NATIONAL CARDIAC AUDIT PROGRAMME

NATIONAL HEART FAILURE AUDIT (NHFA)

2022 Summary Report

(2020/21 data)

NICOR

BRITISH SOCIETY FOR HEART FAILURE

The National Institute for Cardiovascular Outcomes Research (NICOR)

NICOR is a partnership of clinicians, IT experts, statisticians, academics and managers who, together, are responsible for six cardiovascular clinical audits (the National Cardiac Audit Programme – NCAP) and a number of new health technology registries, including the UK TAVI registry. Hosted by Barts Health NHS Trust, NICOR collects, analyses and interprets vital cardiovascular data into relevant and meaningful information to promote sustainable improvements in patient well-being, safety and outcomes. It is commissioned by the Healthcare Quality Improvement Partnership (HQIP) with funding from NHS England and GIG Cymru/NHS Wales.

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British Society for Heart Failure (BSH)

The 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.

Barts Health NHS Trust

With a workforce of around 17,000 people, Barts Health is a leading healthcare provider in Britain and one of the largest NHS Trusts in the country. The Trust's five hospitals – St Bartholomew's Hospital in the City, including the Barts Heart Centre, The Royal London Hospital in Whitechapel, Newham Hospital in Plaistow, Whipps Cross Hospital in Leytonstone and Mile End Hospital – deliver high quality compassionate care to the 2.5 million people of east London and beyond.

The Healthcare Quality Improvement Partnership (HQIP)

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 in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering 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 projects, other devolved administrations and crown dependencies.

www.hqip.org.uk/

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NHFA AT A GLANCE

Data from the period April 2020 to March 2021

Access to specialist heart failure (HF) care and cardiology wards, during the COVID-19 pandemic, is associated with better survival for all and improved treatment at discharge for those with heart failure with reduced ejection fraction (HFrEF).

61,784
total admissions

	All patients	Admitted to cardiology ward	Seen by a specialist
Patients diagnosed with echocardiography	85%	92%	89%
Patients receiving specialist care	88%	99%	100%
Patients with HFrEF discharged on all three disease-modifying drugs	52%	58%	55%
Patients who received a cardiology follow up	39%	52%	43%
Patients who received a Heart Failure nurse follow up	47%	57%	52%
Patients referred to cardiac rehabilitation	12%	18%	14%
Mortality in hospital	9%	6%	8%

Place of care is a key quality indicator for HF as care on a cardiology ward is associated with the best survival, both during the admission and after discharge, better treatment for HFrEF, and the best access to specialist care.

Executive summary

This report summarises selected key findings from the National Heart Failure Audit (NHFA), part of the National Cardiac Audit Programme (NCAP). It deals with a specific and crucial phase in the disease trajectory of patients admitted to hospital with heart failure (HF) in England and Wales. There is a particular focus on a set of quality improvement (QI) metrics, based on standards and guidelines, which aim to drive up standards of care during the acute admission phase to achieve better patient outcomes.

The report covers the financial year 2020/21, during which the coronavirus disease (COVID-19) pandemic has challenged the capacity of healthcare systems around the world. This has included substantial disruptions to cardiovascular care across key areas of healthcare delivery. As a result, there was a marked reduction in the number of submissions to the audit in the 2020/21 cycle. The reduction in Hospital Episode Statistics (HES) and Patient Episode Database for Wales (PEDW) coded HF admissions, the usual numerical comparator for case ascertainment, was similarly reduced, by 14%, giving a case ascertainment of 82% overall, and this report remains an accurate reflection of HF care.

Some areas of care appear to have improved or remained stable despite the pandemic, although these trends are reported in percentage terms, rather than in absolute numbers, and so should be interpreted with caution. More worryingly, there are a larger number of quality measures which appear markedly compromised and, overall, there is a considerable way to go before all hospitalised heart failure patients receive optimal care.

WHERE THINGS WORSENED / CAUSES FOR CONCERN	
There was a reduction in HF admissions	HF admissions dropped 11% from 2019/20 to 61,784, indicating some patients may not have received the care they needed.
Fewer hospitals achieved echocardiography target	48% of hospitals achieved an echocardiography rate of 90% or more, a decrease of 13%. Echocardiography was performed in 85% of patients, down 1% from 2019/20.
There was a fall in timely specialist follow-up	35% of patients had HF specialist follow-up within 2 weeks of discharge, down from 40% of patients in 2019/20.
Referral rates to rehabilitation dropped	Only 12.2% of patients referred for cardiac rehabilitation during hospitalisation, down 3% from 2019/20.
Older patients less likely to access diagnostics, life-saving drugs and specialist care	Older people continued to have more limited access to diagnostics, life-saving drugs and specialist care at levels seen in previous years. 42% of those aged over 75 are admitted to cardiology wards compared with 60% for those under 75 years old.
Access to diagnostics, cardiology care and cardiology beds needs to improve for females	83.5% of females received an echocardiogram compared with 86.2% of males. Females are less likely to be admitted to cardiology wards than males (42% against 52%).

