QResearch News Update Autumn 2022

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We hope that you are enjoying our newsletters. We think that they are a great opportunity to feature some of the wide-ranging projects that have been enabled by access to QResearch data.

To feature your research news here, please email Claire Meadows at

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QResearch study the first that has identified, confirmed and quantified the association of key symptoms and signs with MND diagnosis

A research team, including researchers from Oxford University, using QResearch data, and funded by the Motor Neurone Disease Association, have made a breakthrough with Motor neurone disease diagnosis.

Motor neurone disease (MND) causes progressive neuromuscular weakness that may first present as isolated and unexplained symptoms. This study is the first that has identified, confirmed and quantified the association of key symptoms and signs with MND diagnosis. In addition to known factors, the study has identified the following new factors to be independently associated with MND prior to diagnosis: ataxia, dysphasia, wheeze and hoarseness of voice. These findings may be used to improve risk stratification and earlier detection of MND in primary care.

MND causes the deaths of 1 in 350 men and 1 in 470 women in the UK, although there is emerging evidence that the incidence might be higher than previously thought. In Europe, the annual crude incidence rate was estimated to be 2.7 per 100 000 person-years. MND is difficult to recognise in primary care since it is both a relatively uncommon disease and the clinical presentations of early symptoms are sporadic and non-specific. As a result, patients may delay consulting their general practitioners (GPs) and the GPs may not attribute the symptoms to MND.

Previous work has demonstrated that both patient factors (eg, delayed presentation to GP) and healthcare practice factors (e.g, referrals to non-neurology specialists) contribute to delays in MND diagnosis, hence patients' access to disease management. The length of diagnostic delay has also been found to be mostly between 10 and 16 months from symptom onset to diagnosis.

New QResearch Data Linkage

From the 1st September 2022, researchers from UK universities will be able to apply for GP data linked to hospital and mortality data supplied by NHS digital under a new sublicence agreement. For enquiries please contact qresearch@phc.ox.ac.uk

Early detection innovation award for Oxford researchers for QResearch study

Professor Julia Hippisley-Cox and Dr Tingting Zhu (pictured) win funding for their collaborative project on novel test technologies for patient triage in primary care.

Most cancers are diagnosed after a visit to primary care. Cancers that are diagnosed earlier are likely to have better outcomes and so rapid referral of patients presenting with suspected cancer symptoms for further investigation in secondary care is important. However, GPs are faced with many patients that present with symptoms that could be cancer. Given that the majority of patients will not have cancer, it is not practical or feasible to refer all patients urgently and a cancer referral in someone at very low risk of having cancer could cause unnecessary anxiety. New tests or combinations of existing tests that can be used in primary care to identify patients at most risk of having cancer would help guide GPs in their clinical decision-making and reduce diagnostic delays in primary care.

Cancer Research UK, the Medical Research Council and the Engineering and Physical Sciences Research Council convened a workshop in November 2021 to bring together multidisciplinary researchers to develop ideas for new tests/tools in primary care that aim to enhance cancer risk stratification. The attendees worked together to generate innovative research proposals and, at the end of the workshop, the new teams pitched their ideas to receive seed funding for feasibility testing from a Cancer Research UK Early Detection Innovation Award. One of the successful teams involved Oxford researchers.

QResearch used to development and validation of a meta-learner for combining statistical and machine learning prediction models in individuals with depression

The debate of whether machine learning models offer advantages over standard statistical methods when making predictions is ongoing. We discuss the use of a meta-learner model combining both approaches as an alternative.

A QResearch study, funded by National Institute for Health Research (NIHR), and headed up by Prof Andrea Cipriani (pictured) of the University of Oxford investigated this and found interesting results.

The proposed meta-learner has the potential to efficiently combine statistical and machine learning models for joint prediction. With appropriate adjustment, the meta-learner may be employed as a handy alternative solution to predictive tasks in the medical domain. As practical advice, we corroborate previous recommendations [51] by suggesting the use of classical statistical methods for most clinical research questions, which typically do not involve large datasets or many potential predictors. Following Occam's razor, we especially recommend classical methods when there is a prior indication that predictors mainly affect the outcome in an additive manner and when interactions between them can either be pre-specified or play a relatively smaller role. Conversely, for larger datasets, and especially when non-additive effects are suspected, researchers can explore both statistical methods and machine learning approaches and follow a meta-learner approach to combine, rather than compare, the two methods. An interesting area of future research is to further explore the performance of meta-learners in simulated datasets and assess their performance on

QResearch study shines a light on neuropsychiatric complications after severe COVID-19

In this University of Oxford-based study using a population-level cohort comprising linked electronic primary and secondary health care data sets from QResearch for more than 8 million adults, we estimated that the neuropsychiatric ramifications of severe COVID-19 infection were similar to those of other SARIs. Individuals surviving severe COVID-19 infection and other SARIs were at significantly increased risk of receiving a neuropsychiatric illness diagnosis and of being prescribed antidepressant, hypnotic/anxiolytic, or antipsychotic medications in the first year after discharge compared with the wider population. Apart from a reduced risk of being prescribed antipsychotic medication, the differences between risks post–COVID-19 hospitalization and post-SARI hospitalization were not significant.

