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1 Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in [NICE's information on making decisions about your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

2 1.1 Diagnosis and assessment

3 Signs and symptoms

4 1.1.1 Suspect gout in people presenting with any of the following:

- 5 • rapid onset (often overnight) of severe pain together with redness and
- 6 swelling, in 1 or both first metatarsophalangeal (MTP) joints
- 7 • tophi.

8 1.1.2 Consider gout, but also assess the possibility of septic arthritis, calcium
9 pyrophosphate crystal deposition and inflammatory arthritis, in people
10 presenting with rapid onset (often overnight) of severe pain, redness or
11 swelling in joints other than the first MTP joints (for example midfoot,
12 ankle, knee, hand, wrist or elbow).

13 1.1.3 If septic arthritis is suspected, refer immediately according to the local
14 care pathway.

15 1.1.4 Consider chronic gouty arthritis in people presenting with chronic
16 inflammatory joint pain.

17 1.1.5 In people with suspected gout, take a detailed history and carry out a
18 physical examination to assess the signs and symptoms (see
19 [recommendations 1.1.1 and 1.1.2](#)).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on signs and symptoms of gout](#).

Full details of the evidence and the committee's discussion are in [evidence review B: what signs and symptoms indicate gout as a possible diagnosis?](#).

1 **Diagnosis**

- 2 1.1.6 Measure the serum urate level in people with suspected gout (see
3 recommendation 1.1.1) to confirm the diagnosis (serum urate level of
4 360 micromol/litre [6 mg/dl] or more). If gout is strongly suspected and the
5 serum urate level is below 360 micromol/litre (6 mg/dl) during a flare,
6 repeat the serum urate level measurement 2 to 4 weeks after the flare has
7 settled to confirm the diagnosis.
- 8 1.1.7 Consider joint aspiration and microscopy of synovial fluid if a diagnosis of
9 gout remains uncertain or unconfirmed.
- 10 1.1.8 If joint aspiration cannot be carried out or the diagnosis of gout remains
11 uncertain, consider imaging the affected joints with X-ray, ultrasound or
12 dual-energy CT.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on diagnosis](#).

Full details of the evidence and the committee's discussion are in [evidence review C: what are the most accurate and cost-effective approaches to diagnosing gout, in particular serum urate level compared with joint aspiration?](#).

13 **1.2 Information and support**

- 14 1.2.1 Provide tailored information to people with gout and their family members
15 or carers (as appropriate) at the time of diagnosis and during subsequent
16 follow-up appointments. Explain:
- 17
- the signs and symptoms of gout

- 1 • the causes of gout
- 2 • that the disease will progress without treatment because high levels of
- 3 urate in the blood will lead to the formation of new urate crystals
- 4 • any risk factors for gout they have, including genetics, excess body
- 5 weight or obesity, medicines they are taking, and comorbidities such as
- 6 chronic kidney disease (CKD) or hypertension
- 7 • how to manage gout flares and the treatment options available
- 8 • that gout is a lifelong condition that will benefit from long-term urate-
- 9 lowering therapy (ULT) to eliminate urate crystals and prevent flares,
- 10 shrink tophi and prevent long-term joint damage
- 11 • where to find other sources of information and support such as local
- 12 support groups, online forums and national charities.

13 1.2.2 Follow the recommendations in [NICE's guidelines on patient experience](#)
14 [in adult NHS services](#) and [shared decision making](#).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on information and support](#).

Full details of the evidence and the committee's discussion are in [evidence review A: patient information](#).

15 **1.3 Managing gout flares**

16 **Treatment for gout flares**

17 1.3.1 Offer a non-steroidal anti-inflammatory drug (NSAID), colchicine or a short
18 course of an oral corticosteroid for first-line treatment of a gout flare,
19 taking into account the person's comorbidities, co-prescriptions and
20 preferences.

21
22 In June 2022, this was an off-label use of oral corticosteroid. See [NICE's](#)
23 [information on prescribing medicines](#).

1 1.3.2 Consider adding a proton pump inhibitor for people with gout who are
2 taking an NSAID to treat a gout flare.

3 1.3.3 Consider an intra-articular or intramuscular corticosteroid injection to treat
4 a gout flare if NSAIDs and colchicine are contraindicated, not tolerated or
5 ineffective.

6
7 In June 2022, this was an off-label use of corticosteroid injection. See
8 [NICE's information on prescribing medicines](#).

9 1.3.4 Do not offer an interleukin-1 (IL-1) inhibitor to treat a gout flare unless
10 NSAIDs, colchicine and corticosteroids are contraindicated, not tolerated
11 or ineffective. Refer the person to a rheumatology service before
12 prescribing an IL-1 inhibitor.

13 1.3.5 Advise people with gout that applying ice packs to the affected joint (cold
14 therapy) in addition to taking prescribed medicine may help alleviate pain.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on managing gout flares](#).

Full details of the evidence and the committee's discussion are in [evidence review D: pharmacological and non-pharmacological interventions for managing gout flares](#).

15 **Follow-up after a gout flare**

16 1.3.6 Consider a follow-up appointment after a gout flare has settled to:

- 17
- 18 • measure the serum urate level
 - 19 • provide information about gout and how to self-manage and reduce the risk of future flares (see the [section on information and support](#))
 - 20 • assess lifestyle and comorbidities (including cardiovascular risk factors and CKD)
- 21

- 1 • review medications and discuss the risks and benefits of long-term
2 ULT.

