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RESHAPING GLOBAL HEALTH SYSTEMS IN RESPONSE TO COVID-19

UCL Institute for Innovation and Public Purpose

Summary

The COVID-19 pandemic is a fast-evolving global crisis. At the time of writing (27 May 2020), the total number of cases in 213 countries or territories around the world has reached 5.7 million, with a death toll of 352,667. As the pandemic continues to challenge health system capacity in high income countries, there are growing concerns about the risk of widespread outbreaks in countries with the least developed health systems. In addition, the pandemic has strained global supplies of essential medical and pharmaceutical supplies. In search of an exit strategy, governments are funding vaccine developments with billions of dollars, but wide availability and equitable distribution of the eventual products is uncertain as global coordination remains insufficient.

Tackling this crisis requires a strong public sector committed to investing in both hard (physical facilities) and soft (knowledge and institutions) public health infrastructures and the capabilities to act rapidly and effectively to combine the available resources. Countries with a weakened public sector — reflected in the prevailing framing that its role should be limited to intervening and fixing only when problems arise in the market economy — have seen significant loss of vital capabilities and absence of preparedness. The crisis also shows the need to nurture and develop an entrepreneurial state with the ability and vision to coordinate, finance and steer the production and development of both essential and high-value activities.

Source: Martin Sanchez, Unsplash

A key element of this is the creation of resilient supply chains and capabilities to counter emergencies. This requires the development of symbiotic public-private sector relationships that give direction to the market and ensure the sharing of both risks and rewards in innovation.

Finally, nation-states on their own are a necessary but insufficient condition for ensuring an effective and equitable response to global crises. Coordination and leadership by international organisations, exemplified by the World Health Organization (WHO), is central to the fight against COVID-19, and countries must commit to supporting and upholding them.

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Summary of Proposals:

Proposal 1: Strengthen the public sector's capability to protect and advance public health through sufficient funding, expanded coverage and a philosophy to shape health outcomes, not just fix new problems

Proposal 2: Unleash the capability of entrepreneurial states to coordinate and steer manufacturing and innovation in public and private business sectors to ensure sufficient availability of medical supplies and pharmaceuticals

Proposal 3: Govern the innovation system for public interest and create symbiotic public-private relationships centred on conditionalities, which ensure the gains from public investments in COVID-19 vaccines and treatments are shared equitably across the world

