

**National
Heart
Failure
Audit
2008/09**



This third report for the National Heart Failure Audit presents key findings and recommendations from the audit which was launched in July 2007. The data included in this report was submitted between April 2008 and March 2009. Aimed at healthcare professionals, managers and clinical governance leads, the report describes progress to date, clinical findings and patient outcomes, and implementation issues.

Electronic copies of this report can be found at: www.ic.nhs.uk. For further information about this report please contact The Information Centre for health and social care 0845 300 6016 or email: enquiries@ic.nhs.uk quoting document reference 20100309.

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The Healthcare Quality Improvement Partnership (HQIP) promotes quality in healthcare. HQIP holds commissioning and funding responsibility for the National Heart Failure Audit and other national clinical audits.



The NHS Information Centre for Health and Social Care (NHS IC) is England's central, authoritative source of essential data and statistical information for frontline decision makers in health and social care. The NHS IC managed the publication of the 2008/09 annual report.



The British Society for Heart Failure (BSH) is a national organisation of health care professionals dedicated to improving heart failure outcomes in the UK. The BSH was responsible for providing clinical leadership and strategic direction to the 2008/09 annual report.

National Heart Failure Audit 2008/09

Third report for the audit period
between April 2008 and March 2009

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Acknowledgements

The National Heart Failure Audit is managed by The NHS Information Centre for health and social care (The IC) and has been developed in partnership with the British Society for Heart Failure. It has been commissioned by the Healthcare Quality Improvement Partnership

We would like to acknowledge the important contribution of NHS Improvement and by all NHS Trusts and the individual clinicians, nurses and audit teams who are participating in the audit.

Foreword

Recent publications have demonstrated improved survival following the initial diagnosis. It is suggested that the improved life-expectancy may result from improved use of ACE inhibitors and Beta-blockers.

This does not mean that we can relax. Heart failure patients need to be provided with optimal care if they are to gain maximum benefit and if the NHS is to be spared the burden of very numerous admissions to hospital.

Great progress has already been made but we need to go further. The only way that we can be certain about the extent of progress is to measure it, hence the importance of clinical audit.

The heart failure audit has progressed very well but is some way from being comprehensive.

I would like to encourage all hospital services to submit data so that we can reach the level of comprehensiveness needed and ensure that all services are offering the level of care that we would all like to receive ourselves.



Professor Roger Boyle CBE
National Director for Heart Disease and Stroke

A handwritten signature in black ink that reads "Roger Boyle". The signature is written in a cursive, flowing style.

1. Executive Summary

The National Service Framework for Coronary Heart Disease (NSF for CHD) sets national standards of care relating to CHD, including providing better care for people with heart failure. The National Institute of Clinical Excellence (NICE) has issued guidelines on the management of heart failure in primary and secondary care. Both play an important role in improving health standards and ensuring high quality care is available and accessible to all who need it.

1.1 Heart failure

Heart failure is a clinical syndrome characterised by symptoms such as breathlessness and fatigue, and signs of fluid retention such as swollen ankles. It is caused when the heart is unable to pump enough blood fast enough to meet the needs of the body. It develops over time as the pumping action of the heart grows weaker. Most cases are due to coronary heart disease and damage following a heart attack. Many cases also reflect damage from high blood pressure, which causes the heart's muscular wall to thicken, making it less flexible and unable to pump blood properly.

Heart failure affects at least one in 100 people in the UK, increasing steeply with age to about 7% in men and women over 75–84 years. The number of patients with heart failure is set to rise in the next twenty years. This is due to the combined effects of improved survival after a heart attack and an ageing population.

The average age of patients admitted with a first or recurrent episode of heart failure is 78 years. Heart failure is one of the commonest reasons for emergency medical admissions (about 5%), readmission rates and occupied bed days. Survival rates are worse than for breast and prostate cancer, with annual mortality ranging from 10% to 50% depending on severity. Death may be due to progressive heart failure, sudden death or other concomitant disease. Patients with heart failure have a poor quality of life, with over a third experiencing severe and prolonged depressive illness.

There is good evidence that appropriate diagnosis, treatment and ongoing support can improve quality of life, help reduce morbidity and mortality and reduce hospital admission. Previous work undertaken by the Healthcare Commission found that progress in meeting the NSF standards and implementing evidence based clinical guidance had, until recently, been slow. Whilst substantial progress has been made over the last few years, there is variation across the country and between different groups of patients in relation to the confirmation of diagnosis, access to evidence based treatment and heart failure specialist staff.

1.2 National Heart Failure audit

National clinical audits play a key role in supporting improvement by monitoring implementation of national evidence based guidance and measuring progress towards meeting national standards.

The National Heart Failure audit is run jointly by The IC and the British Society for Heart Failure, and is funded by the Healthcare Quality Improvement Partnership (HQIP). The audit focuses on the care and treatment of all patients with an unscheduled admission to hospital with heart failure. The main purposes of the audit are to measure the quality of care and clinical outcomes, enabling comparisons between Trusts and bring about improvement where necessary. It also allows comparisons to be made on the quality of care afforded to patients with other unscheduled admissions for cardiac causes especially acute coronary syndromes.

The national audit consists of 36 core data items that reflect national guidance on the care and treatment of patients with heart failure. The heart failure database provides users with immediate feedback on data quality. Participating in the audit has many benefits and can:

- help care providers to measure their standards of care against best practice and national standards, identify gaps in their care provision and improve their services
- improve the quality of life of patients with chronic heart failure and support their carers
- support the local healthcare system's ability to meet its Public Service Agreement target for long term conditions by avoiding unnecessary hospital admission and reduce length of stay
- support Primary Care Trusts by providing information to support effective commissioning
- act as a resource for healthcare professionals in both primary and secondary care to assess whether NHS Trusts are meeting the standards set by the NSF for CHD, NICE and the Care Quality Commission.

This report summarises key findings from April 2008 and March 2009.

1.3 Summary of key findings and main recommendations

As of March 2009, 113 out of 166 (68%) Trusts had registered with the audit although only 71 (43%) are submitting data. This is an improvement from 2005–2006 when the Healthcare Commission found that only 20% of Trusts were collecting clinical audit data that meets the NSF criteria. Hospitals were asked to confine the survey to patients with a primary diagnosis of heart failure at the time of death or discharge from hospital. Hospitals submitted clinical data on 6170 patients in 2008–2009. Nationally this represents approximately 11% of patients discharged from hospital with a primary discharge diagnosis of heart failure and about 2% of all heart failure discharges. A list of participating and non-participating hospitals is provided in Appendix 2.

Patients with heart failure enrolled in this registry were mostly admitted under either cardiology (44%) or general medicine (46%). Echocardiography, a key investigation for heart failure, was done in more than 75% of cases. This is an improvement from 2007–2008 when only 32% of patients had access to this key diagnostic test.

The key treatments recommended by NICE include: ACE inhibitors, beta blockers, loop diuretic, aldosterone receptor antagonists (ARA). Prescribing these drugs in the right combination and dosage for each patient is a key element of the NSF and NICE guidelines. Audit findings suggest an improvement in the use of ACE inhibitors (80%) and beta blockers (46%) since the Healthcare Commission survey work in 2005–2006, when only 67% of patients were prescribed ACE inhibitors and 28% prescribed beta blockers. However, variation in access to the key clinical treatments reported by the Healthcare Commission continues. Patients admitted to cardiology were younger, more likely to be men, and more likely to be prescribed ACE inhibitors, beta blockers, loop diuretic, aldosterone receptor antagonists (ARA).

Mortality rates are high with 10.5% inpatient mortality and 30% mortality within the first year of discharge. Patients admitted to cardiology had a significantly higher survival rate than those admitted to general medicine even after correction for differences in age, sex, symptoms and treatments. Patients with access to cardiology follow-up or heart failure liaison service also had higher survival rates than those who do not.

There is some indication that the number of core NICE drugs prescribed had a positive impact on survival and it is likely that the titration of key drugs had a further positive impact on mortality. Further exploration is required to determine the factors contributing to the improved survival rates for cardiology patients.

Of the patients who died, only 6% were referred to palliative care. Whilst this reflects the national picture of considerable unmet palliative needs for patients with heart failure, other factors may explain the low referral level. For example, challenges of determining end stage disease in heart failure patients or variations in referral patterns between different areas. In some cases patients may be discharged to primary care before referral to palliative care.

It is important to bear in mind that the findings are likely to have a positive bias as the Trusts submitting data are likely to be those with a local champion or with designated heart failure resources. To ensure data for this audit are representative of care in all organisations, it is essential that the quality of care for all patients with a primary discharge diagnosis of heart failure is recorded. The number of cases submitted by each site varies considerably. Feedback from users identified a number of factors that impact on data completeness. These include local resources, competing local priorities and the complexity of the care pathway for patients with heart failure.

This report makes a number of recommendations to improve the data quality of the audit and the quality of heart failure care and treatment. The full list is given in the main body of this report, but some of the most important are highlighted as follows:

- all secondary care Trusts that treat patients with heart failure to participate in the audit
- as a move towards full participation, all secondary care Trusts to submit at least 50% of all cases of patients discharged with a diagnosis of heart failure in the primary position
- Strategic Health Authorities to require the inclusion of heart failure related Indicators for Quality Improvement in quality accounts
- all secondary care service providers to streamline the heart failure care pathway to ensure all patients, regardless of admission ward, have access to recommended medication in line with NICE guidelines and that treatment is managed by specialist staff
- commissioners to use evidence of participation in the National Heart Failure Audit within the effective commissioning process to ensure that all patients with a confirmed diagnosis of heart failure have access to evidence based treatment as recommended by NICE.

2. Introduction to the National Heart Failure Audit

2.1 Background to heart failure

Heart failure is a complex syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the heart to function as a pump to support physiological circulation. The syndrome of heart failure is characterised by symptoms such as breathlessness and fatigue, and signs such as fluid retention.

