



Republic of Rwanda  
Ministry of Health  
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# Rwanda plan to increase access to medical oxygen

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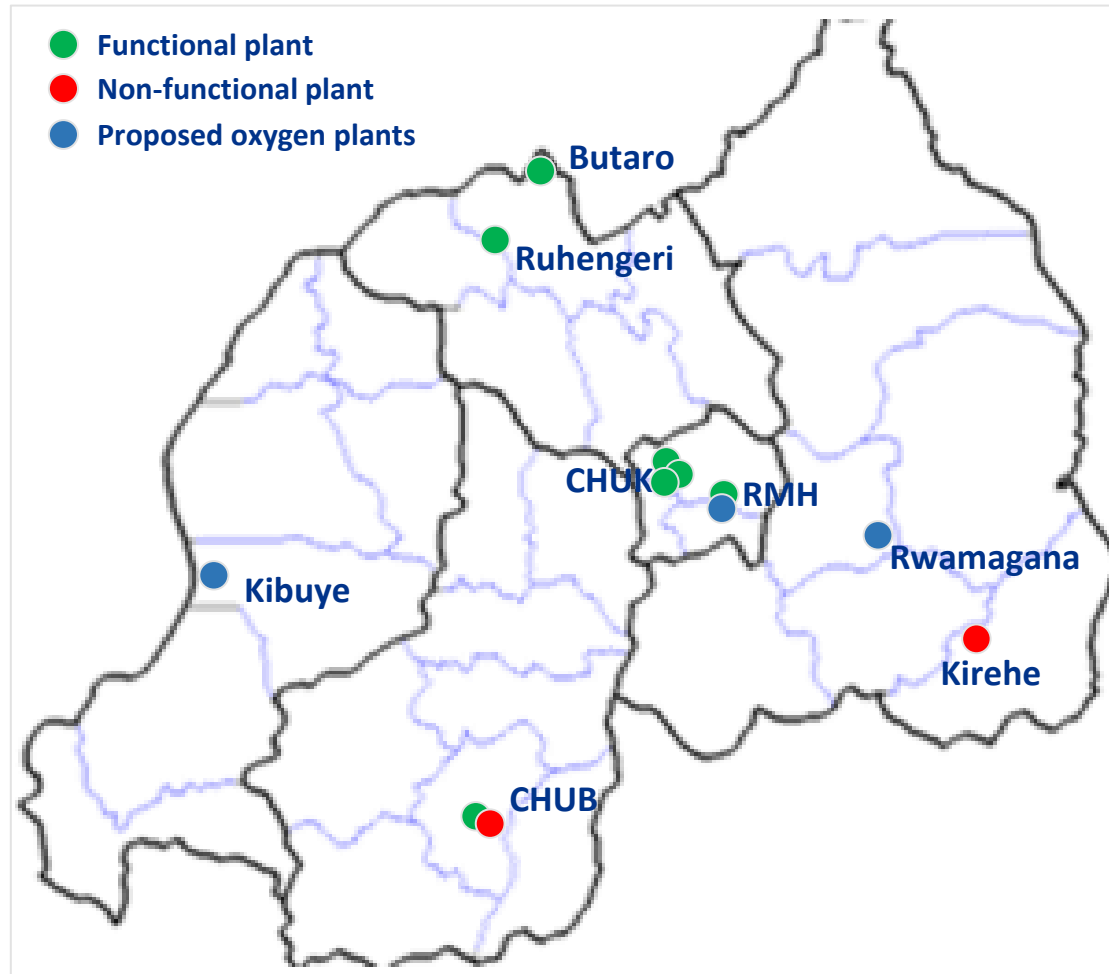
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# Currently, 7 functional public oxygen plants produce ~7,000 cylinders (50L) per month

Map of existing and proposed public medical oxygen plants in Rwanda



- Rwanda counts currently: 508 Health Centers, 37 Districts Hospitals, 4 Provincial Hospitals and 8 Referral Hospitals
- Total maximum oxygen production capacity of the functioning public oxygen plants is 355 cylinders (50L) per day or approximately **10,800 cylinders per month**.
- Actual average total oxygen production of these plants is 230 cylinders (50L) per day (**~7,000 cylinders per month**).
- Functioning oxygen plants across the country are **producing oxygen at 65% of their total capacity**.
- The oxygen plants are supplied by the following manufacturers: **Oxymat, Inmatec, Airsep, Craft, Amico**.

