**1. Patient information**

Age:

Gender:

Past medical history: (hypertension, diabetes, hyperlipidemia, cardiovascular disease, neurological disorder, chronic renal failure, dementia, unknown)

Medications: (antiplatelet agents, anticoagulants, beta blockers, ACE, ARB, unknown)

Performance Status (preadmission): 0–4

Socioeconomic status

Homeless: (yes/no)

Welfare recipient: (yes/no)

Number of family members in household (if living alone, put 0):

Spouse: (yes/no)

Nursing insurance: (yes/no)

**2. Prehospital information**

Location of cardiac arrest: (house, apartment, public place, street, workplace, in ambulance, medical institution, other)

Emergency medical service information

Initial cardiac arrest ECG rhythm: (VF, VT, PEA, Asystole)

Witness: (yes/no)

Bystander CPR: (yes/no)

Pupil diameter:

Contralateral light reflex:

Bilateral contralateral light reflex: (yes/no)

AED use: (yes/no)

Adrenaline use: (yes/no)

Airway management: (tracheal intubation, supraglottic apparatus [LT/LMA], mask ventilation)

Prehospital ROSC (pulse pressure confirmed for 1 minute or more): (yes/no)

ECG rhythm change (waveform captured at least once before arriving at hospital): (VF, VT, PEA, asystole, none)

Prehospital emergency care

Means of transport: (doctor car/helicopter)

Airway management: (tracheal intubation, supraglottic apparatus [LT/LMA], mask ventilation)

Venous/arterial sheath placement: (yes/no)

Adrenaline use: (yes/no)

Amiodarone use: (yes/no)

Method of chest compressions: (mechanical, manual)

**3. Information at admission**

ECG rhythm: (VF, VT, PEA, asystole, ROSC)

Heart rate:

Systolic blood pressure:

Diastolic blood pressure:

GCS:

Pupil diameter:

Contralateral light reflex:

Bilateral contralateral light reflex:

Body temperature :

Agonal respiration: (yes/no)

Examination findings

Blood gases: (pH, pCO2, pO2, BE, HCO3, Lac, Na, K, Cl, Glu, time of collection)

Blood tests: (Hb, WBC, platelets, T-Bil, Cr, NH3, Alb, CRP, Fib, APTT, AT III, D-Dimer, Na, K, Glu, time of collection)

Diagnosis (reason for admission)

Diagnosis at the time of admission ECMO: (internal cause [cardiogenic], internal cause [non-cardiogenic: details], external cause [details])

**4. Diagnosis and treatment**

CAG: (yes/no)

Responsible lesion: (#1–15)

Number of lesions: (1 branch, 2 branches, 3 branches)

CTO: (yes/no)

PCI: (yes/no)

TIMI grade before intervention: (0, 1, 2, 3)

TIMI grade after intervention: (0, 1, 2, 3)

Pre-existing pacemaker: (yes/no)

Temporary pacing: (yes/no)

ROSC after admission: (yes/no)

Timing of ROSC (1): (before ECMO pump on, after ECMO pump on)

Timing of ROSC (2): (before PCI, after PCI)

Pulmonary embolism: (yes/no)

Treatment for pulmonary embolism: (none, anticoagulation, thrombolysis, catheterization, surgical treatment)

**5. Mechanical circulation**

IABP

IABP insertion: (yes/no)

Timing of IABP (1): (before ROSC, after ROSC)

Timing of IABP (2): (pre-ECMO, post-ECMO)

Timing of IABP insertion (3): (during initial care [ER], during initial care [catheter room], after ICU admission)

Reason for IABP insertion: (routine, circulatory failure, unknown, other)

ECMO

ECG rhythm at ECMO insertion: (VF, VT, PEA, asystole, ROSC)

Catheter size (venous): Fr

Catheter size (arterial): Fr

Location of insertion: (emergency room, catheter room, other)

Use of portable X-ray equipment: (yes/no)

Puncture method: (surgical, percutaneous, other)

Use of echo (pre-scan only, real-time): (pre-procedure, intra-procedure, not used)

Complications during insertion: (yes/no)

*Procedure-related complications*

Abnormal position (venous): (yes/no)

Abnormal position (arterial): (yes/no)

Insertion failure: (Yes/No/Unknown)

Hemorrhage at cannulation insertion site (requiring blood transfusion, surgical hemostasis, or IVR intervention): (yes/no)

Date of onset:

Surgical intervention: (yes/no)

IVR intervention: (yes/no)

ACT, APTT, D-dimer, platelets on day of onset:

Retroperitoneal hemorrhage (requiring blood transfusion or surgical hemostasis/IVR intervention): (yes/no)

Date of onset:

