

Editorial

Promoting health in a globalized world requires adopting a *One Health* perspective

Eric Muraille

The pandemic caused by the novel Coronavirus SARS-CoV-2 has highlighted the astounding speed with which epidemics are spreading in a highly interconnected world and the weakness of governments in responding to them.

Reported in China on November 16, 2019, the COVID-19 epidemic was declared a pandemic on March 11, 2020 by the World Health Organization (WHO). During the first nine months, in the absence of specific treatments and vaccines, governments were reduced to practicing lockdowns and imposing social distancing in order to avoid saturation of hospitals. Although the development and validation of several effective and safe vaccines in a single year is a remarkable achievement (the average research time being eight years (1)), vaccinating the world's population is proving to be a daunting task and will require well over a year. In addition, the emergence of variants of SARS-CoV-2 (2) potentially capable of eluding natural immunity and vaccines makes constant monitoring of this virus necessary. Finally, the human and economic cost of the COVID-19 pandemic is already catastrophic and will undoubtedly mark the 21st century. As of May 1, 2021, nearly 3.2 million individuals have died of COVID-19, and the existence of long (3) and disabling forms of the virus, as well as the impact of the containment and distancing measures put in place on precariousness, education, and mental health, suggests a much higher human cost in the medium and long term. In the US alone, the economic cost of the pandemic is estimated at US\$3 trillion (4) or even US\$16 trillion (5).

The COVID-19 pandemic has also served as a reminder of the crucial importance of governance and international cooperation in the face of global threats. While scientific information about SARS-CoV-2 was quickly and widely shared throughout

the pandemic, the way the US and European governments responded to it was deemed chaotic and ineffective by many scientific experts (6,7) as well as by the WHO (8). Faced with a global threat, the US has developed national and sometimes even regional responses, without the slightest coordination. In Europe, countries such as Germany, France, and Belgium have adopted partial or total containment policies while others, such as the United Kingdom, have opted for a health policy of 'complacency' and betting on the development of herd immunity, which makes no sense between neighboring countries whose borders remain open. More than ever, a European health policy based on a scientific conceptual framework is proving essential to prevent and deal with future pandemics as well as the consequences of climate change and air pollution. It is worth recalling that the latter is the cause, alone, of 9 million deaths each year (WHO figure), much more than malaria, tuberculosis, and the human immunodeficiency virus (HIV) combined.

Indeed, if the precise origin of SARS-CoV-2 remains uncertain, it is well demonstrated that of the 335 emerging infectious agents detected between 1940 and 2004, more than 60.3% are zoonoses, infections transmitted by animals (9). Contrary to what some economists (10) claim, these events cannot be interpreted as 'black swans' (11), or unexpected events having a cause external to our economic system. Agricultural activities are associated with 25% of all outbreaks of infectious agents and almost 50% of emerging zoonoses (12). For example, influenza viruses infecting humans originate from viruses infecting wild birds, which infect poultry and pig farms, then breeders, and gradually adapt to them (13). The link between the emergence of new infectious agents and the invasion of natural ecosystems has been well demonstrated,

Université Libre de Bruxelles (ULB), Laboratoire de Parasitologie, and ULB Center for Research in Immunology (U-CRI), Gosselies, Belgium.

Correspondence to: Eric Muraille, Université Libre de Bruxelles (ULB), Laboratoire de Parasitologie, and ULB Center for Research in Immunology (U-CRI), Gosselies, Belgium. Email: Eric.Muraille@ulb.be

Global Health Promotion 1757-9759; Vol 0(0): 1–3; 1035070 Copyright © The Author(s) 2021, Reprints and permissions: <http://www.sagepub.com.uk/journalsPermissions.nav> DOI: 10.1177/17579759211035070 journals.sagepub.com/home/ghp

particularly in the case of HIV (14); the impact of urbanization on the frequency of infectious agents in animals is also documented (15). This interdependence between human health, animal health, and the state of ecosystems is the basis of the 'One Health' concept, which today constitutes the conceptual framework of the strategy of national and international public health agencies such as the WHO, the World Organization for Animal Health, and the Food and Agriculture Organization of the United Nations.

The One Health concept has gradually been built on the knowledge accumulated over the last half-century in human and veterinary medicine, and in ecology. In 1984, 'Veterinary Medicine and Human Health', the work of one of the fathers of modern epidemiology, veterinarian Calvin Schwab, already highlighted the interconnection between animal and human health. Then in 2004, at New York University, the '12 Manhattan principles' were proposed, which add the ecological dimension and underline the need to understand the interconnection of living things in a resolutely transdisciplinary way. The One Health concept was introduced in 2008 in Sharm el-Sheikh (Egypt), during a symposium on infectious risks linked to contact between human and animal ecosystems. It proposes the development of public health policies combining several disciplines (human medicine, veterinary medicine, ecology, human sciences), to protect the health of all living things and not just humans. Other similar concepts have emerged, such as EcoHealth and Planetary Health, all taking into account the interconnection of living things, defending the abandonment of any linear and reductive thinking and advocating the decompartmentalization of disciplines in the face of global threats in public health. In practice, One Health promotes a new unified public health action strategy combining reactivity and, above all, proactivity. It proposes to act on the socio-economic conditions favoring human and animal diseases and the degradation of ecosystems. In the case of epidemics, One Health promotes a proactive policy by monitoring areas identified as at risk and by regulating land use, conditions of animal farming, and transport. In fact, this policy is in line with the principles of health promotion, in particular through the axes relating to public policies and environments, including a resolutely intersectoral dimension and a concern for equity.

