SOCIEDAD ESPAÑOLA DE CARDIOLOGÍA

SEMICYUC

CAPAC

CERTIFICACIÓN ASISTENCIAL EN PARO CARDIACO

VERIFICADO POR AENOR

Quality requirements for certification of post-cardiac arrest care centres (PCCs)

Contents

1. Introduction

It is estimated that there are 52,300 cardiac arrests a year in Spain, 30,000 occurring in the community and 22,300 in hospitals. Of those occurring outside the hospital setting, only one in ten achieve return of spontaneous circulation and reach the hospital alive, and only 5%-10% achieve recovery.

Comprehensive early intervention for cardiorespiratory arrest (CRA) is necessary, and must extend from early detection and activation of the emergency system and basic life support manoeuvres started by witnesses to the arrest to advanced life support measures and post-resuscitation care (survival chain).

Bystander-witnessed cardiopulmonary resuscitation (CPR) in the first 3-4 minutes and early use of automated defibrillators is vital for improving the chances of survival. However, the patient's assistance and care does not end with the return of spontaneous circulation, and the relevant post-resuscitation care must be continued. This starts with the recovery of signs of circulation in the pre-hospital setting and continues with management by emergency care facilities and intensive care units. Hospital management of post-resuscitation care plays a vital role in the patient's survival and, to a greater extent, in their neurological outcome.

It should also be noted that poor clinical results in patients with critical neurological injury due to cardiac arrest can be extremely costly in both the short and long term. Although the hospital survival rate has increased and neurological prognosis has improved over the last decade, while measures such as temperature control and advancements in post-resuscitation care have become widespread, multi-disciplinary teams providing comprehensive high-quality management and guaranteeing a continuum of care for these patients are also vital.

There is a broad scope of action for reducing mortality and neurological damage in patients on discharge, given the large variability of cardiac arrest management. Improvement measures could be established with regard to this variability, which is attributable to epidemiological or sociodemographic factors, health resourcing and methodological or organisational reasons.

The European Resuscitation Council (ERC) has partnered the European Society of Intensive Care Medicine (ESICM) to draw up a series of post-resuscitation care guidelines, demonstrating the importance of high-quality care as a vital link in the survival chain and the patients' positive neurological outcome.

The ERC also recommends implementing accredited cardiac post-resuscitation care units, and proposes the following:

- The creation of centres specialising in cardiac arrest care, forming a network with smaller centres in order to optimise the quality of the care and available resources.
- All cardiac arrest centres must be able to immediately perform a cardiac catheterization and have intensive care units with temperature control capability available.
- The centres must be equipped with the necessary means for a correct prognostic stratification, both neurological and functional, and a specific system for support and rehabilitation after hospitalization.
- They should ideally be included in organ donation programmes, including non-heart beating donation, for patients not achieving reanimation or for whom it has been decided to remove the life support measures.
- The care of these patients is completed with access to units where hereditary disease screening is performed for prevention in family members.

- Adult patients with non-traumatic out-of-hospital cardiac arrest (OHCA) should be attended to at the cardiac arrest centres in accordance with local protocols and organisational resources.
- The minimum requirements for a cardiac arrest centre are 24/7 availability of an on-site coronary angiography laboratory, an emergency department, an ICU and the possibility of imaging studies such as echocardiography, computed tomography and MRI scanning.

This is the backdrop to the CAPAC project (**Cardiac Arrest Care Certification** in its Spanish acronym), aimed at achieving **implementation of accredited cardiac arrest centres within the Spanish Healthcare Services**, which will have acknowledged compliance with the quality standards necessary to guarantee the best care for these patients, maximise their survival rate and minimise possible neurological damage and, consequently, the cost from a human, social and healthcare perspective.

This document is intended as a guide for healthcare organisations wishing to become accredited as post-arrest care centres (PCCs), enabling them to:

- Cater to **quality, safety, clinical effectiveness and cost savings requirements**.
- Provide **guarantees with regard to the care-providing professionals**.
- Promote **health protection, integrity and quality care for the patients after suffering the CRA**.
- Identify **the centres that adopt this standard,** facilitating their use when an OH-CRA occurs, as the patients are provided with a **quality guarantee for the care** they will receive.
- **Regular inspections** of these centres, with the consequent commitment to fostering improvement of and active involvement in **research**.

