

## OPINION PAPER

# COVID-19: Lessons Learned from COVID-19 Pandemic through the lens of a One Health approach

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Since the emergence of Severe Acute Respiratory Syndrome (SARS) in 2003 and Influenza H1N1 in 2009, we are facing perhaps the most unprecedented global health crisis in the recent history of mankind with the emergence of COVID-19, which has evolved from a public health emergency to a global pandemic within a short period of time. SARS-CoV-2 is a novel zoonotic virus in humans which has jumped from an animal source that is still unconfirmed. Following genetic characterization of the virus it is very likely that the source was fruit bats, however, an intermediate animal host is suspected to play a crucial role as an amplifier in close contact with humans in a wet market in Wuhan City in China during 2019.

On 30 August 1854, Dr. John Snow, the father of modern epidemiology, while researching observational studies witnessed the emergence of the great cholera epidemic near his home in Soho, London leading to more than 550 deaths within two weeks. Following careful analysis of the addresses of the cholera deaths and interviews of residents of the area, led him to suspect that drinking water from a particular pump was responsible. Not long after that he successfully convinced the community leaders and local authorities to remove the handle of the water pump located at Broad Street, which prevented additional cholera deaths. When there is an outbreak of a new disease uncertainty increases, as sufficient information and data are not always available to inform the level of response or to support rapid risk assessment. Epidemiological thinking including traditional descriptive data analysis, exploration of temporal and spatial patterns of cases and their determinants/drivers and source of infection is essential to deepen our understanding on disease patterns and risk factors involved in a new emerging disease affecting human or animals.

The COVID-19 trajectory is alarming; it has spread across all continents affecting over 200 countries, infecting nearly ten million, killing nearly half a million and limiting civil liberties of almost 7.8 billion people. The aggressive response plans and sweeping actions implemented by some countries to flatten the epidemic curve, including barring the virus transmission between affected or infected individuals and susceptible communities using lockdown of an entire country to cities, restriction of free movement of people, old style quarantine measures, social distancing, isolation of cases and enforcing stringent measures to reduce human to human contact, cannot be applied successfully in many developing or low income countries because of complex economic, political and social contexts.

Disease surveillance efforts play an important role in the identification of cases, deaths, rates of infection, reproduction number of COVID-19, similar to any other human or animal infectious disease. However, countries use different protocols and exert varying efforts to find cases and carry out the right testing in correct numbers. This effort is also related to the actions conducted after identifying cases - how people respect self-isolation or self-quarantine, protect the exposure of health personnel treating patients or frontline workers searching for cases and tracing back contacts and exposures. John Snow observed risk

factors for the cholera outbreak back in 1854 and 166 years after we are facing a similar situation with COVID-19. Over one and a half century little has changed, as new diseases and pathogens continue to emerge and re-emerge, and traditional epidemiological principles from epidemic curves to risk analysis are still valid and applicable to find solutions to challenging questions. Therefore, workforce development and strengthening competencies and skills of public health and animal health workers in epidemiology, surveillance and risk assessment need to be reinforced and be seen as a global health insurance policy in many developing countries to deal frontally with endemic zoonosis and emerging diseases such as COVID-19 and others.

Encroachment of wildlife and bush meat consumption by humans have been touted as the most likely pathway of transmission of this novel virus and WHO has been called upon by its members to investigate the origin of the virus and source of the infection, to implement preventive measures for reducing the risks of new emergence or further spread. FAO and OIE have been supporting the global response to COVID-19 as we witness this novel virus emerging again from the animal and human ecosystem interface, ravaging the world by impacting all aspect of the global and local economies including international travel, agriculture and livestock production, delivery of animal health services to farmers and safety of food products, among others.

One of the most severe consequences of COVID-19 is its high negative socio-economic impact resulting from, among others, restrictions of movement and disruption of businesses, trade and distribution of goods affecting global value chains. The livestock sector is not spared. This sector is likely to see an increased incidence of animal diseases in 2020-2021 and years to come, caused by low investment on livestock health, poor delivery of animal health services to farmers, insufficient vaccination coverage for specific livestock diseases and a surge of antimicrobial resistance (AMR) due to misuse and overuse of antimicrobials without professional prescription in human and animal production. This may lead to wrong perceptions from consumers that animal products and food are not safe. This uncontrolled increase of the incidences of animal diseases may include some zoonotic diseases, together with increased rates of super bugs due to AMR, which can make the livestock sector more vulnerable to emerging diseases, existing disease spreading in larger proportions or even spreading to new geographical areas in many developing countries.