WHERE LEVELS OF CARE WERE MAINTAINED OR REMAINED BROADLY STABLE	
Similar proportions of patients were seen on a cardiology ward	While slightly higher than 2019/20, still less than half of patients are seen on a specialist cardiology ward. The variation between hospitals was more marked.
Mortality rates were unchanged	In-patient mortality of 9.2% and 1-year mortality of 39% were the same as for 2019/20 (30-day mortality rose slightly).
Prescribing of best-practice drugs on discharge were similar	Discharge on all three disease-modifying for HFrEF rose slightly to 52% but still requires significant improvement.
Length of stay shortened	Median length of stay (LOS) fell from 9 days to 8 days in cardiology and for those seen by specialists (but a shorter LOS may compromise patient stability pre-discharge).
WHERE THINGS IMPROVED / PRACTICES CHANGED	
Prescribing of beta-blockers for HFrEF patients improved	10% improvement in the number of hospitals achieving the 90% or greater prescription of beta-blockers for HFrEF patients.
More hospitals provided a high proportion of specialist care	65% of hospitals achieved specialist review rates of over 80%, an increase of 4%.

Summary of recommendations

1. Hospitals not achieving the recommended standard of the use of in-patient echocardiography for patients with acute heart failure should urgently review their clinical pathways and ensure that echocardiography is performed and ideally within the first 48 hrs of admission.
2. Hospitals should ensure that high-risk cardiac patients have access to a cardiology ward. Heart failure patients are often those in the highest risk groups.
3. Hospitals not achieving the standards for ensuring a patient with acute heart failure is managed on a cardiology ward or seen by a heart failure team should review their pathways of care and consider a quality improvement programme to improve on their current performance.

   Hospitals that do not have a clinical lead for Heart Failure should appoint one: ideally a consultant cardiologist with sub-specialty training in heart failure.

   Hospitals that do not have access to specialist heart failure nurses within their hospital team or in the community should urgently seek to appoint them.
4. Greater attention is needed to ensure all patients with HFrEF receive the disease-modifying drugs that they should be on unless there is a contra-indication. This can be increased by patients being managed on cardiology wards or being seen by a HF specialist team, early during an admission. Those hospitals not meeting the expected standards should perform a clinical pathway review to investigate where improvements can be made.
5. More attention to follow-up arrangements is required so that patients are referred for Cardiology & Specialist Heart Failure Nurse follow-up, ideally leaving hospital with their first appointment. Hospitals should review their pathways for referral to cardiac rehabilitation to allow greater access and uptake for heart failure patients.

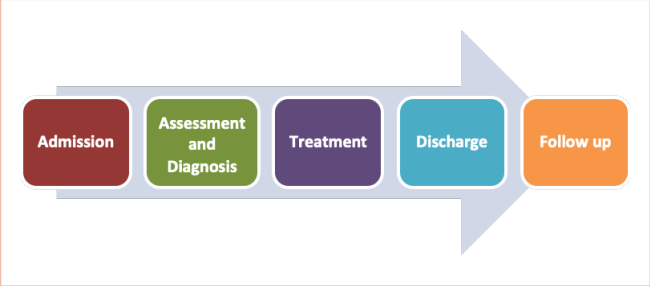
1 Introduction

This report summarises the key findings from the National Heart Failure Audit (NHFA), part of the National Cardiac Audit Programme (NCAP).

The focus is on a number of specific quality improvement (QI) metrics which aim to drive up standards of care during the acute admission phase to achieve better patient outcomes. This is accomplished by capturing data on clinical indicators that have a proven link to better outcomes in clinical trials, encouraging the increased use of diagnostic tools and disease-modifying treatments recommended in National[1,2] and International Clinical Practice Guidelines[3,4] and Quality Standards[5,6], and by following robust referral pathways.

The report explores the characteristics of patients requiring admission to hospital with HF, describes their in-hospital investigation, treatment, access to specialist care, it also deals with discharge planning as well as the follow-up which they are offered. The results reflect the patient journey for people hospitalised because of HF [Figure 1.1]. For a general introduction to HF and the audit methodology see Appendix 1 and Appendix 2.

Figure 1.1: The patient pathway for a typical HF patient in the NHFA audit



The latest data in the audit are for the financial year 2020/21, during which the COVID-19 pandemic has challenged the capacity of healthcare systems around the world. It has also resulted in substantial disruptions to cardiovascular care across key areas of healthcare delivery. As a result, there was a marked reduction in the number of submissions to the audit in the 2020/21 cycle.

