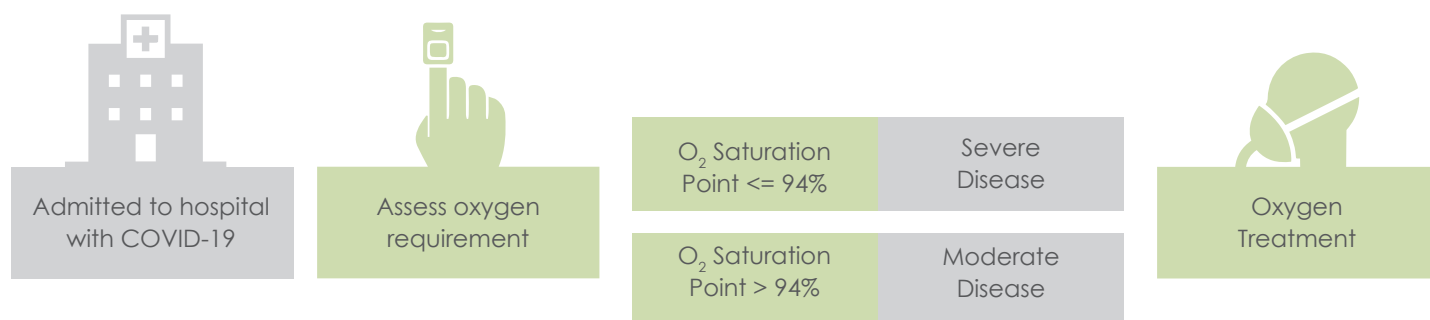


## The treatment of COVID-19 begins with oxygen.

Oxygen saves lives. However, the need for oxygen extends beyond COVID-19. The preventable and treatable diseases with the highest mortality burden - pneumonia, bronchitis, malaria, and severe malnutrition - all require oxygen for effective treatment.



### The Facts.

Surveys of low-and middle-income countries have found less than half of health facilities have **uninterrupted access to oxygen**.<sup>1</sup> [PATH 2016]

The World Health Organization reports that only 28% of health facilities and 34% of hospitals in sub-Saharan Africa had what could be called “**reliable**” **access to electricity** (without prolonged interruptions in the past week).<sup>2</sup> [WHO 2015]

**In many resource-constrained settings, oxygen is the only therapeutic intervention for COVID-19 that can truly save lives.**

COVID-19 is shining a spotlight on the global oxygen deficit, allowing an opportunity to redouble efforts to address this problem. Investing in fragile health systems immediately will disrupt the spread of COVID-19 and create lasting change beyond the pandemic.

**How can we ensure everyone has access to lifesaving oxygen therapy?**

<sup>1</sup> [https://www.who.int/selection\\_medicines/committees/expert/21/applications/s1\\_oxygen\\_ind.pdf?ua=1](https://www.who.int/selection_medicines/committees/expert/21/applications/s1_oxygen_ind.pdf?ua=1)

<sup>2</sup> [https://apps.who.int/iris/bitstream/handle/10665/156847/9789241507646\\_eng.pdf;jsessionid=684EEB52324077F61828AA7157B98F8F?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/156847/9789241507646_eng.pdf;jsessionid=684EEB52324077F61828AA7157B98F8F?sequence=1)

## For healthcare facilities in low-resource settings, there aren't many options when it comes to providing oxygen

Large hospitals with high demand for oxygen typically depend on **oxygen plants** to meet their needs. However, these systems are **expensive** and rely on complex **supporting infrastructure** and **supply chains**.



With limited resources, **oxygen cylinders** may be a good option. They are generally affordable, can be stored for long periods of time and, most importantly, don't require electricity. But oxygen cylinders are **heavy** and **manually intensive to monitor**. It also might be difficult to set up a reliable **supply chain**, raising costs.

