Serum urate outcomes of treat-to-target urate lowering treatment: results of a nationwide cohort study from 1997 to the COVID-19 pandemic using data from the Clinical Practice Research Datalink

Despite long-standing recommendations, most gout patients prescribed urate lowering treatment (ULT) do not achieve serum urate (SU) target. The time between treat-to-target (T2T) recommendations and achievement of SU treatment target, and how the latter was impacted by the COVID-19 pandemic has not been evaluated. We used UK-wide nationally representative primary-care data from the Clinical Practice Research Datalink (CPRD) GOLD to evaluate temporal trends in achievement of T2T–SU levels within 12 months of first ULT prescription in successive years from 1997 to 2020. CPRD contains anonymised healthcare records from >18 million individuals, originating during their routine care in the National Health Service, a healthcare system with universal coverage.

This study spanned from 01 January 1997 to 31 December 2021. Prevalent gout cases age≥18 years, first prescribed ULT in the study period was followed from the first prescription to earliest of prescription end, death, transfer out, last data collection, 12 months after ULT prescription or 31 December 2021. Participants were required to have≥1 year ULT prescription-free registration prior to study entry to prevent prevalent ULT users appearing as new users. Gout and ULT prescription status were defined using Read and product codes.

Prevalence (95% CI) of achieving SU<360 and <300 µmol/L within 12 months of ULT initiation were calculated. The latest SU within 12 months of ULT initiation was used to define achievement of target thresholds. Cox proportional HR with 95% CI were used to estimate the likelihood of achieving SU target for patients starting ULT in each year compared with those starting in the year 2006 as the first British Society for Rheumatology gout guidelines were published in 2007. Analyses were adjusted for age, time between first primary care consultation for gout and first ULT prescription, sex and region. Sensitivity analysis included additional adjustment for pre-ULT SU. Data were analysed using Stata-MP V.16.

Data for 119903 gout patients (77.19% men) were included (online supplemental figure S1). Their mean (standard deviation) age and time from first gout consultation to first ULT prescription were 63.09 (15.06) and 2.54 (5.14) years. Overall, 99.32%, 0.50% and 0.18% were prescribed allopurinol, febuxostat and uricosurics, respectively. Overall, 34137 (28.47%) and 18926 (15.78%) achieved SU<360 and <300 µmol/L, after mean (SD) 1.05 (1.73) and 1.44 (2.95) years. The median (IQR) allopurinol dose at treatment start was 100 (100–300) mg/day (n=107214). Participants who achieved and did not achieve SU<300 µmol/L by 1 year were prescribed allopurinol at median (IQR) dose of 300 (200–300) and 200 (100–300) mg/day (p<0.0001, Wilcoxon rank-sum test). Similarly, participants who achieved and did not achieve SU<360 µmol/L at 1 year were prescribed allopurinol at median (IQR) dose of 300 (100–300) and 200 (100–300) mg/day (p<0.0001, Wilcoxon rank-sum test). Increasing proportion of gout patients commenced on ULT in calendar years 1997–2018 achieved SU target (figure 1). The age and SU at the start of ULT increased modestly over time (online supplemental table S1). Overall, 5228 (15.31%) and 2979 (15.74%) participants who achieved SU<360 and <300 µmol/L by 12-month consulted at their General Practice surgery for gout flare subsequently, defined as Read code specific for gout flare or any consultation for gout and prescription colchicine, corticosteroids or NSAIDs on the same or next date.

Figure 1  (A) The proportion (solid line) and 95% CI (dotted line) of gout cases commenced on urate lowering treatment (ULT) in each calendar year that achieved serum urate (SU) treatment target<360 (red) and <300 (blue) µmol/L within 1 year. (B) Adjusted HRs (95% CI) for achieving SU outcomes<360 (top) and <300 (bottom) µmol/L within 1 year in gout cases commenced on ULT in successive years with the year 2006 reference.
There was a 5-year lag between EULAR and British Society for Rheumatology recommendations to treat gout to target before significant improvement in achievement of recommended SU treatment target was apparent. Compared with those prescribed ULT in 2006, participants commenced on ULT in the year 2020 were significantly less likely to achieve SU<300µmol/L (figure 1, online supplemental table S2).

This study evaluated T2T–ULT in consecutive annual new-prescription cohorts spanning 25 years. There was a sharp reduction in achievement of SU targets among those commenced on ULT in the year 2019 and 2020 potentially due to the impact of the COVID-19 pandemic. This was comparable to 37.2% reduction in healthcare utilisation during the pandemic reported in a systematic review, with 29.6% and 31.4% reduction in therapeutics and diagnostics, respectively. T2T–ULT prevents recurrent gout flares and our findings point to a potential epidemic of uncontrolled gout. The modest improvement in SU outcomes pre pandemic was lost during the pandemic resolves, additional efforts, for example, engagement with primary-care providers will be required to increase the use of T2T–ULT.

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