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Qatar ECMO program: Past, present, and future

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The clarion call for setting up a Qatar adult extracorporeal membrane oxygenation (ECMO) program came during the MERS-CoV outbreak in the Arabian Peninsula region.[1] This carried a high mortality rate in those presenting with severe respiratory failure, and recent data from the "CESAR Trial" showed that treatment in a severe respiratory failure center with ECMO capabilities improved severe respiratory failure (SRF) patient survival.[2]

Owing to the regional novelty of the program, potential partners of external well-established ECMO programs were sought. The model of care hinged on medical versus surgical ECMO delivery. The balance tipped in favor of a medical model in view of the prevailing nature of the pandemic outbreak at the time. There is plenty of evidence demonstrating that the intensivist-led ECMO cannulation model is safe.[3] The commissioning body also favored the notion of a severe respiratory failure outreach and retrieval service, delivered round-the-clock with the provision of on-site cannulation for ECMO and transportation thereafter.[4,5] In early 2013, an ECMO partnership with a UK-based academic healthcare system was established with the view to train and initially mirror the UK-based ECMO program with subsequent tailoring and localization to fit the local need in Qatar. Team members were chosen locally, who were physicians, nurses, perfusionists, respiratory therapists, nutritionists, pharmacists, physiotherapists, and critical care paramedics.[6] These underwent ECMO (VV modality) simulation and hands-on training in London as well as cadaveric cannulation training in Berlin, Germany. After extensive training abroad, the team members returned to Qatar where further training through simulation was carried out.[7] This was supervised and signed off by the UK-based ECMO center. In April 2014, the first case qualifying for ECMO due to severe respiratory failure was treated at the Hamad Medical Corporation (HMC) ECMO center. Through the rest of 2014, the center was treating

one patient per month. The survival rate was 100%. The first ECMO retrieval occurred in October 2014. This was carried with no recorded incidents. The year 2015 saw ECMO team size expansion and consolidation through in-house simulation courses and the HMC ECMO center joining ELSO. By the end of 2015, the center had treated 25 patients with a recorded survival rate of 70%. The year 2016 witnessed the introduction of VA ECMO modality, and the first aeromedical ECMO transfer occurred in June that year. Towards the end of 2016, the center began an ECMO fellowship program and registered its participation in multicenter ECMO trials. By the end of 2016, the center had carried out 50 runs of ECMO, with 10 patients dying while on ECMO (20% mortality). The ECMO patient survival to ICU discharge was 70% and to hospital survival was 68%. The future direction of the HMC ECMO program is to play a role of an adult regional center of excellence with not only land,[8] but also aeromedical transport capability, and to consolidate on ECMO education and training, through simulation courses, for both static and transport modalities.[7] Other future directions are, through local partnership, build on pediatric and cardiac ECMO, to introduce neonatal ECMO programs.

Keywords: ARDS, extracorporeal membrane oxygenation, ECMO, Qatar, SRF

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