The rest of this report is structured as follows:

Section 2 highlights the principal impacts of the COVID-19 pandemic.

Section 3 focuses on four of the Quality Improvement (QI) metrics which should continue to be a priority, either for teams within hospitals or for those leading service commissioning and development at Integrated Care System (ICS) level.

Section 4 provides some pointers towards the future direction of the audit.

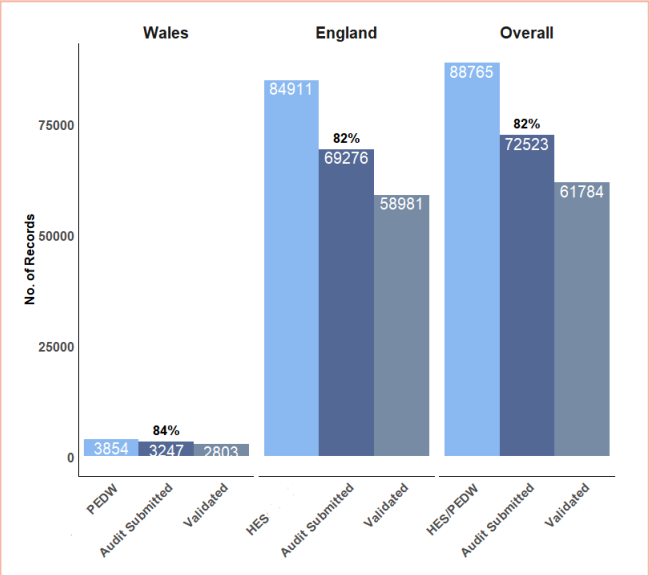
2 Principal impacts of the COVID-19 pandemic

2.1 There was a sharp fall in HF admissions

Data were provided on 61,784 validated hospital admissions of patients with acute heart failure who either died as an in-patient or who survived to discharge between April 2020 and March 2021 [Figure 2.1]. This is an 11% reduction from the previous year.

The reduction in overall submissions in 2020/21 reflects the impact of the first two waves of the COVID-19 pandemic. The case ascertainment remains substantial (82% of HES/PEDW coded heart failure admissions were submitted to the audit, of which 85% were confirmed as heart failure). These data, therefore, still give a very accurate picture of hospitalised HF patients in England and Wales.

Figure 2.1: Validated HF hospital admissions in England and Wales, 2020/21 [NHFA data]

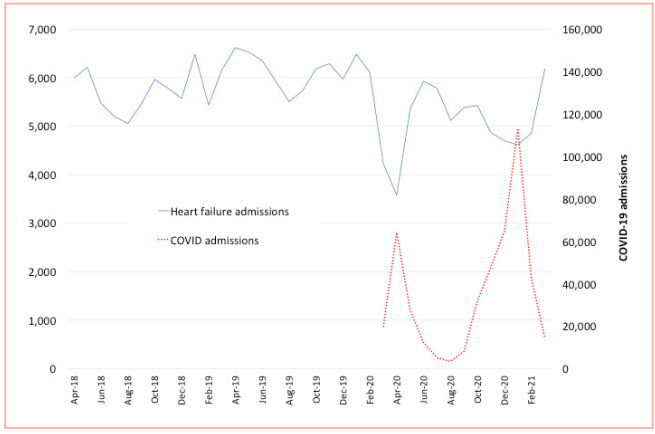


2.2 Monthly admissions were dramatically affected by the pandemic waves

Monthly HF admissions during the first two waves of the COVID-19 pandemic are shown in Figure 2.2. HF admissions began to fall steeply even before the first lockdown from 23rd March 2020 but then rebounded to normal or near normal levels with a more modest fall in the run up to the second lockdown.

Towards the end of our reporting cycle in March 2021, as the second wave of COVID-19 declined, HF admissions can be seen to be increasing rapidly again. The temporary reduction in hospitalisations is consistent with reports from earlier in the pandemic.[7] [8] [9]

Figure 2.2: HF hospital admissions in England and Wales against COVID-19 hospitalisations, 2018/19 – 2020/21 [NHFA data]



COVID-19 admissions from 23rd March 2020

A genuine reduction in patients, either not presenting to hospital or not being admitted to hospital, likely reflects the complexities of a mix of factors. These include government COVID briefings, the news, a diversity of patients' and health care professionals' illness beliefs, redeployment of staff in hospitals and elsewhere, and the already well-rehearsed challenges of providing hospital care during the pandemic.