2. Object and scope of application

This document sets out the general principles and requirements to be met by a post-arrest care centre (PCC) for hospital management of post-resuscitation care of patients recovering from a cardiac arrest presumably of cardiac origin or of unknown origin, from admission to discharge.

This document applies to the organisation of the PCC, the facilities and equipment, and the care provision processes.

This document will define the requirements, itemising them by process stages and specifying those necessary to obtain certification for both level II (for centres able to provide post-cardiac arrest care) and level I (for centres with additional resources of a higher capacity and complexity).

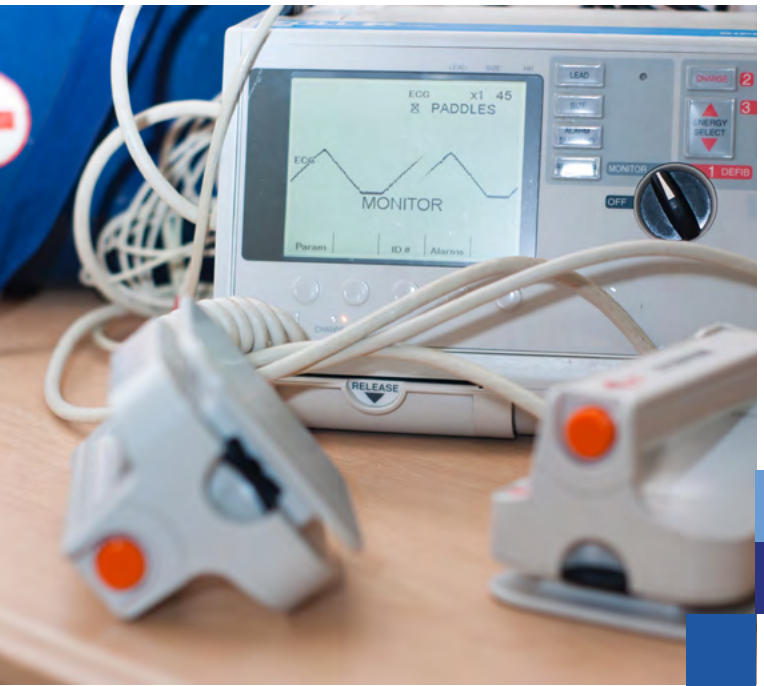
3. Definitions and list of abbreviations used

Post-cardiac arrest care centre (PCC): a health organisation accredited for care of recovering out-of-hospital cardiac arrest patients that meets the necessary quality standards to guarantee the best care for patients recovering from an out-of-hospital cardiac arrest, with the aim of maximising their survival and minimising neurological damage to the greatest possible extent.

Level I post-cardiac arrest care centre: a health organisation that meets the requirements for providing patients recovering from an out-of-hospital cardiac arrest with all the state-of-the-art care they may require, at the centre itself.

Level II post-cardiac arrest care centre: a health organisation that fulfils the minimum requirements, at least, for providing quality care in accordance with the current standards for patients recovering from an out-of-hospital CRA.

Adverse event (AE): an undesired and unexpected event, with or without lasting negative consequences for the patient or the healthcare institution itself, resulting from the healthcare, in this case the care of patients recovering from a cardiac arrest.



Sentinel event (SE): an unexpected event causing or risking death or serious physical or psychological damage on managing post-resuscitation care. The occurrence of such events serves as an alert, obliging the organisation to conduct immediate evaluation and provide a response to control the advent of new cases.

Servo-controlled temperature control therapy: this is based on circulating cold water through a series of pads adhered to the skin. Its electronic module is connected to disposable pads transferring the thermal energy directly to the patient's skin, insulating them from the ambient temperature. It is a servo-controlled system that monitors the patient's body temperature at one-second intervals and compares it with the desired protocol, adjusting the water flow temperature 30 times an hour.

