



The Oxygen Therapy Project



unicef
for every child

Supply Division

"Nowhere is the technology gap more apparent than in the provision of oxygen ... Oxygen is seldom available in the poorest countries beyond urban hospitals and private providers. Pulse oximeters, effective and inexpensive diagnostic devices for measuring blood oxygen levels, are similarly unavailable to those who need them most."

*-Henrietta H. Fore, Executive Director of UNICEF and Kevin Watkins, Chief Executive of Save the Children UK**

Overview

The Challenge

Oxygen is a life-saving medical gas for treating respiratory illnesses and for managing various health system needs, like emergency obstetric care, surgery and anesthesia. However, it is seldom available in the poorest countries beyond urban hospitals and private providers.

Hypoxemia, an abnormally low level of oxygen in the blood, can be fatal. It results from complications of common illnesses or surgery and requires oxygen therapy for treatment. Pneumonia, an infection of the lungs is linked to 15 per cent of all under five deaths. Approximately 13 per cent of children with pneumonia have hypoxemia, which increases the risk of death by up to five times.

Ensuring oxygen is accessible to children with hypoxemia, pneumonia or other respiratory illness is challenging. There are inherent complexities in the procurement, distribution and utilization of appropriate equipment for a large proportion of severely ill children. For example, the equipment for detecting hypoxemia and delivering oxygen (such as a pulse oximeter or nasal cannula) may not be available in children's sizes.

The Response

With support from the Bill and Melinda Gates Foundation, UNICEF's *Oxygen Therapy Project* aims to provide governments with practical tools for building oxygen systems in their countries.

There are three key components to the project:

1. *An oxygen system planning tool* to help countries map out oxygen equipment needs at health facilities across the country.
2. *An interagency technical specifications and guidance manual*** for procuring oxygen devices so decision makers understand what types of equipment are necessary for providing oxygen.
3. *Updating the UNICEF Supply Catalogue**** to include the full range of products required to provide oxygen, so decision makers worldwide can purchase the equipment if the appropriate devices are not available on local markets.

These three key activities implemented in unison can enable a government to do rational device planning and procurement to ensure oxygen therapy is available at health facilities across a country.

The Impact

UNICEF is currently introducing and testing the project components in Ghana, Senegal, and Uganda. The learnings will inform further development of the project and support UNICEF's efforts to spread the resources to more decision makers globally, where key activities can be adapted for the differing contexts of each country.

Through a systematic approach, the *Oxygen Therapy Project* can help governments worldwide ensure life-saving oxygen therapy is available to children suffering from respiratory illnesses, so that under-five deaths can be prevented in the future.

Key Figures



Challenges

1.86 million children with hypoxemia each year require oxygen therapy for treatment

13% of children with pneumonia have hypoxemia

90% of the all child pneumonia deaths are in lower and middle income countries.



Response

25 health facilities in Ghana and Uganda user-testing the computer-based tool (component 1)

5 countries & over **1,000** users accessed the manual from Nov 2019 – Feb 2020 (component 2)

20 oxygen equipment items updated or added to UNICEF's Supply Catalogue (component 3)

* Article can be found here: <https://www.devex.com/news/opinion-we-re-not-fighting-hard-enough-against-the-top-killer-of-children-96463>

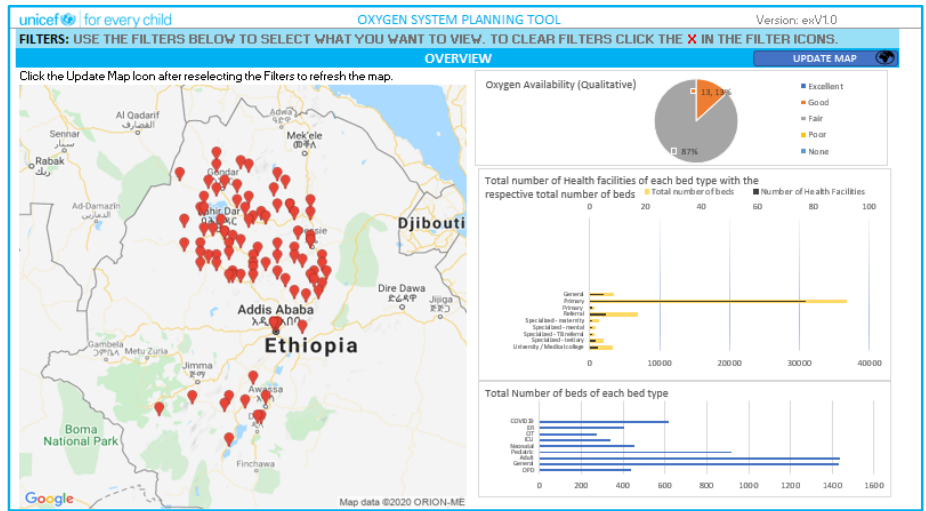
**Guidance manual can be found here: https://www.who.int/medical_devices/publications/tech_specs_oxygen_therapy_devices/en/

