Abstract FRI0246 – Table 1. Generalised linear model for association between sUA level and gout flare rates (n=15,140)

Variable	Rate Ratio	95% CI	p-value
Group 2: sUA ≥ 6.0 and < 9.0 mg/dL ¹	1.179	(1.143, 1.216)	<0.001
Group 3: sUA ≥ 9.0 mg/dL ¹	1.540	(1.475, 1.608)	<0.001
Sex: Male	1.374	(1.326, 1.424)	<0.001
Age	1.012	(1.010, 1.014)	<0.001
North central ²	2.198	(2.114, 2.285)	<0.001
South ²	1.382	(1.339, 1.425)	<0.001
West ²	2.038	(1.935, 2.145)	<0.001

¹: versus < 6.0 mg/dL (Group 1)²: versus northeast

Conclusions: These results suggest that higher sUA levels are associated with higher flare rates and that sUA level may be an indicator of GFLR. This finding may encourage health providers to prioritise reducing sUA levels in gout patients to reduce the frequency of gout flares and improve gout management.

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FRI0247

GOUT CHARACTERISTICS AND ITS ASSOCIATION WITH THE PRESENCE OF CARDIOVASCULAR DISEASE: A CASE-CONTROL STUDY

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Background: Gout is an independent risk factor for any type of cardiovascular disease (CVD). The exact mechanism behind remains to be elucidated, but persistent crystal-related inflammation is presumed as a key factor.

Objectives: The aim of this study was to assess whether gout characteristics that may indicate a more severe disease and higher inflammatory load are associated with the presence of CVD.

Methods: Case-control study, performed at baseline of an inception cohort including consecutive crystal-proven gout patients seen at a rheumatology unit. Gout features (time since first attack, number of attacks, number of joints affected, pattern of presentation, tophi) were registered after interview and physical exam. Presence and duration of CVD (which included coronary heart disease, heart failure, stroke or peripheral artery disease) was registered after interview and records review. Those patients who have suffered from CVD prior to the onset of gout were excluded. Other cardiovascular risk factors, as well as clinical and laboratory variables, were also registered. Odds ratios with 95% confidence intervals (95% CI) for each gout feature were calculated between patients with and without CVD, using a multiple logistic regression model to adjust for confounders.

Results: The inception cohort includes 308 patients; 54 were excluded for this study because gout onset occurred after CVD, so finally 254 cases were analysed. Mean age was 61.4 years (SD 13.9), being 225 (88.6%) men. Regarding gout, median duration was 5 years (IQR 1–12), median number of reported attacks was 5 (IQR 2–14) that had involved a median of 3 joints (IQR 2–5); presenting attack was monoarticular in 77.4% cases, oligoarticular in 16.7%, and polyarticular in 6%, and 58 patients (22.8%) showed tophi at enrolment. A total of 32 patients (12.6%) had suffered from CVD at enrolment. Table 1 shows the results of logistic regression analysis: time since first attack and polyarticular presentation of gout both significantly associated with the presence of CVD, while other variables showed no association. After multivariate analysis, time since first attack persisted associated with CVD, while polyarticular involvement showed a trend towards signification.

Association between gout features and cardiovascular disease

	Simple regression		Multiple regression	
	OR (95% CI)	p	aOR (95% CI)*	p
Gout duration	1.07 (1.03–1.10)	<0.001	1.06 (1.02–1.11)	0.005
Number of attacks suffered	1.00 (0.99–1.00)	0.561	-	-
Number of involved joints	1.09 (0.96–1.22)	0.177	-	-
Joint pattern at presentation	1. (ref)	-	1.0 (ref)	-
i. Monoarticular	2.30 (0.93–5.72)	0.073	1.71 (0.44–6.65)	0.440
ii. Oligoarticular	3.56 (1.02–12.32)	0.045	5.33 (0.92–30.78)	0.061
iii. Polyarticular	1.64 (0.73–3.69)	0.234	-	-
Tophi				

*aOR: adjusted OR for age, gender, hypertension, diabetes, dyslipidemia, smoking background, obesity, and renal failure.

Conclusions: Time since first attack and likely a polyarticular presentation, two variables that may estimate crystal and inflammatory load in gout patients, are independently associated with the presence of CVD, adding evidence to the role of persistent inflammation on its development.

Disclosure of Interest: None declared

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FRI0248

VALIDITY OF RANDOM URINARY URIC ACID-TO-CREATININE RATIO FOR ESTIMATING 24-HOUR URINE URIC ACID EXCRETION IN PATIENTS WITH GOUT

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Background: Gout is one of a heterogeneous group of diseases related to hyperuricemia. The measurement of 24 hour urinary uric acid excretion is frequently used to evaluate disease status and select drugs that lower uric acid level. However, 24 hour urine collection is inconvenient and frequently unreliable, due to errors in collection. Therefore, a simpler alternative to the 24 hour urine collection is needed.