Infarction code network: a care network guaranteeing the coordination of all the necessary healthcare resources for timely attention to ACS patients requiring reperfusion therapy. Implementing care networks for patients with ACS enables shorter reaction times and increases reperfusion rates, impacting patient results. Although each autonomous community has a series of population, geographical, healthcare and resource-related features that determine the type of network to be created in accordance with its scope, all the ACS patient care networks must share a series of minimum requirements characterising them as such and enabling their functioning, evaluation and comparison.

STE-ACS: sST-segment elevation acute coronary syndrome (STE-ACS).

LSTL: life support therapy limitation.

TTM (Targeted Temperature Management): management of temperature control. This includes conventional non-controlled methods, controlled percutaneous and intravascular methods, and other techniques such as extracorporeal cooling, the use of continuous renal replacement therapy and bladder and oesophageal cooling.

POCT (point of care test): immediate bedside analysis of care.

ONT: national transplant organisation.

SCR: spontaneous circulation return.

POCUS: Point-of-care ultrasound.

CPC score: the score on the Cerebral Performance Category (CPC) scale assessing neurological evolution.

ACS: acute coronary syndrome.

NSE: neuron-specific enolase.

SSEPs: somatosensory evoked potentials.

4. PCC resourcing

4.1. Human Resources

The PCCs must have the following, at least:

4.1.1. Intensive Care Unit.

4.1.2. Cardiology Service.

4.1.3. Rehabilitation and/or physiotherapy unit.

4.1.4. Neurophysiology unit.

4.1.5. Transplant coordinator.

It is also recommended for the PCCs to have an interventional radiology service.

4.2. Material Resources

4.2.1. Emergency room equipped for critical patient care.(see annex)

4.2.2. Intensive care unit, equipped with:

- Means for applying strict continuous temperature control therapy.
- Means for applying continuous extra-renal purification.
- Means of advanced cardio-respiratory support.

4.2.3. Cardiac imaging lab.

4.2.4. Diagnostic imaging unit able to perform full-body CAT scans 24/7.

4.2.5. Haemodynamics lab.

4.2.6. Interventional radiology lab.

4.2.7. Electrophysiology lab.

4.2.8. Neurophysiology lab, including EEG at least and also, ideally, somatosensory evoked potentials (SSEPs).

4.2.9. Availability of specific analytic studies: high sensitivity troponin, neuron-specific enolase, natriuretic peptides, D-dimer and lactate.

4.3. Equipment control

The PCC must determine the monitoring and measurement of the equipment to be carried out.

When the validity of the results provided by this equipment is critical for ensuring the effectiveness of the CPR process, the measuring equipment must be:

- Calibrated or checked, or both, at specified intervals or before use, comparing it with standards of measurement traceable to international or national measurement standards; if no such standards exist, the basis used for the calibration or checking must be recorded.
- Adjusted or readjusted as necessary.
- Identified so that its calibration status can be determined.
- Protected against any adjustments that could invalidate the measurement result.
- Protected from damage and wear during handling, maintenance and storage.

Also, the organisation must assess and record the validity of the results of the previous measurements if non-conformity of the equipment is detected. The organisation must take the necessary action with regard to the equipment, and to any affected product.

The records of the results of the calibration and checking must be kept.

The capacity of the computer programs to fulfil the application they are intended for must be confirmed, when they are used for the activities. This must be done before beginning to use them and confirmed again whenever necessary.

Equipment that cannot be used (not in working order, being repaired, etc.) must be identified.

5. Cardiac arrest care process requirements

5.1. Care coordination between healthcare levels

Post-resuscitation care begins at the time of spontaneous circulation return in the pre-hospital setting and lasts until the patient's final discharge after completion of their study and treatment.

Coordinating the different healthcare levels involved in this care entails optimisation of resources and clinical results, and a care network is therefore proposed, so that:

- Outpatient care is suitably coordinated with inpatient care, in order to complete the initial stabilisation and diagnosis of the cause of the CRA as quickly and effectively as possible and to achieve continuity and uniformity of the post-resuscitation life support.
- Inpatient care is suitably organised as a networking system between the different levels of centres, so that patients eligible for more advanced resources are detected appropriately and in good time and can be transferred to benchmark centres using specific criteria in accordance with the local situation, enabling fair, cost-effective use of resources

On analysing the coordination with pre-hospital care, the process begins on activating the transfer in the setting in which the CRA occurs and lasts until arrival at the benchmark centre.

