

MEDICAL DISPATCH

INDIA'S CRISIS MARKS A NEW PHASE IN THE PANDEMIC

In countries where the storm is lifting, it's time to turn outward and help the rest of the world.



By Dhruv Khullar

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Family members of people infected with COVID-19 lining up to replace empty oxygen cylinders in New Delhi, in April. Photograph by Naveen Sharma / SOPA / Shutterstock

Since just before the new year, Ramanan Laxminarayan, an epidemiologist and economist at Princeton, has been camped out with his family in an apartment in New Delhi. Laxminarayan is the founder and director of the Center for Disease Dynamics, Economics, and Policy, and is an expert in antibiotic resistance. During the pandemic, he's been studying coronavirus transmission in India. He works from home, spending nearly all his time indoors until five-thirty each day, when he takes his dog out for a stroll. Together, they explore Vasant Vihar, an embassy-filled neighborhood in the southwest of the city.

Laxminarayan's walks have changed in recent weeks. Coronavirus deaths in India have skyrocketed, and a frightening atmosphere has descended. New Delhi is roughly as dense as New York City, with some thirty thousand residents per square mile. But now Laxminarayan passes just a few scattered people; almost everyone stays inside if they can, venturing out only in search of food, medication, or medical care. Before the surge, mask-wearing had declined, but now everyone's face is covered again. "You need public-health enforcement when the pandemic is invisible," Laxminarayan told me. "Now fear is the dominant force changing people's behavior."

Read *The New Yorker's* complete news coverage and analysis of the coronavirus pandemic.

Government statistics indicate that the virus is newly infecting millions of Indians each week, and that some twenty thousand or thirty thousand people are dying weekly. But most experts, including Laxminarayan, believe that those numbers capture a fraction of the true COVID-19 toll. "It's a war zone," Laxminarayan said.

“It’s worse than what you’re reading in the papers or seeing on T.V. Whatever the numbers are, they don’t tell the full story. The human toll is devastating.” The current surge differs fundamentally from India’s experience last year. “This is truly a national wave,” Laxminarayan said. “It’s not urban. It’s not rural. It’s not north or south. It’s everywhere.” He went on, “During the first wave, the poor suffered the bulk of the health and economic toll. Now everyone is affected. I personally don’t know a single family that doesn’t have COVID in it right now. I don’t mean in their extended family. I mean in their nuclear family.”

In late April, after his dentist’s parents both died and after a colleague fell ill and couldn’t get oxygen, Laxminarayan decided to shift from COVID research to COVID relief. He and his team at C.D.D.E.P. decided to focus on India’s oxygen-supply problem, which has fundamentally limited the nation’s hospital capacity. They launched an initiative called OxygenForIndia, raising eight and a half million dollars in two weeks; with the help of corporate partners, among them Verizon Media, Logitech, and UiPath, they have secured more than two thousand oxygen concentrators—portable devices that remove nitrogen from the air to produce purified oxygen—and thirty thousand cylinders to store gaseous oxygen. By some estimates, those cylinder donations add up to more gaseous oxygen than India has received through foreign aid to date. “Right now, no one wants to leave a hospital bed they’re in,” Laxminarayan said. “It’s the only place they know perhaps they can get oxygen. We want to assure people they will have oxygen at home, so that hospital capacity is freed up for the sickest patients.” Laxminarayan thinks that bolstering critical-care capacity is a long-term proposition—“You can’t make doctors and nurses overnight”—and that India is better served today by making more efficient use of its existing infrastructure.

OxygenForIndia has already started delivering oxygen to people’s homes, but the organization’s larger goal is to partner with hospitals in urban areas: Delhi, Bangalore, and Kolkata, among others. Doctors, along with algorithms, will triage patients upon presentation or as they improve before discharge. Those deemed safe to go home with supportive oxygen will be given a QR code to be scanned at

are to go home with supportive oxygen will be given a QR code to be scanned at a nearby warehouse, where they can collect an oxygen cylinder or concentrator to keep as long as they need. (Cylinders must be refilled at the warehouse each day; concentrators can be used continuously at home.) “I’m hoping this is a scalable

model that can be used by other countries when they face their big COVID wave,” Laxminarayan said. “Because there’s no reason to believe they won’t.”

