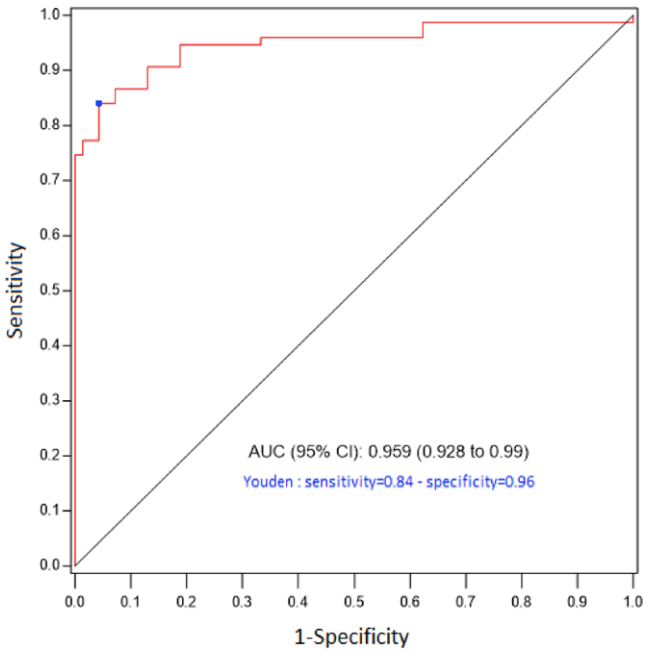

Figure 1. ROC curve analyzing performance of FDG-PET/CT for the diagnosis of PMR according to the number of sites with significant FDG uptake (≥ 2)

Conclusion: Our results demonstrate that the FDG uptake score and the number of sites with significant FDG uptake could be relevant criteria for the diagnosis of PMR. However, unlike other authors, we found no evidence suggesting that FDG-PET/CT may be useful in diagnosing silent underlying LVV in patients with isolated PMR.

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Improving collaborative research and patients' participation in health decision-making

OP0191-PARE **DEVELOPMENT OF A PUBLIC AND PATIENT INVOLVEMENT (PPI) RESEARCH NETWORK FOR PEOPLE WHO HAVE RHEUMATIC CONDITIONS**

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Background: Public and patient involvement (PPI) improves quality and relevance of research (1). PPI is advocated by policy makers and funding bodies and is supported by EULAR (2). Arthritis Research Limerick (ARL) is a partnership between researchers at the University of Limerick and clinicians at University Hospitals Limerick. PPI representatives have been involved in ARL projects, however no formal PPI network had been established prior to 2020. The need for a formal PPI network to collaborate with ARL was identified by both ARL and patient representatives. This need arose from a joint ambition to promote meaningful involvement of the public and patients in ARL projects and to develop a platform through which researchers and PPI representatives could collaboratively set research priorities.

Objectives: The aim of this project was to create a formal PPI network to engage with people living with rheumatic and musculoskeletal diseases (RMDs) and their families and to identify collaborative research opportunities between ARL and PPI representatives.

Methods: A face-to-face PPI seminar was planned for October 2020. The seminar consisted of speakers from ARL providing an overview of research projects and a World Café research ideas session. Funding was obtained through a competitive, peer-review funding call from the PPI Ignite group at the University of Limerick to support the PPI seminar. The funding application was a joint application between ARL members and a PPI partner (iCAN - Irish Children's Arthritis Network). The seminar was advertised through national patient organisations (iCAN and Arthritis Ireland), social media and ARL research networks.

Results: Due to Covid-19 public health restrictions the PPI seminar was held virtually. The ARL PPI inaugural seminar was attended by N=19 researchers and people living with RMDs. The seminar speakers included ARL researchers and a PPI representative. The World Café event was modified to adapt to the virtual seminar delivery. Research ideas were noted by the seminar organiser and summarised for attendees at the end of the research ideas and priorities session. An ARL PPI mailing list was set-up post seminar as a means of communicating with seminar attendees and will serve as a formal PPI network for ARL. Research updates and opportunities will be communicated via this formal network to people living with RMDs and researchers alike.

Conclusion: This was the first PPI seminar organised by ARL in collaboration with a PPI seminar, and has led to the creation of a formal PPI network. Delivery mode of the PPI seminar was changed due to Covid-19 public health restrictions. This change may also have impacted engagement and attendance at the PPI seminar, given that virtual events are not accessible to all of the RMD population. Future PPI seminars will consider a hybrid approach of face-to-face and virtual attendance, to enhance accessibility. A formal PPI communication network has been established. Future work will focus future collaborative opportunities between the PPI panel and the ARL group, including project development, co-led research funding applications and joint research dissemination.