SARI were found to be associated with significant post-acute neuropsychiatric morbidity, for which COVID-19 is not distinctly different. These results may help refine our understanding of the post-severe COVID-19 phenotype and may inform post-discharge support for patients requiring hospital-based and intensive care for SARI regardless of causative pathogen.

This study was funded by Oxford NIHR BRC, Wellcome ISSF and the John Fell Fund.

Professor Julia Hippisley-Cox amongst Oxford BRC researchers named NIHR Senior Investigators

Seven Oxford academics, six of them supported by the NIHR Oxford Biomedical Research Centre (BRC), and one of them QResearch founder Julia Hippisley-Cox have been named National Institute of Health Research (NIHR) Senior Investigators in recognition of their outstanding leadership in research.

The NIHR describes its Senior Investigators as among the "most prominent and prestigious researchers" and "most outstanding leaders of patient and people-based research within the NIHR research community".

QResearch study examines the impact of the COVID 19 pandemic on the diagnosis of childhood, teenage and young adult cancers

In the United Kingdom (UK), the commonest cause of death in children, teenage and young adults (TYA) is cancer. Diagnostic delays are known to play a role. By increasing delays, the COVID-19 pandemic may worryingly contribute to worsening morbidity and mortality associated with cancer. There is an urgent need to explore the extent of these delays.

Using the QResearch database we identified children and TYA who have been diagnosed with cancer during the pandemic period and compare the characteristics and length of time taken to diagnose their cancer to those who were diagnosed three consecutive years prior to the pandemic.

Our goal was to ensure that appropriate policy and awareness strategies are put in place now, preparing us for the recovery period and any future resurgence of COVID-19 or other pandemic threats.

We found a "substantial reduction in childhood, teenage and young adult cancer detection" in England last year. The research showed a 17% drop in cases diagnosed in the under-25s
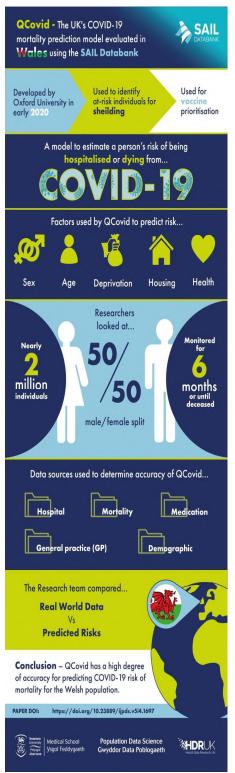
Read more on the study results here

Lifestyle advice for hypertension or diabetes: trend analysis from 2002 to 2017 in England

A new QResearch study has given insight into how GP advice is given to patients in cases of diabetes and high blood pressure.

Self-reported data and GP records showed that most patients with hypertension and diabetes do not receive lifestyle advice, whereas management by medication is more common. The proportion of patients receiving lifestyle advice for hypertension increased over time in both sources; however, the GP records (QResearch) appear to be dominated by a spike from 2009 to 2013 corresponding with the introduction of a QOF encouraging provision of lifestyle advice, which is not reflected in the self-reported data.

For patients with diabetes, the evidence was inconsistent, with a decline in patients reporting receiving advice but an increase in reports of advice being provided based on medical records. Associations between lifestyle advice and participant characteristics were mixed but provide evidence of differences by age, sex, ethnicity, and minor differences by socioeconomic status. For patients with hypertension who were overweight or with obesity, advice was more common, whereas for diabetes it was less common than for patients with a healthy weight.

New QResearch study shows that the QCOVID algorithm developed in England can be used for public health risk management for the adult Welsh population.

The Lancet Diabetes and Endocrinology: COVID-19 vaccine protects people of all body weights from hospitalisation and death, study of 9 million adults in England suggests

COVID-19 vaccines greatly reduced the number of cases of severe COVID-19 disease for everyone regardless of their body size, according to a new study published in *The Lancet Diabetes and Endocrinology*. Vaccine effectiveness was similar for those with a higher BMI and of a healthy weight, but slightly lower in the underweight group, who were also the least likely to have been vaccinated.

In a further analysis of vaccinated people only, among the fewer COVID-19 cases recorded , people of very low and very high BMI were more likely to experience severe disease than vaccinated healthy weight people. This replicates the findings seen in a previous analysis before the vaccination programme commenced.

Obesity was pinpointed as a risk factor for severe COVID-19 early in the pandemic, reflected in the UK vaccine rollout in 2021, which prioritised people with a BMI of over 40 as a high-risk group. However, little was known until now about the effectiveness of the COVID-19 vaccines for people with obesity. Previous work has shown that people with obesity are less likely to take seasonal 'flu vaccines and have modestly reduced benefits from 'flu vaccinations, although the reasons for this are not well understood.

"Our findings provide further evidence that COVID-19 vaccines save lives for people of all sizes. Our results provide reassurance to people with obesity that COVID-19 vaccines are equally as effective for them as for people with a lower BMI, and that vaccination substantially reduces their risk of severe illness if they are infected with COVID-19. These data also highlight the need for targeted efforts to increase vaccine uptake in people with a low BMI, where uptake is currently lower than for people with a higher BMI," says lead author Dr Carmen Piernas of the Nuffield Department of Primary Care Health Sciences, University of Oxford, UK (*pictured*).