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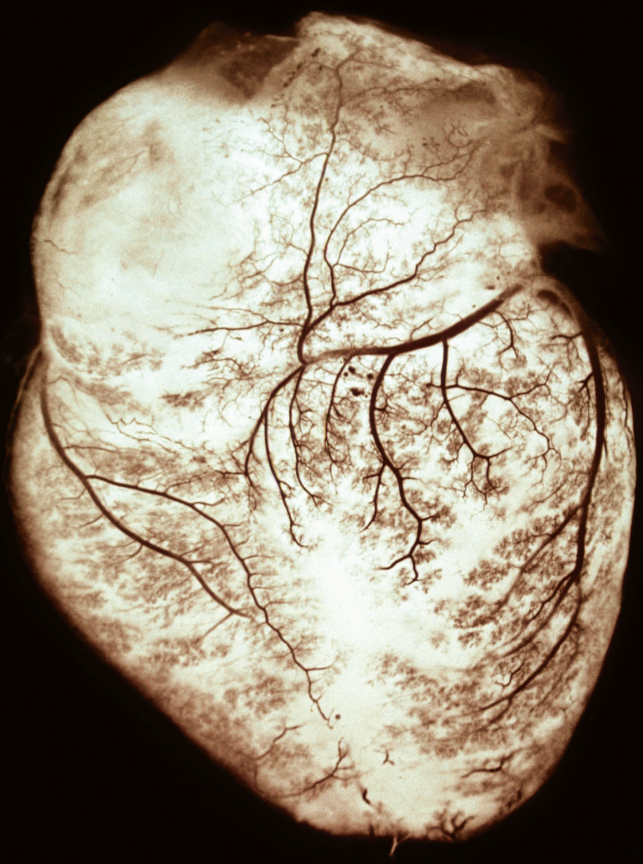
BRITISH SOCIETY FOR HEART FAILURE

NICOR



NATIONAL HEART FAILURE AUDIT

APRIL 2015 - MARCH 2016

NICOR (National Institute for Cardiovascular Outcomes Research) is a partnership of clinicians, IT experts, statisticians, academics and managers which manages six cardiovascular clinical audits and two clinical registers. NICOR analyses and disseminates information about clinical practice in order to drive up the quality of care and outcomes for patients.

The British Society for Heart Failure (BSH) is a national organisation of healthcare professionals which aims to improve care and outcomes for patients with heart failure by increasing knowledge and promoting research about its diagnosis, causes and management.

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the National Clinical Audit Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

Founded in 1826, UCL (University College London) was the first English university established after Oxford and Cambridge, the first to admit students regardless of race, class, religion or gender, and the first to provide systematic teaching of law, architecture and medicine. It is among the world's top universities, as reflected by performance in a range of international rankings and tables. UCL currently has 24,000 students from almost 140 countries, and more than 9,500 employees. Its annual income is over £800 million.

Authors

This report was written and compiled by Akosua Donkor, Theresa McDonagh and Suzanna Hardman, with input from the National Heart Failure Audit Steering Group Committee (see Appendix 5 for the 2015/16 membership list).

Data extraction was carried out by Marion Standing. Data linkage, cleaning and analysis was performed by Jiaqiu Wang.

Acknowledgements

The National Heart Failure Audit is managed by NICOR, which is part of NCAPOP, based at UCL. The National Heart Failure Audit is commissioned by HQIP as part of the NCAPOP.

Specialist clinical knowledge and leadership is provided by the British Society for Heart Failure (BSH) and the audit's clinical lead, Professor Theresa McDonagh. The strategic direction and development of the audit is determined by the audit Project Board. This includes representatives of major stakeholders in the audit including cardiologists, the BSH, Heart Failure specialist nurses, Clinical Audit and Effectiveness Managers, patients, NICOR and HQIP. See Appendix A for the 2015/16 Project Board membership.

NICOR would especially like to thank the contribution of all NHS Trusts, Welsh Heath Boards and the individual nurses, clinicians and audit teams who collect data and participate in the audit. Without this input the audit could not continue to produce credible analysis, or to effectively monitor and assess the standard of heart failure care in England and Wales.

This report is available online at http://www.ucl.ac.uk/nicor/audits/heartfailure/additionalfiles. Hospital level tables will be available on http://data.gov.uk. Participation analysis is published at http://www.hqip.org.uk/parcar/.

National Heart Failure Audit
National Institute for Cardiovascular Outcomes Research (NICOR)
UCL Institute of Cardiovascular Science
1 St Martin's Le Grand, 2nd Floor, London EC1A 4NP

National Heart Failure Audit Annual Report

April 2015 - March 2016

The ninth annual report for the National Heart Failure Audit presents findings and recommendations for patients with an unscheduled admission to hospital, who were discharged or died with a primary diagnosis of heart failure between 1 April 2015 and 31 March 2016. The report covers all NHS Trusts in England and Health Boards in Wales that admit patients with acute heart failure.

The report is aimed at all those interested in improving the standard of heart failure care, including those involved in collecting data for the National Heart Failure Audit, alongside the clinicians involved in delivering that care and the patients receiving it, the hospital chief executives, managers, clinical governance leads and those commissioning heart failure services, patient groups and many others. The report includes clinical findings at national and local levels, and patient outcomes.

Contents

Executive Summary

Findings

1. This year's Heart Failure (HF) audit is based on 66,695 admissions to hospitals in England and Wales between April 2015 and March 2016. This represents 82% of HF admissions as the patient's primary diagnosis in England and 77% in Wales.
2. During hospital admission, more than 90% of patients are recorded as having had an up to date echocardiogram, a key diagnostic test. However, rates are higher for those admitted to Cardiology (96%) rather than General Medical (85%) wards. Specialist input, irrespective of the place of admission is associated with higher rates (95%) of echocardiography.
3. The prescription of key disease-modifying medicines for patients with heart failure and a reduced left ventricular ejection fraction (HF-REF) has increased, including beta-blockers (87%) and mineralocorticoid antagonists (53%); treatments that are both life-saving and inexpensive.
4. Prescription rates for all three key disease modifying medications [angiotensin converting enzyme inhibitors (ACEI), beta-blockers (BB) and mineralocorticoid (aldosterone) receptor antagonist (MRA)] for patients with HF-REF has increased from 35% to 53% for those admitted to cardiology wards over the last six years.
5. Irrespective of the place of admission, 47% of patients with HF-REF seen by a member of the specialist HF team as an inpatient, were prescribed all three disease modifying drugs, key priorities for implementation (KPI)[1].This has increased from 45% last year, albeit with considerable room for further improvement.
6. The number of patients seen by HF specialists remains high at 80% this year. In particular HF nurses saw more HF patients admitted onto general medical wards (33%) than last year (24%). This is important as specialist care improves mortality.
7. The mortality of patients hospitalised with heart failure is significantly lower this year at 8.9% compared to 9.6% last year. However, mortality remains too high and there are large variations in mortality amongst hospitals.
8. Mortality rates in hospital are better for those admitted to cardiology wards.
9. Post mortality rates at one year to 6 year are independently associated with admission to a cardiology ward, cardiology follow up and the use of key disease-modifying medicines for HF-REF.
10. Had the patients identified within this audit cycle as having HF-REF, who left hospital on none of the three disease modifying drugs, been prescribed all three, then at least an additional 212 patients would likely have been alive at the time of census. With more comprehensive prescription and dose optimisation across the audit there is the ability to prevent numerous additional deaths.
11. This year's report shows modest but important improvements which are to be celebrated. But an 8.9% inpatient mortality cannot be accepted and requires urgent attention within every acute Trust admitting patients with Heart Failure.

Recommendations

For Chief Executives, Medical and Clinical Directors

The HF audit is now comprehensive. Trusts and Health Boards should be aware that there is considerable variation in the quality of care delivered by different hospitals, and in different wards within a hospital. With this in mind:

1. Chief Executives, Medical Directors and Clinical Leaders at provider centres must explore, understand and act upon variations in their care of people with heart failure highlighted by this 2017 report.
2. Be aware that data from the national heart failure audit will be used:

- To validate the application of the best practice tariff (BPT) in heart failure in England. The BPT for acute heart failure is higher than the standard tariff.
- To confirm that the minimum data-entry to the audit is being met (currently set at 70% of the HES/PEDW activity for HF).
- By the Care Quality Commission (CQC) to monitor acute Trusts.

3. Chief Executives, Medical Directors and Clinical Leaders must ensure that:

- Sufficient staff are in place for delivery of high quality acute HF care based on NICE Guidance and Quality Standards.
- These staff have sufficient resources to enable rapid and accurate data entry.
- Your HF teams have a senior clinical lead and adequate support from the medical director and other clinical and non-clinical senior management.
- The clinical lead presents this annual report at board level, and identified gaps in service provision are addressed by agreed strategies which might include:

  a. Work with teams to explore contributing factors.

  b. Widespread dissemination and discussion of the audit findings.

  c. Clear QI action plans with implementation of changes by agreed deadlines.

  d. Presentation of subsequent findings to the Board to monitor success of quality improvement changes.

e. Extending the specialist care to more patients admitted with heart failure.

For Multidisciplinary HF Teams and HF leads and Networks

This audit is a measure of the quality of your service, which however good, can always be improved.

4. Ensure the data are accurate and reliably entered in a timely fashion and interrogate the data on a regular basis.
5. Share data across your acute Trust/Board, and networks and work together to find solutions. Your managers and commissioners may appreciate help understanding the data. Use the data to drive improved care. Be aware that hospital specific data will increasingly be in the public domain in future years. For this to be a correct representation of local practice, your data-entry needs to be accurate and comprehensive.
6. Use the national heart failure audit report (2017) data as a central component of business plans and in support of staff and other resources that are required when developing and delivering an evidence-based heart failure service.
7. Encourage and support quality improvement work targeted at improving any limitations in your care of people with acute heart failure as demonstrated by this heart failure audit report. For example you might need to develop your service to ensure it has:

- A named Trust HF clinic lead.
- Adequate specialist care including heart failure cardiologists and nurses and others.
- Adequate specialist team outreach services are available in all ward areas.
- All patients admitted with HF due to HFREF are offered disease modifying treatments (for example ACE/ARB, BB and MRA), prior to leaving hospital.
- A referral for cardiac rehabilitation, and an appointment to see a member of the HF team within 2 weeks, is made before patients leave hospital.

8. Share this HF Audit data with non HF Clinical teams and ensure they:

- Work with the appointed Trust HF clinical lead to explore and address known limitations demonstrated by heart failure audit report (2017) findings.
- Agree and implement QI initiatives aimed at targeting audit report identified limitations in the care provision of people with acute heart failure.
- Widely share successful QI initiatives resulting from acute heart failure audit report work for example through:

I. RCP 'Tell us your story': https://www.rcplondon.ac.uk/projects/future-hospital-tell-us-your-story.
II. HQIP case studies: http://www.hqip.org.uk/resources/.

For Commissioners

- It is essential that you understand your local HF team and that it is properly constituted and fully commissioned.
- Use the audit report to understand how the HF care that your commissioned team delivers, compares with other Trusts.
- Understand any service gaps and limitations in local HF care and work with your Trust HF lead, and their multidisciplinary team, to address any identified gaps in service.
- Discussing the annual HF report with local providers, and developing local targets for improvement, will be a highly effective tool for improving the HF care for your population – all services have room for improvement.

For Patients and Patient Groups

- This report provides a national picture of care for people with HF in 2015/16 in England & Wales, and also contains important information about your local hospital services, which can be compared against other hospitals and the national averages.
- Please pay close attention to the section on the NICE Key Priorities for Implementation and Quality Standards.
- This information should create opportunities to open local discussions about the quality of care and local services for people with HF. We hope that you find your local health care teams welcome your input into improving services.

1 Introduction

1.1 What is Heart Failure

HF means a defect in heart function (either emptying or filling) leading to a rise in atrial pressures (congestion) and, eventually, symptoms such as breathlessness and ankle swelling. It is common. Approximately 900,000 people in the United Kingdom have HF, it causes or complicates about 5% of all emergency hospital admissions in adults and consumes up to 2% of total NHS expenditure[6]. It is the final common pathway of most forms of cardiovascular disease, usually as a consequence of myocardial (heart muscle) dysfunction. In the UK, the most common type of HF is due to left ventricular systolic dysfunction, where there is impaired contraction of the left ventricle (HF-REF, HF with Reduced Ejection Fraction). HF can also be attributed to impaired filling of the left ventricle when the heart muscle is thickened, often as a result of long standing high blood pressure (HF-PEF, HF with preserved ejection fraction). HF is often described as chronic (CHF) when patients have relatively stable symptoms of breathlessness, fatigue and ankle swelling and acute (AHF), when the symptoms become severe and the patient usually requires admission to hospital. However, in many cases deterioration occurs gradually over several weeks before hospital admission and might be prevented if detected and managed earlier. The typical course of CHF is punctuated by periods of acute or sub-acute decompensation into AHF, although good management and monitoring will make these less frequent.

HF is often associated with marked reductions in quality of life and high levels of debility, morbidity and mortality. This imposes a heavy burden not only on patients but also those who care for them. Repeated hospitalisations are a measure of the adverse effects of HF on quality of life, the failure to control symptoms and disease progression, the high levels of co-morbidity and ultimately of an adverse prognosis; they also make a large contribution to the huge fiscal cost of HF to the NHS. Survival rates for HF patients are variable, dependent on the age and severity of disease of the patient, and the quality of care they receive. Outcomes are consistently poor for patients who receive suboptimal care, but input from the HF specialists and prescription of evidence-based HF therapies have a substantial prognostic benefit.

While there have been huge advances in the treatment of chronic HF with reduced systolic function (HF-REF) over the last twenty years (with 1 year mortality rates of 5-10% for those in clinical trials receiving optimal medical and device therapy), there has been little progress made in therapy for HF-PEF or those admitted with AHF regardless of left ventricular ejection fraction. The in-hospital mortality rate for those admitted with acute HF in the UK is approximately 10%, with more than one third of those discharged dying in the following year. However, age-related mortality rates are beginning to fall, reflecting more consistent implementation of guideline recommendations. This audit has consistently shown that specialist cardiology care during the admission and initiation of optimal medical therapy for those with HF-REF is associated with better outcomes in hospital and at one year.

This audit 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 key metrics on over 70% of admissions with a primary diagnosis of HF and trends on KPIs and outcomes compared to previous years.

1.2 Management of Patients with Heart Failure

The treatment of HF is determined by the mode of presentation, that is acute or chronic, and the underlying type of cardiac dysfunction (HF-REF or HF-PEF).

There has been little progress in the treatment of AHF over the last forty years. Oxygen and intravenous diuretics rapidly relieve (usually within 30-90 minutes) symptoms of pulmonary congestion (breathlessness). Diuretics are also the mainstay of treatment for peripheral congestion although this may require several days of intensive treatment before it is controlled. Sometimes intravenous vasodilator or inotropic agents are required. Once patients are euvolaemic after intravenous therapy, they are converted to oral diuretics to ensure that they remain free from symptoms and signs of congestion (breathlessness and peripheral oedema). For those who have HF-REF as the underlying cause of their HF, key disease modifying medicines need to be given. These are ACE inhibitors (ACEI), beta-blockers (BB) and mineralocorticoid receptor antagonists (MRA). Data from numerous clinical trials in HF show that these medicines improve or reduce recurrent worsening of symptoms and reduce hospitalisations for HF and mortality. Previous audit reports show that patients discharged on all three medicines have better survival rates from discharge out to 6 years of follow-up compared to those discharged on fewer or none. The prescription of these medicines for HF-REF is a KPI in this audit.

1.3 Guidelines and Quality Standards

The National HF audit dataset is evolving to ensure it remains an effective representation of current evidence based HF guidance. This 9th report reflects practice for the year April 2015-April 2016 and therefore should be assessed in the context of the 2010 NICE CHF guidelines and related 2011 CHF quality standards and the 2012 European Society of Cardiology (ESC) AHF and CHF guidance [2,3,4]. The most recent European Guidelines were published in May 2016 so will not

have influenced the management during this cycle. The first NICE guidelines for AHF were published in late 2014 and the related AHF quality standards in December 2015 and arguably the improved outcomes in this audit report may reflect the new guidance[1,5]. These NICE guidelines are based on evidence from many randomised controlled trials that enrolled many thousands of patients and economic modelling of the cost-effectiveness of implementing the findings of these trials using data from the National HF Audit. Thus, an ideal cycle is established whereby this audit data from routine practice is used to identify real patient outcomes, which then inform emerging HF guidance. However patients will only derive benefit if the guidance is implemented as outlined below.

Considerable emphasis has been placed on the role of the HF specialist, defined in the 2010 guidance, and the multidisciplinary specialist team which they lead. The term 'specialist' denotes a physician with a special interest in HF (often a consultant cardiologist) who leads a specialist multidisciplinary HF team of professionals with appropriate competencies from primary and secondary care. The team will involve, where necessary, other services (such as rehabilitation, tertiary care and palliative care) in the care of individual patients. The specialist team is central to the care of patients with AHF, which for the purposes of this audit means any patient admitted to hospital because of HF.

For patients hospitalised with AHF, which will include both those with a new or pre-existing diagnosis, early and continued involvement of the specialist team is emphasised in the guidance and related quality standards. Further important themes include clinical stabilisation and pre-discharge implementation of disease modifying medicines, which are most cost effectively delivered by a specialist cardiac care or HF unit, adequate discharge planning including a specialist follow-up appointment within two weeks of leaving hospital, and rehabilitation. The key guidance applicable to the current audit and current best practice can be seen in in Table 1.

Table 1: Some of the Key Priorities for Implementation from the NICE Acute HF Guideline[5] and the recently published NICE Acute HF Quality Standards[1]

Quality	Detail
Acute HF Guideline (KPI) Organisation of care	All hospitals admitting people with suspected acute HF should provide a specialist HF team that is based on a cardiology ward and provides outreach services.
Acute HF Guideline (KPI) Organisation of care	Ensure that all people being admitted to hospital with suspected acute heart failure have early and continuing input from a dedicated specialist heart failure team.
Acute HF Guideline (KPI) Treatment After Stabilisation	In a person presenting with acute HF who is already taking beta-blockers continue the beta-blocker treatment unless they have a heart rate less than 50 beats per minute, second or third degree atrioventricular block, or shock.
Acute HF Guideline (KPI) Treatment After Stabilisation	Start or restart beta-blocker treatment during hospital admission in people with acute heart failure due to left ventricular systolic dysfunction, once their condition has been stabilised - for example when intravenous diuretics are no longer needed.
Acute HF Guideline (KPI) Treatment After Stabilisation	Ensure that the person's condition is stable for typically 48 hours after starting or re-starting beta-blockers and before discharging from hospital.
Acute HF Guideline (KPI) Treatment After Stabilisation	Offer an angiotensin-converting enzyme inhibitor (or angiotensin receptor blocker if there are intolerable side effects) and an aldosterone antagonist during hospital admission to people with acute heart failure and reduced left ventricular ejection fraction. If the angiotensin-converting enzyme inhibitor (or angiotensin receptor blocker) is not tolerated an aldosterone antagonist should still be offered.
Acute HF Quality Standard 1	Adults presenting to hospital with new suspected acute HF have a single measurement of natriuretic peptide.
Acute HF Quality Standard 2	Adults admitted to hospital with new suspected acute HF and raised natriuretic peptide levels have a transthoracic doppler 2D echocardiogram within 48 hours of admission.
Acute HF Quality Standard 3	Adults admitted to hospital with acute HF have input within 24 hours of admission from a dedicated specialist HF team.
Acute HF Quality Standard 4	Adults with acute HF due to left ventricular systolic dysfunction are started on, or continue with, beta-blocker treatment during their hospital admission.
Acute HF Quality Standard 5	Adults admitted to hospital with acute HF andreduced left ventricular ejection fraction are offered an angiotensin- converting enzyme (ACE) inhibitor and an aldosterone antagonist.
Acute HF Quality Standard 6	Adults with acute HF have a follow- up clinical assessment by a member of the community- or hospital-based specialist HF team within 2 weeks of hospital discharge.

1.4 National Heart Failure Audit

1.4.1 The role of the audit

The National HF Audit was established in 2007 to understand contemporary practice with the aim of helping clinicians improve the quality of HF services and to achieve better outcomes for patients. The purpose of this audit is to drive up standards of care during the acute admission phase to achieve better patient outcomes. This can be accomplished by capturing data on clinical indicators that have a proven link to improved outcomes, encouraging the increased use of clinically recommended diagnostic tools, implementing use of disease-modifying treatments, and by robust referral pathways.

The National HF Audit aims to collect data on all hospital deaths and discharges primarily due to HF, in England and Wales. Events submitted to the audit are compared with HF episodes coded in the first diagnostic position by Hospital Episode Statistics (HES) in England or Patient Episode Database of Wales (PEDW). This report covers all records submitted to the audit where the date of discharge is between 1 April 2015 and 31 March 2016.

1.4.2 Methodology

The National HF Audit collects data on all patients with an unscheduled AHF admission to hospital in England and Wales who have a death or discharge with a coded primary diagnosis of HF. This is designated by the following 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

Patients admitted for elective procedures, for example elective pacemaker implantation or angiography, are not included. Patients must be over 18 years old to be eligible for inclusion in the audit.

Participation in the audit is mandated by NHS England's NHS Standard Contracts for 2013/14 and 2014/15[6], and by the NHS Wales National Clinical Audit and Outcome Review Plan 2013/14[7]. Trusts are expected to include all patients with a primary death or discharge diagnosis of HF in the audit; a target of at least 70% of all such episodes (using HES/PEDW as the denominator) is the minimum requirement. Although most patients with HF are managed mostly in the community, this audit currently only covers unscheduled AHF admissions to hospital. Extension of the audit to primary care is under consideration and a pilot project underway.

Data can be input manually or imported from locally developed systems and third party commercial databases such as TOMCAT, PATS and DATACAM. Cardiology units may enter their data into the central audit database in three ways:

- Direct data entry using the online data-entry form using the web portal.
- Direct data entry using the online data-entry form using Lotus Notes.
- Uploading of electronic data (in CSV file format) from existing local IT systems, currently via Lotus Notes only.

The role of the HF audit database users varies between hospitals but the personnel involved in collecting and inputting data tend to be HF specialist nurses, clinical audit leads and clinical effectiveness managers. The time taken to manually input the core data fields for an individual patient is upward of 20 minutes depending on the complexity of the case, the quality of the clinical notes and whether the patient is known to the HF team or not.

1.4.3 Data quality, data completeness & case ascertainment

Trusts and Health Boards are expected to include all episodes for all patients in the audit with a primary death or discharge diagnosis of HF subsequent to an unscheduled hospital admission. The minimum requirement for case ascertainment is 70% of HES/PEDW activity. In 2015/16, 205 hospitals from 137 NHS Trusts in England and six Local Health Boards in Wales reported deaths or discharges coded as HF according to HES and PEDW. In England 82% of Hospital Trusts met the above minimum participation requirement and 77% of Welsh Health Boards.

