**NAP7: Perioperative Cardiac Arrest**

**Local Coordinator Guide Version 1**

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# Introduction

**Thank you for agreeing to be a Local Coordinator (LC) for NAP7! You are critical to the success of this important project.**

The NAPs investigate serious rare events during anaesthesia that are important to patients and clinicians. Previous topics include complications of airway management during anaesthesia, awareness during anaesthesia and perioperative anaphylaxis. They are highly respected, supported by patients and clinicians, and have influenced the practice of anaesthesia worldwide.

This NAP will investigate **perioperative cardiac arrest**. We aim to assess the incidence, current practice and outcomes related to perioperative cardiac arrest.



LCs may have participated in previous NAPs and will therefore be familiar with the overall process, while others will be doing this for the first time. This guide aims to help you understand the NAP7 structure and plan locally to collect the data needed.

The structure of NAP7 will be similar to NAPs 4, 5 and 6, and include three core components, outlined below.



**All NAP7 reporting is CONFIDENTIAL and reviewers cannot identify the origin of any submitted report.**

If you have any questions or issues at any stage, please contact us at [nap@rcoa.ac.uk](mailto:nap@rcoa.ac.uk).

# Baseline Survey

The baseline survey will be distributed before the launch of NAP7. It seeks to evaluate anaesthetists’ previous experiences, preparedness and departmental facilities regarding perioperative cardiac arrest and resuscitation.

There will be two components:

1. **Individual anaesthetist baseline survey.** An online survey for all UK anaesthetists, including trainees and anaesthesia associates, to investigate previous experiences with perioperative cardiac arrest, resuscitation training and relevant facilities in their workplace.

It will take 5-10 minutes to complete and will not require specialist knowledge.

All responses will be anonymous and confidential.

LCs will be sent a link to the online survey (SurveyMonkey®). Please distribute this link to **all anaesthetists and anaesthesia associates in your hospital(s)**.

The survey should be completed by **all grades of anaesthetists and anaesthesia associates.**

After completion of the survey, respondents will be asked to send an email confirming completion to their LC to enable the LC to track who in their department has responded. We appreciate that this may be an onerous task in large departments – LCs may wish to enlist the assistance of colleagues to monitor who has completed the survey so that non-responders can be reminded.

LCs will be provided with certificates that they can send to colleagues who have completed the survey.

At the end of the survey period, LCs will be asked to report how many people they sent invitations to and how many confirmed their response. This will enable the response rate to be calculated. We are aiming for a 100% response rate and previous NAPs have attained high response rates.

LCs will receive a link for the Baseline Survey on or before the 9th of June 2021. They should distribute the survey to colleagues on the 9th of June or as soon as possible after this.

1. **Local Coordinator baseline survey.** This seeks additional summary data about department size, structure, and preparedness for management of perioperative cardiac arrest, e.g. in-house resuscitation training, available resuscitation equipment etc.

It will also include final questions on the anaesthesia and critical care COVID-19 [activity survey](https://www.niaa.org.uk/article.php?newsid=2154) to gauge baseline activity at the start of NAP7.

**The deadline for completion of both surveys is 14 July 2021.**

# Individual Case Registry

The individual case reports are the central focus of NAP7 and a review panel will review each case of perioperative cardiac arrest reported. They will provide detailed information about the occurrence, management and outcomes of all perioperative cardiac arrests over 12 months.

Every case reported will be reviewed, with some cases having a more detailed review by a panel to identify key issues and themes.

You will be asked to enter into a secure online case reporting database: a brief narrative description of the event followed by a structured report detailing patient demographics, pre-operative data, intra-operative management and management and outcomes of the cardiac arrest.

**ALL CASES MUST BE REPORTED ANONYMOUSLY. PLEASE DO NOT INCLUDE ANY PATIENT, CLINICIAN OR HOSPITAL IDENTIFIERS IN ANY PART OF THE REPORT.**

## One Year Registry Period

The case review registry will record cases of perioperative cardiac arrest for one year. The reporting system will remain open for 6 weeks after this period ends to allow for the completion of data entry.



