Strengthening the Primary Health Care Response to COVID-19 in Rural Mongolia

The U.S. Government, through the United States Agency for International Development (USAID), has provided technical assistance (TA) to the Mongolian Government to respond to the COVID-19 pandemic since December 2020. This assistance began with coordinating the distribution of 50 ventilators donated by the U.S. Government to Mongolia's Ministry of Health (MOH), followed by critical care training to strengthen the country's capacity to manage COVID-19 patients. Building upon the successes and insights gained from the initial phase of TA implementation, the U.S. Government approved additional funding for Mongolia under the American Rescue Plan Act (ARPA) in August 2021.

This subsequent phase of TA was designed to strengthen capacity for COVID-19 response in the primary health care system in rural Mongolia, with a focus on increasing oxygen availability and building clinical capacity among providers at all Soum facilities across the country (Soums are primary health care facilities located in rural areas).

Activities and accomplishments

COORDINATION WITH STAKEHOLDERS

EpiC partnered with the Mongolian branch of Save the Children Japan (SCJM) to implement the TA activities. Other stakeholders included the Division of Primary and Referral Care of the MOH, the Medicine and Medical Devices Regulatory Authority (MMRA), USAID Philippines (which oversees U.S. Government-funded health programs in Mongolia), USAID Mongolia, and FHI 360 staff.

EPIC'S KEY ACCOMPLISHMENTS

- Completed rapid assessment of oxygen therapy capacity of Soum-level (i.e., rural) facilities and training needs of Soum health care providers
- Procured essential oxygen therapy equipment and supplies, including 800 units of oxygen cylinders and consumables for 200 priority Soum health facilities and 45 maintenance and repair toolkits for biomedical engineers and technicians (BMETs)
- Built capacity for COVID-19 clinical management and oxygen therapy among 665 Soum-level health care providers through a cascade training approach
- Built capacity of 45 BMETs to maintain and repair medical equipment
- Developed training curriculum and technical resources on COVID-19 management and oxygen therapy in the context of primary health care in rural Mongolia

This work was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the EpiC project and do not necessarily reflect the views of USAID or the United States Government. EpiC is a global cooperative agreement (7200AA19CA00002) led by FHI 360 with core partners Right to Care, Palladium International, and Population Services International (PSI).

Strengthening oxygen ecosystems

RAPID ASSESSMENT OF OXYGEN THERAPY PREPAREDNESS OF PRIMARY HEALTH (SOUM) FACILITIES

EpiC conducted a rapid assessment of oxygen capacity at Soum-level facilities in December 2021 to determine procurement needs and inform the design of a clinical training curriculum. EpiC worked closely with a local clinical consultant from the Mongolian National University of Medical Sciences (MNUMS) to design the rapid assessment tool.

EpiC Mongolia coordinated with the health departments of 21 provinces to collect data virtually from more than 300 Soums on oxygen therapy infrastructure, demand and supply needs of specific oxygen equipment and consumables essential for COVID-19 care, challenges, and associated priority training needs. The team also conducted in-person assessments at selected Soum facilities during site visits. The rapid assessment helped to identify and rank Soum facilities in order of urgency to improve oxygen therapy capacity. The detailed assessment findings were shared with the MOH and other key stakeholders.

KEY FINDINGS OF THE RAPID ASSESSMENT OF OXYGEN THERAPY CAPACITY (DECEMBER 2021)

- In total, 16 of 21 provinces have oxygen plants to meet local oxygen needs.
- Oxygen cylinder shortages are common.
- The availability of oxygen concentrators, pulse oximeters, and selected consumables is inconsistent and varies widely between provinces. Most Soum facilities do not have specialized ambulances to transport patients and provide oxygen during transportation.
- Most Soum facilities lack health care providers trained on managing COVID-19 complications and oxygen therapy.
- COVID-19 morbidity and hospitalization rates varied widely across provinces and Soums within provinces, suggesting that the availability of trained providers, access to equipment and consumables, and other factors may be contributing to these differences.

PROCUREMENT OF ESSENTIAL EQUIPMENT AND SUPPLIES FOR OXYGEN THERAPY

To fill the gaps identified during the rapid assessment, EpiC procured 800 units of 10-liter oxygen cylinders and related consumables for Soum health facilities in September and November 2022 and held two equipment handover ceremonies. The first ceremony was held on September 9 at the conclusion of the clinical training for Soum health care providers, where a sample of the oxygen cylinders and related consumables were presented to Minister of Health Dr. S. Enkhbold by Thomas Crehan, USAID Mongolia senior development advisor. The second and final handover ceremony took place on November 2 upon the arrival of the full procurement. The handover events also were attended by leadership and officers of the Primary and Referral Health Care Division of the MOH, as well as other representatives from the U.S. Embassy in Mongolia. Officials recognized EpiC's work as contributing significantly to improving access to quality health care and patient outcomes in the country, especially for herders and other residents of remote rural areas.