1.4.4 Data cleaning and data quality

The National Heart Failure Audit collected 66,695 records of heart failure admissions with a discharge date between 1 April 2015 and 31 March 2016.

Table 2. Number of records excluded from analysis in this report

Records excluded 2015/16 (n)	Records excluded 2006-16 (n)	Dataset	Reason
11	80	Admission	Missing or invalid hospital identifier
1	11	Readmission	Missing or invalid hospital identifier
1337	5204	Admission/ Readmission	Non-identical rows with identical NHS number and identical admission/ discharge dates
3	4122	Admission/ Readmission	Time to discharge <0

After data cleaning and exclusion of invalid records, the total number of records was 65,343 (Table 2). Mortality data for patients in the National Heart Failure Audit is provided by the Data Linkage and Extract Service of NHS Digital (Table 3).This service links audit data with death registration data from the Office of National Statistics (ONS)[8].

Table 3. Number of records excluded from mortality analysis in this report

Records excluded 1-year mortality analysis (n)	Records excluded 7-year mortality analysis (n)	Reason
1791	4693	No life status
495	2054	Time from discharge to follow-up either <0 or >longest possible interval

1.4.5 Minimum data standard

Increasingly national clinical audit data is used to support quality assurance and quality improvement within the healthcare sector. Examples include CQC regulation and NHS England BPT.

NICOR will be introducing a data completeness tool to support hospitals and the NICOR team to monitor the quality of all data fields. The tool will highlight the expected minimum data standard for each audit; hospitals not meeting the minimum data standard will be notified. Failure to meet the minimum data quality standard will affect the accuracy of local analysis of KPI's.

As the HF audit is currently developing a risk model, the minimum data standard will focus on the core mandatory fields in the dataset (currently 49 fields) to reduce the number of fields marked 'unknown'. This will maximise the number of records that can be used in the model to enable robust comparisons of expected and actual risk-adjusted outcome at a local level. NICOR are also creating an online tool to monitor compliance with the minimum data standard, to allow hospitals to keep track of their progress.

1.4.6 How we analysed the data

Data held within the secure storage environment at NICOR were extracted and provided to the information analyst with pseudonymised personal identifiers. Data provided by hospitals does not always adhere to the technical standards of the audit.

The data are first processed to reduce the impact of deviation from the audit's standards which maximises their usability for analyses. On rare occasions, multiple copies of records for the same admission are found in the database. Duplicate records are identified with the combination of patients' pseudonymised NHS number, date of admission and discharge. They are removed prior to analysis. All analyses are performed on valid and cleaned data. All data cleaning processes and analyses described in this report were performed in the R statistical programming language (version 3.2.2).

For almost all of the descriptive statistics presented, percentages were rounded to whole numbers. Thus, there are some analyses where percentage breakdowns add up to more or less than 100%. This is not in error, and is simply a consequence of rounding.

Univariate analyses for mortality are presented as the percentage of patients dead during admission, at 30 days and 1 year post discharge. Multiple logistic regression analysis was used to determine the independent predictors of mortality during hospitalisation. Kaplan Meier survival curves were generated for post discharge mortality. Cox Proportional Hazards modelling was used to determine the independent predictors of survival.

For multiple admissions for the same patient, the index record within the audit reporting period with the pseudonymised NHS number and admission date was used.

2 The National Heart Failure Audit 2015/16 Results

2.1.1 Patients admitted with heart failure

Data were provided on 66,695 deaths and discharges from April 2015 to March 2016. This is a significant increase of approximately 17% when compared to 56,915 such events in the previous annual report.

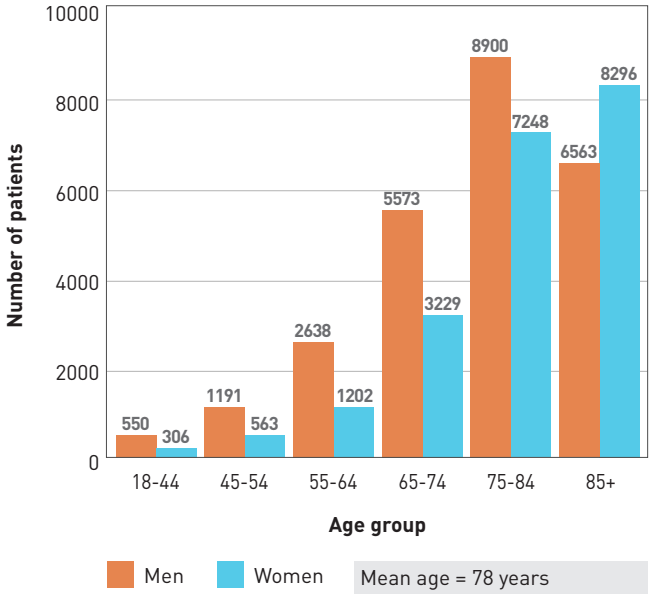
Table 4: Records submitted and case ascertainment in 2015/16

Region	Records submitted	HES/PEDW total HF discharges 2015-16	Case ascertainment (%)
Overall	66695	81449	82
England	63235	76936	82
Wales	3460	4513	77

2.1.2 Demographics

The median age [IQR, interquartile range] of patients was 80 years overall but slightly higher for women and lower for men. There were more men in each age category other than the 85+ age group where women were in the majority (Figure 2).

Figure 2: Age and gender demographics at first admission

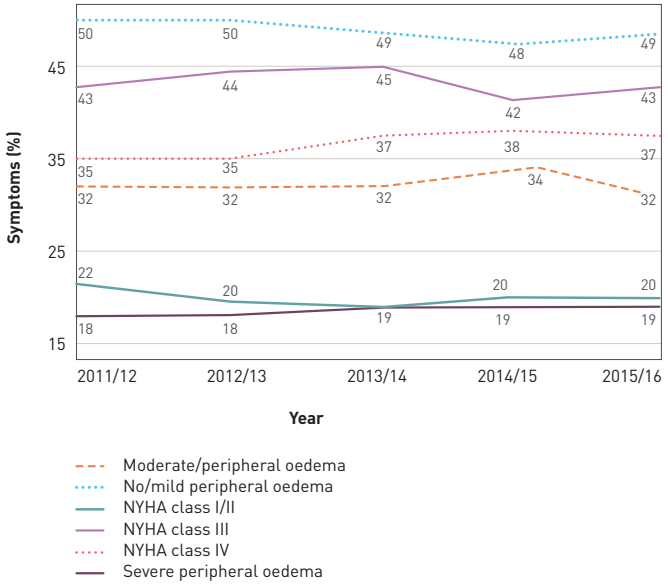


Mean age = 78 years
Median age = 80.4 years
Mean age men = 76.1 years
Mean age women = 80.2 years

2.1.3 Trends in symptoms

The pattern of symptoms and signs of HF has remained fairly consistent over the years. Just over one third of admissions were associated with symptoms at rest or with minimal exertion (NYHA Class IV). Approximately half of admissions were associated with moderate or severe oedema. As peripheral oedema usually accumulates over days or weeks there is an opportunity to reduce admissions through better control of congestion in the community. As peripheral oedema is associated with longer stays, better management of congestion might shorten admission.

Figure 3: Trends in symptoms and signs of HF over 5 years



2.1.4 Causes and co-morbidities of heart failure

Just over 68% of patients are reported to have HF-REF. As in previous years ischaemic heart disease (IHD) and prior myocardial infarction are more common in those with HF-REF, whereas hypertension and valve disease are associated with HF-PEF. Of note is the high co-morbidity; burden one third of patients had diabetes and just under 19% had chronic obstructive pulmonary disease (COPD) (Table 5).

Table 5: Aetiology and comorbidity HF-REF/HF-PEF

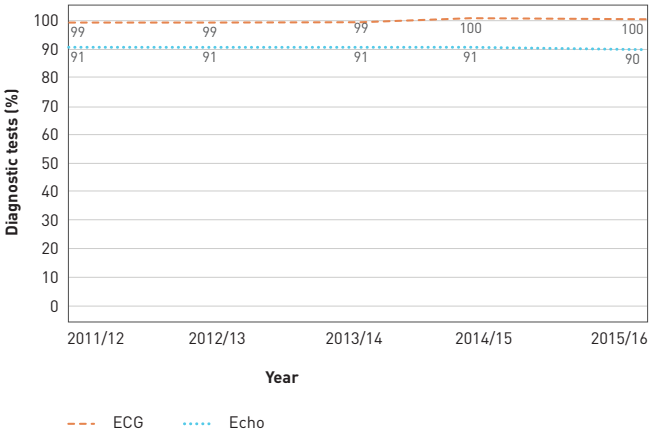
Medical History	HF-REF (%)	HF-PEF (%)	p value
IHD	48.4	37.9	<0.001
Atrial fibrillation	49.1	40	0.857
Myocardial Infarction	30.7	18.1	<0.001
Valve disease	23.9	31.4	<0.001
Hypertension	52.1	59.9	<0.001
Diabetes	33.3	33.5	0.577
Asthma	8.4	9.4	<0.001
COPD	16.7	18.9	<0.001

2.2 Assessment and Diagnosis

ECGs and echocardiography are done in 100% and 90% of patients respectively, in line with the key priorities for implementation (KPIs) for accurate diagnosis. These high levels have been maintained over the last four years. This still leaves 10% of patients still not accessing echocardiography in hospital and having no record of a recent echo within the last 12 months (Figure 4).

2.2.1 ECG and echo diagnostic tests

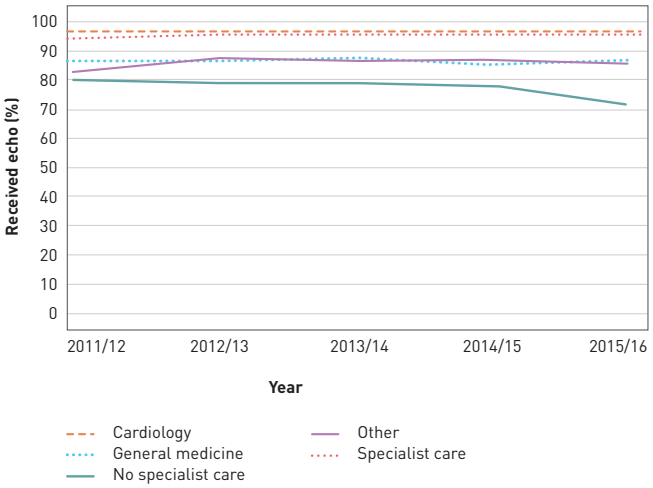
Figure 4: HF patients receiving ECG and echo diagnostics tests over 5 years (2011-2016)



Patients admitted to cardiology wards were more likely to have echocardiography than those admitted to general medical wards. However it should be noted that patients receiving specialist input to their care no matter where they are admitted have similar rates of echocardiography as those on cardiology wards (Figure 4).

2.2.2 Access to diagnostic test based on place of care

Figure 5: Percentage of patients receiving echo by place of care (or with specialist input regardless of the place of care) from 2011-2016



2.2.3 Echo diagnosis

Echocardiography provides important information on the underlying aetiology of HF. In this audit, most patients have HF-REF as in previous years. There has been an increase in reports of left ventricular hypertrophy (LVH), valve disease, diastolic dysfunction and other diagnoses. This may be an early indicator of a rise in the proportion of HF-PEF or could reflect more awareness of echo measures of diastolic dysfunction (Table 6).

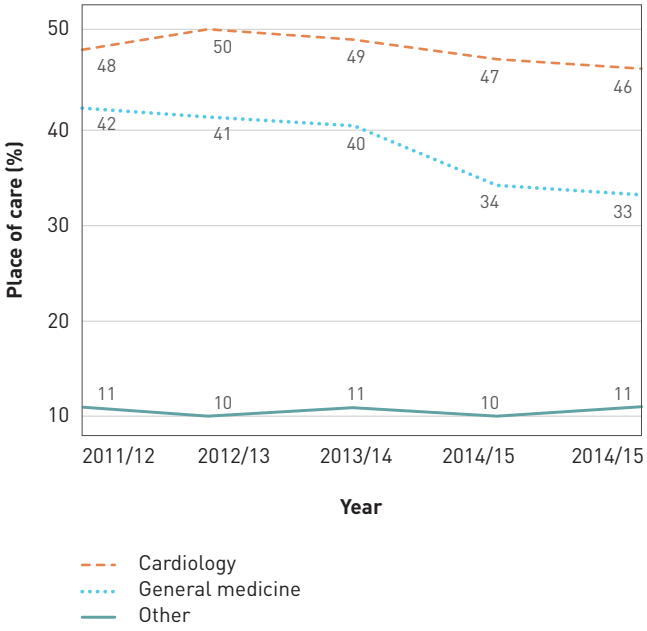
Table 6: Overall echo diagnosis breakdown

	Total (%)
Normal Echo	2.7
Left ventricular systolic dysfunction (LVSD)	68.3
Left ventricular hypertrophy (LVH)	7.1
Valve disease	34.8
Diastolic dysfunction	11.1
Other diagnosis	12.6

2.2.4 Trends in place of care

Place of care is a key quality metric for HF. In this audit cycle, as in the preceding three, just under half of patients were admitted to cardiology wards. An apparent fall in patients admitted to general medical wards has been observed this year which is due to the addition of an option to record admissions to Care of the Elderly wards, which applied to 9% of admissions (see Figure 6).

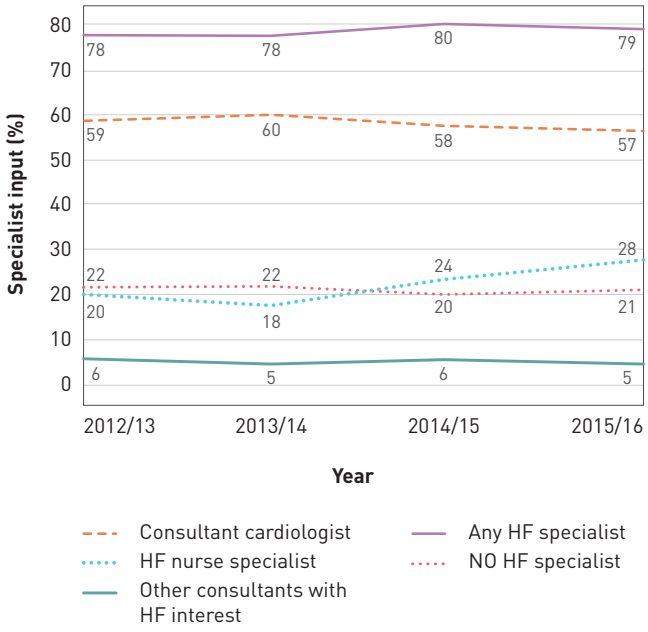
Figure 6: Trends in place of care over 5 years (2012-16)



2.2.5 Trends in input by HF specialists

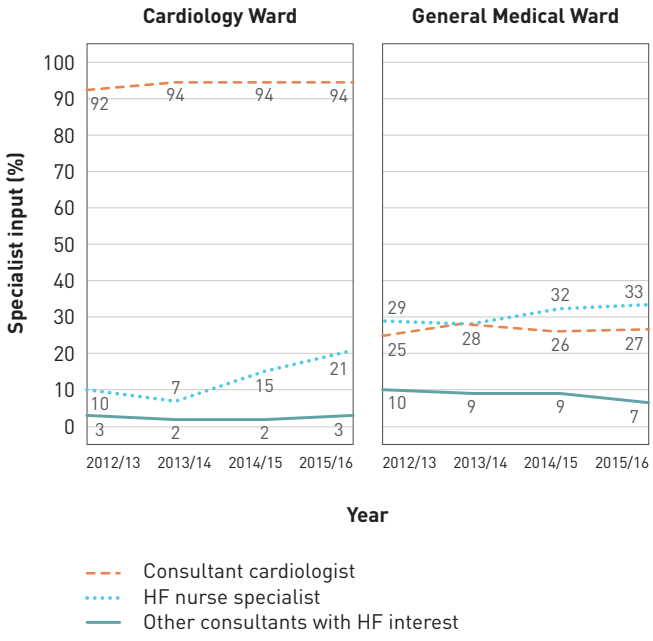
79% of patients are seen by a HF specialist during the admission. This can either be a consultant cardiologist, another consultant with specialist HF interest (usually a geriatrician) or a HF specialist nurse. Over a quarter of patients now see a HF specialist nurse during their admission (Figure 7).

Figure 7: 4 year trends in HF specialist input (2012-16)



Access to consultant cardiology input remains highest on the Cardiology wards at over 90%. HF specialist nurse input to patients admitted to general medical wards increased this year to 33% (Figure 8).

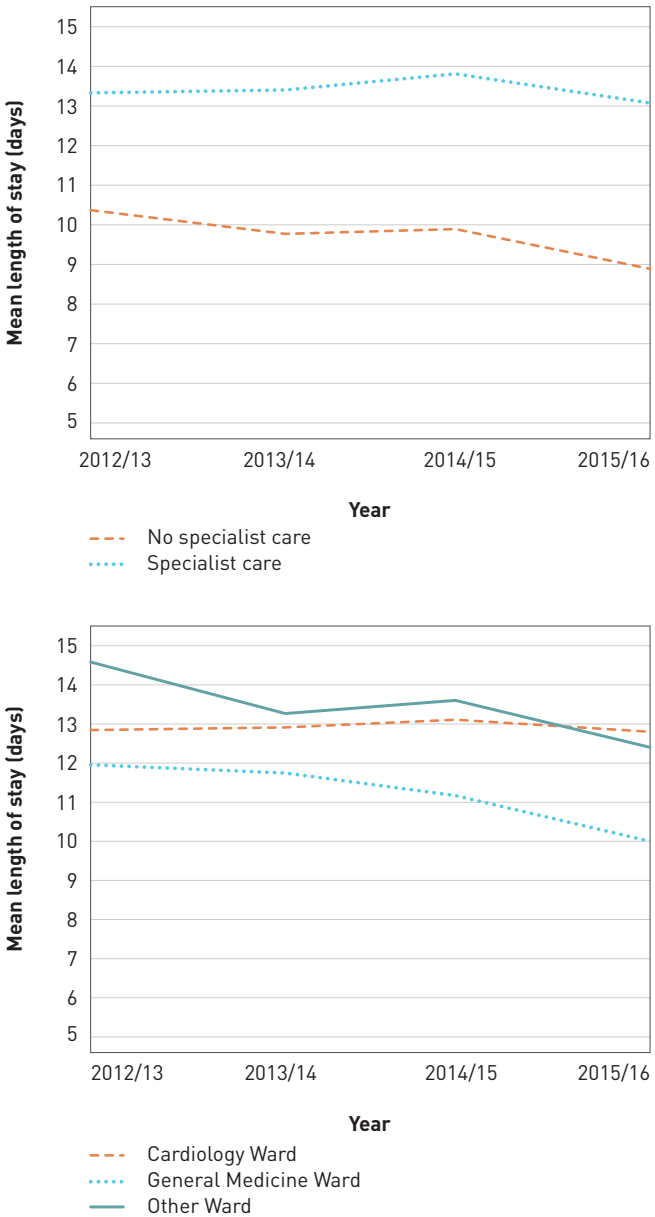
Figure 8: 3 year specialist input trends by Place of Care (2013-16)



2.2.6 Trends in length of stay

The median length of stay (LOS) in 2015/16 was 9 days for those admitted to cardiology ward and 6 days for those in general medicine wards. Those receiving specialist care also have a higher median LOS at 9 days compared to 5 days for patients not seeing specialists. LOS remained static for cardiology ward and those seeing specialists, but is becoming shorter for those in general medical wards and those not being reviewed by specialists. The longer length of stay for patients receiving specialist care might reflect referral of more severe cases for expert care, higher rates of implementation of disease modifying therapies and greater care to ensure that the patient is stable prior to discharge (Figure 9).

Fig 9: 4 year trend of mean length of stay based on place of care and specialist input 2011-15



In the past 4 years, the median length of stay also remains unchanged in cardiology ward (9 days), and general medicine ward (6 days) and amongst patients that received specialist input during admission (9 days). However, there has been a decrease in the length of stay of patients not seen by during the admission.

2.3 Treatment

Prescription of ACEI, BB and MRAs are key performance indicators for patients with HF-REF. This year high standards were again achieved with 83% being discharged on ACEI or angiotensin receptor blockers (ARBs), 87% on BB and 53% on MRA. However, arguably a more relevant and challenging target is the number discharged on all three medicines which has increased to 44% (Table 7).

2.3.1 Treatment at discharge for HF-REF

Table 7: Treatment on discharge for LVSD in 2015/16

Medication	Total prescribed (%)
ACE inhibitor	72
ARB	21
ACE or ARB	83
Beta blocker	87
MRA	53
ACE and ARB	0.5
*ACEI or ARB, beta blocker and MRA	44
Loop diuretic	92
Thiazide diuretic	6
Digoxin	23

*ACEI (angiotensin converting enzyme inhibitor); ARB (angiotensin receptor blocker); MRA [mineralocorticoid (aldosterone) receptor antagonist].

2.3.2 Trends in prescribing for HF-REF

The differential prescribing of disease modifying treatment with ACE/ARB, BB and MRA with age was also seen again this year (Figure 10). The inflexion point for reduction in these drugs is in the 55-64 age group. This is an area for targeting better practice in the next few years.

The trends in prescribing of the three key medicines over the last 6 years are favourable, in particular the prescription of BB has improved markedly with 86% of patients with HF-REF now being discharged on these. MRA are now prescribed to 53% of patients but should probably be substantially greater (see Figure 11). Achieving higher prescription rates for MRA should be a goal for many Trusts.

