



# NATIONAL HEART FAILURE AUDIT (NHFA)

## User Guide v2

Dataset version 5.0

**The National Institute for Cardiovascular  
Outcomes Research (NICOR)**



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## Change History

<b>Date</b>	<b>Version</b>	<b>Author</b>	<b>Comments</b>
	1 <sup>st</sup> 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



## Introduction

The National Heart Failure Audit was established in 2007 and has now collected over 500,000 records of heart failure-coded hospital admissions. 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 and research groups to help highlight clinical practice and outcomes which do not meet optimal standards to help drive service improvement. The audit reports on the variation in practice across England and Wales, recommends compliance with evidence-based clinical guidelines in order 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 is hosted by Bart's Health NHS Trust, London. NICOR manages six national cardiac clinical audits commissioned by the Healthcare Quality Improvement Partnership ([HQIP](#)), one of many audits in their National Clinical Audit and Patient Outcomes Programme ([NCAPOP](#)).

Specialist clinical knowledge and clinical leadership for the National Heart Failure Audit is provided by the [British Society for Heart Failure \(BSH\)](#) and the Domain Expert Group (DEG), which determines the strategic direction and development of the audit. The DEG membership is made up of a variety of stakeholders, including cardiologists, specialist nurses, clinical audit and effectiveness managers, cardiac networks and patients.

This user guide corresponds to the current Heart Failure dataset version 5.0, which comes into effect in 1<sup>st</sup> April 2021. The previous dataset, version 4.2.1 was streamlined to ensure duplicate or unnecessary data is not collected. A small number of recently added fields will enhance the risk adjustment of data, which is necessary for the development of accurate comparative mortality analysis. The user guide explains which patients to include in the audit and outlines the audit methodology and design.

## 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 who are discharged or die in hospital with a diagnosis of heart failure in the primary position in England and Wales. Events submitted to the audit are compared with heart failure episodes code in the first diagnostic position by Hospital Episode Statistics (HES) in England or the Patient Episode Database of Wales (PEDW) in Wales. The following ICD-10 codes in the table below.

Further information on ICD codes can be found here:

The table below contains the current ICD codes which apply to the new dataset, version 5.0, which is located on the NICOR website here:

<https://www.nicor.org.uk/national-cardiac-audit-programme/datasets/>

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

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.

Heart failure patients are the patients coded as '1. Yes Confirmed Diagnosis of Heart Failure' in the heart failure diagnosis field. It is also possible that an unplanned (emergency) admission has been coded as heart failure by HES/PEDW but you disagree with the diagnosis. We would like you to include these patients but code them as "0" (i.e. not heart failure) However, patients classified as '0. No Heart Failure' but has an abnormal echo with oedema and/or breathlessness will be classified as heart failure patients. Therefore, the audit captures more patients than those recorded as having a confirmed diagnosis of heart failure.



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.

## Data analysis

### Patients included in our analysis

Once submitted data are extracted, we analyse the patients based upon the inclusion/exclusion criteria below.

Data used to Produce Main Report	
Included	Excluded
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 <u>discharge</u> are the same *. Deaths on the day of admission are not excluded.
	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.

The data analysis comprises outputs for a variety of metrics we report annually. These metrics reflect stages of the care pathway, for instance, 'activity' data shows the number of admission and readmission records submitted to the audit by your hospital, whereas patient outcomes require us to focus on patient discharge and death.

At the validation stage, the majority of analyses uses patient admissions, whereas the final analysis uses discharge once ONS life status is received. Due to this there



can be a slight difference in numbers between those in the validation report and final numbers reported in the final NCAP reports. We aim to provide as much clarity in our definitions as we can, which we include in validation reports and FAQ's.

