VENOARTERIAL EXTRACORPOREAL MEMBRANE OXYGENATION (VA-ECMO) FOR PATIENTS IN SHOCK OR CARDIAC ARREST SECONDARY TO CARDIOTOXICANT POISONING: A COST-EFFECTIVENESS ANALYSIS

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Introduction: A recent systematic review of treatments for patients with a type of cardiotoxicant poisoning revealed that venoarterial extracorporeal membrane oxygenation (VA-ECMO) was one of the most strongly supported interventions in the literature.

Objectives: The objective of this cost-effectiveness analysis was to assess the incremental cost-effectiveness ratio (ICER) of using VA-ECMO for adults in cardiotoxicant-induced shock or cardiac arrest compared to standard care.

Methods: Adults in shock or in cardiac arrest secondary to cardiotoxicant poisoning treated in Canadian tertiary centres providing VA-ECMO were studied with a lifetime horizon and a societal perspective. VA-ECMO cost-effectiveness was calculated using a decision analysis tree. The effect of the intervention and the probabilities used in the decision model were taken from an observational study identified by a systematic review as being the highest level of evidence available. The costs in 2013 Canadian dollars ($1.00CDN = $0.9562US) were documented with interviews, questionnaires, consultation of official provincial documents or published articles. A series of one-way sensitivity analysis and a probabilistic sensitivity analysis using a Monte Carlo simulation were used to evaluate uncertainty in the decision model.

Results: The cost per life-year gained (LY) in the VA-ECMO group was $145,931/18LY compared to $88,450/10LY in the non-ECMO group. The ICER ($7,185/LY but $34,311/LY using a more pessimistic approach) was mainly influenced by the probability of survival. The probabilistic sensitivity analysis identified an increase in cost with a variable increase in effectiveness.

Conclusion: This analysis suggests that VA-ECMO may be cost-effective in treating cardiotoxicant poisonings.