Figure 10: Treatment on discharge for HF-REF by age in 2015/16

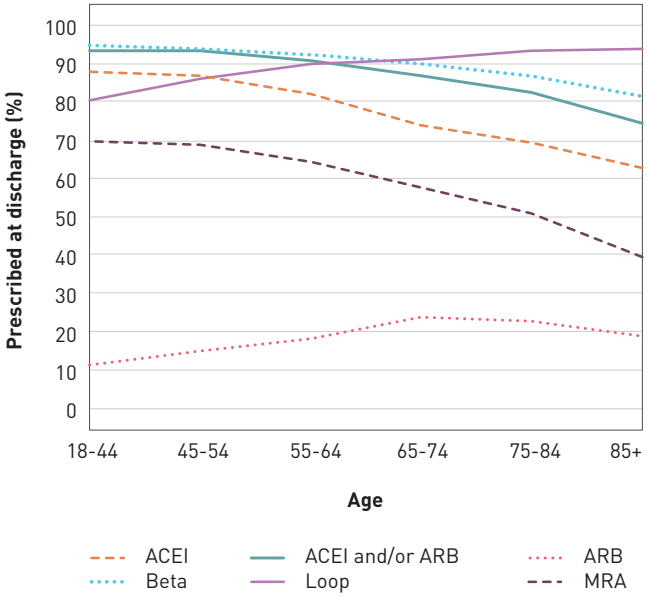
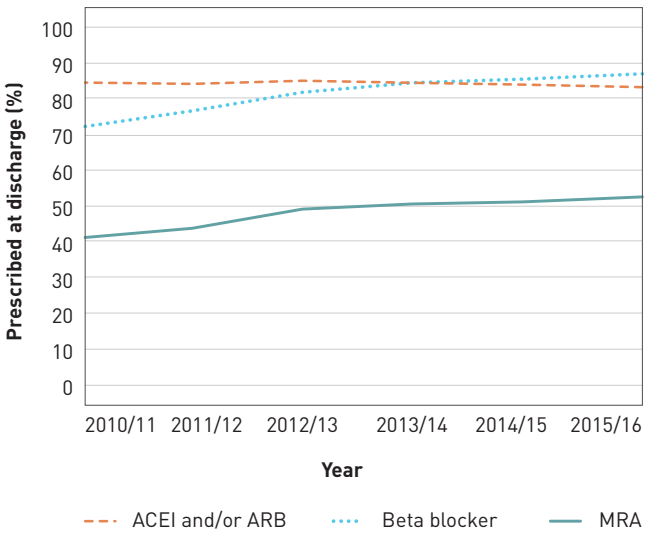


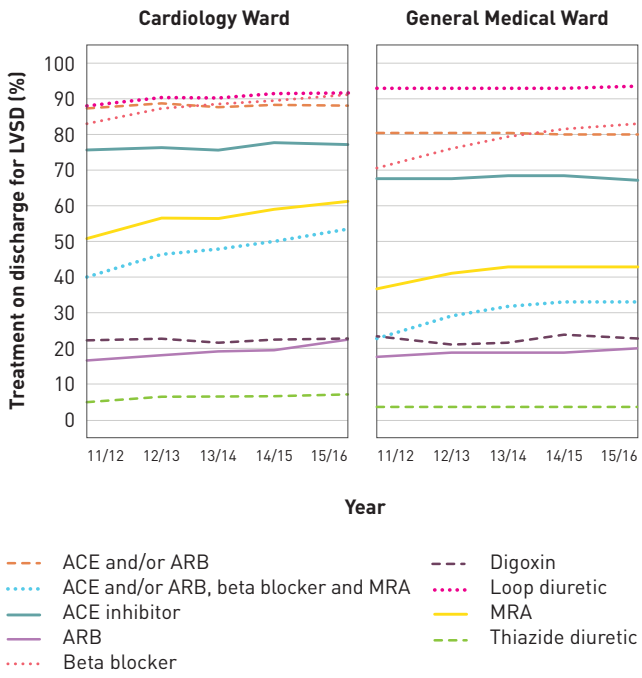
Figure 11: 6 year trends in prescription of disease modifying therapies for HF-REF



2.3.3 Trends in treatment by place of care

The rate of prescription of all three disease-modifying medicines in combination has increased from 35% to 53% over the last six years on cardiology wards and from 21% to 36% on general medical wards (Figure 12). For those seen by specialist, 47% were discharged on all 3 medicines, compared to only 22% of those not seen by a specialist (Figure 13), irrespective of their ward allocation. Thus, outreach services to other wards can improve care. The trend seen over the last 6 years is for an increase in the prescription of BB, MRA and their combination in patients who have specialist input. Prescription rates for those who lack specialist input are more static.

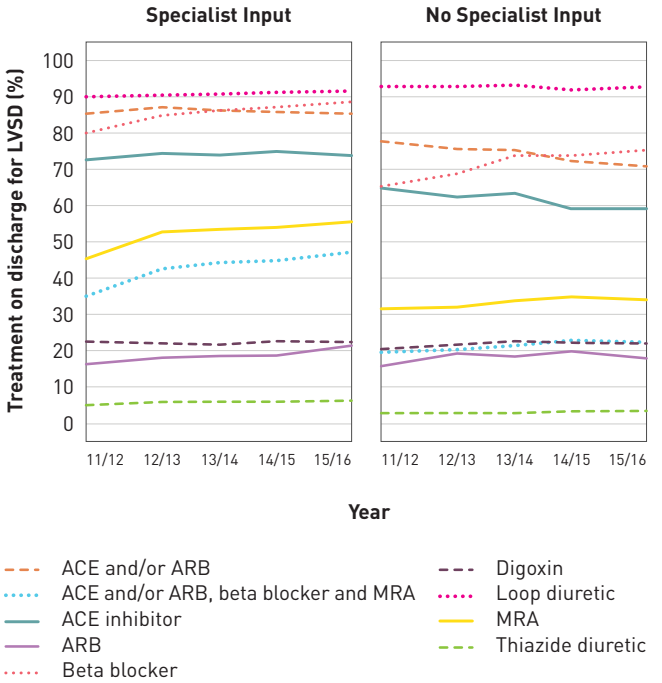
Figure 12: 5 year trends of treatment of LVSD on discharge by place of care trends (2011-16)



2.3.4 Trends in treatment and specialist input

For those seen by specialists, 47% were discharged on all 3 medicines, compared to only 22% of those not seen by a specialist (Figure 13), irrespective of their ward allocation. Thus, outreach services to other wards can improve care. The trend seen over the last 6 years is for an increase in the prescription of BB, MRA and their combination in patients who have specialist input. Prescription rates for those who lack specialist input are more static.

Figure 13: 5 year trends in treatment and specialist input (2011-16)

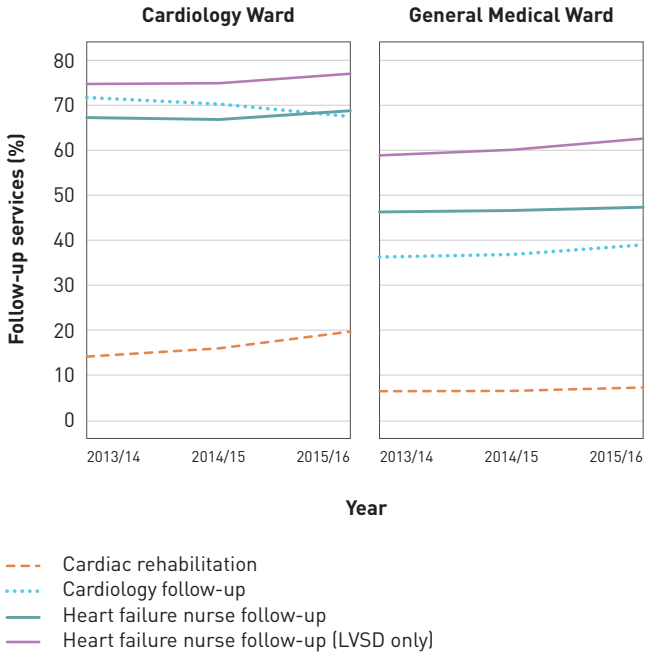


2.4 Discharge — Follow up

People admitted to hospital because of HF should be discharged only when stable and should receive a clinical assessment from a member of a multidisciplinary HF team within 2 weeks of discharge[5].

Overall 50% of those discharged have cardiology follow up, and 57% have HF specialist nurse follow up.

Figure 14: Trends in follow up rate for inpatients by place of care



These follow up rates are higher for those being admitted to cardiology wards at 68% and 69% respectively. Trends in follow up by either a cardiologist or a HF nurse are static (Figure 14). This is a key area for future improvement as such follow up has been demonstrated repeatedly by this audit to be associated with improved outcomes.

Similarly fewer than 20% of patients are referred for cardiac rehabilitation during hospitalization. Informal feedback suggests more are referred after discharge by community teams. However the audit does not capture this and there is under provision of rehabilitation for heart failure patients across the UK.

2.5 Patient Outcomes

2.5.1 Trends in in-hospital mortality

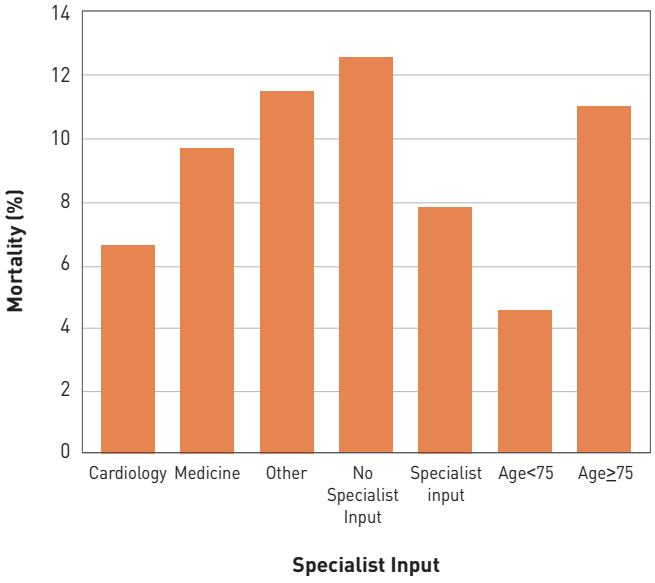
In-hospital mortality in this year's report was lower at 8.9% compared with 9.6% in the previous audit cycle. Mortality varies with age, being 4.5% for those ≥75yrs and 11% for those ≥75yrs. As in previous years outcomes are better for patients admitted to cardiology (6.6%) compared to general medical (9.7%) wards and for those accessing specialist care (7.8%) compared to those who do not (12.6%) (Figure15).

Table 8: In-hospital all-cause mortality (2015/16)

Overall variable	Records (n)	Absolute deaths (n)	Deaths (%)
In-hospital mortality	45181	4005	8.9
Women	*20299	1857	9.1
Men	*24763	2143	8.7
Age group 18-74	14954	673	4.5
Age group 75+	30227	3332	11.0
Cardiology Ward	20535	1350	6.6
General medicine Ward	15049	1467	9.7
Care of the elderly Ward	4793	636	13.3
Other Ward	4718	541	11.5
No specialist input	8995	1130	12.6
Specialist input	35007	2715	7.8

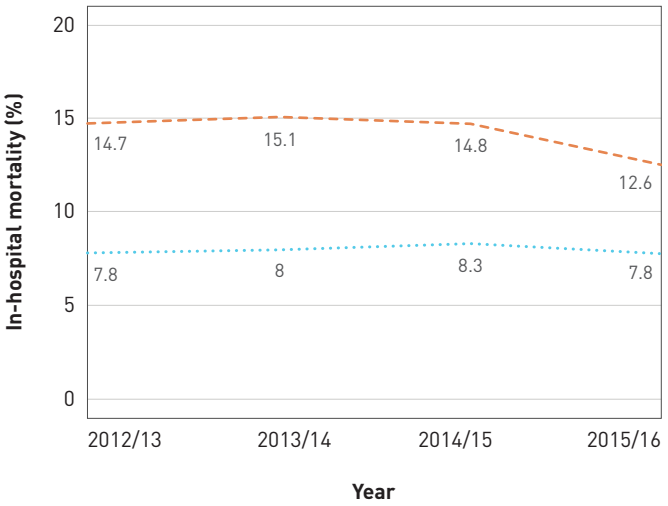
* 119 records were submitted whereby gender was not specified. These have been removed from the gender variable breakdown and are not included in the overall variable total.

Figure 15: In-hospital mortality (2015/16)



2.5.1.1 Specialist Input

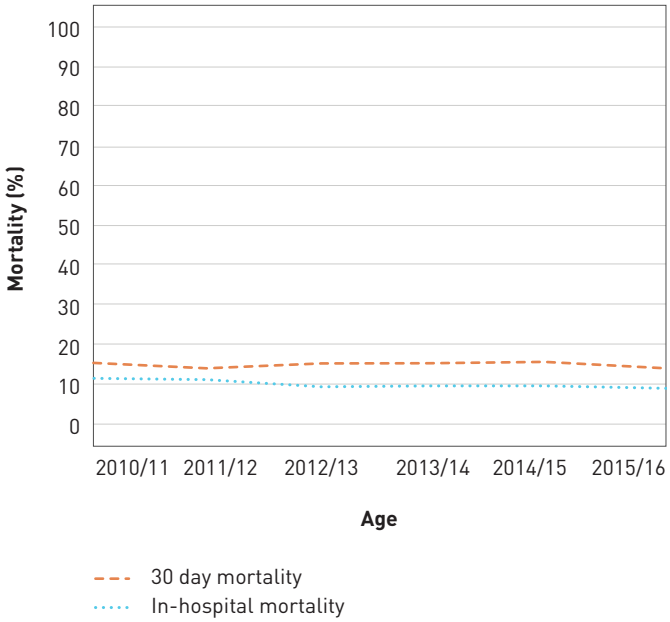
Figure 16: 4 year trends of in-hospital mortality for those receiving specialist care (2012/13 - 2015/16)



There is great variation between hospital survival/mortality rates. This may be due to differences in patient characteristics and variations in care. In-hospital mortality rate may be a useful indicator of the quality of patient care when adjusted for differences in patient characteristics.

Inpatient, 30 day and 1 year mortality rates have fallen significantly over the last year (Figure 17). This is very positive and may illustrate a perfect audit cycle, with audit data informing guideline development, alongside RCTs, and then guideline implementation delivering the better outcomes for the patients illustrated in this most recent audit.

Figure 17: 6 year trends of in-hospital mortality and 30 day mortality from admission (2010 – 2016)



In multivariable analyses adjusted for age, being admitted to a cardiology ward (HR 1.77, p<0.001) continues to be an independent predictor of improved survival when other common markers of disease severity are included in the model (Appendix 3 and 4).

2.5.2 30 day mortality: Aggregate analysis

Figure 18: Kaplan Meier plot of 30 day all-cause mortality from admission

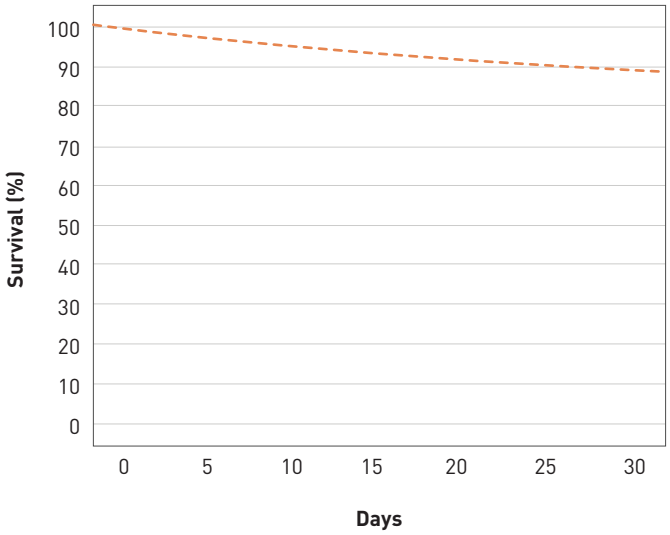
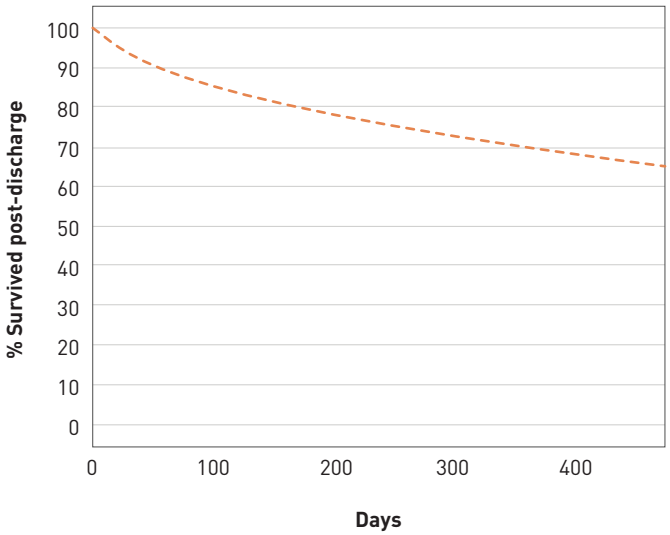
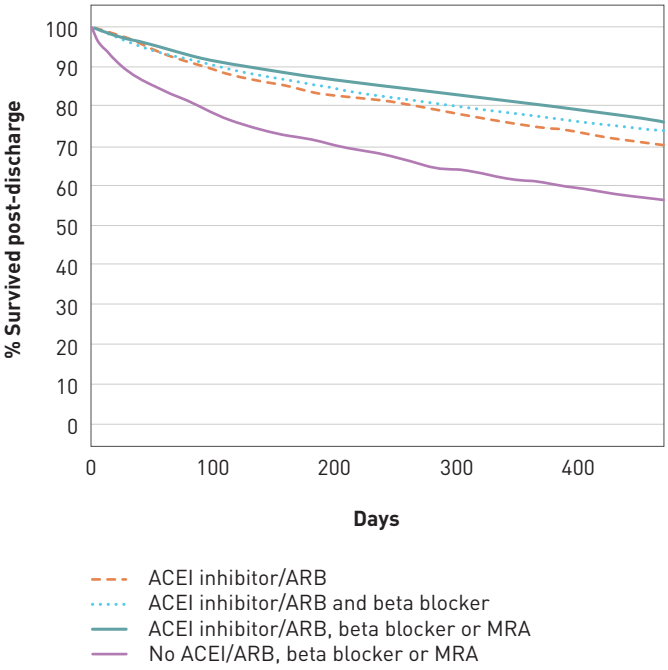


Figure 19: Kaplan Meier plot of all-cause mortality following discharge from hospital (2015-16)



Mortality post-discharge is highly dependent upon the prescribing of each of three disease modifying drugs, with the greatest cumulative benefit seen in those who leave hospital on all three key modifying drugs (Figure 20).

Figure 20: Mortality post-discharge prescribing for patients with LVSD



The mortality rate at one year was 26.7% (actual number of deaths in one year is 12087) during subsequent follow up for people admitted with HF and surviving to discharge. As in previous years, mortality at 1 year was lower for patients admitted to cardiology wards (25.2%) compared to those in general medical wards (31.1%)(Figure 21). Similarly mortality at 1 year of follow-up was lower for those having cardiology follow up (Figure 23) and those seen by HF nurses (Figure 22). Referral to cardiac rehabilitation is also associated with a better outcome at one year (Figure 24).

In a multivariable Cox Proportional Hazards Model (Appendix 3 and 4) the variable which was most strongly associated with a poor outcome at one year was age >75 years (HR1.89, p<0.001). However, KPI's such as not having cardiology follow up (HR 1.27, p<0.001), not being on an ACEI/ARB (HR 1.37, p<0.001), not being admitted to a cardiology ward (HR 1.19, p<0.001) and not being on a BB at discharge (HR 1.17, p<0.001) were all independent predictors of a higher mortality at 1 year along with more traditional markers of HF disease severity.

In the longer term Cox Model (2009-15) these KPI's are independently associated with poorer survival out to 6 years of follow up (see Appendix 3, Table M).

Figure 21: Kaplan Meier plot of all-cause mortality following hospital discharge by place of care (2015/16)

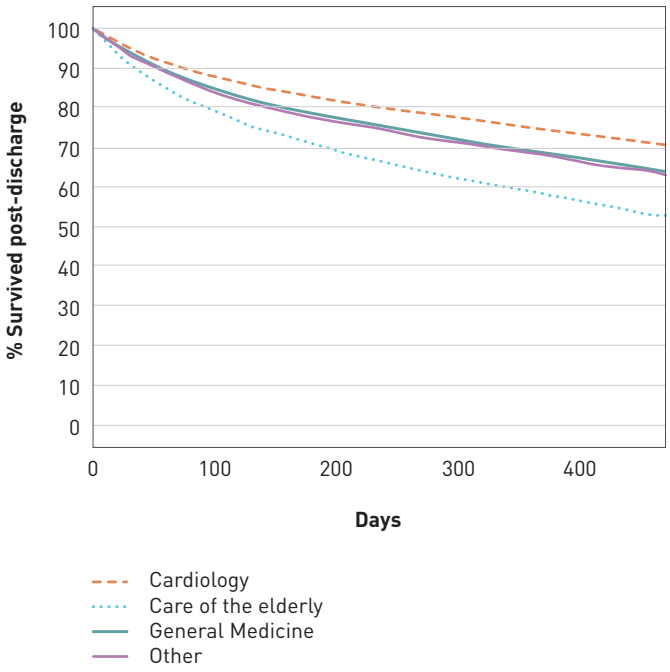


Figure 22: Kaplan Meier plot of all-cause mortality following hospital discharge by referral to HF nurse follow-up (2015/16)

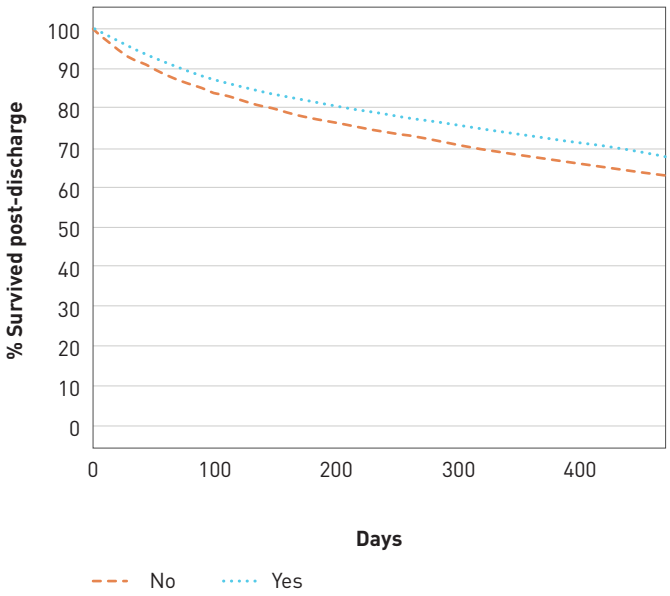


Figure 23: Kaplan Meier plot of all-cause mortality following hospital discharge by referral to cardiology follow-up (2015/16)

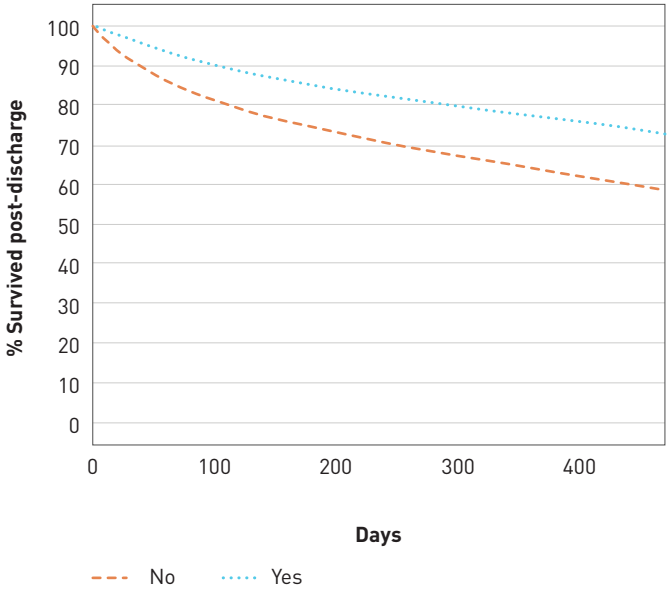
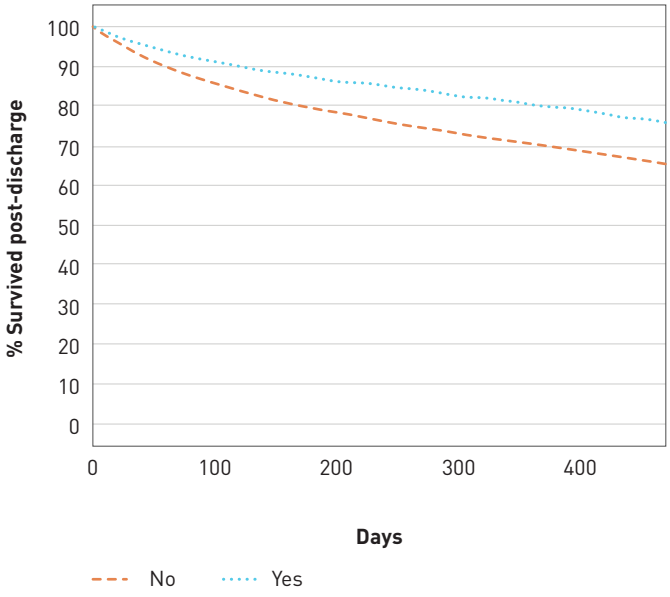


Figure 24: Kaplan Meier plot of all-cause mortality following hospital discharge by referral to cardiac rehab (2015/16)



2.6 Audit achievements – driving patient outcomes

The NICE guidance for AHF was published in late 2014 and the related NICE Quality Standards for AHF in 2015. Audit data from earlier cycles informed the guideline development. This audit cycle is the first which might reflect their implementation showing a reduction in all cause inpatient mortality for patients admitted for heart failure, and a lower mortality at both 30 days and one year, than in previous audit cycles.

