

# Medical Oxygen

Medical oxygen is a lifesaving medicine with no substitute. It is essential for surgery, emergency and critical care, and for treating severe respiratory illnesses, including COVID-19 and pneumonia.

Medical oxygen is also critical for treating pregnant women with complications, newborns in respiratory distress and people with severe malaria, advanced HIV disease and tuberculosis (TB), among other critical health issues.

But despite its importance, medical oxygen is often unavailable where needed most. Severe shortages of medical oxygen have been a problem for decades; fewer than 50% of health facilities in many low- and middle- income countries have uninterrupted access. Inadequate health care infrastructure, lack of oxygen-related equipment, and prohibitively high costs are some of the challenges limiting access to medical oxygen. The COVID-19 pandemic exacerbated these shortages. In early 2021 the need for medical oxygen rose tenfold in just a few weeks; many hospitals ran out of medical oxygen, leaving patients without lifesaving treatment and leading to countless preventable deaths.


## How we work

At Unitaid, we save lives by making new health products available and affordable for people in low- and middle-income countries. We identify innovative treatments and tools, help tackle the market barriers that are holding them back, and get them to the people who need them most – fast.

Equitable, sustainable access to medical oxygen is key to improving maternal and child health, strengthening primary health care in support of universal health coverage, and to ensuring health systems are better prepared for the next global health emergency. When the COVID-19 pandemic exposed broad failures in access to medical oxygen, we built on our existing work to address acute needs and support more sustainable access.

## Responding to global health emergencies:

In response to the COVID-19 pandemic, we immediately provided flexible financing and delivered emergency oxygen supplies to 51 low- and middle-income countries. We also played a leading role in the Access to COVID-19 Tools Accelerator (ACT-Accelerator), a groundbreaking collaboration to ensure equitable access to COVID-19 vaccines, tests and treatments. As co-lead of the ACT-



**Photo:** Djeneba Mariko, 17 months old, was treated with oxygen therapy for severe malaria, anemia and respiratory distress at the pediatric unit of the Centre de Santé de Références in Dioila, Mali. © Seyba Keita/ ALIMA.

Accelerator's Therapeutics Pillar, together with the Global Fund to Fight AIDS, Tuberculosis and Malaria and Wellcome, we launched the Oxygen Emergency Taskforce to address the critical shortage of oxygen in the fight against the pandemic. The taskforce raised more than US\$1 billion to boost access to medical oxygen, expand production, negotiate for better pricing, and provide technical advice to governments. Through unprecedented agreements with two major gas companies, we secured price reductions of approximately 22% for liquid oxygen and 43% for cylinders and cylinder filling, paving the way for long-term agreements for access to liquid oxygen.

**Improving child survival:** Children with hypoxemia – dangerously low levels of oxygen in the blood – and respiratory distress need immediate diagnosis and oxygen therapy. Yet most children in low- and middle-income countries lack access to effective tests and treatment; for example, of the 7.2 million children with pneumonia in critical need of medical oxygen each year, studies have shown that only one in five children will receive it<sup>1</sup>. To improve child survival, we are working to speed up the availability, adoption and scale-up of new tools to improve oxygen delivery and respiratory support, suitable for use in low-resource settings.



**Only one in five children  
with pneumonia in critical  
need of medical oxygen  
receive it**

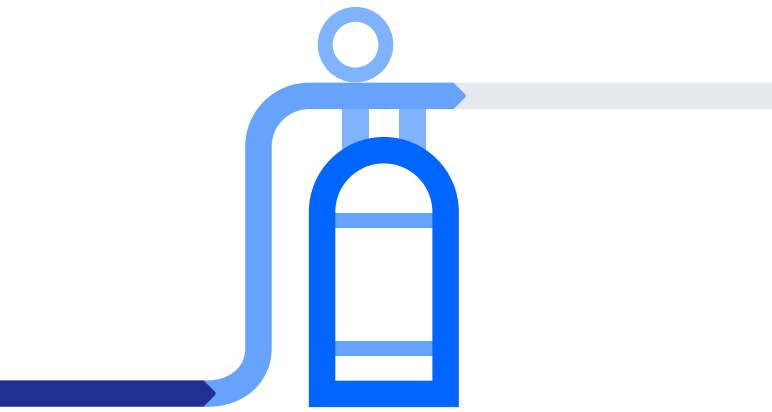
For example, two initiatives that we are implementing with our partners ALIMA (the Alliance for Medical Action) and PATH are examining the feasibility, cost-effectiveness and impact of introducing pulse oximeters, a device used to measure the oxygen saturation in the blood to diagnose severe hypoxemia. Because they are portable and non-invasive, pulse oximeters are particularly suitable for use with children at the primary care level.

Together with Vayu Global Health, we also helped bring to market two new devices that enable newborns and young children to access oxygen therapy: an oxygen blender – a machine used to deliver the right amount of oxygen to patients that prevents the eye, lung and brain damage associated with giving young children a pure oxygen supply; and a bubble continuous positive airway pressure (bCPAP) device – a non-invasive way of ventilating newborns who are struggling to breathe. These potentially game-changing devices are low-cost, easy to use and don't need an electricity supply or compressed air, unlike the existing products on the market. With complementary funding from USAID's Development Innovation Ventures (DIV) and Grand Challenges Canada, the devices are now in early use in 22 countries with over 11,000 infants treated as of February 2023. We are working with partners and donors to scale up the use of these devices in these and other low- and middle-income countries.

