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Global and local O_2 challenges

Critical Resource Continuity: Securing Oxygen for Health System Resilience

Michael Lipnick, MD
Professor, Anesthesia & Critical Care
Associate Director, Center for Health Equity in Surgery and Anesthesia
Co-Director, WHO Collaborating Center for Emergency, Critical & Operative Care
PI, The Hypoxia Lab
Commissioner, Lancet Global Health Commission on Medical O2 Security
University of California San Francisco

UCSF Center for Health Equity in Surgery & Anesthesia
chesa.ucsf.edu

Where is this?

- Life expectancy is in the 60s
- Limited access to routine ‘standard’ healthcare
- Limited and inequitable access to oxygen
- Disparities in critical care outcomes

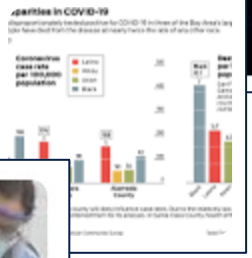
global = local + international

NBC News

Asian American COVID-19 death rate in San Francisco concerning, researchers say

San Francisco Chronicle

Bay Area Latinos, black people are hit hardest by coronavirus ...



KGO-TV

Coronavirus Impact: Black COVID-19 patients nearly 3 times more likely to be hospitalized, study finds

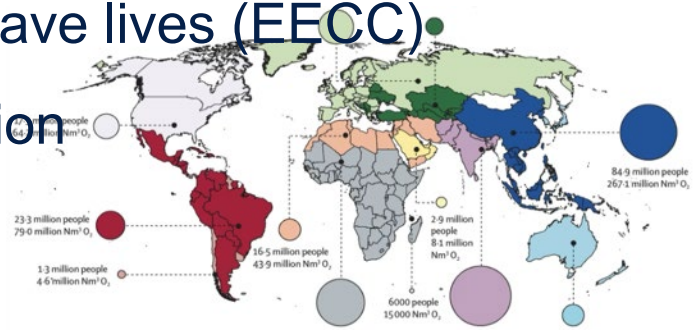
Navajo Nation faces devastating loss from Covid-19 pandemic

By Megan Marples, CNN

Updated 0822 GMT (1622 HKT) November 24, 2020

O_2 shortage: An old problem, amplified

- Most of worlds **8 billion** don't have reliable access to O2
- **374 million** people per year need medical O2
- **82%** of those needing O_2 are in LMICs
- **Simple resources** like O_2 and fluids save lives (EECC)
- O_2 is a **cost effective** health intervention
- 100k ORs and ICUs lack oximetry



Oxygen coverage

Less than 1 in 3 people who need oxygen for acute medical or surgical conditions receives it. This 70% coverage gap far exceeds treatment gaps for HIV/AIDS (23%) and tuberculosis (25%)

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O_2 ecosystem constraints & potentiators

Production

- LOX plants
- PSA plants
- Cylinders
- Reliable power
- Maintenance
- Parts

Distribution

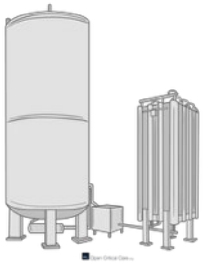
- Roads & trucks
- Refill logistics
- Facility piping
- Rural support
- Supply chain
- Last-mile

Delivery

- Device:context
- Consumables
- Monitoring
- Clinical workforce
- BME workforce
- Clinical protocols
- Access to care

System Enablers

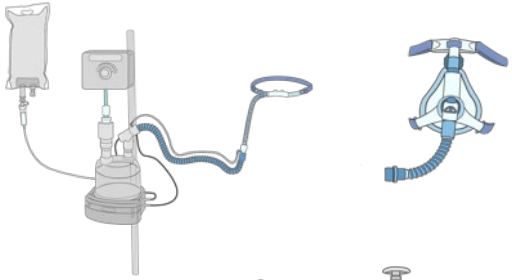
- Investment
- Regulatory
- Data (supply, demand)
- Coordination
- Policy priorities
- Competition
- Guidelines/open info
- Planning Tools

