



Improving Outcomes from Pre-hospital and Emergency Care across the Asia-Pacific

STUDY PROPOSAL REQUEST FORM

Please complete the form and email to PAROS secretariat at paros.secretariat@yahoo.com by the stipulated date. You will be notified in due time on whether your study has been accepted for presentation.

1. BASIC INFORMATION

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2. TYPE OF REQUEST (Please select one)

New Study Proposal (initial)

Secondary Analyses

Explanatory Analyses

3. STUDY TITLE

Place-Provider Matrix and Time Interval to Initiation of Cardiopulmonary Resuscitation and Defibrillation After Out-of-hospital Cardiac Arrest

4. ABSTRACT OF STUDY PROPOSAL

In **no more than 350 words**, describe the study under the given headings below.

Objectives/Hypotheses

Rapid cardiopulmonary resuscitation (CPR) and defibrillation is the first procedures of resuscitation after out-of-hospital cardiac arrest (OHCA). Public education of CPR and Public access defibrillation (PAD) program are the most important community interventions to convey these procedures immediately. Despite of encouragement of bystander CPR, some places have more limitations to achieve high bystander CPR rate due to lack of trained persons, fear about low quality CPR, and fear about legal liability. PAD programs also have argued on cost-effectiveness because of lack of scientific evidences on deployment priority of PAD except recent geospatial analysis. To increase faster CPR and defibrillation, a more customized strategy according to places of the event would be developed. First responder system activating professional safety providers like firefighters, guards, and policeman has been an alternative novel strategy to achieve faster CPR and defibrillation, and is regarded as a basement level of emergency medical service (EMS) systems in North America. However, most Asian communities have few systemic programs to activate professional first responders due to lower recognition of benefit, political issues, administrative priority, and economic burden. Our hypothesis is that places-provider matrix (PPM) has different effect on the time interval to initiation of CPR/defibrillation. Some places which have lower layperson CPR rate and limited accessibility to first defibrillation has greater benefit by first responder while some places by layperson. In particular, private place which has low survival rate but evolving major portions in places can be considered to be potential candidates for implementing the first responder program. This study aims to compare the time interval of first CPR and defibrillation after OHCA by the PPM and to determine the effect of the matrix on the survival outcomes after OHCA.

Methodology

EMS-treated OHCA patients with cardiac etiology will be analyzed in PAROS and CARES data (2010 to 2012). Patients witnessed by EMS providers, occurred during ambulance transport, and not transported by ambulance to hospital will be excluded. Main exposure is provider-place matrix; first CPR/defibrillation providers (first responder, family, layperson, and EMS crew) with stratification by places (home residence, healthcare facility, public/commercial building, nursing home, street/highway, industrial place, transport center, place of recreation,

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and other places). Primary outcomes are time intervals from call EMS to initiation of CPR and first defibrillation. Secondary outcomes are any return of spontaneous circulation, survival to admission and to discharge. Potential confounders such as age, gender, co-morbidity, date/time variable of the event, and primary ECG will be adjusted for primary outcomes. Response time, transport time, airway management will be additionally adjusted for secondary outcomes. The multi-level survival analysis using Cox-proportional hazard regression models for primary outcome and multi-level logistic regression analysis for secondary outcomes will be used to calculate effect size. A city or community variable will be used as an aggregate level data.

Significance of the study

From this comparison of the effect of PPM using multinational, multicenter data, we can benchmark the system design on first responder model to convey faster CPR/defibrillation. If we can find more effective places among PPM, we can recommend a new customized strategy of first responder program as well as encouraging bystander CPR and PAD program.

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