Extracorporeal Life Support Organization (ELSO)

ELSO Registry ECPR Addenda Data Definitions
April 2019

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For all comments, questions and concerns please email
RegistrySupport@elso.org

Preface

This document is intended to assist data entry and identify definitions for each field. This document is organized into the sections and subsections that exist on the database registry. We also attempt to identify if fields will be incorporated in mandatory fields or major complication fields by highlighting those data elements.

The Selection of Pre-ECLS Cardiac Arrest on the main ELSO Registry Data Entry Form will automatically associate this addendum, but the ECPR Addendum is not a mandatory data element. However, if centers chose to submit data elements of the ECPR Addendum, there is a CORE DATASET which is maintained by many of the ECPR Addendum elements being MANDATORY fields

Descriptions of fields in this document

Field Name is the name of the variable as it appears in the online application at www.ELSO.org.

Definition/ Explanation/ Example provides the definition of the variable with an explanation of the how to collect the variable and, when appropriate, an example of choosing the correct data collection

Data Entry Rules refers to formatting rules for data entry and any warnings or restrictions on data entry. For example, the user will receive a **Soft Notification** or warning when entering data that falls outside common values or if that value could represent a more common entry in a different unit. The warning does not necessarily mean data has been entered incorrectly; it is just an opportunity for the user to double check data entry. The data enterer will receive a **Hard Limit** when data is restricted from entry. This means ELSO assesses the value to be incorrect. For example, the entry of ECLS Start Time after the Date of Death is not allowed. Occasionally it is necessary for Data Entry Rules to vary by age group in ELSO. There are three mutually exclusive ELSO age groups: **Neonate** (0-28 days), **Pediatric** (29 days- 17 years), and **Adult** (≥ 18 years). The **Soft Notification** for the **Field Name** "Admission Weight" is different for each age group. (The possibility of error exists; please email Peter Rycus at prycus@elso.org if an unwarranted Hard Limit is received).

Collection / Modification describes the dates during which the data has been collected. If there was a modification of the method by which a variable is collected, the date when that modification occurred is noted here.

Table Name is a descriptor that provides the name of the table in which a given variable is stored. ELSO data is a relational database, meaning that different data elements are stored in different tables with common rows that allow merging of tables.

Column Name / Stored Values describes the column or variable name and stored values for a given variable. For example, the data field "**Hand Bag Valve Ventilation**" is stored under Column Name (or variable name) "**HandBagging.**" Handbagging has the and is stored with values "**No = 0**", "**Yes = 1** ", and "**Unknown = -1.**"

Mandatory Fields and Major Complications

We indicate mandatory fields in two ways. First, the box for the **Field Name** has a red background (see below). Second, the **Definition/ Explanation/ Example** includes the sentence "**This is a required field.**" See example below:

Mandatory Data Field

Major complications
We indicate major complications by shading the background of the **Field Name** yellow. See example below:

Major Complication

Extracorporeal Life Support Organization (ELSO) Registry Data Definitions

When is it Extracorporeal Cardiopulmonary Resuscitation (ECPR)?

- *ECPR is the application of rapid-deployment venoarterial extracorporeal membrane oxygenation to provide circulatory support in patients in whom conventional cardiopulmonary resuscitation (CPR) is unsuccessful in achieving sustained return of spontaneous circulation (ROSC).*

When is return of spontaneous circulation?

- *Sustained ROSC is deemed to have occurred when chest compressions are not required for 20 consecutive minutes and signs of circulation persist (Jacobs et al, Cardiac arrest and CPR outcome reports: Utstein templates from ILCOR Circulation.2004; 110 (21):3385-97; and Conrad et al, The Extracorporeal Life Support Organization Maastricht Treaty for Nomenclature in Extracorporeal Life Support. A Position Paper of the Extracorporeal Life Support Organization. Am J Respir Crit Care Med. 2018; 198(4):447-451.*

When is it not ECPR?

- *Cardiac or Respiratory arrest requiring CPR but with sustained ROSC with no chest compressions for 20 consecutive minutes prior to ECMO cannulation does not fulfil ECPR definition.*

I. Pre-Cardiopulmonary Arrest

This section details the cardiopulmonary failure resulting in ECPR. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections.

Precipitating Event

This field defines the events immediately preceding or resulting in ECPR. Events are Cardiac or Non-Cardiac. **This is a required field as one selection must be made.**

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Cardiac	This field relates the use of ECPR for cardiopulmonary arrest related to cardiac and cardiovascular dysfunction. It may be selected for the use of extracorporeal membrane oxygenation with a primary indication for support of left and/or right ventricular failure by providing cardiac and gas exchange support. **Patient Z,** a 55 year old, suffered a cardiac arrest after a myocardial infarction. He achieved ROSC during ECMO cannulation, 5 minutes before full flows were achieved. Choose precipitating event type Cardiac.	One selection must be made.		ECPR.ECPRAddendumNew	PrecipitatingEvent
Non-Cardiac	This field relates to the use of ECPR for cardiopulmonary arrest related to respiratory, infective, neurological etiologies *without* primary cardiac involvement. It may be selected for the use of extracorporeal membrane oxygenation with a primary indication for support of respiratory failure by providing gas exchange support. Does not imply any specific ECLS mode or cannulation configuration. **Patient X,** a 3 year old, suffered a cardiac arrest during intubation for an asthma exacerbation. He was placed on V-A ECMO through the neck during active CPR. Choose precipitating event type 'Non-cardiac'.	One selection must be made.		ECPRAddendumNew	PrecipitatingEvent
Unknown	This field relates to the use of ECPR in the event of unwitnessed cardiopulmonary arrest. Use this field if no information about pre-existing illness is available for the patient at the time of cannulation to ECMO. By Jacobs et al 2004 Utstein template criteria (Circulation. 2004;110:3385-3397; Resuscitation 63 (2004) 233–249), a cardiopulmonary arrest is presumed to be of cardiac etiology unless it is known or likely to have been caused by trauma, submersion, drug overdose, asphyxia, exsanguination, or any other noncardiac cause as best determined by rescuers.	One selection must be made.		ECPRAddendumNew	PrecipitatingEvent

Antecedent Events The antecedent event should be present in the prior 4 hours to event unless specified. Should be active and contributing directly to patient's immediate condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Cardiac					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Ventricular Dysfunction	This field collects patients with life-threatening hypotension despite rapidly escalating inotropic support, critical organ hypoperfusion, often confirmed by worsening acidosis and/or lactate levels or patient with declining ventricular function despite intravenous inotropic support (INTERMACS profiles 1 and 2)	One selection must be made.		ECPR.AntecedentEvents	EventId 1 Lookup table: ECPR.AntecedentEventsCodes
Vasoplegia	This field collects patients with impaired vascular tone resulting in vasodilatation and hypotension despite escalating vasopressor support, resulting in critical organ hypoperfusion, often confirmed by worsening acidosis and/or lactate levels. May result from etiologies such as sepsis, septic shock, inflammation, neurogenic shock, etc.	One selection must be made.		ECPR.AntecedentEvents	EventId 2 Lookup table: ECPR.AntecedentEventsCodes
Cardiac Tamponade	This field collects patients with hemodynamically significant cardiac tamponade by clinical or imaging (echocardiogram) criteria regardless of cause.	One selection must be made.		ECPR.AntecedentEvents	EventId 3 Lookup table: ECPR.AntecedentEventsCodes
Obstructive Shock	This field collects patients with obstructive shock due to pulmonary emboli, but may also be due to other forms of emboli, atrial myxoma, etc.	One selection must be made.		ECPR.AntecedentEvents	EventId 4 Lookup table: ECPR.AntecedentEventsCodes
Arrhythmia	This field collects patients who had hemodynamically significant acute onset of cardiac arrhythmia demonstrated by 3-lead rhythm strip or 12-lead ECG.	One selection must be made.		ECPR.AntecedentEvents	EventId 5 Lookup table: ECPR.AntecedentEventsCodes

