NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

# Resource impact report:
## Gout: diagnosis and management (NG219)

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## Summary

This report focuses on the recommendations from NICE's guideline on Gout: diagnosis and management that we think will have the greatest resource impact (cost or saving) nationally (for England) and will need the most additional resources to implement or potentially generate the biggest savings. They are:

- treat to target urate lowering therapy (ULT) (recommendations 1.5.1, 1.5.8-1.5.10)
- treating gout flares with a nonsteroidal anti-inflammatory drug (NSAID), colchicine or an oral corticosteroid (recommendation 1.3.1)
- annual monitoring of serum urate level (recommendation 1.5.14).

**Financial impact**

The estimated financial impact of implementing this guideline for England in the next 5 years is a cost of around £3.2m in 2022/23 rising to a cost of around £10.2m in 2026/27 as set out in table 1 below. These costs relate to the impact on prescribing budgets only and do not include any financial impact relating to any increase or decrease in consultations and monitoring appointments. Based on the assumptions used for England, this is equivalent to a cost of around £569,000 and £342,000 in 2026/27 for Wales and Northern Ireland, respectively. The resource impacts result from:

- an increase in primary care prescribing budgets for ULT that will have cash impact on Integrated Care Systems (ICS) budgets
- a decrease in primary care prescribing budgets for manging gout flares that will have cash impact on ICS budgets
- an increase in primary care consultations for ULT (and a small increase for those people that don't have ULT) that will have a capacity impact on primary care providers
- a decrease in primary care consultations for gout flares that will have a capacity impact on primary care providers

- an increase in the number of annual monitoring appointments for people with gout that will have a capacity impact on primary care providers.

The estimated financial impact of implementing this guideline for an average GP practice (10,000 people) is a cost of around £1,800 and for an average 100,000 population is around £18,100.

**Table 1 Estimated annual cost of implementing the guideline for the population of England**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| **Implementation rate of guideline (%)** | 20% | 40% | 60% | 80% | 100% |
| **Costs for recommendations 1.5.1, 1.5.8-1.5.10 (£000) (cash)** | £3,243 | £5,028 | £6,813 | £8,598 | £10,383 |
| **Saving for recommendation 1.3.1 (£000) (cash)** | -£44 | -£88 | -£132 | -£176 | -£220 |
| **Total cash cost (£000)** | £3,199 | £4,940 | £6,681 | £8,422 | £10,163 |
| **Total resource impact for England (£000)** | **£3,199** | **£4,940** | **£6,681** | **£8,422** | **£10,163** |

**Table 2 Estimated annual cost of implementing the guideline per 100,000 population**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| **Implementation rate of guideline (%)** | 20% | 40% | 60% | 80% | 100% |
| **Total cash cost (£000)** | £6 | £9 | £12 | £15 | £18 |
| **Total resource impact per 100,000 population (£000)** | **£6** | **£9** | **£12** | **£15** | **£18** |

There will be an impact on primary care appointments, a pressure on GP practice nurses (or other healthcare professionals) for additional serum urate level monitoring for annual monitoring and the treat to target strategy. It is estimated that 80 additional appointments would be needed each year for an average GP practice (10,000 population). As the number of gout flares decreases there will also be primary care appointments avoided, around 57

appointments avoided per year for an average GP practice. This leads to a net increase of 23 primary care appointments as shown in table 3.

**Table 3 Impact on primary care consultations per GP practice (assuming 10,000 people)**

| | Current practice | Change in 2022/23 | Change in 2023/24 | Change in 2024/25 | Change in 2025/26 | Change in 2026/27 |
|---|---|---|---|---|---|---|
| **Number of primary care consultations for urate lowering therapy (ULT)** | 93 | 14 | 35 | 45 | 55 | 65 |
| **Number of primary care consultations for people not having ULT** | 28 | 3 | 6 | 9 | 12 | 15 |
| **Number of primary care consultations for gout flares** | 335 | -11 | -23 | -34 | -46 | -57 |
| **Total capacity impact** | **456** | **5** | **18** | **20** | **21** | **23** |

This report is supported by a resource impact template which may be used to calculate the resource impact of implementing the guidance by amending the variables.

