

RES MEDICA

Journal of the Royal Medical Society



CLINICAL AUDIT ARTICLE

The Management of Gout in Primary Care – Are We Doing it Right?

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Abstract

Introduction: The soaring incidence of gout in the United Kingdom suggests that medical practitioners should be increasingly aware of optimizing management of gout, which is aimed at pain relief, preservation of joint function and preventing recurrent attacks. Recent guidelines published by the British Society of Rheumatology (BSR), have provided clinicians with a framework for achieving these aims.

Aims: To evaluate the management of gout in a primary care centre in North West England against recognized standards.

Methods: An electronic search on EMIS Web using the Read codes “gout” and “gouty arthritis”, with a specified period of 2010–2013, generated a cohort of patients who were categorized into 2 groups: those prescribed urate-lowering therapy (allopurinol) and those not. Patients on febuxostat were excluded. Clinical data from the patients were extracted and retrospectively audited.

Results: A total of 112 patients were identified, of which only 46% ($n = 52$) of patients were reviewed after an acute attack. Among those who were prescribed allopurinol, only 19% ($n = 12$) achieved target serum urate levels while only 67% ($n = 42$) had their serum urate levels checked regularly and 31% ($n = 20$) had dosage adjustments. Comparatively, in patients not prescribed allopurinol, a few indications for initiating allopurinol were detected: 29% ($n = 12$) had more than one attack of gout in a year, 27% ($n = 11$) suffered from renal insufficiency, 2% ($n = 1$) presented with tophi, and 17% ($n = 7$) were on diuretics.

Conclusion: Gout management in this primary care centre is not fully concordant to the BSR guidelines. Clearly, there is a need to improve adherence, particularly in the tight monitoring of serum uric acid levels, medications review, appropriate use of allopurinol, where indicated, and patient follow-up.

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ISSN: 2051-7580 (Online) ISBN: 0482-3206 (Print)

Res Medica is published by the Royal Medical Society, 5/5 Bristo Square, Edinburgh, EH8 9AL

Res Medica, 2014, 22(1): 102-110.
doi:10.2218/resmedica.v22i1.822

The Management of Gout in Primary Care – Are We Doing it Right?

Introduction

Gout, a disorder of purine metabolism, is characterized by hyperuricaemia and leads to deposition of uric acid crystals in joints, precipitating acute inflammatory arthritis, tophi around joints, and uric acid urolithiasis. Gout has become the most common inflammatory arthritis, affecting 2.49% of the population.^{1,2} Over the past 16 years, its incidence has increased rapidly in the United Kingdom, and tends to increase with age, especially afflicting those above 65 years.^{2,3} Gout is more common in men, with an incidence of 4.42 per 1000 in men but 1.32 per 1000 in women.⁴

The short-term management of gout is centred on pain relief and preservation of joint function while long-term management targets prevention of recurrent attacks and chronic joint damage. Patients presenting with mild gout symptoms are treated by self care and lifestyle modification, but for those with moderate to severe attacks, the addition of medication to treat gout is pivotal.⁵ Medical treatment includes the usage of non-steroidal anti-inflammatory drugs (NSAIDs), colchicine, and corticosteroids. Where indicated, the

recurrence of gout is controlled by initiating urate-lowering therapy (ULT) (e.g. allopurinol), which decreases the level of uric acid in the blood. Therefore, patients have their serum uric acid (sUA) levels monitored regularly and doses of allopurinol are titrated appropriately until the target urate level is achieved.

A recent *British Medical Journal* publication revealed that the clinical management of gout in primary care has not improved over the years and remains suboptimal.⁶ With the increasing prevalence of gout, the expected number of patients being treated with ULT should increase. However, this has remained stagnant, at just a third of the gout population.^{2,6} A series of guidelines in the management of gout has been established by the European League Against Rheumatism (EULAR), British Society of Rheumatology (BSR), and American College of Rheumatology (ACR) between 2006 and 2012, which emphasizes the importance of titrating urate-lowering therapy to achieve a serum urate target below 300–360 $\mu\text{mol/L}$.⁷⁻⁹

Aims & Standards

Aims

To assess whether patients with gout have been appropriately managed and monitored

according to the BSR guidelines in a GP practice in north-west England.

Standards

1. 100% of patients who have been diagnosed with gout should have their serum uric acid checked after 4–6 weeks of an acute attack.