Antecedent Events (continued)

The antecedent event should be present in the prior 4 hours to event unless specified. Should be active and contributing directly to patient's immediate condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**

Non-Cardiac

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Hypoxemia	This field collects patients who had clinical determination of hypoxemia different from patient baseline and not corrected with supplemental oxygen or escalation to positive pressure ventilation.	One selection must be made.		ECPR.AntecedentEvents	EventId 6 Lookup table: ECPR.AntecedentEventsCodes
Hypercarbia / Respiratory Acidosis	Arterial paCO2 of >90mmHg (or 12kPa) and/or pH <7.2 from uncompensated hypercapnia (References:1. UK collaborative randomised trial of neonatal extracorporeal membrane oxygenation. UK Collaborative ECMO Trail Group. Lancet. 1996 348(9020):75-82. PubMed PMID: 8676720. And 2. Peek GJ, et al CESAR trial collaboration. Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial. Lancet. 2009 374(9698):1351-63. Erratum in: Lancet. 2009 Oct 17;374(9698):1330. PubMed PMID: 19762075.)	One selection must be made.		ECPR.AntecedentEvents	EventId 7 Lookup table: ECPR.AntecedentEventsCodes
Pulmonary Hemorrhage	Requiring pRBC transfusion (>20ml/kg/24 hrs of PRBCS or >3U PRBCs/24 hrs in neonates and pediatrics and >3U PRBCS/24 hrs in adults)	One selection must be made.		ECPR.AntecedentEvents	EventId 8 Lookup table: ECPR.AntecedentEventsCodes
Pneumothorax	Requiring insertion of chest drain	One selection must be made.		ECPR.AntecedentEvents	EventId 9 Lookup table: ECPR.AntecedentEventsCodes

Neurological

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Impending Herniation Syndrome	This field collects patients who had complete or impending brainstem herniation precipitating intervention.	One selection must be made.		ECPR.AntecedentEvents	EventId 10 Lookup table: ECPR.AntecedentEventsCodes

Toxic/Metabolic					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Metabolic Acidosis	pH <7.2 without hypercapnia [i.e. paCO2 <60mmHg (or 8kPa)]	One selection must be made.		ECPR.AntecedentEvents	EventId 11 Lookup table: ECPR.AntecedentEventsCodes

Other					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Unknown	Use this field if no information about pre-existing illness is available for the patient at the time of cannulation to ECMO.	One selection must be made.		ECPR.AntecedentEvents	EventId 12 Lookup table: ECPR.AntecedentEventsCodes
None	Use this field if the patient is known to have no relevant prior medical history at the time of cannulation to ECMO.	One selection must be made.		ECPR.AntecedentEvents	EventId 13 Lookup table: ECPR.AntecedentEventsCodes

Co-Morbid Conditions The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Cardiac					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Acute Coronary Syndrome	This field collects patients who had clinical determination of hypoxemia different from patient baseline and not corrected with supplemental oxygen or escalation to positive pressure ventilation.	One selection must be made.		ECPR.CMconditions	ConditionId 1 Lookup table: ECPR. CMconditionCodes
CHD-acyanotic	This field collects patients with Congenital heart disease with SpO2 > 94% at baseline - acyanotic (pediatric, newborn, adult congenital heart disease). Structural congenital heart disease without limitation of pulmonary blood flow or obligatory right to left shunt or mixing lesion (eg any repaired biventricular circulation - atrioventricular canal). Baseline oxygen saturations should be normal, without the clinical findings of cyanosis.			ECPR.CMconditions	ConditionId 2 Lookup table: ECPR. CMconditionCodes
CHD—cyanotic	This field collects patients with Congenital heart disease with SpO2 <94% at baseline - cyanotic (pediatric, newborn, adult congenital heart disease). Structural congenital heart disease with either limitation of pulmonary blood flow (eg Tetralogy of Fallot) or obligatory right to left shunt or mixing lesion (e.g. tricuspid atresia) resulting in lower than normal oxygen saturation and the clinical pattern of cyanosis.			ECPR.CMconditions	ConditionId 3 Lookup table: ECPR. CMconditionCodes
CHF	This field collects patients, who during the inpatient episode of care, has the clinical features (before ECMO cannulation) of congestive heart failure due to failure of the left ventricle, the right ventricle or both. Symptoms and signs include shortness of breath (dyspnea), reduced exercise tolerance, edema, hepatic congestion, enlarged heart (cardiomegaly on CXR or dilated cardiomyopathy on echocardiogram), reduced ventricular systolic function.			ECPR.CMconditions	ConditionId 4 Lookup table: ECPR. CMconditionCodes
CV Shock	This field collects patients with clinical findings of low cardiac output with end-organ hypoperfusion and hypotension. Causes may include but are not limited to acute coronary syndrome, post-cardiotomy, pulmonary embolism or arrhythmia.			ECPR.CMconditions	ConditionId 5 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Cardiac					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Cardiac Tamponade	This field collects patients with low cardiac output secondary to constrictive physiology regardless of cause (may be fluid, blood, clot collection, pericardial disease etc.)			ECPR.CMconditions	ConditionId 6 Lookup table: ECPR. CMconditionCodes
Arrhythmia	This field collects patients with hemodynamically significantly acute onset of cardiac arrhythmia demonstrated in 3-lead or 12-lead ECG.			ECPR.CMconditions	ConditionId 7 Lookup table: ECPR. CMconditionCodes
PHN	This field collects patients with clinically significant (i.e., documented by cardiac cath or requiring pulmonary vasodilators) Pulmonary Hypertension either idiopathic or secondary; including pulmonary hypertension directly related to existing acquired or unrepaired/residual congenital heart disease.			ECPR.CMconditions	ConditionId 8 Lookup table: ECPR. CMconditionCodes
PE	This field collects patients with radiologically proven pulmonary embolism (note: symptoms and signs of PE are variable and non-specific, so only radiologically proved PE should be documented).			ECPR.CMconditions	ConditionId 9 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Pulmonary					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Critical Airway Emergency	This field collects patients with a critical airway emergency including the upper airway or lower airway. Examples include but are not limited to foreign bodies, tracheostomy or endotracheal tube dislodgement, airway trauma, vocal cord paralysis or dysfunction and laryngotracheobronchitis.			ECPR.CMconditions	ConditionId 10 Lookup table: ECPR. CMconditionCodes
Mediastinal Mass	This field collects patients with any thoracic or abdominal mass impacting effective ventilation.			ECPR.CMconditions	ConditionId 11 Lookup table: ECPR. CMconditionCodes
Obstructive Airways Disease	This field collects patients with severe asthma or obstructive airways disease. Examples may include those cases refractory to standard therapy (i.e., intubation, inhaled anesthetics, multiple classes of bronchodilator therapy, etc.).			ECPR.CMconditions	ConditionId 12 Lookup table: ECPR. CMconditionCodes
Lung Disease	This field collects patients with Hypoxic or hypercarbic acute respiratory failure, acute lung injury, pneumonia and/or ARDS requiring intervention. This may or may not meet strict AECC or Berlin Criteria for ALI/ARDS.			ECPR.CMconditions	ConditionId 13 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Neurological					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Acute CNS Non-Stroke Event	This field collects patients with neurological deterioration associated with a non-cerebrovascular accident event documented by radiographic, electrographic, laboratory, or other objective means. Examples include but are not limited to space occupying lesions, seizure, aneurysm, encephalitis, meningitis and other encephalopathy.			ECPR.CMconditions	ConditionId 14 Lookup table: ECPR. CMconditionCodes
Acute Ischemic Stroke	This field collects patients with acute ischemic cerebrovascular event documented by radiographic imaging. Choose this option if ischemia is present, even if hemorrhage is also present.			ECPR.CMconditions	ConditionId 15 Lookup table: ECPR. CMconditionCodes
Hemorrhagic Stroke	This field collects patients with acute hemorrhagic cerebrovascular event documented by radiographic imaging. Choose this option if hemorrhage is present, even if this is considered to be related to a prior ischemic event.			ECPR.CMconditions	ConditionId 16 Lookup table: ECPR. CMconditionCodes
Spinal Cord Injury	This field collects patients with injury or insult resulting in disruption of the autonomic pathways within the spinal cord which may result in vasoplegia.			ECPR.CMconditions	ConditionId 17 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Toxic/Metabolic					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Pre-existing Chronic Renal Failure	This field collects patients with pre-existing chronic abnormalities of kidney structure or function, present for >3 months, with implications for health with any cause, GFR category, and albuminuria category (CGA) - KDIGO 2012.			ECPR.CMconditions	ConditionId 18 Lookup table: ECPR. CMconditionCodes
Intoxication/ Ingestion	This field collects patients with intentional or non-intentional ingestion or intoxication resulting in clinically significant findings including but not limited to shock, acute respiratory failure, dysrhythmia and acidosis.			ECPR.CMconditions	ConditionId 19 Lookup table: ECPR. CMconditionCodes
Vitamin/ Electrolyte Abnormality	This field collects patients with acute electrolyte disturbances resulting in clinically significant findings such as hypotension, shock, dysrhythmia, etc. Examples include but not limited to hypokalemia, hyperkalemia, hyperphosphatemia, hypophosphatemia and vitamin deficiency from malnutrition.			ECPR.CMconditions	ConditionId 20 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Infectious/Inflammatory					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Distributive Shock (non-infectious)	This field collects patients with distributive shock characterized by a high cardiac output/low systemic vascular resistance state not directly related to an infectious source, involving the use of vasopressors. Causes may include but not limited to acute liver failure, systemic lupus erythematosus, anaphylaxis, hemophagocytic lymphohistiocytosis (HLH) or macrophage activation syndrome (MAS).			ECPR.CMconditions	ConditionId 21 Lookup table: ECPR. CMconditionCodes
Sepsis or Septic Shock	This field collects patients with sepsis, defined as the presence of suspected infection along with hypotension, altered mental status and tachypnoea. Septic shock includes the features of sepsis, along with hypotension requiring vasopressors to maintain mean arterial blood pressure >65mmHg (in adults) and lactate >2mmol/L. (Sepsis-3). This may include elements of hypovolemic, distributive, and cardiogenic shock.			ECPR.CMconditions	ConditionId 22 Lookup table: ECPR. CMconditionCodes

