

WHO technical consultation on oxygen scale-up



Session 4
27 November 2020

Agenda

Friday, 27 November, 2020

16:00–16:10	Welcome remarks <ul style="list-style-type: none">• Review of agenda• Participant attendance• Summary of Session 3	Janet Diaz Lead, Clinical Management for COVID-19 WHO Health Emergency Programme
16:10–16:30	Mapping to optimize the collective efforts <ul style="list-style-type: none">• Example of supplier positioning mapping Global Medical Oxygen Scale-up Mapping <ul style="list-style-type: none">• Where, What, Why, How, Who• Illustrative data collection methodology	Alejandra Velez Focal point, Oxygen scale-up, WHO Health Emergency Programme
16:30–17:15	Discussion on the potential value and controversies of a Global Platform	Fetnah Ramirez (co-chair) Edgardo Diaz (co-chair)
17:15-17:25	Wrap-up of key topics highlighted over the last sessions	Janet Diaz
17:25–17:30	Next steps: <ul style="list-style-type: none">• Publication of Technical Consultation Reports• Collaboration to build Interim Operational Guidance on PSA plants and distribution systems• Data Platform and Mapping• Identification of other work areas for further working sessions.	Janet Diaz

Summary of key discussion take-aways from Session 3: Oxygen distribution systems (i.e. piping, cylinders)

- ✓ Medical Oxygen purity and impurity along the system:
Lack of guidance with respect to methodology, frequency, and [impurity] parameters.
 - Risk profile for patient impact needs to be assessed.
 - IP for Oxygen 93 needs to be developed, addressing above concerns.
- ✓ Piping strategy and manifold changeover should remain simple. There are limited experiences to draw off on in LMICs as piping has been seen as a ‘luxury’.
- ✓ Piping standards have been developed for and are applied in high income countries. They are very stringent, and could be unnecessarily costly, especially where budget constraints abound.
- ✓ Alternate materials for piping, including polyurethane instead of copper, or “push-fit” instead of welding, are available but the quality and safety has not yet been validated by international standards.
- ✓ In the practice, it is still difficult to ensure safe and effective cylinder management and use even if general guidance is available.

The aim of this technical consultation is to achieve the following core objectives across four teleworking sessions:

Needs assessment: taking stock of existing guidance to forecast oxygen needs; identification of shared challenges; formalizing baseline assumptions and framework methodologies that apply for a **high-level oxygen needs estimation for LMICs**.

