

## NURTuRE-INS - a national cohort study to facilitate stratified medicine in idiopathic nephrotic syndrome

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### Introduction

Idiopathic Nephrotic Syndrome (INS) is a heterogenous disease and current classification is based on observational responses to therapies. The NURTuRE-INS cohort has been established as part of the UK-first standardised renal-biorepository with linked clinical data. It aims to develop novel methods to stratify patients for better disease management and to develop new treatments. This cohort builds on the existing NephroS-UK study and aims to add highly protocolled bio-sampling in a core subset of 800 prospectively collected INS patients over 3 years (NURTuRE-NephroS).

### Methods

Patients are being recruited from 14 adult and 8 paediatric centres throughout Great Britain. Participants undergo a detailed clinical assessment, which is entered into an online database managed by the UK Renal Registry (UKRR). Once a participant is registered, all past and future routine laboratory data are captured by the UKRR. Outcomes with respect to end-stage kidney disease will be provided by the UKRR and data regarding survival and hospital admissions will be obtained from NHS Digital.

Serum, plasma, urine and blood for RNA and DNA extraction are obtained and processed according to strict industry standard operating procedures (SOP). Samples are split into 133 specimen aliquots and subsequently frozen within 2 hours. Specimens are centrally stored at the National Biosample Centre in Milton Keynes

The original histology slides and any surplus biopsy tissue blocks are being transferred to the Human Biomaterials Resource Centre at the University of Birmingham, where slides are digitally scanned and additional immunohistology conducted.

Follow-up visits and sample collection will occur depending on the patient's disease course: at relapse, remission and (before/after) transplantation. In addition, half the cohort (400 patients) will be followed up at a time dependent manner (at least 6 months after) their baseline visit.

Funding and governance is achieved via a unique collaborative partnership between Kidney Research UK, industry and academic investigators.

### Results

Recruitment commenced in October 2017 and to date 580 patients have been recruited (369 adults, 211 paediatric). The cohort is due to complete recruitment in December 2020. Follow-up will take place between March 2020 - December 2021. Patients will have GWAS and exome sequencing undertaken by the industry partners with data shared with academic researchers – 169 patients have been analysed so far. Of the 580 patients recruited to date, 327 patients (257 adults, 70 paediatric) have had a biopsy as part of their routine clinical care. An MRC precision medicine programme grant based on the NURTuRE cohort is allowing the delivery of detailed molecular stratification, and further research studies are invited.

## Discussion

NURTuRE-INS is a unique resource of high-quality patient samples alongside clinical data to mechanistically stratify patients to improve disease management and treatment.

In keeping with the goals of the UK Renal Research Strategy to establish a national renal biobank, access to the data and biosamples will be available to investigators in the UK by application to an independent Strategic Oversight and Access Committee.

Plans are already in progress to establish similar cohorts with national biobanks using the NURTuRE model in other kidney disease areas.