NATIONAL HEART FAILURE AUDIT (NHFA)

User Guide v3

Dataset version 5.0

The National Institute for Cardiovascular Outcomes Research (NICOR)

Table of Contents

Change History

Date	Version	Author	Comments
	1st April 2014	Polly Mitchell	
	V1	Sarah Ajayi & Shenaka Singarayer	This updated version is to reflect changes made for the move to the new IT platform.
18th May 2021	V2	Sarah Ajayi & Shenaka Singarayer	This updated version is to reflect changes made for the new dataset v5.0
18th December 2023	V3	NHFA team	This updated version is to reflect changes made to the dataset and analysis outputs v5.0

Introduction

The National Heart Failure Audit was established in 2007 and has now collected circa 1 million heart failure admissions, reflecting about 80% of all HES coded HF admissions, in the first position. The current dataset V5 is the dominant version in use with very limited continuing entry to V4.2.1. The audit aims to capture data on clinical indicators which have a proven link to improved outcomes for heart failure patients, and to encourage the increased use of clinically recommended diagnostic tools, disease modifying treatments and referral pathways. The dataset is updated periodically to ensure that the data collected remains in line with contemporary clinical guidance, and clinical input is integral to the decision-making and running of the audit.

The data collected on the treatment and management of heart failure patients is disseminated to hospitals, government bodies, commissioners, and research groups and many others, to help highlight clinical practice and outcomes which do not meet optimal standards to help drive service improvement, alongside good clinical practice. Once published the annual report is in the public domain and available through the NICOR website, https://www.nicor.org.uk. The audit reports on the variation in practice across England and Wales, recommends compliance with evidence-based clinical guidelines to improve the quality of care and outcomes for patients with heart failure. Participation in the audit was made compulsory for NHS Trusts in England from April 2011 by the Department of Health's NHS Standard Contracts for Acute Hospital Services and in Wales since April 2012.

The National Heart Failure Audit is managed by the National Institute for Cardiovascular Outcomes Research (NICOR) which became part of ARDEN & GEM CSU, a branch of NHSE in 2022. NICOR manages the National Cardiac Audit Programme (NCAP), a cardiac programme, which includes a growing range of registries across various cardiac specialties that focus on a specific disease area or treatment.

Specialist clinical knowledge and clinical leadership for the National Heart Failure Audit is provided by the British Society for Heart Failure (BSH), through the Clinical Lead and the Domain Expert Group (DEG), which determines the strategic direction and development of the audit. The DEG membership brings a strong range of expertise from and including cardiologists, specialist nurses, clinical audit and effectiveness managers, analysts patient representatives, general practitioners and others, with good representation from England and the devolved nations.

This user guide corresponds to the current Heart Failure dataset version 5.0, which came into effect on 1st April 2021 and is a modified version of dataset 4.2.1 to ensure improved accuracy of data collected and that the data better reflects changing clinical practice. This guide aims to explain which patients to include in the audit submission and outlines the audit methodology and design.

i. Data collection

Which patients to include in the audit?

The National Heart Failure Audit aims to collect data on all patients with an unscheduled admission to hospital because of acute heart failure, who are discharged or die in hospital, across England and Wales. To ensure adequate case ascertainment the numbers of cases submitted to the audit are compared with coded heart failure episode in the first diagnostic position through Hospital Episode Statistics (HES) in England or the Patient Episode Database of Wales (PEDW) in Wales. The ICD-10 codes used are listed in the table below.

Current ICD-10 codes
I11.0 Hypertensive heart disease with (congestive) heart failure
I25.5 Ischaemic cardiomyopathy
I42.0 Dilated cardiomyopathy
I42.9 Cardiomyopathy, unspecified
I50.0 Congestive heart failure
I50.1 Left ventricular failure
I50.9 Heart failure, unspecified

Historically by definition, the National Heart Failure Audit only reports on heart failure patients in secondary care, I.e., services provided by health professionals in a hospital setting. However, in response to a slight change in practice, limited data collection of patients with a secure diagnosis of HF admitted to Virtual wards and Ambulatory Care will be implemented in the future but we will contact all Trusts about the development of this.