## Definition of analysis

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

Column header	Definition	Denominator	Notes
Total admissions submitted (n)	Total number of admission and readmission records submitted to the audit by your hospital	n/a	
Heart failure admissions (n)	Number of records with a confirmed diagnosis of heart failure	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 <b>*not*</b> be included in the annual report analysis

## 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, and your case ascertainment rate is less than 70%, the percentages will be suppressed or not included in the annual report. If you are a small centre with fewer than 20 heart failure admissions, but you have submitted at least 70% of your HES-recorded heart failure admissions, your hospital-level analysis will be published.



## Ensuring representativeness

In order to ensure that a representative sample of heart failure patients is included in the audit, you must include 100% of patients otherwise the audited patients must be selected at random. If the patients included in the audit are more likely to be those that were treated on a cardiology ward, or who survived at discharge, then the audit analysis, and in particular the hospital-level analysis, is likely to be unrepresentative.

One way of ensuring that a random sample is collected, is to obtain a list of all patients who meet the audit inclusion criteria from your coding department each month, and work through the list chronologically by date of discharge.

## Patient confidentiality and identification

The National Heart Failure Audit collects patient identifiable data (PID) in order to track life status by linkage with Office for National Statistics ([ONS](#)) mortality data, to link to HES readmission data for England and PEDW for Wales, and to enable linkage with the other cardiac databases, such as MINAP and CRM.

However, there are strict rules for the use of potential patient identifiers; although 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 secondary research purposes, the following safeguards are in place to protect patient identity:

- The patient's 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, which 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 also pseudonymised, so that third parties outside of 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 section 251 approval from the National Information Governance Board, which allows us to collect and process patient identifiable data for all of the cardiovascular audits, including the National Heart Failure Audit, without requiring consent from individual patients. However, we recommend that you tell patients that their anonymised data will be used for national audit and research purposes to improve patient care.

A patient leaflet, which can be printed and distributed to patients, along with more information about NICOR is available on the NICOR website at:

<https://www.nicor.org.uk/wp-content/uploads/2019/05/NICOR-Privacy-Fair-Processing-Patient-and-Public-Information-Leaflet-Updated-16-04-19-.pdf>

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.

<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>

## Collecting and submitting data

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 at:

<https://www.nicor.org.uk/national-cardiac-audit-programme/datasets/>. There are also prompts throughout the online portal fields and any queries can be sent via the NICOR helpdesk [nicor.helpdesk@nhs.net](mailto:nicor.helpdesk@nhs.net). The core pro-forma captures essential data submitted to the audit which are routinely analysed and reported. These fields include a) core mandatory fields (i.e. data required for the record to be saved) and b) core fields (i.e. you are strongly encouraged to collect core data, such as NHS number). Both mandatory and core fields are clearly marked in the dataset. c) non-core fields still allow a record to be saved (but it is still optimal to complete them). The full pro forma contains some of the fields that are not essential to our analysis and reporting. These fields are therefore “non-core” which you are not expected to



collect or submit for the purposes of the National Clinical Audit, but can 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 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.

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

## Using the data application

### Introduction to QReg5

QReg5 is the new 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.

