Supplementary Table 1. Key information of the included original articles.

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| No | Author | Title | Journal | Publication year | Included CA group | Category |
| 1 | Aaron J. Donoghue *et al*. [1] | Cardiopulmonary resuscitation for in-hospital events in the emergency department: A comparison of adult and pediatric outcomes and care processes | Resuscitation | 2015 | EDCA | 1 |
| 2 | Alina Toma *et al*. [2] | Perceived barriers to therapeutic hypothermia for patients resuscitated from cardiac arrest: a qualitative study of emergency department and critical care workers | Critical Care Medicine | 2010 | OHCA+EDCA | 3 |
| 3 | Amy L. Valderrama *et al*. [3] | Cardiac arrest patients in the emergency department-National Hospital Ambulatory Medical Care Survey, 2001-2007 | Resuscitation | 2011 | OHCA+EDCA | 1 |
| 4 | An-Yi Wang *et al*. [4] | Peri-arrest Modified Early Warning Score (MEWS) predicts the outcome of in-hospital cardiac arrest | Journal of the Formosan Medical Association | 2015 | EDCA | 2 |
| 5 | Babith Mankidy *et al*. [5] | Reduction of in-hospital cardiac arrest with sequential deployment of rapid response team and medical emergency team to the emergency department and acute care wards | PLoS One | 2020 | EDCA+IHCA | 3 |
| 6 | Cássia Regina Vancini-Campanharo *et al*. [6] | Characterization of cardiac arrest in the emergency department of a Brazilian University Reference Hospital: A prospective study  | The Indian Journal of Medical Research | 2016 | OOCA+EDCA | 1 |
| 7 | Cássia Regina Vancini-Campanharo1 *et al*. [7] | One-year follow-up of neurological status of patients after cardiac arrest seen at the emergency room of a teaching hospital | Einstein | 2015 | OHCA+EDCA | 1 |
| 8 | Chin Siah Lim *et al*. [8] | Is bispectral index (BIS) monitoring in the emergency department helpful for prognostication during resuscitation of cardiac arrest patients? | Proceedings of Singapore Healthcare | 2015 | OHCA+EDCA | 1 |
| 9 | Chung-Ting Chen *et al*. [9] | Prognostic factors for survival outcome after in-hospital cardiac arrest: An observational study of the oriental population in Taiwan | Journal of the Chinese Medical Association | 2015 | EDCA+IHCA | 1 |
| 10 | Dong-Hyun Jang *et al*. [10] | Developing neural network models for early detection of cardiac arrest in emergency department | American Journal of Emergency Medicine | 2019 | EDCA+IHCA | 2 |
| 11 | Erin F. Hoehn *et al*. [11] | Peri-Intubation Cardiac Arrest in the Pediatric Emergency Department: A Novel System of Care | Pediatric Quality and Safety | 2020 | EDCA | 3 |
| 12 | Filiz Baloglu Kaya *et al*. [12] | Comparison of manual and mechanical chest compression techniques using cerebral oximetry in witnessed cardiac arrests at the emergency department: A prospective, randomized clinical study | American Journal of Emergency Medicine | 2020 | EDCA | 3 |
| 13 | Fu-Yuan Siao *et al*. [13] | Managing cardiac arrest with refractory ventricular fibrillation in the emergency department: Conventional cardiopulmonary resuscitation versus extracorporeal cardiopulmonary resuscitation | Resuscitation | 2015 | OHCA+EDCA | 3 |
| 14 | Georgescu V *et al*. [14] | Traumatic cardiac arrest in the emergency department - Overview upon primary causes | Journal of Medicine and Life | 2014 | EDCA | 1 |
| 15 | German Devia Jaramillo *et al*. [15] | Rhythms and prognosis of patients with cardiac arrest, emphasis on pseudo-pulseless electrical activity: another reason to use ultrasound in emergency rooms in Colombia | International Journal of Emergency Medicine | 2020 | OHCA+EDCA | 3 |
| 16 | H.-J. Busch *et al*. [16] | Safety and feasibility of nasopharyngeal evaporative cooling in the emergency department setting in survivors of cardiac arrest | Resuscitation | 2010 | OHCA+EDCA | 3 |
