Background
Inaccurate prediction of disease flare exposes the 10% of the population with autoimmune disease to overtreatment with immune system suppressing drugs (with consequent infection and cancer risk), or under-treatment with these drugs (with consequent organ failure due to uncontrolled autoimmunity). We need better tools to personalise these treatments. Using ANCA vasculitis as a model archetypal relapsing autoimmune disease, we aim to identify and validate the environmental / clinical factor interactions influencing flare of the disease.

Linkage to Rare Kidney Disease registry EPR
Meds, flares, AAV characteristics
Followed for 5 years
About 50% of patients will suffer an AAV flare

Breath condensate
Proteomic analysis of breath condensate is a novel technology that can provide a non-invasive estimate of systemic inflammation. We shall explore options for integrating this into the AVERT workflow.

Statistical & Machine Learning analysis
Location
Time
Flare events
Medication
Phenotype
Weather
Local Infections
Iterative predictive algorithm building, refined with each new flare event

End goal: Physician/patient support dashboard depicting flare risk over next 3 months

pMp smartphone app: location, activity and symptoms

Followed for 5 years

About 50% of patients will suffer an AAV flare