



Medical oxygen crisis: a belated COVID-19 response

More than a year into the pandemic, global health agencies have set up a taskforce to address the vast unmet demand for medical oxygen. Ann Danaiya Usher reports.

For more on **oxygen shortages in sub-Saharan Africa** see <https://www.ft.com/content/c0eaf4c2-0c4f-497b-9d47-c362845467f1>

For more on **oxygen shortages in Nigeria** see <https://www.reuters.com/article/us-health-coronavirus-nigeria-oxygen-idUKKBN2A2197>

For more on **oxygen shortages in Egypt** see <https://www.nytimes.com/2021/01/18/world/middleeast/egypt-hospital-oxygen-covid.html?referringSource=articleShare>

For more on **oxygen shortages in Brazil** see <https://www.bbc.co.uk/news/world-latin-america-55670318>

For more on **oxygen shortages in Mexico** see <https://www.nytimes.com/2021/02/09/world/americas/mexico-covid-oxygen-shortage.html>

For more on **oxygen shortages in Peru** see <https://www.reuters.com/article/us-health-coronavirus-peru/peru-slammed-by-oxygen-shortage-as-coronavirus-deaths-spike-idUSKBN2A1JZF>

For the **COVID-19 Oxygen Needs Tracker** see <https://www.path.org/programs/market-dynamics/covid-19-oxygen-needs-tracker/>

Wellcome Trust, Unitaïd, and WHO have established a COVID-19 Oxygen Emergency Taskforce and say that US\$90 million is needed to fund an “immediate emergency response”. This response would initially target patients with COVID-19 in up to 20 low-income and middle-income countries (LMICs), including Malawi, Nigeria, and Afghanistan. \$1.6 billion will be needed to make medical oxygen available more widely over the coming year.

In a press release, the agencies said that more than half a million patients with COVID-19 in LMICs need oxygen every day and shortages are causing preventable deaths. This figure does not include the millions of patients, including newborn babies and children with pneumonia, malaria, and other ailments, who also require medical oxygen therapy each year.

“COVID-19 has put huge pressure on health systems, with hospitals in many LMICs running out of oxygen... This is a global emergency that needs a truly global response, both from international organisations and donors. Many of the countries seeing this demand struggled before the pandemic to meet their daily oxygen needs”, Philippe Duneton, executive director of Unitaïd said. He urged countries to assess their overall needs and to put forward concrete funding propositions to global health agencies, as well as to the World Bank, to ensure that oxygen is prioritised.

The global pandemic response mechanism, the Access to COVID-19 Tools Accelerator (ACT-A), has been slow to take up the issue. During the first year of the pandemic, ACT-A and its donors have concentrated overwhelmingly on developing new vaccines. Other tools like oxygen and personal protective equipment failed

to generate the same level of interest and engagement.

A spate of recent media reports about oxygen shortages in sub-Saharan Africa, Nigeria, Egypt, Brazil, Mexico, and Peru has documented an increasingly desperate situation for hospitals, and patients and their families. Last week’s announcement

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by Wellcome and Unitaïd follows repeated calls from health charities and researchers for ACT-A to deal more seriously with the oxygen crisis.

The new ACT-A taskforce includes the Every Breath Counts pneumonia coalition, Save the Children, the Clinton Health Access Initiative, and PATH, groups that have been sounding the alarm about oxygen shortages in LMICs. Leith Greenslade, coordinator of Every Breath Counts, welcomed the announcement as “a major step that recognises the critical status of oxygen as an essential medicine and a vital therapy”. But she urged agencies to “move quickly in the weeks ahead” to make bulk liquid oxygen, oxygen cylinders, and oxygen concentrators available.

Kevin Watkins, CEO of Save the Children, has previously accused the international community of “sitting on its hands” in the face of this growing humanitarian emergency. Now he is cautiously optimistic. “This crisis has been unfolding in full view for weeks and months. The international response has been way too slow to the point of complacency.

This initiative is the wake-up call”, he told *The Lancet*.

When ACT-A was launched in April, 2020, it had three focal points: vaccines, therapeutics, and diagnostics. Oxygen was introduced in November when a fourth pillar on health systems was added with a fundraising target of \$1.6 billion. While the requests for the first three ACT-A pillars were based on detailed costing and a clear target to reach 20% of people with the new tools, the health system pillar contained no such details. Only a small proportion of donor support to ACT-A ended up being earmarked for the fourth pillar.