| 17 | Hannah M. Preston *et al*. [17] | A description of echocardiography in life support use during cardiac arrest in an Emergency Department before and after a training programme | European Journal of Emergency Medicine | 2015 | OHCA+EDCA | 3 |
| 18 | Hiroshi Okamoto *et al*. [18] | Comparison of video laryngoscopy versus direct laryngoscopy for intubation in emergency department patients with cardiac arrest: A multicentre study | Resuscitation | 2018 | OHCA+EDCA | 3 |
| 19 | Inyong Kim *et al*. [19] | Use of the National Early Warning Score for predicting in-hospital mortality in older adults admitted to the emergency department | Clin Exp Emerg Med | 2020 | EDCA+IHCA | 2 |
| 20 | J. Zwingmann *et al*. [20] | Outcome and predictors for successful resuscitation in the emergency room of adult patients in traumatic cardiorespiratory arrest | Critical Care | 2016 | OHCA+EDCA | 1 |
| 21 | Jiang Cheng *et al*. [21] | Improving cardiopulmonary resuscitation in the emergency department by real-time video recording and regular feedback learning | Resuscitation | 2010 | OHCA+EDCA | 3 |
| 22 | June-sung Kim *et al*. [22] | Maximum emergency department overcrowding is correlated with occurrence of unexpected cardiac arrest | Critical Care | 2020 | EDCA | 4 |
| 23 | June-sung Kim *et al*. [23] | Prolonged Length of Stay in the Emergency Department and Increased Risk of In-Hospital Cardiac Arrest: A nationwide Population-Based Study in South Korea, 2016–2017 | Journal of Clinical Medicine | 2020 | EDCA+IHCA | 2 |
| 24 | Kap Su Han *et al*. [24] | Experience of extracorporeal cardiopulmonary resuscitation in a refractory cardiac arrest patient at the emergency department | Clinical Cardiology | 2019 | OHCA+EDCA | 3 |
| 25 | Kumpol Amnuaypattanapon *et al*. [25] | Evaluation of related factors and the outcome in cardiac arrest resuscitation at Thammasat Emergency Department  | Journal of the Medical Association of Thailand | 2010 | OHCA+EDCA | 2 |
| 26 | Li-Heng Tsai *et al*. [26] | Association of patient-to-emergency department staff ratio with the incidence of cardiac arrest: A retrospective cohort study | Surgery Signa Vitae | 2021 | EDCA | 2 |
| 27 | Mallika R. Singh *et al*. [27] | Barriers to point-of-care ultrasound utilization during cardiac arrest in the emergency department: a regional survey of emergency physicians | American Journal of Emergency Medicine | 2021 | OHCA+EDCA | 3 |
| 28 | Marcus Eng Hock Ong *et al*. [28] | A randomised, double-blind, multi-centre trial comparing vasopressin and adrenaline in patients with cardiac arrest presenting to or in the Emergency Department | Resuscitation | 2012 | OHCA+EDCA | 3 |
| 29 | Marcus Eng Hock Ong *et al*. [29] | Prediction of cardiac arrest in critically ill patients presenting to the emergency department using a machine learning score incorporating heart rate variability compared with the modified early warning score | Critical Care | 2012 | EDCA+IHCA | 2 |
| 30 | Micheal Blaivas *et al*. [30] | Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echocardiogram | Academic Emergency Medicine | 2001 | OHCA+EDCA | 3 |
| 31 | Michael D. April *et al*. [31] | Peri-intubation cardiac arrest in the Emergency Department: A National Emergency Airway Registry (NEAR) study | Resuscitation | 2021 | EDCA | 3 |
| 32 | Nan Liu *et al*. [32] | Prediction of adverse cardiac events in emergency department patients with chest pain using machine learning for variable selection | BMC Medical Informatics and Decision Making | 2014 | EDCA+IHCA | 2 |
| 33 | Nancy Mikati *et al*. [33] | Data-driven classification of arrest location for emergency department cardiac arrests in the USA | Resuscitation | 2020 | OHCA+EDCA+IHCA | 1 |
| 34 | Nicholas J. Johnson *et al*. [34] | Emergency department factors associated with survival after sudden cardiac arrest | Resuscitation | 2012 | OHCA+EDCA | 1 |