Another report suggests that the patients admitted during this period had an excess risk of cardiovascular and specifically HF deaths.[8]

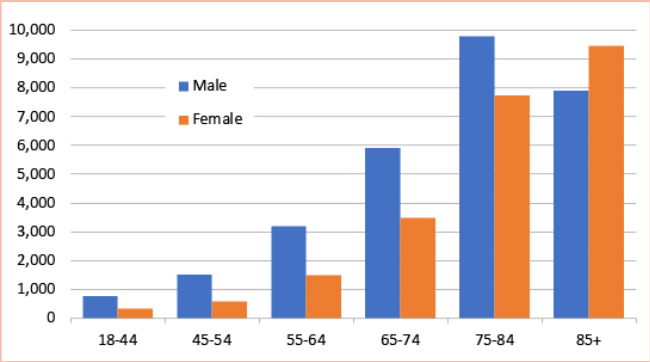
An additional, quantitatively less important factor is that with staff redeployment there may have been issues around all aspects of HF coding and data submission to the NHFA audit.

2.3 Average age of patients fell slightly after years of rising

The gradual year-on-year increase in average age which had been evident did not continue in 2020/21. Indeed, there was a slight fall in the mean age of all patients from 78.4 years to 77.8 years (75.8 for males and 80.2 years for females).

There were more males in each age category other than the 85 plus age group where females were in the majority [Figure 2.3].

Figure 2.3: Age and sex of HF patients in England and Wales at first admission, 2020/21 [NHFA data]



2.4 There were slight changes in the profile of HF patients in terms of LV dysfunction, causes and comorbidities

Echocardiography provides crucial information on the type of HF and its underlying aetiology. Again, this year, very few patients had a normal echo (less than 1%) [Table 2.1]. Those with a normal echocardiogram were excluded unless they had atrial fibrillation recorded.

Most patients had HFrEF (58%), although this is slightly lower than the 62% reported in 2020/21. This may reflect the lower numbers submitted or could be due to COVID-19, where there were fewer myocardial infarction (MI) admissions recorded early in the pandemic (MI being one of the most potent drivers of subsequent HF).

The declining proportion of HFrEF is important as it remains the type of heart failure with the most therapies proven to alter the natural history of the disease. If this finding persists as COVID-19 settles, it will translate into our outcome data and further underscore the need for more research into heart failure with preserved ejection fraction (HFpEF) to generate disease-modifying therapies, suitable for the older, more comorbid population with this diagnosis.

Also of note is the increasing prevalence of significant valve disease, at over 41%. This will necessitate the need for greater access to percutaneous and surgical options for valve disease in HF patients in the future. During the pandemic, there was a significant fall in treatments available for those with valve disease [see NACSA report].

As in previous years, ischaemic heart disease (IHD) is more common in those with HFrEF, whereas hypertension and valve disease are more associated with HFpEF. Atrial fibrillation occurs in 53% of those with HFpEF.

Of note is the consistently high co-morbidity burden. Over one third of patients have diabetes and almost 20% have chronic obstructive pulmonary disease (COPD). Just under 10% are recorded as having asthma [Table 2.2].

Table 2.1: Overall echo diagnosis breakdown of HF patients in England and Wales, 2020/21 [NHFA data]

Assessment and diagnosis	Percentage of total
Normal echo	1
Left ventricular systolic dysfunction (LVSD)	58
Left ventricular hypertrophy (LVH)	7
Valve disease	41
Diastolic dysfunction	33
Other diagnosis	21

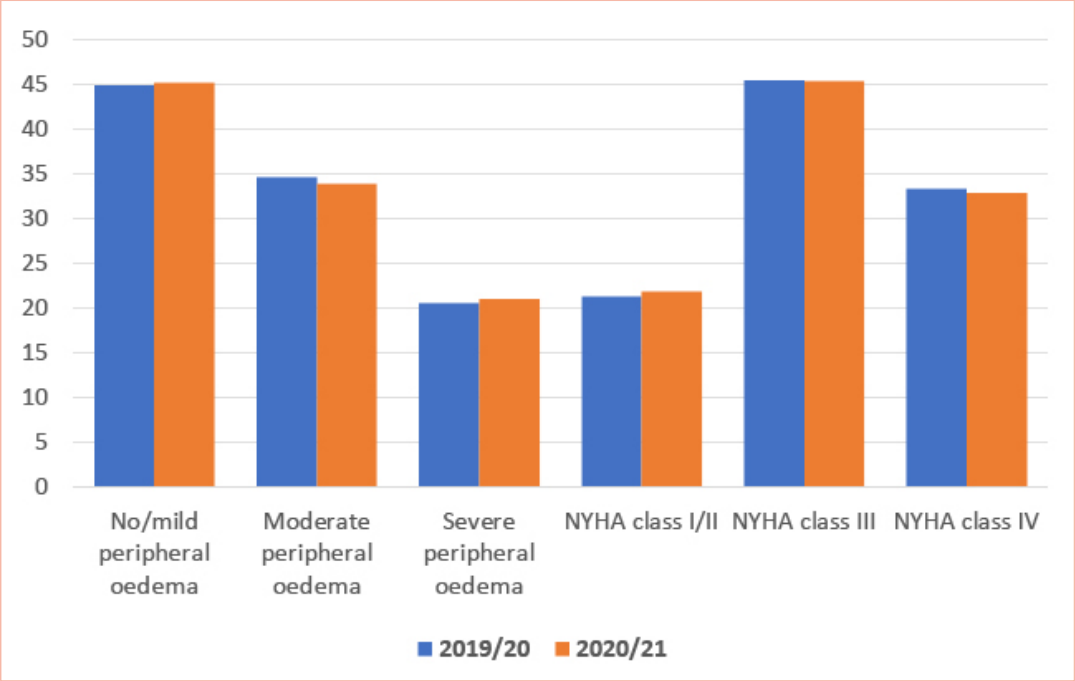
Table 2.2: Causes and comorbidities of heart failure in HF patients in England and Wales, 2020/21 [NHFA data]

