

Regular full-dose paracetamol used with topical NSAIDs is still the mainstay of pharmacological treatment. Opioids are only recommended if paracetamol and topical NSAIDs are insufficient, but the risks and benefits should be considered. The choice of NSAID should be dictated by the patient's degree of GI and cardiovascular risk, with COX-2 inhibitors being used in those at a high risk of GI side-effects and a low risk of cardiovascular events. Note that all NSAIDs/COX-2 inhibitors may adversely affect the cardio-protective effects of aspirin.

Cost-effective analysis indicates that PPIs are also advocated when starting a patient with low GI and CV risk (aged under 65 years and with no risk factors) on an NSAID.<sup>2</sup> Data from a large study on COX-2 inhibitors<sup>15</sup> showed that when co-prescribing a COX-2 inhibitor with a PPI, it resulted in fewer adverse upper GI events than prescribing diclofenac with a PPI. Glucosamine is only recommended for symptomatic relief in knee osteoarthritis.

**Key points**

- Osteoarthritis is the most common form of arthritis, with the knees, hips, and small hand joints being the sites most often affected
- Pain is the most common presentation of osteoarthritis and it can be described as episodic, related to movement, or present all the time
- The pain can cause sleep disturbance, which may lead to daytime fatigue, lack of muscle conditioning, and musculoskeletal pain similar to that seen in chronic widespread pain syndromes, for example fibromyalgia
- Risk factors for osteoarthritis include genetic factors, ageing, female sex, high bone density, joint injury, and occupational factors
- A holistic approach to care should be given, with patients being encouraged to consider factors that can enhance the self management of their condition
- Individual self-management strategies should be agreed between the patient and healthcare professional
- GPs should provide patients with advice on activity and exercise therapy (including weight loss, appropriate footwear, and supporting the affected joint), and information on analgesia
- Paracetamol and topical NSAIDs are relatively safe pharmaceutical options for the treatment of knee and hand osteoarthritis
- Where paracetamol or topical NSAIDs are ineffective or insufficient for people with osteoarthritis, the addition/substitution with an oral NSAID/COX-2 inhibitor should be considered, co-prescribed with a PPI
- If the patient requires low-dose aspirin, consider using other analgesics before offering an NSAID/COX-2 inhibitor
- Referral to surgery for arthroscopic lavage and debridement should be limited to people who have a clear history of mechanical locking
- Referral to surgery for joint replacement should be considered in patients who experience joint symptoms that impact substantially on their quality of life and who do not respond well to non-surgical treatment
- Age, gender, smoking status, obesity, and co-morbidities should not be a barrier to referral

NSAID=non-steroidal anti-inflammatory drug; GI=gastrointestinal; PPI=proton pump inhibitor; COX-2=cyclooxygenase-2.

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Selective COX-2 inhibitors are contraindicated for patients with active peptic ulceration, gastrointestinal (GI) bleeding or inflammatory bowel disease. Caution is advised with treatment of patients most at risk of developing a GI complication with NSAIDs, the elderly, patients using any NSAID or acetylsalicylic acid concomitantly, or patients with a prior history of GI disease, such as ulceration or GI bleeding.<sup>9</sup> Additional contraindications and warnings regarding all COX-2-selective inhibitors, including celecoxib, are available on the MHRA website at <http://www.mhra.gov.uk>

