The OxygenForIndia initiative initiated at the height of the unprecedented oxygen crisis in April 2021. Led by Dr. Ramanan Laxminarayan, economist, epidemiologist, and founder and president of the One Health Trust (founded as the Center for Disease Dynamics, Economics & Policy or CDDEP), OxygenForIndia is a collective effort of philanthropic organizations, corporations, medical and public health professionals, volunteers, and concerned citizens around the world. Many partners and nearly 14,000 small and large donors ranging from students raising money from their friends to Logitech, UiPath, Vista Equity Partners, Facebook, Give Foundation, and more came together to help support OxygenForIndia’s work. The initiative persists with a long-term vision to ensure that no one in India dies due to a lack of medical oxygen.

The immediate impact of our work was recognized by many local institutions in India that we supplied with oxygen equipment to during the shortages in 2021.

"OxygenForIndia was a bright light in a long, dark tunnel during the COVID-19 medical oxygen crisis. Not only did they mobilize a large group of diverse stakeholders to get oxygen to patients quickly, but their strong public advocacy motivated many other groups in India and abroad to imitate their model-saving many lives. The Every Breath Counts Coalition applauds OxygenForIndia for taking all that they learned during the pandemic to ensure that patients never again experience such tragic shortages by developing and testing new solutions, including a National Oxygen Grid. This work continues to inform the new Global Oxygen Alliance (GO2AL), led by Unitaid, The Global Fund, PAHO, the Africa CDC, WHO, UNICEF, and shape the Lancet Global Health Commission on Medical Oxygen Security which will report in 2024."

Leith Greenslade
Founder & CEO, JustActions
Coordinator, Every Breath Counts Coalition
Member Board of Directors, TEAMFund
I am obliged and grateful to OxygenForIndia for providing me help during these unprecedented times. I was found COVID positive on 9th May, 2021, having severe symptoms such as continuous rise in body temperature and throat and body ache. I tried my best to find an oxygen concentrator. Just when I was about to lose all hope, OxygenForIndia came as saviors. They provided me with the machine on the same day. The team came to my place and explained the technicals about the machine. It was a big relief for me.

Thanks to OxygenForIndia, they are oxygen heroes for me.
- JAGDEEP KAUR

I would like to say thank you to OxygenForIndia for helping me with oxygen support in the pandemic situation. I got COVID in April 2021 and I developed breathing difficulty. I had to be admitted to the ICU for a month. I had breathing trouble after I got discharged and the doctor advised I stay on Oxygen support as there was inflammation in my lungs. I couldn’t afford to buy an Oxygen concentrator due to financial problems. In this crisis, OxygenForIndia really helped me. They gave me the oxygen concentrator for free in a short span of time. It saved my life!

Thank you OxygenForIndia for your kindness and support.
- MANISHA CHAUDHARY
In the News

**ABC News**

A ‘complete collapse’ of preventive health: How India’s 2nd COVID wave exploded

While the second wave wasn’t avoidable, its scale was, experts say.

By Eric Schoenholz
April 29, 2021, 7:05 PM

In addition to the second wave being much bigger than the first, infections and deaths were concentrated among India’s urban poor during the first wave, Laxminarayan explained. Many weren’t tested for COVID and those who were sick often didn’t make it to a hospital, meaning they weren’t counted in official COVID-19 statistics. The first wave “was not visible to people in urban India,” Laxminarayan said of middle- and upper-class communities. During the second wave, infections and death are everywhere.

---

**Forbes**

The Oxygen Paradox: It’s Available But Not Easily Accessible

I spoke to Ramanan Laxminarayan, an epidemiologist from Princeton now based in Delhi, who is the director of the Center for Disease Dynamics, Economics & Policy. He’s working to remedy the oxygen paradox through his new campaign Oxygen for India. Having written several on-the-ground accounts of India’s Covid-19 crisis for the New York Times, he is now working with oxygen manufacturers and local NGOs to bring oxygen from the factories where it’s being produced to the hospitals where it’s needed. As he explains, “The main challenge isn’t necessarily an oxygen supply issue. It’s getting the oxygen from manufacturers to the hospitals and patients. It’s a transportation issue. If it’s the last mile,” Laxminarayan has developed a model to help close this gap, which he calls the last mile delivery model, and is deploying it throughout the country.