Implementing the guideline may result in the following additional costs:

- prescribing costs for ULT

Implementing NICE's guideline may result in the following benefits and savings:

- a reduction in treatment costs for people with gout flares
- improved quality of life for people with gout due to lower urate levels.

Gout diagnosis and management services are commissioned by integrated care systems. Providers are primary care providers and NHS Hospital Trusts.

# 1 Introduction

1.1 The guideline offers evidence-based advice on the diagnosis and management of gout.

1.2 This report discusses the resource impact of implementing our guideline on Gout: diagnosis and management in England. It aims to help organisations plan for the financial implications of implementing the NICE guideline.

1.3 A resource impact template accompanies this report to help with assessing the resource impact at a local level in England, Wales, or Northern Ireland.

1.4 We have considered direct costs and savings to the NHS (and local authorities if applicable) and not those for the individual, the private sector, or the not-for-profit sector. Any cost savings arising from a change in practice have been offset against the cost of implementing the change.

1.5 Gout diagnosis and management services are commissioned by integrated care systems. Providers are primary care providers and NHS Hospital Trusts.

# 2 Background

2.1 Gout is a type of arthritis caused by monosodium urate crystals forming inside and around joints, resulting in sudden flares of severe pain, heat and swelling.

2.2 Gout is a relatively common condition, around 2.49% of people in England (around 1.4 million) have gout (Kuo et al 2015). This is equivalent to 2,500 people per 100,000 population. However, only one-third of people with gout (around 900 people per 100,000 population) have appropriate medicines to treat gout (Kuo et al 2015) and these are used effectively (lowering serum urate level to

the target) by one-third of people (around 300 people per 100,000 population) who take them.

# 3 Significant resource impact recommendations

There are 6 guideline recommendations that are likely to lead to a significant resource impact when implemented. Four of these are considered in section 3.1, one of them is considered separately in section 3.2 and one recommendation is considered in section 3.3.

## 3.1 For all people experiencing a first or subsequent gout flare, discuss the option of treat-to-target urate lowering therapy (ULT) (recommendations 1.5.1, 1.5.8-1.5.10)

### Background

3.1.1 ULT is used to reduce serum urate levels, which reduces flares. The committee recommended discussing and considering the option of ULT with all people having a first or subsequent flare as currently this is not always happening. Once the target serum urate level is reached, people with gout will remain on ULT.

### Assumptions made

3.1.2 It is estimated that the number of people with gout who consult a healthcare professional is currently around 680,000.

3.1.3 It is estimated that 77% of people with gout who consult healthcare professionals will have ULT, currently around 520,000 people in England, or around 930 people per 100,000 population, based on Doherty et al. 2018.

3.1.4 Expert clinical opinion is that of the 520,000 people who have ULT 86%, around 450,000 people in England, or around 800 people per 100,000 population currently receive allopurinol and 14%, around 73,000 people in England, or around 130 people per 100,000 population currently receive febuxostat.

3.1.5 Assumptions on the dosing and number of appointments for people receiving both allopurinol and febuxostat are taken from the FAST trial (Mackenzie et al, 2020) and can be found in the resource impact template.

3.1.6 In current practice it is estimated that 22% of people receiving ULT, around 115,000 people in England, or around 200 people per 100,000 population, will have a urate level below 360 µmol per litre. 78% of people receiving ULT, around 410,000 people in England, or around 720 people per 100,000 population, are not achieving a urate level below 360 µmol per litre (Doherty et al. 2018).

3.1.7 It is estimated that the number of people with gout who consult a healthcare professional will increase to around 1.1 million in future practice. Of these, around 77% (810,000 people) will receive ULT.

3.1.8 In future practice it is estimated that 84% of people, around 680,000 people in England, or around 1,200 people per 100,000 population, will have a urate level below to 360 µmol per litre. 16% of people, around 130,000 people in England, or around 230 people per 100,000 population, are not expected to achieve a urate level below 360 µmol per litre (Doherty et al. 2018).