**Bedside oxygen concentrators** have low capital costs, minimum maintenance and portable sizes. These units are an efficient way to provide oxygen in small to midsize hospitals if continuous and reliable electricity is available. Oxygen concentrators must have **electricity 24/7** to be effective in delivering oxygen therapy.



For small to midsize healthcare facilities in low-resource settings, the **two biggest barriers** to increasing oxygen capacity are **cost** and **unstable power supply**.

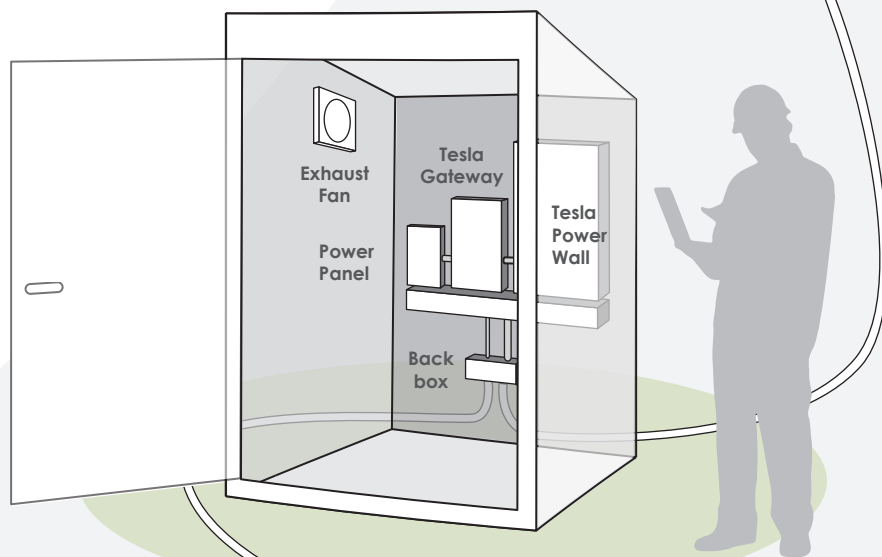
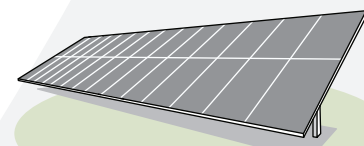
**That's where the OxBox comes in.**

**The OxBox combines existing technologies for a low-cost solution that meets both the clinical and energy requirements for oxygen delivery at small to midsize healthcare facilities.**

## Build Health International's Solution: The OxBox

OxBox bridges the oxygen divide by packaging and combining existing technology to address the need for oxygen in small to midsize healthcare facilities that lack access to 'reliable' electricity.

- ❑ **Rapidly Deployable:** prefabricated setup can be shipped and installed within 30 days
- ❑ **Continuous Power Supply:** accessible in remote areas with contained operating costs
- ❑ **Scalable:** supports five 5-10 liters/minute bedside Oxygen concentrators for up to 10 patients
- ❑ **Environmentally-friendly** technology that tracks data in real time with mobile application
- ❑ **Batteries** can be charged through dedicated solar array or through an existing power source on-site
- ❑ Units are **customizable** and **affordable**, starting at \$20,000