---

**KRON 4**

COVID relief: Bay Area residents launch fundraisers to get supplies into India

In the meantime, another group oxygenbindia.org is trying to raise $400,000 to bring oxygen cylinders and concentrators to hospitals and patients at home.

| Worldwide COVID-19 death toll tops a staggering 3 million |

San Francisco volunteer Neecha Wadhwa has extended family and in laws in India. “This issue is very close to me and also a humanitarian crisis so not just my personal relationship to it but being someone in the world who wants to do good and help solve this problem,” Neecha Wadhwa, with oxygenbindia.org, said.
How to help India during its COVID surge – 12 places you can donate

India is fighting a desperate battle against a new coronavirus surge that’s sent COVID-19 cases, hospitalizations and deaths skyrocketing.

Nearly 58,000 people have died in the last month — accounting for a quarter of India’s 222,000 deaths since the start of the pandemic — according to official reports. But experts estimate that the recent jump in COVID-related deaths could be up to five times greater than official counts.

Multiple, potentially more transmissible variants are now spreading across the country. Vaccines are in short supply, hospitals are overwhelmed and running out of oxygen, crematoriums are full.

As the COVID-19 pandemic grips country after country, many in India are wondering if we are somehow different. Globally, it took roughly 45 days for the first 100,000 cases. It is likely to take nine days for the next 100,000. The global death count is now doubling every nine days and stands at 8,348, with 307,298 confirmed cases. That is how epidemics work — they gather steam as infected individuals go on to infect even more people. Confirmed cases in India, as of today, stand at 369, much lower than small countries such as Iceland (around 250). Could this really be the case that we have fared better than everyone else?

Probably not. Testing in India remains abysmally low. Only about 10 in a million people in India have been tested, compared to say nearly 120 in a million in Thailand or 40 per million in Vietnam. The stated explanation is that the limited number of test kits are being conserved for when they are truly needed but when is the need greater than right now? There are probably shortages even in being able to procure adequate supplies given that many countries are seeking to buy the limited stocks. Testing is the most important thing we could be doing right now. As the Director General of the World Health

The COVID-19 crisis in India is getting worse. Here’s how you can help.

“The virus is swallowing our city’s people like a monster.”

In this April 25, 2021, file photo, a relative of a person who died of COVID-19 reacts at a crematorium in Jammu, India. (AP Photo/Channi Anand, File)

A patient receives oxygen outside a Gurdwara, a Sikh house of worship, in New Delhi, India, Saturday, April 24, 2021. India’s medical oxygen shortage has become so dire that this gurdwara began offering free breathing sessions with shared tanks to COVID-19 patients waiting for a hospital bed. They arrive in their cars, on foot or in three-wheeled taxis, desperate for a mask and tube attached to the precious oxygen tanks outside the gurdwara in a neighborhood outside New Delhi.
Under the OxygenForIndia initiative, we are working with partners to establish a stable, reliable oxygen supply system for India, long term. This work has been supported by the Bill & Melinda Gates Foundation and USAID. One Health Trust (OHT) researchers and collaborators are working with the government of Uttar Pradesh and Karnataka on state-wide pilots for what will eventually become a National Medical Oxygen Grid (NMOG).

The Grid is a state-of-the-art IT platform for monitoring, tracking, and supporting data-based decision-making, to ensure the supply of high-quality medical oxygen to all parts of the country and help deal with any fluctuations in demand.

"An ideal oxygen grid for the country would work much like an electricity grid, with central generation (LMO), transmission (tankers and cylinders), storage (liquid and gaseous), and decentralized production (PSA generators and oxygen concentrators). A sustainable oxygen grid — one that supplies medical oxygen when and where it is required — needs both centralized and decentralized production, plus reliable transmission and storage."

Dr. Indu Bhushan
Co-lead National Medical Oxygen Grid Project
Founding CEO of Ayushman Bharat

"The acute need for oxygen predates COVID-19, and shortages are a constant problem, particularly in rural India. Pregnant women and children with pneumonia can die without supplemental oxygen. Medical oxygen is among the most essential and best understood medical interventions."