Co-Morbid Conditions (continued) The comorbid condition was present in the 24 hours prior to event unless specified. The condition should be active and contributing directly to patient's condition. Multiple selections may be made. ICD-10 Diagnosis Codes should be included on the main Registry Data Entry Form to support selections. **This is a required field as one selection must be made.**					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Hemorrhage or Hypovolemic Shock	This field collects patients with pre-existing chronic abnormalities of kidney structure or function, present for >3 months, with implications for health with any cause, GFR category, and albuminuria category (CGA) - KDIGO 2012.			ECPR.CMconditions	ConditionId 23 Lookup table: ECPR. CMconditionCodes
Major Trauma	This field collects patients with major trauma, defined as an injury or a combination of injuries that are life-threatening and could be life changing because it may result in long-term disability. NICE Guidelines 2016.			ECPR.CMconditions	ConditionId 24 Lookup table: ECPR. CMconditionCodes
Pregnancy / Delivery	This field collects patients who is pregnant during this hospitalization or has recently delivered with complications directly contributing to the patient's acute illness.			ECPR.CMconditions	ConditionId 25 Lookup table: ECPR. CMconditionCodes

Other					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Unknown	Use this field if no information about co-morbid conditions are available for the patient at the time of cannulation to ECMO.	One selection must be made.		ECPR.CMconditions	ConditionId 26 Lookup table: ECPR. CMconditionCodes
None	Use this field if the patient is known to have no relevant prior medical history at the time of cannulation to ECMO.	One selection must be made.		ECPR.CMconditions	ConditionId 27 Lookup table: ECPR. CMconditionCodes

II. Cardiopulmonary Arrest

This section details the period surrounding the arrest event.

Location of Arrest

Location of arrest is the specific location where the event occurred or the patient was found. Choose either 'Out of Hospital" or 'In Hospital' as the site that CPA preceding ECPR occurred. If resuscitation continued through multiple locations, include only the site of initial CPA without ROSC for >20 mins - i.e. according to ECPR definition. If an out of hospital location is chosen, additional question: Emergency Medical Services on site Yes/No is triggered

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Out of Hospital Arrest	This field collects where the patient had the initial cardiopulmonary arrest. Please select one of the following: **Home:** Place of residence (e.g., home, apartment, back yard of a home). Private residence, whether or not it is the patient's primary residence. **Public Place**: Street, city park, shopping center, sports stadium, entertainment center, airport, railway station, church, beach, office building - any location with access to bystanders. **Outpatient Ambulatory Medical Care**: According to the local ELSO center, a healthcare facility for assessment and management of non-inpatient care - not co-located with an inpatient or emergency resourced facility. **Ambulance Transport:** EMS personnel respond to a medical emergency in an official capacity as part of an organized medical response team. Choose this option if the patient is under their care at the time of arrest. **Other:** Other location (e.g., hotel room, private office, long-term care facility)			ECPR.ECPRAddendumNew	LAOutOfHospital Lookup table: ECPR.ArrestOutOfHospital Home=1, Public Place=2, Ambulatory Medical Care=3, Ambulance Transport=4, Other=5
Emergency Medical Services on Site	This field collects whether EMS personnel respond to a medical emergency in an official capacity as part of an organized medical response team.			ECPR.OOHCA	OOHCAId

Location of Arrest (continued) Location of arrest is the specific location where the event occurred or the patient was found. Choose either 'Out of Hospital" or 'In Hospital' as the site that CPA preceding ECPR occurred. If resuscitation continued through multiple locations, include only the site of initial CPA without ROSC for >20 mins - i.e. according to ECPR definition. If an out of hospital location is chosen, additional question: Emergency Medical Services on site Yes/No is triggered					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Bystander CPR	This field collects patients who received bystander CPR, defined as CPR performed by a person who is not responding as part of an organized emergency response system approach to a cardiac arrest. Physicians, nurses, and paramedics may be described as performing bystander CPR if they are not part of the emergency response system involved in the victim's resuscitation.			ECPR.OOHCA	OOHCAId
Bystander AED Use	This field collects the instance when a bystander attempts defibrillation (e.g., public access or layperson rescuer defibrillation), it is recorded as a defibrillation attempt before EMS arrival. AEDs are increasingly being made available to the public.			ECPR.OOHCA	OOHCAId
In Hospital Arrest	This field collects where the patient had the initial cardiopulmonary arrest. Level of available care according to local ELSO center policies to the patient at their in-hospital location at the time of cardiac arrest. Note - Additional question Emergency Medical Services on site Yes/No is NOT triggered by IN HOSPITAL choices Please select one of the following: **Ambulatory/Outpatient Area**: Non-inpatient facility within a healthcare setting or hospital which also manages inpatient care **Emergency Department:** Established unit resourced to provide acute assessment and management to ill and injured patients **General Inpatient Ward**: According to the local ELSO center, a healthcare facility for assessment and management of illness and/or injury **High Dependency Unit, Intermediate Care or Stepdown Unit:** According to the local ELSO center, a healthcare facility resourced to provide more acute care than general hospital admission			ECPR.ECPRAddendumNew	LAInHospital Lookup table: ECPR.ArrestInHospital Ambulatory/Outpatient=1 , ED=2 , Inpatient Ward=3 , HDU=4 ,

Location of Arrest (continued) Location of arrest is the specific location where the event occurred or the patient was found. Choose either 'Out of Hospital" or 'In Hospital' as the site that CPA preceding ECPR occurred. If resuscitation continued through multiple locations, include only the site of initial CPA without ROSC for >20 mins - i.e. according to ECPR definition. If an out of hospital location is chosen, additional question: Emergency Medical Services on site Yes/No is triggered					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
In Hospital Arrest (continued)	**Intensive Care Setting:** According to the local ELSO center, a healthcare facility resourced to provide intensive care. (Drop down list to select specific ICU: Adult Medicine ICU, Adult Surgical ICU, Mixed ICU, Adult Cardiac or Cardiovascular ICU, Adult Coronary Care Unit, Pediatric Intensive Care Unit, Pediatric Cardiac Intensive Care Unit, Neonatal Intensive Care Unit) **Cardiac Catheterization Laboratory:** According to the local ELSO center, a specialized operating room or suite equipped with fluoroscopy for cardiac catheterization. **Interventional or Diagnostic Suite:** According to the local ELSO center, a specialized operating room or suite equipped for diagnostic and interventional procedures. **Operating Room:** According to the local ELSO center, a specialized operating room for procedures. **Post-Anesthesia Recovery Room (PACU):** According to the local ELSO center, a specialized room or suite for post anesthesia recovery after surgical procedures. **Delivery Room:** According to the local ELSO center, a healthcare environment specialized for the care of gravid women and newborn infants. **Other Inpatient Setting:**			ECPR.ECPRAddendumNew	ICU=5 , Cath Lab=6 , Interventional Radiology=7 , OR=8 , PACU=9 , Delivery Room=10 , Other=11
Witnessed Arrest	This field collects if the patient has a witnessed arrest, defined as one that is seen or heard by another person or an arrest that is monitored. Was it recognized immediately that the patient had suffered a cardiac arrest? Note: a person found collapsed should be noted as an unwitnessed arrest. Please select from the following: Yes, No, Unknown			ECPR.ECPRAddendumNew	WitnessedArrest
Date of Arrest				ECPR.ECPRAddendumNew	ArrestDateTime
Time of Arrest				ECPR.ECPRAddendumNew	ArrestDateTime

III. Management of Cardiopulmonary Arrest

This section details the management of the arrest.

CPR Specifics					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Time CPR Commenced	This field collects what time CPR started for the patient the first time.	Hard Minimum: Must be after patient date and time of birth; must be at or after time of CPA; may be before patient admission to hospital Hard Maximum: Must be prior to date and time of death; prior to date and time of ECMO decannulation Soft Notification: If date is prior to hospital admission but patient was registered as an inpatient in a facility, a warning flags, but can be overcome.		ECPR.ECPRAddendumNew	TimeCprCommenced

CPR Specifics (continued)					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Total CPR Time Prior to ECMO	What was the total time of CPR prior to ECMO cannulation and flow without sustained ROSC for >20 minutes? Estimate total CPR time from documentation of the cardiac arrest including CPR time in minutes from the onset of initial CPR until ECMO cannulation, if there was less than 20 minutes of sustained ROSC. **Patient X**, a 54 year old man with s/p successful PCI for STEMI with severe left ventricular systolic dysfunction develops ventricular tachycardia with a pulse, not responsive to ACLS management. His rhythm deteriorates to ventricular fibrillation and CPR is commenced. He is cannulated ECPR after 40 minutes of CPR. His total CPR time is 40 minutes. **Patient Y**, a 5 year old girl returns to CICU from OR s/p mitral valve repair. She had clinical signs of low cardiac output, increasing inotropic agent use and rising lactate, before a 4 minute episode of sustained ventricular tachycardia without pulse for which she received CPR. She responded to defibrillation x 1. Over the next hour she was started on lidocaine infusion, but had worsening signs of low cardiac output and developed ST segment changes in lateral distribution. She had another episode of ventricular tachycardia which deteriorated to ventricular fibrillation which was not responsive to ACLS management. She was cannulated ECPR 34 minutes into code. Her total CPR time is 34 mins (i.e. initial 4 minutes not included as patient had ROSC for >20 mins). **Patient Z**, a 50 year old, suffered ventricular fibrillation cardiac arrest. In the next 40 minutes, he required a cumulative of 35 minutes of CPR interrupted by 2 x short lived ROSC (3 mins and 2 mins). When ECLS cannulas were placed, he was not receiving CPR with ROSC for 2 minutes prior. Total CPR time is 35 mins and; he meets ECPR criteria (<20 minutes ROSC prior to ECMO).	Hard Minimum: 1 minute Hard Maximum: 400 minutes Soft Notifications: 1 minute and 120 minutes		ECPR.ECPRAddendumNew	TotalCPRTime

CPR Specifics (continued)					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Did the patient have multiple cardiopulmonary arrests within 24 hours prior to ECPR event?	This field collects whether the patient had multiple arrests within the previous 24 hours.	Yes / No		ECPR.ECPRAddendumNew	MultipleCPA
Did the patient have ROSC at any time after initial cardiopulmonary arrest, before ECMO flow initiated?	This field collects whether the patient had return of spontaneous circulation (ROSC) at any time after the initial arrest, but before ECMO flow was initiated. From the time of initial cardiac arrest precipitating ECPR, was/were there time/s of perfusing rhythm when CPR was held for short periods of time? By Utstein 2004 consensus upheld in AHA guidelines and ELSO Maastrict Treaty for Nomenclature in Extracorporeal Life Support, the phrase "any ROSC" is intended to represent a brief (approximately 30 seconds) restoration of spontaneous circulation that provides evidence of more than an occasional gasp, occasional fleeting palpable pulse, or arterial waveform.	Yes / No		ECPR.ECPRAddendumNew	ROSCtimeAfterCPR
Did the patient have a pulse at the time of cannulation?	This field collects whether the patient had ROSC at the time of ECMO cannulation. **YES** if the patient had regained circulation prior to ECMO flow. **NO** if they continue to receive CPR until ECMO cannulation and flow was established. (Holding CPR for actual cannula insertion should not be considered when answering this question).	Yes / No		ECPR.ECPRAddendumNew	PulseTimeOfCannulation

Compression Method Used Chest compressions are performed by an individual or a mechanical device during CPR in an attempt to restore spontaneous circulation. If multiple methods were utilized/selected, the estimated duration of each method will be requested.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Standard manual compression	This field collects whether the patient had cardiac compressions according to basic life support principles. Estimate time of standard manual compressions in minutes (if applicable)	At least one must be selected. If multiple techniques selected, an estimated time box will be for each method checked.		ECPR.ECPRAddendumNew	CMSandardEst
Automatic Compressor	This field collects whether the patient had at any time during the resuscitation, was a mechanical CPR device deployed. Estimate time of automatic compressions in minutes (if applicable)			ECPR.ECPRAddendumNew	CMAutoCompEst
Open Chest CPR	This field collects whether the patient had manual compression of the heart directly during an intra-thoracic procedure. Estimate time of open chest CPR in minutes (if applicable)			ECPR.ECPRAddendumNew	CMOpenChestEst
Unknown	This field collects if the type of compressions delivered were unknown.			ECPR.ECPRAddendumNew	CMUnknownEst

Initial Pulseless Rhythm Cardiac arrest is the cessation of cardiac mechanical activity as confirmed by the absence of signs of circulation. The first monitored rhythm is the first cardiac rhythm present when a monitor or defibrillator is attached to a patient after a cardiac arrest. If the AED does not have a rhythm display, then it may be possible to determine the first monitored rhythm from a data storage card, hard drive, or other device used by the AED to record data. If the AED has no data-recording device, then the first monitored rhythm should be classified simply as shockable or non-shockable. Specify the first identified rhythm during recognized cardiac arrest					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Asystole	This field collects whether the patient had at any time no cardiac electrical activity on ECG or rhythm strip	One rhythm must be selected, and only one may be chosen.		ECPR.ECPRAddendumNew	InitialPulselessRhythm 1
Pulseless Electrical Activity	This field collects whether the patient had at any time organized electrical activity on ECG or rhythm strip without appreciable arterial pulse.			ECPR.ECPRAddendumNew	InitialPulselessRhythm 2
Pulseless Ventricular Tachycardia	This field collects whether the patient had at any time wide complex organized rhythm demonstrated on ECG or rhythm strip without appreciable arterial pulse.			ECPR.ECPRAddendumNew	InitialPulselessRhythm 3
Ventricular Fibrillation	This field collects whether the patient had at any time disorganized electrical activity in the ventricles resulting in no appreciable cardiac ejection.			ECPR.ECPRAddendumNew	InitialPulselessRhythm 4
Unknown – Shockable	This field collects whether the AED has no data-recording device, then the first monitored rhythm should be classified simply as shockable or nonshockable. In general, shockable cardiac arrest rhythms are further divided into ventricular fibrillation and pulseless ventricular tachycardia.			ECPR.ECPRAddendumNew	InitialPulselessRhythm 5
Unknown – Non Shockable	This field collects whether the AED has no data-recording device, then the first monitored rhythm should be classified simply as shockable or nonshockable. Nonshockable cardiac arrest rhythms can be categorized as either asystole or PEA.			ECPR.ECPRAddendumNew	InitialPulselessRhythm 6
Unknown	This field collects whether the patient had no information regarding initial rhythm is available			ECPR.ECPRAddendumNew	InitialPulselessRhythm 7

Patient treated with Cardioversion or Defibrillation. Defibrillation can be attempted by means of an automated external defibrillator (AED), a semiautomated external defibrillator, an implantable cardioverter-defibrillator (ICD), or a manual defibrillator. Were DC shocks delivered in the management of the arrest?					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Patient treated with Cardioversion or Defibrillation?	This field collects whether the patient had at any time during the arrest defibrillation or cardioversion. Defibrillation can be attempted by means of an automated external defibrillator (AED), a semiautomated external defibrillator, an implantable cardioverter-defibrillator (ICD), or a manual defibrillator.	Yes / No		ECPR.ECPRAddendumNew	DCCardOrDefi
Number of Shocks before Cannulation	This field collect the number of times Cardioversion or Defibrillation was delivered prior to ECMO Cannulation	HARD MIN: 0 HARD MAX: 50		ECPR.ECPRAddendumNew	NumberOfShocks

Rhythm at Time of Cannulation Specify the first identified rhythm after ECMO cannulation/initiation.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Asystole	This field collects whether the patient had no cardiac electrical activity on ECG or rhythm strip	One rhythm must be selected, and only one may be chosen.		ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 2
Pulseless Electrical Activity	This field collects whether the patient had organized electrical activity on ECG or rhythm strip without appreciable arterial pulse.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 1
Pulseless Ventricular Tachycardia	This field collects whether the patient had wide complex organized rhythm demonstrated on ECG or rhythm strip without appreciable arterial pulse.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 9
Ventricular Fibrillation	This field collects whether the patient had disorganized electrical activity in the ventricles resulting in no appreciable cardiac ejection.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 8
High Degree Atrioventricular Block	This field collects whether the patient had organized electrical activity with second or third degree atrioventricular block.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 3
Supraventricular Tachycardia	This field collects whether the patient had an organized electrical activity with heart rate higher than normal upper limit for age.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 7

Rhythm at Time of Cannulation (Continued) Specify the first identified rhythm after ECMO cannulation/initiation.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Sinus Rhythm	This field collects whether the patient had an organized rhythm with impulse originating from sinoatrial node, with atrioventricular synchrony at normal rate for age.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 4
Sinus Bradycardia	This field collects whether the patient had an organized rhythm with impulse originating from sinoatrial node, with atrioventricular synchrony, rate slower than lower limit for age.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 5
Sinus Tachycardia	This field collects whether the patient had an Organized rhythm with impulse originating from sinoatrial node, with atrioventricular synchrony, rate faster than upper limit for age.			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 6
Unknown	This field collects if the rhythm was unknown, none of the above			ECPR.ECPRAddendumNew	RhythmAtTimeCannulation Lookup table: ECPR.RTCannulation RTCannulationId 10

Medications During Cardiopulmonary Arrest The term drugs refers to delivery of any medication (by IV cannula, IO needle, or tracheal tube) during the resuscitation event. Check all that apply					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
	Select medication field for any medication delivered during CPA. Total number of epinephrine and vasopressin doses will be required.	At least one must be selected. Multiple medications may be selected.			
Adenosine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 1
Amiodarone				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 2
Atropine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 3
Calcium Chloride/Gluconate				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 4
Dobutamine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 5
Dopamine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 6

Medications During Cardiopulmonary Arrest (Continued) The term drugs refers to delivery of any medication (by IV cannula, IO needle, or tracheal tube) during the resuscitation event. Check all that apply					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Epinephrine	Enter the total number of doses delivered to the patient.			ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 7
Flumazenil				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 8
Glucagon				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 9
Glucose				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 10
Lidocaine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 11
Magnesium Sulfate				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 12
Milrinone				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 13

Medications During Cardiopulmonary Arrest (Continued) The term drugs refers to delivery of any medication (by IV cannula, IO needle, or tracheal tube) during the resuscitation event. Check all that apply					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Naloxone				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 14
Norepinephrine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 15
Phenylephrine				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 16
Procainamide				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 17
Sodium Bicarbonate				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 18
Vasopressin	Enter the total number of doses delivered to the patient.			ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 19
No Medications				ECPR.ECPRNewAddendumMedications	MedicationId Lookup table: ECPR.ECPRNewMedicationCodes MedicationId 20

Cardiac Pacing During Cardiopulmonary Arrest During CPR, was there an attempt to electrically stimulate the heart for the purpose of cardiac pacing?					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Temporary cardiac pacing	During CPR, was there an attempt to electrically stimulate the heart for the purpose of cardiac pacing? If yes, what form of pacing was utilized (select from below).			ECPR.OiDuringCPA	OIcpaId 1 Lookup table: ECPR.OiDuringCPAcodes
Transcutaneous Cardiac Pacing	This field collects whether the patient had temporary cardiac pacing by delivering pulses of electric current through the patient's chest, which stimulates the heart to contract. Most commonly deployed with pads/paddles associated with a defibrillator.			ECPR.OiDuringCPA	OIcpaId 2 Lookup table: ECPR.OiDuringCPAcodes
Transvenous Cardiac Pacing	This field collects whether the patient had temporary cardiac pacing by delivering electric current via a lead inserted via the (internal jugular) vein direct to the right ventricle.			ECPR.OiDuringCPA	OIcpaId 3 Lookup table: ECPR.OiDuringCPAcodes
Epicardial Pacing	This field collects whether the patient had temporary cardiac pacing by delivering electric current via temporary pacing wires attached directly to the epicardium.			ECPR.OiDuringCPA	OIcpaId 4 Lookup table: ECPR.OiDuringCPAcodes
Permanent Pacemaker	This field collects whether the patient had a permanent pacemaker already in place.			ECPR.OiDuringCPA	OIcpaId 6 Lookup table: ECPR.OiDuringCPAcodes
No Attempt at Pacing				ECPR.OiDuringCPA	OIcpaId 5 Lookup table: ECPR.OiDuringCPAcodes
Unknown				ECPR.OiDuringCPA	OIcpaId 6 Lookup table: ECPR.OiDuringCPAcodes

IV. CIRCULATION ASSESSMENT

These fields collect what measures were used to ensure the quality of compressions for CPR during CPA. During the resuscitation, were there mechanisms or processes in place to measure the quality of CPR being delivered?

Quality of CPR

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
End Tidal CO2	This field collects whether an end tidal CO2 monitor was in situ during CPR. If yes, enter the resultant measure closest to ECMO Flow initiation.	If yes, ETCO2 measure closest to ECMO Flow initiation must be entered. HARD MAX: 200 mmHg HARD MIN: 0 mmHg		ECPR.ECPRAddendumNew	EndTidalCO2Monitoring ETCO2
Invasive Arterial Access	This field collects whether an invasive arterial line was in situ during CPR. If yes, enter the diastolic blood pressure (DBP) recorded during CPR just prior to ECMO flow initiation.	If yes, DBP closest to ECMO flow initiation must be entered. HARD MIN: 5 mmHg HARD MAX: 110 mmHg SOFT MIN: 0 mmHg SOFT MAX: 180 mmHg		ECPR.ECPRAddendumNew	InvasiveArterialAccess DBPflowStart
Cerebral Near-Infrared Spectroscopy	This field collects whether cerebral NIRS was in situ during CPR. If yes, enter the NIRS measured just prior to ECMO flow initiation.	If yes, NIRS closest to ECMO flow initiated. HARD MAX: 100		ECPR.ECPRAddendumNew	CerebralNIRS NIRS
CPR Feedback Device	This field identifies the use of devices that measure chest compression quality during CPR (e.g. accelerometer, force transducer, etc.). This includes CPR quality coaching systems integrated with mechanics devices (e.g. metronomes, and Zoll-R defibrillators). If yes enter the rate of compressions delivered.	If yes, number of compressions delivered. Estimate allowed. HARD MIN: 40 HARD MAX: 160mmHg SOFT MIN: 20 SOFT MAX: 200		ECPR.ECPRAddendumNew	CPRFeedbackDevice CPR

Quality of CPR (Continued)					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Signs of Life Present	Was the patient making attempts at breathing, gagging or moving prior to cannulation? If no, must enter whether the patient received neuromuscular blockade (paralysis).	If no, must select Yes/No for did the patient receive neuromuscular blockade.		ECPR.ECPRAddendumNew	SignsOfLifePreECLS NeuromuscularBlockadeUse
None	Select if none of the above were in place.				

V. CANNULATION AND CIRCUIT DETAILS

These fields collect where cannulation and initiation of ECMO occurred as well as pump and circuitry details.

Cannulation Location					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Out of Hospital	This field collects where the patient was cannulated Out of Hospital. Please select one of the following: **Home:** Place of residence (e.g., home, apartment, back yard of a home). Private residence, whether or not it is the patient's primary residence. **Public Place**: Street, city park, shopping center, sports stadium, entertainment center, airport, railway station, church, beach, office building - any location with access to bystanders. **Outpatient Ambulatory Medical Care**: According to the local ELSO center, a healthcare facility for assessment and management of non-inpatient care - not co-located with an inpatient or emergency resourced facility. **Ambulance Transport:** EMS personnel respond to a medical emergency in an official capacity as part of an organized medical response team. Choose this option if the patient is under their care at the time of arrest. **Other:** Other location (e.g., hotel room, private office, long-term care facility)			ECPR.ECPRAddendumNew	CDOutOfHospital Lookup table: ECPR.ArrestOutOfHospital Home=1, Public Place=2, Ambulatory Medical Care=3, Ambulance Transport=4, Other=5

Cannulation Location (Continued)					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
In Hospital	This field collects where the patient was cannulated In Hospital. Please select one of the following: **Ambulatory/Outpatient Area**: Non-inpatient facility within a healthcare setting or hospital which also manages inpatient care **Emergency Department:** Established unit resourced to provide acute assessment and management to ill and injured patients **General Inpatient Ward**: According to the local ELSO center, a healthcare facility for assessment and management of illness and/or injury **High Dependency Unit, Intermediate Care or Stepdown Unit:** According to the local ELSO center, a healthcare facility resourced to provide more acute care than general hospital admission **Intensive Care Setting:** According to the local ELSO center, a healthcare facility resourced to provide intensive care. (Drop down list to select specific ICU: Adult Medicine ICU, Adult Surgical ICU, Mixed ICU, Adult Cardiac or Cardiovascular ICU, Adult Coronary Care Unit, Pediatric Intensive Care Unit, Pediatric Cardiac Intensive Care Unit, Neonatal Intensive Care Unit) **Cardiac Catheterization Laboratory:** According to the local ELSO center, a specialized operating room or suite equipped with fluoroscopy for cardiac catheterization. **Interventional or Diagnostic Suite:** According to the local ELSO center, a specialized operating room or suite equipped for diagnostic and interventional procedures. **Operating Room:** According to the local ELSO center, a specialized operating room for procedures. **Post-Anesthesia Recovery Room (PACU):** According to the local ELSO center, a specialized room or suite for post anesthesia recovery after surgical procedures.			ECPR.ECPRAddendumNew	CDInHospital Lookup table: ECPR.ArrestInHospital Ambulatory/Outpatient=1 , ED=2 , Inpatient Ward=3 , HDU=4 , ICU=5 , Cath Lab=6 , Interventional Radiology=7 , OR=8 , PACU=9 , Delivery Room=10 , Other=11

Cannulation Location (Continued)					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
In Hospital (continued)	**Delivery Room:** According to the local ELSO center, a healthcare environment specialized for the care of gravid women and newborn infants. **Other Inpatient Setting:**				

ECPR System and Circuit Prime					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Pre-Primed Circuit	This field collects whether a pre-primed circuit was used prior to cannulation and initiation of ECMO. Refers to a circuit that was assembled and filled with a fluid and on standby. Pump and circuit that was assembled and primed specifically for this patient CPR event should not entered.	Yes/No/Unknown		ECPR.ECPRAddendumNew	ECPRSystem
Type of Prime	If yes, then select from the type of primed fluid used: **Blood Prime:** Circuit was primed with a mix of crystalloid fluid and blood products. **Clear Prime:** Circuit was primed with a crystalloid fluid. **Unknown:** No information available.	If yes, then select fluid type		ECPR.ECPRAddendumNew	ECPRTypeOfPrime

VI. POST ECPR CARE AND MANAGMENT

This section collects information regarding care and management in the time after cannulation and intiation of ECMO.

Procedures Post ECPR - Neurology

This field collects whether the patient had any procedure to assess neurological status in the 24-hour period post cannulation.

