The crucial role of industry in increasing access to medical oxygen

Lancet Glob Health 2025

Published Online
February 17, 2025
https://doi.org/10.1016/S2214-109X(24)00556-4

See Online/The Lancet Global Health Commission
https://doi.org/10.1016/S2214-109X(24)00496-0

For more on **medical oxygen** see https://www.who.int/health-topics/oxygen#tab=tab_2

It is an essential medicine with no substitute, yet less than half of hospitals in low-income and middle-income countries (LMICs) have uninterrupted access to medical oxygen. The consequences are deadly, with an estimated 25 million people dying each year due to approximately 20 conditions requiring oxygen, ranging from pneumonia to heart disease.[1]

The issue of inadequate medical oxygen supply made headlines during the COVID-19 pandemic; however, oxygen shortages go back decades, reflecting a fundamentally malfunctioning market for this life-saving commodity. These market failures stem not only from problems with supply, but also from demand issues. Such issues include lack of aggregation of demand in public sector facilities; limited governance; non-availability of financing; and a lack of investments in bulk oxygen supply, equipment installation, maintenance, and staff training. Affordability is also an issue, first because inadequate health-care facility infrastructure and fragmented supply chains lead to complex logistics in many LMICs, and second because market competition is low. Only a few large gas companies dominate the market for liquid oxygen, while manufacturers of pressure swing adsorption (PSA) plants operate in select high-income and upper-middle-income countries and depend on local suppliers of variable quality.

Now there is an opportunity to resolve these long-standing market challenges. A landmark WHO resolution in May, 2023, set out, for the first time, a clear framework to help LMICs develop healthier oxygen markets.[2] It urges governments to undertake 20 high-impact actions to ensure equitable oxygen provision, including systematic assessments, costed national plans, and increased investment to sustain the operation of equipment purchased during the COVID-19 pandemic. An investment case of US$4 billion can treat an additional 24 million patients by 2030.[3]

Improved provision will only become a reality, however, with the buy-in and support of the entire medical oxygen industry (panel). Ensuring a lifeline of oxygen supply during emergencies and routine procedures requires an adjustment of companies' commercial priorities towards securing access over the long term. There is a precedent: over recent decades, the pharmaceutical industry has increasingly recognised its pivotal role in global health and acknowledged the importance of expanding access to medicine globally—not just to meet societal obligations, but also to deliver a sustainable business demanded by investors.

Since the start of the COVID-19 pandemic, important examples emerged of companies taking action to boost the supply of oxygen, accessories, consumables, and key services; for example, some gas companies pivoted their production from industrial to medical liquid oxygen.[4] Numerous companies also actively participated in a series of unprecedented meetings, which convened a diverse group of stakeholders—including global health organisations and investors—to explore solutions and opportunities to improve access to medical oxygen in LMICs.[5] Other notable examples of initiatives with industry include three gas companies establishing first-of-their-kind formal agreements with global health

***Panel:* Priority areas for action for the medical oxygen industry to support country agendas and improve access to medical oxygen in low-income and middle-income countries (LMICs)**

1. Prioritise access efforts by establishing an access-to-medical-oxygen strategy, key performance indicators, and an internal access team. Measure and report on progress publicly.
2. Enable and show affordability of products and services for different populations and health systems—eg, by using equitable pricing strategies, pooled procurement, and innovative finance mechanisms like volume guarantees.
3. Provide a sustainable supply of medical oxygen by establishing long-term plans and contracts, and expanding manufacturing capacity in LMICs. Establish buffer stocks of medical oxygen and relevant equipment, such as cylinders and tanks, as well as reliable spare part supply chains for PSA plants and concentrators. Ensure robust distribution strategies for different settings and remain responsive to issues and needs on the ground. Report publicly on plans.
4. Develop and maintain more formal long-term partnerships with LMIC governments, regional governmental authorities, global health partners, other companies and industry associations to strengthen oxygen policies, programmes, and close access gaps.
5. Offer installation, maintenance, and training services so that health systems, health-care facilities, and individuals (eg, biomedical engineers) have the support required to operate and maintain medical oxygen systems and administer oxygen therapy. Develop more robust products, particularly concentrators, requiring less maintenance.
6. Plan proactively for future emergencies by establishing robust emergency plans that include building relationships with governments, global health partners, and other companies.

organisations acting on behalf of the wider oxygen community, as a commitment to improve access to oxygen in LMICs.[6] Two of these agreements enabled price reductions of 22% for liquid oxygen and 43% for cylinders and cylinder filling.[7] In addition, collaborations between PSA plant suppliers, concentrator suppliers, and other global health partners enabled the development of a standardised PSA plant-in-a-box now available in 40 LMICs and a concentrator target product profile for low-resource settings.[8] Collaborations with concentrator suppliers also led to market engagement via advance purchase commitments to develop and commercialise new oxygen products. New oxygen generators originally designed for space requiring little maintenance are also being developed for access to oxygen in resource-limited settings.[9]

For more on **medical oxygen initiatives** see https://globaloxygenalliance.org/

The industry has actively engaged with the access-to-medical-oxygen agenda by participating in multiple public and by-invitation procurement tenders and calls for expression of interest. The objectives of these tenders and calls have included increasing the availability of medical oxygen and medical oxygen equipment in LMICs, as well as exploring how innovative financing (eg, volume guarantees or market shaping loans to local manufacturers) can be deployed to support increased supply and secure affordable pricing.[10] Manufacturers, local businesses, and other service and logistics providers have also provided essential maintenance, repair and training support, and improved distribution. For example, local businesses, via profitable franchise models are now scaling-up in LMICs' oxygen markets as owners and operators of local oxygen production and distribution systems and are learning to maintain and repair equipment. Public–private alliances have additionally prioritised maintenance and repair by supporting local enterprises and creating shared learning resources.[11] Members of the Global Oxygen Alliance (GO_2AL) and many other global health organisations have striven to establish these initiatives with industry and work collaboratively to advance access to medical oxygen in LMICs.