Dr. Ramanan Laxminarayan
Co-lead National Medical Oxygen Grid Project
Founder and President of the One Health Trust

Beyond COVID-19
The NMOG was developed by researchers and public health experts at OHT to address the need for a systematic means of monitoring, regulating, and allocating a medical oxygen supply throughout India. A concept blueprint of the NMOG was released by OHT researchers in October 2022, serving as an overview of the final design of the model’s pilot version, launched in July 2023.

This IT platform is available in both a web portal version as well as a phone app version.

To conceptualize and build resilient data systems for decision-making and reporting, it is imperative to bring together rigorous thinking and robust innovation. Strong inter- and intra-departmental relationships are critical to catalyze national and state-level action, implement a resilient data system of oxygen access, and strengthen decision-making and governance mechanism across sectors.

Some of the ways in which NMOG will support health systems strengthening are as follows:

- ensuring that oxygen is always available everywhere and, during any spurt in demand, diverting from production to consumption points while keeping the other points completely untouched;
- forecasting changes in demand based on patterns of consumption to adjust production and ensure availability to meet evolving demands;
- ensuring that most fluctuations in demand can be met through the existing production volume of medical oxygen and a storage reserve;
- studying historical patterns of oxygen demand, supply, and consumption and driving policy changes based on data captured;
- and acting as a global repository for oxygen capacity building tools such as clinical and technical guidelines and reports, training videos, posters, and more.

The National Medical Oxygen Grid (NMOG)
National Medical Oxygen Grid's (NMOG’s) Working & Operations

One time activity
- Facility registration with HFR ID under ABDM
- Facility to declare their oxygen assets

Daily data entry
- Bed occupancy
- Disease specific patient load
- Oxygen stock, supply raised & received, and consumed

Data entry personnel
- Oxygen asset operator/staff nurse/pharmacist
- Under the supervision of oxygen nodal person such as a specialist, anesthetist, etc.

Data entry
- Under the supervision of facility manager

A. Facility infra
- Manufacturing capacity, and storage capacity
- Bed capacity

B. Last 30-day trends
- Oxygen supply received, manufactured, and consumed
- Rational use of oxygen
- Bed occupancy

C. 7-day predictive trend
- Oxygen required
- Different types of bed required
- Case load of different patient types

A. District/state/national infra
- Manufacturing capacity, storage capacity, and transportation
- Different bed type capacity
- No. of PSA plants, concentrators, LMO tanks & tankers, and cylinders

B. Last 30-day trends
- Oxygen supply received, manufactured, and consumed
- Rational Use of Oxygen
- Bed occupancy

C. 7-day predictive trend
- Oxygen required
- Different types of bed required
- Case load of different patient types

D. Supplier details
- Oxygen manufacturing capacity
- Oxygen supplied to hospitals

A. Unit infra
- Manufacturing capacity, storage capacity, and transportation capacity

B. Last 30-day trends
- Demand received
- Oxygen supplied

Open to all tools

Knowledge products tool - guidelines, training videos, and posters

Oxygen therapy consumables based on facility type tool

Cost analysis of Oxygen sources tool

Oxygen unit conversion tool

Demand side

Supply side

NMOG IT platform

Dashboard indicators

Administrators, district/state/national

Service providers

Suppliers
The below chart displays a side-by-side comparison of features included in the NMOG in contrast to its predecessors. The NMOG is compared to other platforms along the lines of pure technological functionalities as well as oxygen management-specific functions.

### Technology

<table>
<thead>
<tr>
<th>Feature</th>
<th>STATE PORTAL</th>
<th>ODTS</th>
<th>ODAS</th>
<th>OC-MIS</th>
<th>NMOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuitive User Interface</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master/Satellite Users</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privileges/Right Customization</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Manual Included</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible Technical Support/Grievance Redressal</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>STATE PORTAL</th>
<th>ODTS</th>
<th>ODAS</th>
<th>OC-MIS</th>
<th>NMOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Profile Creation</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Infrastructure Management</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed Infrastructure Monitoring</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Profile Creation</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease-wise Patient Monitoring</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mock Drill Management</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order Placing &amp; Management (Demand-side)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order Placing &amp; Management (Supply-side)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order &amp; Delivery Status Tracking</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Source Cost Analysis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Demand Estimation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed Occupancy &amp; Disease Case Prediction</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rational Use of Oxygen Tool</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Unit Conversation Tool</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictive Analytics Dashboard</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What Makes NMOG a Breath of Fresh Air