3.1.9 The current practice uptake of allopurinol is based on the usual care arm of Doherty et al. 2018. The future practice uptake of allopurinol is based on the treat to target nurse led intervention from Doherty et al. 2018.

3.1.10 The uptake of febuxostat is based on clinical expert opinion. Clinical expert opinion is that most people who take febuxostat would achieve the ULT target without needing to increase the dose.

3.1.11 It is assumed in the template that accompanies this report that people with gout have appointments to manage their ULT treat to target strategy with a GP practice nurse.

**Costs**

3.1.12 Clinical expert opinion is that there will be increased drug costs for allopurinol, as more people require higher doses of ULT to achieve the target serum urate level.

3.1.13 There is anticipated to a capacity impact for the additional practice nurse (or other healthcare professional) appointments required for ULT lowering therapy (and a small increase for those people that don't have ULT). The average GP practice (around 10,000 people) is estimated to have an additional 80 appointments per year when the recommendation is fully implemented. Due to the way primary care is funded this is not likely to have a cash impact for commissioners.

3.1.14 The net activity and cost of ULT treat to target strategy per 100,000 population is summarised in tables 4 and 5.

**Table 4 Estimated number of people affected per 100,000 population for recommendations 1.5.1, 1.5.8-1.5.10**

| People with gout receiving urate lowering therapy treat to target | Current number of people | Future number of people (year 5) | Change in number of people |
|---|---|---|---|
| People receiving allopurinol | 799 | 1,007 | 208 |
| People receiving febuxostat | 130 | 431 | 301 |
| **Total** | **929** | **1,438** | **509** |

**Table 5 Estimated annual cost of recommendations 1.5.1, 15.8-1.5.10 per 100,000 population**

| People with gout receiving urate lowering therapy treat to target | Unit cost (£) | Current cost (£000) | Future cost (year 5) (£) | Change in cost (£) |
|---|---|---|---|---|
| People receiving allopurinol | £16.03 - £78.48 | 22,202 | 30,939 | 8,737 |
| People receiving febuxostat | £31.68 - £53.84 | 4,194 | 13,904 | 9,710 |
| **Total** | | **26,396** | **44,843** | **18,447** |

3.1.15 The net cost of urate lowering therapy treat to target strategy over the next 5 financial years is summarised in table 6.

**Table 6 Estimated annual cost of recommendations 1.5.1, 15.8-1.5.10 per 100,000 population**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| People receiving allopurinol (£) | -15 | 2,173 | 4,361 | 6,549 | 8,737 |
| People receiving febuxostat (£) | 5,777 | 6,760 | 7,743 | 8,727 | 9,710 |
| **Total (£)** | **5,762** | **8,933** | **12,104** | **15,275** | **18,447** |

### Benefits and savings

3.1.16 It is anticipated that as more people with gout achieve a serum urate level below 360 µmol per litre there will be a reduction in the number of gout flares. This will result in in a reduction in the number of primary care appointments to treat the gout flares. See section 3.2 for further details.

### Other considerations

3.1.17 It is anticipated that there will be an increase in appointments to help people manage their urate lowering therapy for people with gout. These appointments are likely to be with their GP practice nurse, although they may on occasion be with a GP or other healthcare professional. This will impact the availability of practice nurses (or GPs/other healthcare professional) for patients with other conditions.

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

### Background

3.2.1 Gout flares are incidences of severe pain, heat and swelling in a joint, commonly distal joints such as the big toes, knees, ankles, and fingers. It is current practice for an NSAID or colchicine to be prescribed first, corticosteroids may be prescribed based on comorbidities and contraindications.

### Assumptions made

3.2.2 The average number of gout flares for a person not being treated with a urate lowering therapy (ULT) is assumed to be 4.2 flares per year. (Figure 3 of Doherty et al, 2018).

3.2.3 It is anticipated that when people with gout have ULT following a treat to target strategy, the number of gout flares will be reduced. It is estimated in figure 3 of Doherty et al., 2018 that people with gout and ULT have 1.5 gout flares per year on average.