Heart failure occurs in around 1 per cent of the adult population rising to 7 per cent in those aged over 75 years and 15% for those aged 85 and overⁱ. Most cases of heart failure are due to coronary heart disease (approximately 70 per cent) and most cases have or have had hypertension. Although there has been an overall decline in mortality from coronary heart disease, the number of patients with heart failure is increasingⁱⁱ. This is due to an ageing population combined with improved survival rates after a heart attack in patients with left ventricular dysfunction. The majority of patients admitted to hospital are over 60 and fall within two age groups: 60–74 (24.6%) and over 75 (68.3%).

In 2001, over 11,000 deaths due to heart failure were officially recorded in the UK. However, the number of deaths directly attributed to heart failure is likely to be an underestimate of the actual number of deaths it contributes to, which may be in excess of 100,000 per year. Guidance given on death certificates, that heart failure is not a cause but a mode of death, discourages doctors from recording heart failure as the underlying cause of death. This means that other causes of death, such as coronary heart disease, are more commonly given as the cause of death.

2.2 Patient outcomes

Heart failure has a significant impact on patient outcomes. Survival rates are worse than for breast and prostate cancer, with annual mortality ranging from 10 per cent to 50 per cent depending on severity, and a high risk of sudden death. Newly diagnosed patients have a 40 per cent risk of dying within a year of diagnosisⁱⁱⁱ. Patients with heart failure experience a poor quality of life, with over a third experiencing severe and prolonged depressive illness.

2.3 Impact on services

Providing services to patients with heart failure costs the NHS an estimated £625 million per year. Heart failure places a significant demand on hospital facilities and resources through emergency admissions and readmissions. Almost 90% of heart failure admissions are emergency admissions^{iv} and it accounts for 5 per cent of medical admissions.

The readmission rate for heart failure has been estimated to be as high as 50 per cent over 3 months^v. It is in the top ten diagnoses for use of hospital bed days (Figure 1) despite having lower admission rates than other conditions. For example, in 2007–2008 there were similar admission rates of for heart failure (59,514) and heart attacks (64,381) but a much lower use of bed days for patients admitted with a heart attack (538,996).

2.4 Quality of care

There is good evidence that appropriate diagnosis, treatment and ongoing support can improve quality of life and help reduce admissions and readmissions, morbidity and mortality^{vi}. The National Service Framework (NSF) for Coronary Heart Disease (CHD)^{vii} emphasises the need to develop a systematic approach to the diagnosis, investigation, treatment and ongoing support of people with heart failure throughout the NHS. Evidence-based clinical guidelines^{viii} published by the National Institute for Health and Clinical Excellence aim to assist health professionals in clinical decision making.

2.5 Variation in practice and impact on patient outcomes

In a national review of CHD services, the Healthcare Commission found that despite significant progress in implementing the NSF, progress in meeting the heart failure standards had been slow (2004)^{ix}. In response, two further pieces of work were commissioned to provide an in-depth picture of the quality of heart failure services across the country.

A subsequent review of heart failure services (2007)^x showed that substantial progress had been made in the two years after the NSF review. However, there was still variation across the country in relation to the confirmation of diagnosis, access to evidence based treatment and heart failure specialist staff. This appeared to have an impact on patient outcomes. Data pooled for the years 2002/2003 and 2004/2005 demonstrated wide variation in the level of observed re-admission and mortality across PCTs in England when compared with expected levels.

The second piece of work^{xi} focused on the inpatient admission routes and used patients with heart failure to examine access to diagnostics and key treatment. The results indicated that many patients admitted to acute hospitals in England, Wales and Northern Ireland are not managed fully in accordance with international evidence-based guidelines. Only a minority of patients with heart failure are seen, or followed up, by a specialist service. Whilst most trusts (86.5%) have a lead consultant for the care of patients with heart failure, only 22.3% of patients admitted to hospital with heart failure were referred to the lead clinician or a cardiologist.

Access to specialist heart failure teams was also shown to be extremely variable with averages for trusts varying from 0% to 74%. There are also differences in access to evidence-based clinical treatment between different groups of patients. Women appear to be less well managed against recommended guidelines and are less likely to be prescribed anti-failure medication, except diuretics, on discharge. This may reflect differences in age (women are older) and the greater prevalence of heart failure with a preserved ejection fraction, for which guidelines provide little advice on treatment.

2.6 Improving quality: The role of clinical audit

Reliable information is the key to understanding and improving services. Clinical audit plays a key role in determining whether standards of care are being met and identifying variation in practice. It is crucial that high quality data is collected to demonstrate that patients receive evidence based care and that service improvement is undertaken where necessary. Since publication of the National Service Framework for Coronary Heart Disease there has been significant progress in cardiac care. Access to reliable data has been a key factor in improving quality through service improvement activity (Figure 2).

One of the reasons for the slower progress in improving heart failure services has been the lack of data. Until the launch of the National Heart Failure Audit in 2007 there was no form of national audit. At a local level, fewer than 20% of organisations were able to meet the CHD NSF criteria for auditing the delivery of heart failure services in 2006, an NSF milestone set for hospitals in 2002. A lack of data has made it difficult to compare practice with clinical standards and assess the quality of services.

2.7 Improving quality: clinical audit and service improvement

NHS Improvement sees heart failure as an area where there is still considerable room for service improvement. The difficulty in the past has always been in finding ways to measure any improvement and the national audit gives local networks the chance to measure their Trusts against national benchmarks.

In some regions, Strategic Health Authorities have asked Cardiac Networks to set standards and to measure and monitor their Hospital Trusts against them.

Figure 1
Emergency admissions by primary diagnosis 2007–2008

| Top 10 primary diagnoses for hospital bed days | | Number of bed days | Admissions |
|--|--|--------------------|---------------|
| R69 | Unknown and unspecified causes of morbidity | 2,334,453 | 141,032 |
| S72 | Fracture of femur | 1,722,758 | 74,111 |
| F20 | Schizophrenia | 1,609,405 | 18,187 |
| J18 | Pneumoniaorganism unspecified | 1,258,259 | 110,281 |
| I63 | Cerebral infarction | 1,229,482 | 41,804 |
| N39 | Other disorders of urinary system | 1,105,511 | 149,906 |
| J44 | Other chronic obstructive pulmonary disease | 818,525 | 101,804 |
| I50 | Heart failure | 754,476 | 59,514 |
| Z38 | Liveborn infants according to place of birth | 653,043 | 455,078 |
| P07 | Disorders relating to short gestation and low birth weight | 616,069 | 41,270 |

Source: HES online ^{iv}

Figure 2
MINAP audit data supporting improvement in the quality of care ^x; ^{xii}

Heart Attacks

Ambulance services and hospitals have used Myocardial Infarction National Audit Project (MINAP) data to identify breaches in treatment time targets. Findings have supported service improvement activities that include the way emergency calls are handled, locating ambulances closest to where they are needed and introducing pre-hospital thrombolysis. As a result treatment times have shortened significantly and the percentage of heart attack patients who die within 30 days of admission to hospital has fallen.

In Bedfordshire and Hertfordshire, the measures have been agreed as:

- number of admissions/month
- number of readmissions/month
- median/average length of stay
- proportion of patients with echo result recorded during admission
- proportion of patients on core medications
- proportion of patients referred to the community heart failure service on discharge.

The National Heart Failure Audit can help Trusts to collect some of these measures around the quality of service that may not otherwise be readily available. The Bedfordshire and Hertfordshire Heart and Stroke Network are helping facilitate their Hospital Trusts involvement in the audit by helping to fund data entry personnel in the short term whilst work to import data from the hospital system to the audit is completed. Once a baseline for these measures has been established, achievable standards can be agreed and set for each trust, and can be monitored to show improvement.

2.8 Improving quality: Indicators for quality improvement

The NHS Next Stage Review^{xiii} places a new emphasis on clinical audit and the use of data to measure and improve the quality of services. High Quality Care for All defines quality in the NHS as safe and effective care of which the patient's whole experience is positive. Lord Darzi has set out ambitious commitments for making quality the organising principle of the NHS. His vision emphasises the importance of measurement in driving quality improvements. The Review highlights services for long-term conditions. Heart failure and its impact on patients and NHS resources is one of the most significant of these.

In response to the Review, the Department of Health and The NHS Information Centre have identified an initial, but evolving, set of indicators to describe the quality of a broad range of services – the Indicators for Quality Improvement^{xiv}. The indicators have been developed in partnership with professionals across the NHS and the first set of indicators include the following:

1. The Trust has registered with the National Heart Failure Audit
2. The Trust submitted 10 or more cases per month between April 2008 – March 2009.

From 2010, healthcare providers will be required to publish 'quality accounts' just as they publish financial accounts. These will be reports to the public about the quality of services they provide and will look at safety, experience and outcomes. The content of Quality Accounts is still to be confirmed but it is likely that some indicators will be compulsory at either a national or SHA level.

2.9 The Audit

The National Heart Failure Audit aims to provide national comparative data to help clinicians and managers improve the quality and outcomes of their services. Findings can be used to assess achievement against NSF targets and NICE guidelines for heart failure on an ongoing basis. Information can also be used to inform patients about the quality of local care and to support patient choice.

The Heart Failure Audit: secondary care

The provision of comprehensive and high quality services for patients with heart failure is complex. A multidisciplinary approach is advocated often involving healthcare professionals from both primary and secondary care as well as involving social care services. It requires good coordination at all stages of the patient pathway. Such complexity poses a number of challenges and an audit that encompasses all organisations would be extremely large and potentially unwieldy, and would be difficult to evaluate. This being the case, The IC and the BSH have chosen to focus initially on auditing inpatient care within secondary care.

The Heart Failure Audit: key objectives

The first objective of the audit is to identify the percentage of inpatients with a primary diagnosis of heart failure who have quality of care recorded. The audit captures data on all patients identified as having heart failure in hospital discharge codes in the primary position. The primary position is the main condition treated or investigated during the episode of care. The following ICD-10 codes are used:

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

A second objective is to describe current clinical practices in heart failure diagnosis, care and treatment, and to explain variation in practice using data on patient characteristics and healthcare provider identity. An algorithm summarising the core data items mapped to the key NICE heart failure recommendations can be found in Appendix 1.

A third objective is to describe the following patient outcomes: length of stay, in-hospital mortality and late mortality (up to one year post discharge).