| 35 | Nicholas Pokrajac *et al*. [35] | Risk Factors for Peri-intubation Cardiac Arrest in a Pediatric Emergency Department | Pediatr Emerg Care | 2020 | EDCA | 3 |
| 36 | Pandian, G.R., *et al*. [36] | Profile and outcome of sudden cardiac arrests in the emergency department of a tertiary care hospital in South India | Journal of Emergencies Trauma and Shock | 2016 | OHCA+EDCA | 1 |
| 37 | Paul R. Atkinson *et al*. [37] | Do Electrocardiogram Rhythm Findings Predict Cardiac Activity During a Cardiac Arrest? A Study from the Sonography in Cardiac Arrest and Hypotension in the Emergency Department (SHoC-ED) Investigators | Cureus | 2018 | OHCA+EDCA | 3 |
| 38 | Robert G. Kayser *et al*. [38] | Cardiac arrest in the Emergency Department: a report from the National Registry of Cardiopulmonary Resuscitation | Resuscitation | 2008 | EDCA | 1 |
| 39 | Romolo Gaspari *et al*. [39] | Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest | Resuscitation | 2016 | OHCA+EDCA | 3 |
| 40 | Roshini Ravindran *et al*. [40] | Cardiac arrest and related mortality in emergency departments in the United States: Analysis of the nationwide emergency department sample | Resuscitation | 2020 | OHCA+EDCA | 1 |
| 41 | Sang Bong Lee *et al*. [41] | Emergency Department Triage Early Warning Score (TREWS) predicts in-hospital mortality in the emergency department | American Journal of Emergency Medicine | 2020 | EDCA+IHCA | 2 |
| 42 | Sang Jin Han *et al*. [42] | Predictors of survival following extracorporeal cardiopulmonary resuscitation in patients with acute myocardial infarction-complicated refractory cardiac arrest in the emergency department: a retrospective study | Journal of Cardiothoracic Surgery | 2015 | OHCA+EDCA | 3 |
| 43 | Sing C. Tan *et al*. [43] | Cardiac arrests within the emergency department: an Utstein style report, causation and survival factors | European Journal of Emergency Medicine | 2018 | EDCA | 1 |
| 44 | Su Yeong Pyo *et al*. [44] | Impact of the modified SESAME ultrasound protocol implementation on patients with cardiac arrest in the emergency department | American Journal of Emergency Medicine | 2021 | OHCA+EDCA | 3 |
| 45 | Sungjun Hong *et al*. [45] | Prediction of Cardiac Arrest in the Emergency Department Based on Machine Learning and Sequential Characteristics: Model Development and Retrospective Clinical Validation Study | JMIR Med Inform | 2020 | EDCA | 2 |
| 46 | Surendar Ravipragasam *et al*. [46] | Survival to discharge after in-hospital cardiac arrest at emergency department and its associated factors: A prospective observational study | Journal of Acute Disease | 2019 | EDCA | 1 |
| 47 | Tianchi Liu *et al*. [47] | Manifold ranking based scoring system with its application to cardiac arrest prediction: A retrospective study in emergency department patients | Computers in Biology and Medicine | 2015 | EDCA+IHCA | 2 |
| 48 | Han *et al*. [48] | Validation of different score systems in predicting cardiac arrest occurrence of ST-elevation myocardial infarction  | Hong Kong Journal of Emergency Medicine | 2017 | EDCA+IHCA | 2 |
| 49 | Winchana Srivilaithon *et al*. [49] | Predictors of in-hospital cardiac arrest within 24 h after emergency department triage: A case-control study in urban Thailand | Emergency Medicine Australasia | 2019 | EDCA+IHCA | 2 |
| 50 | Winchana Srivilaithon *et al*. [50] | The Outcomes of Targeted Temperature Management after Cardiac Arrest at Emergency Department: A Real-World Experience in a Developing Country | Therapeutic Hypothermia and Temperature Management | 2016 | OHCA+EDCA | 3 |
| 51 | Won Young Kim *et al*. [51] | Factors associated with the occurrence of cardiac arrest after emergency tracheal intubation in the emergency department | PLoS ONE | 2014 | EDCA | 3 |
| 52 | Yu-Hsin Chang *et al*. [52] | Association of sudden in-hospital cardiac arrest with emergency department crowding | Resuscitation | 2019 | EDCA | 4 |

Category- 1: Epidemiology and prognosis; 2: Prediction and risk factors; 3: Skill related; 4: ED overcrowdedness.

OHCA, Out-of-Hospital Cardiac Arrest; IHCA, In-Hospital Cardiac Arrest; EDCA, Emergency Department Cardiac Arrest.

References

[1] Donoghue AJ, Abella BS, Merchant R, Praestgaard A, Topjian A, Berg R, et al. Cardiopulmonary resuscitation for in-hospital events in the emergency department: a comparison of adult and pediatric outcomes and care processes. Resuscitation. 2015 92: 94–100.

[2] Toma A, Bensimon CM, Dainty KN, Rubenfeld GD, Morrison LJ, Brooks SC. Perceived barriers to therapeutic hypothermia for patients resuscitated from cardiac arrest: a qualitative study of emergency department and critical care workers. Critical Care Medicine. 2010; 38: 504–509.

[3] Valderrama AL, Fang J, Merritt RK, Hong Y. Cardiac arrest patients in the emergency department-National Hospital Ambulatory Medical Care Survey, 2001–2007. Resuscitation. 2011; 82: 1298–1301.

[4] Wang A, Fang C, Chen S, Tsai S, Kao W. Periarrest Modified Early Warning Score (MEWS) predicts the outcome of in-hospital cardiac arrest. Journal of the Formosan Medical Association. 2016; 115: 76–82.

[5] Mankidy B, Howard C, Morgan CK, Valluri KA, Giacomino B, Marfil E, et al. Reduction of in-hospital cardiac arrest with sequential deployment of rapid response team and medical emergency team to the emergency department and acute care wards. PLoS ONE. 2020; 15: e0241816.

[6] Vancini-Campanharo CR, Vancini RL, de Lira CAB, Andrade MDS, Lopes MCBT, Okuno MFP, et al. Characterization of cardiac arrest in the emergency department of a Brazilian University Reference Hospital: a prospective study. The Indian Journal of Medical Research. 2016; 144: 552–559.

[7] Vancini-Campanharo CR, Vancini RL, de Lira CAB, Lopes MCBT, Okuno MFP, Batista REA, et al. One-year follow-up of neurological status of patients after cardiac arrest seen at the emergency room of a teaching hospital. Einstein. 2015; 13: 183–188.

[8] Lim CS, Koh JYL, Ng WY, Shahidah N, Ong MEH. Is bispectral index (BIS) monitoring in the emergency department helpful for prognostication during resuscitation of cardiac arrest patients? Proceedings of Singapore Healthcare. 2016; 25: 152–157.

[9] Chen C, Chiu P, Tang C, Lin Y, Lee Y, How C, et al. Prognostic factors for survival outcome after in-hospital cardiac arrest: an observational study of the oriental population in Taiwan. Journal of the Chinese Medical Association. 2016; 79: 11–16.

[10] Jang D, Kim J, Jo YH, Lee JH, Hwang JE, Park SM, et al. Developing neural network models for early detection of cardiac arrest in emergency department. The American Journal of Emergency Medicine. 2020; 38: 43–49.

[11] Hoehn EF, Dean P, Lautz AJ, Frey M, Cabrera-Thurman MK, Geis GL, et al. Peri-Intubation Cardiac Arrest in the Pediatric Emergency Department: A Novel System of Care. Pediatric Quality & Safety. 2020; 5: e365.

[12] Baloglu Kaya F, Acar N, Ozakin E, Canakci ME, Kuas C, Bilgin M. Comparison of manual and mechanical chest compression techniques using cerebral oximetry in witnessed cardiac arrests at the emergency department: a prospective, randomized clinical study. The American Journal of Emergency Medicine. 2021; 41: 163–169.

[13] Siao F, Chiu C, Chiu C, Chen Y, Chen Y, Hsieh Y, et al. Managing cardiac arrest with refractory ventricular fibrillation in the emergency department: Conventional cardiopulmonary resuscitation versus extracorporeal cardiopulmonary resuscitation. Resuscitation. 2015; 92: 70–76.

[14] Georgescu V, Tudorache O, Strambu V. Traumatic cardiac arrest in the emergency department - Overview upon primary causes. Journal of Medicine and Life. 2014; 7: 287–290.

[15] Devia Jaramillo G, Navarrete Aldana N, Rojas Ortiz Z. Rhythms and prognosis of patients with cardiac arrest, emphasis on pseudo-pulseless electrical activity: another reason to use ultrasound in emergency rooms in Colombia. International Journal of Emergency Medicine. 2020; 13: 62.

[16] Busch H, Eichwede F, Födisch M, Taccone FS, Wöbker G, Schwab T, et al. Safety and feasibility of nasopharyngeal evaporative cooling in the emergency department setting in survivors of cardiac arrest. Resuscitation. 2010; 81: 943–949.

[17] Preston HM, Collins AST, Reed MJ, Connolly J. A description of echocardiography in life support use during cardiac arrest in an Emergency Department before and after a training programme. European Journal of Emergency Medicine. 2015; 22: 426–429.

[18] Okamoto H, Goto T, Wong ZSY, Hagiwara Y, Watase H, Hasegawa K. Comparison of video laryngoscopy versus direct laryngoscopy for intubation in emergency department patients with cardiac arrest: a multicentre study. Resuscitation. 2019; 136: 70–77.

[19] Kim I, Song H, Kim HJ, Park KN, Kim SH, Oh SH, et al. Use of the National Early Warning Score for predicting in-hospital mortality in older adults admitted to the emergency department. Clinical and Experimental Emergency Medicine. 2020; 7: 61–66.

[20] Zwingmann J, Lefering R, Feucht M, Südkamp NP, Strohm PC, Hammer T. Outcome and predictors for successful resuscitation in the emergency room of adult patients in traumatic cardiorespiratory arrest. Critical Care. 2016; 20: 282.

[21] Jiang C, Zhao Y, Chen Z, Chen S, Yang X. Improving cardiopulmonary resuscitation in the emergency department by real-time video recording and regular feedback learning. Resuscitation. 2010; 81: 1664–1669.

[22] Kim JS, Bae HJ, Sohn CH, Cho SE, Hwang J, Kim WY, et al. Maximum emergency department overcrowding is correlated with occurrence of unexpected cardiac arrest. Critical Care. 2020; 24: 305.

[23] Kim JS, Seo DW, Kim YJ, Jeong J, Kang H, Han KS, et al. Prolonged Length of Stay in the Emergency Department and Increased Risk of In-Hospital Cardiac Arrest: A nationwide Population-Based Study in South Korea, 2016–2017. Journal of Clinical Medicine. 2020; 9: 2284.

[24] Han KS, Kim SJ, Lee EJ, Jung JS, Park JH, Lee SW. Experience of extracorporeal cardiopulmonary resuscitation in a refractory cardiac arrest patient at the emergency department. Clinical Cardiology. 2019; 42: 459–466.

[25] Amnuaypattanapon K, Udomsubpayakul U. Evaluation of related factors and the outcome in cardiac arrest resuscitation at Thammasat Emergency Department. Journal of the Medical Association of Thailand. 2010; 93: S26–S34.

[26] Tsai L, Chien W, Chen C, Tsai S, Chaou C, Weng Y, et al. Association of patient-to-emergency department staff ratio with the incidence of cardiac arrest: A retrospective cohort study. Signa Vitae. 2021; 17; 118–124.

[27] Singh MR, Jackson JS, Newberry MA, Riopelle C, Tran VH, PoSaw LL. Barriers to point-of-care ultrasound utilization during cardiac arrest in the emergency department: a regional survey of emergency physicians. The American Journal of Emergency Medicine. 2021; 41: 28–34.

[28] Ong MEH, Tiah L, Leong BS, Tan ECC, Ong VYK, Tan EAT, et al. A randomised, double-blind, multi-centre trial comparing vasopressin and adrenaline in patients with cardiac arrest presenting to or in the Emergency Department. Resuscitation. 2012; 83: 953–960.

[29] Ong MEH, Lee Ng CH, Goh K, Liu N, Koh ZX, Shahidah N, et al. Prediction of cardiac arrest in critically ill patients presenting to the emergency department using a machine learning score incorporating heart rate variability compared with the modified early warning score. Critical Care. 2012; 16: R108.

[30] Blaivas M, Fox JC. Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echocardiogram. Academic Emergency Medicine. 2001; 8: 616–621.

[31] April MD, Arana A, Reynolds JC, Carlson JN, Davis WT, Schauer SG, et al. Peri-intubation cardiac arrest in the Emergency Department: a National Emergency Airway Registry (NEAR) study. Resuscitation. 2021; 162: 403–411.

[32] Liu N, Koh ZX, Goh J, Lin Z, Haaland B, Ting BP, et al. Prediction of adverse cardiac events in emergency department patients with chest pain using machine learning for variable selection. BMC Medical Informatics and Decision Making. 2014; 14: 75.

[33] Mikati N, Callaway CW, Coppler PJ, Elmer J. Data-driven classification of arrest location for emergency department cardiac arrests. Resuscitation. 2020; 154: 26–30.

[34] Johnson NJ, Salhi RA, Abella BS, Neumar RW, Gaieski DF, Carr BG. Emergency department factors associated with survival after sudden cardiac arrest. Resuscitation. 2013; 84: 292–297.

[35] Pokrajac N, Sbiroli E, Hollenbach KA, Kohn MA, Contreras E, Murray M. Risk Factors for Peri-intubation Cardiac Arrest in a Pediatric Emergency Department. Pediatric Emergency Care. 2020. (in press)

[36] Pandian GR, Thampi SM, Chakraborty N, Kattula D, Kundavaram PPA. Profile and outcome of sudden cardiac arrests in the emergency department of a tertiary care hospital in South India. Journal of Emergencies, Trauma, and Shock. 2016; 9: 139–145.

