Potential Candidates for Emergency Department (ED) Initiated Extracorporeal Cardiopulmonary Resuscitation (ECPR) in a Canadian Institution

***J Gould**, G Kovacs, J Goldstein, A Travers, J Swain, P Atkinson, J Mekwan, A Carter*

Introduction

Out of hospital cardiac arrest (OHCA) has historically held a survival rate of 3-10%. The use of veno-arterial extracorporeal membrane oxygenation (VA-ECMO) in the setting of cardiac arrest, termed extracorporeal cardiopulmonary resuscitation (ECPR), has shown promise in improving survival with good neurologic outcome to 30-40%. Our study objective is to determine the number of potential annual ECPR candidates amongst the OHCA population in our Atlantic Canadian health region. This serves as a needs assessment to guide establishment of an Emergency Department (ED) ECPR program in Halifax, Nova Scotia.

Methods

We are conducting a retrospective chart review over a 5-year period: Jan 1st 2012-December 31st 2016. All consecutive OHCA and ED cardiac arrest occurring in a pre-determined catchment area within our health region were identified. This area was defined using a square geographic coordinate bounding box, the perimeter of which is an estimated 20-minute transport time to our ECMO center (Halifax, Nova Scotia). A hypothetical set of ECPR criteria were developed to identify potential candidates: (1) age 16-70 (2) witnessed arrest (3) CPR within 10 minutes of arrest, (4) refractory to conventional treatment, (5) transport time <20 minutes to ECMO center, (6) non-traumatic, and (7) no known do-not-resuscitate status. For all cases, clinical data related to candidacy was extracted by electronic query from prehospital and ED electronic records.

Results

Our search resulted in 575 OHCA, and 414 in ED cardiac arrests for a total of 989 cases. A database was built to collect all clinical data obtained by data query. Any clinical data not available by electronic query is currently pending collection by manual chart review.

Conclusions

Complete data collection and final analysis is pending. The existing literature suggests a 5-10% ECPR candidacy rate using similar criteria. Therefor our preliminary results would suggest that, for this population, Halifax, Nova Scotia could expect 10-20 candidates annually for an ED-ECPR program.