3.2.4 In current practice, people with gout flares will receive either an NSAID or colchicine, or if these are contraindicated, a corticosteroid. In future practice these same treatments will be

used, this is based on clinical expert opinion. It is expected in future practice that the treatments would be used in slightly different proportions compared to current practice. The rate of uptake for the treatments for current and future practice can be seen in table 7.

**Table 7. The uptake of treatments for gout flares**

| Treatment | Current practice | Future practice |
|---|---|---|
| NSAID for gout flare | 69% | 59% |
| Colchicine for gout flare | 30% | 40% |
| Oral steroid for gout flare | 1% | 1% |
| **Total** | **100%** | **100%** |

3.2.5 The template that accompanies this report assumes that 4 different NSAIDs are used to treat gout flares. These are diclofenac potassium, naproxen, indomethacin and ibuprofen, the uptake of these treatments is based on clinical expert opinion, following review of an unpublished audit, and can be found in table 8. The uptake of the proportion of NSAIDs received is anticipated to remain the same in current and future practice. It is possible because of ease of access to ibuprofen as an over-the-counter medicine, that the uptake of ibuprofen may be underestimated.

**Table 8 Uptake of NSAIDs**

| NSAID Treatment | Current practice | Future practice |
|---|---|---|
| Diclofenac sodium 100mg modified-release capsules 3 times a day for 3 days | 12% | 12% |
| Diclofenac sodium 75mg modified-release capsules 3 times a day for 3 days | 12% | 12% |
| Diclofenac sodium 50mg gastro-resistant tablets 3 times a day for 3 days | 12% | 12% |
| Naproxen 250mg 3 times a day for 3 days | 27% | 27% |
| Indomethacin 50mg 3-4 times a day for 3 days | 23% | 23% |
| Ibuprofen 200mg 7 times a day for 3 days | 14% | 14% |
| **Total** | **100%** | **100%** |

3.2.6 People being treated with NSAIDs may need gastric protection. In the template it has been assumed that people would receive either omeprazole 20 mg once daily or lansoprazole 15 mg once daily. It

is assumed that 50% of people having gastric protection would have omeprazole and the other 50% would have lansoprazole. Based on expert clinical opinion, in current practice uptake of gastric protection is estimated to be 30%, and in future practice 50%. The gastric protection would be for the duration of their treatment with NSAIDs.

3.2.7 People with gout receiving colchicine for a gout flare would have 500 mg tablets four times a day for three days.

3.2.8 When NSAIDs and colchicine are contraindicated in around 1%, people with gout having a flare can receive oral corticosteroids. It is expected that they would receive 60 mg prednisolone once daily for three days.

**Costs**

3.2.9 It is anticipated that as more people receive treat to target ULT, the number of gout flares will reduce. This is expected to lead to savings from prescribing budgets due to avoided gout flare treatments.

3.2.10 As there will be fewer healthcare consultations required for people having gout flares, it is likely that more primary care appointments will become available. This will be a non-cash capacity benefit, allowing GP practices to see other patients.

3.2.11 The net activity and saving of this change in practice is summarised in tables 9 and 10.

**Table 9 Estimated number of people affected per 100,000 population for recommendation 1.3.1**

| Area costed | Current number of gout flares | Future number of gout flares (year 5) | Change in number of people |
|---|---|---|---|
| People receiving NSAIDs for gout flare | 2,313 | 1,639 | -674 |
| People receiving colchicine for gout flare | 1,006 | 1,111 | 106 |
| People receiving oral corticosteroids for gout flare | 34 | 28 | -6 |
| **Total** | **3,352** | **2,778** | **-574** |
| Gastric protection for people having NSAIDs | 694 | 820 | 126 |