The MOH passed an order on December 7, 2022, to register the equipment as part of the country's health care inventory and approve distribution to the health departments of 21 provinces. EpiC supported the delivery of the equipment across the country.

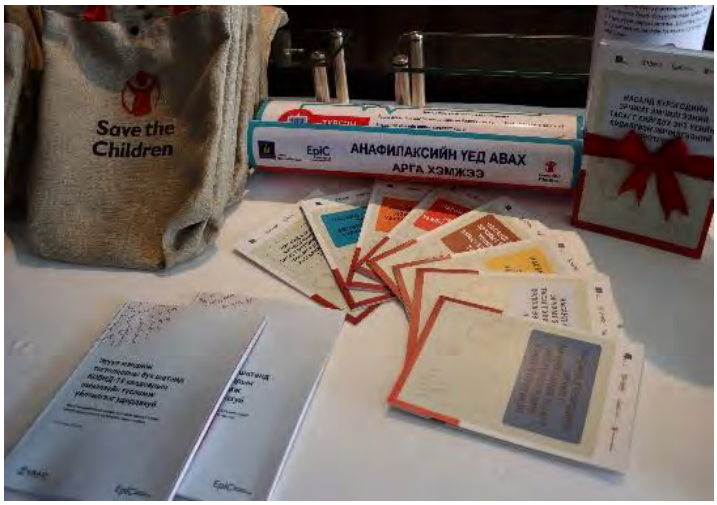
A ceremonial handover of oxygen cylinders and consumables to Mongolia's Ministry of Health is held on September 9, 2022. Photo by SCJM, Mongolia

Training on COVID-19 clinical management

DEVELOPMENT OF TRAINING CURRICULUM AND MATERIALS

EpiC Mongolia, in coordination with the MOH, created a technical working group consisting of primary health care experts and clinical consultants. The group reviewed and adapted the clinical training package developed by the technical team at EpiC headquarters to the local primary health care context. The training curriculum incorporated the latest global COVID-19 care guidelines and additional topics identified through the assessment.

Training materials translated into Mongolian included information on triage, patient referrals and transfer, emergency oxygen therapy, and safe handling of oxygen cylinders and consumables, as well as a handbook on navigating COVID-19 clinical care pathways. The materials were also reviewed and finalized by a group of master trainers at the national and provincial levels, as described in the next session. Technical materials then were printed and prepared for dissemination to primary health care providers.



Technical resources adapted for Mongolian primary health care settings included the Navigating COVID-19 Clinical Care Pathways handbook, ICU protocols, and posters. Photo by SCJM, Mongolia

USAID's support helped to take the critical and emergency care services in Soums to the next level, improving quality and access to health care for rural populations in Mongolia.

~ Dr. S. Enkhbold, Minister of Health, Mongolia

Training a multilevel cadre of master trainers and rolling out nationwide clinical workshops

The clinical TA had two goals:

1. Prepare a national cadre of master trainers at all levels of the health system
2. Roll out training workshops nationwide to ensure coverage of all Soum facilities and involve as many primary health providers as possible

To achieve these objectives, the EpiC team designed and implemented clinical training using a cascade approach.

- Referral or national level: Epic selected 23 emergency and intensive care doctors from leading teaching and tertiary referral hospitals in Ulaanbaatar with experience in primary health care to participate in a one-day orientation to become master trainers on May 11, 2022. During this orientation, participants were familiarized with the training curricula, and materials and further inputs were sought to ensure that the training aligned with the needs of providers.

- Secondary or provincial level: EpiC selected 42 emergency and intensive care clinicians, epidemiologists, internists, and primary health care administrators (two from each province) to participate in a three-day master training of trainers (TOT) workshop on June 15–17 in Ulaanbaatar. During the workshop, the trainers familiarized themselves with the training curricula and materials, their role as trainers, and the plan to cascade trainings across all 21 provinces of the country.

Dr. Yanjiv, national master trainer and emergency care doctor at the 3rd Central Hospital, Ulaanbaatar, leads a session on the use of oxygen cylinders during one of the provincial workshops. Photo credit: SCJM, Mongolia

- Primary or Soum level: Clinical trainings were conducted in 18 batches of three-day workshops between June 21 and September 9, covering 665 doctors and nurses in 21 provinces in 311 of the country's 330 Soums. The trainees (about two doctors and two nurses per Soum) represented 346 health facilities and offices, including Soum health facilities, sub-Soum level family health centers, and provincial branches of the State Emergency Committee that coordinates local COVID-19 responses. Participants received continuing medical education credits and certification as master trainers. Provincial health departments have been encouraged to expand the training to the remaining health care workforce that was unable to attend the initial workshops, having the master trainers who have already received the training facilitate the additional sessions.