Surgical intervention: (yes/no)

IVR intervention: (yes/no)

ACT, APTT, D-dimer, platelets on day of onset:

Other complication at insertion: (yes/no)

Distal limb perfusion: (yes/no)

Reason for placement of distal limb perfusion: (routine, ischemic symptoms)

Distal limb perfusion site (superficial femoral artery, dorsalis pedis artery, other)

Type of catheter used: (sheath, needle, other)

Intervention for lower limb ischemia (fasciotomy, lower limb amputation): (yes/no)

*ECMO-related complications*

Date of onset

Surgical intervention: (yes/no)

IVR intervention: (yes/no)

ACT, APTT, D-dimer, platelets on day of onset

Cerebral infarction: (yes/no)

Mesenteric ischemia: (yes/no)

Other: (yes/no)

*Hemorrhage complications during ECMO (ICU)*

Brain (cerebral hemorrhage on CT): (yes/no/unknown)

Date of onset: day

Surgical intervention: (yes/no)

IVR intervention: (yes/no)

ACT, APTT, D-dimer, platelets on day of onset:

Mediastinal hemorrhage (requiring blood transfusion or surgical hemostasis/IVR intervention): (yes/no)

Liver (requiring blood transfusion or surgical hemostasis/IVR intervention): (yes/no)

Spleen (requiring blood transfusion or surgical hemostasis/IVR intervention): (yes/no)

Gastrointestinal tract (requiring blood transfusion or surgery/endoscopic hemostasis/IVR): (yes/no)

Other (requiring blood transfusion or surgical hemostasis/IVR intervention): (yes/no)

Equipment malfunction: (yes/no)

Removal method: (surgical, compression)

Use of heat exchanger: (yes/no)

Impella insertion: (yes/no)

Removal ECMO: Day

Removal IABP：Day

Reinsertion of ECMO: (yes/no)

Reinsertion of IABP: (yes/no):

**6. Admission information**

Onset, EMS call, EMS arrival, Ambulance transport started, Arrival at hospital, ECMO insertion start, Start of ECMO, ICU admission

Arrival on a holiday: (yes/no)

**7. Body temperature management**

Target body temperature: °C

Time to achieve target body temperature: min

Maintenance time: hr

Recovery time: hr

Target body temperature after rewarming: °C

Termination of hypothermia: (yes/no)

Reason for termination: (circulation, bleeding, withdrawal from treatment, other)

Deviation from target body temperature of 0.5°C or more: (yes/no)

Deviation from the target body temperature of 1°C or more: (yes/no)

Overcooling < 32°C: (yes/no)

Complications

Hypokalemia (<3.0 mmol/l) :

Hypomagnesemia (<0.7 mmol/l):

Hypophosphatemia (<0.7 mmol/l):

Arrhythmia: atrial fibrillation, atrial flutter, tachycardia > 100bpm, bradycardia < 50bpm or requiring pacing, ventricular fibrillation, ventricular tachycardia (with pulse, without pulse, unknown), other (details)

Defibrillation: (yes/no)

**8. Information after ICU admission**

Blood gases: pH, pCO2, pO2, BE, HCO3, Lac, Na, K, Cl, Glu, measurement time: at admission to ICU, day 1, day 2, day 3

Blood test: Hb, WBC, platelets, T-Bil, Cr, NH3, Alb, CRP, Fib, APTT, AT III, D-Dimer, Na, K, Glu, P, Mg, measurement time: at admission to ICU, Day 1, Day 2, Day 3

Heart rate: at admission to ICU, day 1, day 2, day 3

Systolic blood pressure / diastolic blood pressure: at admission to ICU, day 1, day 2, day 3

GCS: at admission to ICU, day 1, day 2, day 3

Pupil findings: at admission to ICU, day 1, day 2, day 3

Pupil diameter: at admission to ICU, day 1, day 2, day 3

Contralateral light reflex: at admission to ICU, day 1, day 2, day 3

Bilateral contralateral light reflex: at admission to ICU, day 1, day 2, day 3

Body temperature : at admission to ICU, day 1, day 2, day 3

Measurement site: (bladder, esophagus, pharynx, tympanic membrane, blood, others, unknown)

ECMO flow rate:

ECMO rotation speed: at admission to ICU, day 1, day 2, day 3

ECMO oxygen level: at admission to ICU, day 1, day 2, day 3

IABP: (yes/no)

mSOFA: platelet count, mSOFA: bilirubin, mSOFA: hypotension, mSOFA: Glasgow Coma Scale, mSOFA: creatinine

RCC transfusion volume: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

FFP transfusion volume: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Infusion volume: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Urine volume: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Use of vasopressor: (yes/no)