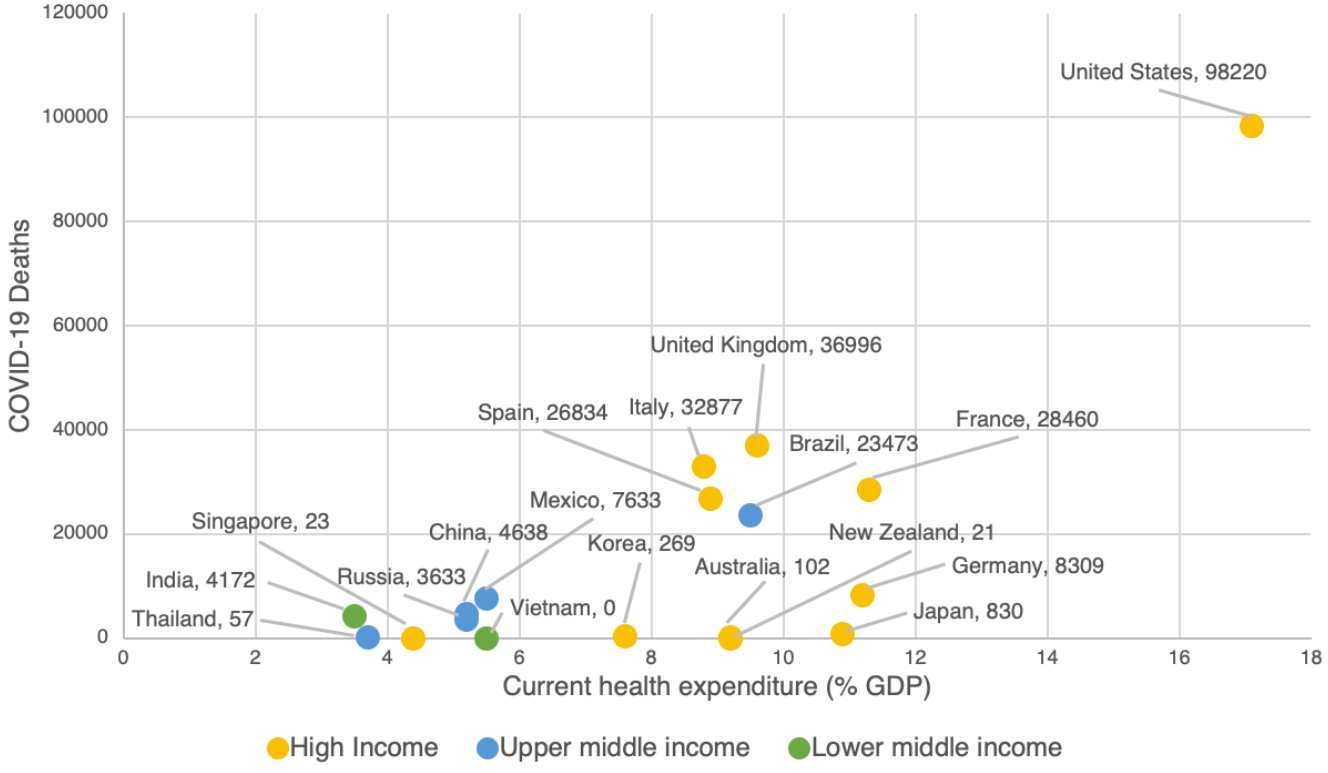
Proposal 4: Buttress international cooperation to achieve the historical global health mission of overcoming COVID-19

Context

The COVID-19 pandemic is one of the most significant outbreaks in recent human history and one of the gravest public health challenges. First reported in China on 31 December 2019, the highly contagious disease rapidly spread within and outside of the country. The severity and extensiveness of the outbreak soon escalated across the world: by the time the World Health Organization (WHO) characterised COVID-19 as a pandemic on 11 March 2020, the disease had reached 113 countries. As of 27 May 2020, the total number of cases in 213 countries or territories around the world has reached 5.7 million, with a death toll of 352,667.

The scale and intensity of the COVID-19 pandemic means that even well-resourced healthcare systems can be overwhelmed (Figure. 1). Despite having outspent all other countries in healthcare in proportion to their respective GDPs, high income countries including the United States, United Kingdom, Italy, Spain and France are the worst-hit countries in total COVID-19 mortalities. In contrast to the examples above, countries with similar spending levels in health — such as Germany, Japan, Korea, New Zealand, Australia — have kept the death tolls much lower. In fact, those with much lower spending levels —China, Thailand, Singapore and Vietnam — have been able to achieve similar levels of control. Remarkably, Vietnam has reported zero deaths to-date.

Figure 1: COVID-19 deaths and current health expenditure (% of GDP by country) (Data sources: Johns Hopkins University Center for Systems Science and Engineering via Github, and World Development Indicators; 26 May 2020)



As COVID-19 continues to spread and countries respond, learning from the failures and successes from international experiences so far and understanding their implications for resource-poor settings will be all the more critical. The epicentre of the pandemic may carry on shifting. Having first impacted China, the focal point has since shifted to Europe and the United States. More recently incidents of cases and deaths are shifting towards low and middle-income countries (LMICs), where health systems are less resourced, less able to cope with surges in patients, and the service coverage across the population poorer. Some developing countries — such as Brazil, Russia, India and Mexico — face growing pressure to reopen from the current lockdown to restore economic activities. As cases and deaths are still rising and yet to reach a turning point in some developing countries, their health systems are bracing for even sterner tests ahead.

