

Repurposing public health systems to decode COVID-19

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Existing public health monitoring systems in the UK, could improve understanding of the risk factors associated with severe COVID-19.

Research published in the journal *Microbial Genomics* describes how national surveillance systems can be linked with the UK Biobank. This

pooled data could then be used to understand how genetics and other epidemiological factors impact risk of developing severe infection.

The UK Biobank (UKB) is an international [health](#) resource which enables researchers to understand the genetic and lifestyle determinants of common diseases. The researchers linked UKB with Public Health England's Second-Generation Surveillance System (SGSS), a centralized microbiology database used for national disease surveillance in England. SGSS holds data collected in clinical diagnostic laboratories in England, including test results for SARS-CoV-2.

Large cohorts such as UKB are a useful resource for understanding how a disease behaves in different groups, according to Dr. Danny Wilson, Associate Professor at the Big Data Institute, University of Oxford (UK). He said: "Large datasets are helpful for detecting [risk factors](#), including those that have modest effects or vary from person-to-person, and for providing a sound footing for conclusions by reducing statistical noise. These discoveries help scientists better understand the disease and could inspire efforts aimed at improving treatment."

By linking the two systems, researchers hope to facilitate research into the risk factors for severe COVID-19. Repurposing [public health](#) systems in this way can provide near-to-real-time data on SARS-CoV-2, and allow researchers to understand the spread, testing and disease characteristics of the virus.

This new computerized system will provide weekly linkage of test results to UKB and other cohorts. The UK Biobank database consists of around 500,000 men and women in the UK, aged 50+. This group is particularly appropriate for the study of COVID-19, as severity of disease increases with age. Further data is also being released by UKB, according to Dr. Wilson: "UK Biobank are releasing, or have released other data relevant to COVID-19, like mortality records, and they plan to release hospital

episode statistics and primary care data soon too".

Their data provides in-depth analysis of disease severity, symptoms and risk in people from the UKB database. Researchers hope that this data can reveal additional risk factors for severe infection and improve understanding of the [disease](#). "By providing information about COVID-19 to large cohorts including UK Biobank, INTERVAL, COMPARE, Genes & Health, Genomics England and the National Institute for Health Research (NIHR) Biorepository, this work facilitates research into lifestyle, medical and genetic risk factors" said Dr. Wilson.

More information: Jacob Armstrong et al, Dynamic linkage of COVID-19 test results between Public Health England's Second Generation Surveillance System and UK Biobank, *Microbial Genomics* (2020). [DOI: 10.1099/mgen.0.000397](https://doi.org/10.1099/mgen.0.000397)

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