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
EEG Monitoring	This field collects whether post-ECPR electroencephalogram was performed within the first 24 hours - whether or not the results were abnormal. If yes, then select: **Standard:** According to local protocols, regular duration of EEG **Continuous:** EEG applied within the first 24 hours for a period of >12 hours of continuous monitoring	Must select one, if Yes then additional questions apply.		ECPR.ECPRAddendumNew	EEGMonitoring
Intracranial Imaging	This field collects whether Intracranial imaging was performed within the first 24 hours - whether or not the results were abnormal. If yes, then select: **Cranial Ultrasound:** **CT Scan of Brain:**	Must select one, if Yes then additional questions apply.		ECPR.ECPRAddendumNew	IntracranialImaging

Procedures Post ECPR – Metabolic and Environmental This field collects whether the patient had temperature management strategies employed post ECPR.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Temperature Management Strategy Planned	This field collects the intended temperature management strategy early post cardiopulmonary arrest. If yes, then select: **Targeted temperature management 32-34 degrees:** Informed by Moler et al THAPCA N Engl J Med. 2017 Jan 26;376(4):318-329 **Targeted normothermia 36-37.5 degrees:** Informed by Moler et al THAPCA N Engl J Med. 2017 Jan 26;376(4):318-329 **Targeted temperature management 32-36 degrees:** Informed by ILCOR 2015, Part 8 - Post-cardiac arrest care; Targeted temperature management **No specifically targeted temperature management:** **Unknown:**	One must be selected, but one choice may be made.		ECPR.ECPRAddendumNew	TempManagement Targeted 32 - 34°C=1, Targeted normothermia=2, Targeted 32 - 36°C=3, No Target=4, Unknown=5"
Highest Temperature in first 24 hours	This field collects the highest temperature management strategy (i.e. targeted normothermia) and whether this was achieved in the early post cardiopulmonary arrest phase (<24 hours). Choose one of the following: <32 degrees Centigrade 32 - <34 degrees Centigrade 34 - <35 degrees Centigrade 35 - <36 degrees Centigrade 36 - 37.5 degrees Centigrade 37.6 - 38.5 degrees Centigrade >38.5 degrees Centigrade Unknown	One must be selected, but only one choice may be made.		ECPR.ECPRAddendumNew	HighestTemp24Hrs < 32°C=2, 32 -< 34°C=3, 34 -< 35°C=4, 35 -< 36°C=5, 36 - 37.5°C=6, 37.6 - 38.5°C=7, > 38.5°C=8, Unknown=9

Procedures Post ECPR – Metabolic and Environmental (Continued) This field collects whether the patient had temperature management strategies employed post ECPR.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Lowest Temperature in first 24 hours	This field collects the lowest temperature management (i.e. targeted normothermia) and whether this was achieved in the early post cardiopulmonary arrest phase (<24 hours). Choose one of the following: <30 degrees Centigrade 30 - <32 degrees Centigrade 32 - <34 degrees Centigrade 34 - <35 degrees Centigrade 35 - <36 degrees Centigrade 36 - 37.5 degrees Centigrade 37.6 - 38.5 degrees Centigrade >38.5 degrees Centigrade Unknown	Not mandatory.		ECPR.ECPRAddendumNew	LowestTemp24Hrs < 30°C=1, 32 -< 34°C=3, 34 -< 35°C=4, 35 -< 36°C=5, 36 - 37.5°C=6, 37.6 - 38.5°C=7, > 38.5°C=8, Unknown=9, 30 -< 32°C = 10

First Blood Gas Post ECPR Choose the first arterial blood gas that meets the following 4 criteria: 1. Blood gas obtained from patient rather than circuit - specify arterial vs venous 2. Drawn after the ECLS Start Time 3. Drawn no more than 6 hours after the ECLS Start Time 4. If multiple arterial blood gases exist in this time period, choose the post-ECMO arterial blood gas closest to AND after the ECLS Start Time					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Post ECPR First Blood Gas Date/Time	This field collects the date and time of the arterial blood gas that meets the timing criteria for the Post ECPR Blood Gas defined above. Patient M had an ECLS start time of 03/28/2017 09:00PM He had the following 3 blood gases following shorthand: pH/PaCO2/PaO2/HCO3/SaO2 Lactate=X, FiO2 delivered=X ABG at 03/28/2017 7:00PM 7.13/48/42/18/76% Lactate 5 FiO2 delivered = 100% ABG at 03/28/2017 10:00PM 7.06/58/35/16/61% Lactate 11 FiO2 delivered = 100% ABG at 03/29/2017 1:00AM 7.07/40/140/16/100% Lactate 10 FiO2 delivered = 100% ABG on 03/28/2017 at 7:00PM is ineligible because it was collected before the ECLS Start Time. ABG on 3/29/2017 at 1:00AM is ineligible because it is the second ABG after ECLS Start Time. Enter Post-ECLS Blood Gas Date/Time ABG at 03/28/2017 10:00PM because it is the ABG closest to, but after the start of ECMO. Use all values for pH, PaCO2, PaO2, HCO3, SaO2, Lactate, from the same ABG and report the FiO2 at the time the ABG was drawn.	**Soft Notification:** Post ECPR Blood Gas Date/Time must be AFTER the ECLS Start Time but not more than 6 hrs. **Hard Limit:** Post ECPR Blood Gas Date/Time must be AFTER the time on ECMO. Post ECPR Blood Gas Date/Time cannot be earlier than the Date of Birth. Post ECPR Blood Gas Date/Time cannot be after the Date of Death.			

First Blood Gas Post ECPR Choose the first arterial blood gas that meets the following 4 criteria: 1. Blood gas obtained from patient rather than circuit - specify arterial vs venous 2. Drawn after the ECLS Start Time 3. Drawn no more than 6 hours after the ECLS Start Time 4. If multiple arterial blood gases exist in this time period, choose the post-ECMO arterial blood gas closest to AND after the ECLS Start Time					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
pH	This field collects the pH on that meets the timing criteria for the **Post ECPR Blood Gas** defined above. Potential of hydrogen (negative of the base 10 logarithm of the activity of the hydrogen ion) in the arterial blood sample.	Precision 2 decimal points **Soft Notification:** **< 6.90 or > 7.50** **Hard Limit:** **<6.00 or > 8.00**		ECPR.ECPRAddendumNew	pH
$PaCO_2$	This field collects the arterial partial pressure of carbon dioxide ($PaCO_2$) that meets the timing criteria for the **Post ECPR Blood Gas** defined above. Arterial partial pressure of carbon dioxide in mm Hg	**US units of Entry** Precision whole number **Soft Notification:** **< 30 mm Hg or > 100 mm Hg** **Hard Limit:** **< 10 mm Hg or > 240 mm Hg** **International Units** Precision 2 decimal points **Soft Notification:** **< 4.00 kPa or > 13.33 kPa** **Hard Limit:** **< 1.30 kPa or > 32.00 kPa**		ECPR.ECPRAddendumNew	PCO2

First Blood Gas Post ECPR Choose the first arterial blood gas that meets the following 4 criteria: 1. Blood gas obtained from patient rather than circuit - specify arterial vs venous 2. Drawn after the ECLS Start Time 3. Drawn no more than 6 hours after the ECLS Start Time 4. If multiple arterial blood gases exist in this time period, choose the post-ECMO arterial blood gas closest to AND after the ECLS Start Time					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
PaO_2	This field collects the arterial partial pressure oxygen (PaO_2) that meets the timing criteria for the **Post ECPR Blood Gas** defined above. Arterial partial pressure of oxygen in mm Hg Not required if venous gas	**US units of Entry** Precision whole number **Soft Notification:** **< 20 mm Hg or > 300 mm Hg** **Hard Limit:** **< 0 mm Hg or > 760 mm Hg** **International Units** Precision 2 decimal points **Soft Notification:** **< 2.66 kPa or > 40.00 kPa** **Hard Limit:** **< 0 kPa or > 101.31 kPa**		ECPR.ECPRAddendumNew	PO2