3
4 For guidance on adherence to medicines, see [NICE's guideline on](#)
5 [medicines adherence](#). For guidance on investigations for CKD, see
6 [NICE's guideline on chronic kidney disease](#). For guidance on
7 cardiovascular risk factors, see [NICE's guideline on cardiovascular](#)
8 [disease](#). For guidance on shared decision making, see [NICE's](#)
9 [guideline on shared decision making](#).

For a short explanation of why the committee made this recommendation and how it might affect practice, see the [rationale and impact section on follow-up after a gout flare](#).

Full details of the evidence and the committee's discussion are in [evidence review M: follow-up for people with gout after a gout flare](#).

10 **1.4 Diet and lifestyle**

11 1.4.1 Explain to people with gout that there is not enough evidence to show that
12 any specific diet prevents flares or lowers serum urate levels. Advise them
13 to follow a healthy, balanced diet.

14 1.4.2 Advise people with gout that excess body weight, obesity or excessive
15 alcohol consumption may exacerbate gout flares and symptoms.

16
17 For guidance on maintaining a healthy weight see [NICE's guidelines on](#)
18 [preventing excess weight gain](#) and [obesity: identification, assessment and](#)
19 [management](#).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on diet and lifestyle](#).

Full details of the evidence and the committee's discussion are in [evidence review I: diet and lifestyle modifications for managing gout](#).

1 **1.5 Long-term management of gout**

2 **Management of gout with urate-lowering therapies**

3 1.5.1 Offer ULT, using a [treat-to-target strategy](#), to people with gout who have:

- 4 • multiple or troublesome flares
- 5 • CKD stages 3 to 5 (glomerular filtration rate [GFR] categories G3 to
- 6 G5)
- 7 • diuretic therapy
- 8 • tophi
- 9 • chronic gouty arthritis.

10 1.5.2 Discuss the option of ULT, using a treat-to-target strategy, with people
11 experiencing a first or subsequent gout flare who are not within the groups
12 listed in recommendation 1.5.1.

13 1.5.3 Ensure people understand that ULT is usually continued after the target
14 serum urate level is reached, and is typically a lifelong treatment.

15 1.5.4 Start ULT at least 2 to 4 weeks after a gout flare has settled. If flares are
16 more frequent, ULT can be started during a flare.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on management of gout with urate-lowering therapies](#).

Full details of the evidence and the committee's discussion are in [evidence review E: which people with gout should be offered a urate-lowering therapy?](#) and [evidence review F: timing of urate-lowering therapy in relation to a flare in people with gout](#).

1 **Treat-to-target strategy**

- 2 1.5.5 Start with a low dose of ULT and use monthly serum urate levels to guide
3 dose increases, as tolerated, until the target serum urate level is reached.

For a short explanation of why the committee made this recommendation and how it might affect practice, see the [rationale and impact section on treat-to-target strategy](#).

Full details of the evidence and the committee's discussion are in [evidence review J: treat-to-target management](#).

4 **Target serum urate level**

- 5 1.5.6 Aim for a target serum urate level below 360 micromol/litre (6 mg/dl).
- 6 1.5.7 Consider a lower target serum urate level below 300 micromol/litre
7 (5 mg/dl) for people with gout who:
- 8 • have tophi or chronic gouty arthritis
 - 9 • continue to have ongoing frequent flares despite having a serum urate
10 level below 360 micromol/litre (6 mg/dl).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on target serum urate level](#).

Full details of the evidence and the committee's discussion are in [evidence review K: best serum urate level target to use when treating-to-target in gout?](#).

11 **Urate-lowering therapies**

- 12 1.5.8 Offer either allopurinol or febuxostat as first-line treatment when starting
13 treat-to-target ULT, taking into account the person's comorbidities and
14 preferences.

1 1.5.9 Offer allopurinol as first-line treatment to people with gout who have major
2 cardiovascular disease (for example previous myocardial infarction or
3 stroke, or unstable angina).

4 1.5.10 Consider second-line treatment with allopurinol or febuxostat if the target
5 serum urate level is not reached or first-line treatment is not tolerated,
6 taking into account the person's comorbidities and preferences.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on urate-lowering therapies](#).

Full details of the evidence and the committee's discussion are in [evidence review G: urate-lowering therapies for the long-term management of gout](#).

7 **Preventing gout flares**

8 1.5.11 Discuss with the person the benefits and risks of taking medicines to
9 prevent gout flares when starting or titrating ULT.

10 1.5.12 For people who choose to have treatment to prevent flares when starting
11 or titrating ULT, offer colchicine while the target serum urate level is being
12 reached. If colchicine is contraindicated, not tolerated or ineffective,
13 consider an NSAID or a corticosteroid.

14 1.5.13 Consider adding a proton pump inhibitor for people with gout who are
15 taking an NSAID to treat a gout flare.

16 1.5.14 Do not offer an IL-1 inhibitor when starting or titrating ULT to prevent gout
17 flares unless colchicine, NSAIDs and corticosteroids are contraindicated,
18 not tolerated or ineffective. Refer the person to a rheumatology service
19 before prescribing an IL-1 inhibitor.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on preventing gout flares](#).

Full details of the evidence and the committee's discussion are in [evidence review H: colchicine, NSAIDs, corticosteroids and IL-1 inhibitors for the prevention of gout flares during the initiation or titration of urate-lowering therapy](#).

1 **Monitoring serum urate level**

- 2 1.5.15 Consider annual monitoring of serum urate level in people with gout who
3 are continuing ULT after reaching their target serum urate level.

For a short explanation of why the committee made this recommendation and how it might affect practice, see the [rationale and impact section on monitoring serum urate level](#).

Full details of the evidence and the committee's discussion are in [evidence review L: optimum frequency of monitoring](#).

4 **1.6 Referral to specialist services**

- 5 1.6.1 Consider referring a person with gout to a rheumatology service if:
- 6
- 7
- 8
- 9
- 10
- 11
- the diagnosis of gout is uncertain
 - the response to treatment has not been adequate or the treatment is not tolerated
 - treatment is contraindicated
 - they have CKD stages 3b to 5 (GFR categories G3b to G5)
 - they have had an organ transplant.

For a short explanation of why the committee made this recommendation and how it might affect practice, see the [rationale and impact section on referral to specialist services](#).

Full details of the evidence and the committee's discussion are in [evidence review N: referral to specialist services](#) and [evidence review O: surgical excision of tophi](#).

1 Recommendations for research

2 The guideline committee has made the following recommendations for research.

3 Key recommendations for research

4 1 Pharmacological management of gout flares

5 In people with gout (including people with gout and chronic kidney disease [CKD]),
6 what is the clinical and cost effectiveness of colchicine compared with corticosteroids
7 for managing gout flares?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on managing gout flares](#).

Full details of the evidence and the committee's discussion are in [evidence review D: pharmacological and non-pharmacological interventions for managing gout flares](#).

8 2 Preventing gout flares

9 In people with gout (including people with gout and CKD), what is the clinical and
10 cost effectiveness of non-steroidal anti-inflammatory drugs or corticosteroids for
11 preventing gout flares when starting or titrating urate-lowering therapy (ULT)?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on preventing gout flares](#).

Full details of the evidence and the committee's discussion are in [evidence review H: colchicine, NSAIDs, corticosteroids and IL-1 inhibitors for the prevention of gout flares during the initiation or titration of urate-lowering therapy](#).

12 3 Target serum urate level

13 What is the best target serum urate level when using a treat-to-target strategy to
14 treat gout, including in people with CKD?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on target serum urate level](#).

Full details of the evidence and the committee's discussion are in [evidence review K: best serum urate level target to use when treating-to-target in gout?](#).

1 **4 Follow-up after a gout flare**

- 2 What is the clinical and cost effectiveness and patient acceptability of different
3 approaches to follow-up, including provision of patient information and managing
4 gout flares?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on follow-up after a gout flare](#).

Full details of the evidence and the committee's discussion are in [evidence review M: follow-up for people with gout after a gout flare](#).

5 **5 Monitoring gout**

- 6 In people with gout (including people with gout and CKD), what is the optimum
7 frequency of serum urate level monitoring when target serum urate level is reached?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on monitoring serum urate level](#).

Full details of the evidence and the committee's discussion are in [evidence review L: optimum frequency of monitoring](#).

8 **Other recommendations for research**

9 **When to start urate-lowering therapy**

- 10 What is the clinical and cost effectiveness of starting ULT during a flare compared
11 with starting ULT once a flare has settled?

For a short explanation of why the committee made this recommendation for research, see the [rationale section on management of gout with urate-lowering therapies](#).

Full details of the evidence and the committee's discussion are in [evidence review F: timing of urate-lowering therapy in relation to a flare, in people with gout](#).

1 **Rationale and impact**

2 **Signs and symptoms of gout**

3 [Recommendations 1.1.1 to 1.1.5](#)

4 **Why the committee made the recommendations**

5 Although evidence is limited, the signs and symptoms of gout reported in studies are
6 generally in line with the committee's experience of the signs and symptoms seen in
7 clinical practice. The committee agreed that if a person has only 1 sign or symptom
8 this is not enough to diagnose gout, but gout should be suspected if they have a
9 combination of signs and symptoms.

10 The committee agreed that gout should be strongly suspected if a person presents
11 with rapid onset pain together with redness and swelling in 1 or both first
12 metatarsophalangeal (MTP) joints, especially if symptom onset occurs overnight.
13 The presence of tophi suggests longstanding, untreated gout.

14 Signs and symptoms in other joints (such as the knee, wrist, ankle, midfoot joints,
15 finger interphalangeal joints or elbow) may be caused by gout or another condition
16 such as septic arthritis, calcium pyrophosphate crystal deposition or inflammatory
17 arthritis. The committee noted that when other non-MTP joints are affected, other
18 diagnoses should be considered first.

19 **How the recommendations might affect practice**

20 The recommendations may be useful for non-specialist clinicians, but are not
21 expected to lead to significant changes in practice.

22 [Return to recommendations](#)

1 **Diagnosis**

2 [Recommendations 1.1.6 to 1.1.8](#)

3 **Why the committee made the recommendations**

4 There is no clinical evidence on diagnosing gout by taking a history, doing a physical
5 examination or measuring serum urate level. There is evidence on imaging
6 techniques, including ultrasonography, dual-energy CT (DECT) and plain
7 radiography. The committee based their recommendations on the available evidence
8 for diagnosing gout and their experience of current practice.