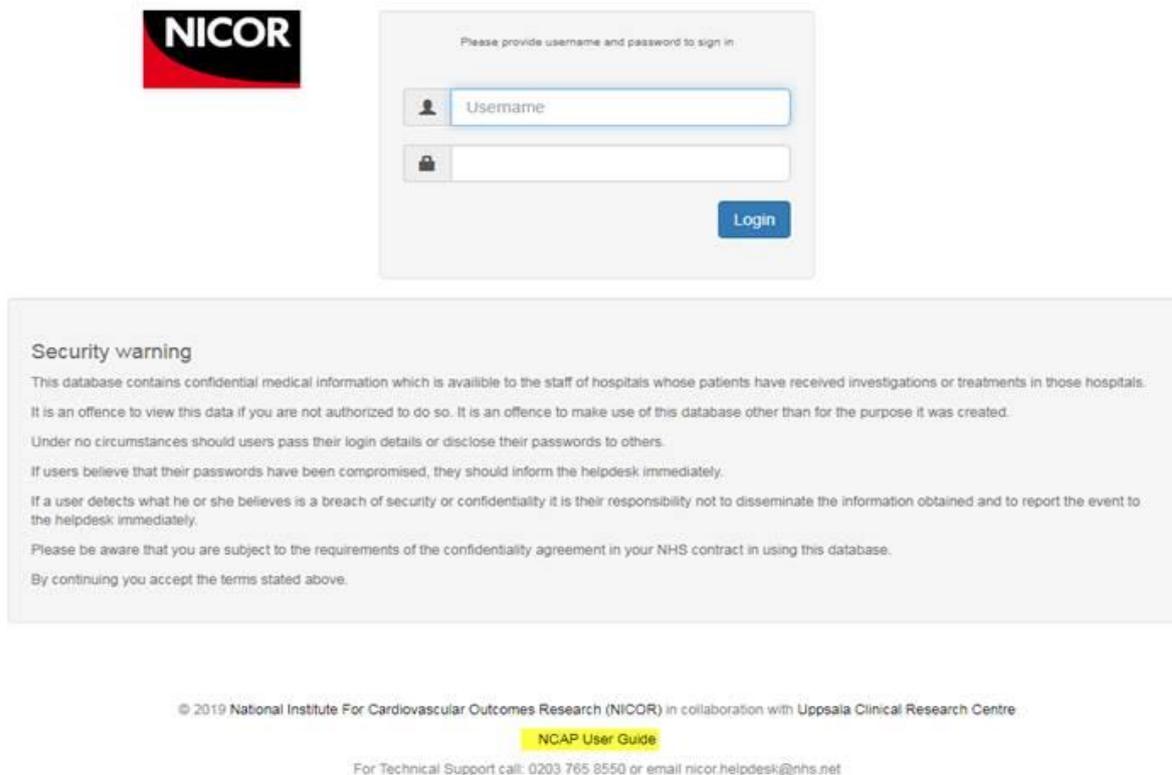
A key feature of this web-based application is that patient records for your hospital will be shared among the different domains that you enter data for. For instance, if a patient in your hospital has had a PCI or surgery, the patient record created originally will be available for the Heart Failure 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 errors.

You can find out how to access and navigate the new IT system, in the user guide for the QReg5 data application, this can be found on the QReg5 login page at <https://ncap.nicor.org.uk/>