In addition to generating very high pressure on health systems, COVID-19 has also created a huge challenge for manufacturing and research and development (R&D) capacities. The pandemic leads to dramatic increase in the demand for essential medical supplies, particularly personal protective equipment (PPE) for health workers and ventilators, and pharmaceuticals. Meeting the sudden demand surge by rapidly scaling up manufacturing capacity is made particularly challenging by supply chain disruptions, such as lockdowns of manufacturing sites, and travel and export bans.

The pandemic has also put the biopharmaceutical R&D system in ever greater spotlight, as any exit strategy from COVID-19 will have to involve effective and universally available vaccines (which prevent people from contracting the disease) and treatments (which improve recovery rate and/or time and help freeing up health system capacity). Also in the spotlight is the role of the public sector: historically, it has been responsible for funding some of the highest-risk research that leads to the most innovative and crucial biopharmaceutical innovations (Nayak, Avorn and Kesselheim 2019).

COVID-19 is “the defining global health crisis of our time”, observed Dr Tedros Adhanom Ghebreyesus, Director-General of the WHO. Given the global nature of the pandemic, individual countries and their governments alone would not be able to provide an effective response. Coordination in public sector responses across countries and multiple sectors and institutions are necessary more than ever. Working with other intergovernmental and international organisations, the WHO has been helping to amplify a holistic COVID-19 response driven first and foremost by health needs. It chairs the UN Crisis Manage Team that brings together key UN Secretariat departments, and works closely with international financial institutions (IFIs) including the World Bank, International Monetary Fund and regional development banks (such as the European Investment Bank) on strengthening health systems especially in the development context. It coordinates — with the World Food Programme — the UN COVID-19 Supply Chain Task Force that scales of the procurement and delivery of essential medical supplies like PPE and ventilators, and has shipped millions of items to over 130 countries. It has activated the R&D Blueprint and, with public, private and non-profit actors leading the health innovation efforts for vaccines, therapeutics and diagnostics, established the Access to COVID-19 Tools (act) Accelerator to speed up R&D by providing a much-needed international framework for partnership, knowledge sharing and commitment to equitable access to the products. Such a public purpose-driven international organisation requires extensive support from national governments to achieve its global health mission.

IIPP Assessment

Strengthening the public sector's capability in public health and preparedness

Health spending alone cannot translate into the basis for an effective COVID-19 response, especially when it increasingly focuses on curative care at the expense of prevention. Fundamentally, a strong public health approach requires a very different framing of the role of the public sector from the one that governments have chosen (Mazzucato 2020a). Since the 1980s, governments have adopted a ‘market correcting role’, intervening only when there are clear market failures, whilst business steers the economy and creates wealth. The result is that governments are not prepared and equipped to deal with crises such as pandemics or the climate emergency. In the process, critical institutions providing public services and public goods are left weakened. In response to this pandemic, countries need to rethink how public value is imagined, practiced, and evaluated to achieve public purpose (Mazzucato 2017).

The loss and absence of vital capabilities cannot be rectified overnight. The United States and the United Kingdom — the two most highly-ranked countries in the Global Health Securities index in 2019 but the worst-hit in this pandemic — are the most illustrative examples. The budget of the US Centers for Disease Control and Prevention (CDC) has plunged in recent years from $11·5 billion in 2018 to $7·7 billion in 2020, with further funding cuts to below $7 billion being sought. In the United Kingdom, austerity cuts have seen public health funding in 2020 reduced by £850 million in real terms compared with 2015/16, the value of emergency stockpiles of PPE dwindled by 40 percent from £831 million in 2013 to £506 million by 2019.