Heart failure patients are the patients coded as ‘1. Yes’, Confirmed Diagnosis of Heart Failure. Even if patients do not have a confirmed diagnosis but have other symptoms like oedema or breathlessness AND an abnormal echo they will be classified as heart failure patients, therefore the audit captures more patients than those coded as yes in the Heart failure diagnosis field.

Patients admitted for elective procedures should not be entered unless the admission was for decompensation. We are only including emergency admissions in the HES denominator.

ii. Data analysis

Once submitted patient data is extracted and cleaned, it is analysed based upon the inclusion/exclusion criteria in the table below.

Analysis criteria	
Inclusion	**Exclusions**
ICD-10 code for heart failure: (I11.0; I25.5; I42.0; I42.9; I50.0; I50.1; I50.9)	1. Aged less than 18 years
	2. Duplicate Records
	3. Records with a missing or invalid hospital identifier
	4. Date of admission or discharge is not known
	5. Date of discharge precedes date of admission
	6. Date of admission and discharge are the same *. These patients are tracked for mortality only.
	7. Patients with a normal echocardiogram unless the heart rhythm is atrial fibrillation or flutter

*Patients admitted and discharged on the same day with a primary diagnosis of heart failure should still be submitted as they count towards the metrics for completeness of reporting. The outcomes of these patients will be tracked through HES/PEDW and ONS track and may be reported in the future.

NHFA data analysis comprises outputs for a variety of metrics reported annually. These metrics reflect stages of the care pathway, from admission, through diagnosis, treatment to subsequent patient outcomes with a focus on inpatient, 30 day and 1 year mortality rates and specialist follow up arrangements on leaving hospital.

Trusts are now required to self-validate their data, checking that they have submitted as many as possible of their HES coded HF patients as possible. Trusts should also check their own data for completeness and data accuracy. We aim to provide as much clarity in our definitions as we can, which can be found in the dataset and Q&A's documents on our website here: [National Heart Failure Audit (NHFA) - NICOR]()

iii. Definition of analysis

The definition of analysis sets out the criteria for calculating each of the metrics. An example of these is listed in the table below.

Column	Definition	Denominator	Notes
Emergency confirmed heart failure admission (n)	Number of records with a confirmed diagnosis of heart failure and an emergency HF admission.	n/a	
Survived to discharge (n)	Number of records with a confirmed diagnosis of heart failure, where the patient survived to discharge.	n/a	This figure is for your information only and will ***not*** be included in the annual report analysis. Aggregate data is published for inpatient mortality and when the Risk Model is implemented risk adjusted data will also be available by hospital.
Received echo (%)	Percentage of patients who received an echo during their admission, or within the preceding 12 months.	Heart failure admissions	
ACEI on discharge (LVSD only) (%)	Percentage of patients who were prescribed an ACE inhibitor on discharge.	Survived to discharge and LVSD	
ACEI on discharge (LVSD only) with unknown/blanks/not applicable assigned as	Percentage of patients who were prescribed an ACE inhibitor on discharge, with	Survived to discharge and LVSD	

No (%).	unknown/blanks/not applicable assigned as No.		

iv. Patient information

Number of patients

The National Heart Failure Audit will accept 70% of HES/PEDW recorded heart failure admissions as an acceptable minimum. Hospitals who fail to submit this number of records will be recorded as failing to meet participation standards.

IMPORTANT: If the number of records submitted is less than 20, the percentages will not be included in the hospital level tables of the annual report. The data will be used in all aggregate analyses.

Ensuring Data Completion

For those teams struggling to submit adequate numbers of the HES coded HF admissions it is worth working closely with the coding department both to ensure data is correctly coded and an early alert of any HF coded admissions they may have missed is sent to the HF team. This will allow timely submission to the audit and for arrangements to be made for those people to have outpatient review if they were missed during the admission.

