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Title : Evidence-based, standardized and high-quality knowledge products on management of medical oxygen and respiratory care devices for South and South East Asia

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Abstract : The surge in COVID-19 cases during 2021 caused an unprecedented demand for medical oxygen to save patients with life-threatening respiratory symptoms. As the health systems across the World Health Organisation's South East Asia Region raced to install various medical oxygen generation and delivery systems in the health facilities, the gaps in capacity to manage medical oxygen systems presented a key challenge in getting medical oxygen to the patients.

Very few personnel in the health systems, especially at sub-national and secondary-level facilities, had the knowledge to understand the complexity of the integration and maintenance of respiratory care devices, especially these newly installed oxygen systems. Even fewer had the relevant skills to operate and manage these newly deployed oxygen systems. Furthermore, the trainings provided by oxygen equipment manufacturers and vendors at the time of installation of the oxygen systems varied immensely in quality, content, and approach from one training to another.

To supplement the medical oxygen infrastructure developed by the Member States in WHO's South East Asia region, WHO-SEARO together with

PATH, has developed two high quality and reliable knowledge products to strengthen biomedical capacity for oxygen and respiratory care devices in WHO'S South East Asia Region (SEAR) –

- a) A regional manual on Operating Guidelines on maintaining respiratory care ecology, maintenance of equipment and equipment handling and other key biomedical aspects of oxygen and respiratory care, and
- b) A regional training module for Biomedical Engineers on (i) establishing, maintenance, upgrading, expansion of oxygen/ respiratory care systems, and (ii) setting up of and ensuring functionality of the biomedical equipment needed for influenza pandemic response in the long run and managing surges of SARI patients due to COVID-19 in the short run.

These knowledge products fill the oft-felt need for standardised, evidence-based, and high-quality training and learning materials on the management of medical oxygen and respiratory care systems in SEAR. Developed specifically for the Biomedical Engineers and technicians, they include essential information on medical oxygen systems, from its source, such as Pressure Swing Adsorption (PSA) oxygen generation plants to storage, such as in liquid medical oxygen tanks

and cylinders, to its delivery to patients, through medical gas pipeline system, mechanical ventilators and bilevel positive airway pressure (BiPAP) machines, among others. Considering the evolving nature of respiratory infections, the knowledge products also cover diagnostic devices, such as ultrasound machine, electrocardiogram (ECG) and X-ray machines.

They will serve as regional goods of WHO for use by health facility managers, biomedical engineers, and technicians in the area of biomedical engineering, especially for oxygen and respiratory care devices to strengthen oxygen ecology in the health facilities and in the region. These documents will also be available for use as readily reference materials in the public domain to improve the technical skills for management, upgrade, and extension of existing medical gas pipeline systems and maintenance of oxygen and respiratory care devices for all Member States throughout WHO's Southeast Asia Region and beyond.