

## Commentary

# Limitations of the Current Standards of Care for Treating Gout and Crystal Deposition in the Primary Care Setting: A Review



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### ABSTRACT

**Purpose:** This article outlines several important issues regarding the management of patients with gout. The topics discussed include best practices for gout based on the most current guidelines, opportunities for improving gout management, and current and emerging therapies for gout.

**Methods:** [PubMed and Google Scholar databases] were search for all articles and trials published before 2016, using the key terms [*hyperuricemia, gout, tophi, joint erosion, joint damage, treatment guidelines, American College of Rheumatology (ACR), European League Against Rheumatism (EULAR), flare, comorbidity, epidemiology, adherence, serum uric acid (sUA), monosodium urate (MSU), <6 mg/dL, MSU crystal formation, as well as individual drug names and classes of treatments of interest (allopurinol, febuxostat, colchicine, non-steroidal anti-inflammatories (NSAIDs)]*. Studies were selected that presented data on gout treatment, including drugs under development, and on the management of gout from both the physician and patient perspectives. The reference lists of identified articles were searched manually for additional publications.

**Findings:** Gout, a progressive debilitating form of inflammatory arthritis, is caused by factors that elevate serum uric acid (sUA) levels, leading to hyperuricemia. Continued elevated sUA can result in monosodium urate crystal deposition in joints and soft tissues, causing acute and chronic inflammation. Crystal deposition can lead to chronic gout, with an increased number of flares, tophi development, and structural joint damage. The aims of gout treatment are to reduce the sUA level to <6 mg/dL, to inhibit the formation of new crystals, and to promote the dissolution of existing crystals. Gout is often poorly

managed for several reasons, including a lack of adherence to treatment guidelines by health care providers, patients' poor adherence to therapy, and differences between a provider's and patient's perspectives regarding treatment.

**Implications:** Patients need to be educated about their diagnosis and management of the disease, such as the importance of compliance with long-term treatment. Gout treatment may also be confounded by contraindications to current standards of therapy and the limitations of current treatment paradigms. Recently approved medications, as well as drugs under development, may provide new ways for reaching the sUA target and also "curing" the disease. (*Clin Ther.* 2017;39:430–441) © 2017 The Authors. Published by Elsevier HS Journals, Inc.

**Key words:** gout, hyperuricemia, serum uric acid, treatment, uricosuric drugs, xanthine oxidase inhibitors.

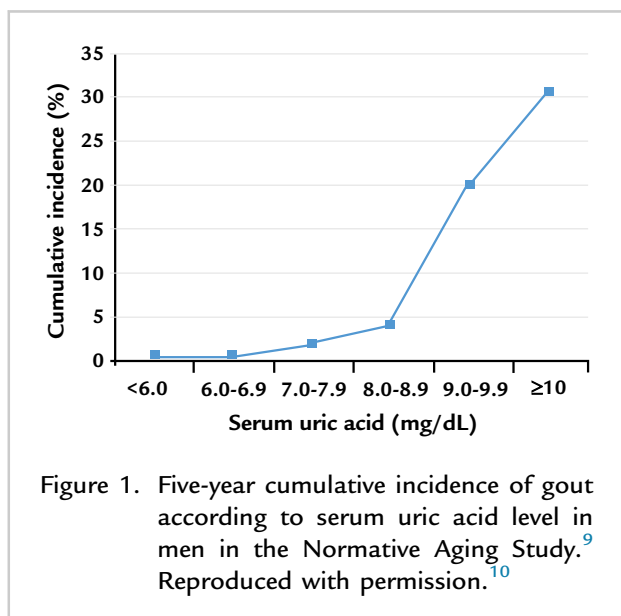
### INTRODUCTION

This article outlines several important issues regarding the management of patients with gout. The topics discussed include best practices for gout based on the most current guidelines, opportunities for improving gout management, and current and emerging therapies for gout.

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it may be of no surprise that there has been a rise in the costs of care of patients with gouty arthritis. During 2005 to 2011, the estimated costs of all-cause gout, which include the costs of emergency department visits, ambulatory care visits, inpatient stays, prescription medications, and other costs (eg, home health care), was \$31.8 billion.<sup>3</sup> In 2008, gout was the reason for ~175,000 emergency department visits, accounting for ~0.2% of all visits that year, and in 2002 gout was associated with 3.9 million ambulatory care visits, ~40% of cases of which were treated by primary care providers (PCPs).<sup>4</sup> Gout can have a significant impact on a person's life, and refractory gout, in which signs and symptoms are poorly controlled, is associated with a significant loss of the ability to perform daily activities, a loss of work productivity, and a low health-related quality of life.<sup>5,6</sup>

## MATERIALS AND METHODS

For this review, PubMed and Google Scholar databases were searched for all articles and trials published between 1999 and 2016, using the key terms *hyperuricemia*, *gout*, *tophi*, *joint erosion*, *joint damage*, *treatment guidelines*, *American College of Rheumatology (ACR)*, *European League Against Rheumatism (EULAR)*, *flare*, *comorbidity*, *epidemiology*, *adherence*, *serum uric acid (sUA)*, *monosodium urate (MSU)*, *<6 mg/dL*, *MSU crystal formation*, as well as individual drug names and classes of treatments of interest (*allopurinol*, *febuxostat*, *colchicine*, *non-steroidal anti-inflammatories (NSAIDs)*). Studies were selected that presented data on gout treatment, including drugs under development, and on the management of gout from both the physician and patient perspectives. The reference lists of identified articles were searched manually for additional publications.

## RESULTS

### Background and Epidemiology

Gout is the most common inflammatory arthritis in the United States, affecting 8.3 million adults (~4%), while hyperuricemia, the root cause of gout, affects 43.3 million (~21%).<sup>1,2</sup> The prevalence of gout in the United States increased 2-fold between the 1960s and the 1990s, with further increases anticipated over the next several decades.<sup>1</sup> Considering this increase, and the multiple comorbid conditions associated with gout,



Figure 2. Arthroscopy of the knee of a patient who was thought to have had his gout under control given the absence of flares despite his serum uric acid (sUA) concentration being above the recommended target of <6 mg/dL. The patient presented with redness, warmth, swelling, pain, and draining at the arthroscopy surgical incision site 8 weeks after surgery. Note the significant intra-articular crystal deposition (tophus formation) and the background synovial inflammation (lower right and left). © Robert T. Keenan, MD, MPH.

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