Objectives: We investigated the utility of the random urine uric acid-to-creatinine (UA/CR) ratio in predicting 24 hour urine uric acid excretion in patients with gout.

Methods: Ninety patients with gout without any use of uric acid lowering agents were enrolled in this study. The mean age was 50.0±16.7 years old and the male patient was 90.0% (81/90) of all participants. For the evaluation of uric acid excretion and renal function, patients were collected 24 hour urine. Random urine uric acid and creatinine specimens were gained on the same day of 24 hour urine collection. Chronic kidney disease was defined as a creatinine clearance (CCr) level of less than 60 ml/min/1.73m² measured in 24 hour urine collection sample. Excretion of more than 600 mg of uric acid in the 24 hour urine sample was defined as uric acid over-excretion.

Results: Mean serum uric acid level was 7.73±1.89 mg/dl, and the mean 24 hour uric acid excretion was 666.5±236.2 mg. The random urinary UA/CR ratio showed positive correlation with 24 hour urine uric acid excretion ($\gamma=0.398$, $p<0.001$). Correlation between these two variables was also found in the patients with chronic kidney disease ($\gamma=0.762$, $p=0.028$). In the linear regression analysis, absolute 24 hour urine uric acid excretion was estimated to be 581 x (random urinary UA/CR)+432 ($p<0.001$, adjusted R²=0.398). The best cut-off value for the random urinary UA/CR ratio to distinguish between uric acid over-excretion and normal uric acid excretion was 0.342, with a sensitivity of 74.1%, specificity of 66.7%. The areas under the curves (AUCs) of the random urine UA/CR ratio was 0.763 [95% confidence interval (CI), 0.665–0.861, $p<0.001$].

Conclusions: The random urine UA/CR ratio correlated with 24 hour urine uric acid excretions in patients with gout. The best cut-off random urine UA/CR ratio value to discriminate uric acid over-excretion was 0.342, with a sensitivity of 74.1% and a specificity of 66.7%. The random urine UA/CR ratio would be a useful

predictor to detect patients with urinary uric acid underexcretion, who could then be treated with uricosuric drugs.

Disclosure of Interest: None declared

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FRI0249 AUDIT OF THE MANAGEMENT OF GOUT -ARE WE DOING IT RIGHT?

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Background: Gout is the most prevalent inflammatory arthritis, affecting 2.5% of adults in the UK. However, management is often inadequate in both primary and secondary care, with only 45% of patients achieving target serum urate (SUA) level <360µmol/L over 12 months in UK rheumatology clinics. A better understanding of how well gout is managed in different areas of our service (discharge to GP, general rheumatology follow-up clinics, and specialist gout clinic) will inform service redesign.

Objectives: To compare the management of gout in the rheumatology service against the 2007 British Society for Rheumatology (BSR) and 2006 European League Against Rheumatism (EULAR) gout guidelines, and the NICE febuxostat technology appraisal (TA164).

Methods: We retrospectively audited all new out-patient referrals with gout seen in our department over a 12 month period (January-December 2015). Data were collected by electronic review of case notes and completion of a structured proforma. Three mutually exclusive groups were compared: those seen once in rheumatology and discharged to GP (group1), followed-up in general rheumatology clinics (group2), or followed-up in a specialist gout clinic (group3). Follow-up SUA levels were specifically compared to EULAR (<360µmol/L) and BSR (<300µmol/L) treatment targets.

Results: 150 new consecutive gout referrals (50 per group) were included in the audit: 83% were male and mean age was 62 years. Gout was diagnosed by monosodium urate crystal identification in 16 (11%) and 25% had tophi. 43 (29%) patients were already on ULT, and 107 (71%) patients were newly commenced on ULT. Prophylactic medications were co-prescribed in 86% (130) cases. 44 patients were taking diuretics; diuretics were advised to be stopped or reduced in 12% cases. Nearly all patients starting allopurinol commenced a daily dose of ≤100 mg (99% cases). Of the patients started on a uricosuric/febuxostat, 92% had taken allopurinol previously. Of the 15 patients commenced on febuxostat, 3 (15%) had ischaemic heart disease (IHD) or cardiac failure. Chronic kidney disease (CKD) stage 3 (group1 28%, group2 22%, group3 34%), CKD stage 4/5 (2%, 2%, 10%), IHD/cardiac failure (30%, 30%, 40%), clinically evident tophi (16%, 18%, 42%) and previous allopurinol intolerance (10%, 14%, 24%) were more common in group 3 than groups 1 and 2. After 12 months, only 90 (60%) patients achieved target <360µmol/L (group1 42%, group2 64%, group3 62%) and 47 (31%) patients achieved target SUA <300µmol/L (group1 20%, group2 34%, group3 36%).

Conclusions: Allopurinol starting dose, use of prophylaxis, and use of allopurinol first-line concurred well with national and international guidelines. We achieved target SUA levels more commonly than the UK national average in a recent national rheumatology audit. Patients discharged to the GP with a management plan prior to achieving a target SUA level achieved target less frequently suggesting that rheumatologists should follow patients in order to ensure treatment is escalated until the target SUA level is achieved.