Mortality is lowest when the care advocated in the guidance is followed. The audit can continue to be used to drive further improvements anticipated as a result of the Guidance and Quality Standards (Table 1). The emphasis is on earlier diagnosis, earlier and more comprehensive specialist input, prescription of disease modifying medicines and early follow up by the specialist team following discharge from hospital. These priorities have translated into the improved outcomes in the recent audit cycle, and contributed to the reported reduction in mortality.

The NICE health economic modelling[5] highlighted that most cost-effective method of care was provided by wards offering specialist care; either a cardiology ward or dedicated HF units. Although the medical needs of some patients may mean that care is best offered by another specialty ward but with outreach services provided by the heart failure team, there are many patients who would be optimally cared for within the cardiology ward or HF unit who do not receive this care.

Although the percentage of patients being looked after on the cardiology wards is static at 50%, given the absolute rise in HF admissions over the duration of the audit, this does represent a modest increase in numbers receiving such care. But it remains an inadequate response to a life threatening condition. Those leading HF services should explore how to extend specialist care to more patients.

2.6.1 Key Performance Indicators (KPIs)

In summary regarding the KPIs in this audit cycle:

- Mortality rates have fallen significantly.
- Application of diagnostic tests remains high.
- Prescribing rates of key disease modifying medicines for those with HF-REF have increased.
- The proportion of patients admitted to cardiology wards is static at <50% but the proportion of patients who have input from a HF specialist has increased to >80% and more patients have HF specialist nurse input.

3 Use of Audit Data

3.1 National reporting

Informing clinical guidelines (NICE)	
Transparency of data	Data.gov.uk website
Quality accounts	
NHS England Service Level Markers	
Best Practice Tariff (BPT)	NICOR has written and published guidance for NHS England and Monitor to support the reporting for the BPT for HF using NHFA data to demonstrate whether hospitals are employing good practice in the treatment and management of their HF patients. The HF best practice tariff is chosen for inclusion in the 2015/16 BPT list, **participation in the audit** (i.e. achieving the required case ascertainment target) and meeting a target for **percentage of patients seen by a HF specialist** is used as a measure of good practice in the first year.
CQC data flow	Care Quality Commission (CQC) will be using NHFA data to monitor acute Trusts from 2017 onwards.

3.2 Local reporting and activity

NICOR provides feedback to each participating hospital in the form of online views which are updated daily. These provide comparative information for each hospital about the quality of current activity against the national average. Hospitals can also export the data they submit to the database and can carry out local analysis. Additional reports for data completeness, diagnosis, treatment and follow up care will be introduced over the next reporting period.

4 HF Audit for the Future

The consistent message that arises from the 9th National Heart Failure Audit Report is that outcomes for those admitted to hospital are better for those with access to Specialist Heart Failure Care. We need to continue our efforts to treat more of these patients on Cardiology Wards, make sure that those admitted to General Medical Wards are seen by Heart Failure Specialists (both nurses and doctors) during the admission, so that they have optimum access to appropriate diagnostic tests, receive the correct disease modifying treatments during the admission and have robust specialist follow up in place at discharge.

The audit data fields are being modified to ensure they reflect the additional data-capture needed to monitor the latest guidance and related standards. This will ensure the audit remains fit for purpose and can continue to drive up the of quality care of all patients with heart failure, and in doing so prevent deaths and improve the quality of life for this vulnerable group.

In 2016/17 the plan is to:

Change to a new web based data entry form with an updated data set

Validate the risk adjustment model for mortality. This will then enable hospitals to benchmark their risk adjusted mortality and compare it to other hospitals to further improve best practice

Continue to encourage compliance with the minimum data standard set out by NICOR in collaboration with BSH. More detail on the data standard can be found on the NICOR website: http://www.ucl.ac.uk/nicor

Make available an import function to allow participating hospitals to import their data via a web portal

Improve data quality by encouraging the use of consistent definitions and support hospitals' internal audits to assess accuracy. This data cannot be validated by NICOR but NICOR can support the process

Focus on which key quality indicators track best with risk adjusted mortality and provide feedback to sites to concentrate their efforts on the most important process indicators.

5 Appendices

Appendix 1: Hospital level analysis

Case ascertainment is measured against the number of emergency HF admissions with a primary death or discharge diagnosis of HF, as recorded by Hospital Episode Statistics (HES) in England and the Patient Episode Database of Wales (PEDW).

Case ascertainment is reported by Trust and Health Board. Trusts and Health Boards are counted as fully participating if they submitted at least 70% of their HES figures to the audit. See appendix for full hospital analysis (see Appendix 4).

Table A: Participation and case ascertainment in England

Trust name	NHS Trust code	Trust records submitted	HES primary HF discharges	% HES submitted	Participation status	NICOR hospital code	Hospital name	Hospital records submitted
England and Wales		**66695**	**81449**	**82%**				
England		**63160**	**76936**	**82%**				
Aintree University Hospital NHS Foundation Trust	REM	647	568	114%	Yes	FAZ	University Hospital Aintree	647
Airedale NHS Foundation Trust	RCF	314	395	79%	Yes	AIR	Airedale General Hospital	314
Ashford and St Peter's Hospitals NHS Trust	RTK	545	454	120%	Yes	SPH	St Peter's Hospital	545
Barking, Havering and Redbridge University Hospitals NHS Trust	RF4	632	913	69%	No	KGG	King George Hospital	173
						OLD	Queen's Hospital Romford	459
Barnsley Hospital NHS Foundation Trust	RFF	234	445	53%	No	BAR	Barnsley Hospital NHS Foundation Trust	234
Barts Health NHS Trust	R1H	1169	432	271%	Yes	NWG	Newham University Hospital	406
						SBH	St Bartholomews Hospital	120
						LCH	The London Chest Hospital	20
						LON	The Royal Hospital London	251
						WHC	Whipps Cross University Hospital	372
Basildon and Thurrock University Hospitals NHS Foundation Trust	RDD	547	555	99%	Yes	BAS	Basildon University Hospital	547
Bedford Hospital NHS Trust	RC1	247	397	62%	No	BED	Bedford Hospital	247
Blackpool Teaching Hospitals NHS Foundation Trust	RXL	132	631	21%	No	VIC	Blackpool Victoria Hospital	132
Bolton NHS Foundation Trust	RMC	185	473	39%	No	BOL	Royal Bolton Hospital	185
Bradford Teaching Hospitals NHS Foundation Trust	RAE	306	557	55%	No	BRD	Bradford Royal Infirmary	306

Brighton and Sussex University Hospitals NHS Trust	RXH	629	611	103%	Yes	PRH	Princess Royal Hospital (Haywards Heath)	200
						RSC	Royal Sussex County Hospital	429
Buckinghamshire Healthcare NHS Trust	RXQ	309	309	100%	Yes	SMV	Stoke Mandeville Hospital	154
						AMG	Wycombe Hospital	155
Burton Hospitals NHS Foundation Trust	RJF	355	436	81%	Yes	BRT	Queen's Hospital (Burton)	340
Calderdale and Huddersfield NHS Foundation Trust	RWY	749	711	105%	Yes	RHI	Calderdale Royal Hospital	353
						HUD	Huddersfield Royal Infirmary	396
Cambridge University Hospitals NHS Foundation Trust	RGT	500	570	88%	Yes	ADD	Addenbrooke's Hospital	500
Central Manchester University Hospitals NHS Foundation Trust	RW3-X	407	577	71%	Yes	MRI	Manchester Royal Infirmary	344
						TRA	Trafford General Hospital	63
Chelsea and Westminster Hospital NHS Foundation Trust	RQM	514	685	75%	Yes	WES	Chelsea and Westminster Hospital	148
						WMU		366
Chesterfield Royal Hospital NHS Foundation Trust	RFS	77	537	14%	No	CHE	Chesterfield Royal Hospital	77
City Hospitals Sunderland NHS Foundation Trust	RLN	428	463	92%	Yes	SUN	Sunderland Royal Hospital	428
Colchester Hospital University NHS Foundation Trust	RDE	646	643	100%	Yes	COL	Colchester General Hospital	646
Countess of Chester Hospital NHS Foundation Trust	RJR	390	479	81%	Yes	COC	Countess of Chester Hospital	390
County Durham and Darlington NHS Foundation Trust	RXP	785	840	93%	Yes	DAR	Darlington Memorial Hospital	347
						DRY	University Hospital of North Durham	438
Croydon Health Services NHS Trust	RJ6	362	463	78%	Yes	MAY	Croydon University Hospital	362
Dartford and Gravesham NHS Trust	RN7-X	383	412	93%	Yes	DVH	Darent Valley Hospital	383
Derby Hospitals NHS Foundation Trust	RTG	509	1066	48%	No	DER	Royal Derby Hospital	509
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	RP5	480	796	60%	No	BSL	Bassetlaw Hospital	113
						DID	Doncaster Royal Infirmary	367
Dorset County Hospital NHS Foundation Trust	RBD	219	302	73%	Yes	WDH	Dorset County Hospital	219
East and North Hertfordshire NHS Trust	RWH	431	517	83%	Yes	LIS	Lister Hospital	431
East Cheshire NHS Trust	RJN	122	194	63%	No	MAC	Macclesfield District General Hospital	122
East Kent Hospitals University NHS Foundation Trust	RVV	643	904	71%	Yes	KCC	Kent and Canterbury Hospital	202
							Queen Elizabeth the Queen Mother Hospital	220
						WHH	William Harvey Hospital	221

Trust name	NHS Trust code	Trust records submitted	HES primary HF discharges	% HES submitted	Participation status	NICOR hospital code	Hospital name	Hospital records submitted
England and Wales		**66695**	**81449**	**82%**				
England		**63160**	**76936**	**82%**				
East Lancashire Hospitals NHS Trust	RXR	400	522	77%	Yes	BLA	Royal Blackburn Hospital	400
East Sussex Healthcare NHS Trust	RXC	520	720	72%	Yes	CGH	Conquest Hospital	266
						DGE	Eastbourne District General Hospital	254
Epsom and St Helier University Hospitals NHS Trust	RVR-X	301	471	64%	No	EPS	Epsom Hospital	138
						SHC	St Helier Hospital	163
Frimley Park Hospital NHS Foundation Trust	RDU	1143	1309	87%	Yes	FRM	Frimley Park Hospital	540
						WEX	Wexham Park Hospital	603
Gateshead Health NHS Foundation Trust	RR7-X	281	342	82%	Yes	QEG	Queen Elizabeth Hospital (Gateshead)	281
George Eliot Hospital NHS Trust	RLT	112	299	37%	No	NUN	George Eliot Hospital	112
Gloucestershire Hospitals NHS Foundation Trust	RTE	393	755	52%	No	CHG	Cheltenham General Hospital	142
						GLO	Gloucestershire Royal Hospital	251
Great Western Hospitals NHS Foundation Trust	RN3	455	569	80%	Yes	PMS	Great Western Hospital	455
Guy's and St Thomas' NHS Foundation Trust	RJ1-X	504	395	128%	Yes	STH	St Thomas' Hospital	504
Hampshire Hospitals NHS Foundation Trust	RN5-X	358	440	81%	Yes	NHH	Basingstoke and North Hampshire Hospital	189
						RHC	Royal Hampshire County Hospital	169
Harrogate and District NHS Foundation Trust	RCD	259	273	95%	Yes	HAR	Harrogate District Hospital	259
Heart of England NHS Foundation Trust	RR1-X	622	345	180%	Yes	EBH	Birmingham Heartlands Hospital	329
						SOL	Solihull Hospital	217
						GHS	Good Hope Hospital	76
Hinchingbrooke Health Care NHS Trust	RQQ-X	83	242	34%	No	HIN	Hinchingbrooke Hospital	83
Homerton University Hospital NHS Foundation Trust	RQX	310	361	86%	Yes	HOM	Homerton University Hospital	310
Hull and East Yorkshire Hospitals NHS Trust	RWA	668	779	86%	Yes	CHH	Castle Hill Hospital	368
						HRI	Hull Royal Infirmary	300

Imperial College Healthcare NHS Trust	RYJ	410	826	50%	No	CCH	Charing Cross Hospital	138
						HAM	Hammersmith Hospital	156
						STM	St Mary's Hospital Paddington	116
Isle of Wight NHS PCT	R1F-X	78	221	35%	No	IOW	St Mary's Hospital, Newport	78
James Paget University Hospitals NHS Foundation Trust	RGP	155	417	37%	No	JPH	James Paget University Hospital	155
Kettering General Hospital NHS Foundation Trust	RNQ	440	496	89%	Yes	KGH	Kettering General Hospital	440
King's College Hospital NHS Foundation Trust	RJZ	758	1087	70%	Yes	KCH	King's College Hospital	438
						BRO	Princess Royal University Hospital (Bromley)	320
Kingston Hospital NHS Trust	RAX	196	322	61%	No	KTH	Kingston Hospital	196
Lancashire Teaching Hospitals NHS Foundation Trust	RXN	709	660	107%	Yes	CHO	Chorley and South Ribble Hospital	248
						RPH	Royal Preston Hospital	461
Leeds Teaching Hospitals NHS Trust		764	1066	72%	Yes	LGI	Leeds General Infirmary	764
Lewisham and Greenwich NHS Trust	RJ2	279	742	38%	No	GWH	Queen Elizabeth Hospital (Woolwich)	106
						LEW	University Hospital Lewisham	173
Liverpool Heart and Chest Hospital NHS Foundation Trust	RBQ	82	72	114%	Yes	BHL	Liverpool Heart and Chest Hospital	82
London North West Healthcare Trust†	R1K	974	1146	85%	Yes	CMH	Central Middlesex Hospital	39
						EAL	Ealing Hospital	230
						NPH	Northwick Park Hospital	705
Luton and Dunstable Hospital NHS Foundation Trust	RC9	369	460	80%	Yes	LDH	Luton and Dunstable Hospital	369
Maidstone and Tunbridge Wells NHS Trust	RWF	519	523	99%	Yes	MAI	Maidstone Hospital	275
						KSX	Tunbridge Wells Hospital	244
Medway NHS Foundation Trust	RPA	446	527	85%	Yes	MDW	Medway Maritime Hospital	446
Mid Cheshire Hospitals NHS Foundation Trust	RBT	172	446	39%	No	LGH	Leighton Hospital	172
Mid Essex Hospital Services NHS Trust	RQ8	578	480	120%	Yes	BFH	Broomfield Hospital	578
Mid Yorkshire Hospitals NHS Trust	RXF-X	877	849	103%	Yes	DEW	Dewsbury and District Hospital	323
						PIN	Pinderfields Hospital	554
Milton Keynes Hospital NHS Foundation Trust	RD8	344	391	88%	Yes	MKH	Milton Keynes General Hospital	344

† Ealing Hospital NHS Trust and The North West London Hospitals NHS Trust merged on 1st October 2014 to form London North West Healthcare NHS Trust (R1K)

Trust name	NHS Trust code	Trust records submitted	HES primary HF discharges	% HES submitted	Participation status	NICOR hospital code	Hospital name	Hospital records submitted
England and Wales		**66695**	**81449**	**82%**				
England		**63160**	**76936**	**82%**				
Norfolk and Norwich University Hospitals NHS Foundation Trust	RM1	270	1011	27%	No	NOR	Norfolk and Norwich University Hospital	270
North Bristol NHS Trust	RVJ-X	485	611	79%	Yes	BSM	Southmead Hospital	485
North Middlesex University Hospital NHS Trust	RAP	169	600	28%	No	NMH	North Middlesex University Hospital	169
North Tees and Hartlepool NHS Foundation Trust	RVW	267	485	55%	No	NTG	University Hospital of North Tees	267
Northampton General Hospital NHS Trust	RNS	190	461	41%	No	NTH	Northampton General Hospital	190
Northern Devon Healthcare NHS Trust	RBZ	259	305	85%	Yes	NDD	North Devon District Hospital	259
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	RJL-X	577	623	93%	Yes	GGH	Diana Princess of Wales Hospital	263
						SCU	Scunthorpe General Hospital	314
Northumbria Healthcare NHS Foundation Trust	RTF	198	832	24%	No	HEX	Hexham General Hospital	22
						NTY	North Tyneside Hospital	83
						ASH	Wansbeck General Hospital	93
Nottingham University Trust	RX1	554	228	243%		CHN	Nottingham City Hospital	2
						UHN	Queen's Medical Centre	552
Oxford Radcliffe Hospitals NHS Trust	RTH	760	663	115%	Yes	HOR	Horton General Hospital	202
						RAD	John Radcliffe Hospital	558
Pennine Acute Hospitals NHS Trust	RW6	988	997	99%	Yes	BRY	Fairfield General Hospital	325
						NMG	North Manchester General Hospital	293
						BHH	Rochdale Infirmary	46
						OHM	Royal Oldham Hospital	324
Peterborough and Stamford Hospitals NHS Foundation Trust	RGN	472	451	105%	Yes	PET	Peterborough City Hospital	472
Plymouth Hospitals NHS Trust	RK9	740	723	102%	Yes	PLY	Derriford Hospital	740
Poole Hospital NHS Foundation Trust	RD3	367	337	109%	Yes	PGH	Poole General Hospital	367
Portsmouth Hospitals NHS Trust	RHU	457	664	69%	No	QAP	Queen Alexandra Hospital	457

Rotherham NHS Foundation Trust	RFR	267	313	85%	Yes	ROT	Rotherham Hospital	267
Royal Berkshire NHS Foundation Trust	RHW	413	266	155%	Yes	BHR	Royal Berkshire Hospital	413
Royal Brompton and Harefield NHS Foundation Trust	RT3	370	259	143%	Yes	HH	Harefield Hospital	194
						NHB	Royal Brompton Hospital	176
Royal Cornwall Hospitals NHS Trust	REF-X	673	714	94%	Yes	RCH	Royal Cornwall Hospital	673
Royal Devon and Exeter NHS Foundation Trust	RH8	454	461	98%	Yes	RDE	Royal Devon & Exeter Hospital	454
Royal Free London NHS Trust	RAL	787	1041	76%	Yes	RFH	Royal Free Hospital	314
						BNT	Barnet General Hospital	473
Royal Liverpool and Broadgreen University Hospitals NHS Trust	RQ6	386	466	83%	Yes	RLU	Royal Liverpool University Hospital	386
Royal Surrey County Hospital NHS Foundation Trust	RA2	256	334	77%	Yes	RSU	Royal Surrey County Hospital	256
Royal United Hospital Bath NHS Trust	RD1	445	601	74%	Yes	BAT	Royal United Hospital Bath	445
Salford Royal NHS Foundation Trust	RM3	424	396	107%	Yes	SLF	Salford Royal	424
Salisbury NHS Foundation Trust	RNZ	183	187	98%	Yes	SAL	Salisbury District Hospital	183
Sandwell and West Birmingham Hospitals NHS Trust	RXK-X	666	870	77%	Yes	DUD	Birmingham City Hospital	470
						SAN	Sandwell General Hospital	196
Sheffield Teaching Hospitals NHS Foundation Trust	RHQ	1003	1022	98%	Yes	NGS	Northern General Hospital	1003
Sherwood Forest Hospitals NHS Foundation Trust	RK5	478	553	86%	Yes	KMH	King's Mill Hospital	478
Shrewsbury and Telford Hospitals NHS Trust	RXW	409	713	57%	No	TLF	Princess Royal Hospital (Telford)	280
						RSS	Royal Shrewsbury Hospital	129
South Devon Healthcare NHS Foundation Trust	RA9	569	536	106%	Yes	TOR	Torbay Hospital	569
South Tees Hospitals NHS Foundation Trust	RTR	437	608	72%	Yes	FRH	Friarage Hospital	64
						SCM	James Cook University Hospital	373
South Tyneside NHS Foundation Trust	RE9	337	263	128%	Yes	STD	South Tyneside District Hospital	337
South Warwickshire NHS Foundation Trust	RJC	256	371	69%	Yes	WAR	Warwick Hospital	256
Southend University Hospital NHS Foundation Trust	RAJ	663	580	114%	Yes	SEH	Southend Hospital	663
Southport and Ormskirk Hospital NHS Trust	RVY	301	288	105%	Yes	SOU	Southport and Formby District General Hospital	301
St George's Healthcare NHS Trust	RJ7	512	714	72%	Yes	GEO	St George's Hospital	512
St Helens and Knowsley Teaching Hospitals NHS Trust	RBN	352	473	74%	Yes	WHI	Whiston Hospital	352