Hospitals that consistently achieve above average results will be identified, allowing other centres to adopt their successful methods in order to improve the quality of care and survival rates for patients with heart failure across the United Kingdom.

The Heart Failure Audit: Primary Care

The need to extend the scope to primary settings has also been highlighted by the Healthcare Commission (2007)^x. The aim is to extend the audit into primary care following successful implementation of the audit in secondary care. In the meantime, The NHS Information Centre will work with organisations with a cardiac remit to identify ways in which heart failure audit findings can be used alongside other data sources to provide a picture of the quality of care across the both primary and secondary care. This includes using the General Practice Extraction Service (GPES) to obtain information from all NHS GP practices in England. More information about the GPES project can be found via following link: <http://www.ic.nhs.uk/services/in-development/general-practice-extraction-service>

2.10 Organisation of the Audit

The National Heart Failure Audit is project managed by The Information Centre for health and social care with specialist clinical knowledge provided by the British Society for Heart Failure (BSH). The BSH is a national organisation of health care professionals dedicated to improving heart failure outcomes in the UK. It is a charitable organisation and functions as an affiliated group of the British Cardiovascular Society. As part of the BSH strategy to improve patient care in heart failure, several of its board members have worked with The IC to design a national audit dataset for heart failure. The BSH project steering group have provided clinical input and direction during the development, design and implementation of the audit.

The audit was initially commissioned by the Healthcare Commission for two years (2006–2008) and has since been renewed for a further two years until March 2010. Commissioning arrangements transferred to the Healthcare Quality Improvement Partnership in April 2008. Information about the role of the NHS Information Centre and the IT infrastructure is available in previous National Heart Failure Audit reports. These are all available via the following link: <http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/heart-disease>.

3. Findings

3.1 Participation

The NSF for CHD set milestones for NHS hospitals to have an annual audit process for heart failure in place by April 2002. It also set out the audit criteria that should be measured. In addition, the NICE guidance listed additional audit criteria to monitor the implementation of its recommendations. In 2007, the Healthcare Commission found that only 20% of Trusts could meet this standard.

The first objective of the audit is to identify the percentage of patients with a diagnosis of heart failure who have quality of care recorded. This requires participation of all Trusts and submission of all cases of heart failure that meet the audit criteria.

Number of Trusts

There are 166 NHS Trusts in England¹ and Wales² that discharge adult patients with a heart failure code in the HES primary diagnosis position. As of March 2009, 113 (68%) Trusts had registered with the audit.

There is a wide variation in the number of records submitted by each Trust per month. Only 37 (25%) Trusts are submitting more than 10 records per month on a regular basis. Whilst this is a slight improvement from the 20% reported by the Healthcare Commission, the majority of Trusts are still not meeting this NSF standard.

A list of registered and non-registered Trusts and number of submitted records is provided in Appendix 2.

Number of patients

Between 2008–2009, 86 hospitals submitted admission data on 6170 patients for the period April 1st 2008 to March 31st 2009. There were 966 readmissions recorded in the database. Of these, 710 were for one readmission only. The number of readmissions records per person ranges from 1 to 7.

Nationally, the number of cases submitted to the audit represents approximately 11% of patients discharged from hospital with a diagnosis of heart failure in the primary position¹. Figure 3 shows the estimated proportion of missing cases. This is an improvement from last year when the number of cases submitted to the audit represented 6% of patients discharged with a diagnosis of heart failure³.

Feedback from users has highlighted a number of barriers to full implementation and these are described in the section on implementation issues (page 18).

Data completeness

There are 34 core data items for which completion is mandatory. There is an 'unknown' option within each core data item. This allows the user to save the record even if a specific piece of information is missing from the patient record. The target for data completeness within the national clinical heart disease audits is 90%. The target was met for key diagnostic tests and the drug therapies recommended by NICE (Figure 4). This is an improvement since last year when data completeness was less than 30% for the diagnostic tests and less than 80% for the key clinical treatments^{xv}

3.2 Patient demographics: Age and gender

The incidence of heart failure is gradually increasing partly due to the ageing population. Prevalence of heart failure increases sharply with advancing age and there are differences in onset between men and women. Up to 74 years, more men than women have heart failure. This reverses at ages above 75, when slightly more women have heart failure than men.

This pattern is reflected in the national findings from the heart failure audit. The median age at admission was 78 years and there are slightly more cases of men (n= 3525; 57 per cent) than women (2639; 43 per cent) until ages 75 and above when more women have heart failure (Figure 5).

3.3 Care and management of patients with heart failure

Measures of the quality of care received by patients are required to drive and monitor improvement. Access to key investigations, treatments and interventions, length of hospital stay and mortality are all indicators of the quality of heart failure services.

Diagnosis: access to key investigations

The NSF and NICE guidelines emphasise the importance of having a confirmed diagnosis of heart failure because many of the symptoms are similar to those of other conditions such as asthma. If heart failure is suspected, a number of tests (such as BNP or NT-proBNP) are recommended. If heart failure is not ruled out, echocardiography is recommended to confirm and identify the cause.

Recording of echocardiography has improved since last year (32% of cases) with 75% of patients (n=4,641) having an echocardiogram with a further 6% (n=365) planned after discharge. Of those who had an echocardiogram, the vast majority had evidence of substantial cardiac dysfunction. Most patients (78%) had left ventricular systolic dysfunction (LVEF<40%), 406 (9%) had valve disease, 218 (5%) had LV hypertrophy and only 415 (9%) were considered normal.

¹ Based on Hospital Episode Statistics, The NHS Information Centre, admission data 2007–2008.

² Patient Episode Database for Wales 2008–2009

³ Based on Hospital Episode Statistics, The NHS Information Centre admission data 2006–2007

Figure 3
Missing cases based on a comparison of audit submissions and HES discharge data

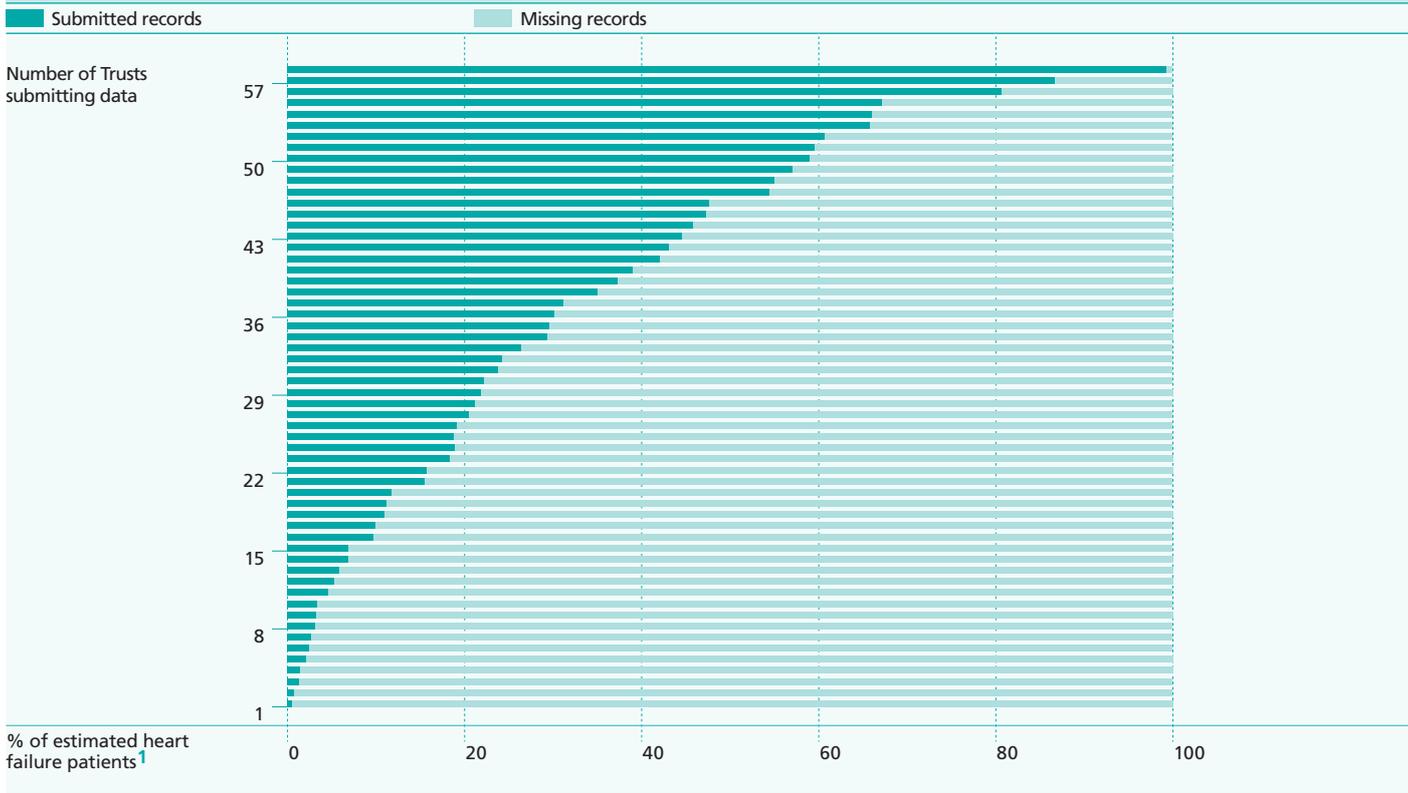


Figure 4
Percentage of cases where diagnostic and clinical information is recorded as 'unknown'