Medical history	HFrEF (%)	HFpEF (%)
IHD	41	33
Atrial fibrillation (from ECG)	41	53
Valve disease	26	37
Hypertension	55	64
Diabetes	34	36
COPD	16	20
Asthma	10	10

2.5 Severity of symptoms at admission was similar to previous years

Previous reports have cited that those admitted during the early part of the pandemic were sicker than usual.[7 8 9] Our aggregate data in this report, covering the whole year, do not support that finding [Figure 2.4], although this may have varied between hospitals. The patients had comparable disease severity, in terms of their NYHA Class and degree of peripheral oedema, to that seen in 2019/20.

Figure 2.4: Severity of symptoms and signs of heart failure (%) in HF patients in England and Wales), 2019/20 and 2020/21 [NHFA data]



2.6 In-hospital mortality of HF patients did not change significantly

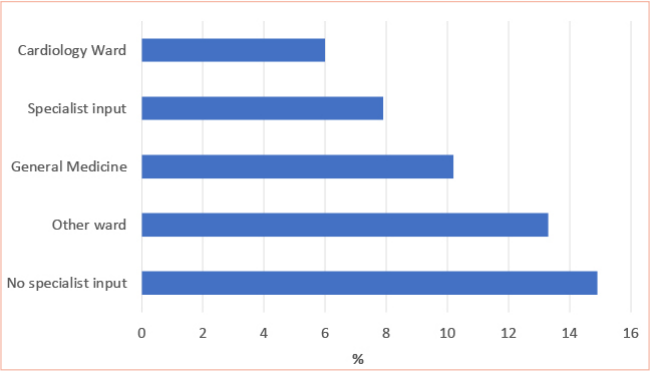
Good specialist HF care reduces mortality in HF, and most especially in HFrEF. The NHFA has repeatedly shown that drugs (BBs, ACEis/ARBs, and MRAs) known from randomised controlled trials to confer mortality and other benefits, also confer this benefit when prescribed during in-patient care.[10] Mortality during an index admission reflects the quality of overall in-patient care and the benefit of high-quality in-patient care persists, beyond the index admission, for years.

The 30-day mortality reflects the quality of care during the index admission, alongside discharge planning and transitional care, and 1-year mortality reflects care during the index admission, alongside the longer-term follow-up care. All are therefore central to the patient journey and are of particular interest for the current report because of the impact of COVID-19. Please see Appendices 3 and 4 for Kaplan-Meier survival curves and multivariate analyses respectively.

In-hospital mortality for 2020/21 was 9.2%, similar to the previous year. Mortality varies with age, being 5.8% for those under 75 years and 10.9% for those aged 75 years or older.

As in previous years, mortality was lower for patients admitted to specialist cardiology wards (6.0%) compared to general medical wards (10.2%). It was also lower for those patients accessing specialist care (7.9%) compared to those who receive no specialist care (14.9%) [Figure 2.5].

Figure 2.5: In-hospital mortality of HF patients in England and Wales, 2020/21 [NHFA data]



These findings are all important since they show that during this first year of the COVID-19 pandemic, patients who were admitted to hospital and received specialist care had a markedly better outcome than those who did not. This differential is more marked than last year (6% mortality on cardiology wards in both this and the previous audit cycle, 7.9% for specialist care in both audits, now compares with 14.9% for those not receiving any specialist care, up from 13.3% in 2019/20). As always, there were marked variations in these figures between different hospitals.

These findings suggest that the HF patients who were admitted to hospital and received specialist care, derived the **usual benefit** from this care, rather than in-patient care posing a risk.

