NHS Audit Outlier Policy — National Audit of Cardiac Rehabilitation

Purpose

To define criteria, processes, responsibilities and actions for identifying, investigating, and responding to statistical and clinical outliers within the NHS National Audit of Cardiac Rehabilitation (NACR) to improve patient safety, data quality, and service delivery.

Scope

Applies to all eligible cardiac rehabilitation (CR) programmes and sites delivering CR in England, Wales, Northern Ireland and the Channel Isles, NACR audit team staff, regional clinical leads, and the NACR Steering Committee. Covers non-participation, statistical outliers, data-quality outliers, and sustained performance deviations.

Patient cohort covers patients referred to CR teams (including Heart Failure Rehab) in England and Wales, plus Northern Ireland and Channel Islands.

Data follows an annual publication cycle, by calendar year (January to December) published the following year. Associated reports are also produced quarterly for publication, and sharing on the Model Health System and Future NHS dashboards, with ad hoc reports produced on request for local CR teams and ICBs/regions.

Definitions

Non-participation: a provider or site who is providing CR to NHS patients and not currently entering data to the audit, including those that have previously entered data but have stopped; also includes those not meeting the minimum number of patient starters (30 starting Core rehab for the year) for inclusion in the annual reports.

Statistical outlier: a provider or site whose performance metric(s) fall outside predefined statistical control limits.

Data-quality outlier: a site showing anomalous patterns in data completeness, timeliness, or plausibility (e.g., >X% missing key fields, sudden change in coding).

Clinical outlier: a site whose clinical outcomes or process measures differ materially from peers in a way that suggests potential patient-safety or quality concerns.

Case-mix adjustment: risk adjustment applied to outcome/process measures to account for patient population differences.

Alert level vs. escalation level: Alert = notification and initial review; Escalation = formal investigation and potential regulatory/action steps.

Governance and Responsibilities

NACR Audit Team: run statistical analyses, flag outliers, monitor data quality, produce reports, manage initial communications.

Provider Site Lead (Cardiac Rehab Service Manager / Clinical Lead): conduct local investigation, submit response and action plan. Liaise with NACR.

Regional Clinical Lead / Quality Improvement (QI) Lead: support local review, liaise between NACR and provider.

NACR Steering Committee / Clinical Advisory Group: Where regional or national data is consistently outside the outlier parameters, this may be referred to the steering committee for consultation for recommended action

NHS England/Improvement and relevant regulatory bodies: engaged only for escalations meeting defined severity criteria.

Metrics and Frequency

Metrics subject to outlier monitoring: Submission of data, Submission of 12 months of data, NCP_CR KPIS 1-7

Frequency: Certification is run annually, with regular data downloads during the year allowing monthly monitoring if required.

Outlier Detection Methodology

Data preparation: require minimum data completeness thresholds for inclusion in analyses.

Statistical approach: Compare submitted data against national standards and reported publicly and to teams where they are failing to me thresholds of KPI or data submission thresholds.

Documentation: record algorithm versions, model covariates, date of run, and analysts.

Notification and Classification

Alert (Level 1): Outlier is identified as part of routine reporting and in accordance with the sending of local data or the publication of the NCP_CR report, teams are notified of failing to meet thresholds along with the outlier value.

Investigation (Level 2): Where submission of data or the quality of provision is consistently outside of thresholds, NACR will inform the service, and where appropriate notify to wider ICB/Network lead.

Escalation (Level 3): escalate to NACR Steering Committee and, where required, NHS England/Improvement or regulatory bodies. Immediate provisional actions (e.g., service pause) may be recommended by clinical leads if patient safety is at risk.

Local Investigation Process (Provider responsibilities)

Convene multidisciplinary review including clinical lead, data lead, and IT/BI support where appropriate – this will depend on whether programmes are manually entering data or importing from third part software.

Review data for completeness, coding, and submission errors; identify any training needs and/or re-run local extracts if needed.

Review clinical processes and patient records for systematic issues including receipt/sending of referrals and updating internal data (if extracting for upload).

Via email CR services will be notified of:

Root causes (data vs clinical/process)

Immediate mitigations taken

Proposed corrective actions with owners, timelines, and measurable indicators

Submit report to NACR and Regional Lead within timeframe specified.

NACR Support and Verification

Provide data quality, training/dataset support and analytic assistance to identify and evidence findings, support clinical team with methods to fix issues, and re-run analyses using locally corrected data.

Monitor implementation of actions through follow-up checks on monthly downloads until clinical team and NACR are satisfied data quality is improved.

Transparency, Confidentiality and Publication

Individual provider-level outlier notifications are confidential and shared only with relevant local and regional stakeholders during investigation.

Public reporting: in accordance with the existing NCP_CR publication report, services will be monitored through the supplement, highlighting where submission of data, sufficient data and quality of care is outside of national thresholds and thus failing to meet KPIs.

