

Appendix D. Inclusion criteria for extracorporeal cardiopulmonary resuscitation of studies included

Author, year, country	Age, (year)	Location of CA	Witnessed arrest	No-flow time, (min)	Low-flow time, (min)	Initial asystole/PEA on ECG	Initial VF/VT on ECG	Refractory CA without ROSC	No ROSC after > 10 min of CPR	Cardiac origin
Chen et al. 2008 ⁵⁵ Taiwan	≥ 18 to 75	IHCA	Yes	...	No specified	No specified	No specified	...	Yes	Yes*
Kim et al. 2014 ⁵⁶ South Korea	≥ 18	OHCA	Yes†	No specified†	No specified	No specified	No specified	...	Yes‡	No specified
Maekawa et al. 2013 ⁵⁷ Japan	≥ 16	OHCA	Yes	...	...	No specified§	No specified§	...	> 20	Presumed ^l
Sakamoto et al. 2014 ⁵⁷ Japan	≥ 20 to 74	OHCA	...	...	...	Not	Yes	Yes¶	At least 15 min after hospital arrival	Presumed
Shin et al. 2013 ⁵⁷ South Korea	≥ 18 to 80	IHCA	Yes	...	...	...	...	Yes	10–15||	...
Siao et al. 2015 ⁵⁸ Taiwan	≥ 18 to 75	OHCA#	...	< 5	...	Not	Yes	...	Yes	...

Abbreviations: CA = cardiac arrest; CPR = cardiopulmonary resuscitation; ECG = electrocardiogram; IHCA = in-hospital cardiac arrest; OHCA = out-of-hospital cardiac arrest; PEA = pulseless electrical activity; ROSC = return of spontaneous circulation; VT = ventricular tachycardia; VF = ventricular fibrillation.

* An in-hospital cardiac arrest was deemed to be of cardiac origin if there was evidence of raised cardiac enzymes before CPR, sudden collapse without obvious causes, sudden collapse with pre-existing cardiovascular disease, or other expressions approved by the task force committee.

† Witnessed cardiac arrest with or without bystander CPR of presumed correctable causes; no-flow time was expected to be short, even for unwitnessed arrests.

‡ The ECPR team was activated by the emergency physician in cases when OHCA patients met the inclusion criteria, and required prolonged CPR more than 10 min as in-hospital CPR duration or recurrently arrested in the ED after achievement of ROSC (≥ 20 min).

§ Initial cardiac arrest rhythm documented during pre-hospitalization was not considered as an indication for ECPR.

^l Cardiac arrest was presumed to be of cardiac origin unless it was known or likely to have been caused by trauma, submersion, hypothermia, drug overdose, asphyxia, exsanguination, or any other noncardiac cause including intracranial hemorrhage, acute aortic dissection, and terminal malignancy as evident by the case record.

¶ Cardiac arrest on hospital arrival with or without pre-hospital ROSC within 45 min from reception of the emergency call or the onset of cardiac arrest to the hospital arrival. Forty-six facilities participated in this study. Twenty-six hospitals were enrolled in the ECPR group and 20 hospitals in the non-ECPR group.

|| ECMO was considered mostly when there was prolonged arrest and no ROSC within 10–15 min after initiation of CPR, when ROSC could not be maintained due to recurrent arrest, or when the recovery without ECMO support was unlikely due to known severe left ventricular dysfunction or coronary artery disease despite relatively short CPR duration.

Forty-one of the cases had out-of-hospital cardiac arrest.