First Blood Gas Post ECPR Choose the first arterial blood gas that meets the following 4 criteria: 1. Blood gas obtained from patient rather than circuit - specify arterial vs venous 2. Drawn after the ECLS Start Time 3. Drawn no more than 6 hours after the ECLS Start Time 4. If multiple arterial blood gases exist in this time period, choose the post-ECMO arterial blood gas closest to AND after the ECLS Start Time					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
HCO_3	This field collects the arterial standard bicarbonate (HCO_3) that meets the timing criteria for the **Post ECPR Blood Gas** defined above. Standard bicarbonate concentration **mEq/L** or **mmol/L**	**US units of Entry** Precision whole number **Soft Notification:** **< 10 mEq/L or > 40 mEq/L** **Hard Limit:** **< 0 mEq/L or > 70 mEq/L** **International units** Precision whole number **Soft Notification:** **< 10 mmol/L or > 40 mmol/L** **Hard Limit:** **< 0 mmol/L or > 70 mmol/L**		ECPR.ECPRAddendumNew	HCO3
SaO_2 (%)	This field collects the arterial oxyhemoglobin saturation that meets the timing criteria for the **Post ECPR Blood Gas** defined above. Arterial blood oxyhemoglobin saturation from arterial blood gas in %	**Units of measure** for **US** and **International** is % Precision whole number **Soft Notification:** **<50% or > 100%** **Hard Limit:** **<1% or > 100%**		ECPR.ECPRAddendumNew	SaO2

First Blood Gas Post ECPR Choose the first arterial blood gas that meets the following 4 criteria: 1. Blood gas obtained from patient rather than circuit - specify arterial vs venous 2. Drawn after the ECLS Start Time 3. Drawn no more than 6 hours after the ECLS Start Time 4. If multiple arterial blood gases exist in this time period, choose the post-ECMO arterial blood gas closest to AND after the ECLS Start Time					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Lactate	This field collects the highest serum lactate concentration from an arterial blood gas arterial oxyhemoglobin saturation that meets the timing criteria for the **Post ECPR Blood Gas** defined above. If the lactate was drawn from a venous sample it is ok to enter. Highest serum lactate concentration drawn in the 6 hours preceding ECLS. If not all blood gases collect lactate, it can be drawn separately from the other arterial blood gas values, but it still needs to fall in the above described time period for **Post ECPR Blood Gas.**	**Units of measure** for **US** and **International** is mmol/L **Soft Notification: <0mmol/L or >20 mmol/l** **Hard Limit: <0mmol/L or >40 mmol/l**		ECPR.ECPRAddendumNew	Lactate
No Blood Gas Within 6 hours	This field to be selected if no blood gas was obtained within 6 hours of ECMO cannulation and initiation.			ECPR.ECPRAddendumNew	BloodGasAvailable

Debrief Post ECPR Monthly review of CPR cases has been associated with improved survival post CPR Informed by Chan PS, Resuscitation Practices Associated with Survival After In-Hospital Cardiac Arrest: A Nationwide Survey. JAMA Cardiol. 2016 May 1;1(2):189-97.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection/ Modification	Table Name	Column Name / Stored Values
Debrief Post ECPR	This field collects if your inter-disciplinary team discussed the resuscitation event and ECPR process in the period following ECPR. If Yes select the timeframe that it occurred. **Within 24 hours:** **If >24 hours, did this occur within 1 month** **If >1 month, did this occur within 3 months**			ECPR.ECPRAddendumNew	DebriefPostECPR

Neurological Assessment at Discharge

At the time of hospital discharge, what was the patient's functional performance assessed by Cerebral Performance Category (CPC) for patients >18yo; or Pediatric Cerebral Performance Category (0-18yo).

Informed by Jennett and Bond Assessment of outcome after severe brain damage Lancet 1975 Mar 1;1(7905):480-4; and Fiser Assessing the outcomes of pediatric intensive care J Pediatr. 1992 Jul;121(1):68-74.

Field Name	Definition / Explanation / Example	Data Entry Rules	Collection / Modification	Table Name	Column Name / Stored Values
Neurological Assessment at Discharge	This field collects if the patient had a functional performance assessment by Cerebral Performance Category (CPC) for patients >18 yo; or by Pediatric Cerebral Performance Category (0-18 yo) If yes, enter result: Cerebral Performance Category (Adult): **CPC 1**: Conscious, alert, able to work and lead a normal life. May be minor psychologic or neurologic deficits (mild dysphasia, non-incapacitating hemiparesis, or minor cranial nerve abnormalities). **CPC 2**: Conscious. Sufficient cerebral function for part-time work in sheltered environment or independent activities of daily life (dress, travel by public transportation, food preparation). May have hemiplegia, seizures, ataxia, dysarthria, or permanent memory or mental changes. **CPC 3**: Conscious. Dependent on others for daily support (in an institution or at home with exceptional family support). Has at least limited cognition. This category includes a wide range of cerebral abnormalities, from patients who are ambulatory but have severe memory disturbances or dementia precluding independent existence, to those who are paralyzed and can communicate only with their eyes, as in the “locked in” syndrome. **CPC 4**: Unconscious. Unaware of surroundings, no cognition. No verbal and/or psychologic interaction with environment. **CPC 5**: Brain dead, circulation preserved. Death at Discharge.			ECPR.ECPRAddendumNew	NeurologicalAssessment AdPedScore CPC 1=1, CPC 2=2, CPC 3=3, CPC 4=4, CPC 5=5, Death at Discharge=6

Neurological Assessment at Discharge (continued) At the time of hospital discharge, what was the patient's functional performance assessed by Cerebral Performance Category (CPC) for patients >18yo; or Pediatric Cerebral Performance Category (0-18yo). Informed by Jennett and Bond Assessment of outcome after severe brain damage Lancet 1975 Mar 1;1(7905):480-4; and Fiser Assessing the outcomes of pediatric intensive care J Pediatr. 1992 Jul;121(1):68-74.					
Field Name	Definition / Explanation / Example	Data Entry Rules	Collection / Modification	Table Name	Column Name / Stored Values
Neurological Assessment at Discharge	Pediatric Cerebral Performance Category Scale (PCPCS): **Normal (1):** Normal at age appropriate level. School age child attends regular school classroom. **Mild Disability (2):** Conscious alert and able to interact at an age appropriate level. School age child attending regular school classroom but grade perhaps not appropriate for age. May have mild neurologic deficit. **Moderate Disability (3):** Conscious. Sufficient cerebral function for age-appropriate independent activities of daily life. School age child attending special education classroom. May have learning deficit. **Severe Disability (4):** Conscious. Dependent on others for daily support because of impaired brain function. **Coma or Vegetative State (5):** Any degree of coma without any of the criteria for brain death. Unawareness even if awake in appearance without interaction with the environment. Cerebral unresponsiveness. No evidence of cortical function and aroused by verbal stimuli. Possibly some reflexive responses, spontaneous eye opening and/or sleep-wake cycles. **Death (6):** Brain Apnea OR areflexia OR electroencephalographic (EEG) silence.			ECPR.ECPRAddendumNew	AdPedScore Normal (1)=1, Mild Disability (2)=2, Moderate Disability (3)=3, Severe Disability (4)=4, Coma or Vegetative State (5)=5, Brain Death (6)=6