For efficient management of this care process, the PCC must have:

- A procedure for activating the care protocol for return from cardiac arrest, contemplating the following:

a) An activation call from outpatients to the destination centre

b) A person responsible for the call

c) Call criteria

- A procedure for reception and transfer of the patient, specifying:

d) The room the patient is received in

e) The person responsible for receiving the patient

r) The minimum information to be transmitted

- Analysis of results and opportunities for improvement between care levels.

  The organisation must encourage the process responsibles to meet at least once a year, leaving a record including the information addressed and the conclusions or decisions reached.

- Associated indicators must be available.

As to the coordination between centres, the process begins after the initial stabilisation and causal diagnosis of the CRA and consists of referring patients with special needs to hospitals that meet the requirements for their comprehensive management. Centralising some resources may foster specialisation and training and research capacity, as well as greater effectiveness of the resources.

For efficient coordination between centres, the centres must have patient referral procedures, in accordance with the resources available and the clinical context, which may be CRA-specific or tailored to a particular aetiology (infarction code, trauma code, etc.).

5.2. Identifying the cause of the CRA

One of the main aspects of post-resuscitation care is identifying the causal diagnosis of the CRA in order to provide specific treatment, thus avoiding a subsequent CRA and facilitating the patient's stabilisation and improved recovery.

All PCCs must have a documented protocol for the procedure of making the differential causal diagnosis of the cardiac arrest. This must include an algorithm of action that involves performing the following, at least, in accordance with each case:

- **A 12-lead ECG**.
- **An emergency coronary angiography**, for ECG patients with ST-segment elevation, via infarction code activation from the out-of-hospital setting.

Inpatient activation will be considered appropriate in cases of newly-appearing ST changes or persistent haemodynamic instability.

If the centre does not have emergency coronary angiography available, it must form part of the **infarction code network** and comply with the specific quality guidelines applicable, particularly with regard to door-to-balloon time.

- **An ultrasound study** at the point of care in accordance with protocols for resuscitation or life support in the first two hours, as an initial evaluation and particularly in cases where the cause of the CRA has not been identified.
- **Analytical study** by rapid determination (blood gas and acid-base balance, haemoglobin, basic ions – K, Na, Ca), later completed with laboratory studies including toxin determination and study of multiple organ dysfunction (haemogram, creatinine, bilirubin, prothrombin activity), according to the case.
- **Thoracoabdominal and/or cranial CT,** guided by clinical data, for differential diagnosis of the cause of the CRA in ECG patients NOT compatible with a coronary ischaemic origin of the CRA.

5.3. Life support management

Once spontaneous circulation has returned, the immediate aim, apart from the diagnosis, prevention of another CRA and resolving the cause of the CRA, is to maintain organic functioning under the best possible conditions in order to minimise the onset of multiple organ failure and the impact of anoxic encephalopathy, thus optimising the probability of good clinical results, with regard to both survival and functional status.

For a centre to be considered adequate for life support management in a post-cardiac arrest syndrome setting, it must have a procedure integrating all the life support care from a multi-disciplinary perspective with the capacity for comprehensive care, centralising the diagnostic and therapeutic processes, informing of the following, at least:

a) The basic actions to be controlled by the casualty and emergency team.

b) The possibility of initiating advanced cardiorespiratory support, particularly mechanical ventilation, vasoactive support and mechanical circulatory support.

c) The capacity to perform continuous renal replacement therapies.

d) The possibility of performing strict continuous temperature control therapy.

f) The availability of multimodal monitoring, including advanced neuromonitoring, in accordance with the patient's particular case.

For the cardiac arrest centres to be considered higher-volume centres, i.e. Level I centres, they must have the following:

- Mechanical circulatory support programme with possibility of e-PCR.
- Electrophysiology unit with device implant and monitoring capacity.
- 24/7 interventional radiology capacity.

