

Strengthening Critical Care Capacity to Manage COVID-19 Patients in Indonesia

Between August 2020 and November 2021, the Linkages across the Continuum of HIV Services for Key Populations Affected by HIV (LINKAGES) project provided technical assistance (TA) for COVID-19 case management and critical care. In 2020, the United States Government, through the United States Agency for International Development (USAID), donated 1,000 mechanical ventilators to mitigate the impact of COVID-19 in Indonesia. The donation delivered on the U.S. administration's pledge to provide critically needed supplies and support Indonesia's ongoing efforts to manage the COVID-19 pandemic in the country.

LINKAGES Indonesia collaborated closely with the Ministry of Health (MOH) and various Indonesian medical professional associations to improve the capacity of health care workers and medical facilities to use ventilators for COVID-19 treatment and strengthen provision of care. During a surge in COVID-19 infections, the program also established a private sector partnership to facilitate the transport and refill of hospital medical oxygen cylinders in Jakarta.

Key Accomplishments

- Strengthened critical care capacity of 1,572 health care workers at 458 facilities in 211 districts and 13 provinces
- Hosted a COVID-19 learning webinar series on topics such as COVID-19 management, patient triage, patient nutrition, and the implications of long COVID, reaching over 1,000 attendees
- Transported and refilled 2,997 medical oxygen cylinders for 40 hospitals during a COVID-19 surge in Jakarta
- Conducted ventilator technical assistance monitoring visits to 34 hospitals in 10 provinces
- Procured 2,500 adult breathing circuits, 100 child breathing circuits, and 110 test lungs to support oxygen treatment services for hospitals across Indonesia

Activities and Accomplishments

Building capacity for COVID-19 clinical management

LINKAGES Indonesia worked with technical assistance partner University of California San Francisco (UCSF) to develop *Mechanical Ventilation for COVID-19: A Training Curriculum for Frontline Health Care Workers*. This three-module, eight-hour introductory course was designed to prepare Indonesian hospital clinicians, nurses, and technicians in intensive care units (ICUs) to use Vyaire LTV1200/2200 ventilators for critical COVID-19 care. The training included sessions on standard ventilation practices and considerations for COVID-19 patients; ventilation practices for acute respiratory distress syndrome (ARDS), including prone positioning; considerations for the daily assessment of ventilated patients; and strategies for evaluating patients for extubation readiness. Four COVID-19 case studies were developed and integrated into the training package, along with eight ventilator demonstration videos.



Health care providers in Jakarta participate in LINKAGES' critical COVID-19 care training program. Photo by Ade Sonnyville

Over the course of the program, 14 Indonesian master trainers, who had been trained by LINKAGES, delivered trainings for 1,572 health care workers at 458 facilities across 211 districts and 13 provinces. The in-person sessions, which began in July 2020, were transitioned to being provided online in August. One participant, Dr. Jason from Cengkareng Hospital in Jakarta, remarked: "I really appreciated this training. I learned new things that will help me improve my skills, especially for dealing with severe [COVID-19] cases."



The COVID-19 critical care training was moved online. Photo by Erlan Rista Aditya

Other participants asked for ongoing capacity support and, as a result, LINKAGES Indonesia established partnerships with the Indonesian Society of Intensive Care Medicine, Indonesian Doctor's Association, and Indonesian Association of Emergency Doctors to develop and offer a COVID-19 learning webinar series that built on the training received by practitioners. More than 1,000 participants joined synchronously or asynchronously to each of the three-hour webinars on *COVID-19 Management for Doctors, Patient Nutrition and Transportation, and COVID-19 Triage: Field Challenges and Realities*. An additional three-part webinar series on long COVID—in collaboration with medical associations such as the Indonesian Psychiatric Association—was also well attended, with thousands of participants learning about the mental health, nutritional, or respiratory implications of long COVID.

Refilling and transporting oxygen to address surge demand

With COVID-19 cases surging in Jakarta in July and August 2021, LINKAGES Indonesia established an emergency partnership with a private truck company to transport and refill hospital medical oxygen cylinders at the PT Krakatau Steel company. LINKAGES rented four trucks that conducted daily oxygen refill trips and transported a total of 2,997 medical oxygen cylinders to 40 hospitals in August 2021.



During a surge of COVID-19 infections, LINKAGES Indonesia supported the refill and delivery of oxygen tanks to 40 hospitals in Jakarta. Photo by Erlan Rista Aditya

Recommendations and conclusions

Together with a team of national and subnational Government, USAID, and Meditrans Indonesia personnel,¹ LINKAGES conducted an assessment at 44 COVID-19 treatment hospitals across 13 provinces at the end of program implementation. These hospitals received 123 Vyair ventilators, or 13.5 percent of the total distributed, and were among the more established COVID-19 treatment sites in Indonesia. The assessment incorporated information from in-person consultations with Provincial Health Office staff, and health care providers and hospital administrators at selected facilities; and from two online ventilator monitoring forms administered at the Provincial Health Office and hospital levels.

Assessment participants—at provincial, district, and facility levels—pointed out the need for continued critical care capacity development and monitoring efforts. Site-level mentoring, training of trainers, and provision of training materials directly to facilities² were identified as ways to promote the transfer of critical care knowledge and skills. Participants further highlighted the monitoring roles and responsibilities of provincial and district health office personnel to ensure adherence to COVID-19 critical care procedures and to highlight and respond to capacity gaps and needs.

These recommendations have informed subsequent COVID-19 capacity development and impact mitigation initiatives in Indonesia that are supported by the U.S. Government and implemented by a variety of local, United Nations, and international development organizations.

¹ Meditrans Indonesia was contracted by USAID to distribute U.S.-donated ventilators and to provide technical assistance for ventilator setup and operation.

² LINKAGES' initial plan to establish a resource portal was not approved by the Ministry of Health given a lack of clarity on which Health Department would assume overall capacity-building responsibility.