Data protection: handle all data in line with NHS data governance and GDPR requirements.

Remediation and Improvement Support

For data-quality issues: provide data-cleaning guidance, training sessions, and follow-up monitoring.

Appeals and Dispute Resolution

Providers may request reanalysis if they can provide corrected data or clear methodological concerns by the data deadline for the report. Data cannot be rerun for publication after the annual report data deadline has been passed (end of May each year, for previous calendar year). Quarterly reports are rerun once, the following quarter after which local figures can be rerun, but will not be published.

NACR will document reanalysis results and, if appropriate, revise classification. Unresolved disputes can be escalated to NACR Clinical Lead and/or Steering Committee for independent arbitration.

Records, Monitoring and Review of Policy

Maintain audit trail for each outlier case: detection outputs, communications, local reports, actions, and follow-up results.

Annual review of outlier detection methods, thresholds, and policy by NACR Steering Committee with stakeholder input, or sooner if methodological advances require changes.

Key Timelines (default)

Level 1 notification → Email of outliers emailed to team in alignment with the NCP_CR report highlighting in which KPI or data submission the service is an outlier

Follow up - rerun data to check resolution

Follow-up verification → 3 months and 6 months post-action plan.

Data Deadlines – quarterly, for Quarterly Reports. Annually 31st May for previously calendar year's data (based on date starting core CR).

Appendices

Appendix A: Data Outliers list

Approval

This policy is approved by the NACR Steering Committee and published to the NACR website. It will be reviewed annually.

Appendix A - Data Outliers list

Outlier Measure	Description	Outlier identifier methodology	Frequency of Reporting
Submission of data	Submission of data into the NACR is the only way to allow activity to be monitored and included in national and regional reporting. NACR will report on programmes submission of data, highlighting consistent gaps or temporal changes	Absence of any entry of data will be reported by NACR at a named local level Insufficient data (<30 in annual reporting and <10 in quarterly reports) will be flagged and included in reports	Annually in the inclusion supplement highlighting lack of NACR data submission In named supplement reports, NACR will flag teams with data submission that is insufficient in quantity for reporting. Yearly and Quarterly
Submission of 12 months of data	As part of the NCP_CR, to be fully certified, services must submit data for a whole calendar year.	Within the named NCP_CR supplement, programmes will be reported on according to patients commencing in each month within the reporting period	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April
KPI 1 – MDT and response to staffing survey	As part of the NCP_CR, services must respond to the Staffing survey, conducted annually. Where services fail to respond, the service will have this reported	Within the NCP_CR supplement and the staffing supplement, all services will be reported, this will include if services did not respond	Yearly – September in line with NCP_CR report and November/December in the staffing supplement
KPI 2 – Priority groups	As part of the NCP_CR, services are required to see patients from each of the five priority groups (MI, MI+PCI, PCI, CABG and HF)	Within the NCP_CR supplement indication of seeing each of the priority groups will be included, services failing to meet this will have the number of priority groups see reported	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April
KPI 3 – Duration of Core CR	As part of the NCP_CR, services are required to deliver Core rehabilitation at or above 56 days (8-weeks)	Within the NCP_CR supplement services median duration is reported and flagged if meeting 56 days. If services fall outside of national median and Quartiles, they will be flagged by the NACR to investigate	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April
KPI 4 – % of starters with valid Assessment 1	As part of the NCP_CR, services are required to measure and submit baseline assessments to inform tailoring of the rehabilitation. This is measured through the Assessment 1 record.	Within the NCP_CR supplement services % of starters with valid Assessment 1 are reported. Services will be flagged if they fall beneath National KPI threshold while also monitoring trends over time and completeness of assessment record	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April
KPI 5 – CABG Wait time from post-discharge referral to start of core CR	As part of the NCP_CR, services are required to commence/start Core rehabilitation for CABG patients within national average thresholds	Within the NCP_CR supplement services wait times for patients are reported, in addition the spread of wait times will be used	Yearly – September NCP_CR supplement OR

		to identify service quality outside of National Confidence intervals of the median (Lower/upper 95%)	As part of supplements sent to teams in February and April
KPI 6 – MI and or PCI Wait time from post-discharge referral to start of core CR	As part of the NCP_CR, services are required to commence/start Core rehabilitation for MI and or PCI patients within national average thresholds	Within the NCP_CR supplement services wait times for patients are reported, in addition the spread of wait times will be used to identify service quality outside of National Confidence intervals of the median (Lower/upper 95%)	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April
KPI 7 – % of starters with valid Assessment 1	As part of the NCP_CR, services are required to measure and submit end of CR assessments to inform tailoring of the rehabilitation. This is measured through the Assessment 2 record.	Within the NCP_CR supplement services % of starters with valid Assessment 2 are reported. Services will be flagged if they fall beneath National KPI threshold while also monitoring trends over time and completeness of assessment record	Yearly – September NCP_CR supplement OR As part of supplements sent to teams in February and April