5.4. Neurological outcome evaluation

For correct assessment of the patient's neurological outcome, the PCC must have a multimodal neurological assessment protocol, including the following:

- Clinical evaluation of the patient, directed by a specialist able to analyse the data obtained and assess them on an overall basis to reach a comprehensive clinical judgement.

  Note: this may be a specialist in cardiological intensive care and neurology, as applicable.

- Imaging tests (CT and MRI)
- Functional assessment tests (EEG and somatosensory potentials)
- Determination of biochemical markers of neuronal damage (NSE)
- Reassessment when tests are NOT conclusive.

5.5. Removal from life support and organ donation

The decision to remove a patient from life support must be made after discussion between the members of the care team, and it is therefore a shared decision. Documented information must be maintained.

The PCC must have a local protocol, coordinated with the benchmark centre transplant unit.

There must be communication with the family and they must be involved in the process.

5.6. Requirements for patient's transition from care to discharge

Before moving the patient from intensive care to the ward, the following must be provided:

a) Medical report (discharge summary by the unit, treatment plan, etc.)

b) Nursing care plan.

For continuum of care on home discharge, the following must be be provided:

a) Medical discharge summary.

b) Nursing discharge summary.

c) Follow-up appointment scheduled on discharge.

d) Psycho-social assessment prior to discharge.

e) Functional physical assessment on discharge.

f) Rehabilitation plan (this may be included in the medical discharge summary).

g) Functional follow-up appointment within three months.

6. Training, information and communication requirements

6.1. Formación del personal sanitario

The competence of all persons attending to the patients and/or carrying out tasks that could affect the post-arrest care process must be ensured, i.e. they must have adequate education, training or experience.

The training, information and communication needs for the persons involved in post-arrest care must be determined.

The necessary documented information must be kept as proof of this competence.

Ongoing training and awareness-raising regarding post-arrest care must be fostered, in aspects considered necessary for their work.

The staff involved in the post-arrest care process must have the following training, at least:

a) Specific training in advanced life support systems.

b) Specific training in post-resuscitation care. It is advisable to include clinical simulation as a training tool for acquiring technical and non-technical skills.

- Ongoing training accredited by the Spanish scientific societies SEC and SEMICYUC.
- Local ongoing training directed by professionals who have successfully completed the training accredited by SEC/SEMICYUC, containing 80% or more of the material described in Information Annex A of this document.

6.2. Information and communication with family members

The process for informing and communicating with family members must be determined, including the following:

a) What to communicate

b) When to communicate it

c) How to communicate it

Factors such as language, culture, literacy and disability must be taken into account on considering the information and communication needs.

The following factors must be taken into account, at least:

- The family must be attended to at times considered flexible and adapted to the needs of the patient, the family and external conditioning factors.
- There must be a welcome guide, leaflet and/or information poster for family members and for patients admitted to the ICU, with information on accessing the unit and the possibility of involvement in the patient's care.
- There must be suitable physical facilities available where family members can be provided with information.
- Patients and family members must be given both medical and nursing information.

6.3. Information and communication with patients

The most appropriate channels and mechanisms must be provided to ensure information and communication with the patients, overcoming any language, technology, cultural barriers, etc.

Measures must be established to aid communication with patients who have difficulty in communicating.

The aim is to:

- Ensure the information is relevant, clear and understandable.
- Guarantee sufficient time for communication of the information and response, to enable timely, appropriate consultation.

7. Commitment to continuous improvement

Processes for aspects including drawing up reports, investigation and decision-making must be established, implemented and maintained, in order to determine and manage any incidents occurring during the post-arrest care process or non-conformities arising due to failure to meet the requirements in this document.