Trust name	NHS Trust code	Trust records submitted	HES primary HF discharges	% HES submitted	Participation status	NICOR hospital code	Hospital name	Hospital records submitted
England and Wales		**66695**	**81449**	**82%**				
England		**63160**	**76936**	**82%**				
Stockport NHS Foundation Trust	RWJ	491	528	93%	Yes	SHH	Stepping Hill Hospital	491
Surrey and Sussex Healthcare NHS Trust	RTP	342	590	58%	No	ESU	East Surrey Hospital	342
Tameside Hospital NHS Foundation Trust	RMP	213	400	53%	No	TGA	Tameside General Hospital	213
Taunton and Somerset NHS Foundation Trust	RBA	304	534	57%	No	MPH	Musgrove Park Hospital	304
The Dudley Group NHS Foundation Trust	RNA	663	680	98%	Yes	RUS	Russells Hall Hospital	663
The Hillingdon Hospitals NHS Foundation Trust	RAS	240	301	80%	Yes	HIL	Hillingdon Hospital	240
The Ipswich Hospital NHS Trust	RGQ	633	783	81%	Yes	IPS	Ipswich Hospital	633
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	RTD	531	598	89%	Yes	FRE	Freeman Hospital and Royal Victoria Infirmary	531
The Princess Alexandra Hospital NHS Trust	RQW	96	403	24%	No	PAH	Princess Alexandra Hospital	96
The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	RCX	612	530	115%	Yes	QKL	Queen Elizabeth Hospital (King's Lynn)	612
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	RDZ	413	668	62%	No	BOU	Royal Bournemouth General Hospital	413
The Royal Wolverhampton Hospitals NHS Trust	RL4	708	723	98%	Yes	NCR	New Cross Hospital	708
The Whittington Hospital NHS Trust	RKE	187	268	70%	Yes	WHT	Whittington Hospital	187
United Lincolnshire Hospitals NHS Trust	RWD	679	999	68%	No	GRA	Grantham and District Hospital	123
						LIN	Lincoln County Hospital	297
						PIL	Pilgrim Hospital	259
University College London Hospitals NHS Foundation Trust	RRV	240	207	116%	Yes	UCL	University College Hospital	240
University Hospital North Midlands NHS trust¥	RJD-X	1212	1341	90%	Yes	STO	Royal Stoke University Hospital	1065
						SDG	County Hospital	147
University Hospital of South Manchester NHS Foundation Trust	RM2	259	559	46%	No	WYT	Wythenshawe Hospital	259
University Hospital Southampton NHS Trust	RHM	733	534	137%	Yes	SGH	Southampton General Hospital	733

University Hospitals Birmingham NHS Foundation Trust	RRK-X	436	923	47%	No	QEB	Queen Elizabeth Hospital (Edgbaston)	436
University Hospitals Bristol NHS Foundation Trust	RA7	375	431	87%	Yes	BRI	Bristol Royal Infirmary	375
University Hospitals Coventry and Warwickshire NHS Trust	RKB	835	811	103%	Yes	WAL	University Hospital Coventry	835
University Hospitals of Leicester NHS Trust	RWE	2081	419	497%	Yes	GRL	Glenfield Hospital	1606
						LER	Leicester Royal Infirmary	475
University Hospitals of Morecambe Bay NHS Foundation Trust	RTX	481	443	109%	Yes	FGH	Furness General Hospital	239
						RLI	Royal Lancaster Infirmary	242
Walsall Healthcare NHS Trust	RBK	237	443	53%	No	WMH	Manor Hospital	237
Warrington and Halton Hospitals NHS Foundation Trust	RWW	185	415	45%	No	WDG	Warrington Hospital	185
West Hertfordshire Hospitals NHS Trust	RWG	483	622	78%	Yes	WAT	Watford General Hospital	483
West Suffolk NHS Foundation Trust	RGR	314	542	58%	No	WSH	West Suffolk Hospital	314
Western Sussex Hospitals NHS Trust	RYR-X	576	771	75%	Yes	STR	St Richard's Hospital	242
						WRG	Worthing Hospital	334
Weston Area Health NHS Trust	RA3	172	237	73%	Yes	WGH	Weston General Hospital	172
Wirral University Teaching Hospital NHS Foundation Trust	RBL	408	718	57%	No	WIR	Arrowe Park Hospital	408
Worcestershire Acute Hospitals NHS Trust	RWP-X	776	688	113%	Yes	RED	Alexandra Hospital	315
						WRC	Worcestershire Royal Hospital	461
Wrightington, Wigan and Leigh NHS Foundation Trust	RRF	444	404	110%	Yes	AEI	Royal Albert Edward Infirmary	444
Wye Valley NHS Trust	RLQ	349	354	99%	Yes	HCH	County Hospital Hereford	349
Yeovil District Hospital NHS Foundation Trust	RA4	283	287	99%	Yes	YEO	Yeovil District Hospital	283
York Teaching Hospital NHS Foundation Trust	RCB	396	874	45%	No	SCA	Scarborough General Hospital	17
						YDH	The York Hospital	379

¥ STO (formerly University Hospital of North Staffordshire combined with SDG (formerly Stafford Hospital) to form University Hospital North Midlands NHS Trust from 1st November 2014. During this merger, STO has been renamed Royal Stoke University Hospital and SDG has been renamed County Hospital.

Table B: Participation and case ascertainment in Wales

Health Board name	Health Board code	Health Board records submitted	PEDW primary HF discharges	% PEDW submitted	Participation status	NICOR hospital code	Hospital name	Hospital records submitted
England and Wales		**66695**	**81449**	**82%**				
Wales		**3463**	**4513**	**77%**				
Abertawe Bro Morgannwg University Health Board	7A3	727	842	86%	Yes	MOR	Morriston Hospital	320
						POW	Princess Of Wales Hospital	222
						SIN	Singleton Hospital	185
Aneurin Bevan Health Board	7A6	497	951	52%	No	NEV	Nevill Hall Hospital	271
						GWE	Royal Gwent Hospital	226
Betsi Cadwaladr University Health Board	7A1	675	853	79%	Yes	CLW	Glan Clwyd Hospital	253
						WRX	Wrexham Maelor Hospital	244
						GWY	Ysbyty Gwynedd Hospital	178
Cardiff & Vale University Health Board	7A4	499	584	85%	Yes	LLD	University Hospital Llandough	218
						UHW	University Hospital of Wales	281
Cwm Taf Health Board	7A5	403	538	75%	Yes	PCH	Prince Charles Hospital	244
						RGH	Royal Glamorgan Hospital	159
Hywel Dda Health Board	7A2	662	745	89%	Yes	BRG	Bronglais General Hospital	223
						WWG	Glangwili General Hospital	89
							Prince Philip Hospital	185
						WYB	Withybush General Hospital	165

Table C: In-hospital care in England

Trust name	NICOR hospital code	Hospital name	Heart failure admissions	Received echo	Cardiology inpatient (%)	Input from consultant cardiologist	Input from specialist (%)
England and Wales			**60737**	**90.1%**	**45.7%**	**56.9%**	**79.0%**
Cambridge University Hospitals NHS Foundation Trust	ADD	Addenbrooke's Hospital	495	80.3	21.9	17.8	85
Airedale NHS Foundation Trust	AIR	Airedale General Hospital	265	82.6	26.8	35.8	39.6
Worcestershire Acute Hospitals NHS Trust	RED	Alexandra Hospital	315	82.3	28.9	68.2	75.5
Wirral University Teaching Hospital NHS Foundation Trust	WIR	Arrowe Park Hospital	396	86.3	49.5	55.3	81.6
Barnet and Chase Farm Hospitals NHS Trust	BNT	Barnet General Hospital	470	96.6	69.1	72.6	79.2
Barnsley Hospital NHS Foundation Trust	BAR	Barnsley Hospital	195	93.3	20	31.2	45.5
Basildon and Thurrock University Hospitals NHS Foundation Trust	BAS	Basildon University Hospital	410	99.5	36.1	47.6	48.9
Hampshire Hospitals NHS Foundation Trust	NHH	Basingstoke and North Hampshire Hospital	169	98.8	59.2	70.7	74.9
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	BSL	Bassetlaw Hospital	75	97.2	44	74.2	75.8
Bedford Hospital NHS Trust	BED	Bedford Hospital	247	96.3	64.8	75.9	82.9
Sandwell and West Birmingham Hospitals NHS Trust	DUD	Birmingham City Hospital	446	99.8	77.6	80.7	99.3
Heart of England NHS Foundation Trust	EBH	Birmingham Heartlands Hospital	315	91.3	37.5	40.6	77.5
Blackpool Teaching Hospitals NHS Foundation Trust	VIC	Blackpool Victoria Hospital	132	100	36.7	36.9	100
Bradford Teaching Hospitals NHS Foundation Trust	BRD	Bradford Royal Infirmary	294	76.1	37.8	37.8	39.5
University Hospitals Bristol NHS Foundation Trust	BRI	Bristol Royal Infirmary	370	100	63.2	55.1	98.9
Mid Essex Hospital Services NHS Trust	BFH	Broomfield Hospital	513	97.6	40.1	37.6	80.6
Calderdale and Huddersfield NHS Foundation Trust	RHI	Calderdale Royal Hospital	292	88.9	46.2	59.9	65.4
Hull and East Yorkshire Hospitals NHS Trust	CHH	Castle Hill Hospital	353	99.7	95.5	96.6	100
London North West Healthcare NHS Trust	CMH	Central Middlesex Hospital	35	92.3	0	0	100
Imperial College Healthcare NHS Trust	CCH	Charing Cross Hospital	138	89.6	5.1	90.9	98
Chelsea and Westminster Hospital NHS Foundation Trust	WES	Chelsea and Westminster Hospital	145	99.3	2.8	43.4	92.9

Trust name	NICOR hospital code	Hospital name	Heart failure admissions	Received echo	Cardiology inpatient (%)	Input from consultant cardiologist	Input from specialist (%)
England and Wales			**60737**	**90.1%**	**45.7%**	**56.9%**	**79.0%**
Gloucestershire Hospitals NHS Foundation Trust	CHG	Cheltenham General Hospital	140	55.4	22.1	24.3	25.7
Chesterfield Royal Hospital NHS Foundation Trust	CHE	Chesterfield Royal Hospital	77	57.1	35.1	35.1	58.4
Lancashire Teaching Hospitals NHS Foundation Trust	CHO	Chorley and South Ribble Hospital	244	100	38.5	26.6	100
Colchester Hospital University NHS Foundation Trust	COL	Colchester General Hospital	636	100	50.9	58.3	94.2
East Sussex Healthcare NHS Trust	CGH	Conquest Hospital	260	94.4	40.4	56.2	99.6
Countess of Chester Hospital NHS Foundation Trust	COC	Countess of Chester Hospital	384	97.1	60.2	77.4	98.9
University Hospital North Midlands NHS trust	SDG	County Hospital	930	77.5	22.2	35.5	99.3
Wye Valley NHS Trust	HCH	County Hospital Hereford	249	99.6	52.6	54.6	60.6
Croydon Health Services NHS Trust	MAY	Croydon University Hospital	307	97	51.5	57.2	82
Dartford and Gravesham NHS Trust	DVH	Darent Valley Hospital	338	94.9	51.5	72.8	94.9
County Durham and Darlington NHS Foundation Trust	DAR	Darlington Memorial Hospital	291	91.7	62.3	77	90.4
Plymouth Hospitals NHS Trust	PLY	Derriford Hospital	694	99.7	35.6	44.4	99.7
Mid Yorkshire Hospitals NHS Trust	DEW	Dewsbury and District Hospital	292	84.8	7.9	36	67.5
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	GGH	Diana Princess of Wales Hospital	212	96.2	51.4	55.2	66.5
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	DID	Doncaster Royal Infirmary	254	98.4	20.9	52.7	75.4
Dorset County Hospital NHS Foundation Trust	WDH	Dorset County Hospital	212	87.3	42.9	60.5	71.9
London North West Healthcare NHS Trust	EAL	Ealing Hospital	230	91.8	38.7	41.7	69.1
Surrey and Sussex Healthcare NHS Trust	ESU	East Surrey Hospital	338	82.1	64.4	69.1	73.9
East Sussex Healthcare NHS Trust	DGE	Eastbourne District General Hospital	250	89	57.2	78.8	90.4
Epsom and St Helier University Hospitals NHS Trust	EPS	Epsom Hospital	135	79.7	39.6	52	78
Pennine Acute Hospitals NHS Trust	BRY	Fairfield General Hospital	303	64.4	33.7	43.6	71.3

The Newcastle Upon Tyne Hospitals NHS Foundation Trust	FRE	Freeman Hospital and Royal Victoria Infirmary	486	84.8	66.3	73.3	79.8
South Tees Hospitals NHS Foundation Trust	FRH	Friarage Hospital	64	100	0	100	100
Frimley Park Hospital NHS Foundation Trust	FRM	Frimley Park Hospital	387	83.3	57.9	72.1	85.8
University Hospitals of Morecambe Bay NHS Foundation Trust	FGH	Furness General Hospital	236	99.6	41.5	79.2	95.8
George Eliot Hospital NHS Trust	NUN	George Eliot Hospital	56	94.2	42.9	58.3	64.6
University Hospitals of Leicester NHS Trust	GRL	Glenfield Hospital	1577	97	87.6	89.2	99.5
Gloucestershire Hospitals NHS Foundation Trust	GLO	Gloucestershire Royal Hospital	244	61	37.7	40.2	42.2
Heart of England NHS Foundation Trust	GHS	Good Hope Hospital	68	77.9	48.5	58.8	61.8
United Lincolnshire Hospitals NHS Trust	GRA	Grantham and District Hospital	114	76.8	8.8	48.2	54.5
Great Western Hospitals NHS Foundation Trust	PMS	Great Western Hospital	454	89.2	40.1	50.3	72.5
Imperial College Healthcare NHS Trust	HAM	Hammersmith Hospital	156	87.9	44.9	60.2	98.4
Royal Brompton and Harefield NHS Foundation Trust	HH	Harefield Hospital	189	96.8	98.4	98.9	100
Harrogate and District NHS Foundation Trust	HAR	Harrogate District Hospital	258	62.6	53.9	44.6	70.9
Northumbria Healthcare NHS Foundation Trust	HEX	Hexham General Hospital	7	100	28.6	28.6	28.6
The Hillingdon Hospitals NHS Foundation Trust	HIL	Hillingdon Hospital	210	96.6	46.9	64	82.8
Hinchingbrooke Health Care NHS Trust	HIN	Hinchingbrooke Hospital	65	95.2	7.7	61.5	80
Homerton University Hospital NHS Foundation Trust	HOM	Homerton University Hospital	306	96.3	36.6	46.9	64.6
Oxford Radcliffe Hospitals NHS Trust	HOR	Horton General Hospital	177	96.6	25	50.3	76.8
Calderdale and Huddersfield NHS Foundation Trust	HUD	Huddersfield Royal Infirmary	311	82.8	34.7	45.7	59.5
Hull and East Yorkshire Hospitals NHS Trust	HRI	Hull Royal Infirmary	197	97	1	12.2	81.7
The Ipswich Hospital NHS Trust	IPS	Ipswich Hospital	630	74.2	19	29.2	53.7
South Tees Hospitals NHS Foundation Trust	SCM	James Cook University Hospital	372	99.4	82.2	84	97.6
James Paget University Hospitals NHS Foundation Trust	JPH	James Paget University Hospital	146	98.6	70.5	79.7	97.2
Oxford Radcliffe Hospitals NHS Trust	RAD	John Radcliffe Hospital	494	95.7	20.7	58.4	83.5
East Kent Hospitals University NHS Foundation Trust	KCC	Kent and Canterbury Hospital	180	93.6	16.7	30.6	96.1
Kettering General Hospital NHS Foundation Trust	KGH	Kettering General Hospital	392	94.2	68.3	75.2	95.3

Trust name	NICOR hospital code	Hospital name	Heart failure admissions	Received echo	Cardiology inpatient (%)	Input from consultant cardiologist	Input from specialist (%)
England and Wales			**60737**	**90.1%**	**45.7%**	**56.9%**	**79.0%**
Barking, Havering and Redbridge University Hospitals NHS Trust	KGG	King George Hospital	117	100	72.2	87.9	94
King's College Hospital NHS Foundation Trust	KCH	King's College Hospital	431	99.5	29.7	66.6	70.5
Sherwood Forest Hospitals NHS Foundation Trust	KMH	King's Mill Hospital	465	70.5	48.6	65.2	72.9
Kingston Hospital NHS Trust	KTH	Kingston Hospital	183	88.6	41	48.6	63.4
Leeds Teaching Hospitals NHS Trust	LGI	Leeds General Infirmary	688	98.5	48.5	61.8	71.7
University Hospitals of Leicester NHS Trust	LER	Leicester Royal Infirmary	454	81.6	2.4	11.8	89.2
Mid Cheshire Hospitals NHS Foundation Trust	LGH	Leighton Hospital	169	100	93.5	92.9	98.2
United Lincolnshire Hospitals NHS Trust	LIN	Lincoln County Hospital	293	81.5	47.4	48.1	59
East and North Hertfordshire NHS Trust	LIS	Lister Hospital	390	96.8	51	61.7	89.3
Liverpool Heart and Chest Hospital NHS Foundation Trust	BHL	Liverpool Heart and Chest Hospital	79	100	93.7	96.2	100
Luton and Dunstable Hospital NHS Foundation Trust	LDH	Luton and Dunstable Hospital	295	95.4	14.2	26.8	51.2
East Cheshire NHS Trust	MAC	Macclesfield District General Hospital	109	98.1	64.2	71.6	88.1
Maidstone and Tunbridge Wells NHS Trust	MAI	Maidstone Hospital	209	100	41.6	65.4	89.5
Central Manchester University Hospitals NHS Foundation Trust	MRI	Manchester Royal Infirmary	288	86.2	36.1	59.2	76
Walsall Healthcare NHS Trust	WMH	Manor Hospital	237	100	49.8	74.4	99.6
Medway NHS Foundation Trust	MDW	Medway Maritime Hospital	443	95	42.4	79	98.2
Milton Keynes Hospital NHS Foundation Trust	MKH	Milton Keynes General Hospital	285	94.3	48.1	54.7	71.2
Taunton and Somerset NHS Foundation Trust	MPH	Musgrove Park Hospital	304	88.2	56.2	59.9	74.7
The Royal Wolverhampton Hospitals NHS Trust	NCR	New Cross Hospital	349	84.3	17.8	17.4	47.8
Barts Health NHS Trust	NWG	Newham University Hospital	406	68.2	54.9	54.4	54.7
Norfolk and Norwich University Hospitals NHS Foundation Trust	NOR	Norfolk and Norwich University Hospital	270	63.9	100	100	100
Northern Devon Healthcare NHS Trust	NDD	North Devon District Hospital	254	93.5	58.7	63	63
Pennine Acute Hospitals NHS Trust	NMG	North Manchester General Hospital	288	69.3	47.2	42.9	69.6

North Middlesex University Hospital NHS Trust	NMH	North Middlesex University Hospital	163	95.6	40.5	69.3	76.1
Northumbria Healthcare NHS Foundation Trust	NTY	North Tyneside Hospital	65	100	55.6	60.7	70.5
Northampton General Hospital NHS Trust	NTH	Northampton General Hospital	190	82.8	28.4	37.4	52.4
Sheffield Teaching Hospitals NHS Foundation Trust	NGS	Northern General Hospital	944	99	17.2	57.8	90.9
London North West Healthcare NHS Trust	NPH	Northwick Park Hospital	673	99	38.8	40.8	83.5
Nottingham University Trust	MKH	Nottingham City Hospital	2	50	50	50	50
Peterborough and Stamford Hospitals NHS Foundation Trust	PET	Peterborough City Hospital	467	90.3	67.7	65.2	90.1
United Lincolnshire Hospitals NHS Trust	PIL	Pilgrim Hospital	256	92.7	41.2	44.9	48.8
Mid Yorkshire Hospitals NHS Trust	PIN	Pinderfields Hospital	416	94	46.2	53.4	80
Poole Hospital NHS Foundation Trust	PGH	Poole General Hospital	269	100	0.7	55.4	69.5
The Princess Alexandra Hospital NHS Trust	PAH	Princess Alexandra Hospital	93	93.5	36.6	40.9	61.3
Brighton and Sussex University Hospitals NHS Trust	PRH	Princess Royal Hospital (Haywards Heath)	200	58.3	1.5	19.5	43.5
Shrewsbury and Telford Hospitals NHS Trust	TLF	Princess Royal Hospital (Telford)	160	98.8	64.4	69.4	79
King's College Hospital NHS Foundation Trust	BRO	Princess Royal University Hospital (Bromley)	298	93.6	46.3	60	68.8
Portsmouth Hospitals NHS Trust	QAP	Queen Alexandra Hospital	451	98.2	86.7	89.1	94.2
University Hospitals Birmingham NHS Foundation Trust	QEB	Queen Elizabeth Hospital (Edgbaston)	293	99	24.7	34.8	76.6
Gateshead Health NHS Foundation Trust	QEG	Queen Elizabeth Hospital (Gateshead)	259	100	63.7	90.4	99.6
The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	QKL	Queen Elizabeth Hospital (King's Lynn)	274	90	33.6	35	49.3
Lewisham and Greenwich NHS Trust	GWH	Queen Elizabeth Hospital (Woolwich)	74	98.6	32.4	45.9	79.7
East Kent Hospitals University NHS Foundation Trust	QEQ	Queen Elizabeth the Queen Mother Hospital	159	91.7	21.3	30.2	83.6
Burton Hospitals NHS Foundation Trust	BRT	Queen's Hospital (Burton)	296	92.3	60.5	76.5	90.1
Barking, Havering and Redbridge University Hospitals NHS Trust	OLD	Queen's Hospital Romford	288	100	19.4	31	67.6
Nottingham University Trust	NMG	Queen's Medical Centre	518	65.7	14.1	21.6	41.1
Pennine Acute Hospitals NHS Trust	BHH	Rochdale Infirmary	44	34.1	70.5	2.3	37.2
Rotherham NHS Foundation Trust	ROT	Rotherham Hospital	262	80.7	44.3	51.1	65.6
Wrightington, Wigan and Leigh NHS Foundation Trust	AEI	Royal Albert Edward Infirmary	442	100	83	93.9	100

Trust name	NICOR hospital code	Hospital name	Heart failure admissions	Received echo	Cardiology inpatient (%)	Input from consultant cardiologist	Input from specialist (%)
England and Wales			**60737**	**90.1%**	**45.7%**	**56.9%**	**79.0%**
Royal Berkshire NHS Foundation Trust	BHR	Royal Berkshire Hospital	373	92.4	52.4	72.2	83.3
East Lancashire Hospitals NHS Trust	BLA	Royal Blackburn Hospital	395	93.8	33.7	43.6	100
Bolton NHS Foundation Trust	BOL	Royal Bolton Hospital	177	96.4	64.4	82.5	87.6
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	BOU	Royal Bournemouth General Hospital	412	88.8	57	56.8	95.1
Royal Brompton and Harefield NHS Foundation Trust	NHB	Royal Brompton Hospital	174	100	96	86.8	98.9
Royal Cornwall Hospitals NHS Trust	RCH	Royal Cornwall Hospital	427	85	38.2	50.4	65.8
Derby Hospitals NHS Foundation Trust	DER	Royal Derby Hospital	501	27.9	44	57.5	64.7
Royal Devon and Exeter NHS Foundation Trust	RDE	Royal Devon & Exeter Hospital	410	65.4	37.8	44.4	51.2
Royal Free London NHS Trust	RFH	Royal Free Hospital	303	96.6	42.9	43.9	57.4
Hampshire Hospitals NHS Foundation Trust	RHC	Royal Hampshire County Hospital	146	99.3	54.8	66.4	76
University Hospitals of Morecambe Bay NHS Foundation Trust	RLI	Royal Lancaster Infirmary	237	97.4	19.4	73.8	99.2
Royal Liverpool and Broadgreen University Hospitals NHS Trust	RLU	Royal Liverpool University Hospital	355	97	68.7	62.5	88.4
Pennine Acute Hospitals NHS Trust	OHM	Royal Oldham Hospital	304	46.8	35.2	44.9	59.9
Lancashire Teaching Hospitals NHS Foundation Trust	RPH	Royal Preston Hospital	453	99.6	41.1	41.5	99.8
Shrewsbury and Telford Hospitals NHS Trust	RSS	Royal Shrewsbury Hospital	114	100	44.7	59.4	78.2
University Hospital North Midlands NHS trust	STO	Royal Stoke University Hospital	144	77.5	22.2	35.5	99.3
Royal Surrey County Hospital NHS Foundation Trust	RSU	Royal Surrey County Hospital	256	85.4	64.1	75.4	88.7
Brighton and Sussex University Hospitals NHS Trust	RSC	Royal Sussex County Hospital	423	82.9	58.8	71.6	79.9
Royal United Hospital Bath NHS Trust	BAT	Royal United Hospital Bath	444	90.7	53.8	57.4	74.1
The Dudley Group NHS Foundation Trust	RUS	Russells Hall Hospital	600	99.3	45.8	46.5	75.7
Salford Royal NHS Foundation Trust	SLF	Salford Royal	408	82.7	30.9	36	88
Salisbury NHS Foundation Trust	SAL	Salisbury District Hospital	182	83.9	61	71.4	89
Sandwell and West Birmingham Hospitals NHS Trust	SAN	Sandwell General Hospital	188	100	40.3	65.4	100