Maximal dose of vasopressor (noradrenaline, dobutamine, dopamine, adrenaline): at admission to ICU, 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Sedation (propofol, midazolam, dexmedetomidine, others, unknown): at admission to ICU, 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Sedative dose: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Analgesia (fentanyl, morphine, others, unknown): (yes/no)

Analgesic dosage: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Muscle relaxation (rocuronium, vecuronium, others, unknown): (yes/no)

Dose of muscle relaxant: 24 hours after ICU admission, 24–48 hours after ICU admission, 48–72 hours after ICU admission

Body parameters during ICU stay: height, body weight at ICU admission, body weight at time of ICU discharge

Infections during ICU stay

Use of antimicrobial agents: (yes/no)

Reason for use of antimicrobial agents: (prophylactic administration, use after onset)

Type of antimicrobial agent:

Daily dose of antimicrobial:

Pneumonia (infiltrative shadow on X-ray and one or more of the following: white blood cell > 12000; fever > 38°C; infective sputum): (yes/no)

Urinary tract infection: (yes/no)

Catheter infection: (yes/no)

Other infection: (yes/no)

Positive blood culture: (yes/no)

Positive sputum culture: (yes/no)

Positive urine culture: (yes/no)

Positive urine culture from catheter: (yes/no)

Other positive cultures: (yes/no)

Sepsis (evidence of infection and elevation of SOFA score by more than 2 points: (yes/no)

Septic shock (requirement for vasoactive drugs to maintain mean blood pressure above 65 mmHg after appropriate volume resuscitation and blood lactate above 2 mmol/L): (yes/no)

Other complications

Development of AKI: (yes/no)

Renal replacement therapy: (yes [continuous, intermittent], no)

VAP (more than 48 hours after intubation, as determined by the physician in charge/noted in the medical record. Excluding aspiration during cardiac arrest): (Yes [onset Day ], No)

Atelectasis (identified on X-ray during ECMO): (Yes [Day ], No)

Imaging findings

Timing of CT imaging: (imaging time)

A. GWR (CT Hounsfield units of left and right white matter and gray matter) in the slice on which the thalamus and posterior limb of internal capsule are visible

B. GWR (CT Hounsfield units of left and right white matter and gray matter) in the slice above one slice where the lateral ventricle is no longer visible

C. GWR (CT Hounsfield units of left and right white matter and gray matter) one slice above B.

Nutrition

Time to start enteral nutrition (EN):

Nutrition on day 3

Calories administered:

Route of administration: (EN, PN, EN+PN, un)

*Gastrointestinal-related complications*

CD-associated enterocolitis with therapeutic intervention: (yes/no)

Intestinal ischemia diagnosed by imaging or clinical suspicion: (yes/no)

VAP based on clinical suspicion or documented in medical records: (yes/no)

Gastrointestinal bleeding requiring discontinuation of enteral feeding: (yes/no)

CRBSI based on clinical suspicion or documented in medical records: (yes/no)

Use of drugs to improve intestinal peristalsis: (yes/no)

Nutrition on day 7

Calories administered:

Route of administration: (EN, PN, EN+PN, un)

*Gastrointestinal-related complications*

CD-associated enterocolitis with therapeutic intervention: (yes/no)

Intestinal ischemia diagnosed by imaging or clinical suspicion: (yes/no)

VAP based on clinical suspicion or documented in medical records: (yes/no)

Gastrointestinal bleeding requiring discontinuation of enteral feeding: (yes/no)

CRBSI based on clinical suspicion or documented in medical records: (yes/no)

Use of drugs to improve intestinal peristalsis: (yes/no)

Anticoagulation

Heparin: (yes/no)

Nafamostat mesilate: (yes/no)

Recombinant human-soluble thrombomodulin: (yes/no)

**9. Outcomes**

Length of ICU stay: days

Length of hospital stay: days

Duration of mechanical ventilation: days

Reintubation: (yes/no)

Tracheostomy: (yes/no)

Cerebral Performance Category at discharge:

Cerebral Performance Category at 30 days:

Diagnosis category of OHCA: (internal cause, external cause, other)

Cause of out-of-hospital cardiac arrest:

Death date:

Timing of death: (before ICU admission, during ICU, after ICU discharge)

Cause of death in hospital:

DNAR: (yes/no)

Date of DNAR decision: Day

Reason for obtaining DNAR: (difficulty in maintaining ECMO, time passed, poor neurological prognosis, poor respiratory or circulation prognosis, complications, medical history, other)

Withdrawal or withholding:

Withdrawal from active treatment: (yes/no)

Time of decision to withdraw:

Hospitalization medical expenses:

Performance Status at discharge: (0–4)

Discharge destination: