STUDY PROPOSAL REQUEST FORM

Please complete the form and email to PAROS secretariat at patricia.tay@scri.cris.sg by the stipulated date. You will be notified in due time on whether your study has been accepted for presentation.
Reminder: Please check the list of existing proposals and publications from
http://www.scri.edu.sg/crn/pan-asian-resuscitation-outcomes-study-paros-clinical-research-network-crn/paros-publications/ to avoid duplications of proposals. Abstract and manuscript must be sent to PAROS chairs for approval before submission for presentation/publication.

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

Developing a Time-Adaptive Prediction Model for Out-of-Hospital Cardiac Arrest: using PARSOS data

4. ABSTRACT OF STUDY PROPOSAL

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

Objectives
Out-of-hospital cardiac arrest (OHCA) is a serious public health issue, and predicting the prognosis of OHCA patients can assist clinicians in making decisions about the treatment of patients, use of hospital resources, or termination of resuscitation. Based on the concept of the time-adaptive cohort, we would like to compare the prediction probability with the conventional model to demonstrate the possibility of predicting patients' clinical outcomes every minute during cardiopulmonary resuscitation (CPR).

Methodology
We want to performed a retrospective observational study using data from the PAROS. To develop the time-adaptive prediction model, we organized the training data set as ongoing CPR patients by the minute. We will compare several results such as random forest, LightGBM, and artificial neural networks as the prediction model methods. Model performance will be quantified using the prediction probability of the model, area under the receiver operating characteristic curve (AUROC), and area under the precision recall curve.
  Unlike with other models, this reflects the real environment using a time-adaptive cohort. We will make the time-adaptive cohort from one big registry by censoring the data. Censoring will be used when time-to-event information is not available such as in clinical trials or survival analysis in cancer treatment., we will try to create the discriminative models by censoring the patients whose status was determined by the minute.

Significance of the study

We have already developed a similar model with our center (Samsung Medical Center) and published it in JMIR Medical informatics in 2021 (https://www.jmir.org/2021/7/e28361). In this study, prediction of best performance model shows, in predicting good neurological outcomes ranged from 0.910 (95% CI 0.910-0.911), whereas that for survival to hospital discharge ranged from 0.800 (95% CI 0.797-0.800). We believe that we can build a better prediction model with a multicenter, worldwide database.

In addition, we might be able to build a model for each country by analyzing feature importance or other relevant factors which are related to outcomes by each country.

For Official Use (Assessor only)

(A) Score (please highlight the appropriate score):

1	2	3	4	5	6	7	8	9	10

Unfavourable *Favourable*

(B) Comments (free text):

GUIDELINES FOR PREPARING NEW PROPOSAL PRESENTATION

If your study proposal has been accepted for presentation, you will be notified by the Secretariat. Please prepare your presentation slides in accordance to the following instructions. Each presenter is given 10 minutes to present (8min presentation + 2min Q&A).

General Instructions

1. Presentation must include the following sections:
   a. Introduction
   b. Objectives/Hypotheses
   c. Methodology
   d. Significance

2. Limit total number of slides to not more than 12. The following are the recommended number of slides for each section.
   a. Introduction – maximum of 2 slides
   b. Objectives/Hypotheses – maximum of 2 slides
   c. Methodology – maximum of 6 slides
   d. Significance – maximum of 2 slides

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

3. Try to use big fonts and contrasting colours to increase readability e.g.
   a. Black/dark blue font against white background
   b. White/yellow font against black background
   c. Black font against blue background

For any enquiries, please contact PAROS secretariat at patricia.tay@scri.cris.sg