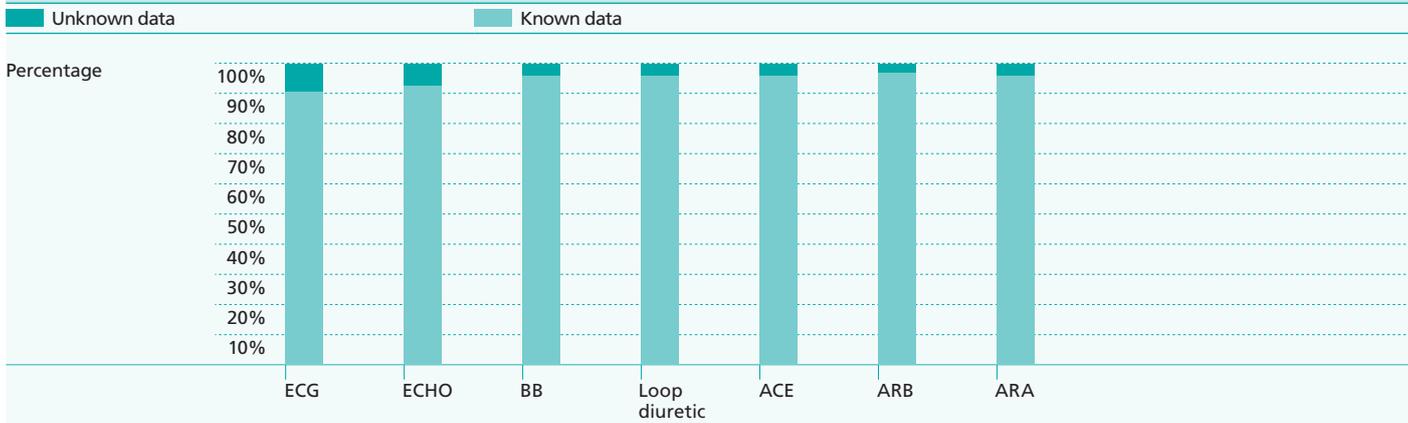
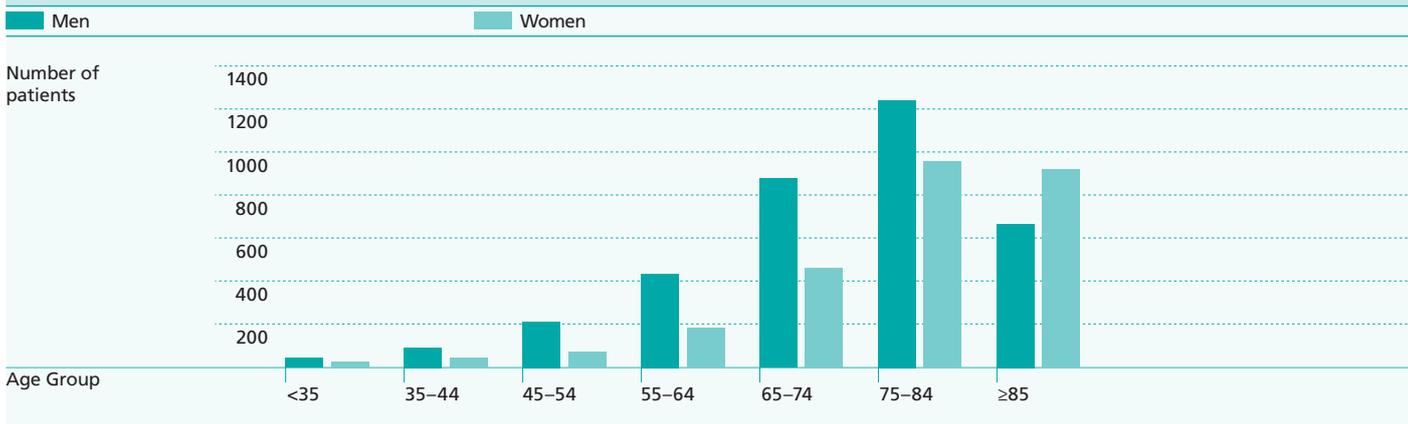


Figure 5
Age distribution by sex of patients enrolled in the audit



ECG data confirmed that a high proportion of patients were in atrial fibrillation (37%).

Of those with heart failure, 48% also had ischaemic heart disease (IHD) including 33% who had a previous MI, 47% had hypertension, 19% had significant valve disease and 27% were known to be diabetic.

BNP concentrations were only reported in 78 patients as this test was frequently unavailable.

Care and treatment: Access to drug therapies

People with heart failure due to left ventricular systolic dysfunction need to receive optimal doses of certain drugs to improve symptoms, enhance life expectancy and help reduce hospital admission. Key drugs include ACE inhibitors, Beta-blockers, Angiotensin II receptor antagonists (ARB), loop diuretics and selective aldosterone receptor antagonists (ARA) (Figure 6).

Figure 7 summarises prescribing rates for drugs on discharge for patients with left ventricular ejection fraction <40%. Patients were prescribed loop diuretics irrespective of age, whereas the proportions receiving ACEI/ARB, beta blockers and aldosterone antagonists decreased with age.

Audit findings suggest an improvement in the use of ACE inhibitors (67%) and beta blockers (28%) since the Healthcare Commission survey work in 2005–2006^x.

Prescribing these drugs in the right doses and combinations is a key element of the NSF and NICE guidelines. For example the NICE guidelines for treatment of chronic heart failure in the UK recommend that beta blockers should be prescribed for all patients with stable chronic heart failure and LVEF <40% who are currently receiving ACE inhibitors and diuretic treatment. Their association with reduced mortality means that treatment with beta blockers is recommended even in the absence of persistent symptoms.

Figure 8 shows the percentage of patients who receive one or more of the core treatments recommended by NICE. Whilst the majority of patients received at least one core therapy, 12% did not receive any of the five core therapies.

Monitoring and follow up

The clinical condition of a person with heart failure may fluctuate and repeated admission to hospital is common, particularly for patients with more severe heart failure. Monitoring of clinical status is necessary and will involve healthcare professionals in both primary and secondary care.

Patients were referred to a heart failure liaison service in 51% of cases and cardiology follow-up in 50% of cases. Very few patients were referred to Care of the Elderly (10%), which may reflect enrolment bias within the audit and how patients are identified. This is discussed further in Part 4: Implementation Issues.

Figure 6
The key treatments recommended by NICE

Core NICE treatments

| | |
|---|---|
| Angiotensin converting enzyme (ACE) inhibitors | Most people with heart failure are prescribed an ACE inhibitor. ACE inhibitors have a protective effect on the heart and when added to diuretics, improve symptoms, exercise tolerance, and survival and reduce hospital admission rates in chronic heart failure. |
| Beta-adrenoreceptor blocking drugs | Beta-adrenoreceptor blocking drugs (beta-blockers) work on the heart and blood vessels to reduce blood pressure and the amount of work the heart does. A betablocker is usually prescribed in addition to an ACE inhibitor. |
| Angiotensin II receptor antagonists (ARB) | Angiotensin-II receptor antagonists work in a similar way to ACE inhibitors and are usually used instead of an ACE inhibitor if a patient has problems or side-effects with taking an ACE inhibitor (such as a persistent cough) but are sometimes used in combination with an ACE inhibitor. |
| Loop Diuretic | A diuretic is commonly needed to ease fluid retention. Diuretics are taken in addition to an ACE inhibitor and beta-blocker. |
| Aldosterone receptor antagonists (SARA) | The aldosterone antagonist sprionolactone has been shown to reduce mortality in patients with severe heart failure. |

Figure 7
Core treatments by age (≥ 55 years) and sex in patients with left ventricular ejection fraction $<40\%$

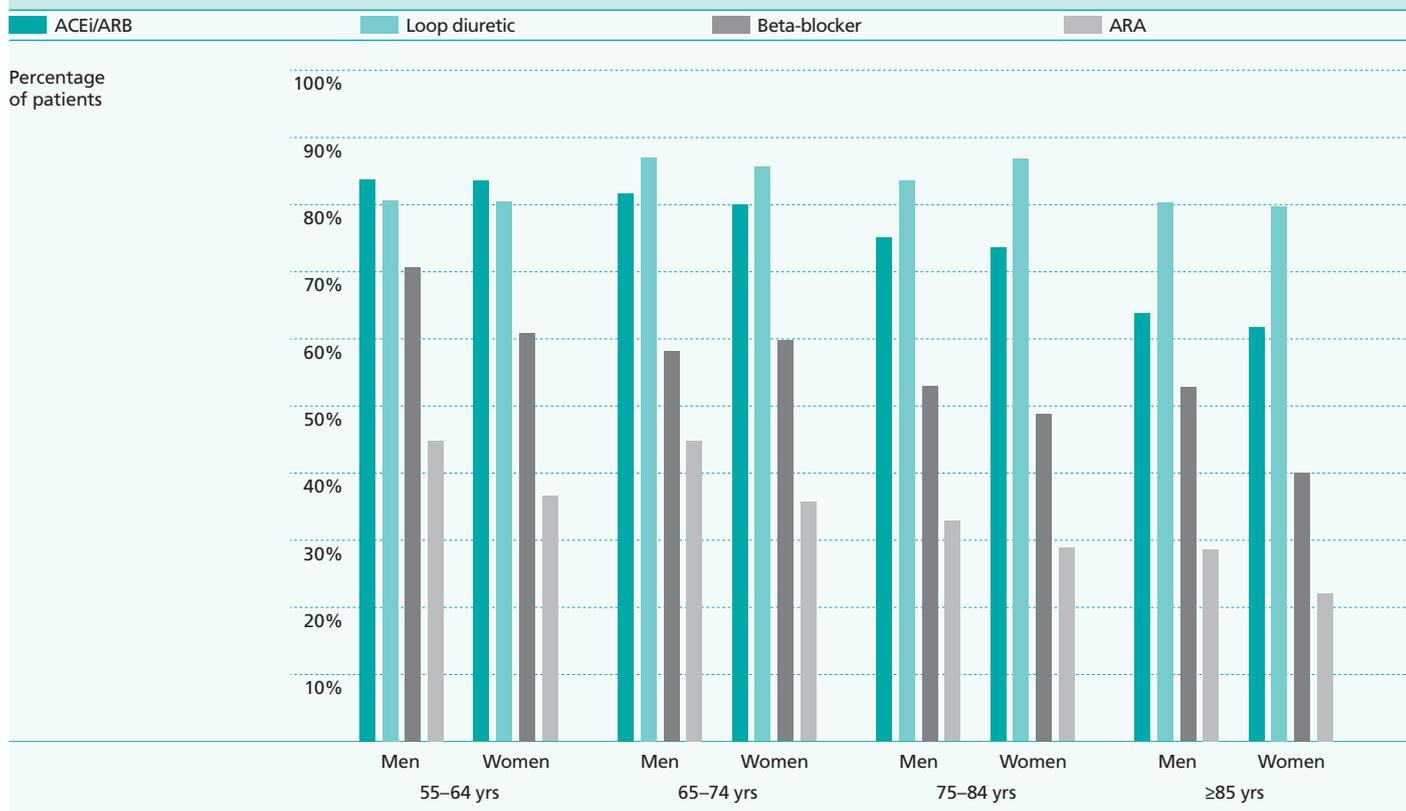
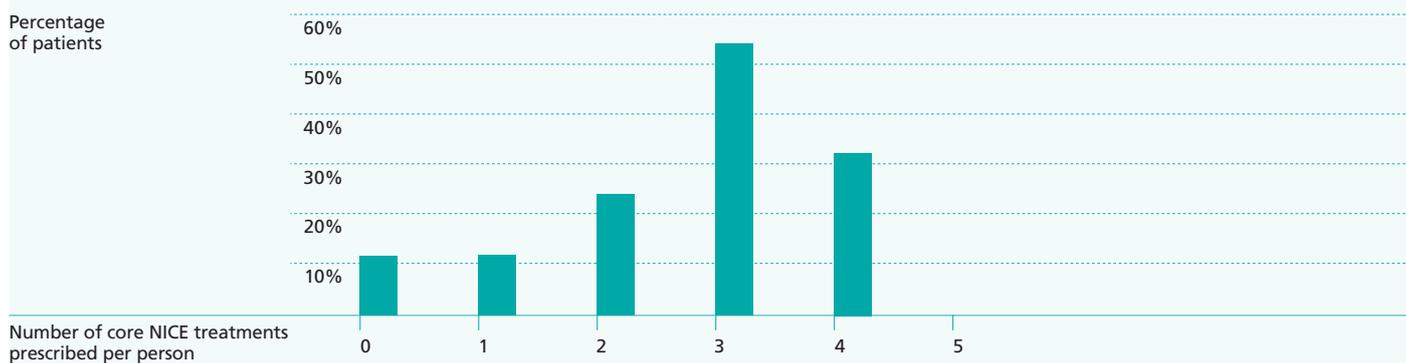


Figure 8
Prescribing for patients with LVSD $<40\%$



3.4 Variation in access to key treatment and specialist staff

Work undertaken by the Healthcare Commission in 2007 highlighted that many patients admitted to acute hospitals are not managed fully in accordance with evidence-based guidelines. Factors such as access to specialist wards and services and sex of the patient may impact on access to key treatments.

Similar variation was found in the national audit. Patients were admitted to either cardiology wards (n= 44%) or general medicine (46%) (Figure 9). Patients admitted to a cardiology ward were younger and more often men.

Patients managed on a cardiology ward were more likely to be on any one of the five core treatments (Figure 10).

Access to specialist follow up services

Of the patients who were referred to the heart failure liaison service the majority (69%) were men. Patients admitted to cardiology wards were more likely to access heart failure liaison services (62%) than those admitted to general medicine (31%).

Men were also more likely to access cardiology follow-up (65%) and those aged < 64 years were more likely to be referred.

Of the patients who died, only 6% were referred to palliative care. Whilst this reflects the national picture of considerable unmet palliative needs for patients with heart failure, other factors may explain the low referral level. For example, it is often challenging to determine whether function might improve with interventions or adjustments to therapy or whether patients have end stage disease. Referral patterns for palliative care may also differ between areas. In some case patients may be discharged to primary care before referral to palliative care.

Figure 9
Admission ward by sex

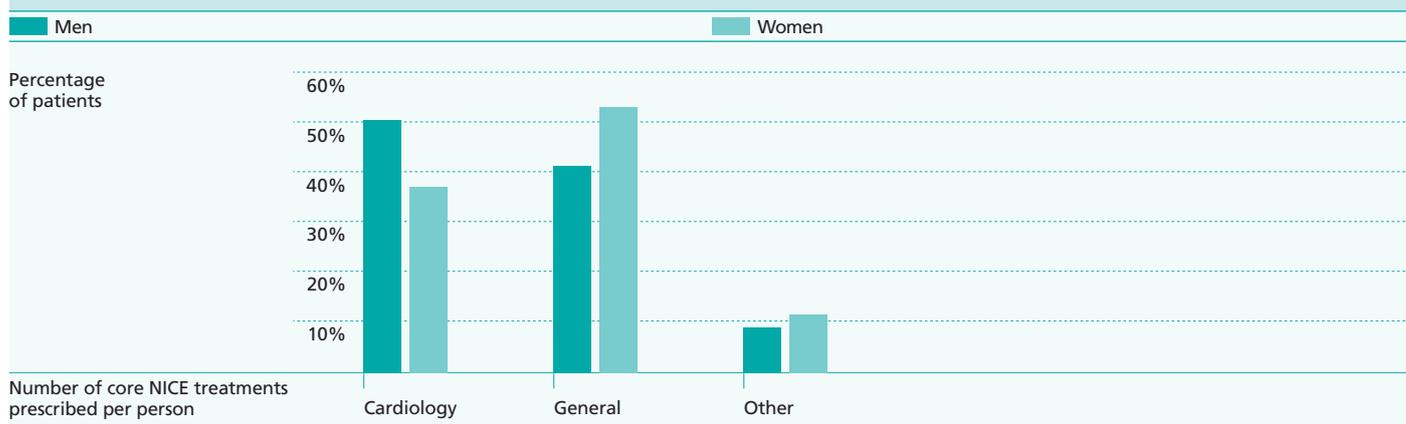
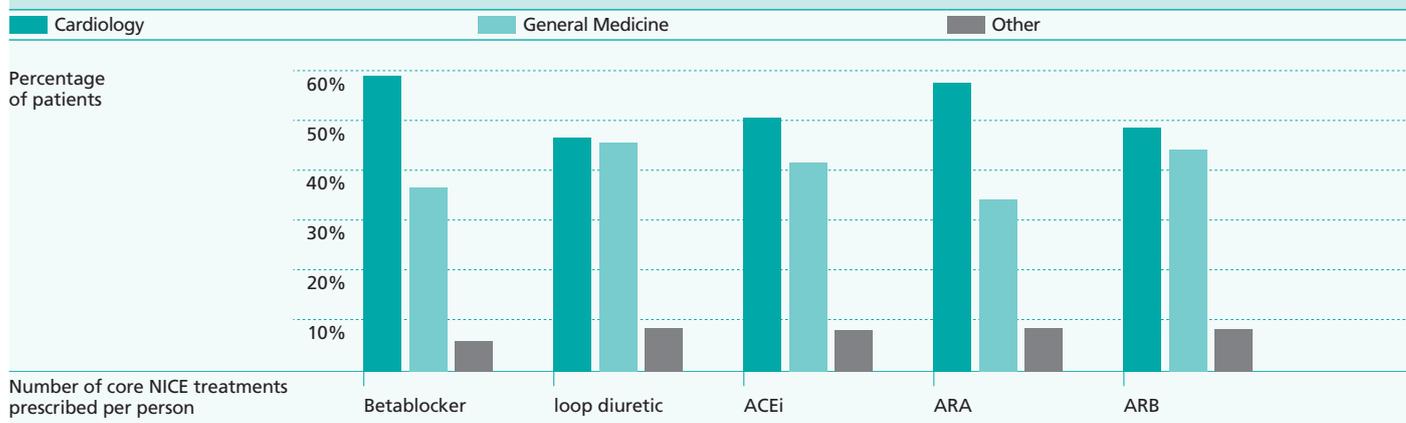


Figure 10
Admission ward by NICE core treatments



3.5 Patient outcomes

Readmission

Of those who survived the first admission⁴, 966 (17.5%) had a readmission within the reporting period.

Length of stay

The median length of stay in hospital was 9 days. This is higher than the national average of 7 days. There was no relationship between length of stay and age at admission. On average, the length of stay was longer on cardiology (10 days) and other wards (11 days) than in general medicine (8 days).

Mortality

The in-hospital mortality rate was 10.5% and is lower than the 15% mortality rate reported by the Healthcare Commission^x.