7.1. Management of incidents, adverse events and sentinel events

When an incident or non-conformity occurs, the person in charge of the centre or the person from the PCC appointed as responsible must act effectively with regard to the incident, adverse event or sentinel event, as applicable and as follows:

1. Taking measures to rectify the situation that gave rise to the event;
2. Addressing its consequences.

It must be assessed whether corrective measures are necessary to eliminate the root causes of the incident, adverse event or sentinel event so that it does not occur again, by:

- Investigating and determining the causes.
- Determining whether any similar incidents, adverse events or sentinel events have occurred previously or could occur again in future.
- Implementing any necessary measures.
- Reviewing the effectiveness of any measure taken.
- Making the relevant changes.

The person in charge of the PCC or the person they have appointed for its management must keep documented information as proof of:

- The nature of the incidents, adverse events or sentinel events and any subsequent action taken.
- The results of any corrective action, including an evaluation of its effectiveness.

The person in charge of the PCC or the person they have appointed for its management must inform the relevant interested parties (patient, family, other healthcare staff, etc.) and involve them in this process, as deemed appropriate at each given time, and communicate the relevant information to them.

7.2. Process monitoring and measurement

The cardiac resuscitation unit must define and establish indicators for the operational processes.

For each indicator defined, the following items at least must be established:

- Process name.
- Indicator name.
- Calculation formula or monitoring method.
- Frequency of the measurement or monitoring.
- Reference value or standard value.

Note: the reference or standard values to be contemplated can be obtained from those defined by the various Scientific Societies or from the organisation's own past results, among other sources.

The records must be kept as proof of monitoring and measurement of the processes.

The organisation must establish the following indicators, at least:

Process Quality Indicators

Process: alert activation (Coordination with out-of-hospital care)

Indicator name	CRA code activation
Purpose	To measure use of the arrest code for patients with out-of-hospital (OOH) cardiac arrest (CRA)
Justification	The arrest code alert activation criteria must be sensitive enough to detect all CRA patients recovering out of hospital.
Formula	$\frac{\text{N° of patients received due to "arrest code" activation}}{\text{N° of patients received due to OOH CRA}} \times 100$
Indicator value	≥70%
Data sources	Record

Indicator name	AMI code activation
Purpose	To measure use of the infarction code for patients with STE-ACS following out-of-hospital spontaneous circulation return (SCR)
Justification	The infarction code alert activation criteria must be sensitive enough to detect all patients with STE-ACS following SCR.
Formula	$\frac{\text{N° of patients with STE-ACS after SCR received due to AMI code activation}}{\text{N° of patients received with STE-ACS after SCR}} \times 100$
Indicator value	≥70%
Data sources	Record

Process: Identification of the cause of CRA

Indicator name	ECG immediately after SCR
Purpose	To measure the ECG frequency after SCR
Justification	Ischemic cardiopathy or, specifically, acute myocardial infarction, is the leading cause of sudden death. Performing a 12-lead ECG is the basic tool to diagnose STE-ACS and indicate the need for immediate intervention.
Formula	$\frac{\text{Nº of patients with OOH SCR with out-of-hospital 12-lead ECG}}{\text{Nº of patients received due to OOH CRA}} \times 100$
Value	≥70%
Data sources	Record

Indicator name	Analysis via immediate rapid test
Purpose	To measure the frequency of immediate rapid test analysis on arrival at the centre
Justification	Point of care tests (POCTs) normally form part of gasometry studies and provide guidance regarding the cause of the CRA in just a few minutes, mainly in cases where the CRA occurs at a non-defibrillatable rhythm, on the basis of pH values, bicarbonate, lactate, GAP anion, pO2, pCO2, glucose, basic ions and Hb and their forms. Even though they are used on patients with a known cause of CRA, these studies enable detection of adjuvant fac-tors increasing the risk of another CRA and which must be treated during the initial stabilisation.
Formula	$\frac{\text{Nº of patients with OOH SCR and POCT within 1h of arrival at centre}}{\text{Nº of patients received due to OOH CRA}} \times 100$
Value	≥80%
Fuentes de datos	Record