**Table 10 Estimated annual saving of recommendation 1.3.1 per 100,000 population**

| Area costed | Unit cost (£) | Current cost (£) | Future cost (year 5) (£) | Change in cost (£) |
|---|---|---|---|---|
| People receiving NSAIDs for gout flare | £0.81 | £1,872 | £1,327 | -£545 |
| People receiving colchicine for gout flare | £0.73 | £732 | £809 | £77 |
| People receiving oral corticosteroids for gout flare | £1.29 | £43 | £36 | -£7 |
| **Total** | | **£2,647** | **£2,172** | **-£476** |
| Gastric protection for people having NSAIDs | £0.67 | £466 | £551 | £85 |
| **Net total** | | **3,114** | **2,723** | **-£391** |

3.2.12 The net saving of managing gout flares over the next 5 financial years is summarised in table 11.

**Table 11 Estimated annual saving of managing gout flares over time per 100,000 population**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| **Saving for NSAIDs for treating gout flare (£)** | -109 | -218 | -327 | -436 | -545 |
| **Saving for colchicine for treating gout flare (£)** | £15 | £31 | £46 | £62 | £77 |
| **Saving for oral steroid for treating gout flare (£)** | -£1 | -£3 | -£4 | -£6 | -£7 |
| **Total saving per 100,000 population (£)** | -95 | -190 | -285 | -380 | -476 |
| **Gastric protection for people having NSAIDs (£)** | £17 | £34 | £51 | £68 | £85 |
| **Net total saving per 100,000 population (£)** | -78 | -156 | -235 | -313 | -391 |

### Benefits and savings

3.2.13 It is expected that there will be costs of treating gout flares that are avoided, due to the reduction in gout flares, as a result of the increase in numbers of people having ULT. In an average GP practice (around 10,000 people) it is anticipated that around 57 GP appointments per year will be avoided due to the reduced number of gout flares each year.

3.2.14 People having treatment for a gout flare may have a follow up appointment when the flare has settled (recommendation 1.3.6). Follow-up appointments after a gout flare provide an opportunity for people to start ULT and reduce future gout flares. This is expected to improve the quality of life for people with gout and lead to costs of treating flares being avoided.

### Other considerations

3.2.15 A reduction in the number of gout flares may avoid GP attendances. This will increase the number of appointments available for people with other conditions.

### 3.3 Consider annual monitoring of serum urate level in people with gout who are continuing ULT after reaching their target serum urate level (recommendation 1.5.15).

#### Background

3.3.1 It is necessary to continue monitoring a person's serum urate level even when target serum urate level has been achieved. This is to prevent it increasing, which can occur with age or because of changes in lifestyle. The monitoring of serum urate levels in current practice is highly variable.

#### Assumptions made

3.3.2 Most people with gout, who have consulted healthcare professionals also have comorbidities for which they would have annual monitoring. It is anticipated that people having annual monitoring for other conditions would be able to have their serum urate level measured at the same time.

3.3.3 It is assumed that all people having treat to target ULT have 1 monitoring appointment from year 2 onwards having started ULT. This assumption can be amended in the resource impact template. It is therefore assumed that any additional appointments as a result of recommendation 1.5.15 have been included in the modelling discussed in section 3.1.13 of this report.

#### Costs

3.3.4 Annual monitoring of serum urate levels is expected to be provided by GP practice nurses or other healthcare professionals. Due to the way that GP services are funded we have not included a cost for the GP practice nurse (or other healthcare professional) in the template that accompanies this report. Local organisations are advised to use local costs.

3.3.5 There will be productivity costs as the GP practice nurse/other healthcare professional will have reduced availability for people with other conditions.

**Benefits and savings**

3.3.6 It is anticipated that increased annual serum urate monitoring would lead to better control of people's urate levels. This will reduce the number of gout flares that people with gout will have. This reduction in gout flares will lead to primary care appointments and treatment for gout flares being avoided. This will have capacity benefits for providers.

3.3.7 Having annual serum urate monitoring will lead to people with gout having a better quality of life, as they will have fewer gout flares.

# 4 Resource impact over time

4.1 The estimated annual cost of implementing this guideline for the population of England based on the uptake in the resource impact assumptions is shown in table 13. The cost from year 5 once steady state is achieved is equivalent to around £18,100 per 100,000 population (see table 14).