## Inclusion and Exclusion Criteria

NAP7 will collect reports of perioperative cardiac arrest in adults and children. The definition of cardiac arrest adopted for NAP7 is:



For NAP7 the perioperative period has been defined as starting and ending as follows:

Each component of this definition is explained in more detail below.

|  |  |  |
| --- | --- | --- |
|  | **Includes** | **Excludes** |
| **Under the care of an anaesthetist** | * General anaesthesia, regional anaesthesia/analgesia, sedation, local anaesthesia or monitored anaesthesia care with an anaesthetist present * Patients directly managed by an anaesthesia associate | * Sedation or local anaesthesia where an anaesthetist is not present |
| **Chest compressions** | * There must be at least 5 compressions. * Includes:   + Direct compression of the heart   + Mechanical chest compression   + Extracorporeal CPR (eCPR) started during cardiac arrest | * Four compressions or fewer |
| **Defibrillation** | * DEFIBRILLATION is an unsynchronised DC Shock for ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT) * Includes:   + External or internal defibrillation   + Manual or Automated External defibrillation (AED)   + Shocks by implanted cardioverter defibrillators (ICDs) for VF/pVT   + Precordial thump | * Synchronised DC shock for cardioversion. |

In addition to this core definition there are several **special inclusion** circumstances:

* **Critically ill children** anaesthetised for retrieval or transfer to another hospital
* **Emergency Department cases in whom a procedure is planned** but who arrest before this is possible
* **Regional block performed by anaesthetist outside of theatre** (non-obstetric)
* **Obstetric analgesia** (including remifentanil PCA)

These are detailed below, alongside further information on inclusion and exclusion in certain circumstances for reference.

**GENERAL EXCLUSIONS**

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**SPECIFIC INCLUSION AND EXCLUSION CRITERIA**

|  |  |  |
| --- | --- | --- |
|  | **Includes** | **Excludes** |
| **Cardiology and cardiac surgery** | * Anaesthesia for cardiology and cardiac surgical procedures | * Cardiopulmonary bypass from arterial/aortic cannula insertion to removal * Defibrillation during electrophysiological procedures when this is a planned, normal, or expected part of the procedure (e.g. during VT ablation) |
| **Obstetrics** | * Patients with obstetric epidural and/or spinal up to 24 hours after delivery * Patients with remifentanil patient-controlled analgesia (PCA) | * Cardiac arrest before the start of anaesthesia care (as defined above) or with no anaesthetic intervention |
| **Paediatrics (under 18 years)** | * As for adults, with the addition of special inclusion criteria for sick children anaesthetised for resuscitation before retrieval or transfer to another hospital | * Newborn resuscitation |
| **Critical care** | * Patients on critical care within 24 hours of the end of their procedure/handover to ICU team * Critical care patients having an interventional procedure in another location under the care of an anaesthetist (excludes diagnostic imaging) from first hands-on intervention, including transfer | * Sedation or anaesthesia solely for critical care * Procedures performed on the critical care unit (e.g. percutaneous tracheostomy). * Any other intra-hospital or inter-hospital transfers originating in critical care. |
| **Extracorporeal cardiopulmonary resuscitation (eCPR)** | * Veno-arterial extracorporeal membrane oxygenation (ECMO) started during cardiac arrest * eCPR start defined as the initiation of extracorporeal flow to the patient after cannulation and circuit connection to cannulas | * ECMO for any other indication |
| **Pain medicine** | * As per general inclusion criteria (includes procedures in pain clinic) |  |
| **Radiology** | * Patients under the care of an anaesthetist for imaging in the radiology department * Interventional radiology procedures, as per general inclusion criteria – including stroke thrombectomy/coiling for subarachnoid haemorrhage | * Patients transferred for diagnostic radiology from critical care |
| **Regional anaesthesia and analgesia** | * Regional blockade performed by an anaesthetist outside of the theatre * Until 24 hours after the procedure | * Procedures performed on critical care |
| **Emergency Department** | * Patients under the care of an anaesthetist who would meet the general criteria for NAP7 inclusion in whom anaesthesia care for an interventional procedure starts in the Emergency Department   (Please see explanatory notes below) | * Adult patients anaesthetised solely for critical care (paediatric patients may be included as per inclusion criteria above) * Patients anaesthetised solely for transfer to ICU. |
| **Other locations** | * Electroconvulsive therapy (ECT) suite, even if in a separate building and/or hospital trust | * Patients in the pre-assessment clinic * Patients undergoing exercise testing * Patients who are not in the hospital * Patients in the surgical admissions unit, ward or theatre complex before their procedure |

**EMERGENCY DEPARTMENT**

* Includes:
  + This is a difficult patient group to define. We wish to capture those patients under the care of an anaesthetist who would meet the general criteria for NAP7 inclusion in whom anaesthesia care starts in the Emergency Department. This includes patients in whom a surgical/interventional radiology/interventional cardiology procedure is planned or likely who then arrest before this is possible. We **do not** wish to include the following groups of patients sedated/anaesthetised in ED: solely for critical care; solely for diagnostic radiology; in whom no potential intervention is considered.