Indicator name	Early point-of-care ultrasound
Purpose	To measure the frequency of the point-of-care ultrasound (POCUS) on arrival at the centre
Justification	Point-of-care ultrasound, particularly the type geared to a CRA context ac-cording to the specific protocols, is an immediate and relatively simple tool to provide guidance regarding the cause of the CRA and indicate interventions to treat it, particularly for patients with non-diagnostic ECG, and as a first step for monitoring initial stabilisation after SCR.
Formula	$\frac{\text{Nº of patients with OOH SCR and POCUS within 2h of SCR being documented via clinical tool}}{\text{Nº of patients received due to OOH CRA}} \times 100$
Value	≥80%
Data sources	Record

Process: CRA treatment – Life support management

Indicator name	Strict temperature control protocol
Justification	Patients who do not regain consciousness on spontaneous circulation return are more likely to suffer brain damage due to ischemia. The neurological outcome is better for those who undergo strict continuous temperature control, avoiding hyperthermia.
Purpose	To check there is a temperature control protocol, with express mention of a specif-ic target temperature and in accordance with the recommendations (<37.5°C).
Data sources	Local protocol, Quality Dept.

Indicator name	Proportion of patients undergoing strict continuous Temperature Control
Justification	Patients who do not regain consciousness on spontaneous circulation return are more likely to suffer brain damage due to ischemia. The neurological outcome is better for those who undergo continuous temperature control, maintained between the evidence-based recommended safety margins*, avoiding hyperthermia. *On the basis of current evidence, temperatures between 32°C and 37.5°C will be considered safe.
Purpose	To measure the proportion of comatose patients undergoing strict continuous tem-perature control
Formula	$\frac{\text{Nº of comatose patients after SCR undergoing strict continuous temperature}}{\text{Nº of comatose patients with SCR}} \times 100$
Value	≥80%
Data sources	Record, clinical record.

Process: Neurological prognosis

Indicator name	Pronóstico multimodal
Justification	Patients who do not regain consciousness after sedation is removed following recovery of stability normally suffer a serious degree of anoxic brain damage and have a poor short-to-medium term prognosis. To predict which of these patients will die or remain in persistent vegetative state (a CPC score of 4-5) regardless of the therapeutic measures established, different complementary tests and pre-dictive models have been proposed to aid clinical decision-making, including decisions on therapeutic effort limitation.
Purpose	To measure the proportion of comatose patients on sedation removal undergoing a multimodal prognosis strategy in accordance with the ERC's current recommenda-tions*
Formula	$\frac{\text{N° of patients recovered from OH-CRA within 72h undergoing a multimodal prognostic test}}{\text{N° of patients recovering from OH-CRA}} \times 100$
Value	≥80%
Data sources	Record

Process: Removal from life support and organ donation

Indicator name	Proportion of life support treatment limitation
Justification	Life support treatment limitation (LSTL) is a measure taken for patients with irre-versible anoxic brain damage. Knowing the proportion of patients it is applied to can provide guidance with regard to the quality of care adaptation.
Purpose	To know the proportion of patients to whom life support treatment limitation is ap-plied.
Formula	$\frac{\text{Nº of patients with poor neurological prognosis for whom LSTL option is considered}}{\text{Nº of patients with poor neurological prognosis (CPC}\geq 4 \text{ in prognostic test)}}$
Value	80%
Data sources	Record, clinical record

Indicator name	Proportion of donors
Justification	Patients with encephalic death or patients with life support treatment limitation due to irreversible brain damage are organ donor candidates and should be suitably assessed by the transplant units.
Purpose	To know the proportion of organ donor candidates who have been suitably as-sessed by the NTO
Formula	$\frac{\text{Nº of patients with encephalic death or LSTL decision evaluated by the NTO}}{\text{Nº of patients with encephalic death or LSTL}}$
Value	≥80%
Data sources	Record

Patient's transition from care to discharge

Indicator name	Availability of discharge summaries
Justification	Transmitting the information between the different units involved in patient care is essential for maintaining the continuum of care, enabling safer, more efficient and higher-quality care.
Purpose	To know the proportion of cases suitably recorded and information transmission
Formula	$\frac{\text{N° of patients with medical and nursing discharge summary(-ł)}}{\text{N° of patients with SCR}} \times 100$
Value	≥80%
Data sources	Record