York Teaching Hospital NHS Foundation Trust	SCA	Scarborough General Hospital	13	87.5	38.5	69.2	92.3
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	SCU	Scunthorpe General Hospital	294	90.5	32	41.2	53.7
Heart of England NHS Foundation Trust	SOL	Solihull Hospital	213	96.7	65.7	65.7	93
South Tyneside NHS Foundation Trust	STD	South Tyneside District Hospital	307	99.3	59	58.1	76.6
University Hospital Southampton NHS Trust	SGH	Southampton General Hospital	726	92	33.7	41.8	85.1
Southend University Hospital NHS Foundation Trust	SEH	Southend Hospital	627	85.4	44.8	46.3	54.9
North Bristol NHS Trust	BSM	Southmead Hospital	482	74.5	40.5	49	58.4
Southport and Ormskirk Hospital NHS Trust	SOU	Southport and Formby District General Hospital	281	81.9	24.2	49.1	72.2
Barts Health NHS Trust	SBH	St Bartholomew's Hospital	120	100	98.3	99.2	100
St George's Healthcare NHS Trust	GEO	St George's Hospital	423	97.6	35.8	44.2	76.1
Epsom and St Helier University Hospitals NHS Trust	SHC	St Helier Hospital	163	80.4	27.8	35.8	78.6
Imperial College Healthcare NHS Trust	STM	St Mary's Hospital Paddington	115	100	3.5	6.1	99.1
Isle of Wight NHS PCT	IOW	St Mary's Hospital, Newport	67	89.6	42.4	56.4	61.8
Ashford and St Peter's Hospitals NHS Trust	SPH	St Peter's Hospital	539	95.8	43	53.6	71.8
Western Sussex Hospitals NHS Trust	STR	St Richard's Hospital	228	94.7	64.5	76.3	94.3
Guy's and St Thomas' NHS Foundation Trust	STH	St Thomas' Hospital	502	99.8	45.4	61.8	92.4
Stockport NHS Foundation Trust	SHH	Stepping Hill Hospital	488	86.6	31.8	61.6	76
Buckinghamshire Healthcare NHS Trust	SMV	Stoke Mandeville Hospital	99	98	14.3	20.9	82.4
City Hospitals Sunderland NHS Foundation Trust	SUN	Sunderland Royal Hospital	387	99.7	44.2	47.9	94.5
Tameside Hospital NHS Foundation Trust	TGA	Tameside General Hospital	198	83.9	46.6	63.5	77.6
Barts Health NHS Trust	LCH	The London Chest Hospital	20	100	100	100	100
Barts Health NHS Trust	LON	The Royal Hospital London	239	93.7	48.7	73.1	76.9
York Teaching Hospital NHS Foundation Trust	YDH	The York Hospital	343	97.7	21.3	41.1	56
South Devon Healthcare NHS Foundation Trust	TOR	Torbay Hospital	568	81.1	42.5	43.7	85.4
Central Manchester University Hospitals NHS Foundation Trust	TRA	Trafford General Hospital	58	83.9	0	47.4	47.4
Maidstone and Tunbridge Wells NHS Trust	KSX	Tunbridge Wells Hospital	223	100	63.2	85.9	100

Trust name	NICOR hospital code	Hospital name	Heart failure admissions	Received echo	Cardiology inpatient (%)	Input from consultant cardiologist	Input from specialist (%)
England and Wales			**60737**	**90.1%**	**45.7%**	**56.9%**	**79.0%**
University College London Hospitals NHS Foundation Trust	UCL	University College Hospital	212	98.1	6.1	80.7	86.5
Aintree University Hospital NHS Foundation Trust	FAZ	University Hospital Aintree	626	99.3	60.3	65.5	87.5
University Hospitals Coventry and Warwickshire NHS Trust	WAL	University Hospital Coventry	755	99.5	63.5	63	77.9
Lewisham and Greenwich NHS Trust	LEW	University Hospital Lewisham	146	100	17.9	52.9	58.1
County Durham and Darlington NHS Foundation Trust	DRY	University Hospital of North Durham	424	92.8	50	59.7	70
North Tees and Hartlepool NHS Foundation Trust	NTG	University Hospital of North Tees	238	95.8	48.7	62.6	88.7
Northumbria Healthcare NHS Foundation Trust	ASH	Wansbeck General Hospital	46	100	71.7	73.3	77.8
Warrington and Halton Hospitals NHS Foundation Trust	WDG	Warrington Hospital	170	95	53.8	55.8	87.7
South Warwickshire NHS Foundation Trust	WAR	Warwick Hospital	177	95.4	66.1	85.3	90.6
West Hertfordshire Hospitals NHS Trust	WAT	Watford General Hospital	457	95.6	38.1	59.7	82
West Middlesex University Hospital NHS Trust	WMU	West Middlesex University Hospital	331	96.9	16	23.4	82.5
West Suffolk NHS Foundation Trust	WSH	West Suffolk Hospital	293	91.5	53.2	60.6	92.7
Weston Area Health NHS Trust	WGH	Weston General Hospital	117	92.7	0	41	43.6
Heatherwood and Wexham Park Hospitals NHS Foundation Trust	WEX	Wexham Park Hospital	582	86	58	61.3	99.1
Barts Health NHS Trust	WHC	Whipps Cross University Hospital	366	93.7	32.8	53	62
St Helens and Knowsley Teaching Hospitals NHS Trust	WHI	Whiston Hospital	352	95.3	74.4	88.9	92.9
The Whittington Hospital NHS Trust	WHT	Whittington Hospital	187	100	51.9	74.7	87.1
East Kent Hospitals University NHS Foundation Trust	WHH	William Harvey Hospital	192	93.7	51	65.3	98.4
Worcestershire Acute Hospitals NHS Trust	WRC	Worcestershire Royal Hospital	461	78.6	48.4	62.9	73.6
Western Sussex Hospitals NHS Trust	WRG	Worthing Hospital	293	96.8	52.6	45.7	96.2
Buckinghamshire Healthcare NHS Trust	AMG	Wycombe Hospital	127	98.4	98.4	95.2	100
University Hospital of South Manchester NHS Foundation Trust	WYT	Wythenshawe Hospital	259	92.1	37.5	51.7	83
Yeovil District Hospital NHS Foundation Trust	YEO	Yeovil District Hospital	278	94	63.3	69.2	96

Table D: Treatment and management on discharge in England

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
Cambridge University Hospitals NHS Foundation Trust	ADD	Addenbrooke's Hospital	495	84.4	93.5	96.1	92.1	85.8	63.6	72.2	29.6	34.6
Airedale NHS Foundation Trust	AIR	Airedale General Hospital	265	69.1	87.1	86.8	46.7	52.5	28.7	48.5	29.5	7
Worcestershire Acute Hospitals NHS Trust	RED	Alexandra Hospital	315	60.7	83.6	78	53.6	99.7	43.8	67.3	56.7	2.8
Wirral University Teaching Hospital NHS Foundation Trust	WIR	Arrowe Park Hospital	396	78.4	90.3	91.2	68.3	100	82.5	89.9	50.3	21
Barnet and Chase Farm Hospitals NHS Trust	BNT	Barnet General Hospital	470	58.3	84.3	89.9	58.3	95.1	35.1	40.4	71.5	4.6
Barnsley Hospital NHS Foundation Trust	BAR	Barnsley Hospital	195	46	60.2	85.2	39.1	65.3	27.6	32.9	61.1	1.4
Basildon and Thurrock University Hospitals NHS Foundation Trust	BAS	Basildon University Hospital	410	63.9	74.3	85.5	40	97.4	46.4	51.7	46.2	4
Hampshire Hospitals NHS Foundation Trust	NHH	Basingstoke and North Hampshire Hospital	169	78.3	83.6	79.2	53.7	77.4	39	43.8	14.7	2.5
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	BSL	Bassetlaw Hospital	75	63.8	79.2	84.9	55.8	92.2	65.6	72.5	77.3	23.6
Bedford Hospital NHS Trust	BED	Bedford Hospital	247	82.8	93.1	93.4	59.4	99.5	29.2	33.1	72.6	9.3
Sandwell and West Birmingham Hospitals NHS Trust	DUD	Birmingham City Hospital	446	96.1	97	96.7	87	93.6	54.7	59.2	75.9	28.6
Heart of England NHS Foundation Trust	EBH	Birmingham Heartlands Hospital	315	58.5	75.3	77.1	45.2	99.3	71.7	87.5	41.5	1.1

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
Blackpool Teaching Hospitals NHS Foundation Trust	VIC	Blackpool Victoria Hospital	132	69.4	87.5	93.4	32.5	100	93.4	93.4	94.7	20
Bradford Teaching Hospitals NHS Foundation Trust	BRD	Bradford Royal Infirmary	294	51.4	67.3	71.4	50.4	83.8	24.5	38.5	40.4	2.4
University Hospitals Bristol NHS Foundation Trust	BRI	Bristol Royal Infirmary	370	81.7	90.7	88.7	60	97.6	58.3	52.5	49.1	24
Mid Essex Hospital Services NHS Trust	BFH	Broomfield Hospital	513	75.3	95.1	96.2	42.6	90.8	85.9	95.5	43.3	21.4
Calderdale and Huddersfield NHS Foundation Trust	RHI	Calderdale Royal Hospital	292	64.6	79.8	86.4	62.1	97.3	40.8	57.8	60.8	26.1
Hull and East Yorkshire Hospitals NHS Trust	CHH	Castle Hill Hospital	353	75.7	80.1	83.1	56.7	91.7	51.8	61.1	91.5	15.9
London North West Healthcare NHS Trust	CMH	Central Middlesex Hospital	35	40	50	81.8	45.5	94.3	16.7	27.3	19.4	0
Imperial College Healthcare NHS Trust	CCH	Charing Cross Hospital	138	96.6	97.6	93.3	60.5	100	34.6	54.9	59.4	11.2
Chelsea and Westminster Hospital NHS Foundation Trust	WES	Chelsea and Westminster Hospital	145	58.3	83.1	75.9	34.5	63.2	49.6	59.8	73.8	2.5
Gloucestershire Hospitals NHS Foundation Trust	CHG	Cheltenham General Hospital	140	94.4	95.7	100	90	84.3	13.7	35.3	18.8	0
Chesterfield Royal Hospital NHS Foundation Trust	CHE	Chesterfield Royal Hospital	77	72	76.9	83.3	62.1	98.5	52.2	64.5	20.9	0
Lancashire Teaching Hospitals NHS Foundation Trust	CHO	Chorley and South Ribble Hospital	244	72.2	90.4	96.1	53.2	100	96	97.4	68.3	11.4

Colchester Hospital University NHS Foundation Trust	COL	Colchester General Hospital	636	71.6	82.2	89.5	27.6	95.3	94.9	94.7	24.5	51.9
East Sussex Healthcare NHS Trust	CGH	Conquest Hospital	260	74.3	98	95.9	48	95.8	93.4	98.4	56.4	9.7
Countess of Chester Hospital NHS Foundation Trust	COC	Countess of Chester Hospital	384	100	100	100	50.6	89.8	58.4	91.5	42.2	26.8
University Hospital North Midlands NHS trust	SDG	County Hospital	144	62.8	77.4	86.6	33.8	84.7	62.7	80.4	53.2	8.4
Wye Valley NHS Trust	HCH	County Hospital Hereford	249	76	86.5	94.5	48.8	90.5	51.3	76.4	35.9	60.4
Croydon Health Services NHS Trust	MAY	Croydon University Hospital	307	55.6	71.1	86.1	33.9	91.2	58.7	71.2	52	47.1
Dartford and Gravesham NHS Trust	DVH	Darent Valley Hospital	338	52.8	82.1	88.5	48.5	88.3	42.6	70.5	67.5	4.2
County Durham and Darlington NHS Foundation Trust	DAR	Darlington Memorial Hospital	291	69.5	78.1	88.5	72.7	83	83.4	90.7	72	65.4
Plymouth Hospitals NHS Trust	PLY	Derriford Hospital	694	57	66.7	79.2	67.5	100	100	NA	NA	NA
Mid Yorkshire Hospitals NHS Trust	DEW	Dewsbury and District Hospital	292	85.6	92.5	87.7	55.1	84.5	61	74.8	42.7	66
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	GGH	Diana Princess of Wales Hospital	212	79.2	98.6	87.8	52.8	62.2	32.8	50	65.3	2.1
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	DID	Doncaster Royal Infirmary	254	68.4	87.8	78.8	42.2	96.2	81.1	85.8	84.5	24.7
Dorset County Hospital NHS Foundation Trust	WDH	Dorset County Hospital	212	82.6	91.8	95.4	72.5	99.5	60.1	73.5	43.5	0.7
London North West Healthcare NHS Trust	EAL	Ealing Hospital	230	60.8	74.7	87.5	53.8	90.4	14.6	15.7	56.3	4.6
Surrey and Sussex Healthcare NHS Trust	ESU	East Surrey Hospital	338	98.1	98.6	98.8	98.6	91.5	70.4	79.2	63.4	1.1
East Sussex Healthcare NHS Trust	DGE	Eastbourne District General Hospital	250	68.1	90.3	90.8	44.1	82.8	80.8	93.1	60.3	8.3

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
Epsom and St Helier University Hospitals NHS Trust	EPS	Epsom Hospital	135	44.1	50	94.6	64.7	89.3	40	92.1	51.1	4.2
Pennine Acute Hospitals NHS Trust	BRY	Fairfield General Hospital	303	50.7	61.1	83.3	25.3	89.7	36.7	48.8	22.5	0.8
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	FRE	Freeman Hospital and Royal Victoria Infirmary	486	75.6	89.6	92.9	53.3	88.2	44	50.8	64.8	1.6
South Tees Hospitals NHS Foundation Trust	FRH	Friarage Hospital	64	72.4	84.7	91.7	26.7	98.4	75.8	74.6	68.3	34
Frimley Park Hospital NHS Foundation Trust	FRM	Frimley Park Hospital	387	57.5	71.7	81.6	62.3	NA	34.8	43.7	29.9	1.4
University Hospitals of Morecambe Bay NHS Foundation Trust	FGH	Furness General Hospital	236	66.7	86.9	85.7	37.7	99.5	67	84.2	38.6	4.4
George Eliot Hospital NHS Trust	NUN	George Eliot Hospital	56	75	91.3	95.8	25	0	2.6	0	64.9	0
University Hospitals of Leicester NHS Trust	GRL	Glenfield Hospital	1577	61.3	72	77.9	40	91.4	82.7	91.7	88.7	75.7
Gloucestershire Hospitals NHS Foundation Trust	GLO	Gloucestershire Royal Hospital	244	96.2	96.7	98.5	100	87	26.3	54.2	28.7	0
Heart of England NHS Foundation Trust	GHS	Good Hope Hospital	68	63	81.5	80	25	64.9	56.1	70	57.9	0
United Lincolnshire Hospitals NHS Trust	GRA	Grantham and District Hospital	114	48.1	59.3	75.9	17.2	57.8	2.4	6.9	67.4	0
Great Western Hospitals NHS Foundation Trust	PMS	Great Western Hospital	454	75	96.1	89	74.6	96.9	34.3	58	20.3	1.4
Imperial College Healthcare NHS Trust	HAM	Hammersmith Hospital	156	89.1	94	93.2	62.7	100	40.9	54.3	71.2	20.6
Royal Brompton and Harefield NHS Foundation Trust	HH	Harefield Hospital	189	64	81.6	86.7	76.6	91.7	87	91.1	92.3	40.7

Harrogate and District NHS Foundation Trust	HAR	Harrogate District Hospital	258	100	100	98.5	100	97.8	38.2	60.2	21.8	17.6
Northumbria Healthcare NHS Foundation Trust	HEX	Hexham General Hospital	7	100	100	100	33.3	60	33.3	50	66.7	0
The Hillingdon Hospitals NHS Foundation Trust	HIL	Hillingdon Hospital	210	96	98.5	91.9	46.5	90.5	54.1	61.9	64.7	0
Hinchingbrooke Health Care NHS Trust	HIN	Hinchingbrooke Hospital	65	93.9	94.7	97.2	50	95.2	60	77.8	63.3	5.3
Homerton University Hospital NHS Foundation Trust	HOM	Homerton University Hospital	306	51.7	70.4	82.8	40.7	72.1	60.5	73.9	54.9	34.1
Oxford Radcliffe Hospitals NHS Trust	HOR	Horton General Hospital	177	92.3	100	85.9	61.4	85.5	74.8	92	35.7	25
Calderdale and Huddersfield NHS Foundation Trust	HUD	Huddersfield Royal Infirmary	311	71.6	89.5	85.4	59.4	98.2	45	67.2	50.3	27.3
Hull and East Yorkshire Hospitals NHS Trust	HRI	Hull Royal Infirmary	197	52.8	61.6	79.8	27.8	95.6	42	56.6	64.6	4.4
The Ipswich Hospital NHS Trust	IPS	Ipswich Hospital	630	54.3	63.2	79.1	48.1	85.9	50.4	75.6	34.2	0.4
South Tees Hospitals NHS Foundation Trust	SCM	James Cook University Hospital	372	71	84.9	91.2	31	90.2	89.8	91.6	79.8	10.5
James Paget University Hospitals NHS Foundation Trust	JPH	James Paget University Hospital	146	57.8	75	82.5	53	94.4	89.5	90.5	55.3	1.5
Oxford Radcliffe Hospitals NHS Trust	RAD	John Radcliffe Hospital	494	91.7	99.4	88.8	79.1	87	71.7	86.7	47.3	29.3
East Kent Hospitals University NHS Foundation Trust	KCC	Kent and Canterbury Hospital	180	84.9	92.5	92.5	31.4	94.9	69.5	95.5	61.8	80.2
Kettering General Hospital NHS Foundation Trust	KGH	Kettering General Hospital	392	73.2	78.7	90.5	60	91.3	68.9	87	75.3	3.3
Barking, Havering and Redbridge University Hospitals NHS Trust	KGG	King George Hospital	117	52.7	75.3	81.9	47.8	89.5	64.4	70.5	92.6	0

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
King's College Hospital NHS Foundation Trust	KCH	King's College Hospital	431	70.7	85.9	89.9	48.4	91	45.9	62.8	76.6	13.7
Sherwood Forest Hospitals NHS Foundation Trust	KMH	King's Mill Hospital	465	62.7	75.8	77	43.1	87	71.4	80.6	63.2	89.7
Kingston Hospital NHS Trust	KTH	Kingston Hospital	183	100	100	100	100	87.2	42.5	60.5	67.2	24.1
Leeds Teaching Hospitals NHS Trust	LGI	Leeds General Infirmary	688	43.7	52.9	81.8	67.4	81.8	71.6	75	51	6.1
University Hospitals of Leicester NHS Trust	LER	Leicester Royal Infirmary	454	33	42.1	66.5	14.8	69.1	46.8	59.4	36	29.8
Mid Cheshire Hospitals NHS Foundation Trust	LGH	Leighton Hospital	169	75	93.3	92.2	65.1	100	50	57.1	30	1.9
United Lincolnshire Hospitals NHS Trust	LIN	Lincoln County Hospital	293	53.4	65.5	67	38.2	97.9	30.5	47.3	39.7	2.7
East and North Hertfordshire NHS Trust	LIS	Lister Hospital	390	67.9	85.2	95.1	36.8	99.7	58.3	69.9	60.1	38.9
Liverpool Heart and Chest Hospital NHS Foundation Trust	BHL	Liverpool Heart and Chest Hospital	79	100	100	100	58.9	91.1	64.6	67.8	89.7	69.2
Luton and Dunstable Hospital NHS Foundation Trust	LDH	Luton and Dunstable Hospital	295	79.3	85.6	79.7	66	98	40.4	54	51.9	21.4
East Cheshire NHS Trust	MAC	Macclesfield District General Hospital	109	61.8	73.5	86.4	28.3	76.7	54	55.4	67.5	0
Maidstone and Tunbridge Wells NHS Trust	MAI	Maidstone Hospital	209	88.1	96.8	93.8	38.5	97.3	69	93.8	77.6	5.2
Central Manchester University Hospitals NHS Foundation Trust	MRI	Manchester Royal Infirmary	288	69.2	80.4	88.4	52.3	68.1	75.2	87.3	37.2	5.3

