

Editorial

Medical Oxygen – The National Stewardship Programme

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Since the start of the COVID-19 pandemic, affordable and sustainable access to oxygen has been a growing challenge globally. Oxygen, an essential medicine, is a complex product and a scheduled drug. It needs to be produced by a medical device or industrial plant and needs a whole system to safely reach patients. This encompasses the source, distribution, regulation, delivery, and patient monitoring. Medicinal oxygen reaching patients should be tested to meet authorised specifications for identity, purity, and content. COVID-19 pandemic put huge pressure on health systems, with hospitals running out of oxygen.

Oxygen systems need regular power supplies and maintenance to function adequately. Depending on the source and production method, the medical oxygen has the following percentages:^[1,2]

1. For oxygen produced by the air liquefaction process, the International Pharmacopoeia defines the requirements of medical use oxygen. At present, oxygen must contain not <99.5% v/v of O₂
2. For pressure swing adsorption (PSA) plants, the WHO interim guidance technical specifications for PSA plants, published in June 2020, specifies: 'Pressure swing adsorption technology to produce medical oxygen 93%±3 from ambient air'.
3. For oxygen concentrators, the WHO-UNICEF technical specifications and guidance for oxygen therapy devices were published in 2019, as one of the sources of oxygen. 'The concentrator should deliver low-flow, continuous, clean and concentrated oxygen (>82%) from room air (21%)'. This same statement was published in the WHO interim guidance of the WHO list of priority medical devices for COVID-19 and its associated technical specifications published November 2020.

Dr. Mike Ryan, Executive Director of the WHO Health Emergencies Programme, said: "Oxygen is life saving" and it is imperative to move faster to scale-up holistically with patient-centred, end-to-end solutions that improve

clinical outcomes. The WHO has been working through the biomedical consortium to bring the technical, clinical, and procurement partners together with about US\$80 million of biomedical equipment procured for low- and middle-income countries.

The oxygen taskforce has been setup by the WHO that will help drive oxygen scale-up through further innovation, financing, and capacitation. Global access to advances remains unequal. There is a need to urgently increase access to medical oxygen to ensure that patients are benefitted regardless of where they live and their ability to pay. International solidarity is the quickest and the only way out of this pandemic. It is a scientific, economic and moral imperative that in a pandemic all tools are made globally available for all. The taskforce brings together key organisations that have been working to improve access to oxygen since the start of the pandemic including Unitaid, Wellcome, WHO, Unicef, the Global Fund, World Bank, the Clinton Health Access Initiative, PATH, every breath counts coalition and saves the children.

During the peak of the second COVID-19 wave in the year 2021, Delhi like other places witnessed a major medical oxygen crisis. At its peak, Delhi recorded 28,300 COVID-19 cases in a day on April 20, with a positivity rate exceeding 36% on April 22. The government on July 20 informed Parliament that there was an unprecedented surge in demand for medical oxygen and it peaked at nearly 9000 MT compared to 3095 MT in the first wave. As per the instructions of the Supreme Court, a 12-member national taskforce for oxygen monitoring has been constituted in June 2021 for scientific allocation of liquid oxygen.

All states and union territories have been asked to install PSA plants in public health facilities and to facilitate the installation of such plants in private facilities as well. The government has sanctioned at least 1500 PSA oxygen generation plants, of which 1463 have been commissioned, including 1225 that

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have been installed and commissioned under PM CARES Fund in every district of the country. The centre has also set up OxyCare, a dashboard that disseminates information on the available oxygen stock for its better distribution.

‘The Union government on 22 December 2021 launched ‘The National Oxygen Stewardship Programme’ by Dr. Mansukh Mandava Hon’ble Union Health Minister and Dr. Bharati Pravin Pawar, Hon’ble MOS, H&FW.^[3] It encompasses an initiative to train healthcare workers engaged in oxygen management and administration with the essential knowledge and skills to ensure rational utilisation of medical oxygen to prevent wastage as part of its preparedness for any possible surge in COVID-19 cases, especially in resource constraint settings. Till now, oxygen was considered to be abundant and it was taken for granted. It is a pharmacological agent with side effects and is to be used judiciously without wastage. Hence, the rational use of oxygen has become mandatory and need of the hour.

The centre is planning to identify and train at least one ‘Oxygen Steward’ in each district across the country amid the rising Omicron scare. This will also help to improve health systems and health outcomes beyond COVID-19 in the long term for patients who require oxygen to survive.’ The Oxygen Steward at each district level shall be responsible to train, reorient the existing workforce at ground level. The use of skill laboratories to upscale the training process is to be promoted. The hospital steward thereafter like infection steward shall monitor the wastage and abuse of oxygen for the best benefit to all the hospitals. Use of non-rebreather masks and non-invasive ventilation is to be promoted as per the clinical indications to keep oxygen saturations between 90 and 94% and to avoid using HFNO that uses 40–60 L/min of oxygen as far as possible. Monitoring patients to optimally deescalate oxygen as per the clinical needs are important. Overstocking and oxygen guzzling are to be strongly discouraged.

‘Each healthcare setup needs to ensure that any untoward incident arising due to the pandemic gets managed

professionally without any undue stress on the systems’ was said by Rajesh Bhushan, the health secretary of Union government during the launch. Dr J.V. Peter, the director of CMC Vellore, stressed the need for homologous or heterologous booster COVID-19 vaccinations and ensuring the capacity of treating hand, which at the present times are deficient by one batch of post graduate students due to the delayed admission process. It is important to train the nursing staff and technicians as the frontline workers for rational use and be careful to avoid oxygen wastage by leakages. We need to be frugal as resources are always finite.

While using Oxygen, regular surveillance is to be ensured to avoid wastage through devices or accessories. It is recommended to keep the areas well ventilated and clean. The fire fighting equipment’s installed including the fire extinguishers and alarm systems, sprinklers need to be regularly checked and monitored. The faulty cylinders and pipe leakages demand prompt reporting and actions. The working staff needs to be trained in the process of patient triage and emergency evacuation plans. Backup stocks should be available in case of exigency.

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