The air around us, which contains twenty-one-per-cent oxygen, must be concentrated and purified to produce the medical-grade gas that people need when the coronavirus besieges their lungs. The most efficient way to accomplish this—the default in wealthy countries—is for factories to produce liquid oxygen, which tanker trucks then deliver to hospitals, where it can be stored in large containers and then piped into patients’ rooms. Many hospitals in poor countries, however, aren’t equipped to store liquid oxygen, and must rely on an external supply. If a hospital is in a remote location, this can be a serious logistical challenge.

Another option is to install on-site plants that extract oxygen from the air. These systems, which use a technology known as pressure swing adsorption, or P.S.A., are expensive, and require maintenance. In October, the Indian government announced plans to build a hundred and sixty-two such plants around the country; thus far, thirty-three have been installed. Laxminarayan’s organization also hopes to create dozens of oxygen-generation plants at Indian hospitals. For now, many hospitals rely on simpler, decentralized technology, which comes with disadvantages: the gaseous oxygen contained in cylinders can cost ten times as much as its liquid equivalent, and oxygen concentrators are usually intended for only one or a few patients at a time.

Whatever the process, it’s clear that too many Indians are going without the oxygen they need. Since this February, India’s oxygen requirements have increased fifteenfold; it now needs nearly three times as much medical-grade oxygen as it

INDIA, IT NOW NEEDS NEARLY THREE TIMES AS MUCH MEDICAL GRADE OXYGEN AS IT did during the height of its first wave. Some hospitals have run out of oxygen, and others are on the precipice. Hospitals won't admit patients whom they can't treat; many Indians therefore suffer a suffocating illness at home. The government is doing what it can: granting oxygen-transport vehicles an ambulance-like status on roads; leveraging the national railway service to move tankers around the country; enlisting the air force to transport empty containers back to factories to be refilled. On Wednesday, India's Supreme Court ordered the federal government to present a more comprehensive plan to meet New Delhi's oxygen needs. Meanwhile, foreign governments and international aid organizations are sending ventilators, concentrators, and cylinders. Still, each day brings fresh reports of people dying because they can't get oxygen. (The shortage is likely to spread: globally, the deficit of medical oxygen—the gap between what's needed and what's being produced—has tripled in recent months, in part owing to the unmet need in India but also because of growing demand in South America and the Middle East.)

Technically, Indians have access to universal health coverage: the country's constitution guarantees everyone a “right to life,” and people can receive care at government facilities free of charge. But, over decades, low levels of public financing have led to poor quality and severe staff and supply shortages. India's federal government spends around one per cent of G.D.P. on health care—far less than most large economies. Moreover, states share responsibility with the federal government for health-care delivery, and that has resulted in a large variation in funding and quality. Many Indians therefore opt to pay for private health care, if they can afford it, and the private sector now provides most care in India, even though commercial health insurance is available to only a fraction of the population and out-of-pocket costs can be devastating. In 2018, the central government launched a major effort aimed at insuring that low-income people could receive care at private facilities. But relatively few Indians have a regular place of care where they can receive ongoing management of their medical conditions or outpatient testing and treatment for COVID-19.

The coronavirus has severely strained India's critical-care capacity, which was lacking even before the pandemic: during normal times, the country has around fifteen per cent of the critical-care specialists it needs. More generally, India has nine doctors for every ten thousand people—about half the global average, and only a third as many as the U.S. There's also the issue of maldistribution: two-thirds of India's population lives in rural areas, where only twenty per cent of the nation's doctors work. (Shortages of nurses and other clinicians can be even worse.)

Still, India's physician-to-patient ratio is higher than that of Bangladesh, Nepal, or any nation in sub-Saharan Africa. Many of the globe's myriad health-care systems share the fundamental constraints that have transformed India's second wave into a humanitarian crisis—including an oxygen-delivery infrastructure that is unable to meet the demands of a vast viral surge.

Many Indians have experienced the current surge as a surprise. But the forces driving it are fundamentally familiar. "Society opened up without restraint," K. Srinath Reddy, the president of the Public Health Foundation of India and the former chair of cardiology at the All India Institute of Medical Sciences, told me. "It was widely perceived that the pandemic is behind us, that we are unlikely to have a second wave. We didn't just return to 2019—we entered 2021 with an extra degree of exuberance."

Politicians encouraged people to gather at massive rallies; cricket stadiums filled with fans; malls opened to shoppers and weddings welcomed guests. The government sanctioned the Kumbh Mela, a Hindu religious festival, and millions of people made the pilgrimage to Haridwar, in the northern state of Uttarakhand, to wash in the River Ganges. The festival started on April 1st and continued for nearly three weeks before the coronavirus toll became unbearable and undeniable. Afterward, people carried the virus back to far-flung cities and villages. "The euphoria of putting the pandemic behind us was a widely prevalent emotion, and

cuphoria of putting the pandemic behind us was a widely prevalent emotion, and it suited everyone,” Reddy said. “Industry wanted to get back to full production. Small traders wanted to get back to business. Ordinary citizens wanted to get back to their lives.”

Many countries have engaged in wishful thinking during the pandemic; all have struggled to fight the virus while avoiding economic collapse. The Indian experience speaks specifically to the problem of endurance, and raises the question of how long low- and middle-income countries can maintain pandemic protocols absent a clear time line for widespread vaccination. The U.S. and much of Europe have navigated the pandemic while looking forward to early and reliable access to vaccines; if we didn't have a firm end date, we at least knew that an end was approaching. Under such conditions, politicians and the public can examine, debate, and accept the costs of restrictions. But that calculus is harder, perhaps impossible, without some assurance that pandemic life is temporary.

The global vaccination effort has faltered, with poor countries receiving a fraction of the vaccines they had expected. COVAX, the world's primary initiative to promote vaccine equity, had planned to deliver two billion doses in 2021; so far, it's sent out about fifty million. Less than half of one per cent of all COVID-19 vaccines have been administered in poor nations. “We're now in this very strange situation where we're talking about fourteen-year-olds in America getting vaccinated, while older people around the world remain vulnerable and entire countries are devastated,” Ashish Jha, the dean of Brown's public-health school, told me. “It's a moral issue, but it's also an epidemiological one. We're placing everyone at risk when we let the virus run rampant. It creates a huge substrate for new variants. We need to quadruple our efforts to get the world vaccinated. That has to be the No. 1 priority for the Biden Administration going forward.”

The U.S. has committed four billion dollars to COVAX, which still faces a funding shortfall of tens of billions of dollars. Last week, the Biden Administration also announced its support for waiving intellectual-property protections for COVID-19

announced its support for waiving intellectual property protections for COVID-19 vaccines. The proposed waiver—it must be approved by the World Trade Organization—has been hailed by many public-health practitioners; the director-general of the W.H.O., Tedros Adhanom Ghebreyesus, called Biden's support for the proposal “a monumental moment” in the fight against the pandemic. But

others have sounded a cautionary note, raising the possibility that the spectre of patent waivers will disincentivize companies from investing in vaccine and drug development in the future. “I wonder whether we want to send potential firms the message that the larger the health crisis, the less we will respect and protect your I.P.,” Craig Garthwaite, a professor at Northwestern University, tweeted, after the Biden Administration's announcement. “That's a great system if you think this is the last pandemic we'll face.”

Jha told me that he worries less about I.P. and incentives than about the practical obstacles to vaccine production. The primary barriers to vaccine availability, he said, are not rigid intellectual-property protections but limited manufacturing capacity and poor distribution infrastructure. Only a small number of companies have the expertise needed to manufacture COVID-19 vaccines, especially ones that use new mRNA technology, and scaling up takes time. “The world wasn't ready to produce five or ten billion doses of COVID vaccines,” Jha said. “We don't just have all this excess capacity sitting around. You need raw materials, production capabilities, liner bags, a whole bunch of complex machinery and supplies.” Absent “a broader package of funding, supplies, manufacturing, and people with technical know-how,” Jha said, waiving I.P. rights wouldn't help India escape the crisis that it faces today.