Patient confidentiality and identification

The National Heart Failure Audit collects patient identifiable data (PID) to track life status by linkage with Office for National Statistics (ONS) mortality data. PID also allows linkage to HES readmission data for England and PEDW for Wales, and enables linkage with the other cardiac databases, such as MINAP and CRM. However, there are strict rules for the use of patient identifiers; whilst patient identifiers are entered into the National Heart Failure Audit, these can only be seen by staff at your own hospital with access to the database, and by specific NICOR staff who manage the database.

When datasets are released to third parties for quality improvement and secondary research purposes, the following safeguards are in place to protect patient identity:

- Patient name is removed.
- NHS number and hospital number are pseudonymised. This is done using an encryption key that the third party using the data does not have access to and means that they cannot convert the details back to their original, identifiable form. Pseudonymised NHS number and hospital number are only released on a need-to-know basis, if it is essential for the research project.
- Hospital identifier is pseudo anonymised, so that third parties external to NICOR cannot undertake identifiable hospital-specific analysis.
- Date of birth is converted to age at admission.
- Postcode can be an identifier where small numbers of individuals share a post code in rural areas. Postcode is used to derive dependent variables such as grid northings and grid eastings (which are rounded to the nearest 1000 meters) and Index of Multiple Deprivation (England only). Only these derived fields are available for secondary use.

Patient consent

NICOR has had section 251 approval from the Care Quality Commission, NHSE and the Health Research Authority Confidential Advisory Group (and formerly the National Information Governance Board). These bodies allow us to collect and process patient identifiable data for all the cardiovascular audits, including the National Heart Failure Audit, without requiring consent from individual patients. However, there is a requirement that you inform patients that their anonymised data will be used for national audit purposes to improve patient care. Information on this is also available through the NICOR website which you may find useful: here

The national data opt-out is a service that allows patients to opt out of their confidential patient information being used for research and planning purposes, but not clinical audit. https://www.nicor.org.uk/for-hospital-clinical-and-audit-teams/national-data-opt-out/ For more information visit the NHS Digital guidance pages: https://digital.nhs.uk/services/national-data-opt-out

v. Data collection and submission

There are 10 variables in a Patient Registration record combined with 159 variables in an Admission or Readmission record, a total of 169 fields in one record for the National Heart Failure Audit dataset, v5.0.

Proformas to aid data collection can be found on the NICOR website: NICOR | Audit documentation. There are also prompts throughout the Qreg5 platform for various fields to help/guide data entry. Additionally, any queries can be sent to the NICOR helpdesk. The core pro-forma captures essential data submitted to the audit which are routinely analysed and reported. These fields include a) core mandatory fields and b) core fields (i.e. together these comprise the critical data and you are strongly encouraged to collect both core and mandatory data and ensure that both are as accurate as possible).

Both mandatory and core fields are clearly marked in the dataset. Non-core fields still allow a record to be saved.

The full pro forma contains some of the fields that are not essential (non-core) to our analysis and reporting which you are not expected to collect or submit for the purposes of the National Clinical Audit but may be used for your local in-depth analysis.

A patient record contains patient identifiable and demographic details. An admission is subsequently defined as the first or index unscheduled admission to a given hospital where the patient is discharged with a primary diagnosis of heart failure. A readmission is any subsequent unscheduled admission where the patient is later discharged with a primary diagnosis of heart failure, even if that is in a different audit year. But for the purposes of the national and validation reports, we only identify admissions and readmissions in the financial year of interest not throughout the audit data. Data analysis in any given audit cycle or year only uses data from the first of index admission.

Please note: It is important to include the NHS number wherever possible.

Using the data application (Qreg5)

QReg5 is the NICOR IT application used to collect national clinical audit and registry data. We have implemented a flexible modern platform designed by an experienced organisation, Uppsala Clinical Research Centre (UCR), using technology to transform innovative ideas into registry-based quality improvement.