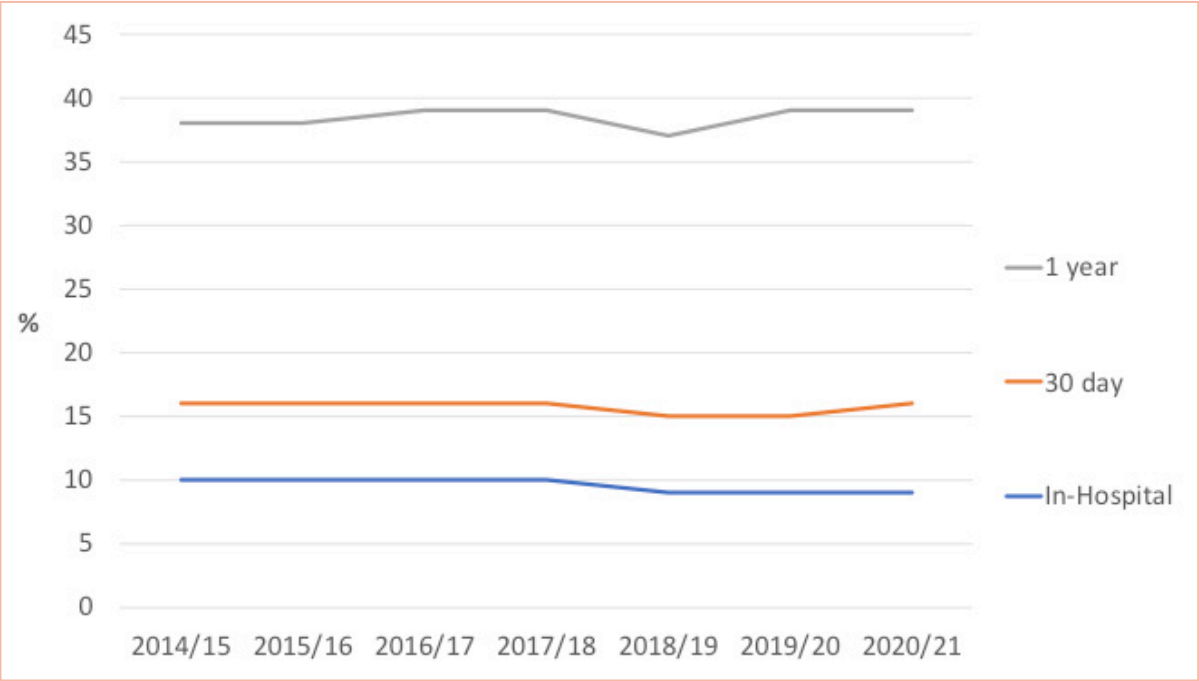
Many HF teams report being redeployed partially or completely during the first COVID-19 wave, severely compromising care both for in-patients and out-patients, whereas this did not happen to the same extent during the second wave. Hospital-level data suggest that large tertiary centres had greater capacity to maintain specialist services throughout. Hospitals therefore need to review the adequacy of their current HF staffing levels accordingly, with careful review of their hospital data for the year 2020/2021, to ensure adequate HF specialist staffing provision.

The 1-year mortality rate (39%) [Figure 2.6] for patients admitted with heart failure was unchanged from last year. Other published reports from the UK concerning the earlier part of the pandemic[7 8] have reported higher death rates in hospital during COVID-19. It is also possible that HF patients had a higher mortality rate in the community during this time.[9]

Our data are more comprehensive, reporting on substantially higher numbers and therefore may be more accurate or else the higher early mortality previously observed has been diluted over time.

Against this, there were fewer reported admissions in 2020/21 than in previous years. Alongside reduced admissions (discussed above), it is possible that patients with chronic HF were amongst those who were admitted and died with COVID-19, and so appropriately were not captured by our data. However, the lack of an increased mortality during this period may also very well reflect the efforts of hospital HF services to maintain specialist care for HF patients, despite the pandemic.

Figure 2.6: In-patient, 30-day and 1-year post admission mortality (%) of HF patients in England and Wales, 2014/15 – 2020/21 [NHFA data]



While our aggregate data report the unchanged mortality of HF during the pandemic, suggesting that overall HF services provided the specialist care that we know improves HF outcomes, there was huge inter-hospital variation in mortality during the hospital stay [Figure 2.7] and at 30-days for those surviving to discharge [Figure 2.8]. This may reflect different hospitals' resilience during the pandemic. It is possible those with lower mortality rates had larger numbers of cardiologists and HF nurses who were able to maintain HF services, whereas smaller units may have suffered more from redeployment and were therefore unable to provide specialist care during this time.