9 In clinical practice, gout is typically diagnosed by a GP taking a detailed history,
10 doing a physical examination and measuring serum urate levels with a blood test.
11 Most people with gout have hyperuricaemia (serum urate level of 360 micromol/litre
12 [6 mg/dl] or more) but many people with hyperuricaemia do not have gout. If the
13 serum urate level is below 360 micromol/litre but gout is strongly suspected, an
14 additional serum urate level measurement should be done 2 to 4 weeks after the
15 acute flare has settled. This is because serum urate levels can be lower when a
16 person is experiencing a gout flare.

17 When diagnosis is uncertain, joint aspiration and microscopy of synovial fluid can be
18 used to diagnose gout. This is usually done in secondary care. The committee noted
19 that joint aspiration is the 'gold standard' test to diagnose gout when the diagnosis
20 remains uncertain. If the affected joint is small, it may be difficult or impossible to
21 aspirate the joint. When joint aspiration cannot be done or diagnosis of gout remains
22 uncertain, plain X-ray imaging can be used to detect any long-term damage to the
23 affected joints. The committee noted that ultrasound or DECT may also be used to
24 diagnose gout, although DECT is not widely available in the UK. Evidence on plain
25 X-ray and DECT is limited. There is evidence on ultrasonography for diagnosing
26 gout, but the committee found it difficult to interpret its overall accuracy because so
27 many different signs associated with gout were reported. However, the committee
28 agreed ultrasound is more sensitive than plain X-ray and is commonly used to
29 confirm or refute the diagnosis.

1 **How the recommendations might affect practice**

2 The recommendations generally reflect current practice and are not likely to result in
3 changes.

4 [Return to recommendations](#)

5 **Information and support**

6 [Recommendations 1.2.1 and 1.2.2](#)

7 **Why the committee made the recommendations**

8 There was moderate- to high-quality evidence for this topic, which included findings
9 on:

- 10 • patient knowledge of the causes of gout and of dietary advice
- 11 • long-term impact of gout
- 12 • tailored information for women
- 13 • online sources of information
- 14 • information or education preferences.

15 The committee agreed that the evidence represents the information that people with
16 gout need. They thought that information provided at the time of diagnosis and at
17 follow-up appointments should be tailored to the needs of the person with gout and
18 the stage of their care pathway. However, there are many incorrect beliefs about the
19 causes and treatment of gout, and people who have gout. The committee therefore
20 included information on signs and symptoms and the risk factors for gout in the
21 recommendations. They also made it clear that people should know that diet and
22 lifestyle changes are not enough and that long-term ULT is usually needed for this
23 long-term condition.

24 **How the recommendations might affect practice**

25 The recommendations should improve the information provided by healthcare
26 practitioners to people with gout. They will not impact on the current services
27 provided because information will be given at the time of diagnosis or at follow-up
28 appointments already scheduled.

1 [Return to recommendations](#)

2 **Managing gout flares**

3 [Recommendations 1.3.1 to 1.3.5](#)

4 **Why the committee made the recommendations**

5 The evidence shows no difference between non-steroidal anti-inflammatory drugs
6 (NSAIDs), colchicine and corticosteroids for most outcomes, including pain and joint
7 tenderness or swelling. The committee noted that in current practice an NSAID or
8 colchicine would usually be prescribed first before corticosteroids and agreed that
9 there is no strong evidence showing that any 1 treatment is more effective when
10 used before any other. They concluded that the current practice of offering either an
11 NSAID, colchicine or a corticosteroid, based on comorbidities, other medications
12 being taken and the person's preferences, should be continued. The committee
13 noted many people have contraindications to NSAIDs, for example people with CKD
14 or cardiovascular disease. There is no evidence on whether a corticosteroid or
15 colchicine is more effective or better tolerated in these groups. The committee
16 therefore decided to make a [recommendation for research on pharmacological
17 management of gout flares](#).

18 The committee agreed that intra-articular and intramuscular corticosteroids are
19 commonly used in practice and agreed they should be considered if NSAIDs and
20 colchicine are contraindicated, not tolerated or ineffective.

21 IL-1 inhibitors show a clinical benefit compared with corticosteroids for pain and
22 quality of life outcomes. However, IL-1 inhibitors are very expensive and other
23 medicines are adequate alternatives. The committee concluded that IL-1 inhibitors
24 would not be a cost-effective use of NHS resources for most people with gout flares.
25 If response to treatment has been inadequate, or NSAIDs, colchicine and
26 corticosteroids are contraindicated or not tolerated, the person should be referred to
27 rheumatology services before prescribing an IL-1 inhibitor.

28 Evidence from 1 small study shows that ice therapy reduces pain. Although the
29 evidence is limited, the committee decided to recommend ice therapy as an adjunct

1 to pharmacological treatments because in their experience this helps ease pain and
2 inflammation.

