Announcing the *Lancet Global Health* Commission on medical oxygen security

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Medical oxygen is an essential health treatment for both acute and chronic conditions across all age groups. Strong medical oxygen systems save lives. Therefore, adequate access to safe, affordable, and appropriate medical oxygen services is crucial for improving population health and meeting the Sustainable Development Goal targets. However, severely limited or unreliable oxygen services have been a persistent issue in many low-income and middle-income countries (LMICs), particularly among small health facilities serving poor, rural, and otherwise marginalised populations.

Medical oxygen insecurity has been a defining inequity of the COVID-19 pandemic, with LMICs bearing the worst of oxygen-related disruptions and excess mortality. Millions of health-care workers and families have experienced the desperation of trying to find oxygen for severely unwell patients and family members. We might never know how many COVID-19 deaths resulted from a lack of access to oxygen during the pandemic, but the limited data available suggest that it is substantial. For example, a study of COVID-19 deaths in 64 intensive care units across ten African countries showed that one in two patients died without receiving medical oxygen,[1] with the situation likely to be worse in smaller, less-resourced hospitals.

Although COVID-19 exposed and exacerbated a massive underlying gap in access to medical oxygen across LMICs, it also resulted in unprecedented attention to, and investment in, oxygen systems that can benefit many patients. Severe COVID-19 is just one indication for medical oxygen therapy. Other notable indications include neonates in respiratory distress; infections including pneumonia, malaria, sepsis, and tuberculosis; chronic illnesses including chronic obstructive pulmonary disease, heart disease, and asthma; and surgery and trauma care. Data suggest that this cumulative need is massive and largely underserved.[2,3] For example, an estimated 7 million children with hypoxaemic pneumonia alone needing medical oxygen therapy are admitted to LMIC hospitals each year,[4] yet in many contexts only one in five actually receives it.[5]

Health-care personnel and patients in many LMICs have experienced the medical oxygen crisis as a painful reality for many years, frustrating efforts to provide quality care, forcing choices about who to prioritise, and burdening patients with treatment costs. But it has taken a global respiratory disease pandemic to draw the attention of the global community. With support from the Access to COVID-19 Tools Accelerator Oxygen Emergency Task Force, and other donors, many LMICs have received new oxygen technologies (eg, liquid, pressure swing adsorption plants, mobile concentrators, pulse oximeters, continuous positive airway pressure devices, ventilators, etc) to treat patients with COVID-19. However, radical improvements in underlying support structures, processes, and personnel are needed if these are to be sustainably integrated into health systems, alongside surge capacity, to achieve a long-lasting effect on lives.

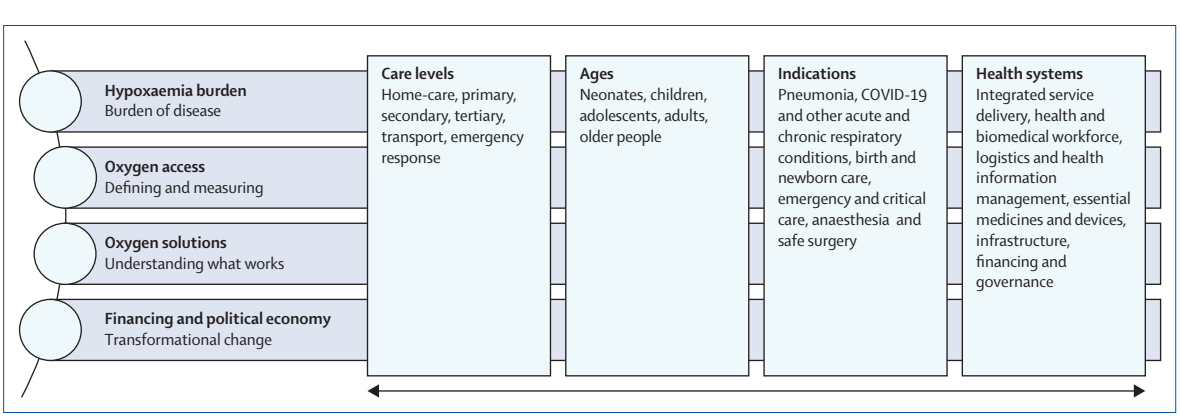

Figure: **Four key research themes and pillars**

A key challenge has been persistent data gaps on oxygen needs and existing service capacity, and how to cost-effectively fill them. Few health and logistical management systems, or health system surveys, track meaningful data on medical oxygen consumption or functional access, severely impairing the ability to plan and implement solutions efficiently.[6] And although we know that strong oxygen systems rely on multiple aspects of what we might call health systems hardware (eg, a skilled health and biomedical workforce, appropriate technology and supply chains, financing of operational expenses especially maintenance, etc), we know little about the contribution of health systems software (eg, power dynamics, values, and norms) at scale in different political and social contexts.[7] Governments, multilateral and bilateral agencies, and their donors are more sensitised than ever to the case for investing in medical oxygen, but there is an urgent need to synthesise existing know-how and fill crucial data gaps to support policy makers and implementers.

The *Lancet Global Health* Commission on medical oxygen security aims to: (1) address major gaps in oxygen research, (2) mobilise a broad coalition to promote best practices in addressing the gaps in medical oxygen delivery systems, facilitating and conducting the relevant research to inform implementation, and (3) accelerate impact towards strong oxygen systems and reduced mortality and morbidity globally. Four research themes will guide the Commission report and will be applied across four cross-cutting pillars addressing all levels of health care, patient populations, relevant indications for oxygen therapy, and a variety of health systems issues (figure).

The Commission is co-chaired by scholars from Makerere University, Kampala, Uganda; the International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh; and the University of Melbourne and the Murdoch Children's Research Institute, Melbourne, VIC, Australia, with support from the Every Breath Counts Coalition, New York, NY, USA. Together these organisations comprise the Executive Committee. A multidisciplinary team of academic leaders will act as Commissioners, supported by an Advisory Group and a global network of Oxygen Access Collaborators, with strong LMIC representation and including non-academic experts. The Commission plans to publish its report on World Lung Day 2024, together with policy briefs translated into multiple languages summarising the major recommendations for national, regional, and global health decision makers.

We declare no competing interests.

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