

Medical Equipment Donation: An End in Itself or a Mean to an End?

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Sir,

The coronavirus disease-2019 (COVID-19) pandemic¹ has placed an unprecedented strain on the healthcare systems globally. India has witnessed a massive second wave amidst acute shortage of oxygen, essential drugs, consumables, and medical equipment, and is preparing for an anticipated third wave. Foreign aid has been pouring in to help us battle this crisis. The Union Health Ministry had constituted a coordination cell to oversee the receipt, prompt allocation, and delivery of the international COVID-19 aid on need basis. Around 19,085 oxygen cylinders, 18,265 oxygen concentrators, and 15,256 ventilators/BiPAP machines have been dispatched to the states and union territories between April 27 and May 29, 2021.² Our institute is one of the recipients of this aid. However, sourcing the medical equipment based on need assessment is only the beginning. Commissioning-installation, education-training, preventive maintenance-repair, and decommissioning are essential components of an equipment's life cycle.^{3,4} The on-site capacity and expertise required to make the equipment operational in terms of human, infrastructural, and financial resources warrant due consideration. Estimates suggest that around 40% medical equipment in developing countries remain out of service, predominantly due to lack of infrastructure, training, and maintenance.⁵

The problems with donated medical equipment are manifold. First, technical support is often not available for initial installation, demonstration, and to impart essential training in safe use, troubleshooting and preventative maintenance. Second, the donated equipment usually do not come with a warranty or comprehensive maintenance contract and after-sales support. Third, they may have incompatible parts whose replacement becomes prohibitively expensive. As an example, at our institute, the flowmeters of the donated oxygen cylinders had to be replaced due to incompatibility. Fourth, sourcing the equipment-specific spare parts and consumables (e.g., patient tubing and interfaces) often becomes a limiting factor as they are not available locally and/or costly. Last but not the least, the donated equipment must be safe and compatible with local storage and operating conditions including temperature, humidity, dust, and electrical supply. Lack of reliable uninterrupted power supply, compressed gas supplies, medical grade oxygen, and purified water are often a concern in our setting. Also, receiving equipment of different make and model from multiple sources presents additional challenges for standardization, user training, and maintenance services. Without appropriate measures, the equipment may be resigned to "equipment graveyards" or may even compromise patient safety and burden the already challenged healthcare system.

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It is the collective responsibility of all the stakeholders including policy-makers, donors, manufacturers, recipients, and end-users to ensure successful and optimal utilization of the donated equipment, in turn enhancing the healthcare capacity to the benefit of patients and society. Appropriate installation and user-training for capacity building must be ensured. Availability of skilled manpower including doctors, nurses, and technicians to utilize the equipment cannot be over-emphasized. Ventilators are usually nested in complex ecosystems, of which, trained staff, other equipment like multipara monitors, infusion pumps, medications like vasoactives, antibiotics etc., are some of the vital components. Adequate budgetary allocations must be made both for ongoing operational costs, consumables, preventive maintenance, and repair, and also for the additional manpower recruitment. The average annual expenditure on consumables may exceed the equipment cost in some instances. It is necessary to ensure sustainable and affordable local supply of spare parts, accessories, and consumables. Biomedical maintenance should be proactive rather than reactive and can be strengthened by developing regional centers of expertise to provide round the clock assistance to clinicians and technicians for tiding over the teething problems. Ongoing program evaluation to assess utilization rates, durability, adverse events, if any, and impact on health systems and health outcomes, becomes pertinent to inform future activities.⁶ Access to timely, affordable, equitable, safe, and quality healthcare requires systematic approach. While foreign aid was timely and valuable in an unprecedented crisis like this, we need to rethink about achieving self-sufficiency in their appropriate allocation, maintenance, and effective usage. Though the lofty ideal of *Vasudhaiva Kutumbakam* "the world is one family" which India propagated seems to be paying our country back, being "aatmanirbhar" is the way forward.

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