**All exclusions do not apply if the patient has already met, or later meets, inclusion criteria.**

## How to report an individual case

**Cases should be reported as soon as possible after a perioperative cardiac arrest has occurred.** This will ensure any details relying on recall are as accurate and complete as possible. Please do not wait for internal or external investigations to report. All reports will be anonymous and confidential.

All cases of perioperative cardiac arrest fulfilling the inclusion criteria should be reported to NAP7 if anaesthesia care started between 00:00:00 hrs on 16 June 2021 and 23:59:59 hrs on 15 June 2022.

If the LC becomes aware of a perioperative cardiac arrest in their hospital(s), the following steps should be taken:

1. Liaise with the anaesthetist(s) involved if they have not already contacted you.
2. Contact NAP7 ([nap@rcoa.ac.uk](mailto:nap@rcoa.ac.uk)) who will issue you a secure login specific for the case on the database.
3. Retrieve anaesthetic and other relevant case notes.
4. Whilst logged into the database, extract the information needed in the structured case review. It is expected that you will need to discuss the case in detail with the anaesthetist(s) involved. It may be that you and the anaesthetist involved in the case will need to work together to enter the data.

A step-by-step guide to reporting the case will be attached to the login details and available on the [Local Coordinator resources page](https://www.nationalauditprojects.org.uk/Local-Resources#pt) of the website.

**Monthly reminders**

LCs will be contacted monthly to check if there have been any cases in their hospital. As in previous NAPs, please report this value monthly, even when there are no cardiac arrests at your site.

As the inclusion criteria extend beyond the anaesthetic department, we request that LCs formally check with the following sources for potentially eligible cases:

* The anaesthetic department (e.g. by monthly email),
* All critical care areas (all adult and paediatric units, including cardiac surgery),
* The Resuscitation Department, for cases in which cardiac arrest occurs on the ward.

# Activity Survey

The activity survey will be carried out during the 12-month registry period (likely beginning in autumn 2021). It will serve two purposes:

1. **Create a quantitative snapshot of anaesthetic activity in the UK.**

This will be used to calculate denominator data for NAP7 and will be compared to previous NAP activity surveys to show how anaesthetic practice in the UK is evolving.

1. **Collect details pertinent to perioperative cardiac arrest.**

E.g. risk factors for cardiac arrest and incidence of events that may be antecedent to perioperative cardiac arrest.

Each hospital site will be asked to survey on **four consecutive days**. The specific four days for each site will be randomly allocated (except for specialist hospitals which will have a different allocation process). LCs will be asked to facilitate this survey in their hospital to ensure that all anaesthetists are aware of the survey and to check that all patients have a completed survey form.

As in previous NAPs, one activity survey entry will be completed by the anaesthetist or anaesthesia associate for each interventional procedure during the survey period at each site (general anaesthesia, regional anaesthesia, sedation or managed anaesthesia care).

The activity survey will be completed electronically via SurveyMonkey®. A link will be sent to the survey and each case will be recorded by completing the survey. We strongly advise that individual anaesthetists complete the link themselves as soon after the case as practically possible. This process should be aided by the LC and other assistants over the activity survey period to ensure all cases are captured. There will need to be oversight to ensure out-of-hours cases and remote site cases are captured. As all clinical areas covered by the case registry phase of NAP7 need to be covered by the activity survey, relevant remote sites need to be included – for example, the emergency department, obstetrics, radiology, ECT, cardiac catheter lab, paediatric resuscitation for transfer.

The NAP7 team will liaise with LCs to ascertain how many of the cases undertaken on those four days were successfully captured. The target case ascertainment is 100%.

More details about the activity survey will be distributed to you when the dates for your site(s) are assigned.