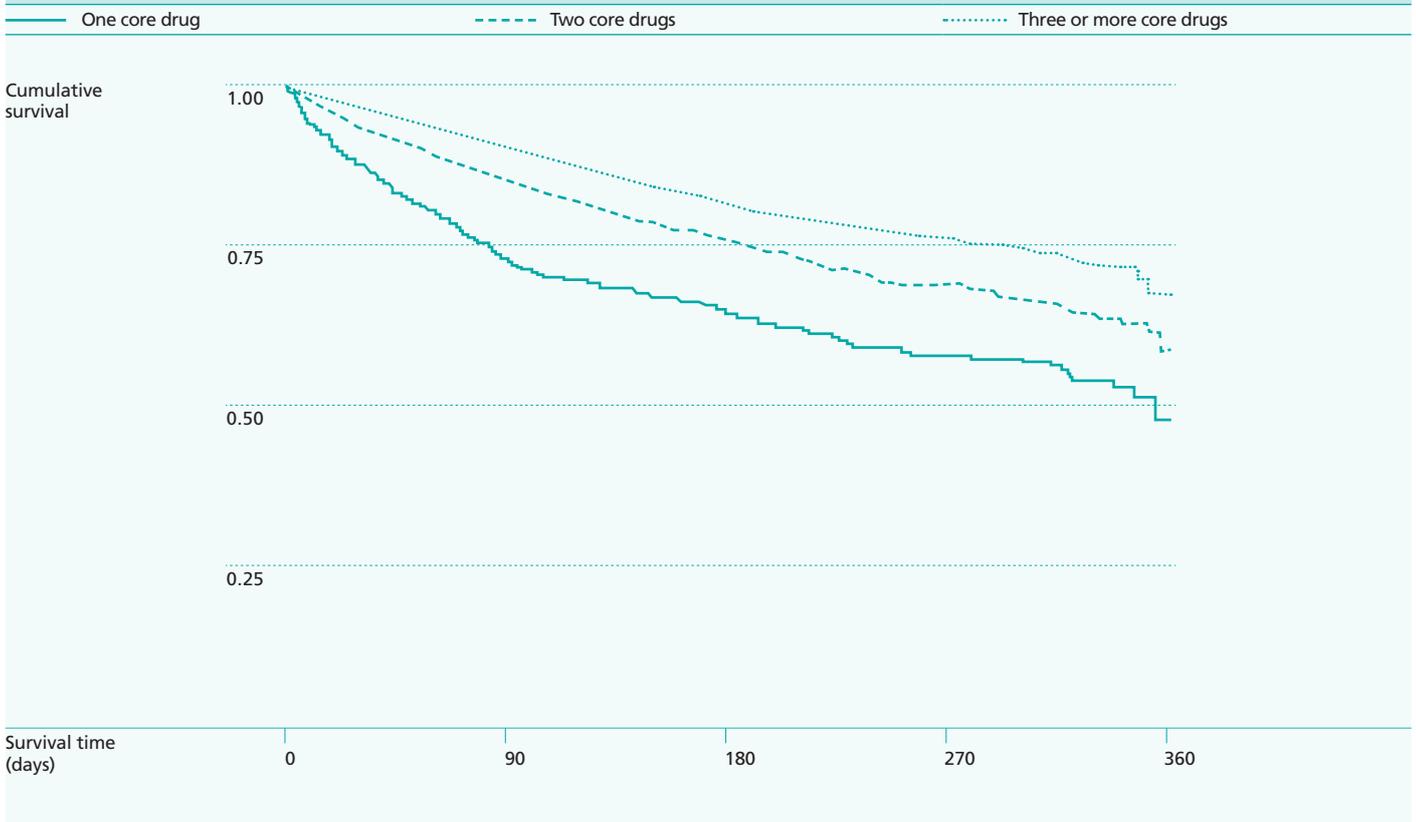
Office for National Statistics mortality data was linked with the audit data to identify patients who had died following discharge. Of the patients entered into the database between 2008 and 2009, 30% (n=1861) died following discharge. Mortality increased with age, ranging from 6% in the under 45 age group to 49% in those aged 85 and over⁵.

Patients admitted to cardiology wards had a lower mortality rate (22%) during follow-up than those admitted to general medicine (36%) or other (41%) wards. Patients with access to cardiology follow up or heart failure liaison service had much better survival rates than those who did not have access.

Some of this may be due to patients admitted to a cardiology ward being younger and more likely to be prescribed the core NICE treatments. However, further statistical analysis showed that after adjustment for patient demographics, history, symptoms, treatment and investigations, patients admitted to a general medicine or other wards were significantly more likely to die compared to those admitted to cardiology (HR=1.2, 95% CI = 1.1, 1.3, p=0.003).

The number of core NICE drugs prescribed had a positive impact on survival (Figure 11) and it may be that the dose and combination used had a further impact on mortality. The titration of drugs to optimal doses is intensive and time consuming and could explain the longer length of stay in cardiology wards than for patients admitted to general medicine. Titration of drugs may also explain the impact of expert follow-up care on prognosis. Further exploration is required to determine the factors contributing to the improved survival rates for cardiology patients.

Figure 11
All-cause mortality by number of core drugs (Kaplan-Meier method)



⁴ First admission refers to the first admission inputted into the national audit and not the actual first inpatient episode of care for the patient.

⁵ ONS mortality data.

3.6 Implementation issues

Good progress has been made in relation to registration. The next phase of the audit will focus on improving data completeness by recruiting all Trusts and increasing the number of records submitted by each Trust. The Trusts are either importing data from existing systems or have dedicated and systematic processes in place.

A series of telephone interviews were conducted with users from Trusts that have yet to submit data and those with both high and low levels of submission rates. Across the board the following factors were reported as likely to impact on data completeness. These are summarised below and will inform our approach to the next phase of the audit.

- **Organisation support**

Feedback from users highlighted the importance of organisational support in improving data completeness:

- The majority of local audit leads do not have additional administrative support to collect and input data. Whilst clinical audit is an essential component of high quality health care, heart failure is a high volume condition and inputting data for all cases would have a significant impact on clinical time unless there was additional administrative support.
- Clinical audit is an essential component of high quality health care and clinical governance. The responsibility for auditing the care of heart failure patients falls within the remit of different healthcare professionals. Heart failure has a complex pathway and patients can be treated by a number of different healthcare professionals. The Healthcare Commission survey of heart failure patients found that most patients (74%) were admitted under the care of the on-call medical team, with only 13% under the direct care of a cardiologist or the lead heart failure clinician, and 9% of patients admitted directly to the elderly care physicians. Access to specialist heart failure teams was also shown to be extremely variable with averages for trusts varying from 0% to 74%.
- For the national heart failure audit, responsibility for collecting national clinical audit tends to be placed with heart failure specialist nurses or local clinical audit staff. This often goes beyond the remit of heart failure nurses who focus on patients with LVSD (the national audit measures the quality of care for all patients with heart failure regardless of cause). A more integrated and coordinated approach with additional local resources to identify and input all cases would make the task more manageable and improve data quality.

- Heart failure is one of a number of national heart disease audits. Within a context of competing local resources, hospitals are reported to prioritise audits linked to incentives such as performance indicators. Examples include MINAP and the BCIS audits.

- **IT issues**

The complex pathway means that users need a flexible system. The heart failure database is based on Lotus Notes and hospitals are provided with one licence which is restricted to a single computer. If audit responsibilities are divided across directorates and roles then additional licences or a more flexible web-based system will be required.

Some trusts are importing data from existing systems. Initially this can delay participation in the short-term but once set up Trusts submit a high level of records.

- **Clinical User Guidance**

Clinical User Guidance targeted at both clinical and non-clinical staff would make the process more user friendly. This includes detailed guidance on each of the core data fields and the process for identifying patients. At the moment a mixture of approaches are taken to identify patients including:

- Referral to a cardiologist
- Referral to heart failure specialist staff
- Hospital coding system
- Ward visits
- Prescribing

The aim of the audit is to measure the quality of care for all patients discharged with a primary diagnosis of heart failure. Because of the complex pathway, the most effective way to capture all patients is via discharge codes. If some trusts are using different methods it is likely that not all patients are identified. This is likely to introduce a positive bias as quality of care and outcomes may be better for patients referred to specialist services or treated on cardiology wards.

- **Accuracy of Coding**

The issue of accuracy makes it difficult to establish an accurate figure of the number of patients discharged with a diagnosis of heart failure. This makes case ascertainment difficult. Much can be learned from the early experience of the Myocardial Infarction Audit. Coding was an initially an issue and there was often a difference between HES and hospital data about the number of patients treated for heart attacks. Case ascertainment was used as a performance indicator so there was an incentive to improve accuracy. In response, hospitals introduced the 'blue stamp' system whereby notes would be stamped with a unique marker to confirm that diagnosis was based on gold standard diagnostic tests.

Applying the same approach to heart failure would provide stakeholders with more accurate data. This would have a financial benefit for Trusts. Heart failure is a high cost Healthcare Resource Group (HRG) and if there are inaccuracies in coding Trusts may well be losing money. Improved data could be used to inform a wide range of activities including service development and improvement, demand management and commissioning. This will also support the future introduction of heart failure related performance indicators, as discharge data will be used as a denominator to calculate data completeness.

4. Conclusion

Quality information is at the heart of improving services. This is particularly relevant for the improvement of heart failure services. Whilst significant progress has been made in recent years, the lack of national data makes it difficult to assess the quality of services across the country. The National Heart Failure Audit has provided important information about the quality of care and impact on patient outcomes. Findings have also highlighted some of the challenges that need to be addressed to support local data collection.

There have been some positive steps over the last year. First is that an increasing number of Trusts have registered with the audit. Whilst there is some way to go to increase the number of patient records submitted, there are excellent examples of good practice and Trusts submitting a high number of records. Lessons can be shared to support implementation in other Trusts. There are concerns that not all patients with heart failure are being identified as the HES data shows a high proportion of missing data for the majority of trusts.

The audit demonstrates some positive steps towards improving access to a gold standard diagnostic test such as echocardiography although the access to BNP testing, as recommended by NICE, is disappointing. A confirmed diagnosis is the key to accessing the right treatment. Audit findings suggest an improvement in the use of key treatments such as ACE inhibitors and beta blockers since the Healthcare Commission survey work in 2005–2006^{xii}. However, the audit shows that not all those with a confirmed diagnosis are provided with the full range of optimal treatments to manage their symptoms and improve their quality of life. Patients admitted to general medicine wards are less likely to access the recommended NICE treatments than those admitted to cardiology wards.

Research has shown that effective care for patients with heart failure can reduce mortality. This audit data is now, for the first time in the UK, showing the considerable mortality and readmission rates associated with an acute admission for heart failure – 30% dead at one year and 47.5% either dead or readmitted to hospital. These outcomes are significantly better for those who have access to specialist care i.e. those seen by cardiologists (16%) or specialist heart failure services (18%). The factors influencing mortality rates need to be confirmed but the up titration process may be the key as opposed to simple access to drugs. This will need to be explored further and addressed in future versions of the audit tool.

Access to palliative care is also very low. NICE highlighted the considerable unmet palliative needs of patients with heart failure in 2003. The hospice movement has made a great impact in opening access to people with all forms of terminal care but there is still some way to go to address inequalities in care.

It is also important to bear in mind that the Trusts that are submitting data are likely to be those with a local champion or with designated heart failure resources. The findings are likely to have a positive bias. Alongside this we know that some Trusts are identifying patients for the audit differently, for example only including those admitted or referred to specialist wards and services. Evidence shows that the quality of care will be higher for these patients than those admitted to other wards. It may well be the case that the quality of care, inequity of access and patient outcomes may be much worse overall, than these findings suggest.

All stakeholders, including the public have a right to expect open reporting. More important though is the expectation that audit will make a difference. Whilst there has been significant improvement in developing heart failure services, inequity of access first identified by the Healthcare Commission in 2005 continues. All stakeholders have a responsibility to ensure findings are used to drive improvement and make a positive difference to the experience of patients living with heart failure. There is a definite need for a more integrated approach to using audit findings to support local improvement.