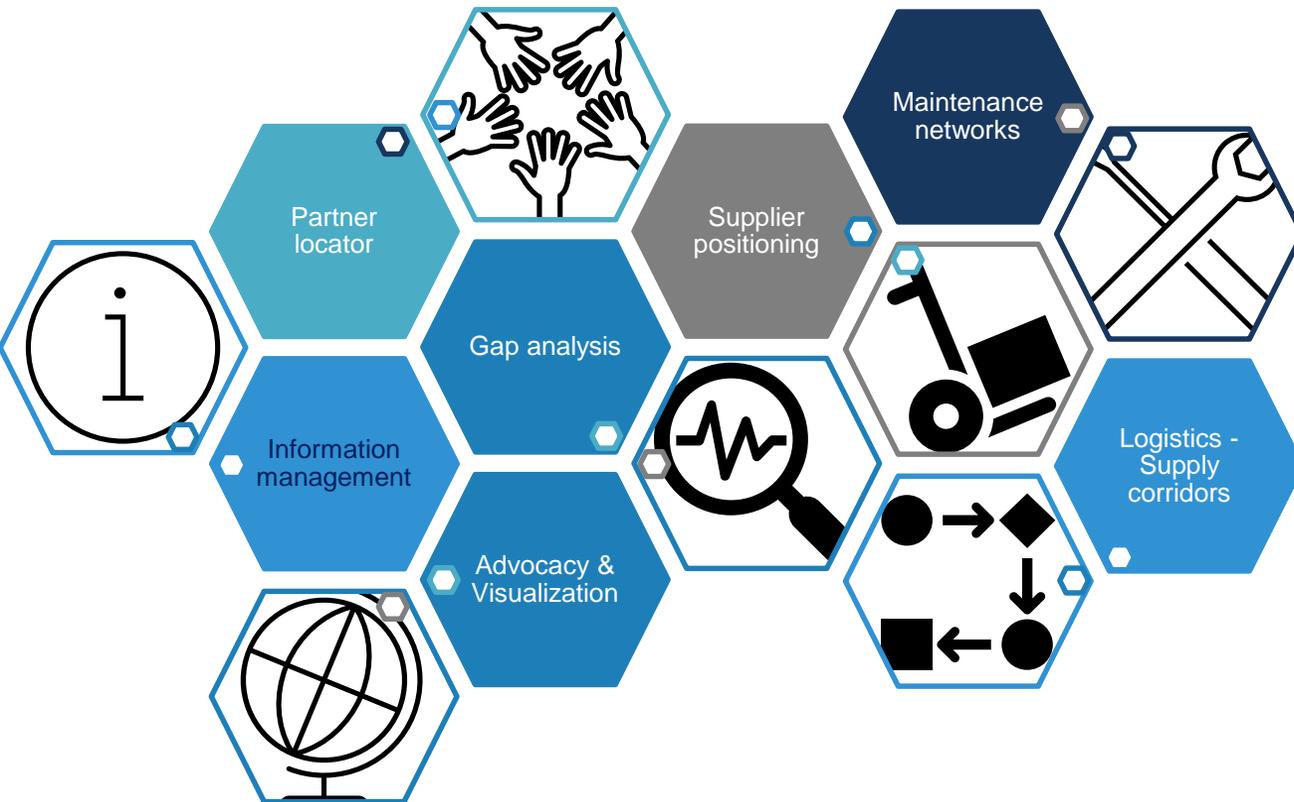
Technical guidance: finalizing operational elements and inputs for WHO consideration in producing interim guidance documents for oxygen production from PSA oxygen generator plants and subsequent distribution (e.g. cylinder manifolds, oxygen piping) at the facility level.

Today

Global scale-up mapping: establishing live mapping updates and/or networking resources to leverage previous accomplishments, to foster collaborations, and to avoid duplication of activities.

Identification of other work areas could result in the addition of further working sessions.

Mapping activities in the space of scaling up oxygen can serve to optimize our collected efforts and beyond, and ultimately reaching more patients.



Consultation entities have experience in scaling up oxygen access; however, leveraging each other's experience can be further amplified.

Longer term sustainability will require a holistic approach and an ecosystem of resources; **not only focus on oxygen production but distribution and delivery, and ongoing maintenance and upkeep.**

While progress has been made, it is believed that the remaining gaps are substantial, but as yet, not quantifiable.

Different approaches to data collection have been taken; however, data utility has not been optimized to illustrate gaps to broader partners in the space.

Efforts in scaling up medical oxygen have been continuously increasing...

Activities and linkages in oxygen scale-up in recent years

- The number of partners have been few; however, many fruitful collaborations resulted.
- Limited donor funding, often geographically specific, and often with country overlaps, was typically linked to paediatric pneumonia.
- Domestic investment in medical oxygen was limited; the medicine often perceived as very expensive.
- The 'Every Breath Counts' (EBC) Coalition was established in 2017. It was the first formal platform to integrate medical oxygen as a priority.

Examples of global efforts to capture and manage information

- SARA – oxygen availability indicated in a binary output (Y/N), information not publicly available.
- HeRAMS – a collaborative approach for sharing information re. essential health resources and services.
- EBC: coalition has grown, many linkages happen through this platform / mechanism.
 - Mapping of entities working in the space.
 - Mapping of oxygen-related procurement.
- UNICEF: CO Surveys.
- Lancet call to build base-line data to inform decision-makers.