A key feature of this web-based application is that patient records for your hospital will be shared among the different audit domains into which data has been entered. If a patient in your hospital has had a PCI or cardiac surgical intervention, the patient record created originally will be available for the Heart Failure application, without the need to recreate it. In the background, all '**procedures**' for that patient in your hospital will belong to one patient record. The application will also allow **'procedures**' (HF Admissions) to be saved as ‘**Draft**’ or ‘**Complete**’. This means that you can save a record as draft if you have not completed it, and then save it as complete when it is finalised.

Whilst a record can always be saved as draft, it can only be saved as complete if validation determines it is error-free. When records are imported, the import decides whether it is draft or complete and it will set to complete if there are no fatal or serious errors.

You can find out how to access and navigate the new IT system, in the user guide for the QReg5 data application – there is a link for this document at the bottom of each page in the application.

To login

Please provide username and password to sign in

Security warning

This database contains confidential medical information which is availible to the staff of hospitals whose patients have received investigations or treatments in those hospitals.

It is an offence to view this data if you are not authorized to do so. It is an offence to make use of this database other than for the purpose it was created.

Under no circumstances should users pass their login details or disclose their passwords to others.

If users believe that their passwords have been compromised, they should inform the helpdesk immediately.

If a user detects what he or she believes is a breach of security or confidentiality it is their responsibility not to disseminate the information obtained and to report the event to the helpdesk immediately.

Please be aware that you are subject to the requirements of the confidentiality agreement in your NHS contract in using this database.

By continuing you accept the terms stated above.

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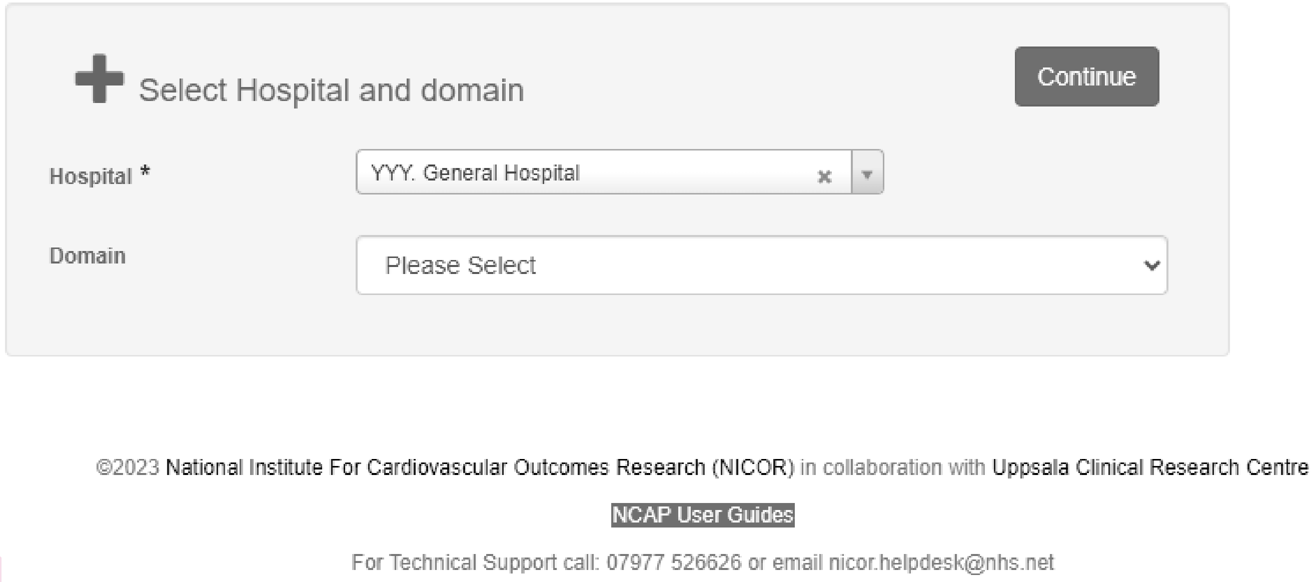
For Technical Support call: 0203 765 8550 or email nicor.helpdesk@nhs.net

The screen below is only visible for those users who have access to more than one domain, otherwise it takes you directly to patient data.