3 **How the recommendations might affect practice**

4 The recommendations generally reflect current practice and are not likely to result in
5 changes.

6 [Return to recommendations](#)

7 **Follow-up after a gout flare**

8 [Recommendation 1.3.6](#)

9 **Why the committee made the recommendation**

10 In current practice, little or no follow-up is offered to people after a gout flare. The
11 committee noted that a follow-up appointment after a gout flare provides an
12 opportunity to review medication and discuss the option of long-term ULT. The
13 healthcare practitioner can also provide information about gout and how to reduce
14 the risk of future flares, and assess any comorbidities and lifestyle factors that may
15 impact how the person self-manages their gout. Based on their clinical experience,
16 the committee agreed that follow-up appointments after a gout flare would allow
17 people to have a better health-related quality of life in the long term. This is because
18 they will likely have fewer subsequent gout flares as a result of starting ULT sooner.
19 People will also be better equipped to manage their gout flares and have more
20 information on how to minimise their risk of recurrent flares. The committee thought
21 that the benefits of follow-up appointments would outweigh the costs and that it is
22 likely to be a cost-effective strategy, but there is not enough evidence to confirm this.

23 There is no evidence on which follow-up strategies are most effective, including the
24 frequency and duration of follow-up, and which healthcare professionals should lead
25 the follow-up and in what settings. The committee made a [recommendation for](#)
26 [research on follow-up after a gout flare](#).

27 **How the recommendation might affect practice**

28 This recommendation is likely to be a change in practice for many and will affect a
29 large proportion of people with gout. Follow-up appointments after a gout flare

1 provide an opportunity for people to start ULT and reduce gout flares. Therefore, this
2 recommendation is expected to be cost saving or at least cost neutral.

3 [Return to recommendation](#)

4 **Diet and lifestyle**

5 [Recommendations 1.4.1 and 1.4.2](#)

6 **Why the committee made the recommendations**

7 The committee discussed the diverse dietary interventions for gout, which included
8 dietary advice, cherry extract and vitamin C. They noted that all studies had small
9 numbers of participants and short follow-up periods. The committee agreed it would
10 be difficult to implement dietary interventions in practice and concluded that there is
11 not enough strong evidence to support any specific diet. They also wanted to avoid
12 giving conflicting advice because many people with gout have comorbidities and may
13 have already had dietary advice for these conditions.

14 The committee acknowledged that people with gout often seek dietary advice. They
15 noted that in current practice the healthcare professional and the person with gout
16 often discuss diet and lifestyle. The patient often starts the discussion because they
17 believe there is a link between diet and gout. The committee agreed that people with
18 gout should be advised that there is not enough evidence to support any specific diet
19 to manage gout and they should follow a healthy, balanced diet. People should also
20 be advised that excess weight, obesity or excessive alcohol consumption may
21 exacerbate gout flares.

22 **How the recommendations might affect practice**

23 The recommendations generally reflect current practice and are not likely to result in
24 changes.

25 [Return to recommendations](#)

26 **Management of gout with urate-lowering therapies**

27 [Recommendations 1.5.1 to 1.5.4](#)

1 **Why the committee made the recommendations**

2 The committee agreed that evidence on which people should be selected for long-
3 term management of gout with ULT is limited because there are only 3 studies of
4 moderate to high quality. The evidence shows that people with chronic renal failure
5 and people using diuretics are more likely to have gout flares, and that people with
6 tophi and swollen or tender joints have more disability through damage to joints.

7 Gout is characterised by severe pain, therefore pain reduction is an important
8 outcome of treatment. People with gout experience the most pain during flares.
9 Reducing the frequency of flares along with reducing joint swelling, inflammation,
10 and joint tenderness, can reduce pain and improve the person's comfort. The
11 committee reinforced the benefits of ULT for reducing serum urate levels and
12 reducing gout flares in the long term. The committee noted that opportunities to offer
13 ULTs to people with gout early in their disease may be missed, but acknowledged
14 that there was a lack of evidence for this. Therefore, the committee recommended
15 discussing and considering the option of ULT with all people having a first or
16 subsequent gout flare. Once the target serum urate level is reached people with gout
17 will usually remain on ULT. The committee agreed that the importance of long-term
18 treatment should be discussed with the patient. The committee highlighted that ULT
19 use in current practice varies and there is low uptake of ULTs.

20 The recommendation is likely to increase the number of people taking ULT but the
21 cost of treatment is anticipated to be outweighed by cost savings from the flares
22 avoided. The committee noted allopurinol and febuxostat were found to be cost
23 effective compared with no treatment (see [evidence review G](#)) and a treat-to-target
24 strategy has been shown to be cost effective (see [evidence review J](#)). Therefore,
25 offering people ULT was highly likely to be cost effective compared with no
26 treatment.

27 The committee agreed that evidence on when to start ULT is very limited because
28 there are only 2 small studies and both included people with a current gout flare. The
29 committee noted that in current practice ULTs are started 2 to 4 weeks after a flare
30 has settled to prevent exacerbating the flare. This is because in previous practice
31 people started treatment with 300 mg allopurinol, which can exacerbate a flare more
32 than starting treatment with 100 mg and up-titrating. The committee suggested that

1 exacerbation of flares may be less of a concern when starting ULT at a low dose and
2 increasing the dose gradually. The committee discussed that starting ULT 2 to
3 4 weeks after a flare has settled means that people who have very frequent flares
4 may not have a sufficiently long flare-free period in which to start ULT. However, the
5 committee also noted that the person may be in too much pain during a gout flare to
6 understand information about ULTs and the importance of treatment adherence.