Since the emergence of highly pathogenic avian influenza in Asia in 2003, FAO, OIE, WHO and other international partners have been promoting and advocating for the use of a One Health approach to enhance prevention and response to emerging diseases, using a multidisciplinary approach. Many tools have been developed at the global, regional and national levels to tackle animal diseases at source, using this multisectoral One Health approach. Some examples of programs that FAO has developed alone or with partners include OFFLU (Influenza network of Laboratories) including animal and human laboratories, four ways linking approach (epidemiologists and laboratory experts form human and animal health side working together on understanding, detecting and responding to a zoonosis), FAO/WHO/OIE Joint Global Early Warning System (GLEWS+), Tripartite Zoonotic Guide (TZG), National Bridging Workshops on One Health (OIE PVS/WHO IHR and FAO), Multisectoral National Plans for Controlling Antimicrobial Resistance (AMR), etc. However, One Health should be operationalized to continue to build concrete and practical sustainable capacities in countries to tackle emerging infectious diseases or AMR, though it is a challenging task. The One Health approach needs to be operational and implementable. Governments must recognize the importance of One Health as a practical, science based and a cost-effective approach and translate and reflect this

approach in policies and programs implemented at the national level. The second impeding factor is that Public Health systems or Human Health Services can perceive a threat of losing national leadership in implementing One Health approaches or coordinating activities with other sectors, including the animal health sector and environment. A third factor is the competition by various sectors for local or limited resources allocated for health in national budget that makes One Health more of a competitive process rather a collaborative effort with a common goal. It may seem trivial but worthy of repeating, that *“prevention is cheaper than cure”* and there is concrete positive return of investments on prevention.

The practical implementation of One Health requires a new mindset by all policy makers, stakeholders and a profound cultural and behavioral change in many societies, to understand that human health is intrinsically linked to animal and ecosystem health. Sustainability of natural resources, good practices of livestock production to reduce the impact on environment, intensification and use of natural resources such as pastures and water, increased welfare of animals to reduce the stress and susceptibility to animal diseases or emerging diseases, regulations of animal density for livestock intensification and implementation of biosecurity along livestock value chains, are related with a common set of good prevention and mitigation practices to reduce the impact of emerging diseases in the future.

What can we learn from COVID-19 and how can we progress with the implementation of One Health for a safer and healthier global ecosystem?

1. Pandemic viruses such as SARS-CoV-2 will continue to emerge if production drivers such as globalization, land degradation, social practices and encroachment between animals, human and environment continue as in the pre-COVID-19 era.
2. If we do not invest enough in animal health and public health systems, capacity development in epidemiology, preparedness and readiness, countries and regions will not be ready or be able to anticipate or respond effectively the next pandemic virus emerging at the animal-human-ecosystem interface.
3. The global response requires coordinated global efforts under the UN system with instruments, resources, policies, guidance and enforcement mechanisms to lead effectively the response at all levels. One Health as a programmatic approach must be included in the UN agenda and programmatic framework, for example, including specific One Health indicators as an AMR indicator, as the latter is already included in the SDG Agenda 2030. For these, specific indicators on One Health need to be identified along with institutional custodians to monitor the progress at country level on preparedness, readiness, response and prevention of emerging pathogens.
4. Investment in scaling up laboratory capacity, prevention, forecasting, foresight, preparedness and intelligence capacities and risk assessment needs to be a priority today for development, since it is cost effective to tackle future pandemics at source. The losses and cost of this COVID-19 pandemic are not yet quantified but with a small investment at country level, the world can respond and be better prepared for the next pandemic. A global solidarity fund for preparedness and responding to pandemics has been proposed by many. For instance, government and the private sector can contribute effectively to create this global mechanism, that can include for instance a contribution of the value of global transaction and business

operations. This fund can be organized within the UN system and with the involvement from FAO, OIE, WHO, World Bank and other UN organizations with a strong participatory role of the private sector.

5. Investment in One Health research, vaccine development and Therapeutic development needs strong partnership and investments from the private sector. This pandemic affects businesses and global supply chains and requires solutions to complex research questions.

6. One Health surveillance including wildlife and livestock need to be recognized as a high priority to have robust evidence on the emergence of new pathogens or the dynamics or temporal and spatial distribution of animal diseases and risk factors. New technologies including genomic profiles of new virus or pathogens detected in wildlife with risk assessment identify the potential of these new or emerging viruses to jump into humans and spread in human and/or animal population.

7. One Health policies and programs in countries need to be high on the Political Agenda at the National Level and by UN and non-UN development partners with presence in countries, including FAO, OIE, WHO, UNEP, UNDP, NGOs, etc.

Global effective anticipation and response to control pandemics matter but being proactive to prevent such pandemics, with the implementation of a truly and cost effective One Health approach, matters even more.

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