Indicator name	Post-discharge follow-up
Justification	It is recommended to evaluate patients 3 months after discharge, to know the me-dium-term results and establish improvement measures
Purpose	To know the proportion of survivors with follow-up scheduled
Formula	$\frac{\text{N° of patients discharged after OH-CRA evaluated at follow-up appointment within 3m}}{\text{N° of patients discharged after OH-CRA}}$
Value	≥60
Data sources	Record

Process: Training, information and communication

Indicator name	Nivel de formación específica
Justification	Training is a key aspect for ensuring the professionals' competence and optimis-ing the quality of the care and the patient's safety.
Purpose	To ensure there are a minimum of trained reference staff
Formula	$\frac{\text{Nº of ICU doctors and nurses in each team/shift } \frac{\text{SEC}}{\text{SEMICYUC}} \text{ or equivalent}}{\text{Nº of staff per ICU shift}}$
Value	>20% of each work team (shift)
Data sources	Record

Process: Commitment to improvement

Indicator name	In-hospital mortality
Justification	The mortality rate for cases of OOH-SCR must be known in order to establish areas for improvement and the necessary corrective measures
Purpose	To know the in-hospital mortality rate
Formula	$\frac{\text{Nº of patients received due to OH-CRA dying for any reason during hospitalisation}}{\text{Nº of patients hospitalised due to OH-CRA}}$
Value	<50%
Data sources	Record

Indicator name	Neurological status on discharge
Justification	The neurological status of the cases of OH-CRA must be known in order to estab-lish areas for improvement and the necessary corrective measures
Purpose	To know the percentage of patients with a poor neurological status on discharge
Formula	$\frac{\text{Nº of patients received due to OH-CRA with CPC 3-4 on hospital admission}}{\text{Nº of patients alive on admission}}$
Value	<40%
Data sources	Record *Check which scale we use in the document (priority CPC)

8. Annexes

Annex I. Training programme

Course in post-resuscitation care and temperature control (semi-cyuc)

A. THEORY

1. 1. Updating in post-cardiac arrest syndrome
   - 1.1. Updating in epidemiology, prognosis and socio-health impact of cardiac arrest.
   - 1.2. Updating in the concept, pathophysiology and epidemiology of post cardiac arrest syndrome.
   - 1.3. Concept, pathophysiology and epidemiology of anoxic encephalopathy. Secondary brain injury and neuroprotective mechanisms.
   - 1.4. Organisational aspects of the post-cardiac arrest centres. The CAPAC Project.
2. 2. Updating in temperature control therapies..
   - 2.1. Clinical impact and temperature monitoring. Physiopathological fundamentals of temperature control therapies.
   - 2.2. Indications, contraindications and complications of temperature control treatment. Evidence for use of temperature control therapies.
   - 2.3. Key aspects of a temperature control therapy protocol.
3. A comprehensive approach to the post-resuscitation syndrome.
   - 3.1. Monitoring and initial stabilisation of patients with spontaneous circulation return.
   - 3.2. Protocol for aetiological diagnosis of cardiac arrest. Practical application of ultrasound.
   - 3.3. Multimodal neuroprognostic protocol.
   - 3.4. Protocols for therapeutic effort limitation and organ donation.
   - 3.5. Options for rehabilitation, psychosocial support and scheduled post-ICU appointments.

B. PRACTICE

4. 4. Hands-on training workshops on temperature control devices
   - 4.1. Servo-controlled surface temperature control devices.
   - 4.2. Intravascular temperature control devices.
   - 4.3. Temperature control via ECMO devices.
5. Practical workshops in non-technical skills
   - 5.1. Organisation workshop. Practical aspects of multi-disciplinary work at a post-arrest centre.
   - 5.2. Decision-making workshop. Case-based guidance for life support limitation and organ donation.
   - 5.3. Meetings with experts. Organisation of post-CRA discharge follow-up. Post-ICU consultation.
6. Clinical simulation for post-cardiac arrest syndrome.

Annex II. Related documents

Below is a list of references that were taken into account on drawing up this document. It is not an exhaustive list and we would note that the documents on this subject are under constant revision due to scientific advances.

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