

Oxford University News Release

Oxford leads development of risk prediction model for smarter COVID-19 shielding advice

Clinicians and GPs will soon be able to better identify patients who are at a higher risk of serious illness from SARS-CoV-2 infection based on a new data-driven risk prediction model, now under development by an Oxford University-led team, supported by NHS Digital.

In the UK, government guidance on COVID-19 identifies individuals based on three broad categories of risk, with those who are 'clinically extremely vulnerable' to the disease previously being advised to shield themselves from the virus.

This new model could be applied in a variety of health and care settings, including supporting GPs and specialists in consultations with their patients to provide more targeted advice based on individual levels of risk.

Routinely collected anonymised electronic health records of 8 million adults in the UK, accessed through the University of Oxford's [QRsearch](#) database and linked datasets will be analysed to identify factors that can be used to predict those at highest risk of infection and serious illness from COVID-19. These include age, sex, ethnicity, deprivation, smoking status, body mass index, pre-existing medical conditions and current medications.

Algorithms from the data analysis, will be developed in conjunction with clinical and data experts at NHS Digital and will drive a clinical risk prediction model which can be applied across various health and care settings. Individualised risk assessment could be used to improve shared decision-making between clinicians and patients based on more accurate information as well as discussions on how to reduce risk.

The model could also be used to inform mathematical modelling of the potential impact of national public health policies on shielding and preventing infection and potentially help identify those at highest risk to be vaccinated, when available.

The project was a commission from the Office of the Chief Medical Officer for England to NERVTAG (New and Emerging Respiratory Virus Threats Advisory Group), who established the parameters and brought together the team as a sub-group of NERVTAG. It is funded by the National Institute for Health Research (NIHR).

This team is led by the University of Oxford and includes researchers from the universities of Cambridge, Edinburgh, Swansea, Leicester, Nottingham and Liverpool with the London School of Hygiene and Tropical Medicine, Queen's University Belfast, Queen Mary University of London, University College London, the Department of Health, NHS Digital and NHS England.

The research team are planning to utilise other datasets from across all four nations of the UK to validate their model and offer a unified approach to evidence-based risk stratification policy.

Principal Investigator, Professor Julia Hippisley-Cox, Professor of Epidemiology and General Practice at Oxford University's Nuffield Department of Primary Care Health Sciences said:

'Driven by real patient data, this risk assessment tool could enable a more sophisticated approach to identifying and managing those most at risk of infection and more serious COVID-19 disease. Importantly, it will provide better information for GPs to identify and verify individuals in the community who, in consultation with their doctor, may take steps to reduce their risk, or may be advised to shield.'

Chief Medical Officer for England, Professor Chris Whitty, said:

'The level of threat posed by COVID-19 varies across the population, and as more is learned about the disease and the risk factors involved, we can start to make risk assessment more nuanced. When developed, this risk prediction tool will improve our ability to target shielding, if it is needed, to those most at risk.'

Professor Keith Channon, Deputy Head of Medical Sciences, University of Oxford, and Director of Oxford Academic Health Partners, said:

'Combining leading expertise in clinical epidemiology and analytical techniques with very large sets of NHS clinical data to develop this new tool illustrates the power of our University and NHS researchers working together, to benefit people at risk of COVID-19.'

Professor Jonathan Valabhji, National Clinical Director for Diabetes and Obesity at NHS England, said:

'Along with other characteristics like age and ethnicity, the evidence shows that both diabetes and obesity are risk factors for Covid-19 and this risk prediction tool has the potential to much more accurately gauge risk for each individual, drawing together all of their relevant characteristics and ultimately helping them to stay as safe as possible during this pandemic.'

Professor Jonathan Benger, Interim Chief Medical Officer at NHS Digital said:

'NHS Digital is delighted to use our data expertise to contribute to this hugely important piece of work. This is a comprehensive analysis of large patient data sets that will provide policy makers with high quality, evidence-led insights.'

Professor Peter Johnson, NHS Clinical Director for Cancer said:

'Cancer patients know that shielding has been important in keeping them as safe as possible during the coronavirus pandemic, and making sure that the advice they follow is based on the best possible evidence will help them to decide how to protect themselves until the risk has passed.'

Dr Patricia Wilkie, President of the National Association for Patient Participation said:

'All patients are facing uncertainty with many having to work out their own level of risk presented by Covid-19. The QRResearch COVID risk tool research is an important piece of research that has the potential to provide crucial information about COVID-19 for patients, enabling patients and their clinicians to better understand the level of risk facing the individual patient.'

The research is funded by the NIHR Oxford Biomedical Research Centre, and the University of Oxford COVID-19 Rapid Response Fund with support from Wellcome and Cancer Research UK.

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Notes to Editors:

The project protocol is available for download:

Development and evaluation of a tool for predicting risk of short-term adverse outcomes due to COVID-19 in the general UK population. Research protocol, 22nd June 2020,

URL: www.phc.ox.ac.uk/covid-risk-prediction

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Within the division, the **Nuffield Department of Primary Care Health Sciences** is the largest, top-ranked centre for academic primary care in the UK and leads world-class research and training to rethink the way healthcare is delivered in general practice and other community settings. The department's main research focus on the prevention, early diagnosis and management of common illness, bringing together academics from many different backgrounds to work together to produce benefits for the NHS, for populations and for patients. www.phc.ox.ac.uk

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- Engages and involves patients, carers and the public in order to improve the reach, quality and impact of research
- Attracts, trains and supports the best researchers to tackle the complex health and care challenges of the future
- Invests in world-class infrastructure and a skilled delivery workforce to translate discoveries into improved treatments and services
- Partners with other public funders, charities and industry to maximise the value of research to patients and the economy

The NIHR was established in 2006 to improve the health and wealth of the nation through research, and is funded by the Department of Health and Social Care. In addition to its national role, the NIHR commissions applied health research to benefit the poorest people in low- and middle-income countries, using Official Development Assistance funding. www.nihr.ac.uk