This data provides a powerful incentive to reorganise heart failure care in the UK. We need to deliver the same streamlined specialist care that we do for the treatment of heart attacks to this group of patients who have a far greater mortality and morbidity rate.

5. Recommendations

Since the launch of the national heart failure audit, a significant proportion of NHS Trusts have registered with the audit. There is still more to be done and attention needs to focus on recruiting the remaining NHS trusts and ensuring Trusts submit all relevant cases on a regular basis. Organisations such as Cardiac Networks, The Heart Improvement Programme and The Care Quality Commission also have a remit to support and promote improvement in the quality of heart failure services.

The British Society for Heart Failure has identified a number of key areas for attention. These fall into two areas: improving data completeness and improving the quality of patient care.

Recommendations for improving data completeness

- all secondary care Trusts that treat patients with heart failure to participate in the audit
- as a move towards full participation, all secondary care Trusts to submit at least 50% of all cases of patients discharged with a diagnosis of heart failure in the primary position
- Strategic Health Authorities to require the inclusion of heart failure related Indicators for Quality Improvement in quality accounts
- the Care Quality Commission to include heart failure related performance indicators within the Annual Health Check
- The NHS Information Centre to ensure the audit process is clearly defined for both clinical and non-clinical roles and to move towards a more flexible web-based system.

Recommendations for improving the quality of care and patient outcomes

- all secondary care service providers to streamline the heart failure care pathway to ensure all patients, regardless of admission ward, have access to recommended medication in line with NICE guidelines and that treatment is managed by specialist staff
- commissioners to use evidence of participation in the National Heart Failure Audit within the effective commissioning process to ensure that all patients with a confirmed diagnosis of heart failure have access to evidence based treatment as recommended by NICE
- The NHS Information Centre, in discussion with partner organisations including the Heart Improvement Programme and Cardiac Networks, to identify ways of supporting implementation of the audit through training and information sessions and using audit findings to support the local improvements of heart failure services.

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Appendices

Appendix 1

Algorithm summarising clinical core data items mapped to the key NICE heart failure recommendations

1) Measuring the quality of care: Diagnosis, treatment and follow up

Suspected heart failure
because of history, symptoms and signs

Field 3.01 Breathlessness
Field 3.04 Oedema
Field 4.01 Previous AMI
Field 4.09 Previous Valve Disease
Field 4.12 Previous Hypertension
Field 4.14 Previous Diabetes



Seek to exclude heart failure through:

- 12-lead ECG
- And/or natriuretic peptides (BNP or NTproBNP) – where available

Field 9.13 BNP
Field 9.21 ECG



Seek to assess
systolic (and diastolic) function of the (left) ventricle and detect intracardiac shunts

Field 9.23 LVEF < 40%: principal aetiology
To accommodate assessment by other means e.g. angiography



Treatment
All patient with heart failure due to LVSD should be considered for treatment with an ACE inhibitor

Field 11.01 Treatment ACE I



Treatment
Angiotensin II receptor antagonists may provide an alternative to ACE inhibitors ⁷

Field 11.04 Treatment ARB (angiotensin II receptor Antagonists)



Treatment
Beta blockers should be initiated in patients with LVSD after diuretic and ACE inhibitor therapy

Field 11.06 Treatment Beta blocker



Treatment
Diuretic therapy is likely to be required to control congestive symptoms and fluid retention

Field 11.09 Treatment Diuretic: loop



Treatment
Patients with heart failure due to LVSD who remain moderately to severely symptomatic despite optimal therapy

Field 11.13 Treatment SARA (selective aldosterone antagonist)



Treatment
Only patients whose diagnosis is confirmed should be managed in accordance with NICE recommendations.

Field 14.0 Diagnosis (Dx) Heart Failure



Monitoring
and following up

Field 15.0 Heart Failure Liaison Service
Field 15.05 Palliative Care
Field 15.06 Care of the elderly/Medical
Field 15.07 Cardiology FU
Field 15.08 GP

⁷ Angiotensin II receptor antagonists have been licensed since publication of the Chronic Heart failure guidelines (2003).

2) Measuring patient outcomes and examining variation

Data collected to link clinical data with patient outcomes to examine variation between patient groups

| | |
|-------------|---------------------------|
| Field 1.03 | NHS Number |
| Field 1.06 | Birth date |
| Field 1.07 | Gender |
| Field 1.09 | Postcode Of Usual Address |
| Field 2.00 | Date of admission |
| Field 2.04 | Current inpatient |
| Field 15.10 | Date of discharge |
| Field 16.01 | Event date |
| Field 16.02 | Event |
| Field 17.01 | Life status date |
| Field 17.02 | Life status |

Appendix 2

Participating and non participating NHS Trusts 2008 – 2009 (as of May 2009).

| Registered Trusts submitting more than 10 records per month | Registered | Submitted Records 2008–2009 | HES Data 2007–2008 | % Data Completeness |
|---|------------|--------------------------------|-----------------------|------------------------|
| Aintree Hospitals NHS Trust | Y | 517 | 361 | 143 |
| Heart Of England NHS Foundation Trust | Y | 487 | 1324 | 37 |
| North Tees And Hartlepool NHS Trust | Y | 385 | 473 | 81 |
| Royal Devon And Exeter NHS Foundation Trust | Y | 295 | 447 | 66 |
| Guy's & St Thomas' NHS Foundation Trust | Y | 288 | 504 | 57 |
| Poole Hospital NHS Trust | Y | 270 | 270 | 100 |
| Gwent Healthcare NHS Trust | Y | 254 | 908 | 28 |
| Salisbury Foundation NHS Trust | Y | 253 | 183 | 138 |
| Royal Berkshire And Battle Hospitals NHS Trust | Y | 245 | 357 | 69 |
| Northampton General Hospital NHS Trust | Y | 236 | 237 | 100 |
| Portsmouth Hospitals NHS Trust | Y | 224 | 502 | 45 |
| Sheffield Teaching Hospitals NHS Foundation Trust | Y | 192 | 874 | 22 |
| South Devon Health Care NHS Trust | Y | 190 | 399 | 48 |
| South Tees Hospitals NHS Trust | Y | 190 | 508 | 37 |
| Oxford Radcliffe Hospitals NHS Trust | Y | 187 | 707 | 26 |
| The Queen Elizabeth Hospital King's Lynn NHS Trust | Y | 185 | 339 | 55 |
| Salford Royal Hospitals NHS Trust | Y | 170 | 279 | 61 |
| South Tyneside NHS Foundation Trust | Y | 166 | 191 | 87 |
| Walsall Hospitals NHS Trust | Y | 163 | 386 | 42 |
| Luton And Dunstable Hospital NHS Trust | Y | 162 | 274 | 59 |
| East Sussex Hospitals NHS Trust | Y | 154 | 631 | 24 |
| University College London Hospitals NHS Foundation Trust | Y | 140 | 305 | 46 |
| Milton Keynes General Hospital NHS Trust | Y | 138 | 231 | 60 |
| West Middlesex University Hospital NHS Trust | Y | 135 | 204 | 66 |
| Northern Lincolnshire And Goole Hospitals NHS Trust | Y | 126 | 430 | 29 |
| North Cumbria Acute Hospitals NHS Trust | Y | 124 | 353 | 35 |
| St Helens And Knowsley Hospitals NHS Trust | Y | 122 | 311 | 39 |
| Hywel Dda NHS Trust | Y | 120 | 722 | 17 |

| Registered Trusts submitting less than 10 records per month | Registered | Submitted Records 2008–2009 | HES Data 2007–2008 | % Data Completeness |
|---|------------|--------------------------------|-----------------------|------------------------|
| University Hospitals Coventry And Warwickshire NHS Trust | Y | 114 | 511 | 22 |
| Pennine Acute Hospitals NHS Trust | Y | 109 | 1175 | 9 |
| Royal Cornwall Hospitals NHS Trust | Y | 105 | 677 | 16 |
| Royal United Hospital Bath NHS Trust | Y | 101 | 478 | 21 |
| Royal West Sussex NHS Trust | Y | 100 | 330 | 30 |
| Sherwood Forest Hospitals NHS Trust | Y | 93 | 540 | 17 |
| Harrogate And District NHS Foundation Trust | Y | 89 | 182 | 49 |
| North Hampshire Hospitals NHS Trust | Y | 87 | 158 | 55 |
| Maidstone And Tunbridge Wells NHS Trust | Y | 86 | 447 | 19 |
| Gloucestershire Hospitals NHS Foundation Trust | Y | 83 | 523 | 16 |
| Epsom And St Helier University Hospitals NHS Trust | Y | 77 | 409 | 19 |
| Worthing And Southlands Hospitals NHS Trust | Y | 73 | 399 | 18 |
| Royal Surrey County Hospital NHS Trust | Y | 58 | 184 | 32 |
| Newham University Hospital NHS Trust | Y | 53 | 222 | 24 |
| Queen Mary's Hospital | Y | 45 | 237 | 19 |
| Hinchingbrooke Health Care NHS Trust | Y | 41 | 138 | 30 |
| Guernsey | Y | 39 | Not Available | |
| North Wales NHS Trust | Y | 39 | 452 | 9 |
| Cwm Taf NHS Trust | Y | 51 | 589 | 9 |
| The Mid Cheshire Hospitals NHS Trust | Y | 28 | 236 | 12 |
| Bedford Hospital NHS Trust Hospital | Y | 28 | 252 | 11 |
| Mid Yorkshire Hospitals NHS Trust | Y | 27 | 743 | 4 |
| The Whittington Hospital NHS Trust | Y | 26 | 265 | 10 |
| Gateshead Health NHS Foundation Trust | Y | 25 | 247 | 10 |
| East And North Hertfordshire NHS Trust | Y | 20 | 379 | 5 |
| Royal Brompton And Harefield NHS Trust | Y | 17 | 521 | 3 |
| West Suffolk Hospitals NHS Trust | Y | 16 | 229 | 7 |
| Hereford Hospitals NHS Trust | Y | 13 | 206 | 6 |
| Hillingdon Hospital NHS Trust | Y | 13 | 218 | 6 |
| Hull And East Yorkshire Hospitals NHS Trust | Y | 13 | 395 | 3 |
| Kettering General Hospital NHS Trust | Y | 12 | 255 | 5 |
| Peterborough And Stamford Hospitals NHS Foundation Trust | Y | 12 | 438 | 3 |
| North West Wales NHS Trust | Y | 12 | 452 | 3 |
| Chelsea & Westminster Healthcare NHS Trust | Y | 10 | 143 | 7 |
| West Hertfordshire Hospitals NHS Trust | Y | 10 | 394 | 3 |
| Brighton And Sussex University Hospitals NHS Trust | Y | 7 | 471 | 1 |
| Swindon And Marlborough NHS Trust | Y | 4 | 267 | 1 |
| North Middlesex University Hospital NHS Trust | Y | 3 | 386 | 1 |
| North West London Hospitals NHS Trust | Y | 3 | 566 | 1 |
| Imperial College Healthcare NHS Trust | Y | 2 | 567 | 0 |
| Sandwell And West Birmingham Hospitals NHS Trust | Y | 2 | 868 | 0 |
| Bradford Teaching Hospitals NHS Foundation Trust | Y | 1 | 484 | 0 |
| Worcestershire Acute Hospitals NHS Trust | Y | 1 | 550 | 0 |