## To login

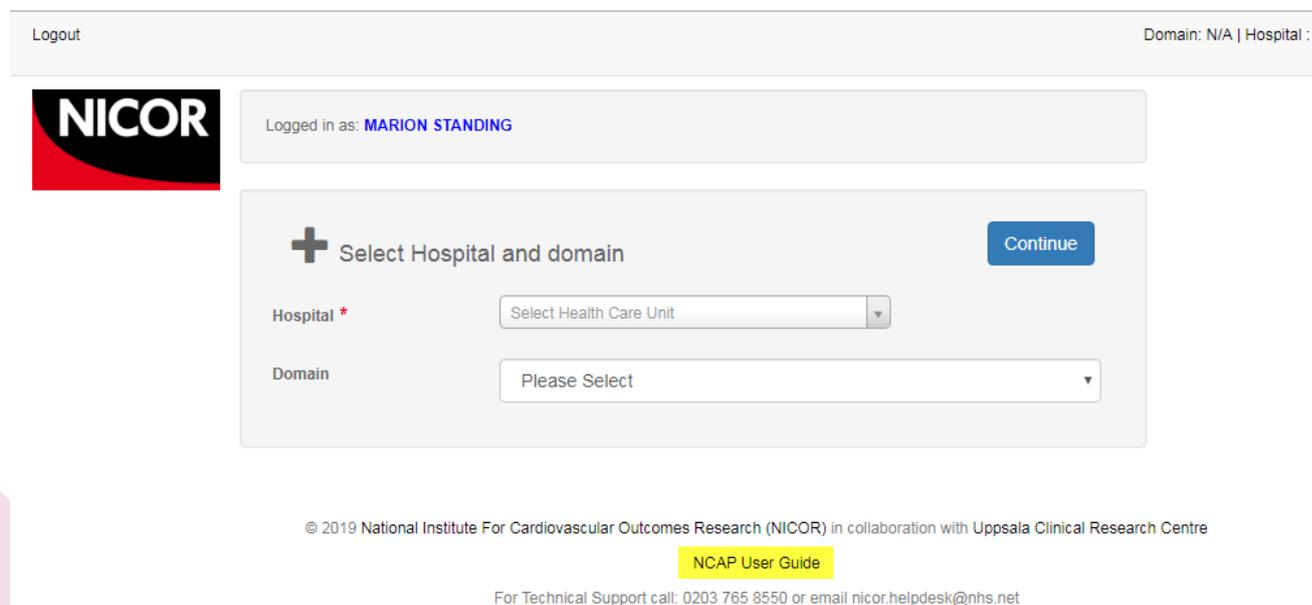


The login interface consists of two main parts. On the left is the NICOR logo. On the right is a login form with the heading "Please provide username and password to sign in". It contains two input fields: "Username" with a person icon and a password field with a lock icon. A blue "Login" button is positioned below the password field. Below the login form is a "Security warning" box with the following text:

**Security warning**  
This database contains confidential medical information which is available 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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[NCAP User Guide](#)  
For Technical Support call: 0203 765 8550 or email [nicor.helpdesk@nhs.net](mailto: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.



The user selection screen features a top navigation bar with "Logout" on the left and "Domain: N/A | Hospital : |" on the right. Below this is the NICOR logo and a box indicating the user is "Logged in as: MARION STANDING". The main content area is titled "Select Hospital and domain" with a plus sign icon and a blue "Continue" button. It contains two dropdown menus: "Hospital \*" with the text "Select Health Care Unit" and "Domain" with the text "Please Select".

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You can also find information on importing/exporting records in the Heart Failure Import/export guide located on the NICOR website along with the datasets and user guides.

## **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. YYYYHFImport.csv and within a date range that you define. In order to analyse clinical practice and check data quality, there are a number of 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 given in the dataset.

The export and Import guide can be found on the NICOR website here: [Import guide](#)

## **Online analysis**

The QReg5 completeness tool is now available. It will allow you to check your local clinical practice regularly, to pick up on 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). Please keep checking the website for new features.

## **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 regulations [GDPR 2018](#) to ensure that the data meets the necessary standards of completeness, accuracy and relevance. GDPR regulations after 2018 is built into [Data Protection Act 2018](#).

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.

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 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 data 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).
- 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 also 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).

A full list of validation checks is found at: <https://www.nicor.org.uk/national-cardiac-audit-programme/datasets/>

### **Data submission deadlines**

The audit reporting period runs on the financial year from 1<sup>st</sup> April to 31<sup>st</sup> March. You have an extra two months at the end of the year to submit all of your data for the preceding audit year (to the nearest working day thereafter).

Please see the [submission deadlines link](#)

### **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.

### **Annual reports**

The National Cardiac Audit Programme Annual Reports aimed at healthcare professionals and the public are produced annually. This covers records across five clinical areas: Congenital Heart Disease, Heart Attack, Percutaneous Coronary Interventions (PCI), Adult Surgery and Heart Failure. It 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.

### **Patient friendly report**

A shorter, simplified version of the annual reports which is aimed specifically at patients with little or no prior knowledge of Heart disease or the clinical audit is found at: <https://www.nicor.org.uk/for-patients-carers-charities-and-the-public/>

### **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 new dataset now contains 169 variables in the 'Procedure' record which are the number of mandatory fields. In the 'Procedure' record there are 10 variables in a Patient Registration section of the record and 159 including patient and Procedure section of the record.

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](mailto: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](mailto:nicor.helpdesk@nhs.net)

T: 020 3765 8550

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