



Profile

Paul Harrison—investigating the psychiatric sequelae of COVID-19



Paul Harrison

For more on **Harrison's research** see <https://www.psych.ox.ac.uk/team/paul-harrison>

For more on **Harrison's teams' first COVID-19 study** see **Articles** *Lancet Psychiatry* 2021; 8: 130–40

For more on **Harrison's teams' second COVID-19 study** see **Articles** *Lancet Psychiatry* 2021; 8: 416–27

For more on **Harrison's teams' third COVID-19 study** see *PLoS Med* 2021; published online Sept 28. <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003773>

For more on **Harrison's teams' work on COVID-19 and eating disorders** see *Br J Psych* 2021; published online July 27. <https://www.cambridge.org/core/journals/the-british-journal-of-psychiatry/article/incidence-and-outcomes-of-eating-disorders-during-the-covid19-pandemic/ACFCF65FF7B1D07CCF1DDC628C50C7CA>

Paul Harrison describes his academic career as being low profile until several large studies on the psychiatric effects of COVID-19, including those linked to so called long-COVID, thrust him and his team into the limelight. “These studies and others leave little doubt that mental and brain health can be damaged by COVID-19, and these effects can be long-lasting”, Harrison tells *The Lancet Psychiatry*. Today, he is about to celebrate 25 years as professor of psychiatry at the University of Oxford, UK. He is Associate Head of Department (Research), chair of the Oxford Neuroscience Committee, and also works as an honorary consultant in general adult psychiatry at Oxford Health NHS Foundation Trust.

Harrison's father was a pathologist, which meant he had a lot of early exposure to medicine. In high school, he was fascinated by how the brain works, and studied at Oxford University where he completed degrees in physiological sciences and medicine. “I wanted to understand how things in the brain could go wrong”, he explains, “so neurology was an option. But as a medical student, I was fascinated by cases of acute psychiatric illness, including psychosis, eating disorders, and obsessive compulsive disorder. From then, I wanted to be a psychiatrist and researcher.”

During his psychiatry training, he obtained a Medical Research Council research fellowship to study for 3 years at St Mary's Hospital in London. There, he learned some of the latest molecular techniques to study Alzheimer's disease.

On moving back to Oxford, Harrison shifted his focus to schizophrenia, and his research evolved from neuropathology to examining how genes for schizophrenia work and affect the brain. “One gene family of interest comprises voltage-gated calcium channels”, he explains. “These channels are important in the brain, as well as the cardiovascular system, and they are known to be druggable—they can be targeted by calcium blockers, [which are] drugs such as amlodipine used to treat hypertension.” He continues: “We have found these channels in the brain are different from those in other tissues such as the heart. This provides the potential to design or repurpose calcium blockers to selectively target the channels in the brain. But it is complicated and expensive research.” Complementing these laboratory studies, his team is also exploring how the existing calcium blockers for hypertension affect the brain and behaviour, testing healthy volunteers and examining electronic health records.

When COVID-19 hit, everything changed rapidly for Harrison and his colleagues. Though he confesses he “hadn't given an injection in years”, he trained and took part in vaccine clinics in his wife's general practice surgery. He also jumped at the chance to do research on the

mental health sequelae of the pandemic, with two major studies published in *The Lancet Psychiatry* and another in *PLOS Medicine*, all led by Maxime Taquet, a junior psychiatrist and research fellow based in Oxford.

The first analysis (published in *The Lancet Psychiatry*) of more than 60 000 survivors of COVID-19, mostly in the USA, showed that a diagnosis of COVID-19 was associated with an increased incidence of a first or a recurrent psychiatric diagnosis in the following 14 to 90 days compared with six other health events, including influenza, respiratory tract infections, and bone fractures. The greatest increased incidence was found for anxiety disorders. The study also showed that having an existing psychiatric diagnosis was linked to an increased risk of COVID-19. The second study (also published in *The Lancet Psychiatry*) of more than 230 000 survivors of COVID-19 provided further evidence for substantial psychiatric, and neurological, morbidity in the 6 months after COVID-19 infection. “One in three patients was diagnosed with a psychiatric or neurological condition, and one in eight received their first such diagnosis of this kind”, explains Harrison. “The risks were greatest in, but not limited to, patients who had experienced severe COVID-19.”

The third study, published in *PLOS Medicine*, studied more than 270 000 patients and found that over one in three had one or more features of long-COVID (such as fatigue, pain, or brain fog) recorded between 3 and 6 months after a diagnosis of COVID-19. This was significantly higher than after influenza. The risk of long-COVID features was higher in patients who had more severe COVID-19 illness, and slightly higher among females. White and non-White patients were equally affected. “We plan to extend our work to look at longer-term follow up, as well as to see whether the effects of the virus are evolving over time, in relation to change in dominance of differing variants”, explains Harrison.

Other studies that his team has carried out include one showing a marked increase in eating disorders since the pandemic began. He has also just begun a detailed study into brain fog, which will conduct a battery of tests on volunteers with the condition to try to identify the causes and potential treatments. “Early clues are that this could be related to persistent inflammation, or small blood clots in the blood vessels of the brain”, he says.

Harrison is keen to continue with his COVID-19 research because it is “impactful, inspiring, and rewarding”, as well as with his other studies. Outside work, at the time of writing he had not been on a plane since before the first lockdown, and is looking forward to a family holiday to New Zealand, once the country opens its borders.

Tony Kirby