# Unlocking UK COVID-19 policy

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In *The Lancet Public Health*, Nicholas Davies and colleagues[1] make an important contribution to understanding UK COVID-19 policy to date, in particular the need for lockdown. They provide detailed yet concise analyses of a range of physical distancing interventions, alone and in combination, and lockdown measures that restrict movement and limit contacts outside of the home. The authors show that lockdown periods are key to suppressing the epidemic and avoiding peaks of cases that would overwhelm hospital and intensive care unit (ICU) capacity and result in hundreds of thousands of deaths.

Davies and colleagues[1] detail how these analyses were part of scientific advice given to the UK Government in February and March in the run-up to Prime Minister Boris Johnson ordering lockdown on March 23. Davies and colleagues' analysis, similar to the analysis by Ferguson and colleagues,[2] is based on robust large-sample data from China showing high case-fatality and hospitalisation rates for COVID-19. Future iterations of Davies and colleagues' model, which is publicly available, should include UK death data, including those in care homes. Emerging estimates of past and current infection prevalence in conjunction with total COVID-19 deaths could also be used to calibrate the model, noting that the 0·63% (95% CI 0·45–0·79) infection-fatality rate (IFR) suggested by Davies and colleagues' model might underestimate the true IFR in the UK. New seroprevalence data indicate 6·8% (5·2–8·6) of the UK population have had previous severe acute respiratory syndrome coronavirus 2 infection as of May 24.[3] With 36 000 deaths, this suggests an IFR of 0·8%; with 44 000 deaths (using death certificate data[4]), this suggests an IFR of 1·0%.

Davies and colleagues consider variation in the basic reproduction number $R_0$—the number of people infected by each infected person—before interventions are implemented, as well as other key parameters.[1] As more data on the effect of lockdown on the effective reproduction number—the number of people infected by each infected person at time $t$ while interventions are in place, sometimes known as $R_t$—become available, the model could be updated and new strategies evaluated. The length of hospital stay could also be updated using new data on UK ICU admissions for COVID-19.[5] Recognising that the case-fatality rate in UK hospital patients not admitted to ICU is as high as 36% (4207 deaths out of 11 580 cases not ongoing)[6] is also crucial to improve estimates of COVID-19 burden in relation to health system capacity. Timing of—and criteria for—hospitalisation and ICU admission are likely to determine the IFR, along with socioeconomic deprivation,[7] comorbidities and other risk factors, the safety of work environments, and protection of care home residents.

The timing of lockdown and other interventions to suppress the epidemic are crucial to stay within health system capacity as well as to minimise overall mortality. Quantifying extra all-cause deaths in scenarios of hospitals being overwhelmed is vital to properly communicate the threat from COVID-19, and neither Davies and colleagues[1] or Ferguson and colleagues[2] attempt this. Davies and colleagues also focus on a single 12-week intervention period when assessing the impact of the timing of such an intervention.[1] In reality, the duration of an intervention should be determined in relation to the threat, and early intervention would prevent far more deaths by preventing the initial spike in cases. For example, if the UK lockdown had started 2 weeks earlier on March 9, the suppression of the epidemic could have begun with less than 5% of the infections that had occurred by March 23,[8] and a large proportion—perhaps most—of the COVID-19 deaths to date in the UK might have been prevented.

For **Davies and colleagues' model** see https://github.com/cmmid/covid-uk

Looking forwards, population-scale testing, tracing, and isolation strategies need to be modelled as the key to lifting lockdown.[9] These could include various measures: tracing all contacts of clinically diagnosed or test-diagnosed cases quickly with paid contact tracers and apps and isolating them for 14 days; wider regular home testing through saliva samples couriered to a decentralised network of labs; and mandatory use of cloth face coverings in public places, especially indoors. These strategies could all help to keep the epidemic suppressed while minimising the need for damaging physical distancing measures. Economic analyses evaluating the costs and benefits of various options for the COVID-19 response including combinations of these strategies over the next year or two while we await highly effective drugs or a vaccine are urgently needed, and are forthcoming.[10]

I declare no competing interests.



*Tim Colbourn*
**t.colbourn@ucl.ac.uk**

UCL Institute for Global Health, 30 Guilford Street, London, WC1N 1EH, UK

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