Figure 2.7: Hospital inpatient mortality (%) for HF patients in England and Wales by hospital, 2020/21 [NHFA data]

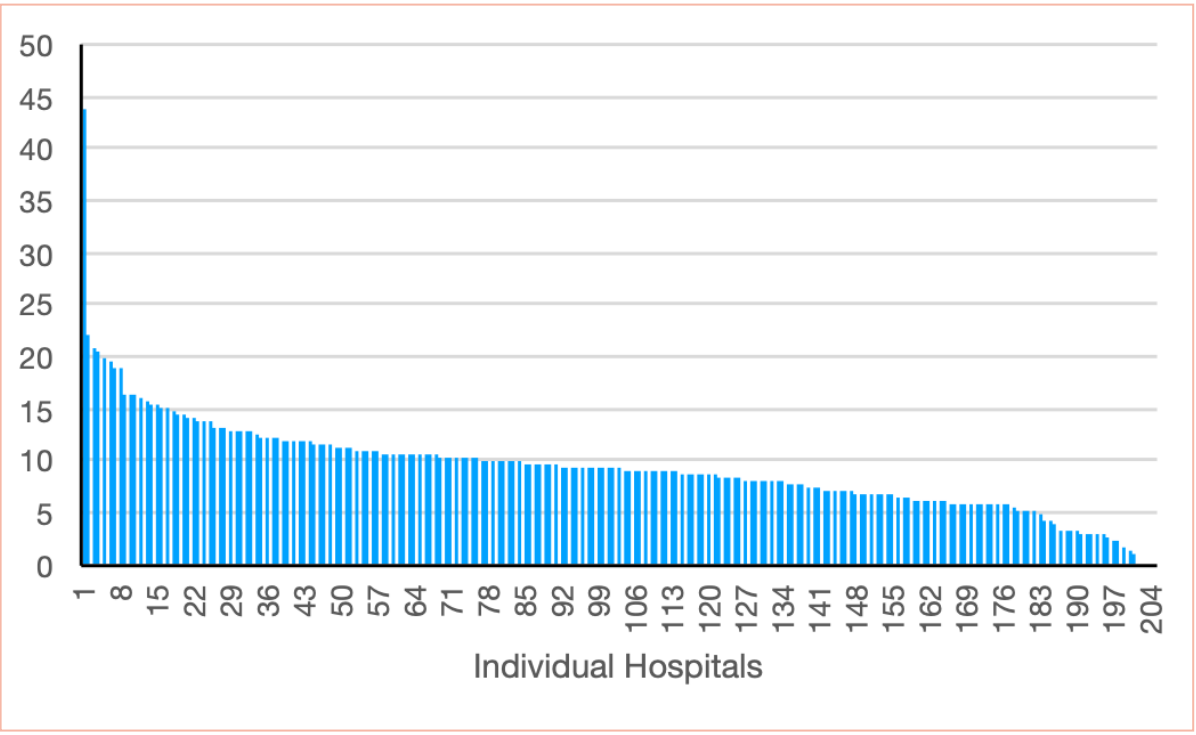
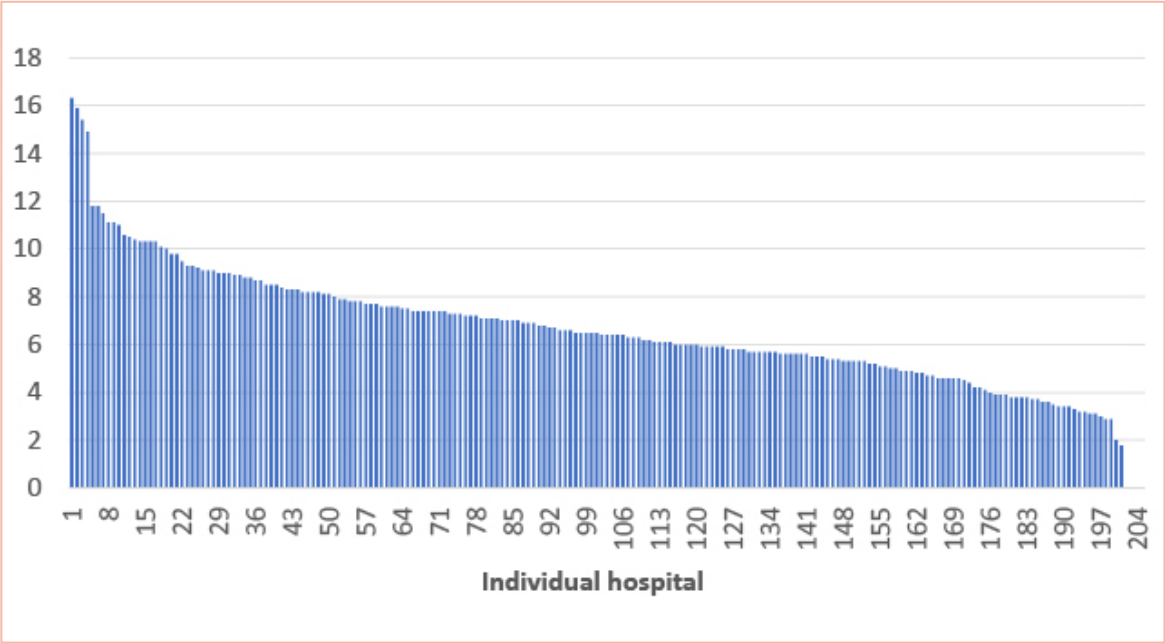