National and international public health organizations have integrated the One Health approach well. But governments are struggling to implement these recommendations. This is all too obvious for climate change, air pollution or pandemics. The One Health approach involves acting at a socio-economic level to anticipate threats, which may be difficult to accept for the population, and also for many private actors. For example, the trade in wild animals represents a significant health risk, but its prohibition is hard to imagine for populations who make a living from it, if it is not combined with education and financial compensation. The One Health approach therefore involves structuring the search for solutions at the population level through the intersection of disciplines. In addition, threats to our health today are mostly global threats. They are borderless and require more cooperation between states. The COVID-19 crisis has clearly highlighted our flaws at this level. It thus calls for strong supranational collaborations that go beyond the interests of each country as well as a strengthening of global governance structures. It is hoped that the One Health approach will gradually gain ground through the education of policy makers, scientists, and citizens. To achieve this objective, as in the field of health promotion, advocacy is fundamental: actors in the field, as well as associations, have the responsibility to inform and alert on these subjects, and participate in inducing a change in human behavior towards nature, as quickly as possible, because time is running out.

References

1. Puthumana J, Egilman AC, Zhang AD. Speed, evidence, and safety characteristics of vaccine approvals by the US Food and Drug Administration. *JAMA Intern Med.* 2021; 181: 559–560.
2. Gómez CE, Perdiguero B, Esteban M. Emerging SARS-CoV-2 variants and impact in global vaccination programs against SARS-CoV-2/COVID-19. *Vaccines.* 2021; 9: 243.
3. Carfi A, Bernabei R, Landi F. Persistent symptoms in patients after acute COVID-19. *JAMA.* 2020; 324: 603–605.
4. Impact of Coronavirus on U.S. Economy Could Be \$3-\$5 Trillion Over 2 Years: USC Study [Internet]. December 14, 2020 [cited 2021 June]. <https://www.>

- insurancejournal.com/news/national/2020/12/14/593838.htm
5. Cutler DM, Summers LH. The COVID-19 pandemic and the \$16 trillion virus. *JAMA*. 2020; 324: 1495–1496.
 6. Horton R (ed). *The COVID-19 Catastrophe: What's Gone Wrong and How to Stop It Happening Again*. Cambridge, UK and Medford, MA: Policy Press; 2020.
 7. Editors. Dying in a Leadership Vacuum. *N Engl J Med*. 2020; 383: 1479–1480.
 8. Pour l'OMS, beaucoup de pays n'en font pas assez pour combattre le coronavirus [Internet]. March 5, 2020 [cited 2021 June]. https://www.rtb.be/info/monde/detail_pour-l-oms-beaucoup-de-pays-n-en-font-pas-assez-pour-combattre-le-coronavirus%C2%A0%C3%82%C2%A0%C2%A0?id=10449010
 9. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, et al. Global trends in emerging infectious diseases. *Nature*. 2008; 451: 990–993.
 10. Vallat D. Apprivoiser les cygnes noirs : enseignements de la crise du coronavirus [Internet]. April 6, 2020 [cited 2021 June]. <https://theconversation.com/apprivoiser-les-cyignes-noirs-enseignements-de-la-crise-du-coronavirus-135481>
 11. Théorie du cygne noir [Internet]. 2021 [cited 2021 June]. https://fr.wikipedia.org/wiki/Th%C3%A9orie_du_cygne_noir
 12. Rohr JR, Barrett CB, Civitello DJ, Craft ME, Delius B, DeLeo GA, et al. Emerging human infectious diseases and the links to global food production. *Nat Sustain*. 2019; 2: 445–456.
 13. Wu D, Zou S, Bai T, Li J, Zhao X, Yang L, et al. Y. Poultry farms as a source of avian influenza A (H7N9) virus reassortment and human infection. *Sci Rep*. 2015; 5: 7630.
 14. Faria NR, Rambaut A, Suchard MA, Baele G, Bedford T, Ward MJ, et al. The early spread and epidemic ignition of HIV-1 in human populations. *Science*. 2014; 346: 56–61.
 15. Gibb R, Redding DW, Chin KQ, Donnelly CA, Blackburn TM, Newbold T, et al. Zoonotic host diversity increases in human-dominated ecosystems. *Nature*. 2020; 584: 398–402.