2. 90% (to allow for patient choice) of chronic gout patients (patients with > 2 episodes of gout in a year who were started on allopurinol) should:

- Have sUA levels tested since initiation of allopurinol
- Have allopurinol dosages reviewed based on sUA
- Achieve a sUA of < 300 $\mu\text{mol/L}$

3. 90% (to allow for patient choice and contraindications) of patients should start allopurinol if they:

- Had > 1 attack of gout
- Have renal insufficiency
- Have tophi
- Have uric acid stones
- Are on diuretics

Methods

Inclusion criteria

All adult patients registered with the practice with a Read-coded diagnosis of gout in their medical records from 2010 to 2013 were included in the audit. In UK general practices, Read codes are commonly used to record patients' comorbidity types, processes of care, and administrative information.

Patients who were on febuxostat (which is deemed an alternative to allopurinol) were excluded from Standard 2 as febuxostat was recently approved as a ULT but was not included into the BSR guidelines at the time of its publication.¹⁰ Table 1 outlines the criteria involved in reference to the guideline published by the BSR.⁷

Search strategy

This audit was undertaken at a GP surgery in a suburban town in Greater Manchester. Using the electronic patient database (EMIS Web) from the GP practice, a search was carried out to identify all patients who had a Read-coded diagnosis of “gout” and/or “gouty arthritis” between 1 January 2010 and 31 December 2013. The electronic records of all relevant patients were searched and notes were individually analysed based on the template in Figure 1.⁷

