Vulnerability and resilience for mental illness following viral infections in the NESDA deep-phenotyped longitudinal cohort

Wachtelaer E (1, 2), De Picker L (1, 2), Morrens M (1, 2), Trippaers C (1, 2), Giltay E J (3), Penninx B W J H (4), Lucas A (5)

1) Collaborative Antwerp Psychiatric Research Institute, Faculty of Health Sciences, University of Antwerp, Antwerp, Belgium.
2) Scientific Initiative for Neuropsychiatric and Psychopharmacological Studies, University Psychiatric Hospital Campus Duffel, Duffel, Belgium.
3) Department of Psychiatry, Leiden University Medical Center, Leiden, the Netherlands; Department of Public Health and Primary Care, Health Campus The Hague, Leiden University Medical Center, The Hague, the Netherlands.
4) Amsterdam UMC location Vrije Universiteit Amsterdam, Department of Psychiatry, Boelelaan 1117, Amsterdam, the Netherlands; Amsterdam Public Health, Mental Health program, Amsterdam, the Netherlands; Amsterdam Neuroscience, Mood, Anxiety, Psychosis, Sleep & Stress Program, Amsterdam, the Netherlands.
(5) Institut des Maladies Métaboliques et Cardiovasculaires (I2MC), plateau We-Met, Inserm UMR1048 and Université Paul Sabatier, Toulouse, France.

Infectious diseases significantly elevate the risk of developing mental illness (MI), with an estimated 30% of the population exhibiting vulnerability for post-infection MI. Despite previous research efforts, underlying pathophysiological mechanisms driving this relation remain unidentified. It is hypothesized that infections can trigger neurobiological changes in the central nervous system, leading to psychiatric symptomatology. To understand these mechanisms, fine-grained clinical and biological data are required, which are immensely difficult to obtain.

In this state-of-the-art study, we will investigate the impact of SARS-CoV-2 seroconversion on the relapse risk of MI and its underlying mechanisms. Our investigation uses a unique, large-scale, longitudinal deep-phenotyped database including biomarkers, genome-wide association study (GWAS), neuroimaging, and psychosocial data. We have collected blood samples and clinical data before and after the COVID-19 pandemic in individuals vulnerable for depressive and anxiety disorders. We hypothesize that infections increase the risk of MI relapse in vulnerable individuals.

MI imposes a major personal, societal, and economic burden worldwide. However, clinical guidelines for identifying, managing or preventing infection-related mental health complications are lacking. By advancing our understanding of the pathophysiology of post-infection MI, our research can facilitate the development of novel personalized therapeutic and preventive strategies.