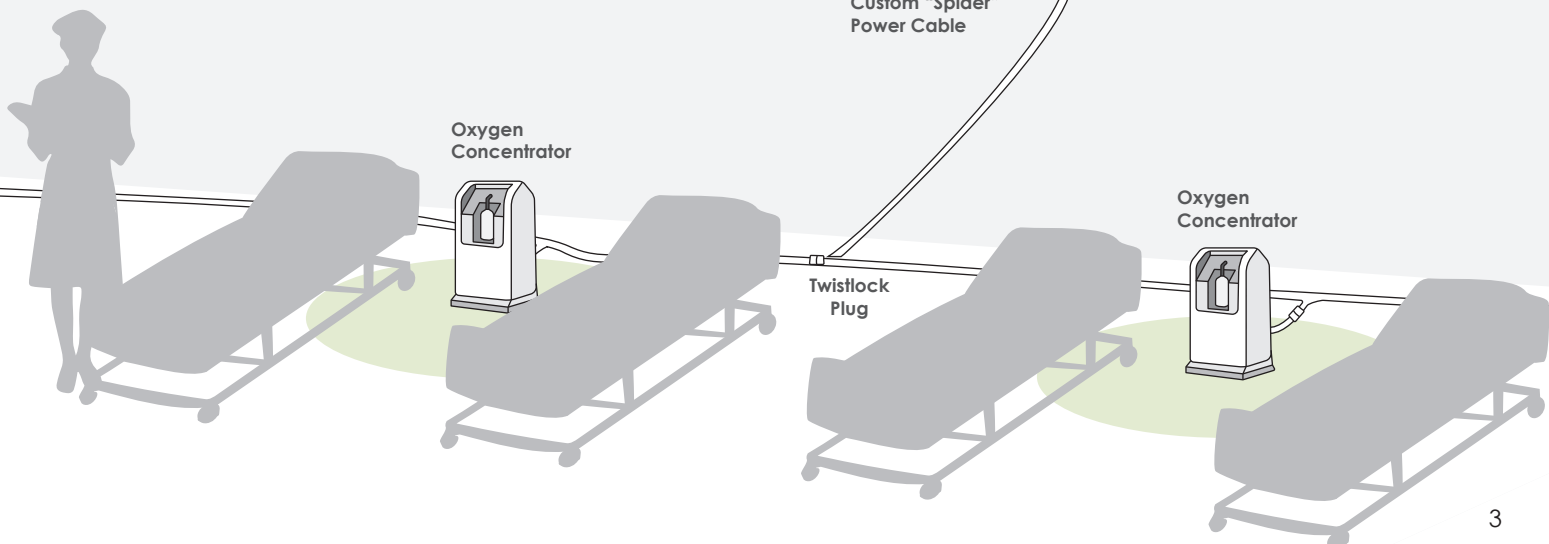


Custom "Spider"  
Power Cable

Oxygen  
Concentrator

Oxygen  
Concentrator

Twistlock  
Plug



## Who we are.

Build Health International promotes global health equity by developing high-quality health infrastructure in settings where there are often no building standards and limited access to public utilities. Since 2014, our work has expanded to more than 20 countries across Africa, Latin America and the Caribbean.



*Inside the Center for Infectious Disease and Emergency Care at St. Boniface Hospital, Haiti*

