



TRAM MB-PhD Project Summary

PhD project Title

Developing personalised care of gout

Lead PhD supervisor (please provide name, affiliation and email)

Dr Philip Riches, Rheumatic Diseases Unit, NHS Lothian/University of Edinburgh
priches@exseed.ed.ac.uk

Second PhD supervisor (please provide name, affiliation and email)

Dr Veronique Vitart, Institute of Genetics and Cancer, University of Edinburgh
Veronique.Vitart@ed.ac.uk

Background

Gout is caused by a reaction to urate crystals that results in attacks of severe joint pain. Medicine to lower urate levels can prevent symptoms of gout however it may take 12 months for this benefit to be felt, and unfortunately most patients never achieve good symptom control. This is a growing problem resulting in rising numbers of hospital admissions. Within Lothian a supported self-management approach to gout has been developed in which patients measure their own urate levels using a finger prick test, and then receive advice on adjusting their treatment dose to achieve target urate levels through a smartphone App (Gout SMART). A trial of this approach has shown that it results in much better control of urate levels after 6 months than usual outpatient based care, and results in improved clinical outcomes. We plan to confirm the effectiveness of this approach in reducing flares of gout over 2 years by randomising patients to either treatment-to-target urate using the GoutSMART approach, or to treatment guided by symptoms only. We have also built a biobank of DNA samples in over 5000 patients with gout as part of the FAST study. Analysis of these samples will allow insights into personalised medication titration effects. A liaison service is being developed to identify all patients with gout as they access Lothian health services which will facilitate recruitment into the planned study.

Aims

There are three core aims

- 1) To explore the impact of gout on patients and the health service.
- 2) Analyse the pharmacogenetics of gout therapy
- 3) Evaluate a supported self-management approach to gout and the impact of a gout liaison service

Training and experience provided

The student will receive training in good clinical practice and help co-ordinate recruitment, management and analysis of a clinical effectiveness trial of gout supported self-management. The student will gain experience in the analysis of pharmacogenetic traits, qualitative research methodology and public health data.



Expected outcomes

Exploring the impact of gout: Student will analyse data from Public Health Scotland on hospital admissions as well as performing qualitative interviews with patients with gout in Lothian identified through the Gout Liaison Service.

Pharmacogenetics of gout: Analysis of genetic predictors of dose titration in over 5000 patients with gout recruited through participation in the FAST study.

Supporting self-management of gout: Evaluation of supported self-management of gout in comparison to pragmatic flare based treatment escalation. Analysis of results in approximately 240 participants randomised to supported self-management or pragmatic flare based escalation of therapy.

References

1. Riches PL, Alexander D, Hauser B, et al, Evaluation of supported self-management in gout (GoutSMART): a randomised controlled feasibility trial. *Lancet Rheumatology* 2022 4(5): e320-e328
2. Mackenzie IS, Ford I, Nuki G, Hallas J, Hawkey CJ, Webster J, Ralston SH, Walters M, Robertson M, De Caterina R, Findlay E, Perez-Ruiz F, McMurray JJV, MacDonald TM; FAST Study Group. Long-term cardiovascular safety of febuxostat compared with allopurinol in patients with gout (FAST): a multicentre, prospective, randomised, open-label, non-inferiority trial. *Lancet*. 2020; 10264(396):1745-1757