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Comorbidities in gout and hyperuricaemia

OP0192 **INCIDENT GOUT AND RISK OF FIRST-TIME ACUTE CORONARY SYNDROME: A PROSPECTIVE, POPULATION-BASED, COHORT STUDY IN SWEDEN**

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Background: Gout is associated with an increased risk of cardiovascular disease (CVD), but it is not clear whether this risk is intrinsic to gout itself or to underlying comorbidities. Although the impact of gout on CVD has been studied previously, the results have been conflicting and studies from European countries are scarce.

Objectives: To investigate the risk of first-time acute coronary syndrome (ACS) in patients with incident gout in western Sweden, compared to the general population.

Methods: Using data from the population-based health care database VEGA, we identified all patients with incident gout diagnosis at either primary or specialized health care units in western Sweden, in the period 2007– 2017 (20,287 cases; mean age, 65.6 years; 67.4% males). Cases regarded as incident, if they did not have any recorded diagnosis of gout in the previous seven years. For each case, up to five controls matched on age, sex, and county at the date of first gout diagnosis were identified from the census register (84,240 controls). Cases and controls with prior history of ischemic heart disease were

excluded. The follow-up began at the first diagnosis of gout, and ended at the earliest of an ACS event, emigration, death, or 31 December 2017. To estimate the risk of first-time ACS, we used incident rate (IR) and univariable and multivariable Cox regression analysis with adjustments for the following cardiovascular risk factors: the diagnoses of hypertension, diabetes, hyperlipidemia, obesity, renal disease, heart failure, cardiomyopathy, psoriasis, chronic obstructive pulmonary disease, alcoholism, cancer, cerebrovascular, and atherosclerotic disease, as well as for the dispensed prescriptions of statins, anticoagulants, anti-hypertensive, anti-diabetic, anti-hyperlipidemic, anti-obesity, and vasodilator drugs.

Results: The IR of first-time ACS was 9.0 events per 1,000 person-years in the gout cohort, compared to 6.3 in the control cohort. The IRs were lower for women than men, both in the gout (IR, 8.2 vs 9.4) and in the control cohort (IR, 5.0 vs 7.0). Univariable analysis showed that patients with gout have a higher risk of first-time ACS, as compared to the general population (Figure 1, Table 1), but the increased risk is largely diminished after adjustments for cardiovascular risk factors (Table 1).

Table 1. Risk of first-time ACS in patients with incident gout, as compared to the general population.

	Unadjusted HR	95% CI	p-value	Adjusted HR	95% CI	p-value
ACS						
Overall	1.43	1.32-1.55	<.0001	1.15	1.05-1.24	0.0013
Men	1.35	1.23-1.48	<.0001	1.12	1.02-1.23	0.0230
Women	1.63	1.41-1.89	<.0001	1.21	1.03-1.41	0.0207

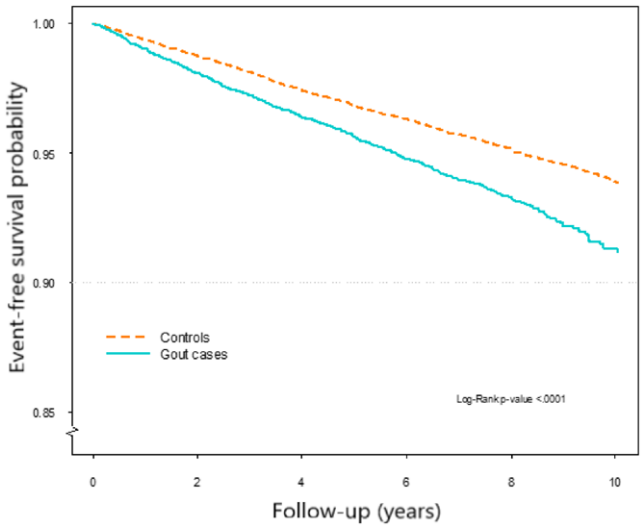

Figure 1. Event-free survival curve for patients with gout and controls during the follow-up, where event is first-time acute coronary syndrome.