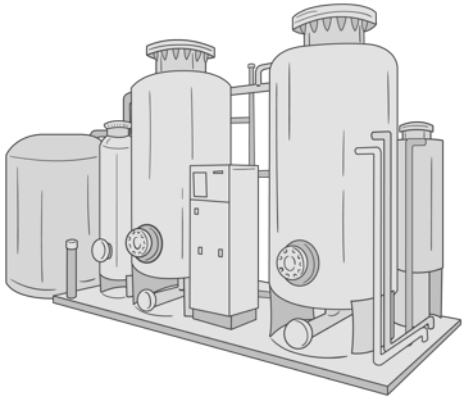


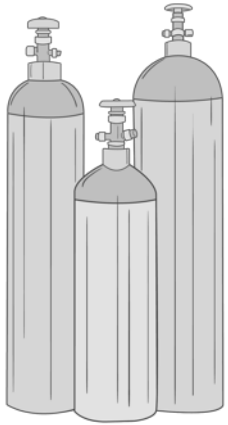
In LMICs: existing challenges exacerbated

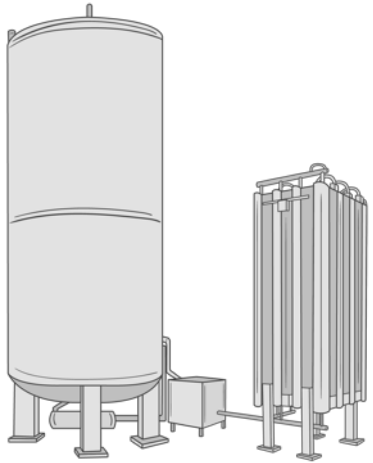
In HICs: vulnerabilities exposed

O_2 strategy: shiny solutions, no consensus



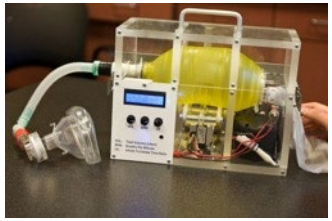






O_2 strategy: shiny solutions, no consensus

- Procurements & donations without context
- Donations without coordination
- Innovation without context
- Opportunistic & misleading sales
- Tech and panaceas > fundamentals
- *Don't just do something, stand there?*



In LMICs & HICs: chaotic, inefficient response

https://news.mit.edu/2010/itw-ventilator-0715
cnet.com Mercedes F1 Racing

https://www.instructables.com/DIY-Pulse-Oximeter/

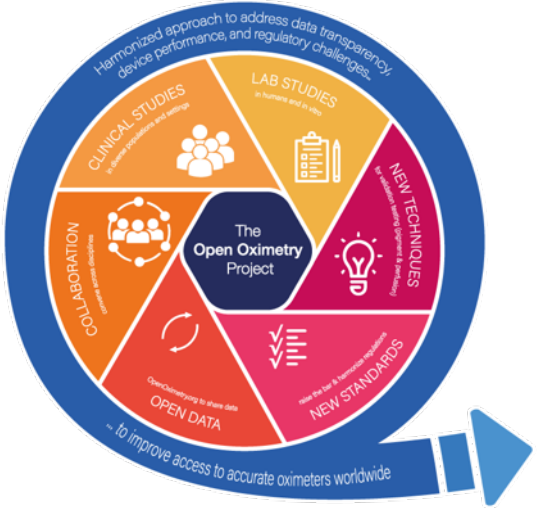
Case of oximetry

> *Can you test this oximeter and let us know if it is acceptable for donation of 100k units in South Asia asap?* anonymous NGO

