



Application number/Title: 41686 Understanding the biological, lifestyle and environmental risks and outcomes for multimorbidity in psychiatric disorders

Applicant PI: Dr Claire Niedzwiedz

Application Institution: University of Glasgow, UK

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

dementia, environment, health-inequalities, machine-learning, mental-health, multimorbidity

Application Lay Summary:

People with mental health disorders such as depression and anxiety have a higher chance of getting a physical health condition such as heart disease. This is a significant health inequality and contributes to the shortened life expectancy among people with mental health disorders.

The aim of this research project is to add to our understanding of the things that increase people's chance of developing different health conditions (e.g. dementia and cancer) if they have experienced a mental health disorder. The research will use novel techniques derived from computer science (e.g. machine learning) to uncover whether they can help us better understand why people develop multimorbidity (two or more health conditions experienced by one person) and what health conditions increase the chances of being hospitalised and dying. Multimorbidity is a growing public health concern and places significant pressure on the health service. Better understanding of multimorbidity is required to enable us to better prevent the development of multiple health conditions and also develop more effective treatments.

The research will make use of methods from different academic disciplines. Machine learning is a set of tools that can use the vast amounts of information now available to researchers to learn from patterns in the data and help us predict who might develop multimorbidity and what might happen to them afterwards. The application of machine learning to better understand public health and, in particular, multimorbidity is novel and has the potential to identify new factors that heighten people's risk of developing certain health conditions.

We will then investigate whether or not these factors are a potential true cause of particular illnesses.

The research will take place over the course of the next three years and will make a significant contribution to our understanding of multimorbidity which can lead to the development of new treatments and prevention efforts.