Walsall Healthcare NHS Trust	WMH	Manor Hospital	237	100	100	100	99.1	93.7	99.1	99.1	52.8	9.9
Medway NHS Foundation Trust	MDW	Medway Maritime Hospital	443	98.8	99.5	100	97.9	99.5	82.7	93.3	53.4	2.3
Milton Keynes Hospital NHS Foundation Trust	MKH	Milton Keynes General Hospital	285	87.4	94.2	93.3	61.8	98.8	24.9	42.9	73.9	0
Taunton and Somerset NHS Foundation Trust	MPH	Musgrove Park Hospital	304	82.4	94.3	93.3	52.3	64.3	55.7	65.5	39.5	0.8
The Royal Wolverhampton Hospitals NHS Trust	NCR	New Cross Hospital	349	47	60.4	69.5	33.7	80.7	35.9	43.8	35.1	0.8
Barts Health NHS Trust	NWG	Newham University Hospital	406	76.8	86.2	93.6	73.4	99.5	43.6	68.7	39.7	0.8
Norfolk and Norwich University Hospitals NHS Foundation Trust	NOR	Norfolk and Norwich University Hospital	270	88.1	100	100	100	100	61.5	66.2	0	0
Northern Devon Healthcare NHS Trust	NDD	North Devon District Hospital	254	84.9	91.2	78.8	83.3	100	29.4	49.6	44.5	20.5
Pennine Acute Hospitals NHS Trust	NMG	North Manchester General Hospital	288	43.7	52.8	66.7	23.1	91.2	32.6	45.3	29.5	1.4
North Middlesex University Hospital NHS Trust	NMH	North Middlesex University Hospital	163	83.8	95	94.4	64.6	98.8	78.3	87.5	72.9	30.8
Northumbria Healthcare NHS Foundation Trust	NTY	North Tyneside Hospital	65	69.2	84.6	88.9	18.8	73.9	59.1	65.7	71.1	0
Northampton General Hospital NHS Trust	NTH	Northampton General Hospital	190	64.3	82.4	68.8	48	100	49.1	62.2	32.9	1.3
Sheffield Teaching Hospitals NHS Foundation Trust	NGS	Northern General Hospital	944	49.9	58.6	67.9	43.7	94	30.6	33.3	15.4	1.9
London North West Healthcare NHS Trust	NPH	Northwick Park Hospital	673	52.6	69.6	83.5	38.2	86.9	66.8	76.1	41.8	19.9
Nottingham University Hospitals NHS Trust	MKH	Nottingham City Hospital	2	NA	NA	NA	NA	100	50	NA	50	0
Peterborough and Stamford Hospitals NHS Foundation Trust	PET	Peterborough City Hospital	467	95.7	97.5	98.3	85.8	82.7	63.7	77	52.5	17

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
United Lincolnshire Hospitals NHS Trust	PIL	Pilgrim Hospital	256	56.5	59.8	68.4	45.2	98.6	34.3	50.5	41	4.2
Mid Yorkshire Hospitals NHS Trust	PIN	Pinderfields Hospital	416	80.2	87	91.4	67.8	91.1	68.5	76.4	64.6	67.8
Poole Hospital NHS Foundation Trust	PGH	Poole General Hospital	269	51.1	69.3	78.9	42.1	99.6	50.2	58.1	52	17.8
The Princess Alexandra Hospital NHS Trust	PAH	Princess Alexandra Hospital	93	71.1	84.4	100	57.8	100	36.9	51	56.5	0
Brighton and Sussex University Hospitals NHS Trust	PRH	Princess Royal Hospital (Haywards Heath)	200	54.8	87.5	76.2	51.2	89.5	28.2	56.5	38.2	0
Shrewsbury and Telford Hospitals NHS Trust	TLF	Princess Royal Hospital (Telford)	160	58.8	69	82.5	29.8	68.2	68.5	72.7	70.4	2.4
King's College Hospital NHS Foundation Trust	BRO	Princess Royal University Hospital (Bromley)	298	74.4	84.4	94.4	68.4	88.3	49.1	72.6	50.7	2.1
Portsmouth Hospitals NHS Trust	QAP	Queen Alexandra Hospital	451	70.5	79.3	86.5	69.1	93.1	83.6	90	27.5	4.3
University Hospitals Birmingham NHS Foundation Trust	QEB	Queen Elizabeth Hospital (Edgbaston)	293	61.4	73.2	78.5	36.8	87.7	68	78	43.8	0.4
Gateshead Health NHS Foundation Trust	QEG	Queen Elizabeth Hospital (Gateshead)	259	94.6	96.3	95	66.7	100	95.8	97.8	14.5	93.8
The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	QKL	Queen Elizabeth Hospital (King's Lynn)	274	46.6	54.1	63.8	36.9	98.1	1.7	2	32.5	0
Lewisham and Greenwich NHS Trust	GWH	Queen Elizabeth Hospital (Woolwich)	74	83.3	84.4	83	52.3	82.2	58.5	68.2	42	1.5
East Kent Hospitals University NHS Foundation Trust	QEQ	Queen Elizabeth the Queen Mother Hospital	159	83.6	87.7	95.2	75	88.4	48.9	82.9	23.9	73.1

Burton Hospitals NHS Foundation Trust	BRT	Queen's Hospital (Burton)	296	79.1	83.2	90.7	78	86.4	57.6	67.2	50.9	17.5
Barking, Havering and Redbridge University Hospitals NHS Trust	OLD	Queen's Hospital Romford	288	61.3	75.6	85.2	62.9	76.9	73	80.4	59.7	10.5
Nottingham University Hospitals NHS Trust	NMG	Queen's Medical Centre	518	100	100	100	96.3	77.1	24.3	30.5	15.4	0
Pennine Acute Hospitals NHS Trust	BHH	Rochdale Infirmary	44	100	100	75	75	95.1	56.1	71.4	17.1	0
Rotherham NHS Foundation Trust	ROT	Rotherham Hospital	262	48.6	59.3	77.5	40.8	99	53.6	59	22.7	0.5
Wrightington, Wigan and Leigh NHS Foundation Trust	AEI	Royal Albert Edward Infirmary	442	94.2	99.3	99.7	65.2	97.1	80.2	86.7	75.6	29.4
Royal Berkshire NHS Foundation Trust	BHR	Royal Berkshire Hospital	373	74.4	81.8	91.7	58.8	86.3	76.6	87	50.9	2.5
East Lancashire Hospitals NHS Trust	BLA	Royal Blackburn Hospital	395	77.5	94.7	95.6	53.3	72.9	57.3	65	69.9	2.1
Bolton NHS Foundation Trust	BOL	Royal Bolton Hospital	177	92.5	94.9	98.6	76.4	97.1	38.8	55.1	69.9	4.2
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	BOU	Royal Bournemouth General Hospital	412	95.4	97.9	94.1	85.6	98.6	56	68	52	17.2
Royal Brompton and Harefield NHS Foundation Trust	NHB	Royal Brompton Hospital	174	60.9	88.2	90.9	73.5	96.3	53.5	73.8	93.8	3.3
Royal Cornwall Hospitals NHS Trust	RCH	Royal Cornwall Hospital	427	42.4	58.3	80.1	34.1	55.5	51.7	59.6	53.1	49.3
Derby Hospitals NHS Foundation Trust	DER	Royal Derby Hospital	501	56.4	61.5	77.2	13.6	86.9	35.9	50.6	25.9	3.6
Royal Devon and Exeter NHS Foundation Trust	RDE	Royal Devon & Exeter Hospital	410	85.8	90.7	79.6	46.6	63.9	16.2	25.2	30.8	4.1
Royal Free London NHS Trust	RFH	Royal Free Hospital	303	63.8	86.8	88.6	50.4	80.2	16.9	27	37.8	2.6
Hampshire Hospitals NHS Foundation Trust	RHC	Royal Hampshire County Hospital	146	73.3	77.8	80.4	44.4	74.3	46.8	58.1	31.2	1

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
University Hospitals of Morecambe Bay NHS Foundation Trust	RLI	Royal Lancaster Infirmary	237	75.4	93.7	92	38.2	92.4	72.9	86.8	28.7	0
Royal Liverpool and Broadgreen University Hospitals NHS Trust	RLU	Royal Liverpool University Hospital	355	83.3	95.9	98	63.9	77.9	74.3	76	58.5	8.7
Pennine Acute Hospitals NHS Trust	OHM	Royal Oldham Hospital	304	75	80	80	39.6	96	56.2	61.5	31.8	0.4
Lancashire Teaching Hospitals NHS Foundation Trust	RPH	Royal Preston Hospital	453	67.5	85.9	89.2	37.4	99	99.5	99.7	77.6	18.9
Shrewsbury and Telford Hospitals NHS Trust	RSS	Royal Shrewsbury Hospital	114	74.6	85.1	77.5	29.1	79.6	72.4	76.8	40.7	1.6
University Hospital North Midlands NHS trust	STO	Royal Stoke University Hospital	930	80.7	85.7	86.3	52.9	77.3	67.8	79.3	48	4.1
Royal Surrey County Hospital NHS Foundation Trust	RSU	Royal Surrey County Hospital	256	81.9	89.7	91	58.4	73.6	68.3	77.9	73.8	24.7
Brighton and Sussex University Hospitals NHS Trust	RSC	Royal Sussex County Hospital	423	85.5	94.9	95.9	69.6	91.4	62.7	78.8	61.8	2.4
Royal United Hospital Bath NHS Trust	BAT	Royal United Hospital Bath	444	98.3	98.6	98.2	93.8	99.5	19	24.5	36.2	18.5
The Dudley Group NHS Foundation Trust	RUS	Russells Hall Hospital	600	50.2	63.5	67.2	29.9	76.5	64.9	67.9	34	0.2
Salford Royal NHS Foundation Trust	SLF	Salford Royal	408	94.4	95.1	96.5	48.7	82.6	62	75.7	36.7	7.9
Salisbury NHS Foundation Trust	SAL	Salisbury District Hospital	182	65.9	93.1	89.3	69.9	99.4	81	83	44.9	3.8
Sandwell and West Birmingham Hospitals NHS Trust	SAN	Sandwell General Hospital	188	85.2	99	93.8	69.1	91	89.6	93.2	64	68.9

York Teaching Hospital NHS Foundation Trust	SCA	Scarborough General Hospital	13	NA	NA	NA	NA	83.3	77.8	NA	100	22.2
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	SCU	Scunthorpe General Hospital	294	99.1	99.2	99.3	98.4	97.6	46.4	56.8	37.1	2.4
Heart of England NHS Foundation Trust	SOL	Solihull Hospital	213	57.4	80.6	76.9	39.9	98.9	81.5	91.5	50.3	0.5
South Tyneside NHS Foundation Trust	STD	South Tyneside District Hospital	307	92.3	98.5	96.8	44.9	100	60.4	70.4	57.7	0.8
University Hospital Southampton NHS Trust	SGH	Southampton General Hospital	726	61.9	75.1	80	67.6	91.1	65.9	76.2	51.9	10.9
Southend University Hospital NHS Foundation Trust	SEH	Southend Hospital	627	51.2	57.3	78.8	39.3	69.4	50.2	84.1	32.3	2.6
North Bristol NHS Trust	BSM	Southmead Hospital	482	51.1	66.9	78.4	37.4	97.3	17.6	21.5	30.4	1.9
Southport and Ormskirk Hospital NHS Trust	SOU	Southport and Formby District General Hospital	281	87.5	89.7	96.9	80.5	99.6	67.8	87.7	48.1	63.5
Barts Health NHS Trust		St Bartholomews Hospital	120	69.7	94.3	93.3	76.1	92.5	99.1	98.9	98.1	92.1
St George's Healthcare NHS Trust	GEO	St George's Hospital	423	67.1	79.6	96.9	52.5	65	68.8	78.7	36.1	1.1
Epsom and St Helier University Hospitals NHS Trust	SHC	St Helier Hospital	163	70.2	85.1	95.7	69.6	94.8	66	89.4	69.9	5.9
Imperial College Healthcare NHS Trust	STM	St Mary's Hospital Paddington	115	49.4	68.8	74	44.2	97.1	58.3	67.1	58.8	1
Isle of Wight NHS PCT	IOW	St Mary's Hospital, Newport	67	76.9	84	66.7	44.4	22.2	26.1	29.4	37	2.1
Ashford and St Peter's Hospitals NHS Trust	SPH	St Peter's Hospital	539	100	100	99.6	98.5	89.9	54.6	64.1	55.8	55
Western Sussex Hospitals NHS Trust	STR	St Richard's Hospital	228	98.7	100	100	53.5	92	61.7	69.2	50.3	25.7
Guy's and St Thomas' NHS Foundation Trust	STH	St Thomas' Hospital	502	93.6	94.6	86.7	49.6	94.7	71	79.1	72.1	7.8

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
Stockport NHS Foundation Trust	SHH	Stepping Hill Hospital	488	71.8	90.8	92.1	51.1	83.4	40.5	65.5	57.3	5.2
Buckinghamshire Healthcare NHS Trust	SMV	Stoke Mandeville Hospital	99	27.3	51.5	77.8	41.2	73.4	56.2	86.1	48.6	35.8
City Hospitals Sunderland NHS Foundation Trust	SUN	Sunderland Royal Hospital	387	74.6	93.2	95.3	51.3	84.8	74.5	80.3	68.9	53.7
Tameside Hospital NHS Foundation Trust	TGA	Tameside General Hospital	198	60.4	87.2	86	72	84.2	64	76.5	69	17.6
Barts Health NHS Trust	LCH	The London Chest Hospital	20	60	100	100	72.7	90	61.5	72.7	92.3	100
Barts Health NHS Trust	LON	The Royal Hospital London	239	74.1	92	91	62	91.3	49.5	58.6	60.5	13.2
York Teaching Hospital NHS Foundation Trust	YDH	The York Hospital	343	58.3	70.5	69.6	50.3	77.3	46.6	58.3	54.7	3.8
South Devon Healthcare NHS Foundation Trust	TOR	Torbay Hospital	568	100	100	100	98.7	92.9	40.9	58.9	47.8	2.9
Central Manchester University Hospitals NHS Foundation Trust	TRA	Trafford General Hospital	58	63	77.8	88.9	46.4	0	13.6	25	73.5	0
Maidstone and Tunbridge Wells NHS Trust	KSX	Tunbridge Wells Hospital	223	78.5	96.9	91.8	73.8	98.9	73.7	85.7	62.8	6.7
University College London Hospitals NHS Foundation Trust	UCL	University College Hospital	212	75.3	91.2	90.9	71	100	75.5	92.7	84	26.2
Aintree University Hospital NHS Foundation Trust	FAZ	University Hospital Aintree	626	90.8	95.1	97	34.4	77.6	80.6	85.3	53.6	5.1
University Hospitals Coventry and Warwickshire NHS Trust	WAL	University Hospital Coventry	755	53.7	64	80.5	37.3	92.8	52.7	76.4	7.1	0.2

Lewisham and Greenwich NHS Trust	LEW	University Hospital Lewisham	146	62.5	81.2	90.8	50.8	78.9	30.8	49.3	65.9	1.8
County Durham and Darlington NHS Foundation Trust	DRY	University Hospital of North Durham	424	63.2	70.7	77.2	32.9	45.9	53.4	63.1	70.9	44
North Tees and Hartlepool NHS Foundation Trust	NTG	University Hospital of North Tees	238	99	99.2	99.3	100	86.6	75.6	85.5	40.7	72.6
Northumbria Healthcare NHS Foundation Trust	ASH	Wansbeck General Hospital	46	66.7	100	100	56	71.4	76.5	84.6	82.4	0
Warrington and Halton Hospitals NHS Foundation Trust	WDG	Warrington Hospital	170	98	98.5	98.8	81	91.4	76.5	81.1	61.1	16.9
South Warwickshire NHS Foundation Trust	WAR	Warwick Hospital	177	70.8	79.1	77.6	42.9	50.6	35.1	47.3	54.7	25
West Hertfordshire Hospitals NHS Trust	WAT	Watford General Hospital	457	60.2	70.4	83.3	58.6	98.5	60.8	74.7	51.1	13.8
West Middlesex University Hospital NHS Trust	WMU	West Middlesex University Hospital	331	95.5	96.4	96.7	88.3	92.1	69.5	71.1	34.7	3.5
West Suffolk NHS Foundation Trust	WSH	West Suffolk Hospital	293	62.5	76.5	86.5	34.8	97.2	62.1	71.2	59.9	14
Weston Area Health NHS Trust	WGH	Weston General Hospital	117	54.4	64.9	83.1	41.7	35.3	9.4	13.3	38.5	1
Heatherwood and Wexham Park Hospitals NHS Foundation Trust	WEX	Wexham Park Hospital	582	56.2	71.1	74.9	51.7	99.6	95.7	97	27.1	2
Barts Health NHS Trust	WHC	Whipps Cross University Hospital	366	64.6	92.1	90.6	54.5	82.7	59.6	71.9	63.7	18.9
St Helens and Knowsley Teaching Hospitals NHS Trust	WHI	Whiston Hospital	352	96.5	98.4	98.8	90.5	99.7	87.1	91.5	54.7	0
The Whittington Hospital NHS Trust	WHT	Whittington Hospital	187	86.4	90.6	93.8	73	89.9	64.8	82.9	63.2	11
East Kent Hospitals University NHS Foundation Trust	WHH	William Harvey Hospital	192	87	94.6	92.8	68.9	88.4	68.9	95.8	66.2	81.1
Worcestershire Acute Hospitals NHS Trust	WRC	Worcestershire Royal Hospital	461	70.9	84.8	80.9	41.7	99.8	68	87.9	49.4	3

NHS Trust	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only) (%)	Referral to cardiology follow-up	Referral to cardiac rehabilitation (%)
England and Wales			**60737**	**61.1%**	**73.7%**	**80.4%**	**45.4%**	**87.30%**	**54.80%**	**70.80%**	**47.20%**	**12.10%**
Western Sussex Hospitals NHS Trust	WRG	Worthing Hospital	293	97.4	97.7	98.6	91.1	81.9	58.8	75.6	23	9.1
Buckinghamshire Healthcare NHS Trust	AMG	Wycombe Hospital	127	54.3	73.4	83.5	57.1	75.2	71.6	85.2	64.3	40.2
University Hospital of South Manchester NHS Foundation Trust	WYT	Wythenshawe Hospital	259	95.3	96	96.4	74.1	90.8	56.5	60	33.6	13.6
Yeovil District Hospital NHS Foundation Trust	YEO	Yeovil District Hospital	278	89.5	92	80.8	45.8	98.8	93.5	95.4	43.1	96.5

Table E: In-hospital care in Wales

Health Board name	NICOR hospital code	Hospital name	Heart Failure admissions (n)	Received echo (%)	Cardiology Inpatient (%)	Input from consultant cardiologist (%)	Input from specialist (%)
England and Wales			60737	90.1%	45.7%	56.9%	79.0%
Abertawe Bro Morgannwg University Health Board	MOR	Morriston Hospital	277	97.8	54.2	64.3	76.9
Abertawe Bro Morgannwg University Health Board	POW	Princess Of Wales Hospital	184	92	65.2	70.1	75.5
Abertawe Bro Morgannwg University Health Board	SIN	Singleton Hospital	153	80.8	49	45.8	47.7
Aneurin Bevan Health Board	NEV	Nevill Hall Hospital	260	67.3	42.3	48.8	53.1
Aneurin Bevan Health Board	GWE	Royal Gwent Hospital	197	79.7	43.1	54.3	61.9
Betsi Cadwaladr University Health Board	CLW	Glan Clwyd Hospital	245	95	53.1	54.3	79.6
Betsi Cadwaladr University Health Board	WRX	Wrexham Maelor Hospital	233	98.2	55.6	59.7	89.2
Betsi Cadwaladr University Health Board	GWY	Ysbyty Gwynedd Hospital	158	98.6	72.2	78.2	89.1
Cardiff & Vale University Health Board	LLD	University Hospital Llandough	184	74	0.5	3.8	29.3
Cardiff & Vale University Health Board	UHW	University Hospital of Wales	262	80.4	46.9	53.3	65.9
Cwm Taf Health Board	PCH	Prince Charles Hospital	218	97.2	63.8	73.9	76.6
Cwm Taf Health Board	RGH	Royal Glamorgan Hospital	130	97.7	35.7	48.8	52.7
Hywel Dda Health Board	BRG	Bronglais General Hospital	208	93.4	68.1	95.6	96.1
Hywel Dda Health Board	WWG	Glangwili General Hospital	71	98.6	52.1	47.1	76.5
Hywel Dda Health Board	PPH	Prince Philip Hospital	173	89.9	30.6	28.5	32.7
Hywel Dda Health Board	WYB	Withybush General Hospital	162	77.5	45.1	55.6	55.6

Table F: Treatment and management on discharge in Wales

Health Board	NICOR Hospital code	Hospital name	Heart Failure admissions (n)	ACEI on discharge (%)	ACEI/ ARB on discharge (%)	Beta blocker on discharge (%)	MRA on discharge (%)	Received discharge planning (%)	Referral to HF nurse follow up (%)	Referral to HF nurse follow up (LVSD only)(%)	Referral to cardiology follow-up (%)	Referral to cardiac rehabilitation (%)
England and Wales			60737	61.1%	73.7%	80.4%	45.4%	87.30%	54.80%	70.80%	47.20%	12.10%
Abertawe Bro Morgannwg University Health Board	MOR	Morriston Hospital	277	93.6	94.9	94.9	79.8	85.5	60.5	71.3	66.2	21.4
Abertawe Bro Morgannwg University Health Board	POW	Princess Of Wales Hospital	184	78.3	94.2	84	67.7	91.8	25.7	30.6	34.5	1.4
Abertawe Bro Morgannwg University Health Board	SIN	Singleton Hospital	153	91.8	92.2	84.9	60.4	78.8	20.9	33.9	45	3.9
Aneurin Bevan Health Board	NEV	Nevill Hall Hospital	260	96.8	97.1	91.7	93.5	88	46.3	59.8	34.8	30.8
Aneurin Bevan Health Board	GWE	Royal Gwent Hospital	197	93.3	93.8	97.1	57.1	50.7	27.6	40	45.4	1.9
Betsi Cadwaladr University Health Board	CLW	Glan Clwyd Hospital	245	65.2	81.2	84.6	49.3	72.3	70.4	76.6	32.9	2.1
Betsi Cadwaladr University Health Board	WRX	Wrexham Maelor Hospital	233	70.9	87.4	91.3	74.2	61	56.2	74.6	29.5	4.1
Betsi Cadwaladr University Health Board	GWY	Ysbyty Gwynedd Hospital	158	62.5	72	97.9	64.4	77.1	79.2	88.3	52.8	35.4
Cardiff & Vale University Health Board	LLD	University Hospital Llandough	184	85.7	88.1	87.7	52.3	50	7.2	5.8	24.8	0
Cardiff & Vale University Health Board	UHW	University Hospital of Wales	262	95	96.6	95.4	79.6	68.6	23.9	28.9	52.1	1.5
Cwm Taf Health Board	PCH	Prince Charles Hospital	218	56.8	66.9	79.1	33.3	98.3	43.5	58.6	63.6	4.5
Cwm Taf Health Board	RGH	Royal Glamorgan Hospital	130	51.4	75.3	71.6	40.5	93.5	46.9	57.3	47.9	0
Hywel Dda Health Board	BRG	Bronglais General Hospital	208	91.5	94.1	100	89.7	1	94.4	97.8	42.3	63.2
Hywel Dda Health Board	WWG	Glangwili General Hospital	71	56.4	77.5	76.3	40.5	95.9	52.7	60.5	39.2	7.7
Hywel Dda Health Board	PPH	Prince Philip Hospital	173	73.9	86.8	87.5	21.1	79.2	17.4	26.1	35.5	0
Hywel Dda Health Board	WYB	Withybush General Hospital	162	92.1	93.6	95.5	96.7	0	1.5	1.7	29.9	1.5

Appendix 2: In-hospital mortality analysis

Table G: In-hospital mortality random-effects Cox proportional hazards model (2015/16)