Figure 1: Data extracted from medical record in chronological order⁷

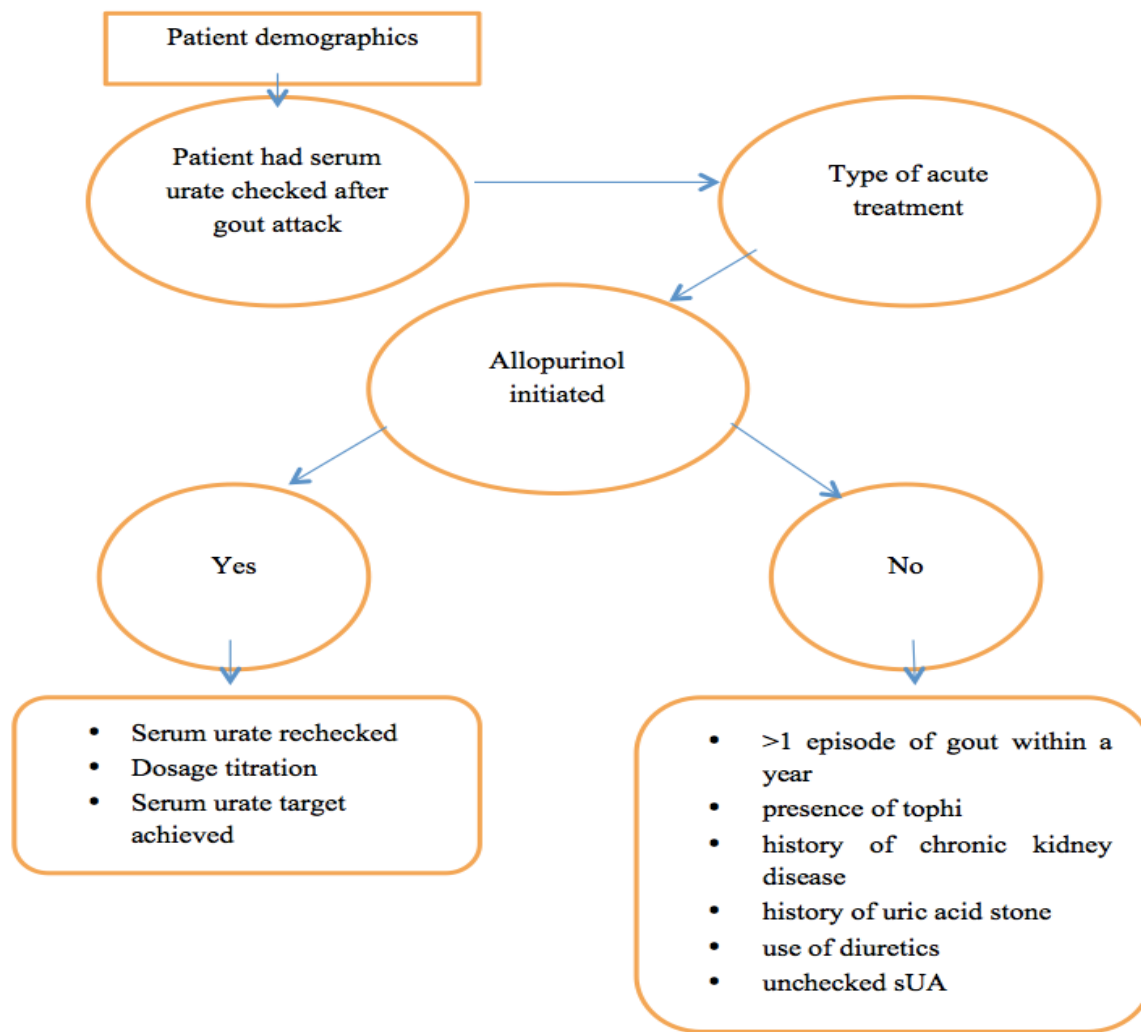


Table 1. Audit criteria based on BSR guidelines⁷

Theme	Guideline	Criteria
Assessment of gout patients	All patients presenting with acute gout should have their serum urate checked after 4-6 weeks	-Patient recorded sUA 4-6 weeks after diagnosis of gout
Management and monitoring of chronic gout	Allopurinol prescribed and titrated until sUA<300micromol/l	-Patients having sUA levels tested since initiation of medication -Patients having allopurinol dosage reviewed based on sUA -Patients having sUA<300micromol/l
Indications of allopurinol	Allopurinol is started in patients with second attack within a year, renal insufficiency, tophi, uric acid stones and continuing treatment on diuretics	-Patient with: <ul style="list-style-type: none"> • >1 attack of gout in a year • renal insufficiency • tophi • uric acid stones • continuous treatment of diuretics not on allopurinol

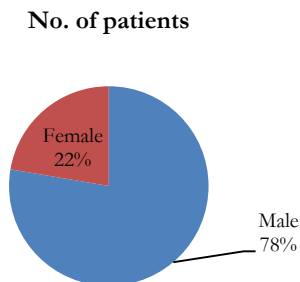
Results

A total of 112 patients with a diagnosis of gout were identified. See Table 4 for a summary of the audit results.

Demographics

Out of the 112 patients with gout, 87 patients (78%) were male and 25 patients (22%) were female (Figure 2). The patients' ages ranged from 27 to 94 years.

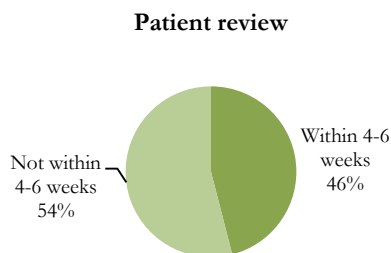
Figure 2. Gender distribution of gout patients



Assessment of gout patients

All the patients were included to determine whether they had a 4–6 week review checking sUA. A total of 52 patients (46%) received appropriate review (Figure 3).

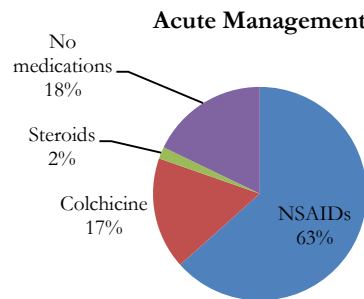
Figure 3. Patients reviewed within 4-6 weeks.



Acute management of gout

71 patients (63%) were treated with NSAIDs, 19 patients (17%) with colchicine, 2 patients (2%) with corticosteroids, and 20 patients (18%) were not treated with medication (Figure 4).

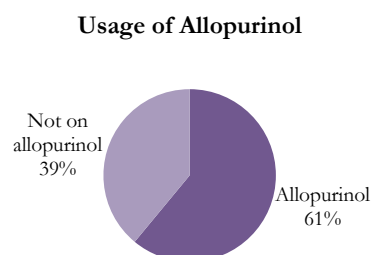
Figure 4. Types of treatment for acute gout



Management of chronic gout

68 patients (61%) were recorded to be using ULT and 44 patients (39%) were not. Of those receiving ULT, 5 were excluded for using febuxostat while 3 others were not on ULT due to personal choice. Therefore, after correction, 104 patients were identified to be either on allopurinol (63 patients [61%]) or not (41 patients [39%]) (Figure 5).

Figure 5. Usage of allopurinol



Monitoring of chronic gout

Among those on allopurinol, 42 patients (67%) had their sUA checked monthly while 21 patients (33%) did not. Dose adjustments of allopurinol had been made in 20 patients (31%). 12 patients (19%) managed to achieve the target value sUA level of <300 µmol/L (Table 2).

