

Development of Inclusion and Exclusion Criteria for ECPR in a Regional Hospital

D Rollo, P Atkinson, J Fraser, J Mekwan, J French, J Middleton, S Lutchmedial

Introduction

Extracorporeal cardiopulmonary resuscitation (ECPR), a method of cardiopulmonary bypass, is increasingly being used to supplement traditional CPR to improve outcomes for cardiac arrest (CA). CA and particularly out of hospital CA (OHCA) have poor outcomes. Prior to development of a 3 phase ECPR program in a Canadian regional hospital, we wished to identify and optimize a practical selection process (inclusion and exclusion criteria) for patients who may benefit from ECPR.

Methods

Using a locally modified Delphi technique, we followed a literature review to construct a proposed set of evidence based criteria with a questionnaire, where inclusion and exclusion criteria were scored by a selected group of 13 experts. Following 3 rounds, and additional review by an international expert in the field of ECPR, consensus was achieved for patient selection criterion.

Results

First round responses achieved $\geq 87.5\%$ agreement for selection of exclusion criteria. Inclusion criteria had agreement $\geq 62.5\%$. Responses to the second round for selection of inclusion criteria were unanimous at 100% with the exception of age parameters (<65 years vs. <70 years). The third and final set of criteria achieved 100% consensus though subsequent expert review refined a single exclusion criteria (asystole). Agreed inclusion criteria were: witnessed CA, age <70, refractory arrest, no flow time <10min, total downtime <60min, and a cardiac or select non-cardiac etiology (PE, drug OD, poisoning, hypothermia). Exclusion criteria were : unwitnessed arrest, asystole, certain etiologies (uncontrolled bleeding, irreversible brain damage, trauma), and comorbidities (severe disability limiting ADLs, standing DNR, palliation). Simplified criteria for EMS transport included witnessed OHCA, age, and no flow time.

Conclusion

Selection criteria of candidates for ECPR are important components for any program. Expert consensus review of current evidence is an effective method for development of ECPR selection criteria.