**Table 13 Estimated annual cost of implementing the guideline for the population of England**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| **Implementation rate of guideline (%)** | 20% | 40% | 60% | 80% | 100% |
| **Costs for recommendations 1.5.1, 1.5.8-1.5.10 (£000) (cash)** | £3,243 | £5,028 | £6,813 | £8,598 | £10,383 |
| **Saving for recommendation 1.3.1 (£000) (cash)** | -£44 | -£88 | -£132 | -£176 | -£220 |
| **Total cash cost (£000)** | £3,199 | £4,940 | £6,681 | £8,422 | £10,163 |
| **Total resource impact for England (£000)** | **£3,199** | **£4,940** | **£6,681** | **£8,422** | **£10,163** |

**Table 14 Estimated annual cost of implementing the guideline per 100,000 population**

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 |
|---|---|---|---|---|---|
| **Implementation rate of guideline (%)** | 20% | 40% | 60% | 80% | 100% |
| **Total cash cost (£000)** | £6 | £9 | £12 | £15 | £18 |
| **Total resource impact per 100,000 population (£000)** | **£6** | **£9** | **£12** | **£15** | **£18** |

# 5 Implications for commissioners and providers

5.1 Gout falls under programme budgeting category 15X problems of the Musculo skeletal system.

5.2 The implementation of the recommendations for urate lowering therapy using a treat to target strategy is expected to increase spending on prescribing budgets.

5.3 There may be pressure on providers due to an increase in practice nurse or other healthcare appointments to manage people's ULT to achieve target serum urate rate and for annual monitoring. These may be offset by primary care appointments avoided to manage gout flares.

5.4 The resource impact template can be amended to evaluate the potential resource impact for primary care by inputting local costs when applicable.

# 6 Assumptions made

6.1 The resource impact template makes the following assumptions:

- of the population of England 2.49% are adults with gout (around 1.4 million people)
- of the adults with gout, in current practice 48.48% have consulted a healthcare professional (around 679,000 people),

this is estimated to have increased to 75% of people with gout in future practice (around 1,050,000 people).

6.2 If a national tariff price or indicative price exists for an activity, this has been used as the unit cost. The resource impact template can be used to amend unit costs to account for any local market forces factor.

6.3 Using these prices ensures that the costs in the report are the cost to ICSs of commissioning predicted changes in activity at the tariff price but may not represent the actual cost to individual trusts of delivering the activity.

# 7 Other considerations

7.1 The recommendation (1.6.1) on referral to specialist rheumatology services may lead to additional costs in secondary care, due to increased referrals and on-going specialist care for people with gout. This is not expected to be significant at a national level.

# 8 Sensitivity analysis

8.1 There are some assumptions in the model for which no empirical evidence exists, so we cannot be as certain about them. Appropriate minimum and maximum values of variables were used in the sensitivity analysis to assess which variables have the biggest impact on the net cost or saving. This enables users to identify the significant cost drivers.

Appendix A is a table listing all variables modified. The key conclusions are discussed below.

8.2 Varying the proportion of people with gout who consult a healthcare professional from 38.48% to 58.48% (compared to a baseline of 48.48%) leads to an estimated cost of between £24,143 and £11,969 (compared to a baseline cost £18,056) per 100,000 population.

# Appendix A. Results of sensitivity analysis

**Individual variable sensitivity**

| | Baseline value | Minimum value | Maximum value | Recurrent resource impact<br>Baseline resource impact (£) | Recurrent resource impact<br>Minimum resource impact (£) | Recurrent resource impact<br>Maximum resource impact (£) | Change (£) | Sensitivity ratio |
|---|---|---|---|---|---|---|---|---|
| People with gout who consult a healthcare professional | 48.48% | 38.48% | 58.48% | 18,056 | 24,143 | 11,969 | -12,174 | 1.00 |

**About this resource impact report**

This resource impact report accompanies the NICE guideline Gout: diagnosis and management and should be read in conjunction with it. Please visit the NICE website to view the terms and conditions.