Variable (n=19,798)	Hazard ratio	Lower 95% CI	Upper 95% CI	p-value
Age ≥ 75	2.1	1.78	2.48	<0.001
Not cardiology in-patient	1.77	1.55	2.01	<0.001
Systolic blood pressure (10 m Hg decrease)	0.98	0.98	0.99	<0.001
Heart rate (5 bpm increase)	1.03	1.02	1.03	<0.001
Ischaemic Heart Disease	1.16	1.03	1.31	0.013
Valvular Disease	1.05	0.92	1.2	0.44
Urea (5 mEq/dL increase)	1.03	1.02	1.03	<0.001
Male	1.01	0.89	1.14	0.93
COPD	1.01	0.87	1.17	0.95
Creatinine (10 umol/L increase)	1	1	1	<0.001
NYHA III/IV	1.06	0.91	1.24	0.43
Haemoglobin (g/dL)	1.01	0.98	1.04	0.34
Serum Potassium ≤3.5	1.56	1.28	1.9	<0.001
3.5-4.5	1	1	1	<0.001
4.5-5.5	1.56	1.36	1.78	<0.001
>5.5	3.27	2.64	4.04	<0.001

Table H: In-hospital mortality random-effects Cox proportional hazards model (2010-16) (fewer variables available)

Variable (n=180,312)	Hazard ratio	Lower 95% CI	Upper 95% CI	p-value
Age ≥ 75	1.8	1.72	1.88	<0.001
Not cardiology in-patient	1.59	1.54	1.65	<0.001
NYHA III/IV	1.25	1.19	1.3	<0.001
Valvular Disease	1.13	1.09	1.17	<0.001
Ischaemic Heart Disease	1.14	1.1	1.17	<0.001
Men	1.09	1.06	1.13	<0.001

Appendix 3: 30 day post discharge mortality

Table I: 30-day all-cause mortality for survivors to discharge (2015/16)

Analysis	Variable	Records (n)	Deaths (n)	Mortality (%)
Overall mortality	Overall mortality	41176	2469	6%
Main place of care	Cardiology	19185	961	5%
Main place of care	General medicine	13582	848	6%
Main place of care	Other	4177	276	7%
Main place of care	Care of the elderly	4157	378	9%
Specialist input	No specialist input	7865	525	7%
Specialist input	Specialist input	32292	1875	6%
Age	18-74	14281	496	3%
Age	75+	26895	1973	7%
Gender	Women	18442	1075	6%
Gender	Men	22620	1390	6%
Diagnosis	No LVSD	15208	888	6%
Diagnosis	LVSD	24521	1497	6%
ACE inhibitor (all)	No ACE inhibitor	10546	751	7%
ACE inhibitor (all)	ACE inhibitor	19348	673	3%
ACE inhibitor (LVSD only)	No ACE inhibitor	5291	421	8%
ACE inhibitor (LVSD only)	ACE inhibitor	13433	457	3%
ACEI/ARB (all)	No ACEI or ARB	7250	625	9%
ACEI/ARB (all)	ACEI and/or ARB	24591	833	3%
ACEI/ARB (LVSD only)	No ACEI or ARB	3316	338	10%
ACEI/ARB (LVSD only)	ACEI and/or ARB	16564	560	3%
Beta Blockers (all)	No beta blocker	6291	459	7%
Beta Blockers (all)	Beta blocker	28827	1388	5%
Beta Blockers (LVSD)	No beta blocker	2824	237	8%
Beta Blockers (LVSD)	Beta blocker	18945	907	5%
Loop diuretic (all)	No loop diuretics	2902	225	8%
Loop diuretic (all)	Loop diuretics	36066	1915	5%
Loop diuretic (LVSD)	No loop diuretics	1943	141	7%
Loop diuretic (LVSD)	Loop diuretics	21277	1151	5%
Additive medicines	No ACEI/ARB, beta blocker or MRA	2183	232	11%
Additive medicines	ACEI/ARB only	1883	57	3%
Additive medicines	ACEI/ARB and beta blocker	7325	271	4%
Additive medicines	ACEI/ARB, beta blocker and MRA	8879	259	3%

Additive medicines (LVSD only)	No ACEI inhibitor/ARB/beta blocker or MRA	820	117	14%
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB	833	25	3%
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB and beta blocker	4792	184	4%
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB or beta blocker and MRA	7224	198	3%
HF nurse follow-up	No HF nurse follow-up	16966	1225	7%
HF nurse follow-up	HF nurse follow-up	22245	1052	5%
Cardiology follow-up	No Cardiology follow-up	19394	1620	8%
Cardiology follow-up	Cardiology follow-up	19754	646	3%
Discharge planning	No discharge planning	3358	264	8%
Discharge planning	Discharge planning	35522	2014	6%

Table J: 30-day post-discharge all-cause mortality random-effects Cox proportional hazards model (2015/16)

Variable (n=12,757)	Hazard ratio	Lower 95% CI	Upper 95% CI	p-value
No cardiology follow-up	1.17	0.96	1.42	0.1
No ACE inhibitor and/or ARB	1.82	1.5	2.2	<0.001
Age ≥ 75	1.59	1.29	1.97	<0.001
NYHA III/IV	1.16	0.92	1.45	0.21
No diuretic loop	0.61	0.46	0.81	<0.001
Serum Sodium (5 mEq/L decrease)	0.96	0.94	0.97	<0.001
Not cardiology in-patient	1.78	1.46	2.17	<0.001
Male	1.26	1.05	1.51	0.011
No beta blocker	1.14	0.93	1.4	0.21
Systolic blood pressure (10 mm Hg decrease)	0.99	0.98	0.99	<0.001
COPD	1.16	0.93	1.43	0.17
Ischaemic Heart Disease	1.05	0.88	1.25	0.58
Serum Urea (5 mEq/dL increase)	1.02	1.01	1.03	<0.001
Haemoglobin (g/dL decrease)	0.98	0.94	1.03	0.38
Serum Creatinine (10 umol/L increase)	1	1	1	0.07
Length of stay 1-4 days	1	1	1	<0.001
5-8 days	1.22	0.93	1.6	0.15
9-15 days	1.46	1.12	1.9	0.0048
≥18	2.37	1.86	3.02	<0.001

Appendix 4: 1 Year post-discharge mortality

Table K: 1 year all-cause mortality for survivors to discharge (2015/16)

Analysis	Variable	Records (n)	Deaths (n)	Mortality (%)	Median follow-up (days)
Overall mortality	Overall mortality	41176	14549	35.3	400
Main place of care	Cardiology	19185	5844	30.5	415
Main place of care	General medicine	13582	5100	37.5	395
Main place of care	Other	4177	1562	37.4	390
Main place of care	Care of the elderly	4157	2012	48.4	350
Specialist input	No specialist input	7865	3139	39.9	391
Specialist input	Specialist input	32292	11008	34.1	404
Age	18-74	14821	3136	21.2	443
Age	75+	26895	11413	42.4	375
Gender	Women	18442	6565	35.6	405
Gender	Men	22620	7941	35.1	398
Diagnosis	No LVSD	15208	5626	37.0	391
Diagnosis	LVSD	24541	8413	34.3	406
ACE inhibitor (all)	No ACE inhibitor	10456	4222	40.4	385
ACE inhibitor (all)	ACE inhibitor	19348	5411	28.0	428
ACE inhibitor (LVSD only)	No ACE inhibitor	5291	2158	40.8	382
ACE inhibitor (LVSD only)	ACE inhibitor	13433	3645	27.1	431
ACEI/ARB (all)	No ACEI or ARB	7250	3253	44.9	361
ACEI/ARB (all)	ACEI and/or ARB	24591	6857	27.9	429
ACEI/ARB (LVSD only)	No ACEI or ARB	3316	1544	46.6	348
ACEI/ARB (LVSD only)	ACEI and/or ARB	16564	4526	27.3	432
Beta Blockers (all)	No beta blocker	6291	2564	40.8	384
Beta Blockers (all)	Beta blocker	28827	9450	32.8	411
Beta Blockers (LVSD)	No beta blocker	2824	1202	42.6	370
Beta Blockers (LVSD)	Beta blocker	18945	5995	31.6	416
Loop diuretic (all)	No loop diuretics	2092	844	40.3	412
Loop diuretic (all)	Loop diuretics	12887	672	5.2	404
Loop diuretic (LVSD)	No loop diuretics	1943	526	27.1%	420
Loop diuretic (LVSD)	Loop diuretics	21277	7421	34.9%	407
Additive medicines	No ACEI/ARB, beta blocker or MRA	2183	979	44.8%	356
Additive medicines	ACEI/ARB only	1883	606	32.2%	422
Additive medicines	ACEI/ARB and beta blocker	7325	2018	27.5%	434

Additive medicines	ACEI/ARB, beta blocker and MRA	8879	2176	24.5%	436
Additive medicines (LVSD only)	No ACEI inhibitor/ARB/beta blocker or MRA	820	404	49.3%	324
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB	833	282	33.9%	414
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB and beta blocker	4792	1341	28.0%	433.5
Additive medicines (LVSD only)	Discharged on ACEI inhibitor or ARB or beta blocker and MRA	7224	1693	23.4%	439
HF nurse follow-up	No HF nurse follow-up	16966	6487	38.2%	391
HF nurse follow-up	HF nurse follow-up	22245	7353	33.1%	408
Cardiology follow-up	No Cardiology follow-up	19394	8239	42.5%	372
Cardiology follow-up	Cardiology follow-up	19754	5527	28.0%	428
Discharge planning	No discharge planning	3358	1310	39.0%	391
Discharge planning	Discharge planning	35522	12360	34.8%	405
Cardiac rehabilitation	No cardiac rehabilitation	24782	8923	36.0%	406
Cardiac rehabilitation	Cardiac rehabilitation	3929	945	24.1%	413

Table L: Post-discharge all-cause mortality random-effects Cox proportional hazards model (2015/16)

Variable (n=12,748)	Hazard ratio	Lower 95% CI	Upper 95% CI	p-value
Age ≥ 75	1.89	1.75	2.05	<0.001
No cardiology follow-up	1.19	1.1	1.28	<0.001
No ACE inhibitor and/or ARB	1.37	1.27	1.48	<0.001
COPD	1.24	1.14	1.35	<0.001
Ischaemic Heart Disease	1.14	1.06	1.21	<0.001
Not cardiology in-patient	1.27	1.18	1.37	<0.001
NYHA III/IV	0.99	0.91	1.07	0.75
No beta blocker	1.15	1.06	1.25	<0.001
Serum Sodium (5 mEq/L decrease)	0.97	0.97	0.98	<0.001
Vascular Disease	1.18	1.1	1.27	<0.001
Men	1.1	1.02	1.17	0.0075
Serum Urea (5 mEq/dL increase)	1.02	1.01	1.02	<0.001
Systolic blood pressure (10 mm Hg decrease)	0.99	0.99	0.99	<0.001
Haemoglobin (g/dL decrease)	0.93	0.91	0.95	<0.001
Serum Creatinine (10 umol/L increase)	1	1	1	<0.001
Serum Potassium ≤3.5	1.05	0.94	1.19	0.36
3.5-4.5	1	1	1	<0.001
4.5-5.5	0.94	0.88	1.02	0.12
>5.5	0.82	0.64	1.07	0.13
Length of stay 1-4 days	1	1	1	<0.001
5-8 days	1.25	1.14	1.37	<0.001
9-15 days	1.5	1.36	1.65	<0.001
≥16	1.87	1.7	2.05	<0.001

Table M: Post-discharge all-cause mortality random effects Cox proportional hazards model (2010-16) (fewer variables available)

Variable (n=123,231)	Hazard ratio	Lower 95% CI	Upper 95% CI	p-value
Age ≥ 75	2.	2.03	2.11	<0.001
No ACE inhibitor and/or ARB	1.41	1.38	1.43	<0.001
No cardiology follow-up	1.18	1.16	1.2	<0.001
No beta blocker	1.23	1.2	1.25	<0.001
Ischaemic Heart Disease	1.26	1.24	1.28	<0.001
Vascular Disease	1.24	1.21	1.26	<0.001
Loop diuretics	1.26	1.22	1.3	<0.001
Not cardiology in-patient	1.38	1.35	1.4	<0.001
Men	1.14	1.12	1.16	<0.001
NYHA III/IV	1.12	1.1	1.14	<0.001
Length of stay 1-4 days	1	1	1	<0.001
5-8 days	1.22	1.19	1.24	<0.001
9-15 days	1.46	1.43	1.49	<0.001
≥16	1.84	1.8	1.88	<0.001

Appendix 5: Project governance

The audit is managed by the National Institute for Cardiovascular Outcomes Research (based at University College London) and is clinically led by the British Society for Heart Failure.

The Steering Group meets four times a year and its membership is made up of a variety of stakeholders in the audit including cardiologists, HF specialist nurses, clinical audit and effectiveness managers and patient representatives.

The remit of the Steering Group is to:

- Provide leadership on the aims and delivery of the project, dependent on allocation of resources, in collaboration with the BSH, and to ensure the agreed reports are published.
- Ensure that the project is aligned with the evolving needs of the clinical specialty.
- Review the England and Wales audit data to assess whether hospitals are meeting the evidence based standards.
- Review applications to use the audit data for research or other quality improvement programmes outside of NICOR.
- Review the dataset for potential changes to ensure it remains up to date in the context of an evolving evidence base.

The National HF audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP). HQIP holds commissioning and funding responsibility and several other national clinical audits.

National HF Audit Steering Group Membership 2015/16

Name	Job title and Organisation	Stakeholder Representation
Gemma Baldock-Apps	Cardiology Audit and Data Manager (East Sussex Healthcare NHS Trust)	Audit and clinical effectiveness, database user
Janine Beezer	HF Specialist Clinical Pharmacist (City Hospitals Sunderland)	HF Specialist Clinical Pharmacist, database user
Andrew Clark	Chair of Clinical Cardiology, Honorary Consultant Cardiologist and Professor (Castle Hill Hospital, Hull)	BSH representative,
John Cleland	Chair in Clinical Cardiology (Imperial College London)	Consultant Cardiologist (England), HALO
Akosua Donkor	National HF Audit Project Manager	NICOR
Gethin Ellis	Consultant cardiologist (Cwm Taf University Local Health Board) and Network Lead Cardiologist (South East Wales, South Wales Cardiac Network)	Consultant Cardiologist (Wales)
Suzanna Hardman	Consultant Cardiologist and HF lead (Whittington Health) , past Chair of British Society for HF (BSH), National HF Audit Deputy Clinical Lead	Deputy Clinical Lead, Vice Chair
Dawn Lambert	HF Nurse Specialist (Portsmouth Hospitals NHS Trust)	HF Nurse Specialist, database user
Theresa McDonagh	Consultant Cardiologist (KCH) and Professor of HF (KCL) and National HF Audit Clinical Lead	Clinical Lead, Chair
Richard Mindham	HF patient	Patient representative
Jim Moore	General Practitioner and GP with Special Interest, Gloucestershire HF Service	Primary Care Physician
Kathy Simmonds	HF Nurse Specialist (Kettering General Hospital NHS Foundation Trust)	HF Nurse Specialist, database user
Marion Standing	Senior Developer	NICOR
Jiaqiu Wang	Information Analyst	NICOR

6 Glossary

Word	Acronym or abbreviation	Definition
(Acute) Myocardial Infarction	(A)MI	Commonly known as a heart attack, a myocardial infarction results from the interruption of blood supply to part of the heart, which causes heart muscle cells to die. The damage to the heart muscle carries a risk of sudden death, but those who survive often go on to suffer from heart failure.
Angiotensin II receptor antagonist/ angiotensin receptor blocker	ARB	A group of medicines usually prescribed for those patients who are intolerant of ACE inhibitors. Rather than lowering levels of angiotensin II, they instead prevent the chemical from having any effect on blood vessels.
Angiotensin-converting enzyme inhibitor	ACE inhibitor/ ACEI	A group of medicines used primarily for the treatment of high blood pressure and heart failure. They stop the body's ability to produce angiotensin II, a hormone which causes blood vessels to contract, thus dilating blood vessels and increasing the supply of blood and oxygen to the heart.
Best Practice Tariff	BPT	The best practice is defined as care that is both clinical and cost effective. The Department of Health introduced the Best Practice Tariff (BPT) as an incentive to deliver best clinical practice through adequate reimbursement of high quality care.
Beta blocker	BB	A group of medicines which slow the heart rate, decrease cardiac output and lessen the force of heart muscle and blood vessel contractions. Used to treat abnormal or irregular heart rhythms, and abnormally fast heart rates.
British Society of Heart Failure	BSH	The professional society for healthcare professionals involved in the care of heart failure patients. The BSH aims to improve care and outcomes for heart failure patients by increasing knowledge and promoting research about the diagnosis, causes and management of heart failure.
Cardiac resynchronisation therapy	CRT	CRT, also known as biventricular pacing, aims to improve the heart's pumping efficiency by making the chambers of the heart pump together. 25-50% of all heart failure patients have hearts whose walls do not contract simultaneously. CRT involves implanting a CRT pacemaker or ICD (implantable cardioverter-defibrillator) that has a lead positioned in each ventricle. Most devices also include a third lead which is positioned in the right atrium to ensure that the atria and ventricles contract together.
Care Quality Commission	CQC	Care Quality Commission are an independent regulator of health and adult social care in England.
Chronic obstructive pulmonary disease	COPD	The co-occurrence of chronic bronchitis and emphysema, a pair of commonly co-existing lung diseases in which the airways become narrowed. This leads to a limitation of the flow of air to and from the lungs, causing shortness of breath (dyspnoea). In contrast to asthma, this limitation is poorly reversible and usually gets progressively worse over time.
Contraindication		A factor serving as a reason to withhold medical treatment, due to its unsuitability
Diuretic		A group of medicines which help to remove extra fluid from the body by increasing the amount of water passed through the kidneys. Loop diuretics are often used in heart failure patients to ease symptoms of oedema and breathlessness.
Echocardiography	Echo	A diagnostic test which uses ultrasound to create two dimensional images of the heart. This allows clinicians to examine the size of the chambers of the heart and its pumping function in detail, as well as examine valves and the myocardium (heart muscle).

Electrocardiography	ECG/EKG	A diagnostic test which records the rhythm and electrical activity of the heart. Electrodes (sticky patches, connected to wires which lead to a recording machine) are attached to the arms, legs and chest, and pick up electrical signals produced by each heartbeat. ECGs are sometimes taken whilst a patient is exercising on a treadmill or exercise bike. Information from exercise tests can help doctors to plan treatment, understand the severity of heart disease in the patient, and determine an optimal cardiac rehabilitation programme.
European Society of Cardiology	ESC	The ESC is a professional association for cardiologists across Europe, which aims to facilitate improved diagnosis and treatment of cardiovascular disease in Europe. It runs numerous education and training events, and edits and publishes nine journals on cardiology. The ESC has produced a Clinical Practice Guideline for acute and chronic heart failure, and a set of standards for delivering heart failure care, which the audit uses, along with NICE guidance, as a benchmark for good practice.
Heart failure	HF	A syndrome characterised by the reduced ability of the heart to pump blood around the body, caused by structural or functional cardiac abnormalities. The condition is characterised by symptoms such as shortness of breath and fatigue, and signs such as fluid retention. Acute heart failure (AHF) refers to the rapid onset of the symptoms and signs of heart failure, often resulting in a hospitalisation, and more common with a first presentation. Chronic heart failure (CHF) describes more stable symptoms, often following effective treatment for acute heart failure, or a more insidious deterioration, where the slow development of symptoms can more easily be missed. People with heart failure are characterised by periods of stability (CHF) when at best they are rendered asymptomatic, and a susceptibility to acute deteriorations or episodes of AHF. Effective treatment of the underlying cause and regular informed review will minimise or even abolish these episodes.
Heart failure with preserved ejection fraction	HF-PEF	Heart failure with preserved ejection fraction. Impaired filling of the left ventricle when the heart muscle is thickened, often as a result of long standing high blood pressure.
Heart failure with reduced ejection fraction	HF-REF	Heart failure with reduced ejection fraction. The most common type of HF due to left ventricular systolic dysfunction, where there is impaired contraction of the left ventricle.
Hospital Episode Statistics	HES	The national statistical data warehouse for England of the care provided by NHS hospitals and for NHS hospital patients treated elsewhere. HES is the data source for a wide range of healthcare analysis for the NHS, government and many other organisations. The National Heart Failure Audit uses HES data to calculate case ascertainment.
Interquartile range	IQR	Interquartile range is the value at 25% and 75% of an ordered set of values.
Key performance indicator	KPI	The Key Priorities for Implementation within heart failure care, identified within the Nice Acute HF Guidelines (CG168), some of which are shown in table 1. There is considerable concordance with other contemporary guidelines where the term Key Performance Indicator is sometimes used and has the same abbreviation
Left ventricular dysfunction	LVD	Any functional impairment of the left ventricle of the heart.
Left ventricular ejection fraction	LVEF	A measurement of how much blood is pumped out of the left ventricle with each heartbeat. An ejection fraction of below 40% may be an indication of heart failure.
Left ventricular systolic dysfunction	LVSD	A failure of the pumping function of the heart, characterized by a decreased ejection fraction and inadequate ventricular contraction. It is often caused by damage to the heart muscle, for example following a myocardial infarction (heart attack).
Length of stay	LOS	Length of stay is the length of an inpatient episode of care, calculated from the day of admission to day of discharge, based on the number of nights spent in hospital.

Medical Research Information Service	MRIS	A Health and Social Care Information Centre service which links datasets at the level of individual patient records for medical research projects. NICOR uses MRIS to determine the life status of patients included in the audit, so as to calculate mortality rates. MRIS also provides the audit with HES data for this report.
Mineralocorticoid receptor antagonist	MRA	A group of diuretic medicines, whose main action is to block the response to the hormone aldosterone, which promotes the retention of salt and the loss of potassium and magnesium. MRAs increase urination, reduce water and salt, and retain potassium. They help to lower blood pressure and increase the pumping ability of the heart.
National Clinical Audit and Patient Outcomes Programme	NCAPOP	A group of 40 national clinical audit and clinical outcomes review programmes, funded by NHSE and overseen by the Healthcare Quality Improvement Partnership (HQIP). The programme collects data on the implementation of evidence based clinical standards in UK Trusts and reports on patient outcomes.
National Institute for Cardiovascular Outcomes Research	NICOR	Part of the National Centre for Cardiovascular Prevention and Outcomes, based in the Institute of Cardiovascular Science at University College London. NICOR manages six national clinical audits, including the National Heart Failure Audit, and two technology registries.
New York Heart Association class	NYHA class	NYHA classification is used to describe degrees of heart failure by placing patients in one of four categories based on how much they are limited during physical activity: Class I (Mild): No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnoea (shortness of breath). Class II (Mild): Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnoea. Class III (Moderate): Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnoea. Class IV (Severe): Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased.
Oedema		An excess build-up of fluid in the body, causing tissue to become swollen. Heart failure patients often suffer from peripheral oedema, affecting the feet and ankles, and pulmonary oedema, in which fluid collects around the lungs.
Patient Episode Database of Wales	PEDW	The national statistics database for Wales, collecting data on all inpatient and outpatient activity undertaken in NHS hospitals in Wales, and on Welsh patients treated in English NHS Trusts.

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Designed and published by:
padcreative.co.uk