**Full title:** Validity of Gout Diagnosis in Primary Care

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**Key indexing terms:** gout, gouty arthritis, cohort studies, hyperuricemia

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**Funding statement:** No specific funding was received from any bodies in the public, commercial or not-for-profit sectors to carry out the work described in this manuscript.

**Conflict of interest:** None

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*To the Editor:*

We read with interest the recent study by Dehlin and colleagues [1], investigating the validity of a gout diagnosis in primary care. We have also investigated how a primary care diagnosis of gout compares to a primary care diagnostic rule for gout and to classification criteria. Our objective was to determine the proportion of patients with a primary care diagnosis of gout who fulfilled the primary care diagnostic rule by Janssens *et al* for acute gouty arthritis [2] and the 1977 American Rheumatism Association (ARA) criteria for the classification of acute arthritis of primary gout [3].

Participants with gout undergoing follow-up as part of a prospective observational cohort study [4] were sent a postal questionnaire, which included questions about clinical features of gout and comorbidities required to assess fulfilment of the Janssens diagnostic rule [2] and the 1977 ARA criteria [3]. The cohort had been established in 2012 and recruited patients over the age of 18 years registered with 20 General Practices in the West Midlands, UK. Participants were required to have a Read-coded (diagnostic coding system used in UK general practice) consultation for gout or a prescription for allopurinol or colchicine within their medical records in the two years preceding baseline questionnaire mailing. Ethical approval was received from the North West – Liverpool East Research Ethics Committee (12/NW/0297). The highest serum urate level and the presence of tophi were extracted from medical records during the period from two years prior to baseline to five years post-baseline. Missing serum urate levels were assumed to be normal. A score of eight or more for the Janssens diagnostic rule [2] or six or more for the 1977 ARA criteria [3] indicated a diagnosis of gout. The positive predictive value (PPV) for a primary care diagnosis of gout was calculated by dividing the number of participants who achieved the required score by the total number of participants.

536 participants were included in the analysis, 484 (90.3%) were male, with a mean (SD) age of 64.3 (11.3) years, and BMI of 29.0 (5.4) kg/m2. Median (IQR) gout duration was 10 (3, 22) years. Mean (SD) highest serum urate level was 370.2 (104.4) µmol/L, and 13 (2.4%) participants had tophi recorded. The Janssens diagnostic rule and 1977 ARA criteria were fulfilled by 396 (PPV 73.9%) and 429 (PPV 80.0%) participants with a primary care diagnosis of gout respectively. 464 (86.6%) participants fulfilled either the Janssens diagnostic rule or the 1977 ARA criteria.

The PPV of 73.9% for a primary care diagnosis compared to the Janssens diagnostic rule [2] is similar to that reported by Dehlin and colleagues (71%) [1]. When compared to the 1977 ARA criteria [3], the PPV of 80% was similar to that reported by Janssens *et al* [5] in an earlier primary care study.

We also intended to calculate the PPV of a primary care gout diagnosis compared to the American College of Rheumatology-European League Against Rheumatism (ACR-EULAR) 2015 gout classification criteria [6]. However, 251 (46.8%) of participants did not have a serum urate level recorded in their medical records. We were therefore unable to calculate a PPV compared to the ACR-EULAR 2015 criteria as serum urate is a mandatory component of these criteria [6]. This suggests that the ACR-EULAR classification criteria may be difficult to apply retrospectively using routinely-recorded data from primary care medical records. Since missing serum urate levels were assumed to be normal when deriving scores for the Janssens diagnostic rule and 1977 ARA criteria, these estimates of PPV of a primary care diagnosis are likely to be conservative.

In this primary care cohort, the PPV of a primary gout diagnosis was high with the majority of participants fulfilling the Janssens primary care diagnostic rule or 1977 ARA criteria. These findings provide reassurance about identifying research participants based on a clinical diagnosis in primary care where synovial fluid analysis and imaging are rarely performed.

Acknowledgements:

This work was supported by service support through the West Midlands North CLRN. The authors would like to thank the administrative and health informatics staff at Keele University’s Arthritis Research UK Primary Care Centre; staff and patients of the participating practices.

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