Select Hospital and domain

Hospital *: YYY. General Hospital

Domain: Please Select

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NCAP User Guides

For Technical Support call: 07977 526626 or email nicor.helpdesk@nhs.net

You can also find information on importing/exporting records in the Heart Failure to and from the audit database, which are located here: NICOR | Audit documentation

Import/Export

If you wish to import data directly into the NICOR databases, your local collection system must be capable of generating an export file in Comma Separated Value (CSV) format, which is then uploaded to the NICOR databases using the import routine.

A CSV line (record) consists of variables (fields) containing information separated by commas and enclosed by double quotes. NICOR accepts either the short code or the long code listed in the datasets for import. There is no restriction on the file name, as long as the extension is **.csv e.g. YYYHFImport.csv** and within a date range that you define. To analyse clinical practice and check data quality, there are several different export options, depending on whether you want to see, core mandatory data or the full dataset. You should make sure that you export your data regularly to check for systematic data entry errors and missing data.

Each line must be made up of the prescribed number of variables, in the sequence order listed in the dataset 'import order' tab.

Online analysis

The QReg5 completeness tool is now available. It will allow you to check your local clinical practice regularly, to notice any problems or changes quickly, and to identify data collection and data entry problems. For example, you can look at all the records with missing fields (e.g., NHS number)**.** You can find further information here: [NICOR | Online reporting tools]

Ensuring data quality in your Trust

National Heart Failure Audit data is analysed to show trends in heart failure care. It can also be used for performance monitoring and management purposes, so it is essential that the data you submit to the audit is accurate and representative of the management of heart failure patients in your hospital. The National Heart Failure Audit data application has a number of validation checks built into it, to ensure that the data entered is not contradictory and is within permitted ranges, but those responsible for entering data need to monitor its quality in addition to this.

Hospitals are bound by the General Data Protection Regulation (GDPR) to ensure that the data meets the necessary standards of completeness, accuracy and relevance. The Data Protection Act 2018 is the UK's implementation of GDPR.

You should register the audit with your Trust Caldicott Guardian and identify someone in your hospital with overall responsibility for the audit. One person should be given overall responsibility for data collection, with additional clinical support if needed. Backup support must be identified for periods of leave; it is the responsibility of your Trust to support you in this. A clinical lead, usually a consultant cardiologist with a special interest in heart failure, should also be identified, who takes overall clinical responsibility for the audit. It would be extremely helpful if this Clinical Lead is clearly identified and made known to NICOR. If these details or other key aspects of the hospital such as becoming a joint Trust with another hospital should change, please immediately inform NICOR. Thank you.

Current data collection manuals with definitions should be made available to all staff involved in data collection and entry, and data should ideally be entered or completed as soon as possible after the patient has been discharged to ensure the greatest possible accuracy. You should establish systems to routinely check the inclusion/exclusion criteria and to monitor the accuracy of discharge coding at your Trust.

Validation checks

The Qreg5 application has a series of in-built validation checks to help ensure high data quality. These include:

- Mandatory field checks, to make sure that all key data items are completed. The National Heart Failure Audit has a higher number of mandatory fields than most other National Clinical Audits, but there is always an ‘unknown’ option which can be used if you cannot find the data. This should be used as infrequently as possible, however, as ‘unknown’ will not be treated as a valid data value for data analysis (completeness). Blank or missing fields, unknown, and not applicable, responses are increasingly being included in the denominator as a ‘No” and collectively described as ‘Unknowns’. They are then compared with analyses where the unknowns are excluded from the analyses. Where data quality is good these analyses will align closely but a large discrepancy indicates the need for improved data quality.
- Where maximum and minimum values for drug dosages and physical examinations are stated – these usually do not prevent you from entering a value which exceeds the boundaries.
- Checks on dates to ensure that a patient is not discharged before they were admitted, or attended for a follow-up appointment before they were discharged.
- Consistency checks, for example to make sure that a patient is not recorded as having an echo diagnosis of LVSD and as having not had an echo.
- Data completeness checks relate to the format of the field. For example, a date field can only ever contain a date. If it is a number field, it cannot contain word text other than numeric text.
- Only dataset field values are accepted in the new system and any that do not comply will be removed during the cleaning process. If a value is submitted for a field that is not part of the dataset it will be erased, and a mapping error is displayed. For example if you submit “1. Of course” instead of “1. Yes” then the record is imported but “1. Of course” is removed and the import log gets a mapping error, and the record is still imported (unless of course if the value removed is in a mandatory field).