**Building alliances and strengthening pandemic preparedness:**

As the world transitions from the acute phase of the COVID-19 pandemic and prepares for future threats, we are working to support governments, health systems and communities to address some of the key shortcomings identified during the COVID-19 crisis. For example, we are partnering with MedAccess on a new initiative to work with local manufacturers in sub-Saharan Africa to build regional manufacturing capabilities for bulk liquid oxygen to ensure a more secure, sustainable and affordable supply.

<sup>1</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6964224/>



To continue the critical work on medical oxygen, the Oxygen Emergency Taskforce evolved into the Global Oxygen Alliance (GO<sub>2</sub>AL) – a broader and more inclusive partnership that includes more than 20 health partners and representatives from civil society and affected communities. Co-chaired by Unitaid and the Global Fund, GO<sub>2</sub>AL aims to convert the investments made during the pandemic into lives saved, including financing to expand production, lowering the price of oxygen and providing technical support to governments. GO<sub>2</sub>AL will collaborate across members and other partnerships to strongly position and advocate for sustainable oxygen systems as a building block for health system strengthening, universal health coverage and pandemic prevention, preparedness and response.

## Our impact

Working closely with governments, industry, health providers and global health partners, we achieved impact in two ways: first, emergency delivery of oxygen to help meet surge demand during the COVID-19 pandemic; second, support to health systems through market shaping, technical support and foundational infrastructure development to build resilience and increase oxygen access in the long term, thus saving millions of lives in future. Together with our partners, we have:

- **Delivered emergency oxygen supplies to respond to COVID-19:** We provided more than 26,000 cylinders, 52,000 concentrators and 14,000 pulse oximeters, and installed, procured or repaired 53 pressure swing adsorption plants (PSA).
- **Increased long-term stability of oxygen supply and equipment:** We secured unprecedented agreements with two major industrial liquid gas companies, leading to price reductions of 22% for liquid oxygen and 43% for cylinders and cylinder filling and paving the way to long-term sustainability of supply. We negotiated, or are negotiating, over 40 agreements linked to liquid oxygen supply and PSA repairs.
- **Provided technical support and strengthened local capacity of health systems to provide oxygen therapy:** We supported the training of over 17,500 clinical and biomedical staff and the development of national guidelines and training materials in seven countries.
- **Introduced innovative, cost-effective oxygen-delivery products that are designed for use in low-resource settings:** We helped bring to market an oxygen blender and a bubble continuous positive airway pressure device for newborns and we are testing the effectiveness and impact of new pulse oximeters.

The long-term benefits of our work will have a huge impact: For example, strengthening oxygen systems could reduce hospital-based pediatric pneumonia deaths by nearly half and hospital-based pediatric deaths overall by a quarter. Building more sustainable and robust oxygen ecosystems will be crucial to realizing universal health coverage and pandemic prevention, preparedness and response goals.



## Case Study:

# Supplying oxygen, saving lives

Leoncio Carrión was gasping for air when he arrived at the Rosa Sanchez de Santillan Hospital in Ascope, a small town in Peru. Battling pulmonary fibrosis, a lung disease that damages lung tissue, the 78-year-old was lucky; if he had come just weeks earlier, he may not have survived. But the hospital had just acquired a lifesaving resource: medical oxygen.

The oxygen was supplied by an oxygen plant newly repaired by engineers with Partners In Health through BRING O2, a Unitaïd-funded initiative to accelerate access to safe, reliable, and quality oxygen in Lesotho, Madagascar, Malawi, Peru and Rwanda. Before the repair work began, the oxygen plant at the hospital was rundown, leaving Ascope with virtually no access to medical oxygen. The shortage worsened during the COVID-19 pandemic.

“Having medical oxygen available 24 hours a day means having the possibility of saving lives,” said Dr. Luis Cáceres, a doctor at the hospital. “We all deserve to receive the best health care and delivery, with quality and equal opportunity.”

Our investment facilitated the repair of 20 oxygen plants across Peru and the training of staff in how to operate and maintain the equipment. Now, the hospital has a fully operational oxygen plant that serves the hospital, the 15 health centers and emergency response teams who rely on it to refill oxygen tanks, and patients like Carrión who use oxygen at home.

“I feel calmer and safer,” said Carrión. “Thank God, now the Rosa Sanchez de Santillan Hospital has an oxygen plant that allows me to continue living.”

**Photo:** Leoncio Carrión is one of hundreds of patients who have accessed lifesaving oxygen therapy in Ascope, Peru after oxygen plant repairs funded by Unitaïd. © José Luis Diaz Catire/Partners In Health.

## Looking ahead

The COVID-19 pandemic highlighted the critical role medical oxygen plays in treating severe illness – and the deadly consequences of shortages. With medical oxygen essential to improving child survival, improving quality of care for COVID-19, treating severe malaria, TB and advanced HIV, and preparing for future pandemics, the world cannot afford to continue to underinvest in this essential medicine. While global health partners and governments have made great progress in increasing affordability, access and supply of medical oxygen as part of the global response, this work must continue, or we risk the same challenges when faced with the next pandemic.

Moving forward, we are working to identify potential future opportunities to invest in innovative products and business models to expand access to oxygen. Beyond COVID-19, our investments will continue to shape global and regional markets, drive the adoption of oxygen interventions, and develop innovative, cost-effective and sustainable oxygen delivery models.

## About Unitaïd:

We save lives by making new health products available and affordable for people in low- and middle-income countries. We work with partners to identify innovative treatments, tests and tools, help tackle the market barriers that are holding them back, and get them to the people who need them most – fast. Since we were created in 2006, we have unlocked access to more than 100 groundbreaking health products to help address the world’s biggest health challenges, including HIV, TB, and malaria; women’s and children’s health; and pandemic prevention, preparedness and response. Every year, more than 170 million people benefit from the products we’ve helped roll out.