These efforts served particular and valid purposes, but still, there is no clear overview of all actions taken for scale-up; there is no clear understanding of existing global capacity

Example of supplier positioning mapping: PSA plant manufacturers

- Rapid market assessment of relevant suppliers in China, Europe and USA market.
- 25+ PSA plants manufacturers.
- 2 VSA plants manufacturers: PCI, PRISM.
- Broad difference with regards quality assurance certifications, lead times and models/configurations.
- WHO have not assessed all of them.



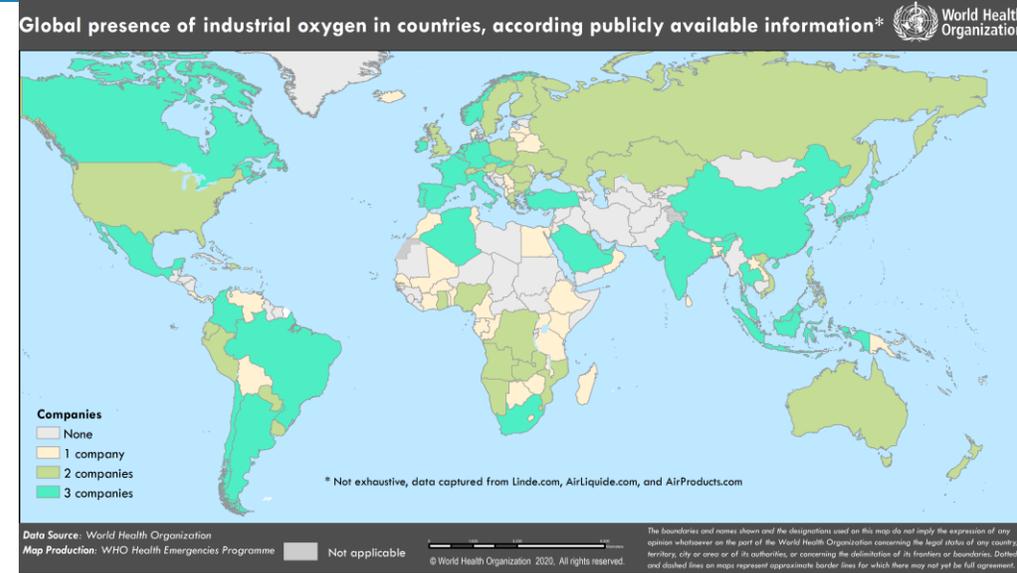
There are an increased number of authorized distributors who require a different QA assessment: not only for the products, but to ensure long term service agreements.

No.	Supplier	Country	No.	Supplier	Country
1	AirSep	USA	14	OGSI	USA
2	Atlas Copco / BeaconMedaes		15	Ox-Air	USA
3	Can Gas Systems Company Limited	China	16	Oxymat	Slovakia
4	Chengdu Tcwy New Energy Tech.	China	17	Oxywise	Slovakia
5	G. Samaras	Greece	18	Özcan Kardeşler	Turkey
6	Hunan Eter Electronic Medical	China	19	Pneumatech Medical Gas Solution	Germany
7	Hydrogaz	Poland	20	Sanghi	India
8	Inmatec	Germany	21	ShanDong MedTech	China
9	Intakatech	South Africa	22	Suzhou Hengda Purification Equip.	China
10	Jiangyin Dongpeng Purifying Equip.	China	23	Suzhou HITE Gas	China
11	Mil's		24	Sysadvance	Portugal
12	MVS Engineering	India	25	Tesa Medikal	Turkey
13	Novair	France			

Example of supplier positioning mapping: Global liquid oxygen production

Understanding of where there is product in the market, through a data repository or visualization, will inform the end user of its potential:

- 3 companies (Air Liquide, Air Products, Linde) represent most of the market.
- These three, along with Gulf Cryo and AirWater, market their product for medical use.
- While the mapping is not exhaustive and not representing the in-country reach, it provides a starting point during the strategic planning phase of any medical project.