At the close of the Second World War, much of Europe lay in tatters. Air strikes had devastated major cities. Industrial facilities, roads, bridges, and railways had been destroyed; trade routes were severely disrupted; hunger was widespread; and hundreds of thousands of refugees crowded into camps. By comparison, the U.S. had escaped relatively unscathed—its infrastructure intact,

its economic might unquestioned. In 1948, the nation began the Marshall Plan—a more than thirteen-billion-dollar effort to rebuild Western Europe by modernizing industrial and agricultural practices, removing trade barriers, providing direct relief, and stabilizing European currencies. The initiative offered economic and technical assistance to more than a dozen countries—France, Great Britain, Italy, and West Germany among them. In an address, the plan's namesake, Secretary of State George Marshall, told the world, "Our policy is not directed against any country but against hunger, poverty, desperation, and chaos." The eventual impact of the Marshall Plan remains the subject of debate. Some scholars argue that it was modest, though others note that, by 1952, the economy of every participating country had sailed past prewar levels. But America's commitment to a more stable, prosperous, and democratic world was widely recognized. Over four years, the U.S. sent more than five per cent of its 1948 G.D.P. to both allies and enemies; the program enjoyed high levels of bipartisan support.

Is a Marshall Plan for COVID a possibility? The U.S. and other wealthy countries are now approaching an inflection point: with vaccination speeding up, coronavirus cases and deaths are falling across the developed world, even as COVID-19 ravages people, health systems, and economies in much of the Global South. In America, the crushing economic and medical toll of COVID-19 is beginning to lighten. The war is winding down. Our next pandemic battle must focus on helping other nations cross the finish line.

The needed action falls along two dimensions: immediate relief and medium-term preparedness. The former involves a robust, standardized aid package—testing kits, oxygen-delivery devices, ventilators, therapeutics, and vaccines—that could be tailored and sent to countries in need that are facing or anticipating a viral surge. The latter requires investing in local infrastructure for vaccine manufacturing, oxygen production, and public health. As it stands, without massive investment and coordinated effort, billions of people could be left without vaccines, ventilators, medications, oxygen, medical care—and relatedly without

vaccines, ventilators, medications, oxygen, medical care—and, repeatedly, without food, shelter, stability, or hope. America has chosen to be a generous nation before. Will it choose that path again?

For Laxminarayan, the pandemic has revealed the best and the worst in people. He frequently gets calls from healthy individuals trying to hoard oxygen. When he asks why they need it, they say that they're hoping for a kind of insurance policy for the future. "It's astounding," he said. "People are dying this second because they can't breathe, and you're trying to stash oxygen away for yourself?" On the other hand, he's been overwhelmed by the outpouring of generosity, from within India and around the world. Donations have streamed in; a network of colleagues and volunteers is working around the clock. Many receive no compensation for their time and effort. "Their goodness makes me cry," he said.

When I spoke with Laxminarayan last week over Zoom, it was past 2 A.M. in India. That was the only time he was available. In recent days, the coronavirus seemed to have tightened its grip on his circle. Two of his friends had lost their fathers to COVID-19. Another woman he knows died of COVID-19 just after childbirth; her newborn child entered the world without a mother. His colleague—the man whose search for oxygen had initially motivated Laxminarayan to raise money for cylinders and concentrators—had also passed away. Laxminarayan looked tired, and his voice cut in and out over the spotty Internet connection. I thanked him for speaking with me so late, but he waved it off: I wasn't his last meeting of the night. During our conversation, he twice paused to accept other calls, each time apologizing for the interruption. They were pleas for help. "People are begging for oxygen, no matter how poor or rich, how isolated or well connected," he said. "In those moments, everyone is the same. They're scared. They can't breathe. They need help."

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