



## Bridging the evidence-practice gap for people with gout

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### Abstract

Gout is a common and disabling form of arthritis. Despite widely available, highly effective, urate-lowering therapies, such as allopurinol, studies continue to demonstrate poor care for individuals with gout in healthcare systems worldwide. In this commentary, we highlight strategies that can be utilised to overcome real-world barriers to optimal gout care, including allied health professional input, patient and clinician education, self-management strategies, and electronic health record solutions.

### Keywords

Gout, urate-lowering therapy, allopurinol, febuxostat, guidelines

Gout is the most common form of inflammatory arthritis worldwide, affecting 1 in 30 UK adults and 1 in 25 US adults [1, 2]. People living with gout suffer from recurrent flares of joint pain and inflammation which can lead to permanent joint damage, disability and extra-articular complications, such as urolithiasis and chronic kidney disease, if undertreated.

There are very effective preventative medications, known as urate-lowering therapy (ULT, e.g., allopurinol and febuxostat), that can prevent symptoms and complications in people with gout. Guidelines, published by the National Institute for Health and Care Excellence (NICE), European Alliance of Associations for Rheumatology (EULAR), and American College of Rheumatology (ACR), recommend that ULT should be discussed and/or offered to all people with gout, and titrated until a serum urate below 360  $\mu\text{mol/L}$  (6 mg/dL) is achieved. However, only a minority of patients receive these guideline-recommended treatments or achieve these target urate levels. Studies demonstrate that only one third of people with gout in the UK are prescribed ULT within a year of diagnosis [3, 4]. Moreover, only a third of patients attain the target serum urate levels necessary to prevent the symptoms and complications of gout [3]. Similar findings are reported in many other countries worldwide [5].

The management of gout has improved minimally during the last two decades, despite the publication of national and international gout management guidelines [3]. This strongly suggests that guidelines need to be accompanied by effective implementation strategies if the gap between evidence-based care and current practice is to be bridged.

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A systematic review, published in 2020, summarised the evidence base for interventions and implementation strategies that have been used to improve the uptake of treat-to-target ULT in people with gout [6]. Twenty studies were identified, outlining 18 interventions [6]. The majority were nurse or pharmacist-led strategies, incorporating patient-centred education and treat-to-target ULT. Many of these interventions associated with improvements in ULT initiation and/or urate target attainment [6]. Most notably, in a randomised-controlled trial (RCT) performed in a primary care setting in the UK, a nurse-led education and treat-to-target strategy resulted in 95% of participants achieving serum urate targets, compared with 30% in the usual care group [7]. This was accompanied by improvements in flare frequency, quality of life and tophi burden, and was cost-effective when assessed against NICE criteria [7].

In the aforementioned study, there was an average of 18 contacts (calls or visits) between nurses and participants during the 24-month study period; the majority of which occurred within the first 6 months [7]. While this intervention may be cost-effective in the long-term, resource availability is likely to be a barrier to more widespread implementation in resource-strained healthcare systems. A large, multi-centre RCT is currently underway to evaluate the clinical benefit and cost-effectiveness of a pragmatic, goal-directed, allopurinol-based, treat-to-target protocol in people with recurrent gout attacks [8]; the results of which are keenly awaited. Other studies have investigated alternative, less intensive strategies—for example, utilising telephone-based prompts and electronic messaging systems—but with more limited success [6].

Strategies that support self-management are a cornerstone of management for many long-term conditions. For example, in people with type 1 diabetes mellitus, point-of-care glucose testing and insulin titration are fundamental to glycaemic control and the prevention of complications. Similar strategies have been evaluated in people with gout. Riches et al. [9] evaluated a supported gout self-management strategy, incorporating self-testing of serum urate via a point-of-care urate meter, and a smartphone application that facilitated treat-to-target ULT, supervised by a clinician. Of individuals ( $n = 40$ ) randomised to the self-management approach, 73% achieved a serum urate below 300  $\mu\text{mol/L}$  within 24 weeks, compared with only 15% of the participants ( $n = 20$ ) randomised to usual care. The self-management approach was inexpensive, with upfront costs of approximately £30 per patient; it was acceptable to the vast majority of participants; and was associated with a reduction in flare frequency.

More broadly, some of the most effective strategies for implementing best practice care for long-term conditions are those that reduce unnecessary workload for clinicians and make it easier to deliver guideline-recommended care [10]. Examples include forcing functions (e.g., electronic health records systems that mandate the completion of a venous thromboembolic risk assessment before allowing an individual to proceed to the next stage of an admission clerking); constraints (e.g., removing the option of prescribing higher and/or mixed-strength methotrexate tablets); and automation (e.g., robotic drug dispensing in pharmacies). These strategies are often more challenging to implement than those based solely upon education, but can deliver more sustainable change [11, 12].

Much of the literature on the hierarchy of effectiveness for intervention strategies stems from the prevention of medication errors [10]; however, these principles can also be applied to optimising care for long-term conditions, such as diabetes and gout [13, 14]. Electronic health record systems provide an opportunity to streamline the delivery of guideline-recommended care for people with gout, and to do so in a sustainable manner. Examples include electronic prompts to guidelines when clinicians enter a relevant diagnostic code or medication; decision-support tools; and automated recall-reminders to facilitate ULT titration. Stamp et al. [15] evaluated gout care in a medical practice in New Zealand, before and after the introduction of a multi-faceted management package, incorporating electronic prompts, a patient-recall system, gout management templates, and nurse-led education. The introduction of this intervention was associated with improvements in the number of prescriptions for ULT, the number of urate tests performed, and urate target attainment [15]. These solutions have the advantage of being rapidly scalable to other locations and healthcare settings, particularly in digitised healthcare systems, with fewer ongoing human resource requirements relative to other strategies.

What is also clear from existing evidence is that there is unlikely to be a “silver bullet” that solves the chronically sub-standard care for people with gout in healthcare systems worldwide. There are numerous entrenched barriers to better gout care at both the provider and patient levels [16]. This includes a pervasive stigma associated with the diagnosis of gout, which contributes to a reluctance to seek medical care, and the belief that gout is a self-inflicted disease due to lifestyle, rather than a predominantly genetically-determined disease. These factors underlie an overemphasis on the urate-lowering benefits of dietary modification, despite little evidence to support this [17], and negatively impact on the uptake of guideline-recommended preventative treatments.

To sustainably address the multiple barriers to better gout care, a multi-faceted solution will be required. This should incorporate many of the strategies for which there is a growing evidence base in optimising gout management, including allied health professional input, patient and clinician education, self-management strategies (e.g., self-testing of serum urate), and electronic health record solutions. It should address the numerous misconceptions that underlie sub-optimal gout care, utilising tools such as the Necessity-Concerns Framework to explore factors including medication adherence [18, 19]. It must also incorporate pro-active screening for the multiple long-term conditions that associate with gout, including chronic kidney disease and cardiovascular disease [20]. Only then will it be possible to close the persistent mortality gap that associates with a diagnosis of gout [21, 22].

## Abbreviations

NICE: National Institute for Health and Care Excellence

RCT: randomised-controlled trial

ULT: urate-lowering therapy

## Declarations

### Disclaimer

MDR is an NIHR Clinical Lecturer at King’s College London. The views expressed in this publication are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care.

### Author contributions

MDR: Conceptualization, Writing—original draft, Writing—review & editing. JBG: Conceptualization, Writing—review & editing.

### Conflicts of interest

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Not applicable.

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