The below chart displays a side-by-side comparison of features included in the NMOG in contrast to its predecessors. The NMOG is compared to other platforms along the lines of pure technological functionalities as well as oxygen management-specific functions.
Web Portal & App
A pilot program for the NMOG was launched in Uttar Pradesh and Karnataka in July 2023 with the approval of state health authorities. It aims to test the effectiveness and usability of the NMOG IT platform. We are scheduled to implement the NMOG IT platform in both states before December 2023.

Testimonials

**Community Health Centre (CHC)**
- Nursing Officers
- PSA Plant Operator

**Sub District Hospitals (SDHs)**
- Chief Pharmacist
- Data Entry Operator

**District Hospitals (DHs)**
- Biomedical Engineer
- Data Entry Operator

**Government Medical Colleges (GMCs)**
- Chief Pharmacist
- Data Entry Operator

**Uttar Pradesh**
- King George's Medical University, Lucknow
- G.S.V.M. Medical College, Kanpur
- Baba Raghav Das Medical College, Gorakhpur
- District Hospital, Sitapur
- Combined Hospital Lok Bandhu Raj Narayan, Lucknow
- CHC Mohanlal Ganj, Lucknow

**Karnataka**
- Sir CV Raman General Hospital, Bengaluru
- GH KR Puram, Bengaluru
- CHC Thyamagondlu, Bengaluru

The pilot program was conducted at the following facilities:

- "App is useful to document oxygen usage and data entry made easy."
- "Easy to use the app and data entry is simple."
- "Tool allows us to monitor our consumption and supply especially refilling of cylinders."
- "Very easy to use and carefully designed tool."
- "The NMOG app is valuable as it allows us to monitor our oxygen consumption and manage the distribution of oxygen effectively. It enables us to track our daily oxygen usage and proves to be a beneficial tool for our hospital."
- "Incredibly practical tool that facilitates the understanding on medical oxygen consumption."
- "Tool allows us to access comprehensive information regarding oxygen & bed availability and equipment specifications."
- "Novel and excellent app, user-friendly interface encourages consistent data entry, easy to use, particularly effective for inventory monitoring."
- "Highly beneficial for our daily data entry needs, provides insights into bed occupancy, performs automatic calculations."
Work & Impact

OxygenForIndia & The Lancet Global Health Commission on Medical Oxygen Security

The Lancet Global Health Commission on Medical Oxygen Security is led by 20 Commissioners and guided by a team of 40 Advisors and an Executive Committee including co-hosting organizations— Makerere University in Uganda, icddr,b in Bangladesh, and the University of Melbourne and the Murdoch Children’s Research Institute in Australia — with support from the Every Breath Counts Coalition.

In May 2023, The Lancet Global Health Commission on Medical Oxygen Security released a statement honoring the adoption by 194 WHO Member States of the first resolution dedicated to increasing access to medical oxygen at the World Health Assembly. The Commission, which includes OHT’s Dr. Ramanan Laxminarayan, also highlighted the launch of a new Global Oxygen Alliance (GO2AL) to continue providing emergency oxygen support to low- and middle-income countries. The new WHO oxygen resolution will help countries bolster their health systems in the face of respiratory pandemics, like that of COVID-19.

Dr. Laxminarayan emphasizes the urgency to maintain the momentum gained in improving access to this life-saving and essential intervention.

The Role of Oxygenation Devices in Alleviating the Oxygen Crisis in India

The One Health Trust’s Dr. Deepshikha Batheja co-authored a new study evaluating the benefits of increased availability of oxygenation devices during the COVID-19 pandemic in India. The study indicates that training staff and providing oxygenation devices on a timely basis can help maximize their utility and allow healthcare facilities to address oxygen demands. This evaluation is relevant to strengthening health systems in many resource-constrained low- and middle-income countries (LMIC).
We are grateful for your support. Your contribution helped those who suffered without oxygen during the COVID-19 pandemic and endures by bolstering our fight to prevent future medical oxygen access crises.

Thank You