In contrast, countries that have brought the pandemic under better control have adequate public health infrastructure. This resilience is generated by both hard (facilities) and soft (knowledge and institutions) health system infrastructure, and governments that are able to act quickly, and combine the available resources in the most optimised ways (Leadbeater, Gurumurthy and Haley 2020). This is best demonstrated by Vietnam's success, in which the government has been able to implement aggressive lockdown, contact tracing and isolation combined with massive expansion of laboratory-based testing and delivered these at a low cost. This result was achieved in the context of a one-party state and a citizenry accustomed to social campaigns and mobilisations at the community level. Yet questions remain about the right balance between individual liberties and livelihoods, and community health priorities (Cash and Patel 2020).

For LMICs where the cases and mortalities are yet to peak, the above examples have significant implications. Immediate and sizable financial relief is critical for health system strengthening, expansion of universal health coverage and building pandemic response capacity in the public sector of those countries. Given the complexities in social fabric and governance, such relief is also indispensable for enabling effective public health measures that involve restricting the movement of citizens and disrupting their basic livelihoods in the near term (UCL Institute for Innovation and Public Purpose 2020a). IFIs need to go much further to ensure additional and substantial financing during and in the immediate aftermath of the pandemic, write off outstanding debts, and reassess the responsiveness and sustainability of complex financial products in pandemic financing used by multilateral development organisations in the longer term.

It is also crucial to ensure that resources are spent on strengthening public health in a holistic way. The physical infrastructure requires finance, but the soft infrastructure requires the right vision for a dynamic role of government in society. The COVID-crisis has shown that this organisational aspect is the most crucial aspect in fighting a pandemic. One of the great organisational challenges of governments today is mobilising the unemployed in the most adversely affected sectors to contribute to massive test and contact tracing endeavours. Increasing the financial wherewithal and productive capacity to ensure an adequate supply of PPE, food and other necessities is made even more important by fact that the pandemic is likely to sustain in the short to medium term.

Unleashing the entrepreneurial states to build and steer resilient industrial ecosystems

The crisis has reminded policy makers of the importance of nurturing a resilient and responsive industrial ecosystem capable of ramping up production of essential items, medical supplies and testing. Several advanced economies have lost this capacity (Andreoni and Chang 2016). As a result, they have been particularly vulnerable in effectively responding to the crisis. In a number of these countries — the United States and the UK in particular — the decline in manufacturing has been accompanied and exacerbated by rising financialisation of corporations.

As de-industrialisation and outsourcing of manufacturing to fast emerging countries becomes the norm, China has gone on to become the leading manufacturer of the world, accounting for nearly 30 percent of global manufacturing output in 2018. Coupled with the contraction elsewhere in the world, concentration of manufacturing capacity has substantially reduced the resilience of supply chains, which is particularly exposed during systemic shocks. In the current crisis, governments with an entrepreneurial mentality (Mazzucato, 2013) and a solid manufacturing base have been better prepared to reshape productive activity to supply the needed medical and protective equipment.

Countries must therefore take the lead in building and buttressing manufacturing capabilities of PPE, ventilators, pharmaceutical products and other medical supplies (Office of U.S. Senator Elizabeth Warren of Massachusetts 2020), including in the developing world (Park et al. 2019). Across all country contexts, stronger global supply chain resilience has to be built upon stronger local productive capacity and the regeneration of industrial commons — the collective capabilities and infrastructures of "R&D know-how, advanced process development and engineering skills, and manufacturing competencies related to a specific technology" resulting from the clustering of upstream and downstream actors from both public and private sectors (Pisano and Shih 2012; Andreoni 2018; Chang and Andreoni 2020).

Countries can design and implement mission-oriented industrial strategy (UCL Commission for Mission-Oriented Innovation and Industrial Strategy 2019) to stimulate innovation and manufacturing that can address grand societal challenge, crowd in private sector investment, and catalyse economy-wide, cross-sectoral transformation. Creating an innovation-led and sustainable economy necessitates substantial increase in the investment in R&D and manufacturing, proactive market shaping through mission agencies exemplified by the Defense Advanced Research projects Agency (DARPA), empowering regional developments, and future proofing the workforce — especially the disadvantaged population (Office of the Senate Democrats 2020). Corporate governance reforms geared towards increasing productive investments — for example, prohibiting share buy backs or setting conditionality of reinvestment —can play a vital role in reversing the vicious cycle caused by financialization (Chang and Andreoni 2020).