# Regulatory approvals, data security and confidentiality

The NAPs are *clinical service evaluations*, rather than *research*, using strict [criteria](http://www.hra-decisiontools.org.uk/research/docs/DefiningResearchTable_Oct2017-1.pdf) set by the Health Research Authority (HRA). This is because there is no intervention, no randomisation of patients and no change to normal patient care or treatment. The project is simply observing current practice. Therefore, the project does not require research ethics committee approval*.* On a local level, there are no further permissions or approvals that you are required to achieve, though some LCs may wish to inform their local audit department and/or Caldicott guardian.

The results obtained from the HRA’s decision tools can be taken as an authoritative decision and are in line with:

• The harmonised UK-wide edition of the Governance Arrangements for Research Ethics Committees ([GAfREC](https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/governance-arrangement-research-ethics-committees/)) 2018;

• [UK Policy Framework for Health and Social Care Research](https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/uk-policy-framework-health-social-care-research/) (2017)

• The National Research Ethics Service (NRES) Defining Research [table](http://www.hra-decisiontools.org.uk/research/docs/DefiningResearchTable_Oct2017-1.pdf) and the algorithm [Does my project require review by a Research Ethics Committee](http://www.hra-decisiontools.org.uk/ethics/)?

• In **Northern Ireland**, the project has been approved by the Chair Privacy Advisory Committee Northern Ireland

• In **Scotland**, the project has approval from the Public Benefit and Privacy Panel for Health and Social Care.

All members of the NAP7 [panel](https://www.nationalauditprojects.org.uk/Meet-the-NAP7-Steering-Panel#pt) have undergone information governance training in line with these regulatory bodies.

As for NAPs 3-6, NAP7 has been endorsed by all four Chief Medical Officers of the United Kingdom (Dame Sally Davies, Dr Frank Atherton, Dr Michael McBride and Dr Catherine Calderwood; 29th July 2019).

Case registry data will be uploaded via a secure web-based tool using SSL encryption onto the Royal College of Anaesthetists (RCoA) servers with high-grade anomaly and intrusion detection, and firewalls in operation.

*Baseline and Activity Surveys*

All individual survey returns will be confidential and will contain no clinician or patient identifiers. Hospital location for baseline and activity surveys will be included only to enable management of the project (to identify whom to send reminders to) and will be removed before analysis. All data used for publication or presentation will be fully anonymous.

*Review of Cases*

Only members of the NAP7 review panel with authorisation from the NAP7 Clinical Lead (JS) and RCoA Director of the National Audit Projects (TC) will have access to the data.

No panel member, including the Clinical Lead and Director of the National Audit Projects, will have access to the location or identity of the reporters, clinicians or patients at any stage of the project. It will not be possible to trace any data back to the reporter, clinicians or patients later.

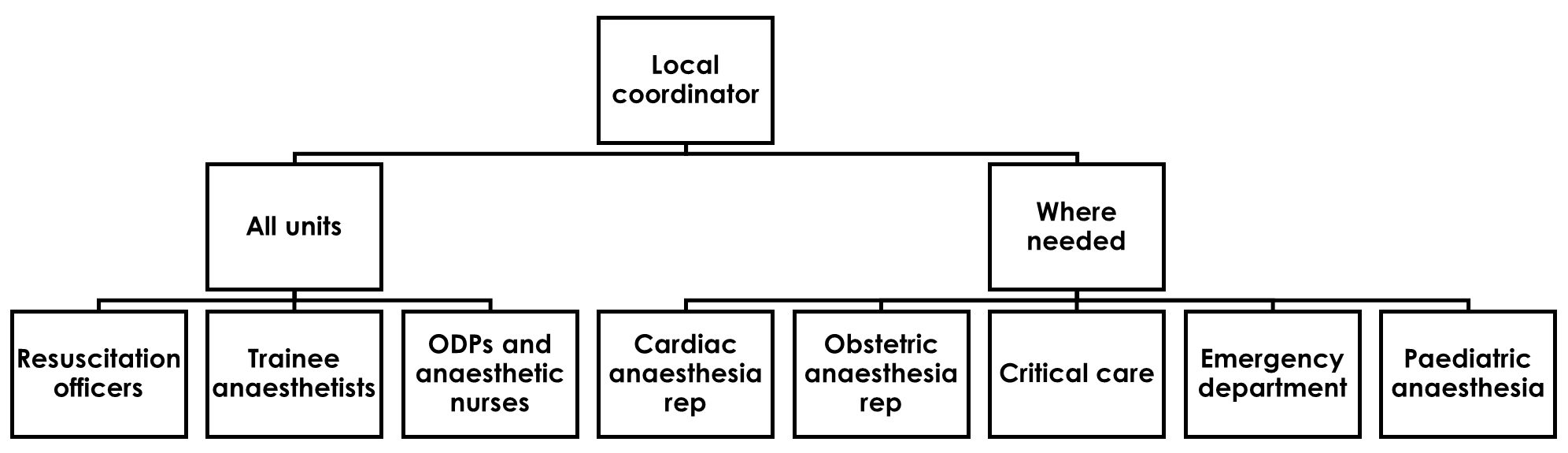
When the review panel assesses cases, data will be provided for review only. Review panel members are not permitted to discuss the details of cases outside of the review meetings. Further, if they feel they can connect the case they are reviewing with knowledge from outside the review process they are not permitted to share this. This will ensure that the review process is not biased by prior knowledge, and prevent possible identification of the reporters, clinicians or patients involved.