7 Based on their experience, the committee recommended that people with gout who
8 choose ULT should ideally start treatment after a flare but people who have frequent
9 flares can start during a gout flare. Because the evidence is very limited the
10 committee decided to make a [recommendation for research on when to start ULT](#).

11 **How the recommendations might affect practice**

12 The recommendations for ULT are likely to result in a change in clinical practice and
13 have a significant resource impact given the prevalence of gout and the current
14 limited uptake of ULTs. Fewer flares observed from more people starting ULT will
15 likely result in long-term cost savings. The recommendation on when to start ULT
16 generally reflects current practice and is unlikely to result in change.

17 [Return to recommendations](#)

18 **Treat-to-target strategy**

19 [Recommendation 1.5.5](#)

20 **Why the committee made the recommendation**

21 Two randomised controlled trials evaluated treat-to-target strategies using ULTs.
22 Both studies compared ULT with usual care, which was any available option chosen
23 by the healthcare provider, such as continuing the current dose of allopurinol or
24 febuxostat, or no treatment.

25 The evidence shows that a treat-to-target strategy increases the frequency of flares
26 at 1 year compared with usual care, but reduces frequency of flares at 2 years. The
27 committee agreed that starting ULT and increasing the dose could set off a flare so
28 the number of flares might initially increase in the first year but decrease by the

1 second year when the dose is stabilised. The high use of febuxostat in 1 study was
2 also noted and was thought to not reflect current practice.

3 Health economic analysis shows that a treat-to-target management strategy is cost
4 effective and therefore the committee recommended it.

5 Overall, the committee agreed that the evidence supports a treat-to-target strategy
6 based on the benefits shown for quality of life outcomes, frequency of flares in the
7 longer term, and the cost-effectiveness results.

8 **How the recommendation might affect practice**

9 The number of people with gout who have a treat-to-target strategy varies in current
10 practice. The committee acknowledged that care is sub-optimal and people with gout
11 are more likely to have usual care. The recommendation will likely increase the
12 number of people having a treat-to-target strategy and therefore change practice.

13 [Return to recommendation](#)

14 **Target serum urate level**

15 [Recommendations 1.5.6 and 1.5.7](#)

16 **Why the committee made the recommendations**

17 There is no evidence on the best target serum urate level when using a treat-to-
18 target strategy.

19 The committee discussed the clinical benefits and costs associated with target
20 serum urate levels of below 300 micromol/litre [5 mg/dl] and below 360 micromol/litre
21 [6 mg/dl]. They agreed that reaching a serum urate level below 360 micromol/litre is
22 more achievable for people with gout. They also agreed that it is unknown whether a
23 lower target is more beneficial, although clinical improvement may be seen more
24 quickly after achieving a lower target. The committee agreed a target of below
25 360 micromol/litre reflected current practice within primary care. Achieving a target
26 serum urate level below 360 micromol/litre would also have a lower cost than
27 achieving a target serum urate level below 300 micromol/litre because reaching a
28 lower target is likely to need more appointments and higher doses.

1 The committee noted that a target serum urate level of below 300 micromol/litre
2 would be more appropriate for people with more severe gout because they have a
3 higher level of crystal deposition, and response to treatment takes longer. A lower
4 target level will help crystals dissolve more quickly and support clinical improvement.
5 This includes people still having gout flares despite reaching a target serum urate
6 level below 360 micromol/litre or people who have tophi or chronic gouty arthritis.

7 The committee discussed that gout is frequently undertreated and this may be
8 because of uncertainty about the optimum target serum urate level. They noted the
9 different levels recommended by the British Society for Rheumatology and European
10 League Against Rheumatism. The committee agreed further research in this area is
11 needed and made a [recommendation for research on target serum urate level](#).

12 **How the recommendations might affect practice**

13 For people having ULT, usual practice is to reach a target serum urate level below
14 360 micromol/litre, therefore the recommendations are not likely to result in changes.

15 [Return to recommendations](#)

16 **Urate-lowering therapies**

17 [Recommendations 1.5.8 to 1.5.10](#)

18 **Why the committee made the recommendations**

19 There is evidence on ULTs from 17 randomised controlled trials, including on first-
20 and second-line treatment, CKD status, and allopurinol or febuxostat dosage. The
21 evidence mainly shows that febuxostat and allopurinol reduce serum urate levels to
22 target compared with placebo. For first-line treatment, febuxostat reduces the
23 frequency of flares compared with allopurinol and reduces serum urate levels
24 compared with allopurinol and placebo. The committee noted that important
25 outcomes are frequency of flares and cardiovascular adverse events, however not all
26 trials report these outcomes. Allopurinol has fewer adverse events such as
27 withdrawal and gastrointestinal issues compared with placebo.

28 A costing analysis comparing the cost of allopurinol and febuxostat for 1 year of
29 treatment with a treat-to-target strategy shows that there are minimal cost

1 differences between allopurinol and febuxostat. The committee thought the evidence
2 showed little difference between allopurinol and febuxostat as first-line treatments for
3 gout so they recommended both drugs. The committee thought that shared decision
4 making is important when choosing treatment and that people with gout should be
5 made aware of the differences between drugs. Febuxostat is easier to titrate than
6 allopurinol because there are only 2 available doses and it is only taken once a day.
7 The evidence shows that the target serum urate level is more frequently achieved
8 with febuxostat than allopurinol, however, it also causes more flares and therefore
9 more people would also need treatment to prevent flares. Most of the trials
10 compared febuxostat with sub-optimal doses of allopurinol (up to 300 mg).
11 Allopurinol doses up to 300 mg are often too low to achieve the target serum urate
12 level and many people with gout would need higher doses to manage their condition.