While manufacturing capacity cannot be simply recovered in the short term — nor can industrial strategy be rushed — immediate actions to galvanise and mobilise available production must be taken to increase the global supply of medical products beyond existing capacity. This could include repurposing non-medical existing supply chains and capacities towards those products, and exploring efficient smart solutions that can be quickly implemented. For example, to work around ventilator-related production challenges and increase in demand in the short term, engineers have deployed 3-D printing to produce extra venturi valves, and designed parts and devices that enable single ventilator to be shared between more than one patient.

Creating symbiotic public and private relationships centred on conditionalities

While the private sector is also crucial in bringing cutting edge medicines to the market, the current pandemic exposes the inadequacy of existing health innovation systems, which are characterised by entrenched short-termism and striking misalignment with public interest (UCL Institute for Innovation and Public Purpose 2018). Firstly, companies prioritise R&D that is likely to deliver "blockbuster drugs" at the expense of commercially unappealing medicines that are hugely important to public health (Moon, Bermudez and 't Hoen 2012). Secondly, the pricing of these medicines does not take into account the contribution by other actors, including public institutions (Mazzucato and Roy 2019). Thirdly, patents are often abused, being too upstream, wide, and strong, leading to high prices and lack of knowledge sharing and collaboration (Mazzoleni and Nelson 1998). Fourthly, high prices are driven by — and in turn fuel — the financialisation of parts of the industry, where share buybacks are outpacing R&D (Lazonick and Mazzucato 2013; Collington 2020).

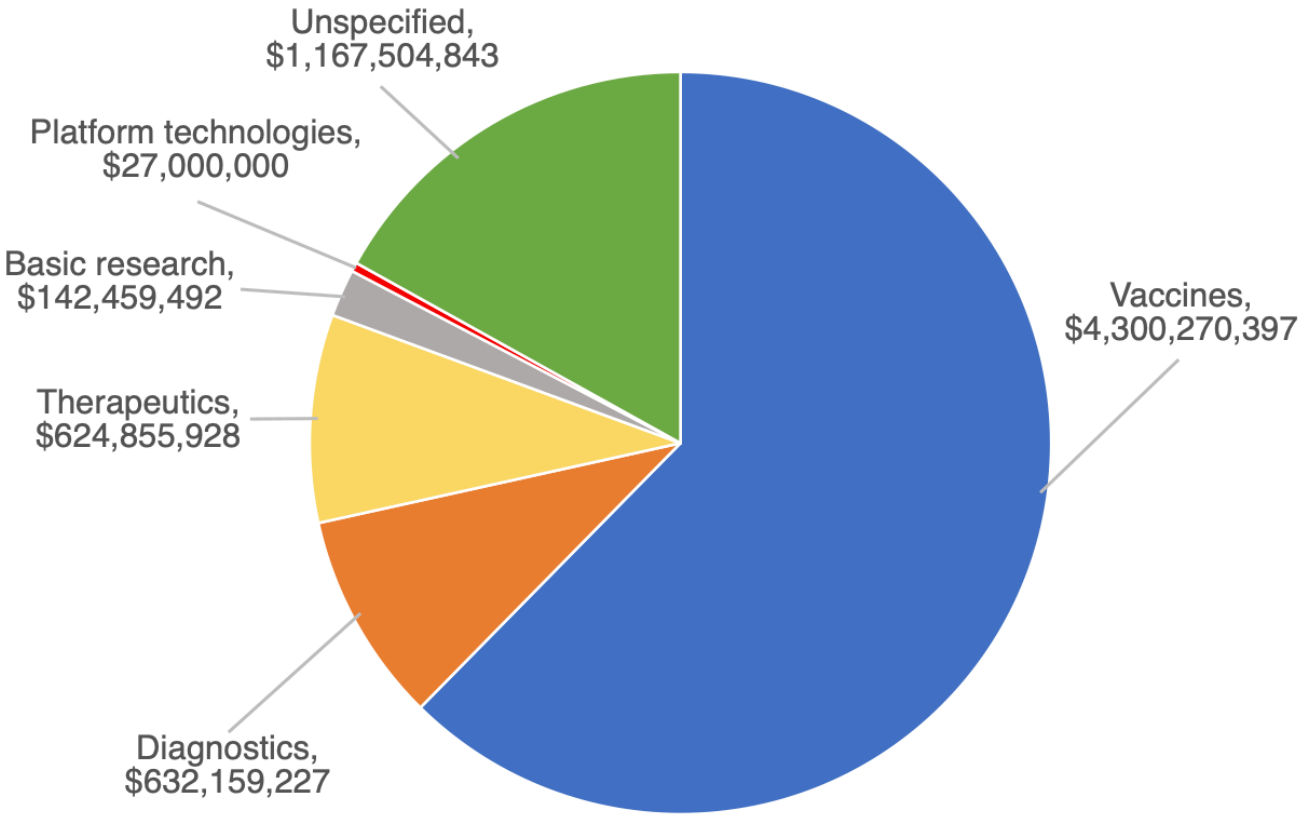
The state should therefore govern the drug innovation process to more effectively shape the market: steering innovation, getting fair prices, ensuring that patents and competition work as intended, and safeguarding medicine supply (Mazzucato, Li and Darzi 2020). At a global level, this will require joint efforts from states to impose firm rules regarding intellectual property (IP), pricing, and manufacturing, designed and enforced in ways that prioritise international collaboration and solidarity, rather than competition between countries.

