# Building a Pediatric ECMO Program Through Regional Collaboration: 18 months Outcomes of a Hub-and-Spoke Model in Brazil


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**Background**: Limited access to experienced extracorporeal membrane oxygenation (ECMO) centers remains a major barrier to the expansion of pediatric and neonatal ECMO programs. Regional collaborative models incorporating telemedicine, standardized protocols, and continuous mentorship may facilitate the safe implementation of new ECMO programs while maintaining high standards of care.

**Objectives**: To evaluate the implementation process and 18-month clinical outcomes of a pediatric and neonatal ECMO program established through a regional hub-and-spoke collaboration between tertiary hospitals in Rio de Janeiro, Salvador and an experienced ECMO referral center in São Paulo.



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**Methods**: A pediatric and neonatal ECMO program was implemented at two tertiary hospitals using a structured hub-and-spoke model, while implementing at a third one. Program development included standardized clinical protocols, multidisciplinary education, high-fidelity simulation training, regular case reviews, and scheduled teleconferences providing real-time expert consultation. Patient demographics, ECMO indications, support modalities, and clinical outcomes during the first 18 months were retrospectively reviewed.

**Results**: Thirty five pediatric and neonatal patients received ECMO support during the 18-months following program implementation. Indications included severe respiratory failure, cardiogenic shock, and congenital diaphragmatic hernia. Clinical decision-making was supported through continuous multidisciplinary collaboration between the local teams and the referral center. Survival to hospital discharge was 69% (24/35 patients). The program successfully established local ECMO capability while maintaining adherence to evidence-based practices through standardized protocols and remote expert oversight. Ongoing multidisciplinary case conferences promoted continuous quality improvement, protocol optimization, and progressive team competency.

**Conclusion**: A regional hub-and-spoke model integrating telemedicine, structured education, standardized protocols, and expert mentorship enabled the successful implementation of a pediatric and neonatal ECMO program with favorable first 18 months outcomes. This collaborative strategy represents a scalable framework for expanding access to high-quality ECMO care in regions with limited local expertise and may facilitate the development of sustainable pediatric ECMO networks.

**References**


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