Data submission deadlines

The audit reporting period runs on the financial year from 1st April to 31st March. You have an extra two months at the end of the year to submit all your data for the preceding audit year (to the nearest working day thereafter). ‘However, the dataset does not close so if patients are subsequently brought to your attention as having had an acute HF admission please continue to submit their data.

Please see the data submission deadlines here:

vi. Use of National Heart Failure Audit data

The National Heart Failure Audit (NHFA) deals with a specific and crucial phase in the patient journey. It reports on the characteristics of patients admitted with acute or sub-acute HF, the in-hospital investigation and care, the treatment given and the discharge planning and follow-up which is offered. The audit is now well established, reporting Quality Improvement (QI) metrics on over 70% of admissions with a primary diagnosis of HF, trends on key performance indicators (KPIs) and outcomes compared to previous years.

The NHFA annual reporting feeds directly into wider NCAP outputs (aggregate and patient reports) as well as reporting nationally through hospitals and other external avenues.

Annual aggregate report

The National Cardiac Audit Programme Annual Reports aimed at healthcare professionals and the public are produced annually. This covers records across several specialties and highlights quality improvement opportunities under the themes of the need for timely care, the need for specialised care and the need for evidence-based care delivered equitably. They contain aggregate and hospital level analysis that concentrates on the last completed financial year.

Additionally, a shorter, simplified version of the annual reports which is aimed specifically at patients, carers, and the public with little or no prior knowledge of heart disease or the clinical audit is available. The report also offers an insight into the type of work produced when engaging with NICOR. The report can be printed and distributed and can be found here: NICOR | National Cardiac Audit Programme

Research

Use of anonymised National Heart Failure Audit data for research purposes is encouraged and is overseen by the National Heart Failure Audit research group.

Dataset revisions

The dataset is reviewed on a regular basis to ensure that the data items collected allow us to appraise performance in line with NICE guidelines and other evidence-based guidance for the treatment and management of heart failure.

The updated NICOR application will be available to you automatically on the NICOR servers. Hospitals using commercial or locally developed applications to import data must ensure that these are updated to include all modifications in a revised dataset. Commercial software companies will be notified of the changes but check with your provider if in doubt. If your software is locally developed, you will need to update the locally held data dictionary.

New Dataset changes- Dataset v5.0

The types of changes made in the new dataset have been to improve and help facilitate data entry, analysis, and reporting.

Specifically, we have made two types of changes to the dataset; a) updated aspects of data entry such as unit types, and upper and lower limits and b) updated and expanded the dataset fields and options, as well as changed the field importance, i.e., changed from non-core to core mandatory. You will find a comprehensive list of changes in the change history tab of the dataset.

A complete list of variables and their import order can be found in the dataset spreadsheet. Information about the import format, for hospitals who wish to upload their records from an existing database can be found at https://ncap.nicor.org.uk/

Contact details

Clinical and audit queries

The National Heart Failure Audit provides a helpdesk for all clinical queries and general enquiries for all the audits. If you have any questions or queries relating to Heart Failure, please email audit enquiries.

E: nicor.auditenquiries@nhs.net

Technical enquiries

All technical enquiries concerning the new web platform (QReg5), new registrations or any other IT or access issues should be directed to the NICOR helpdesk:

E: nicor.helpdesk@nhs.net

National Institute for Cardiovascular Outcomes Research

NHS Arden and Greater East Midlands Commissioning Support Unit

website: https://www.nicor.org.uk