New report models Italy's potential exit strategy from COVID-19 lockdown

May 5 2020, by Ryan O'hare, Dr Sabine L. Van Elsland

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Imperial researchers have analysed the likely impact of easing lockdown measures in Italy and the impact on transmission of coronavirus.

Reducing lockdown measures in Italy could lead to a larger spike in coronavirus deaths than previously seen in some regions, their report warns.

The analysis comes from the Imperial team modelling the spread and impact of COVID-19.

It finds that if the country returns to just 20% of mobility levels before the lockdown—mobility being a measure of people going to work, shops, visiting friends and family etc. – then deaths could rise again within just three weeks.

The authors warn that some social distancing measures will need to remain in place, along with testing, contact-tracing and isolation of people infected with COVID-19, to keep transmission in check and prevent a resurgence of the outbreak.

The new report is the 20th one from the WHO Collaborating Centre for Infectious Disease Modelling within the MRC Centre for Global Infectious Disease Analysis, the Abdul Latif Jameel Institute for Disease and Emergency Analytics (J-IDEA) , Imperial College London.

Preventing resurgence

Dr. Samir Bhatt, from the School of Public Health and lead author, said: "The impact of COVID-19 on Italy has been tragic but the response taken to limit the impact of the disease has been successful and disease control has been substantively achieved.

"Unfortunately, continued social distancing and other measures are required to prevent this success from being rapidly reversed and our work provides a warning against underestimating the importance of such sacrifice."

From this week (4th May 2020), Italy has started to relax the current social distancing measures which have helped to curb the spread of the virus, including school closures, banning public gatherings and non-essential movement—so-called non-pharmaceutical interventions (NPIs).

Given the control currently achieved by the measures, the Imperial team looked at multiple scenarios for the next 8 weeks and the impact of easing such restrictions on the spread of the virus, and associated deaths.

In the latest analysis, researchers estimate that the average reproduction number (referred to as 'R') is currently below one for all Italian regions, significantly so for many regions. This means that someone infected with COVID-19 in these regions, on average, infects less than one person, which is not enough to sustain an outbreak.

No herd immunity

Despite the large number of deaths (more than 28,000 as of 1st May), the current proportion of people who contracted COVID-19 does not provide herd immunity—where most of a population is immune, providing indirect protection for those who are not immune. In Italy, Lombardy has the highest proportion of infections in the population. However, none of the Italian regions—including Lombardy—currently have herd-immunity.

Researchers modelled the effect of non-pharmaceutical interventions on coronavirus transmission using mobility data for Italy. These data capture the number of people going out and the time they spend at places during visits to groceries, pharmacies, parks, transit stations, retail, recreation, residential and workplaces.

To describe changes in the number of people going out and their time spent outside (expressed as a percentage increase in mobility), the data

were compared with a baseline of mobility data collected prior to lock-down measures were implemented.

The authors conclude that in the absence of additional interventions, even a 20% return to pre-lockdown mobility could lead to a resurgence in the number of deaths far greater than those experienced in the current wave, in several regions.

According to the researchers, the onset of this second wave would be delayed, with a time lag of two to three weeks.

Dr. Ilaria Dorigatti, from the School of Public Health, said: "To date COVID-19 has been successfully controlled across Italy but the virus is still in circulation and the epidemic is not over. [This week] Italy enters a new phase, during which people's adherence to government advice on maintaining social distancing and using personal protective equipment alongside swab testing, contact tracing and case isolation are of paramount importance to avoid a potential future resurgence in transmission."

Close monitoring

The report urges for transmission and mobility to be closely monitored in the next weeks and months, and stresses the importance of testing and contact-tracing.

Dr. Michaela Vollmer said: "Our analysis clearly shows that the drastic measures implemented by the Italian government have had a huge effect on the movement of their citizens and therefore on the reduction of transmission of SARS-CoV-2. However, at the same time we see that the lifting of interventions has to be closely monitored and compensated for by other measures of surveillance. Even small changes in mobility will most likely lead to a resurgence of deaths and the occurrence of a second

wave which may be even greater than what Italy has already experienced."

Dr. Seth Flaxman, from the Department of Mathematics, added: "Seven weeks of lockdown have been successful: the coronavirus epidemic is under control in every region of Italy as of today, and thus we are confident that the number of lives tragically lost each day to this disease will continue to decrease over the course of a few weeks. Using a model based on mobility patterns across Italy, we consider various scenarios for the post-lockdown period. Without effective community surveillance, even a partial return to pre-lockdown levels of mobility could lead to a resurgence in the epidemic, with deaths starting to increase once again in the months ahead."

More information: 'Using mobility to estimate the transmission intensity of COVID-19 in Italy: A subnational analysis with future scenarios: www.imperial.ac.uk/mrc-global- … -19/report-20-italy/

Provided by Imperial College London