Underpinned by the rationale to create a symbiotic relationship between public and private actors in the context of COVID-19, 140 public figures, including 50 former world leaders, have led the call for a 'People's Vaccine': a "global guarantee which ensures that, when a safe and effective vaccine (and other technologies for COVID-19) is developed, it is produced rapidly at scale and made available for all people, in all countries, free of charge" (Khan, Ramaphosa et al. 2020).

To achieve the mission of a vaccine for all (Mazzucato and Torreele 2020), a first and vital step is to put in place conditionalities to ensure global, equitable, and affordable access to any innovations that have benefited from public investment from the start of any vaccine development programme (UCL Institute for Innovation and Public Purpose 2020b). This would allow public investments to be structured less like a handout or simple market-fixer, and more like a proactive market-shaper, driven by public objectives. Pricing of COVID-19 treatments and vaccines should reflect both the substantial public contribution to their development (figure 2) and the urgency and magnitude of the global health crisis (Mazzucato and Momenghalibaf 2020; Moon et al. 2020).

According to one of the most comprehensive (although incomplete) survey of global R&D funding for COVID-19, public sector investment has totalled $6.9 billion as of 26th May 2020, of which $2.5 billion is dedicated to vaccine development . For example, the Biomedical Advanced Research and Development Authority, part of the US Department of Health and Human Services, has invested substantially in vaccine-development projects with Johnson & Johnson ($450 million), Moderna ($483 million) and AstraZeneca ($1.2 billion). The Coalition for Epidemic Preparedness Innovations (CEPI), a non-profit organisation at the centre of funding R&D of vaccines

Figure 2: Combined public investment in COVID-19 R&D by product type (USD) (Data source: Policy Cures Research COVID-19 R&D tracker; 26 May 2020)



for deployment in outbreaks, has so far received an extra $765 million of a targeted $2 billion in funding for COVID-19 vaccine development from multiple governments.