For more on **oxygen markets** see https://oxygenhub.org

For more on **medical oxygen access** see https://www.unicef.org/innovation/oxygen-therapy

These examples demonstrate industry's capacity to respond to oxygen demand in LMICs. The challenge now is for the public and private sectors to expand these efforts and work more closely together to provide a sustainable solution that delivers consistently and across all geographies. The Global Fund to Fight AIDS, Tuberculosis and Malaria; Unitaid; the World Bank; USAID; and other partners and governments have made huge investments in oxygen in LMICs, consequently creating interest and stability previously not seen in this market. These initiatives, and those like the UNICEF oxygen market dashboard and the Access to Medicine Foundation's Medical Oxygen Programme, can help to increase transparency about affordability and supply, and to stimulate constructive company actions.Equitable access to medical oxygen is a prerequisite for delivering the Sustainable Development Goals, universal health coverage by 2030, and pandemic prevention, preparedness, and response. There is a real opportunity for the medical oxygen industry to leverage current momentum. The WHO resolution enables companies to anticipate LMIC governments' next steps, which should include efforts to clarify their country's demand for medical oxygen products and services. Local and regional production of medical countermeasures, including oxygen, is also being advanced by the Africa Union and various multilateral and global partners, including through the WHO-led interim medical countermeasures network. Additionally, companies can draw on the support of GO_2AL, which is focused on filling gaps in oxygen supply. As a significant element of the global health ecosystem, the medical oxygen industry must deepen efforts to ensure that this life-saving product can be accessed by all who need it—no matter where they live.

All authors declare no competing interests.

Jayasree K Iyer, Emma Cahuzac, Zachary Katz, Kaodili Udeh, Noha El-Ghobashy, David Lowrance, Kristoffer Gandrup-Marino, Robert Matiru
jiyer@accesstomedicinefoundation.org

Access to Medicine Foundation, Amsterdam, Netherlands (JKI, EC); Clinton Health Initiative, New York, NY, USA (ZK); MedAccess, London, UK (KU); Oxygen Hub, Port Louis, Mauritius (NE-G), The Global Fund to Fight AIDS, Tuberculosis and Malaria, Geneva, Switzerland (DL); UNICEF, New York, NY, USA (KG-M), UnitAid, Geneva, Switzerland (RM)

1 Institute for Health Metrics and Evaluation. GBD compare. Seattle, WA: IHME, University of Washington. 2015. https://vizhub.healthdata.org/gbd-compare/ (accessed Oct 24, 2023).
2 WHO. Increasing access to medical oxygen. 2023. https://apps.who.int/gb/ebwha/pdf_files/WHA76/A76_R3-en.pdf (accessed Oct 24, 2023).
3 Global Oxygen Alliance. Global oxygen strategic framework and investment case. https://globaloxygenalliance.org/resources/global-oxygen-strategic-framework-and-investment-case-2025-2030/ (accessed Oct 20, 2024).
4 Access to Medicine Foundation. What are gas companies doing to scale up access to liquid medical oxygen. 2023. https://accesstomedicinefoundation.org/news/building-on-their-efforts-during-covid-19-gas-companies-must-now-step-up-on-access-to-medical-oxygen-in-the-long-term (accessed Oct 24, 2023).

5 Every Breath Counts Coalition and Access to Medicine Foundation. Access to medical oxygen virtual roundtables. 2021. https://accesstomedicinefoundation.org/event/access-to-medical-oxygen-roundtable-series (accessed Oct 24, 2023).

6 Unitaid. Unprecedented cooperation with global oxygen suppliers paves way to increase access for low- and middle-income countries to address COVID-19 crisis. 2021. https://unitaid.org/news-blog/unprecedented-cooperation-global-oxygen-suppliers-june-2021/#en (accessed Oct 25, 2023).

7 Unitaid. Issue Brief: Medical Oxygen. 2023. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6964224/ (accessed Oct 25, 2023).

8 UNICEF. The oxygen plant-in-a-box: innovation drives a key response to COVID-19. 2022. https://www.unicef.org/supply/stories/oxygen-plant-box-innovation-drives-key-response-covid-19 (accessed Oct 25, 2023).

9 Novair. ION ionic oxygen generator. https://www.youtube.com/watch?v=RKlI3y5gBhw (accessed Oct 20, 2024).

10 Unitaid and MedAccess. Call for expression of interest (CEI). https://unitaid.org/assets/22062022-Call-for-Expression-of-Interest-Liquid-Oxygen-Supply_vF.pdf (accessed Jan 25, 2024).

11 Sanrai International. Sanrai launches a charitable organization: oxygen alliance. 2021. https://www.sanrai.com/oxygen-alliance/ (accessed Oct 25, 2023).