# Organising and promoting NAP7 within your department

We aim to make the LC role as straightforward as possible and will supply electronic resources to help local organisation and promotion of the project. These will be available on the [NAP7 website](https://www.nationalauditprojects.org.uk/NAP7-Home#pt) and you can customise them with your contact details as needed.

## Local organisation

As LC, we are very grateful to you for ensuring that everyone at your site is aware of their roles within NAP7 at various stages of the project. As the LC in a small unit, the workload will likely be manageable. However, at larger sites, it may be more challenging, and we suggest forming a local network (e.g. Fig 1). It is important to have contacts in areas you do not commonly work in. For example, if you are a general anaesthetist with separate cardiac anaesthetists, it would be good to identify a link person. This person can help identify cases in their area and clarify sub-specialty specific aspects of the case registry form.



**Figure 1.** Suggested local organisation structure**.**

Before the launch of the project, LCs should complete the following checklist:

* Review all NAP7 materials and contact the NAP7 team with any questions at [nap@rcoa.ac.uk](mailto:nap@rcoa.ac.uk).
* Try to present at one or more **departmental meetings** and provide an overview of the project (e.g. audit, M&M, consultant meeting, trainee teaching). PowerPoint slides for this are available [here](https://www.nationalauditprojects.org.uk/Local-Resources#pt).
* Try to attend a **NAP7 webinar** with Q&A session, hosted by the NAP7 team. If you are unable to attend, the recordings will be made available on the [NAP7 website](https://www.nationalauditprojects.org.uk/NAP7-Home#pt).

Consider the best way to identify events that occur within the 24h period following the end of a patient’s procedure/handover of care. The patient may be in any of the following locations:

* General inpatient wards
* Post anaesthesia care units (PACU)
* General intensive care and high dependency units
* Specialty intensive care and high dependency units (e.g. neurosurgery, cardiothoracic)
* Paediatric intensive care and high dependency units
* Postnatal wards
* Coronary care unit

We would suggest involving your local **resuscitation officers** to alert them about the study, and specifically highlight any in-hospital cardiac arrests within 24h of the end of a procedure under the care of an anaesthetist. This will help with post-operative event capturing. A sample email can be found on the NAP7 [resources](https://www.nationalauditprojects.org.uk/Local-Resources#pt) page.

## Department presentation

We suggest that LCs aim to promote the NAP7 project locally with the help of a pre-populated PowerPoint presentation that can be downloaded from the [NAP7 website](https://www.nationalauditprojects.org.uk/Local-Resources#pt).

## Posters and flowcharts

These are provided to assist in advertising the project within your hospital, and to increase engagement and awareness amongst the perioperative team. Example locations to display these include anaesthetic departments, all post-operative areas and surgical wards, intensive care units, resuscitation office etc. Posters can be found on the [NAP7 website](https://www.nationalauditprojects.org.uk/Local-Resources#pt) and printed locally.

## Letter and email templates

1. For anaesthetic and intensive care consultants, trainees, SAS and anaesthesia associates.

2. All medical staff within the hospital

The NAP7 team have provided suggested templates on the [NAP7 website](https://www.nationalauditprojects.org.uk/Local-Resources#pt).

**If you have any further questions please contact** [**nap@rcoa.ac.uk**](mailto:nap@rcoa.ac.uk)**. An FAQs document can be found on the NAP7 website and will be updated regularly as needed.**

**Dr Jasmeet Soar Prof Tim Cook**

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**Dr Richard Armstrong Dr Andrew Kane Dr Emira Kursumovic**

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