13 The committee recommended that people with major cardiovascular disease should
14 have allopurinol as first-line treatment because of the [Medicines and Healthcare](#)
15 [products Regulatory Agency \(MHRA\) guidance on febuxostat](#) within this population.
16 They noted that this recommendation may change in the future.

17 There were only 2 studies on second-line treatment. The evidence does not strongly
18 favour 1 treatment, so the committee recommended that both allopurinol and
19 febuxostat could be considered as second-line treatments. This recommendation is
20 dependent on target serum urate level not being reached or when first-line treatment
21 is not tolerated. The committee also noted the importance of taking into account
22 comorbidities and patient preferences when choosing a second-line treatment.

23 An increase in the number of people taking ULT is likely to lead to an increase in
24 monitoring serum urate levels, using prophylaxis and treating flares. However a
25 treat-to-target ULT strategy has been shown to be cost effective, so offering people
26 ULT is highly likely to be cost effective compared with offering no treatment.

27 **How the recommendations might affect practice**

28 The recommendations are a change in practice because currently people have
29 allopurinol as first-line ULT. These recommendations are not expected to result in a
30 substantial resource impact because the cost of allopurinol and febuxostat are
31 similar.

1 [Return to recommendations](#)

2 **Preventing gout flares**

3 [Recommendations 1.5.11 to 1.5.14](#)

4 **Why the committee made the recommendations**

5 The committee noted that the evidence is limited as there are only 3 studies and they
6 all compared colchicine with an IL-1 inhibitor, placebo and no treatment. The
7 evidence shows that colchicine reduces the frequency of gout flares when starting
8 ULT compared with placebo and no treatment, but has some gastrointestinal
9 adverse events compared with placebo. The committee discussed that in current
10 practice, colchicine and NSAIDs are most frequently offered to people with gout to
11 prevent flares. There is no evidence supporting the use of NSAIDs, so the committee
12 agreed colchicine should be offered to people with gout during the start and titration
13 of ULT to prevent gout flares. Although there is no evidence on preventing flares
14 during the titration of ULT, the committee agreed that colchicine can also be used to
15 reduce the risk of flares after up-titration of ULT.

16 The committee noted that colchicine may not be appropriate for some people with
17 gout because of tolerability, comorbidities such as CKD or prescriptions such as
18 statins. The committee agreed that an NSAID or corticosteroid should be considered
19 for people when colchicine is contraindicated, ineffective or not tolerated. Although
20 no evidence was found for either NSAIDs or corticosteroids, the committee agreed
21 an alternative treatment is needed to prevent flares, which can cause severe pain.

22 The committee noted their experience that NSAIDs are well tolerated by people with
23 gout. Because no evidence was found for NSAIDs or corticosteroids the committee
24 also decided to make a [recommendation for research on preventing gout flares](#).

25 Evidence from 1 study shows that canakinumab reduces the frequency of flares,
26 however the committee noted that IL-1 inhibitors are rarely prescribed to people with
27 gout. Use of IL-1 inhibitors requires close monitoring and they are currently only
28 prescribed in secondary care. The committee concluded there was insufficient
29 evidence to recommend IL-1 inhibitors over other routine treatments currently used
30 within clinical practice unless colchicine, NSAIDs and corticosteroids are
31 contraindicated, not tolerated or ineffective.

1 **How the recommendations might affect practice**

2 The recommendations generally reflect current practice and are not likely to result in
3 changes.

4 [Return to recommendations](#)

5 **Monitoring serum urate level**

6 [Recommendation 1.5.15](#)

7 **Why the committee made the recommendation**

8 There was no evidence on the optimum frequency of monitoring serum urate level in
9 people having ULT.

10 The committee agreed that one reason to continue monitoring a person's serum
11 urate level when the target serum urate level has been reached is to prevent it
12 increasing, which can occur with age or because of changes in lifestyle,
13 comorbidities or medications. The committee noted that people may stop treatment if
14 they feel better, but continuing ULT as prescribed is important because serum urate
15 levels can increase quickly once ULT is stopped. The committee discussed that in
16 current practice the frequency of serum urate level monitoring is highly variable.
17 Patients usually make appointments with their GP in response to gout flares and a
18 health professional would measure their serum urate level in that appointment.
19 However, the committee agreed this was not sufficient as the goal of monitoring is to
20 prevent gout flares rather than manage them. Patient support and monitoring is
21 usually based on individual factors after discussion with the patient.

22 The committee highlighted the importance of monitoring and noted that without
23 monitoring, people may have poor medication adherence which increases serum
24 urate levels. This can lead to poorer long-term outcomes for people and impact their
25 health-related quality of life, and may also be associated with additional costs to the
26 NHS.

27 There was no available evidence to estimate how many flares would be avoided with
28 annual monitoring. The committee noted that there may be better medication

1 adherence with annual monitoring and that more people might remain at their target
2 serum urate level.

