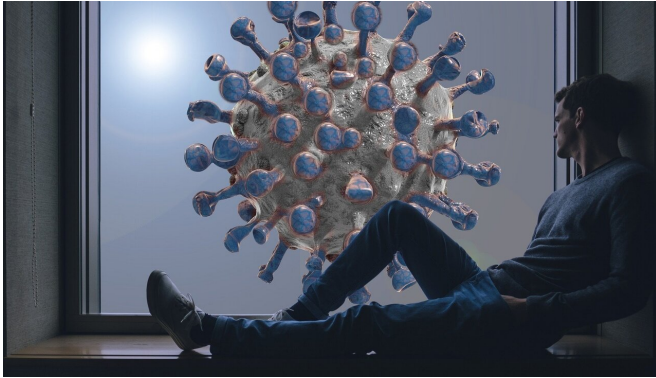


Measured lockdown may be necessary until mid-2021

15 May 2020



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A cautious, measured approach to relaxation of lockdown measures is required to protect the most vulnerable members of society and support the health service, a team of infectious disease experts from the University of Warwick, who have investigated the impact of current lockdown measures upon the spread of COVID-19 in the UK, has found.

This may lead to the need for social distancing measures, varying by region and in the absence of a COVID-19 vaccine, to be in place until mid-2021.

By using a detailed mathematical model calibrated against data on the age distribution of cases, as well as the changing numbers of those being hospitalized and dying as a result of the [disease](#), the researchers have been able to forecast both the short and long term impact of disease as lockdown measures are relaxed.

The researchers found that significant relaxation of social distancing measures could lead to a rapid resurgence of COVID-19 disease and the health system being quickly overwhelmed by a sizable, second epidemic wave. In all considered age-

shielding based strategies they projected serious demand on critical care resources during the course of the pandemic.

In contrast, the reintroduction and release of strict measures on a regional basis, based on ICU bed occupancy, results in a long epidemic tail, until the second half of 2021, but ensures that the health service is protected by reintroducing social distancing measures for all individuals in a region when required.

The researchers, led by Professor Matt Keeling, director of the Zeeman Institute for Systems Biology and Infectious Disease Epidemiology Research (SBIDER), simulated a selection of scenarios to assess the impact of differing approaches to relaxing social distancing measures starting in May 2020 and assessed the impact on the estimated number of patients requiring inpatient and critical care treatment and deaths as key quantities of concern.

The future strategies investigated included: the impact of reducing adherence with the lock-down rules; ongoing shielding of elder age groups while relaxing measures for younger members of the population; and short application of stringent social distancing measures using region-based triggers that came close to ICU hospital capacity.

"Our model predicts that, if significant relaxation of social distancing measures was introduced in May, the UK would have experienced a rapid resurgence of COVID-19 and the health service would be overwhelmed by a second epidemic wave," said Prof. Keeling. "To prevent this second wave, we require strategies in which the social distancing measures are relaxed slowly, either gradually across the entire population or by targeting different regions or age-groups. Ultimately, the scenario which minimizes deaths from COVID-19 requires long-term social distancing until a vaccine can be delivered."

Dr. Tildesley, a co-author of the study added, "We are working round the clock to understand the complex patterns of spread, and find ways in which life can take steps back towards normality without endangering lives. The COVID-19 pandemic is the largest event that we have been involved with in our careers, and we are keen to do anything that we can to help to provide advice that will help to control the spread of disease and to protect the most vulnerable members of society."

The research carried out by the Warwick team also provides evidence in support of the lockdown measures introduced by the UK government in late March in order to control the growth of the epidemic and shows the necessity for a measured approach for releasing lockdown.

More information: Matt J Keeling et al. Predictions of COVID-19 dynamics in the UK: short-term forecasting and analysis of potential exit strategies, *medrxiv* (2020). DOI: [10.1101/2020.05.10.20083683](https://doi.org/10.1101/2020.05.10.20083683)

Provided by University of Warwick

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