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**IMPROVING THE DIAGNOSIS OF RESPIRATORY DISTRESS
IN CHILDREN AND ACCESS TO OXYGEN
IN SUB SAHARAN AFRICA**

In many low and middle-income countries, newborns, children and pregnant women die every year from the lack of oxygen in the blood. This so-called hypoxemia results from conditions that are curable if properly diagnosed (pneumonia, neonatal infections, obstetric emergencies, anemia, etc.) and managed with oxygen delivery systems. **Accelerating access to oxygen and availability of pulse oximeters is one of the most effective steps policymakers can take to help fight against mortality among the most vulnerable.**

With the support of **Unitaid**, **ALIMA** (The Alliance for International Medical Action) has developed two projects in sub-Saharan Africa - **AIRE** (Improving the Diagnosis of Respiratory Distress in Children) and **Oxygen** - which aim at improving access to pulse oximeters and oxygen on a sustainable basis, from the primary health center to the hospital level.

AIRE: INTRODUCING THE PULSE OXIMETER DURING THE PEDIATRIC CONSULTATIONS

The pulse oximeter is an essential and practical tool. Simple to use and inexpensive, it measures a patient's oxygen saturation and thus provides early detection of hypoxemia. But this tool is absent from primary health care centers in sub-Saharan Africa. Health care personnel only refer to the observation of clinical signs, which are sometimes difficult to observe. This makes diagnosis more difficult and delays appropriate management. **The World Health Organization recommends the use of pulse oximeters at the peripheral level**, but there is little evidence specific to this context available to support informed decision-making about scaling up their use to primary health care facilities.

ALIMA (The Alliance for International Medical Action), in partnership with the NGOs **Solthis**, **Terres des Hommes**, and **Inserm** (the French National Institute of Health and Medical Research), **launched the AIRE** (Improving the Diagnosis of Respiratory Distress in Children) **project in 2019**. Its objective is to **reduce mortality of children under five by introducing the pulse oximeter in Integrated Management of Childhood Illness (IMCI) consultations in primary health centers** in four West African countries (Burkina Faso, Guinea, Mali, Niger).

The success of such a project hinges on the involvement of the whole health system. In concrete terms, the AIRE project consists of:

1. Supporting countries in integrating pulse oximeters into national IMCI guidelines (through training modules, addition to the list of essential medicines and equipment, and integration of a health information system).
2. Training and supervising health workers and district management teams in the use of the pulse oximeter at the primary healthcare level and in hospitals.
3. Providing health centers and hospitals with pulse oximeters and essential medicines.
4. Raising community awareness on the signs of respiratory distress in children and informing communities about the use of this new tool in primary health care centers.
5. Generating scientific evidence to support the decision to scale up.



THE OXYGEN PROJECT: IMPROVING ACCESS TO MEDICAL OXYGEN

The COVID-19 pandemic has exacerbated the critical shortage of oxygen to manage patients in respiratory distress. In early 2022, ALIMA launched the Oxygen Project to improve access to oxygen in a sustainable way in Burkina Faso, Guinea, Mali, and Sudan.

The strategy consisted of empowering structures at all three levels of the health pyramid (Teaching hospitals, district hospitals, primary health centers) through several different interventions:

- building or rehabilitating oxygen production plants in 4 hospitals, in Kaya, Conakry, Bamako and Khartoum, and upgrading their electrical systems
- supplying the facilities with the equipment needed to care for patients and installing photovoltaic systems in order to overcome power outages, which are a real obstacle to quality care in remote areas;
- testing an innovation to decentralize oxygen to health centers using solar energy (see next page);
- training national professionals in oxygen therapy and in the maintenance of the equipment necessary for appropriate, quality care.

Experts provided guidance to ALIMA to ensure the quality and sustainability of this project:

- Build Health International (BHI) assisted in the biomedical component, such as the rehabilitation of the oxygen plants, and trained the staff in its proper use and maintenance;
- Electricians without borders supervised the installation of the photovoltaic system in 4 District hospitals and 11 health centers in Burkina Faso, Guinea and Mali.