90s

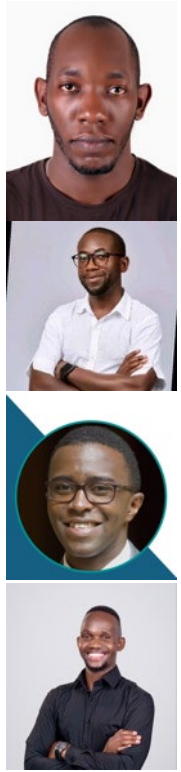
80s

70s



SpO2 vs **SaO2**

Local and global solutions

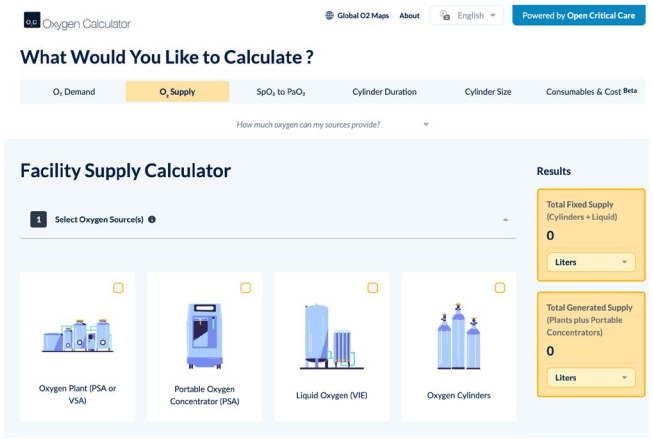


Local and global innovation

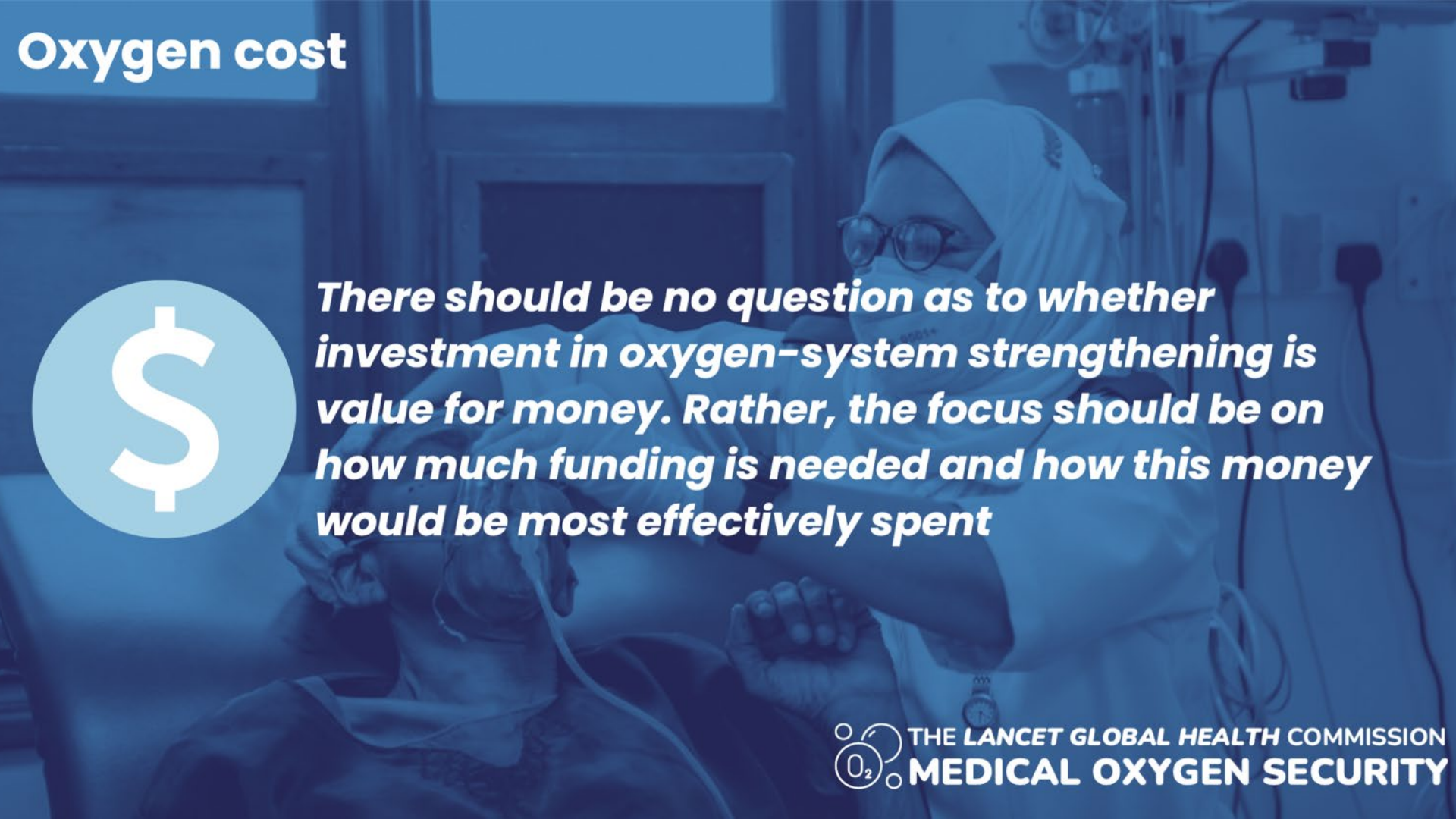
DFC U.S. International Development Finance Corporation

