

A TRAINING NEEDS ANALYSIS FOR THE SIMULATION BASED TRAINING OF EXTRACORPOREAL LIFE SUPPORT SIMULATORS

Fay Claybrook (ET-EOST), Marleen Groenier (TNW-EDU-TG), Wytze Duinmeijer (ET-EOST), Jutta Arens (ET-EOST), Frank Halfwerk (ET-EOST)

1. Introduction

In critical cases of pulmonary and cardiac failures, extracorporeal life support (ECLS, also referred to as 'Extracorporeal Membrane Oxygenation' (ECMO)), is used as a last resort therapy treatment. Complications remain with ECLS even with the increase in cases/centres (1). Complications such as bleeding and infections are associated with higher risk of mortality (2-4).

2. Objectives

Simulation based educational methods place the trainee into real-life situations about complex decision-making skills. Technical skills can increase on high-fidelity ECLS models, yet there is no high-fidelity simulator (1). The Educational ECMO (EduECMO) will close the gap of high-fidelity simulators, firstly with assessing training requirements.

The aim of this research is for the evaluation of expert needs to optimise the design of EduECMO for clinical and training outcome.

3. Methods

A training needs analysis, in line with INACSL standards of best practice (5), was conducted via an online survey to ECLS experts. The study was approved by the University of Twente Ethics Committee (UT-NES 230117)

4. Results

*The professionals varied from different volume ECLS centres. Overall ECLS simulation experience was 83% with 34% having further assessment after initial training. A unanimous consensus of 100% stated the requirement of one patient characteristic (e.g. BMI or ethnicity). **The most important factor for both basic and complete ECLS training was hemodynamics (70 – 75%), and the least circuit decannulation (36 – 52%).***

5. Conclusion

The implementation of the requirements, indicated by professionals, for a high-fidelity ECLS simulator could enhance the procedural accuracy and fewer complications with the translation of the procedure into real-life interventions.

6. References

1. Duinmeijer WC, Fresiello L, Swol J, Torrella P, Riera J, Obreja V, et al. Simulators and Simulations for Extracorporeal Membrane Oxygenation: An ECMO Scoping Review. *Journal of Clinical Medicine*. 2023;12(5).
2. Ranucci M, Pistuddi V, Carboni G, Cotza M, Ditta A, Boncilli A, et al. Effects of priming volume reduction on allogeneic red blood cell transfusions and renal outcome after heart surgery. *Perfusion*. 2015;30(2):120-6.
3. Nunez JI, Gosling AF, O'Gara B, Kennedy KF, Rycus P, Abrams D, et al. Bleeding and thrombotic events in adults supported with venovenous extracorporeal membrane oxygenation: an ELSO registry analysis. *Intensive Care Med*. 2022;48(2):213-24.
4. Organization ELS. ELSO Registry International Summary. 2024.
5. Sittner BJ, Aebersold ML, Paige JB, Graham LL, Schram AP, Decker SI, et al. INACSL Standards of Best Practice for Simulation: Past, Present, and Future. *Nurs Educ Perspect*. 2015;36(5):294-8.