Table 2. Findings of patients on allopurinol

	Yes	No
Regular sUA checks	42 (67%)	21 (33%)
Altered dosage based on sUA	20 (31%)	43 (69%)
Achieved target sUA <300µmol/l	12 (19%)	51 (81%)

Indications of allopurinol

As for patients not on allopurinol, 12 (29%) had more than 1 episode of gout within a year, 11 (27%) had renal impairment, 1 (2%) was found to have tophi, none had uric acid stones, and 7 (17%) were on diuretics. Of the 41 patients not on allopurinol, 15 patients (37%) had their sUA checked while the other 26 patients (63%) did not. Among the 15 patients who had their sUA checked, 6 patients (40%) had a sUA level <300 µmol/L (Table 3).

Table 3. Findings of patients not on allopurinol

	Yes	No
> 1 attack in a year	12 (29%)	29 (71%)
Renal insufficiency	11 (27%)	32 (78%)
Tophi	1 (2%)	40 (98%)
Diuretics	7 (17%)	34 (83%)
Checked sUA	15 (37%)	26 (63%)
Uncontrolled sUA	9 (60%)	6 (40%)

Table 4. Summary of audit results

Standards	Compliance
1. 100% of patients who have been diagnosed with gout should have their serum uric acid checked after 4–6 weeks of an acute attack.	46% (52/112) No patients were excluded
2. 90% (to allow for patient choice) of chronic gout patients should: <ul style="list-style-type: none"> • Have sUA levels tested since initiation of allopurinol • Have allopurinol dosages reviewed based on sUA • Achieve a sUA of < 300 µmol/L 	Only patients started on allopurinol <ul style="list-style-type: none"> • 67% (42/63) • 31% (20/63) • 19% (12/63)
3. 90% (to allow for patient choice and contraindications) of patients started with allopurinol if they: <ul style="list-style-type: none"> • Had > 1 attack of gout • Have renal insufficiency • Have tophi • Have uric acid stones • Are on diuretics 	Only patients not started on allopurinol (Number of patients who did not show indications were used) <ul style="list-style-type: none"> • 71% (29/41) • 73% (30/41) • 98% (40/41) • 100% (41/41) • 83% (34/41)

Discussion

Despite the common occurrence of gout, affecting every 1 in 40 people, the management of gout in primary care is generally poor.^{2,6} The results of this audit elucidated the pitfalls in the management of gout and has helped to identify areas for further improvement. A similar trend was demonstrated by an audit conducted in a primary care setting in North Staffordshire,⁹

UK, which revealed that the management of gout did not fully comply with BSR guidelines.

Our results revealed that many patients did not have a documented sUA level 4–6 weeks after an acute episode. Although sUA is not a diagnostic marker for gout, it serves to guide further management, especially in deciding whether or not to initiate ULT.

In the aspect of managing acute gout, the practice in this audit appears to adhere to the guideline. As commonly practised, NSAIDs have been widely used for relieving joint pains and swellings rapidly, while colchicine and steroids are the next line of therapy if contraindications arise. A minority of patients were not being treated with medications but were only advised about lifestyle changes. Although this may help ease symptoms by reducing the intake of uric acid, acute gout is known to be the most painful form of arthritis, hence analgesics should be given in conjunction with lifestyle advice.¹

Since the 1970s, allopurinol has been the mainstay of chronic treatment.¹¹ Our records show that only a handful of patients had their allopurinol dosages titrated against the sUA and had their sUA checked regularly. BSR guidelines for allopurinol administration recommend progressive dose titration from a starting dose of 50–100 mg daily with

increments of 50–100 mg to a maximum dose of 900 mg daily until target sUA level is achieved.⁷ A clinical study of gout patients reported that 372 mg was the mean allopurinol dose that normalized sUA levels.¹² However, the common dosages of allopurinol prescribed in clinical practice are usually 300 mg daily or less. Hence, a possible area of research would be in reviewing prescription dosages to determine the optimum dose for controlling sUA levels.

As the target value has been set at a sUA of < 300 $\mu\text{mol/L}$, expert consensus concurred that below this value the rate of crystal elimination is increased and the risk of developing tophi is reduced. In the study by Pascual and Sivera,¹³ arthrocentesis was performed in 18 patients before initiation of ULT and it was found that crystals soon disappeared after a dramatic reduction of sUA. Although the current trend of “treating to target” is being emphasized, only a few have successfully achieved the goal.¹³ The findings also suggest that sUA measurements do not precipitate allopurinol titration.