| Registered Trusts not submitting data | Registered | Submitted Records 2008–2009 | HES Data 2007–2008 | % Data Completeness |
|---|------------|--------------------------------|-----------------------|------------------------|
| Ashford And St Peter's Hospitals NHS Trust | Y | 0 | 394 | 0 |
| Basildon And Thurrock University Hospitals NHS Foundation Trust | Y | 0 | 404 | 0 |
| Blackpool, Fylde And Wyre Hospitals NHS Trust | Y | 0 | 391 | 0 |
| Buckinghamshire Hospitals NHS Trust | Y | 0 | 331 | 0 |
| Burton Hospitals NHS Trust | Y | 0 | 256 | 0 |
| Calderdale And Huddersfield NHS Trust | Y | 0 | 509 | 0 |
| City Hospitals Sunderland NHS Foundation Trust | Y | 0 | 261 | 0 |
| Colchester Hospital University NHS Foundation Trust | Y | 0 | 436 | 0 |
| County Durham And Darlington Acute Hospitals NHS Trust | Y | 0 | 573 | 0 |
| Ealing Hospital NHS Trust | Y | 0 | 255 | 0 |
| Frimley Park Hospital NHS Foundation Trust | Y | 0 | 238 | 0 |
| Heatherwood And Wexham Park Hospitals NHS Trust | Y | 0 | 421 | 0 |
| Ipswich Hospital NHS Trust | Y | 0 | 495 | 0 |
| King's College Hospital NHS Trust | Y | 0 | 328 | 0 |
| Leeds Teaching Hospitals NHS Trust | Y | 0 | 761 | 0 |
| Liverpool Heart And Chest Hospital | Y | 0 | 385 | 0 |
| North Cheshire Hospitals NHS Trust | Y | 0 | 273 | 0 |
| Northern Devon Healthcare NHS Trust | Y | 0 | 301 | 0 |
| Northumbria Health Care NHS Trust | Y | 0 | 621 | 0 |
| Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust | Y | 0 | 623 | 0 |
| Royal Free Hampstead NHS Trust | Y | 0 | 183 | 0 |
| Royal Liverpool And Broadgreen University Hospital | Y | 0 | 368 | 0 |
| Scarborough And North East Yorkshire Health Care NHS Trust | Y | 0 | 323 | 0 |
| South Warwickshire General Hospitals NHS Trust | Y | 0 | 216 | 0 |
| Southampton University Hospitals NHS Trust | Y | 0 | 517 | 0 |
| Southend Hospital NHS Trust | Y | 0 | 501 | 0 |
| St George's Healthcare NHS Trust | Y | 0 | 457 | 0 |
| Surrey And Sussex Healthcare NHS Trust | Y | 0 | 283 | 0 |
| Tameside And Glossop Acute Services NHS Trust | Y | 0 | 307 | 0 |
| The Lewisham Hospital NHS Trust | Y | 0 | 321 | 0 |
| United Bristol Healthcare NHS Trust | Y | 0 | 324 | 0 |
| University Hospital Birmingham Foundation NHS Trust | Y | 0 | 549 | 0 |
| University Hospital Of North Staffordshire NHS Trust | Y | 0 | 694 | 0 |
| University Hospital Of South Manchester NHS Foundation Trust | Y | 0 | 396 | 0 |
| West Dorset General Hospitals NHS Trust | Y | 0 | 190 | 0 |
| North Wales NHS Trust | Y | 0 | 665 | 0 |
| Isle Of Man Health Services | Y | 0 | Not Available | |

| Trust that have not registered with the audit | Registered | Submitted Records 2008–2009 | HES Data 2007–2008 | % Data Completeness |
|---|------------|--------------------------------|-----------------------|------------------------|
| Airedale NHS Trust | N | 0 | 349 | 0 |
| Barking Havering And Redbridge Hospitals NHS Trust | N | 0 | 788 | 0 |
| Barnet And Chase Farm Hospitals NHS Trust | N | 0 | 215 | 0 |
| Barts And The London NHS Trust | N | 0 | 346 | 0 |
| Bolton Hospitals NHS Trust | N | 0 | 433 | 0 |
| Bromley Hospitals NHS Trust | N | 0 | 259 | 0 |
| Cambridge University Hospitals NHS Foundation Trust | N | 0 | 349 | 0 |
| Central Manchester And Manchester Children's University Hospitals NHS Trust | N | 0 | 303 | 0 |
| Chesterfield Royal Hospital NHS Foundation Trust | N | 0 | 270 | 0 |
| Countess Of Chester Hospital NHS Foundation Trust | N | 0 | 283 | 0 |
| Dartford And Gravesham NHS Trust | N | 0 | 247 | 0 |
| Derby Hospitals NHS Foundation Trust | N | 0 | 568 | 0 |
| Doncaster And Bassetlaw Hospitals NHS Foundation Trust | N | 0 | 670 | 0 |
| Dudley Group Of Hospitals NHS Trust | N | 0 | 433 | 0 |
| East Cheshire NHS Trust | N | 0 | 199 | 0 |
| East Kent Hospitals NHS Trust | N | 0 | 783 | 0 |
| East Lancashire Hospitals NHS Trust | N | 0 | 520 | 0 |
| East Somerset NHS Trust | N | 0 | 202 | 0 |
| George Eliot Hospital NHS Trust | N | 0 | 256 | 0 |
| Homerton University Hospital NHS Foundation Trust | N | 0 | 121 | 0 |
| Isle Of Wight Healthcare NHS Trust | N | 0 | 193 | 0 |
| James Paget Healthcare NHS Trust | N | 0 | 325 | 0 |
| Kingston Hospital NHS Trust | N | 0 | 385 | 0 |
| Lancashire Teaching Hospitals NHS Foundation Trust | N | 0 | 575 | 0 |
| Mayday Healthcare NHS Trust | N | 0 | 318 | 0 |
| Medway NHS Trust | N | 0 | 276 | 0 |
| Mid Essex Hospital Services NHS Trust | N | 0 | 397 | 0 |
| Mid Staffordshire General Hospitals NHS Trust | N | 0 | 268 | 0 |
| Norfolk And Norwich University Hospital NHS Trust | N | 0 | 668 | 0 |
| North Bristol NHS Trust | N | 0 | 591 | 0 |
| Nottingham City Hospital NHS Trust | N | 0 | 976 | 0 |
| Papworth Hospital NHS Trust | N | 0 | 203 | 0 |
| Plymouth Hospitals NHS Trust | N | 0 | 509 | 0 |
| Queen Elizabeth Hospital NHS Trust | N | 0 | 208 | 0 |
| Shrewsbury And Telford Hospitals NHS Trust | N | 0 | 526 | 0 |
| Southport And Ormskirk Hospital NHS Trust | N | 0 | 272 | 0 |
| Stockport NHS Foundation Trust | N | 0 | 344 | 0 |
| Taunton And Somerset NHS Trust | N | 0 | 386 | 0 |
| The Newcastle Upon Tyne Hospitals NHS Trust | N | 0 | 696 | 0 |
| The Princess Alexandra Hospital NHS Trust | N | 0 | 268 | 0 |
| The Rotherham NHS Foundation Trust | N | 0 | 355 | 0 |
| The Royal Wolverhampton Hospitals NHS Trust | N | 0 | 451 | 0 |
| Trafford Healthcare NHS Trust | N | 0 | 85 | 0 |
| United Lincolnshire Hospitals NHS Trust | N | 0 | 852 | 0 |
| University Hospitals Of Leicester NHS Trust | N | 0 | 1222 | 0 |
| University Hospitals Of Morecambe Bay NHS Trust | N | 0 | 540 | 0 |
| Weston Area Health NHS Trust | N | 0 | 185 | 0 |
| Whipps Cross University Hospital NHS Trust | N | 0 | 416 | 0 |
| Winchester And Eastleigh Healthcare NHS Trust | N | 0 | 254 | 0 |
| Wirral Hospital NHS Trust | N | 0 | 501 | 0 |
| Wrightington, Wigan And Leigh NHS Trust | N | 0 | 316 | 0 |
| York Hospitals NHS Trust | N | 0 | 288 | 0 |
| Barnsley Hospital NHS Foundation Trust | N | 0 | 330 | 0 |
| Abertawe Bro Morgannwg NHS Trust | N | 0 | 910 | 0 |
| Mid Yorkshire Hospitals NHS Trust | N | 0 | 743 | 0 |
| United Lincolnshire Hospitals NHS Trust | N | 0 | 852 | 0 |
| Cardiff And Vale NHS Trust | N | 0 | 692 | 0 |
| Powys Teaching Lhb | N | 0 | 72 | 0 |

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The IC is a special NHS health authority that collects, analyses and distributes data to reduce the burden on frontline staff, releasing more time for direct care.

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