

CAF/19/04 – Developing biologically relevant prediction models for individual patients with First Episode Psychosis using machine learning

Psychosis is an illness manifest by unusual or muddled thoughts and hearing voices. Psychosis is the fifth leading UK cause of disability among working age adults. Meaningful recovery is more than treating symptoms but includes positive quality of life, social and functional outcomes. At a group level, we know factors like duration of untreated psychosis are associated with worse outcomes. However, we struggle to predict who will do well at an individual level.

An advanced statistical technique called machine learning has the potential to revolutionise medicine by predicting individual outcome. No study has applied a machine learning model to new patients with psychosis in a clinical setting. Information about the disease process, like inflammation and glutamate levels, may improve performance. Inflammation protects us from infections but sometimes it can be damaging. People with psychosis can have increased levels of inflammation. Glutamate is a chemical in the brain which helps nerve cells communicate. Abnormalities of glutamate relate to psychosis.

Can I use machine learning to predict individual outcome in psychosis, including new patients, in a clinical setting? I hope my research will lead to a personalised approach to care, maximising available resources, with considerable benefit to patients.