***Supply Catalogue can be found here: <https://supply.unicef.org/>

The Oxygen Therapy Project

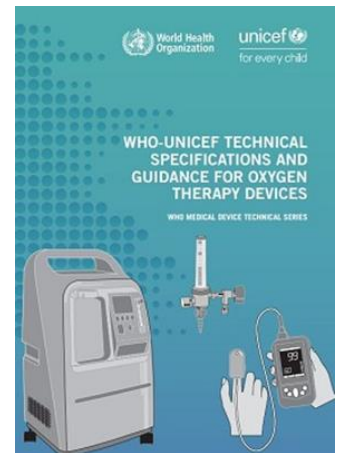
Component 1: Oxygen system planning tool

The computer-based oxygen system planning tool helps decision makers ensure all appropriate oxygen equipment is available throughout a country. It takes country inputs at a local health facility level, then calculates oxygen needs and recommends the best responses to meet those needs (i.e. an oxygen plant, concentrator, or cylinder). It provides a list of products for procurement and estimates cost, both in capital and operating expenditures. The tool is currently in an excel-based format and is available for download at UNICEF's [Oxygen Therapy Project webpage](#). The image above displays a screenshot of what the software system looks like when used.



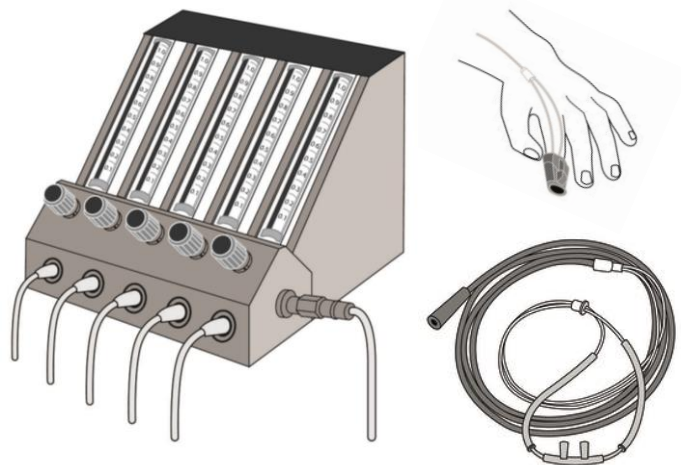
Component 2: Technical specifications and guidance

Technical specialists at UNICEF and WHO worked with expert engineers, clinicians and health programme managers to develop the interagency publication: *Technical Specifications and Guidance for Oxygen Therapy Devices*, published in November 2019. It includes detailed specifications on a wide range of products for delivering basic oxygen therapy, with guidance on the selection, procurement, use and maintenance of these products. The manual is intended to support health facility administrators, clinical decision-makers, procurement officers, planning officers, biomedical engineers, infrastructure engineers and policy-makers to select, procure, use and maintain appropriate oxygen therapy system equipment, especially in low- and middle-income countries. It's available as an open resource via [WHO's document library](#).



Component 3: UNICEF Supply Catalogue

UNICEF's Supply Catalogue contains over 2,000 products that respond to the needs of children and their families, such as medicines, vaccines, health equipment, emergency tents, and water purification tablets. It's designed to help governments and humanitarian workers identify and purchase the most appropriate supplies for programmes worldwide. Under the Oxygen Therapy project, UNICEF is creating a "one stop shop for oxygen," by updating the catalogue to include the full range of products required to detect hypoxemia and provide oxygen in challenging environments if the appropriate devices are not available on local markets. Some of these devices are illustrated to the right, such as a flow meter stand, pediatric pulse oximeter sensor, and a nasal cannula.



For more information contact:

UNICEF Product Innovation Website:
<https://www.unicef.org/innovation/productinnovation>

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