Disclosure of Interest: None declared

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FRI0250 BELIEFS ABOUT MEDICINES AMONG GOUT PATIENTS – DATA FROM THE NOR-GOUT STUDY

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Background: Low adherence to medication is a concern in gout where urate lowering therapy (ULT) is indicated to prevent disease severity and comorbidities. The beliefs patients have about medication may impact on the success of achieving these treatment goals.

Objectives: To study which factors were associated to beliefs about medicines in patients with a recent gout attack and a need for ULT.

Methods: Baseline data from a prospective observational study were used in patients with crystal-proven gout who presented after a recent gout flare with insufficiently treated serum urate (sUA) level (>360 µmol/L/>6 mg/dl). In these patients a treat-to-target approach was planned to meet the treatment target (sUA <360 µmol/L, or <300 µmol/L if clinical tophi). Assessment included demographic and clinical data, baseline serum urate levels, medication, self-administered

comorbidity questionnaire (SCQ), physical function (HAQ), and SF-36 mental (MCS) and physical component summaries.

The Beliefs in Medicines Questionnaire (BMQ)¹ assesses patient beliefs about medicines on four subscales: necessity and concerns specific for the patient, and generally on overuse and harm. Respondents indicated their degree of agreement with each individual statement about medicines on a 5-point Likert scale, (1=strongly disagree to 5=strongly agree). Scores within the four subscales (necessity, concerns, overuse, harm) were summed (ranges 5–25 and 4–20). Calculation of the necessity-concerns differential gave the relative importance for the patient for taking medicines.

Results: 163 patients were included at baseline, 93.3% men, 90.5% caucasian, mean (SD) age 57.0 (14.1) years, disease duration 8.0 (7.7) years. Mean sUA level was 487 (SD 82) µmol/L at baseline, body mass index 28.9 (4.7) kg/m², comorbidity score (SCQ) 3.6 (3.2), and physical function (HAQ) 0.35 (0.55). 18.8% (n=28) had tophi, and 30.1% (n=43) were using allopurinol.

Scores for the BMQ subscales (SD) were for necessity 16.8 (4.3), concerns 13.7 (5.0), overuse 10.6 (2.7), and harm 9.5 (2.4). The specific necessity-concerns differential was 3.1 (5.7), with median 2.5. Patients expressing higher versus lower beliefs in importance of medication (necessity-concern higher than median) demonstrated in bivariate comparisons statistically significant differences (table 1). The level of serum urate was not associated with any BMQ subscale.

In logistic regression analyses, also adjusting for age and gender in the final model, high beliefs in the relative importance of medication were independently associated with not using allopurinol medication (OR 0.41, 95% CI 0.18–0.94), with higher BMI (OR=1.11 per unit, 95% CI 1.02–1.20), and better mental health (SF36 MCS) (OR 1.04 per unit, 95% CI 1.01–1.08).

	High belief (>median)	Low belief	p-value
BMI	29.6	28.2	0.048
Comorbidity score (SCQ)	2.3	4.4	0.02
Taking allopurinol	25.8%	37.9%	0.09
SF36 MCS	50.8	47.1	0.03
BMQ overuse	9.9	11.4	0.001
BMQ harm	8.9	10.2	0.001

Conclusions: Unexpectedly, using allopurinol medication was inversely associated with high beliefs, whereas higher BMI and better mental health were positively associated with high beliefs in the importance of medication in gout patients. These findings do not allow conclusions on causality, and beliefs in medicines in gout patients should also be studied longitudinally and in relationship to therapy response.

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FRI0251 PREVALENCE OF GOUT AND THE USE OF URATE LOWERING AGENTS IN US GENERAL POPULATION NHANES 2007–2016

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Background: The prevalence of gout has been increasing worldwide. Previous study using National Health and Nutritional Examination Survey (NHANES) showed an increase of 1.2% in the prevalence of gout in the US general population from 1988 to 2007. However, it is unknown if this trend continued over the past decades. Therefore, we would like to determine the prevalence of gout in the US general population using NHANES 2007 to 2016. In addition, the use of urate lowering agents among patients with gout was analysed.

Objectives: To estimate the prevalence of gout and the use of urate lowering agents using the National Health and Nutritional Examination Survey from 2007 to 2016

Methods: Adult participants in NHANES 2007–2016 were included in the analysis. NHANES is a continuous national survey conducted by the US Centres for Disease Control and Prevention and is designed to evaluate the health and nutritional status of adults and children in the US. They are based on a representative sample of the non-institutionalised US civilian population. Each participant represents approximately 50000 Americans.

The primary outcome was self-reported gout. Factors associated with gout, such as body weight, drinking habit, history of chronic kidney disease, use of aspirin and thiazide diuretics were evaluated. Prescriptions of allopurinol, febuxostat or probenacid were retrieved from the NHANES dataset to evaluate the use of urate lowering agents among patients with gout.