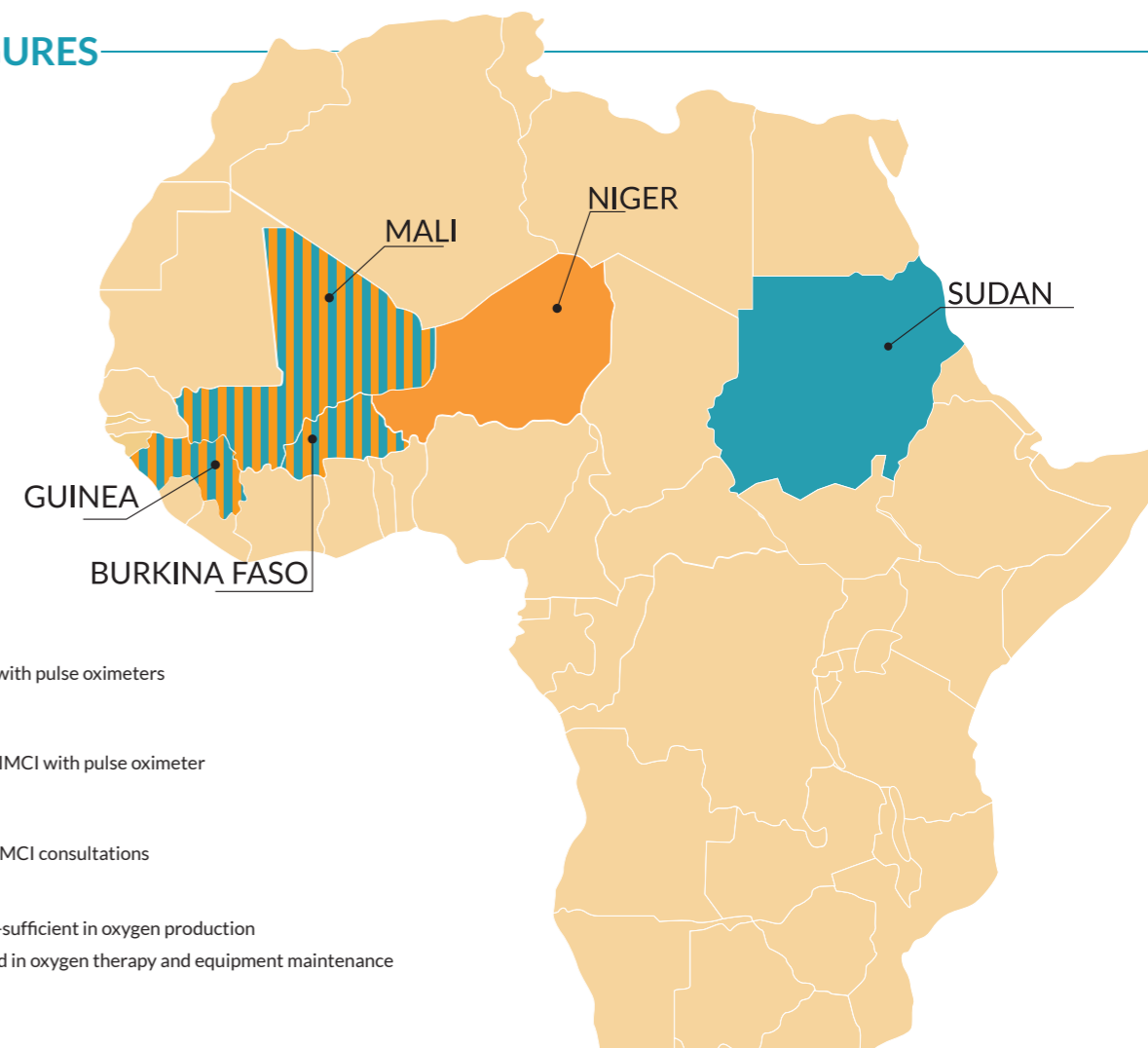


“ Using the pulse oximeter allows us to detect hypoxemia early, which allows to quickly refer a child in distress to a larger health facility. A child may appear healthy according to the Integrated Management of Childhood Illnesses. Though, after using the pulse oximeter, we may realize that they have a problem with the level of oxygen in the blood, hence the quick decision to refer the child to a higher level of care.

Ichiaka Fane, technical director of the Sibila community health center, Markala district, Mali.

PROJECTS KEY FIGURES

- AIRE Projects
- O2 Projects
- AREA & O2 Projects



- 202 health centers equipped with pulse oximeters
- 863 health workers trained in IMCI with pulse oximeter
- 515 551 children received in IMCI consultations
- 4 major hospitals became self-sufficient in oxygen production
- 198 professionals were trained in oxygen therapy and equipment maintenance

THE CONSORTIUM



A PILOT PROJECT FOR OXYGEN DECENTRALIZATION

Because of the limited resources available to ensure the referral of patients in need of oxygen from a health center to the nearest hospital, some die before they get there. ALIMA launched a pilot project to test an innovative solution: small, lightweight oxygen cylinders are filled with oxygen at the health centers using stations connected to a solar system.

Implemented in eleven primary health centers, this innovation allows patients to be stabilized with oxygen for several hours - on the spot or on the way to a bigger facility. In addition, the initial investment quickly pays for itself because of its durability. Indeed, after buying the equipment and installing the solar system, it is only necessary to train the staff in the correct use and maintenance of the equipment.



We need to offer solutions that fit the resources available in the communities. Where we work, we must be able to refer patients from the health center to the hospital. We need to train medical staff to use new equipment so that quality healthcare is provided throughout the process.

Ange Gabriel MONTOPE SOUKPENGO - Biomedical referent for AIRE and Oxygen projects

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