



Application Number / Title: 22207 - Causes and consequences of valvular heart disease

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Keywords provided by the Applicant PI to describe the research project: Valvular heart disease, imaging, risk prediction,

Application Lay Summary:

1a: Valvular heart disease refers to a group of conditions that denote damaged or defective heart valves. Mitral and aortic valve disease tend to be more commonly diagnosed and have more serious health consequences. In an aging population, the burden of valvular heart disease is increasing. However, a large proportion of valvular heart disease is still considered to be 'degenerative' with no clear understanding of its causes and no established preventative strategies. In this application, we propose to make use of the multi-modal data from the UK Biobank to investigate the causes and consequences of valvular heart disease.

1b: Better understanding of underlying causes is the first critical step in developing interventions for prevention of valvular heart disease and its progression.

1c: - We first report the incidence and prevalence of valvular heart disease in this contemporary population. The cases will be identified as reported in electronic health records (EHR) and further complemented by cardiac MRI and echocardiography studies that are ongoing.

- We then predict the risk of developing individual types of valvular disease.

Modelling will take account of potential interactions by other vascular diseases, in particular when EHR data are used.

- We will complement the analysis by conducting a series of Mendelian randomisation studies to identify potential causal pathways for disease development and progression.

1d: The full cohort, plus imaging sub-study cohort, and access to derived genetic markers.