3 Overall, the committee agreed that the benefits of annual monitoring are likely to be
4 a cost-effective strategy and therefore they made a recommendation to consider it.
5 The committee also made a [recommendation for research on monitoring gout](#).

6 **How the recommendation might affect practice**

7 In people with gout who are having ULT, annual monitoring once target serum urate
8 levels are reached may result in a change in clinical practice.

9 [Return to recommendation](#)

10 **Referral to specialist services**

11 [Recommendation 1.6.1](#)

12 **Why the committee made the recommendation**

13 **Referral to specialist gout services**

14 No relevant evidence on referral to specialist gout services was identified. The
15 committee were not aware of any published referral criteria for gout. They
16 acknowledged that referral to a specialist was likely based on the complexity of care
17 needed by the patient, and the gout knowledge and skillset of the GP caring for
18 them. The committee noted that the diagnosis and treatment of people with gout is
19 mainly managed within primary care.

20 The committee discussed when referral to a rheumatologist would be considered
21 and made recommendations based on their experience. This included:

- 22
- 23 • when diagnosis is uncertain and joint aspiration or imaging is needed, because
24 this would usually be done in secondary care
 - 25 • if the person cannot tolerate medication, or has any allergic reaction or difficulty
26 taking allopurinol or febuxostat
 - 27 • when response to treatment has been inadequate, including difficulty in controlling
gout symptoms with ULT.

1 The committee acknowledged that a specialist would prefer to examine people with
2 gout who have comorbidities and complex needs and have a face-to-face
3 consultation instead of relying on their history and test results. Treating gout in
4 people with CKD can be challenging, particularly in people with severe CKD
5 (stages 4 to 5 or glomerular filtration rate [GFR] categories G4 to G5). However, the
6 committee also recognised that stage 3 (GFR category G3) CKD comprises a wide
7 clinical spectrum and that some patients with stage 3 (GFR category G3) CKD and
8 gout may also need referral, often because of difficulties in treating gout in this
9 population. The committee discussed that including people with stage 3 (GFR
10 category G3) CKD within the recommendation could increase the numbers of people
11 being referred, because this represents a large population. They agreed that people
12 with CKD stage 3b (GFR category G3b) are more likely to need specialist input to
13 achieve optimal management of their gout.

14 People with gout who have had an organ transplant will usually be referred to a
15 specialist because treatments for transplant rejection may exacerbate
16 hyperuricaemia and may interact with treatments for gout and renal dysfunction.

17 **Referral for surgical removal of tophi (no recommendation)**

18 There is no relevant evidence on surgical removal of tophi. The committee discussed
19 that tophi develop very slowly over years and typically occur in the toes, fingers,
20 elbows or attachment of the Achilles tendon to the heel bone. The committee agreed
21 that surgical removal of tophi is an uncommon procedure, and surgery is only offered
22 to people whose gout is impacting their quality of life because of pain or restriction in
23 movement.

24 The committee discussed that tophi are seen in people with uncontrolled gout and
25 persistent high urate levels, and they tend to develop in older people. They agreed
26 that with targeted treatment to reduce serum urate levels, tophi will dissolve or
27 reduce over time, and in their experience referral to orthopaedic surgery would rarely
28 be needed.

29 The committee agreed not to make a recommendation because any decision to refer
30 for consideration for surgery would be made on an individual basis.

1 Doing research in this area would be difficult because of the limited number of
2 people that have tophi removed. The committee concluded that research is not
3 feasible and is also low priority given the few people who have this surgical
4 procedure.

5 **How the recommendation might affect practice**

6 Referral to rheumatology services is variable within current practice. The
7 recommendation may lead to an increase in referrals to specialist services.

8 [Return to recommendation](#)

9 **Context**

10 Gout is a type of arthritis caused by monosodium urate crystals forming inside and
11 around joints, resulting in sudden flares of severe pain, heat and swelling. Any joint
12 can be affected but gout is most common in distal joints, such as big toes, knees and
13 ankles, and finger joints.

14 Between 2 and 3 in every 100 people in the UK have gout. It usually occurs in men
15 over 30 and women after menopause, and is more common in men than women.
16 Long-term complications of gout include joint damage and renal stones. Almost 25%
17 of people with gout have chronic kidney disease (CKD) stages 3 to 5 (glomerular
18 filtration rate [GFR] categories G3 to G5).

19 Gout is most often managed in primary care without specialist rheumatological input.
20 Flares are usually treated with non-steroidal anti-inflammatory drugs, colchicine or
21 corticosteroids. However, most people have further flares. They can be prevented by
22 a combination of lifestyle modification (such as losing weight) and medicines to
23 reduce urate levels (such as allopurinol or febuxostat).

24 However, only one-third of people with gout have these medicines and they are used
25 effectively (lowering serum urate level to the target) by only one-third of people who
26 take them. People with CKD also often have contraindications to medicines used to
27 manage gout.

28 Diagnosing gout and differentiating gout from other types of arthritis is not always
29 straightforward and the best method of diagnosis is often unclear. There is a need to

- 1 improve the diagnosis and management of gout and the quality of life for people with
- 2 gout.

3 **Finding more information and committee details**

- 4 To find NICE guidance on related topics, including guidance in development, see the
- 5 [NICE webpage on arthritis](#).

- 6 For details of the guideline committee see the [committee member list](#).

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