Conclusion: Patients with incident gout have a 43% higher risk of first-time ACS, as compared to the general population. This increased risk is largely explained by the increased occurrence of comorbidities in gout, but there is still a modestly increased risk that may be due to gout related factors. Our results underline the importance of cardiovascular risk assessment and the need for appropriate management of the underlying cardiovascular risk factors in patients with gout.

Disclosure of Interests: None declared

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OP0193 EVALUATION OF THE CAUSAL EFFECTS BETWEEN GOUT AND HYPERTENSION: A MENDELIAN RANDOMIZATION STUDY

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Background: Gout is the most common inflammatory arthritis worldwide associated with comorbidities that may impair well-being and reduce longevity. Epidemiological evidence generally supports that gout patients are at high risk of hypertension. However, the causality between gout and hypertension is uncertain since confounding and other types of bias are difficult to contain in the observational study.

Objectives: To test the causal link between gout and hypertension using a Mendelian Randomization (MR) analysis.

Methods: A mendelian randomization analysis was conducted using individual patient data from the Taiwan Biobank featured 2452 individuals with gout and 66527 controls. We selected 12 SNPs as instrumental variables (IVs) with p-values $< 5 \times 10^{-8}$ and the linkage disequilibrium (LD) R^2 value less than 0.8. We conducted traditional MR analysis using the inversed weighted variance (IVW) and median methods with different settings as the primary analysis. Further IV assumption-free methods, the MR-Egger methods [1], Causal Analysis Using Summary Effect Estimates (CAUSE) model [2], and structural equation modeling (SEM) [3,4] were also performed as a sensitivity analysis.

Results: The prevalence of hypertension was 0.15% (n = 9549) in the cohort. Table 1 shows causal effect estimates between gout and hypertension using different methods. The average causal effect β is estimated at 0.09 and the corresponding odds ratio (OR) at 1.09 using traditional methods across different settings. Similar estimates were observed in the MR-Egger method, SEM model, and the CAUSE model, demonstrating the robustness of the causal association between gout and hypertension considering pleiotropic effects (Table 1). Furthermore, the model fit of the hypothesized SEM model is excellent with a comparative fit index of 0.978 and Tucker-Lewis index of 0.968. The SEM model explains at least 32.70% variance of hypertension and 32.6% variance of gout (Figure 1).

Table 1. Estimate the causal effect of MR analysis and sensitivity analysis

Method	Causal effect estimate β	95% lower bound	95% upper bound	p-value
Primary analysis				
IVW with fixed effect, first order	0.0900	0.0656[a]	0.1145[a]	$<10^{-5}$
IVW with fixed effect, second order	0.0895	0.0647[a]	0.1143[a]	$<10^{-5}$
IVW with random effect, first order	0.0900	0.0656[a]	0.1145[a]	$<10^{-5}$
IVW with random effect, second order	0.0895	0.0647[a]	0.1143[a]	$<10^{-5}$
Median method, simple	0.0989	0.0645[a]	0.1332[a]	$<10^{-5}$
Median method, weighted	0.0902	0.0583[a]	0.1220[a]	$<10^{-5}$
Median method, penalized	0.0902	0.0583[a]	0.1220[a]	$<10^{-5}$
Sensitivity analysis				
MR-Egger	0.0786	0.0132[a]	0.1440[a]	0.0183
SEM	0.0519	0.0481[a]	0.0697[a]	$<10^{-5}$
CAUSE model	0.0764	0.0176[b]	0.1349[b]	$<10^{-5}$

* [a] represents the 95% confidence interval; [b] represents the 95% credible interval.

** For the random effect model, if the estimated residual standard error is less than 1, then the *MendelianRandomization* package will automatically set the value of residual standard error into 1.

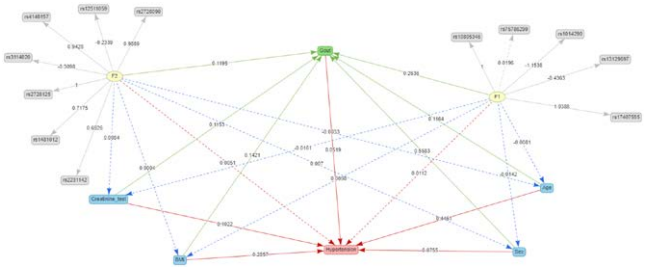

Figure 1. Pathway analysis for SEM study assessing the relationships between gout and hypertension.

Conclusion: These results strongly suggest that the association between gout and hypertension has a causal basis.

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