The liquid market is ripe for engagement; perceived high-costs and no sense of “ownership” have been historical barriers for this segment of the market.



Global Medical Oxygen Scale-up Mapping

What could this look like?

Establish a live mapping platform to:

- Centralize a 'global good' repository of information and tools.
- Illustrate systems status: full visibility into information and activities.
 - Data sharing only if/where permissible.
- Showcase recent, ongoing, or upcoming activities.
- Leverage previous accomplishments to multiply success.
- Facilitate rapid, standardized, and systematic collection of targeted data sets.

Where could we do this?

- WHO has migrated to and proposes REDCap web-based platform, where access is secure, limited, and password-protected.
- WHO has had recent success with the 'Global WHO COVID-19 Clinical Data Platform' to inform appropriate clinical interventions, public health response and generation of evidence-based guidelines:
<https://www.who.int/teams/health-care-readiness-clinical-unit/covid-19/data-platform>

Why would we do this?

- Leverage our collective strengths and foster collaboration.
- Pool our knowledge and avoid duplication.
- Conduct real-time aggregation, analysis, and interpretation of medical oxygen scale-up activities in different contexts.
- Support to shape global, national, and subnational strategies, including policy work and roadmaps.
- Country participation voluntary.
- Potential to increase visibility into a fragmented, opaque market.

WHO is offering to facilitate this initiative to build a Global Data Platform.

Global Medical Oxygen Scale-up Mapping

How can this be done?

1. Define content to be housed on the platform.
2. Develop (or leverage) existing tools, surveys, apps, etc.
3. Ensure accessibility:
 - i. Translate all resources to (at least) UN official languages.
 - ii. Establish legal parameters, time frame, methods of contribution and use.
 - iii. Resource a support network for contributors.
4. Manage and maintain content so that it remains current and relevant.
5. Build out a team for data curation, aggregation, analysis, interpretation.
6. Facilitate information capture both prospectively and retrospectively (to avoid duplication).

Who is this for?

Contributors:

- MoH
- Health facilities
- Clinical/research networks
- NGOs

Users:

- Policy makers
- MoH
- Facilities
- NGOs
- Clinical associations
- Oxygen champions / advocates
- Donors
- Researchers
- Vendors
- Etc.

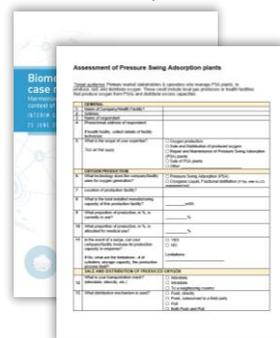
Detailed steps → Data collection to help determining the gap in availability and accessibility of oxygen



- What is the oxygen availability and accessibility gap?



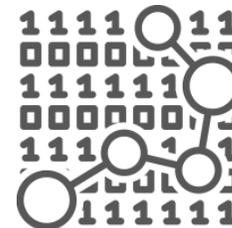
- Medical equipment inventories
- Facility readiness
- Operational readiness, etc.



- Paper surveys
- ODK / REDCap / SurveyCTO, etc.



- Data consolidation and cleaning



- Adequate staffing for:
- Operations
 - Tech Support



- House data in a centralized repository where it will be managed and kept current to reflect real-time situation.
- Leverage existing systems where possible

We are ultimately working at the service of the patient.
The ultimate objective is data-driven action, not a data set unto itself.

Implementation Mapping Exercise (example)

Country	Partner presence	Country O ₂ policy	Activities					Systems integration (e.g. LMIS)
			Baseline / gap-analysis	Scale-up strategy/ road-map	Local and regional market landscaping	Clinical, biomedical, technical training	(etc.)	
Afghanistan	- ... - ...	In-progress	⊕	⊗	⊗	⊗		HeRAMS
Angola	- ... - ...	Yes	☑	☑	⊗	⊗		No
Bangladesh	- ... - ...	Yes	☑	⊗	☑	⊕		OpenLMIS
Benin	- ... - ...	No						
...	- ... - ...							
Zambia	- ... - ...	Yes						
Zimbabwe	- ... - ...	No						

Activities can be substantial stand-alone undertakings; however, they are part of the bigger picture.