[37] Atkinson PR, Keyes AW, O'Donnell K, Beckett N, Banerjee A, Fraser J, et al. Do Electrocardiogram Rhythm Findings Predict Cardiac Activity during a Cardiac Arrest? A Study from the Sonography in Cardiac Arrest and Hypotension in the Emergency Department (SHoC-ED) Investigators. Cureus. 2018; 10: e3624.

[38] Kayser RG, Ornato JP, Peberdy MA; American Heart Association National Registry of Cardiopulmonary Resuscitation. Cardiac arrest in the Emergency Department: a report from the National Registry of Cardiopulmonary Resuscitation. Resuscitation. 2008; 78: 151–160.

[39] Gaspari R, Weekes A, Adhikari S, Noble VE, Nomura JT, Theodoro D, et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. Resuscitation. 2016; 109: 33–39.

[40] Ravindran R, Kwok CS, Wong CW, Siller-Matula JM, Parwani P, Velagapudi P, et al. Cardiac arrest and related mortality in emergency departments in the United States: Analysis of the nationwide emergency department sample. Resuscitation. 2020; 157: 166–173.

[41] Lee SB, Kim DH, Kim T, Kang C, Lee SH, Jeong JH, et al. Emergency Department Triage Early Warning Score (TREWS) predicts in-hospital mortality in the emergency department. American Journal of Emergency Medicine. 2020; 38: 203–210.

[42] Han SJ, Kim HS, Choi HH, Hong GS, Lee WK, Lee SH, et al. Predictors of survival following extracorporeal cardiopulmonary resuscitation in patients with acute myocardial infarction-complicated refractory cardiac arrest in the emergency department: a retrospective study. Journal of Cardiothoracic Surgery. 2015; 10: 23.

[43] Tan SC, Leong BS. Cardiac arrests within the emergency department: an Utstein style report, causation and survival factors. European Journal of Emergency Medicine. 2018; 25: 12–17.

[44] Pyo SY, Park GJ, Kim SC, Kim H, Lee SW, Lee JH. Impact of the modified SESAME ultrasound protocol implementation on patients with cardiac arrest in the emergency department. The American Journal of Emergency Medicine. 2021; 43: 62–68.

[45] Hong S, Lee S, Lee J, Cha WC, Kim K. Prediction of Cardiac Arrest in the Emergency Department Based on Machine Learning and Sequential Characteristics: Model Development and Retrospective Clinical Validation Study. JMIR Medical Informatics. 2020; 8: e15932.

[46] Ravipragasam S, Chandar D, Pandit V, Cheriyan A. Survival to discharge after in-hospital cardiac arrest at emergency department and its associated factors: a prospective observational study. Journal of Acute Disease. 2019; 8: 185.

[47] Liu T, Lin Z, Ong MEH, Koh ZX, Pek PP, Yeo YK, et al. Manifold ranking based scoring system with its application to cardiac arrest prediction: a retrospective study in emergency department patients. Computers in Biology and Medicine. 2015; 67: 74–82.

[48] Han K, Chen S, Weng Y, Ng C, Chiu T, Hsieh I, et al. Validation of different score systems in predicting cardiac arrest occurrence of ST-elevation myocardial infarction. Hong Kong Journal of Emergency Medicine. 2017; 24: 224–229.

[49] Srivilaithon W, Amnuaypattanapon K, Limjindaporn C, Imsuwan I, Daorattanachai K, Dasanadeba I, et al. Predictors of in‐hospital cardiac arrest within 24 h after emergency department triage: a case-control study in urban Thailand. Emergency Medicine Australasia. 2019; 31: 843–850.

[50] Srivilaithon W, Muengtaweepongsa S. The Outcomes of Targeted Temperature Management After Cardiac Arrest at Emergency Department: A Real-World Experience in a Developing Country. Therapeutic Hypothermia and Temperature Management. 2017; 7: 24–29.

[51] Kim WY, Kwak MK, Ko BS, Yoon JC, Sohn CH, Lim KS, et al. Factors associated with the occurrence of cardiac arrest after emergency tracheal intubation in the emergency department. PLoS ONE. 2014; 9: e112779.

[52] Chang Y, Shih H, Chen C, Chen W, Huang F, Muo C. Association of sudden in-hospital cardiac arrest with emergency department crowding. Resuscitation. 2019; 138: 106–109.