#### Prescribing Information – Celebrex®

**Celebrex 100 mg Capsules containing celecoxib 100 mg**

**Celebrex 200 mg Capsules containing celecoxib 200 mg**

#### Refer to Summary of Product Characteristics before prescribing

**Indications.** Symptomatic relief in the treatment of osteoarthritis, rheumatoid arthritis or ankylosing spondylitis. The decision to prescribe a selective COX-2 inhibitor should be based on an assessment of the individual patient's overall risks. **Dosage.** Celebrex should be introduced at the lowest effective dose and for the shortest duration possible. In the absence of therapeutic benefits with the maximum daily dose, other therapeutic options should be considered. Patient's need for continued therapy should be re-evaluated periodically. **Osteoarthritis.** Usual recommended daily dose is 200 mg taken once daily or in two divided doses. The maximum daily dose is 400 mg taken as two divided doses of 200 mg if needed. **Rheumatoid arthritis.** Initial recommended daily dose is 200 mg taken in two divided doses; maximum daily dose 400 mg taken in two divided doses. **Ankylosing spondylitis.** Usual recommended daily dose is 200 mg taken once daily or in two divided doses. The maximum daily dose is 400 mg taken once daily or in two divided doses. **Elderly.** Initial recommended dose is 200 mg per day; maximum daily dose 400 mg in two divided doses. Take particular caution with elderly patients who have a body weight less than 50 kg. **Hepatic impairment.** Half the recommended dose in established moderate impairment (serum albumin 25–35 g/l). **Renal impairment.** Experience is limited in mild–moderate impairment. Patients should be treated with caution. **Children.** Not recommended. **Contraindications.** Hypersensitivity to celecoxib or excipients, known sulphonamide hypersensitivity. Active peptic ulceration or gastrointestinal (GI) bleeding. Patients who have experienced allergic-type reactions after taking aspirin or NSAIDs including COX-2 inhibitors. Pregnancy, women of childbearing potential unless using effective contraception, breastfeeding. Severe hepatic dysfunction (serum albumin <25 g/l or Child–Pugh score ≥10). Inflammatory bowel disease. Patients with creatinine clearance <30 ml/min. Congestive heart failure (NYHA II–IV). Established ischaemic heart disease, peripheral arterial disease and/or cerebrovascular disease. **Warnings/precautions.** Upper gastrointestinal complications, some of them resulting in fatal outcome, have occurred in patients treated with celecoxib. Therefore caution is advised in patients most at risk of developing a gastrointestinal (GI) complication with NSAIDs (e.g. elderly patients using any other NSAID or aspirin concomitantly, patients with history of GI disease such as ulceration and GI bleeding). There is further increase in the risk of GI adverse effects for celecoxib (GI ulceration or other GI complications) when celecoxib is taken concomitantly with aspirin, even at low doses (see Interactions). Cardiovascular risks of celecoxib may increase with dose and duration of exposure so the lowest effective dose should be used for the shortest possible duration. The need for symptomatic relief and response to therapy should be re-evaluated periodically, especially in patients with osteoarthritis. Patients with significant risk factors for CV events (e.g. hypertension, hyperlipidaemia, diabetes mellitus, smoking) should only be treated after careful consideration. Celecoxib is not a substitute for aspirin for cardiovascular prophylaxis. Celecoxib should be used with caution in patients with history of cardiac failure, left ventricular dysfunction, hypertension or pre-existing oedema for any other reason. Caution is also required in patients taking diuretic treatment or at risk of hypovolaemia. In the elderly, treatment should be monitored with appropriate medical supervision. Clinical trials with celecoxib have shown renal effects similar to those seen with comparator NSAIDs. Appropriate measures should be taken and discontinuation of celecoxib therapy should be considered if there is a deterioration of organ system functions. Serious skin reactions, some of them fatal, have been reported very rarely in patients receiving celecoxib. The highest risk for onset of these reactions in the majority of cases is within the first month of treatment. Patients with any other drug allergy may be at greater risk of serious skin reactions or hypersensitivity reactions. Discontinue at the first sign of skin rash, mucosal lesion or other sign of hypersensitivity. Celecoxib may mask fever and other signs of inflammation. In patients on concurrent warfarin therapy, serious bleeding events have occurred (see Interactions). Patients with hereditary problems of galactose intolerance, Lapp lactase deficiency or glucose-galactose malabsorption should not take celecoxib. Celecoxib inhibits CYP2D6. Caution should be exercised in patients known to be poor metabolisers of CYP2C9 and with medicines known to affect CYP2D6. **Interactions.** Monitor anticoagulant activity in patients taking warfarin or other anticoagulants, particularly when starting or changing the dose of celecoxib. NSAIDs may reduce the effect of diuretics and antihypertensive drugs. The risk of acute renal insufficiency, usually reversible, may be increased in some patients with compromised renal function when