In patients who do not receive allopurinol, studies advocate offering allopurinol to patients with either a second episode of gout within a year, renal insufficiency, presence of

tophi, uric acid stones or persistent use of diuretics.

Clearly, there is a need to improve the prescribing of allopurinol in our centre. Our results demonstrate that many of our patients with a history of more than 1 episode of gout within a year (one of the indications for initiating allopurinol) were not given allopurinol to control recurrence. Similarly, patients with renal insufficiency (who had their estimated glomerular filtration rate (eGFR) checked and were diagnosed with chronic kidney disease (CKD) of at least stage 3A and above, predisposing them to hyperuricemia), patients with tophi, and

patients on diuretics prescribed with either furosemide or bendroflumethiazide, were also found to have not been prescribed allopurinol. An audit in 2002 conducted by Roberts *et al.*¹⁴ revealed that 86% of GPs claimed to be confident in managing gout patients. However, our audit results have shown that our primary care management of gout is inadequate due to poor adherence to the guidelines. To determine if this could be a nationwide primary care issue, multicentre audits are required.

Table 5 summarizes the recommendations for change. We aim to re-audit this study in 2 years' time.

Table 5. Recommendations of audit

Issue	Recommendations
1. Patients not currently managed according to guidelines	<ul style="list-style-type: none"> • Review gout patients – prescribe allopurinol as appropriate and check sUA levels in patients who have not had it • Review allopurinol prescriptions in line with sUA levels
2. Lack of awareness of guidelines available	<ul style="list-style-type: none"> • Involve GPs in national rheumatology conferences and encourage multicentre audits on management of gout • Discuss guidelines during practice meetings
3. Varying assessment and targets in practice and a lack of a reminder system	<ul style="list-style-type: none"> • Integrate a clinical template into electronic database, having system prompted disease-specific Read codes during consultations • Possible incorporation of gout management into the Quality and Outcomes Framework (QOF)
4. Lack of medication review	<ul style="list-style-type: none"> • Create reminders on the system for a medication review in line with sUA levels
5. Lack of patient awareness	<p><i>Patient education:</i></p> <ul style="list-style-type: none"> • Implementing posters in GP surgery waiting areas • Hand out leaflets to high-risk age groups
6. Neglected advice on lifestyle changes	<ul style="list-style-type: none"> • Provision of leaflets to encourage dietary changes and weight loss • Encourage a lifestyle diary • Encourage patients to connect with other patients with gout
7. Patient compliance to medication	<ul style="list-style-type: none"> • Ensure proper patient education regarding allopurinol before starting therapy

Conclusion

Primary care centres should be aware of the available guidelines for the appropriate management of gout to ensure uniformity in their care standards. They should be aware of the comorbidities associated with gout, such as cardiovascular and renal diseases. A sound understanding of the comorbidities may motivate GPs and patients to achieve good control of patients' condition.

Although guidelines are readily available and medications have been in use for decades, it is a challenge to maintain high standards in the

management of gout. In addition, clinicians should be able to identify the risk factors and comorbidities which may predispose one to gout flares, such as obesity, and plan their management strategies around these.⁵ However, the presence of these comorbidities can also make management difficult and may implicate the efficacy of pharmacological therapy. With these recommendations in hand, it would help the practice to meet the standards set by the guidelines and also provide optimum care for gout patients in the future.

Learning Points

What is known already

- Gout is a common occurrence in primary care and its incidence has been rising, affecting mainly males and those over 65 years of age.
- If not managed appropriately, gout may contribute to renal and cardiovascular comorbidities and may cause permanent joint destruction.
- Conservative treatments (i.e. lifestyle modifications) in combination with medical therapy (i.e. NSAIDs, colchicines and corticosteroids) have been the mainstay of gout management.
- Allopurinol is commonly used as a prophylactic medication to reduce recurrent attacks.

What this study adds

- The BSR has released a set of guidelines to direct the appropriate management of gout. However, we suspect that these are not being adhered to closely across primary care.
- Patients on allopurinol should have their dosages reviewed in line with their sUA levels. However, determining the optimal dose to prescribe to achieve good control of sUA levels is challenging.
- Clearly there needs to be improvements in adherence to guidelines, especially in the area of monitoring sUA levels, follow-up and prescribing allopurinol where clinically indicated.

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