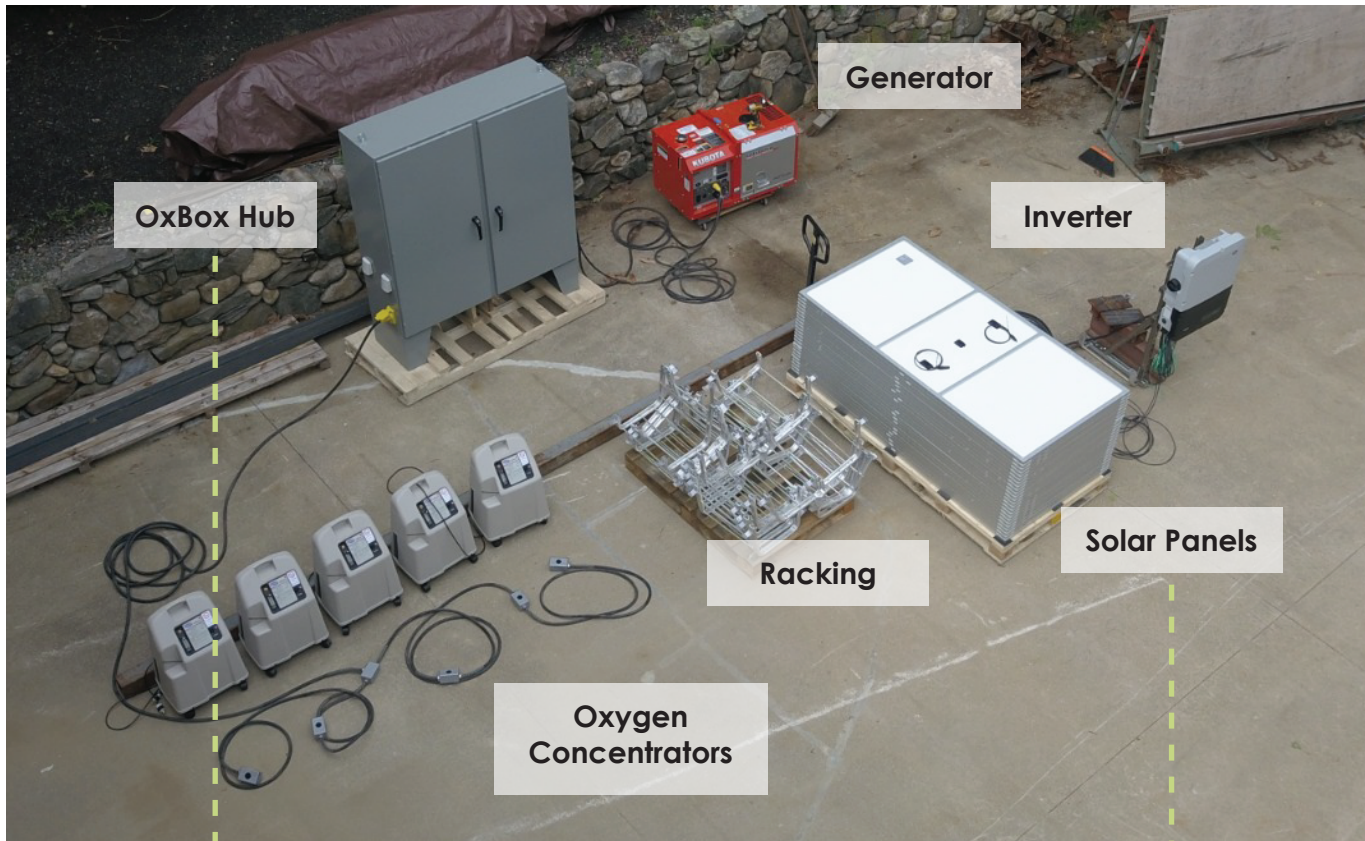
## Health Systems Strengthening Through Infrastructure

Build Health International exists to drive catalytic health systems change through infrastructure. Increasingly, our work has focused on energy and oxygen as critical to health systems strengthening. During the COVID-19 pandemic, we have been working with partners in 13 countries to fill gaps in critical infrastructure, such as isolation wards and intensive care units for COVID-19 patients. Health systems strengthening is a critical, long term investment that must be prioritized if we want to be prepared for the next pandemic.



*A young patient receives oxygen at St. Boniface Hospital, Haiti*

## Progress on Prototype



## Appendix: OxBox Specifications

- 48"W x 24"D x 60"H enclosure can sit on concrete blocks or pad outside ward (basic module weights 190kg).
- Five AirSep® NewLife® Intensity 10 LPM O<sub>2</sub> concentrators that serve up to ten patient beds.
- Five pulse oximeters for measuring O<sub>2</sub> levels.
- Uses a Tesla Powerwall 2 - a revolutionary breakthrough that packs a 13.5kWh lithium-ion battery with DC to AC inverter in a small wall-mounted module.
- Battery can run all five O<sub>2</sub> concentrators at 5 LPM for 20 hours and recharge in less than 3 hours.
- Remote monitoring through the existing Tesla mobile app. Data is recorded and stored in the cloud.
- Can be powered by multiple sources.
- Remote solar panel module or existing generator can be up to 150m away.
- Solar module can power the OxBox during daytime while charging batteries for night use.
- Pre-wired with plug-and-play connectors.
- Electrical - African (220V 50Hz) or North American (120V 60Hz)