# Key barriers identified to safe provision of oxygen therapy to patients within Rwanda Public Hospitals

## Protocols and SOPs

- **SOPs** – there is a lack of clear SOPs for medical oxygen quality control and supply management
- **Clinical protocols** – 33% of surveyed hospitals reported that job aids and clinical protocols/guidelines for medical oxygen use are not available in wards
- **Procurement process** – the way that procurement is generally carried out does not facilitate standardization of equipment across hospitals, leading to inefficiencies in equipment operation and maintenance

## Financial

- **Oxygen therapy tariffs** – Current tariffs are set below the real cost to purchase medical oxygen, are at an hourly rate rather than per liter. Patients are not charged for concentrators
- **Maintenance budgets** – Service contracts with private providers are expensive. Many hospitals do not have an adequate maintenance budget
- **Electricity costs** – costs are too high; hospitals should be charged the industrial electricity fee
- **Transport costs** – very high for geographically remote hospitals

## Equipment and infrastructure

- **Lack of functional equipment and infrastructure:**
  - lack of cylinders
  - lack of pulse oximetry devices and vital signs monitors
  - more hospitals should have piping
- **Spare parts procurement** – 65% of surveyed hospitals reported that spare parts are not always available when needed

## Human Resources

- **# of BME staff** – hospitals have an insufficient number of staff for to ensure equipment is well maintained
- **BME trainings** – there is a lack of specialized technical trainings for medical oxygen equipment care / production
- **Clinician trainings** – there is a lack of specialized clinical training for the application of medical oxygen, from clinical indicators, rational and responsible use, oxygen delivery equipment, etc.

# Framework to increase access to medical oxygen

1

**Standards and SOPs** - develop 1) job aids for medical oxygen use in HFs, 2) SOPs for the management of medical oxygen in HF, including distribution, 3) supplier pre-qualification for heavy equipment, and 4) minimum standards for number of medical oxygen equipment in HFs

2

**Medical Oxygen Plants** – 1) increase current plant utilization, 2) build high capacity oxygen plants to meet demand in periphery and improve geographic accessibility of oxygen: Western Province (Kibuye), Eastern Province (Rwamagana), and Kigali City (RMH) and 3) require all public hospitals to procure publically (where capacity is available, establish contracts immediately, e.g., with CHUB)

3

**Financial Sustainability** - 1) update oxygen therapy tariffs to cover costs and be based on liters consumed, 2) set standard price per liter for oxygen sold to public hospitals, 3) reduce costs of maintenance contracts, and 4) reduce electricity costs by advocating to Rwanda Energy Group

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**Equipment** - 1) equip HCs to diagnose and stabilize patients until transfer, 2) phase out concentrators from hospitals, 3) equip all hospitals with essential oxygen therapy equipment, 4) equip public plants with equipment for oxygen transport, 5) streamline spare parts logistics

5

**Infrastructure (piped oxygen)** – 1) retrofit oxygen piping in hospitals that have high oxygen consumption and in newly constructed maternity blocks and 2) require new hospitals to have piping

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**Trainings** – 1) conduct regular trainings for BMEs on medical oxygen equipment maintenance (leverage skills available in country) and 2) conduct regular trainings for clinicians on medical oxygen use in HFs

