World view

By Trudie Lang

Plug COVID-19 research gaps

Many studies needed to quell pandemics are not being done, and the chance is ebbing away.

More than 2,000 COVID-19 clinical trials have been registered around the world. At least 90% are in wealthy nations, most looking at treatments in hospitals. These studies are needed, and the speed and collaboration involved have been amazing. But we must mind the gaps.

It is a familiar story: in general, 90% of research helps less than 10% of the global population. The first funding rounds in my nation, the United Kingdom, were assessed according to the impact that the research would have here only. The first push of big global money was geared almost entirely towards drugs and vaccines. But we need other studies. What is the best way to implement social distancing and hand washing in urban slums in which many families share a toilet? When people fail to stay at home or seek medical care, is it because they do not trust public-health messages or because they need to earn money for food?

An analysis this month found that clinical trials to treat COVID-19 were often redundant and uncoordinated: one in six focused on using malaria drugs in hospitalized people (see go.nature.com/2zprf0s). Health-research funders must find a mechanism for funding across global health-care settings and categories of unknowns, particularly in behavioural science and diagnostics. That will prevent the same questions being neglected again and again. And we need to help less experienced teams to undertake these studies.

In May, my team and I were part of a collaboration that surveyed and consulted more than 4,000 researchers in 130 countries about what studies were most needed (see https://coronavirus.tghn.org/). Respondents did not focus on clinical trials. A researcher in Zimbabwe wanted to know why fewer women were accessing maternal care (were they afraid, or did they think the clinics were over-run by COVID-19?). A health worker in Pakistan wanted evidence to show when interventions such as lockdowns and social distancing are most effective, and how best to implement them. The gaps that came up were familiar from my experience fighting Ebola and Zika: they concerned community health care, case detection and public communications.

We need to start asking the right questions, right now.

Many studies must happen while transmission rates are high. For example, anti-viral treatments work best when people first become infected, before they need to be hospitalized. Without effective drugs or vaccines, we rely on case detection, contact tracing and public-health measures such as social distancing and stay-at-home orders. So we need practical and cheap diagnostics, and to learn which interventions work best, where and at what point in an outbreak.

> **“We need to start asking the right questions, right now.”**

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Without community studies to learn to stall transmission and to test treatments to keep disease from becoming severe, we will face the next outbreak without better strategies.

Differences from place to place can help us learn how to stop the pandemic. We don't yet know why COVID-19 case numbers vary so much in Africa, Asia and Latin America, even where urban density is similar. Is it family dynamics? Demographics? What happens when other diseases, such as HIV, tuberculosis or malaria, are prevalent? What matters most? Other studies could reveal how to gauge community perceptions and adherence to public-health measures. Interventions that reduce transmission can cut incomes and keep people from seeking routine medical care. We need studies to work out how and why the impacts of such interventions could outweigh the benefit to public health.

Why aren't the studies being done? Many grants are funded on the basis of the researchers' reputation and access to resources. This makes it hard for those with less experience to compete, and creates silos of expertise without building capacity. By some estimates, less than 1% of global research is led by teams in the lowest-income countries.

Another reason is that randomized clinical trials are seen as the gold standard. These are essential in assessing medical interventions, but they might be a poor tool for answering some key social and economic questions. If we don't change course, these will remain uninvestigated for the next pandemic. And the next.

I say this as someone who runs clinical trials. Consider the 2015–16 epidemic of the Zika virus. We faced the same unknowns then: how was the disease transmitted? What can stop infections? What wins public acceptance for measures to prevent transmission? Networks and coordination mechanisms set up after Zika and Ebola outbreaks have produced great science and revolutionized sharing of data and methods – all crucial for the speed of progress on COVID-19.

Now we need better coordination of which studies are initiated. Rather than scoring each application on its own merit, I suggest applications be categorized and prioritized. Must the virus be circulating for the work to be conducted? Can the research help to tackle COVID-19 and future pandemics? Is it relevant only to future pandemics?

By seeing ideas as a portfolio, we'll avoid pouring funds into so many hospital-based clinical trials assessing essentially the same interventions while neglecting research on public trust, transmission from animals or lab-based tests on stored samples. We also need to run qualitative studies so we can know which interventions are acceptable and understand wider questions around, say, mental-health interventions or domestic violence.

The pandemic is devastating communities across the globe. We need global data across communities to quell it, and to prepare for the next one.

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