Given these substantial public investments, firm commitments on a vaccine available to all beyond statements of principle and generic pledges will be necessary, as are concrete conditions that enable vaccines to be free at the point of use. Policymakers should also consider using compulsory licensing to allow countries to make the best use of the available tools and technologies.

Second, to maximize the impact on public health, the innovation ecosystem must be steered to use collective intelligence to accelerate advances. Science and medical innovation thrives and progresses when researchers exchange and share knowledge openly, enabling them to build upon one another's successes and failures in real time. The COVID-10 technology access pool (C-TAP) — a voluntary pool for health technology-related knowledge, intellectual property and data proposed by Costa Rica and adopted and launched by the WHO on 29 May — has offered a pragmatic solution with game-changing significance (Nature Editorials 2020; World Health Organization 2020).

In addition, strong steps need to be taken to ensure that critical technologies and data — especially those generated with public investments — are shared publicly in full, with rigorous scientific assessment.

Necessity and speed must not compromise robust data transparency, or worse, become an excuse for irresponsible communication practices that enable companies to move the financial market to their gains during the crisis (Whitfill 2020). Moreover, collective steering is vital in order to select and pursue the most promising potential vaccines. Otherwise, marketing authorisation may go to the best-resourced candidate rather than the most suitable one.

Third, we need to devise collective procurement mechanisms to help directing, co-creating and shaping markets and ensure fair allocation and equitable global access to the new technologies as they become available. The overriding goal must be to prevent advanced economies from monopolizing the global supply or displacing demand for vaccines from poorer countries. A Benefit-Based Advance Market Commitment approach that builds on the model that Gavi, the Vaccine Alliance has been deploying to pool purchasing power and market potential in lower-income countries can be one important way forward for equitably bridging the demand across high, middle, and low-income countries (Chalkidou et al.

2020). It is critical to ensure this or a similar mechanism is capable of connecting all the vital actors in the full innovation and supply chain of vaccines, and crowd in important private investments.

Supporting the WHO in achieving a historic global health mission

As the COVID-19 pandemic continues to wreak havoc, humanity is in unchartered waters. At its core, navigating the challenges of strengthening public health, upscaling manufacturing capabilities and creating a symbiotic system of health innovation involves negotiating an intricate balance between national interests and global interests over essential resources, how they can be maximised for mutual gains, and distributed in the most equitable way possible.

This process is fraught with problems of a complex nature with social, technological, economic, and political dimensions. In the scramble for resources, the risk of the demand of richer countries crowding out those of poorer countries is evident (Kavanagh et al. 2020). This can be aggravated by populist instincts for protectionist policies and tit-for-tats, disregarding the bigger picture and the greater good. At a time when the world desperately requires unity and solidarity, some of the most influential powers that can bring the world together are seemingly locking horns rather than holding hands.

Only coordination and leadership at the global level can provide the much-needed multilateral platform for dialogues, collaborations, and collective actions to turn the tide, and prevent those inopportune elements from coming to a head for the worse. Despite its limits and constraints, the WHO is, and will be one of the most important global health institutions central to providing the herculean steer, coordination and mobilisation needed to equip global health systems with the knowledge and resources in the most critical moments, along with other crucial global health actors.

The world will not emerge from COVID-19 without a stronger and more supported WHO by actors at all levels and sectors. Faced with the triple crises in health, climate change and economic stability (Mazzucato 2020b), the global health system response to COVID-19 will define the prognosis of humanity going forward.

Conclusion

The COVID-19 crisis has revealed significant shortcomings in global health systems. Even well-resourced health systems have been overwhelmed. The crisis therefore carries an opportunity to upgrade health systems globally to achieve a higher state of public health and more resilience when the next crisis strikes. Substantial public investments are needed to expand capabilities and coverage. This requires a new mentality for governing the public sector based on promoting a bold entrepreneurial state with the vision and ability to shape and crowd in private business activity to deliver better public health outcomes. Additionally, increased support for international cooperation is paramount to achieve this global health mission.

Enquires

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