



Application number/Title: 26999 - Inflammation, depression and cardiovascular disease: examining causal associations

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Keywords provided by the Applicant PI to describe the research project:

biomarkers, cardiovascular-disease, depression, genetics/genotyping, inflammation, mendelian-randomisation

Application Lay Summary:

Depression affects one in five people in lifetime but causes for this illness is poorly understood. Recent scientific evidence indicates that an overactive immune system could increase risk of depression. Levels of proteins related to inflammation (known as inflammatory markers) are elevated in blood in patients with depression and in those at risk of developing the illness. However, psychological stress and other factors could explain previously observed links between depression and inflammatory markers.

The aim of our work is to test whether inflammation is a causal risk factor for depression using novel statistical analysis known as Mendelian randomization. We propose that genetic variants that are known to regulate levels/activity of specific inflammatory markers would be associated with depression. In addition, we will examine whether inflammation could explain the high comorbidity between depression and cardiovascular disease. We will test whether risk factors for cardiovascular disease, such as increased inflammatory markers, lifestyle and other factors, are also associated with depression.

The proposed project will use existing data collected by UK Biobank and will take approximately 24 months to complete.

A better understanding of the biological basis for depression would inform RCTs of novel therapies (e.g., anti-inflammatory drugs). It would also help to reduce stigma around mental illness. Co-morbidity between depression and cardiovascular disease accounts for an excess treatment cost of around £0.5 billion per year in the UK. A better understanding of the causes for this co-morbidity would help to inform preventative and treatment strategies in future