The training workshops covered a range of topics related to the clinical management of COVID-19 patients at Soum level. These topics included clinical assessment; triage; provision and optimal utilization of supplemental oxygen; safe use and handling of oxygen cylinders; low and high flow oxygen therapy for COVID-19 patients and others; use of patient monitors; recognition of the need for advanced medical care, including standardized plans for transferring patients who need a higher level of care; focused assessment with sonography in trauma (FAST) abdominal ultrasound; and cardiac, and pulmonary ultrasound assessment for emergency patients.

The advantage of the project was its forward-thinking approach to ensure that activities are sustainable and comprehensive. Clinical training of trainers for primary Soum level health care providers was a unique and valuable aspect of the project. In addition, the MOH greatly appreciates providing training to biomedical equipment engineers and technicians on safety, maintenance, and repair of medical equipment.

~ Dr. G. Navchaa, Director of the Division on Primary and Referral Health Care, MOH, Mongolia

The workshops also included skills sessions where participants had the opportunity to practice and hone a range of skills related to COVID-19 patient care including handling and maintenance of oxygen cylinders and consumables, assessment and management of critical signs with monitors and defibrillators, and the use of FAST ultrasound to assess internal organs.

A pre- and post-training knowledge test showed a nearly 60 percent improvement among training workshop participants (increasing from 46.2% pre-test to 73.5% post-test). Post-training feedback collected at the end of each workshop showed high satisfaction among participants and local health authorities and highlighted the quality and practical nature of the training. Digital and printed training materials, guides, handbooks, posters, and job aids were distributed to each participating Soum facility.

Building capacity of biomedical equipment engineers and technicians (BMETs)

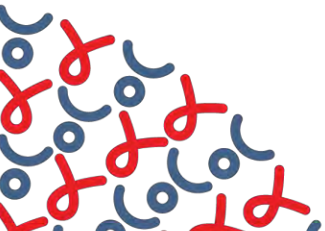
TRAINING OF TRAINERS AND CASCADE TRAINING FOR BMETS IN MONGOLIA ON REPAIR AND MAINTENANCE OF EMERGENCY CARE EQUIPMENT

During the course of the project, it was found that biomedical engineers and technicians (BMET) had limited access to the equipment, devices, and tools needed to properly maintain and repair facility medical equipment, including equipment donated by the U.S. Government. Few BMETs reported having access to test equipment such as oxygen analyzers or ventilator gauges at their hospital facilities, and none had access to electrical safety analyzers, defibrillator analyzers, patient monitor analyzers, or ventilator analyzers. In addition, BMETs reported insufficient continuing education activities compared to other health care workers, such as doctors and nurses. Many BMETs in the hospitals that received donated equipment emphasized the need for additional training that would enhance their ability to maintain, repair, and troubleshoot new equipment and technology.

To address this issue, EpiC Mongolia and Assist International developed and conducted a week-long training for BMETs in December 2022. Sixteen BMETs from hospitals in Ulaanbaatar and selected provinces were first trained as master trainers in emergency care medical equipment maintenance and repair. This was followed by a four-day intensive training of 29 BMETs from 20 provincial facilities and nine Ulaanbaatar district hospitals. Master trainers led the sessions, with coaching from experts at Assist International.

The training program for BMETs primarily focused on maintenance and repair of patient monitors, defibrillators, and anesthesia machines. At the request of MMRA, the training also covered topics on technology management such as scheduling maintenance, establishing an inventory, and forecasting budgets.

The course consisted of approximately 50 percent didactic or theoretical lecture and assessment and 50 percent hands-on practice with equipment. Assist International's presentations, troubleshooting guides, and resources were made available through an online learning management system.



Participants reported high levels of satisfaction with the training, stating that the content was valuable and relevant to their work. Participants indicated a clear need for ongoing capacity building activities. The most requested training topics were maintenance and prevention of damage to equipment, updates on new equipment entering the health care field, standardization of medical equipment maintenance, operation of clinical medical equipment, medical oxygen safety, and medical oxygen plant operation.

It was a productive and valuable training that increased our knowledge and skills on maintenance and repair of critical care equipment and devices essential for COVID-19 management. I found most valuable the combined theory and practical applications sessions. The COVID-19 epidemic in the country highlighted the importance of ongoing technical training for biomedical technicians as hospitals received new equipment to manage patients.

~ B. Gan-Erdene, Biomedical Engineer, Regional and Diagnostic Treatment Center, Umnugovi Province

Dr. Gunalan Daas, a BME expert from Assist International, leads a practical session at the BMETs training in December. Photo by Assist International

Other highlights

EpiC supported the Mongolian National University of Medical Sciences to develop and present a poster titled "Predictors of COVID-19 Mortality among ICU patients in Mongolia: A Single Center Retrospective Observational Study" at the International Conference on Nursing in Dublin, Ireland, August 21–24, 2022.