# COVID-19 preparedness and response in Rwanda



- First case of COVID -19 was confirmed on 14<sup>th</sup> march 2020
- **Rwanda has put in place measures for outbreak prevention and control:**
  - A National COVID-19 Joint Taskforce which is a multi-sectoral taskforce was established to coordinate the emergency response including developing guideline and SOPs.
  - A nation - wide capacity building plan for COVID-19 prevention and management was developed to ensure that:
    - The entire health system has the requisite knowledge and skills to protect the health care providers and everyone who visit health facility.
    - There is enough capacity of health care workers in all health facilities on COVID-19 surveillance, case detection, contact tracing, reporting, IPC and case management for COVID-19.
    - Maintaining Essential Health Services during COVID-19 in Rwandan Context include **MNCH programs.**

# Maintaining MNCH services during COVID-19 in Rwanda context

- Issued of ministerial instructions of continuity of all health services during the lock down with emphasize on RMNCAH
- Issued of guidelines for CHWs on no interruption of RMNCAH services and protective measures to observe
- Provision of PPE to RMNCAH health providers
- Provision of masks to CHWs
- Screening at the entrance of all health facilities
- Continuous radio airing and TV spot of messages related to seek RMNCAH services
- Use of social medias to provide messages related to seek RMNCAH services
- Push up supply of RMNCAH commodities
- Change of school based provision of deworming/HPV vaccination services to community provision
- Regular visit of households by CHWs

# Improve access to oxygen to improve care of newborns and children

- **Capacity building of health providers on quick triage of children who need oxygen**
- **Provision of oxygen concentrators to pediatric and neonatology department**
- **Availability of referral equipment for newborn/child in critical conditions requiring continuous provision of oxygen**
- **Continuous mentorship by professional associations (RPA,RMA and RSOG) for management of hypoxemia and pneumonia**

# Key planning guiding the integration of O2 supply into the health system for COVID-19 response

## Conduct a rapid capacity assessment

- Quantify current O2 demand and forecast the demand surge caused by the COVID-19 epidemic in a country
- Conduct a rapid assessment of our current oxygen generation capacities & respiratory care devices
- Estimate the gap between the COVID-related oxygen need and the current oxygen generation capacities
- Evaluate various O2 sources and delivery infrastructure options to bridge this gap

## Leverage existing capacities

- Repair existing non-functional equipment
- Max out existing PSA plants' capacities
- Procure key missing equipment, spare parts and consumables
- Strengthen current oxygen supply chain
- Map out available capacities in neighboring countries in case needed

## Add extra capacities

- Design the largest investments in line with national strategy
- Phase in these large investment to avoid wastage of resources and create opportunities for redeployment
- Place purchase orders for smaller 'no-brainer' devices (e.g. Setting up ICU beds and related equipment) early enough to mitigate the impact of long lead times during COVID



# Ongoing Activities

- **Prior to COVID-19:**
  - Hospital piping was initiated and departments with MNCH services are priority
    - Piping is at 35% with at least one department piped
    - 35% of piped hospitals have all department piped
    - Among the piped hospitals 94% have neonatology department piped and 76% for maternity and pediatrics wards.
    - All new hospitals are being built with oxygen pipes installed.
- **During COVID-19:**
  - **Clinical guideline, SOP and jobs aids** for oxygen therapy in hospitals have been developed to guide healthcare providers on how to correctly diagnose hypoxemia and provide the correct. (*currently into validation process*)
  - **Clinician training modules and checklists has been developed** to ensure clinician staff know how to appropriately provide quality medical oxygen therapy to patients, including screening and diagnosing hypoxemia and administering the appropriate quantities of medical oxygen for both children and adults.
  - Hypoxemia screen and oxygen therapy **training** has joined the nation - wide capacity building plan for COVID-19 prevention and management training package. (*currently being delivered*)

# Ongoing Activities cnt'd

- **During COVID-19**
  - Conduct a rapid assessment of current O2 generation capacities, quantify and cost the main oxygen-related devices and consumables required to meet the peak COVID-19 demand in a country including Biomedical equipment inventory.
  - Conduct a demand surge assessment & build on the national roadmap / policy recommendations.
  - Engage and coordinate stakeholders to work towards national plan to increase access to oxygen therapy (*Short-term, Intermediate-term, and Long-term planning*).



**Thank you**

**Merci**

**Murakoze**