- ✓ Sharing information more broadly can result in collectively closing the gap.
- ✓ Leveraging existing systems and resources will support effort of sustainability (e.g. training platforms).
- ✓ Activities must be measurable, key indicators targeted at the ultimate objective.
- ✓ Partners are often limited for reasons of funding or expertise; however, once the benefit is understood, the multidisciplinary effort can be done.

Note: information herein is for illustrative purposes and does not reflect current country situation.

Discussion on value of Global Medical Oxygen Scale-up Mapping / Data Platform alike to better facilitate safe, reliable, lasting solutions?

Utility

What information could be managed in such a platform to help with scale-up efforts?

Sensitivity

What could be the potential risks for governments to share their data?

Implementation Technical Advising (TA)

- What additional TA would you expect to be required to support in countries that are underrepresented?
- Could there be value in considering secondments for deployment?

Advocacy

Could this type of platform best support advocacy efforts for oxygen scale-up?

Are there any additional notable pitfalls?

Are there experiences to share on this regard?

Market transparency

- Would public information help merge demand, give visibility, and therefore leverage to the buyer? Would this consolidated information be of benefit the supplier?
- Could some supply perceptions be debunked with greater transparency (e.g. OEM of 'premium' brands)?

Partner networks

Could this effort further partnerships, strengthen networks and improve coordination across working groups?

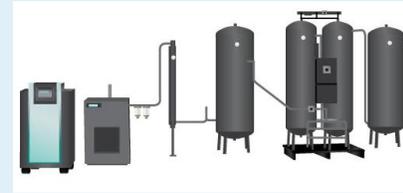
 Oxygen scale up activities
 WHO Oxygen scale up activities

Summary of key gaps identified in technical consultation meetings:



PSA-centric - *technical guidance to be developed:*

- system operations, including post-commissioning requirements (3rd party testing).
- preventive and curative maintenance.
- service-level agreement.



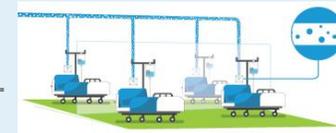
Cylinders - *technical guidance to be developed:*

- Maintaining standards (vessel sizes, valve connections, appropriate regulators and flowmeters, etc.).
- Management and use of cylinders in a system/geography.



Pipelines:

- Review of international standards for pipelines for medical application.
- Review of guidance for design, installation, validation, and verification of medical gas (oxygen) distribution networks.



Safety

- General O₂: Greater need > larger solutions covering continuum: production & distribution & delivery.
- Cylinder handling and safety – need for trainings and better implementation practices.



Purity: navigating requirements for medical oxygen there is unclear guidance relating to different sources. What is acceptable in terms of purity and impurities? Why differences among Pharmacopoeias?

Proposed next steps:

ACTION! Entities are encouraged to:

- Review reports from 4 technical consultation meetings (*1 of 4 has been circulated*).
- Participate in the development of operational guidance for oxygen systems.

WHO team currently drafting (*to be circulated in January 2021 with established timeframes for feedback*):



- PSA strategic planning and procurement.
- PSA system operations, including post-commissioning requirements (3rd party testing).
- PSA preventive and curative maintenance.
- Pipeline technical guidance (distribution network design, including manifold).
- Oxygen 93 monograph (International Pharmacopoeia – *with Essential Medicines Department*).

→ Participate a forthcoming discussion about the development of a Global Medical Oxygen Scale-up Mapping:



- Consolidated feedback, including the challenges encountered in this session, will be used to further steer the concept.
- In-depth exploration of existing platforms will be carried out for suitability.

→ Suggest to WHO additional



- Topics for further consultation.
- Bodies of work that would be helpful as a published a Global Good for Medical Oxygen Scale-up.

THANK YOU!

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