The first indication that oxygen was being given higher priority came on Feb 9, 2021, when ACT-A presented a new budget and strategy. Oxygen was moved out of the health system pillar and into the therapeutics pillar, under the responsibility of the Wellcome Trust and UNITAID. Speaking on condition of anonymity, sources closely involved with ACT-A told *The Lancet* that this was a way of lifting the attention on oxygen. The move was also a recognition of the fact that it was more logical for a therapy that WHO categorises as an essential medicine to be included with other treatments. One of the few drugs shown to be effective against COVID-19, dexamethasone, works more efficiently when combined with medical oxygen.

The slow roll-out of vaccines in LMICs added urgency. Richard Mihigo at the WHO Africa regional office estimates that Africa is likely to vaccinate only about a third of the total population of 1.3 people billion by the end of 2021. The ambition is to extend this to 60% by 2023, according to John Nkengasong, director of the Africa Centres for Disease

Control and Prevention. Speaking to *The Independent*, he said he believes that the shortage of oxygen is a main reason that patients with COVID-19 in Africa are more likely to die there during a surge of cases. "This is a rapidly escalating crisis and oxygen is the only thing keeping people alive as countries wait for vaccines", says Watkins.

In November, as SARS-CoV-2 infection rates in LMICs rose and many countries faced a double burden of pneumonia and COVID-19—two respiratory illnesses that require oxygen treatment—the Every Breath Counts coalition and PATH launched a COVID-19 Oxygen Needs Tracker, to raise awareness about the surge in daily oxygen requirements. The ACT-A oxygen initiative draws heavily on this work: both the \$90 million request and the assertion that 500 000 patients with COVID-19 in LMICs need medical oxygen each day are taken directly from the tracker.

However, the numbers generated by the tracker give only a partial picture, for two main reasons. First, the numbers only include COVID-19 cases confirmed by testing, not taking into account the low levels of testing in LMICs, and second, the numbers do not include the oxygen needs of patients without COVID-19, who vastly outnumber people with COVID-19. PATH, which hosts the tracker, describes it as an "advocacy tool", which "underestimates the total oxygen needs of health systems in LMICs and is not intended to be used for planning or procurement purposes".

How many patients then—with COVID-19 and other ailments—died last year because they needed medical oxygen but did not have access to it?

Hamish Graham, a clinician scientist specialising in oxygen therapy at the Murdoch Children's Research Institute in Melbourne, Australia, often encounters this question. He estimates that approximately 38 million patients in LMICs were admitted to



Edgard Garrido/Reuters

hospitals with hypoxaemia last year. Of these, 8 million were patients with COVID-19. Most of the others were children, including 6 million newborns and 5 million children up to 15 years old who had pneumonia, as well as 11 million adults. Non-hospital patients are not included, he said.

According to Graham, before the pandemic, nine in ten hospitals in LMICs lacked access to pulse oximetry and oxygen therapy and only 20% of those patients who needed medical oxygen received it.

Graham cannot confirm a direct correlation between increased oxygen use by COVID-19 patients and lack of access by others. He says child mortality probably increased in the past year, but this increase is due to many factors, including disruption of immunisation programmes, parents not being able to take their children to care due to fear of COVID-19, and economic reasons. "The massive pressure on oxygen systems that has hit the news is mainly in the big hospitals that already had oxygen, whereas the majority of sick kids tend to be cared for in smaller, rural facilities", he said.

However, the dramatic increase in the price of oxygen sparked by the pandemic is probably affecting smaller facilities that are dependent on filling their oxygen cylinders

at a particular point. "That would potentially have a huge spillover effect", Graham said.

Graham underlines that oxygen should not be seen as an intervention, but rather as a core part of health-facility infrastructure. He warns against merely delivering equipment to hospitals. "You can spend as much as you want on equipment and it will only last for the lifetime of the equipment. Unless you have substantially changed the system—the biomedical, maintenance, distribution, and the economic purchasing system—you will be back in the same situation in 5 years", he said.

After years of neglect, campaigners and health officials hope that the focus on oxygen triggered by COVID-19 will lead to wider availability of medical oxygen, which can be used when the pandemic is over to help patients with pneumonia, malaria, sepsis, and other ailments that require oxygen therapy. Commenting on the ACT-A request for \$1.6 billion for oxygen, Watkins says this amount will, if financed, enable countries to deal with "some of the worst aspects of the crisis while putting in place some of the infrastructure that can serve as a foundation for more sustainable and equitable oxygen systems".

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