Novair
American Oxygen
NASA

OxygenCalculator.org



Oxygen cost



There should be no question as to whether investment in oxygen-system strengthening is value for money. Rather, the focus should be on how much funding is needed and how this money would be most effectively spent

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Costing the oxygen coverage gap

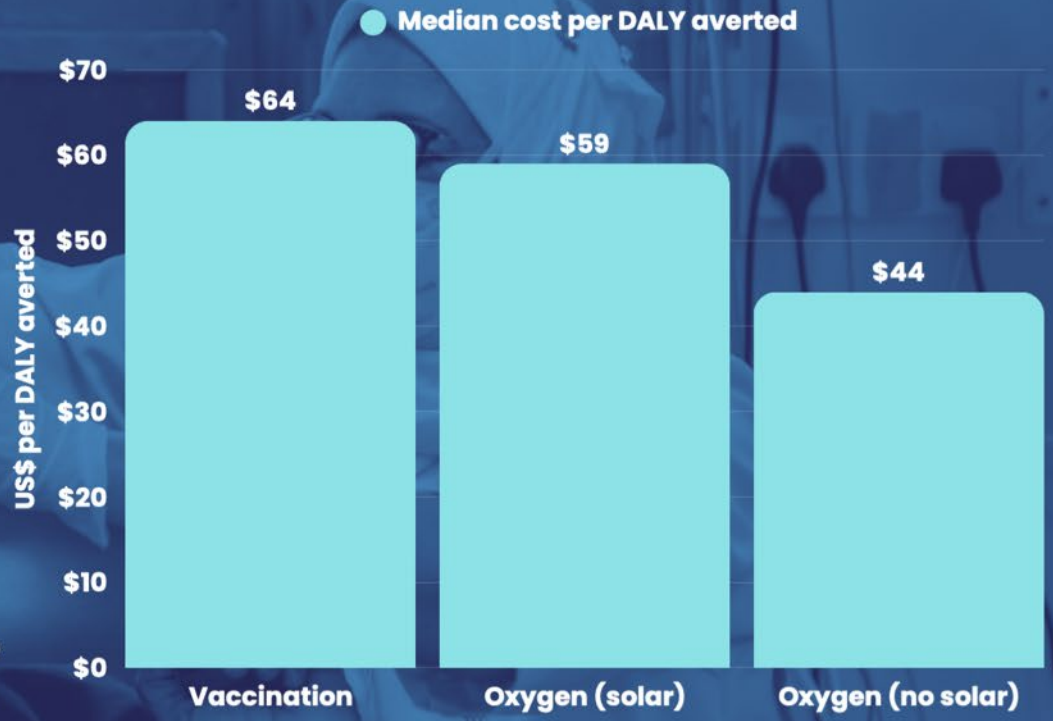
How much will it cost?

Highly cost-effective:

- US$44-59 per DALY averted (based on child pneumonia)
- Similar to the most cost-effective child survival interventions (e.g., vaccination)

Each dollar invested could deliver estimated returns of US$21, and additional funding can cost approximately US$168 per disability-adjusted life year (DALY) averted, and as little as US$23 in countries with very high burdens.

Global Oxygen Strategic Framework and Investment Case 2025-30, 2024



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Recommendations

The Commission makes 52 recommendations for governments, industry, global health actors, academics, and professional bodies to work towards by 2030 and recommend that an independent body assess progress in 2027, with the results made publicly available

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Commission Key Recommendations

Government - National plans, investment, industry negotiations

Industry - Price transparency, emerging market development

Civil Society - Patient advocacy groups and general advocacy

Academics - O_2 in BME & clinical curricula, research in priority areas, utilize core O2 indicators

Donors - increase funding mechanisms, responsible procurement

Regulatory - harmonize standards, incr LMIC participation

O_2 global truths

- O_2 is an indispensable, cross cutting part of healthy systems
- No community immune to O_2 system limitations
- Poor and rural communities hit hardest
- O_2 systems need prevention + preparation > reactive response
- Coordination and context are key
- Local, national and global O_2 ecosystems are connected