Editorial

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The Need for Better Data on Health Effects of Climate Change and Strong National Health Systems for Pandemic Preparedness

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No Country is Fully Prepared for High-Consequence Infectious Disease Outbreaks. Many countries lack essential public health and health system capacities to prevent, detect, and respond to health emergencies. Health security is both a public health and an international security imperative. Significant outbreaks will likely continue to occur. Increases in international travel, mass displacement, migration, climate change, land-use change, and urbanization can enable pathogens to emerge and spread widely, increasing the potential for uncontained outbreaks to become epidemics and pandemics.

How unprepared is the globe as a whole? According to a recent study out of a possible score of 100 points, the average (Global Health Security) GHS Index score across 195 countries and combined categories was 40.2. Even countries with more resources are not ready, as the majority of high- and middle-income countries do not score above 50. What these results tell us is that action is urgently needed to improve countries' readiness for high-consequence infectious disease outbreaks.

Climate change is driving changes that are harder to notice, including small drifts in wildlife population and habitats that are altering infectious disease transmission. While the links between climate change and infectious diseases are complex and not yet fully understood, increased transmission of zoonotic diseases are already recorded and reported like Lassa fever and monkeypox in West Africa, Ebola virus disease in the Democratic Republic of Congo and others.

Governments must invest more in understanding the science, in disease prevention, and in emergency preparedness. We must develop functioning surveillance systems and ensure that the people on the frontlines have the resources and capacity they need. Planning and vulnerability assessments must be done, and preparations for the future must be made. Clearly, it is time we invest in research to better understand climate change and infectious disease and develop responsible policies.

AR5 Synthesis Report by IPCC on the potential impacts of increasing greenhouse gas concentrations and their effect on natural and human systems emphasized populations who are at increased risk of adverse consequences such as developing countries and disadvantaged people. Preparing health systems, including public health, worldwide to adapt to these future threats will avoid unnecessary morbidity and mortality. This requires research on the direct and indirect health effects of climate change impacts due to increasing temperature, extreme weather events and population displacement from sea-level rise.

By analyzing past events on a sub-regional, regional as well as global scale models can be developed that predict who is most at risk for what health impacts in the future. Examining the current capacity of health systems in resource limited environments to respond to acute, sub-acute, and gradual health threats is also needed so that resilience and adaptation can counter our potential failure to mitigate the irreversible GHG effects our future may hold.

Data transparency and political sensitivity are two of the most critical challenges to effective global cooperation on the COVID-19 outbreak, and they are deeply entwined. Data transparency is the key to building much-needed trust, and preventing the misallocation of resources, which could slow down the response. Some countries in Asia, where China holds significant economic and political influence, face a difficult task in balancing effective disease response with the political sensitivity necessary for a successful, cooperative, global response. The best way to counter misinformation in the media is with an aggressive onslaught of facts. The best way to respond to the coronavirus outbreak is by making Vaccine development a top priority, finding treatments, expanding diagnostic capacities, boosting hospital readiness and communicating facts clearly with the public. Travel bans can't keep all cases of the virus out of a country. As the epidemic expands, cases may originate in any number of countries. This virus is likely past the point of containment. We need to focus on mitigating its impact by speeding the development of diagnostic tools, vaccines, and drugs to treat infections. Strong health systems are certainly a crucial foundation for preparedness. All countries, rich or poor, need to have a set of core national preparedness capabilities. For example, they need strong surveillance systems in place that can detect infectious diseases with pandemic potential, robust case detection, and effective contact tracing. Pandemics are global in nature and they require a global response, not just a

national one. A whole set of "transnational" activities, called global public goods, is another critical plank in pandemic preparedness. Health care workers are our first line of defense against disease, whether coronavirus or otherwise. In order to safely and effectively do their jobs they need to both have proper training and the right protective equipment. This keeps them safe during a large outbreak like we have now. The goal in implementing public health measures during suspected outbreaks is to balance the freedom of individuals against the restrictions on freedom required to achieve legitimate protections of the public's health, with public and transparent justification of policy decisions. Quarantine is considered a measure of last resort given the severe restrictions it imposes on individual liberty, and when misused or ineffective can severely undermine trust in government.

The global tobacco epidemic looms as a major threat to public health. There are more than 1.2 billion smokers in the world. The impact of tobacco use over several decades causes around 4 million deaths a year. Because of the lag between tobacco use today and the appearance of tobacco's full health effects, patterns of tobacco use today will lead to about 10 million deaths from tobacco per year in the 2020s. And because 70 percent of tobacco users now live in developing countries, it is not surprising that 70 percent of tobacco deaths in the 2020s will occur in developing countries. Epidemiological evidence was first derived from large-scale studies in the USA and UK. Now, the evidence also comes from China, India, South Africa and Brazil. An important difference between the USA and UK studies and those from developing countries is that the effects of tobacco occurred in developed countries after most infectious diseases were well controlled. In contrast, throughout much of the developing world, infectious diseases and under-nutrition co-exist with a rising incidence of tobacco-induced chronic diseases. The double burden imposes major challenges to health services. The pressure to provide expensive forms of treatment for cancers, heart and chronic respiratory diseases could distort spending patterns in developing countries. For many, there is a need to give higher priority to effective prevention policies: these should start with those that bring in needed money-higher excise tax on tobacco products and should include those measures that do not cost government anything; such as bans on advertising and smoking in public places.

Present and future generations must be urgently protected from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke.

Governments use the tobacco control measures in the WHO Framework Convention on Tobacco Control (WHO FCTC) to reduce the prevalence of tobacco use and exposure to tobacco smoke. By implementing these measures, governments reduce the heavy burden of disease and death that is attributable to tobacco use or exposure.