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Commentary

Epidemiology due to COVID Pandemic

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DESCRIPTION

Epidemiology is essential to the fight against any disease. The study of how diseases spread, and why, has loomed large in the struggle to understand, contain and respond to COVID-19. Analyses of data on infections, deaths, and projections from studies that model the virus`s spread; have driven policy decisions all over the world. Many of these, such as locking down countries, imposing quarantines, and mandating social distancing and mask wearing, are now common place. We also highlight how epidemiology will be important as the pandemic progresses for example, in understanding the potential impact of the new variants that are currently wreaking havoc around the world. Epidemiology is changing the course of the pandemic, but the coronavirus also emphasizes epidemiology, and this report briefly examines how epidemiology is changing the field.

It's been over a year since the report of an unknown coronavirus that causes pneumonia-like symptoms. As of January 5, 2020, 59 people are said to have been infected with the virus in Wuhan City, Hubei Province, China. 7 were in crisis. As of January 20, Chinese authorities have reported more than 200 infections and three deaths. Initially, little was known about the infectivity of the virus, but it soon changed. Around mid-January, epidemiologists began reporting the results of modeling studies suggesting that the number of cases is likely to be much higher than originally documented.

Researchers dealt with limited patient data. However, as more data became available, epidemiologists could confirm that the virus could be transmitted by asymptomatic people and was more likely to be a pandemic. In late January, the World Health Organization declared a public health emergency of international concern and advised countries on how to implement public health measures, including testing and quarantining infected persons, and tracking and quarantining contacts. These procedures were based in part on an epidemiologist's investigation after a previous outbreak of an infectious disease. However, few countries have followed this advice. At the same time, the epidemiological community has begun to pay attention to the assessment of measures that may help contain the virus.

The pandemic has changed epidemiology. Epidemiologists collaborate across national borders and time zones, as do many areas directly involved in the study of COVID-19. They share data *via* an online platform-preprint servers provide scientists with early access to results-and journals publish faster. Epidemiology itself is expanding, with researchers from other disciplines contributing to ideas and expertise, such as physics, mathematics, computer science, and network science. The US government has announced that it will establish a national center for epidemic prediction and outbreak analysis.

We hope that this is the epidemiological equivalent of the Central Weather Bureau and that it will be an independent body that makes predictions using advanced computing power and the best data available. Other countries need to consider the same. As more researchers from different disciplines join the field and more people use epidemiological data such as the general public, policy makers, and the media, researchers are best able to communicate data and results transparently. You need to find a way to ensure that the level is communicated.

Epidemiologists and epidemiological models have received more political and media attention than ever before and faced many challenges. Epidemiology, especially epidemic modeling and prediction, relies on statistical methods to make probabilistic predictions from real-time data. These initial predictions are often inaccurate because the underlying data may be incomplete and inconsistent. Over time, the results will begin to look more certain as the data improves and more research groups become involved. But in many cases, you need to make a decision. Epidemiologists need to communicate both the certainty and the uncertainty in the findings so that they can make the best decisions. That is, researchers convey the uncertainty inherent in models and predictions in a way that people can understand that inaccurate predictions do not invalidate the model, and that general conclusions are still valid. People and policy makers are also exposed to new terminology words and phrases that help explain and visualize uncertainty, and models that provide a variety of probabilistic predictions from best to worst scenarios.

These challenges also represent opportunities, providing the

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opportunity to present science in real time when something that only researchers normally see happens. The pandemic helped people understand that science, by its very nature, requires constant correction and improvement, and its conclusions change as the balance of evidence changes. Changing the perception of science may give the impression that scientists are changing their minds, but it is good to do so when the facts are changing.

If last year taught us something, it means that knowledge of public health tools and access to data is not enough to control the pandemic. People naturally want certainty in the face of something alarming like a pandemic, but the science of responding to a pandemic works naturally with probability. It does not mitigate the effects of epidemiology, but emphasizes the importance of ongoing and transparent dialogue between researchers, policy makers and the general public.