ACE inhibitors or angiotensin II receptor antagonists are combined with NSAIDs, including celecoxib. Monitor renal function when celecoxib is used in combination with these medicines especially in the elderly or when given with cyclosporin or tacrolimus. Celecoxib can be used with low-dose aspirin but is not a substitute for aspirin for cardiovascular prophylaxis. Concomitant administration of celecoxib with low-dose aspirin increases the risk of GI ulceration or GI complications compared with celecoxib alone. Dose reduction may be necessary for individually dose-titrated drugs metabolised by CYP2D6 (e.g. antidepressants (tricyclics and SSRIs), neuroleptics, anti-arrhythmic drugs). Celecoxib had no clinically relevant effects on the pharmacokinetics of oral contraceptives (norethisterone/ethinylestradiol). Celecoxib had no significant effect on the pharmacokinetics of methotrexate but consider adequate monitoring when combining these two drugs. Closely monitor patients on lithium when celecoxib is introduced or withdrawn. Use half the recommended dose of celecoxib in patients on flucanazole, a CYP2C9 inhibitor. Concomitant use of inducers of CYP2C9 such as rifampicin, carbamazepine and barbiturates may reduce plasma concentrations of celecoxib. **Adverse effects.** *Common* (≥1/100, <1/10): sinusitis, upper respiratory tract infection, insomnia, dizziness, pharyngitis, rhinitis, abdominal pain, diarrhoea, dyspepsia, flatulence, rash and peripheral oedema/fluid retention. *Uncommon* (≥1/1000, <1/100): urinary tract infection, anaemia, hyperkalaemia, anxiety, depression, tiredness, blurred vision, hypertension, paraesthesia, tinnitus, myocardial infarction, heart failure, palpitations, hypertension, hypertension aggravated, cough, dyspnoea, constipation, eructation, gastritis, stomatitis, vomiting, aggravation of gastrointestinal inflammation, abnormal hepatic function, urticaria, leg cramps, increased SGOT and SGPT, increased creatinine and BUN increased. *Rare* (≥1/10,000, <1/1000): leucopenia, thrombocytopenia, ataxia, taste alteration, ischaemic stroke, duodenal, gastric, oesophageal, intestinal and colonic ulceration, dysphagia, intestinal perforation, oesophagitis, melana, alopecia and photosensitivity. Post-marketing experience includes headache, nausea, arthralgia and the following. *Very rare* (<1/10,000) and *isolated cases*: pancytopenia, serious allergic reactions, anaphylactic shock, confusion, hallucinations, aggravated epilepsy, meningitis aseptic, ageusia, anosmia, decreased hearing, vasculitis, bronchospasm, menstrual disorder NOS, gastrointestinal haemorrhage, acute pancreatitis, colitis/colitis aggravated, hepatitis, jaundice, hepatic failure, angioedema, exfoliative dermatitis, Stevens–Johnson syndrome, epidermal necrolysis, erythema multiforme, myositis, acute renal failure and interstitial nephritis. **Packaging quantity and price.** Pack of 30 capsules: £21.55 (Celebrex 100 mg), Pack of 60 capsules: £21.55 (Celebrex 100 mg). **Marketing authorisation numbers and holder.** PL 00032/0399 (100 mg) and PL 00032/0400 (200 mg); Pharmacia Limited, Ramsgate Road, Sandwich, Kent, CT13 9NJ, UK. **Legal category:** POM. Further information can be obtained from: Pfizer Ltd, Walton Oaks, Dorking Road, Tadworth, Surrey, KT20 7NS. Date of preparation of P.I. August 2007.

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Date of preparation: March 2008.

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# Experience

## Recognised

NICE has published new guidelines concerning the treatment of osteoarthritis, which endorse the use of COX-2 inhibitors when co-administered with a proton pump inhibitor as an appropriate first choice option in patients where paracetamol and/or topical NSAIDs are ineffective or insufficient for pain relief.<sup>1</sup>

For more information visit [www.nice.org.uk](http://www.nice.org.uk)

Selective COX-2 inhibitors are contraindicated for patients with active peptic ulceration, gastrointestinal (GI) bleeding or inflammatory bowel disease. Caution is advised with treatment of patients most at risk of developing a GI complication with NSAIDs, the elderly, patients using any NSAID or acetylsalicylic acid concomitantly, or patients with a prior history of GI disease, such as ulceration or GI bleeding.<sup>9</sup> Additional contraindications and warnings regarding all COX-2-selective inhibitors, including celecoxib, are available on the MHRA website at <http://www.mhra.gov.uk>

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