Figure 2.8: Hospital 30-day mortality (%) for HF patients in England and Wales by hospital, 2020/21 [NHFA data]



The variation in mortality rates between hospitals is likely to be the result of differences in patient characteristics and variations in care, including the complexity of ensuring continuity of care as patients move from one health provider or setting to another. This has been made even more challenging by the pandemic. In addition, this variability may also have reflected differences in data collection and coding practices and any significant mortality differences arising between hospitals must be interpreted with caution.

A risk-adjustment model has been derived using data from previous audit cohorts. It is currently being validated in audit cycle years that do not encompass COVID-19. Once the risk-adjustment model is robust, funnel plot analyses will be carried out to detect outliers for mortality. These will be published and available on the website.

2.7 Length of stay was reduced

Length of stay (LOS) for those admitted to cardiology wards and those accessing care by HF specialists is usually longer than that for patients admitted to general medicine or who do not access specialist services. This year the median LOS was reduced from 9 days to 8 days both in cardiology wards and for those being seen by HF specialists. LOS remained at 6 days for those admitted to general medical wards and 5 days for those not seeing specialists.

The lower LOS for those not accessing specialist care may reflect the pressure on general services to discharge patients sooner during the pandemic to accommodate the surge in COVID-19 admissions.

This shorter LOS may also be a factor in the slightly higher 30-day mortality seen this year when compared with the pre-COVID-19 cycle. Whilst there is enormous enthusiasm by some for ever-shorter LOS, and during the pandemic very real bed pressures for this, the practice may compromise the ability to ensure patient stability pre-discharge.[2]

2.8 Access to specialist and other follow-up care was affected

During 2020/21, the reduction in accessing either hospital or community HF services within 2 weeks of leaving hospital would have had a negative effect on the ability to provide care for patients who had deteriorated or had other problems that needed addressing.

Another factor affecting on-going care would have been the limited face-to-face GP access, alongside reduced access to blood tests.

3 Selected quality improvement metrics

3.1 Echocardiography for the assessment and diagnosis of HF: Considerable room for improvement and hospital variation has become more marked during COVID-19

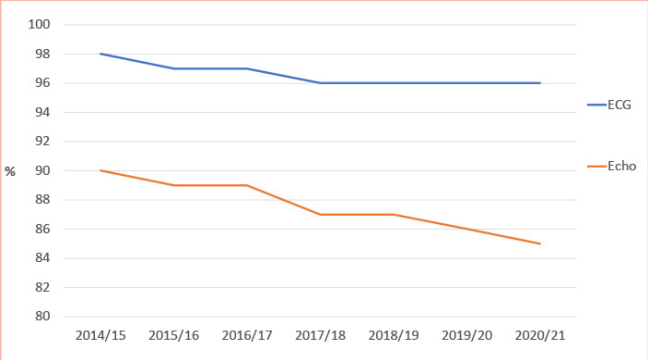
3.1.1 Overview of QI metric

QI Metric Description/Name	Use of echocardiography for assessment and diagnosis.
Why is this important?	Attempting a diagnosis of heart failure on clinical symptoms and signs alone will result in an incorrect diagnosis 50% of the time. An accurate diagnosis requires an investigation to confirm an underlying structural or functional abnormality of the heart (most commonly performed by echocardiography). This also allows appropriate treatment of the individual.
QI theme	Effectiveness, safety.
What is the standard to be met?	There is no accepted national standard here. The NICE acute heart failure guideline recommends an early inpatient echocardiogram for all new presentations of acute HF. Accepting that some patients may have had a recent echocardiogram, the national audit standard set is for at least 90% of patients to undergo echocardiography.
Key references to support the metric	NICE Clinical guideline [CG187]. Acute heart failure: diagnosis and management.[2]
Numerator	Number of patients with a first admission with acute heart failure for whom an in-patient echocardiogram was performed.
Denominator	Number of patients with a first admission with acute heart failure.
Trend	Echocardiography was performed in 85% of patients. This was a decrease of 1% from last year. When we observe the last seven-year trends there is an obvious decline in echocardiography rates. 15% of patients are now not undergoing echocardiography in hospital and/or have no record of an echocardiogram within the last 12 months [Figure 3.1].

Please see Appendix 5 for hospital level data for echocardiography and other variables

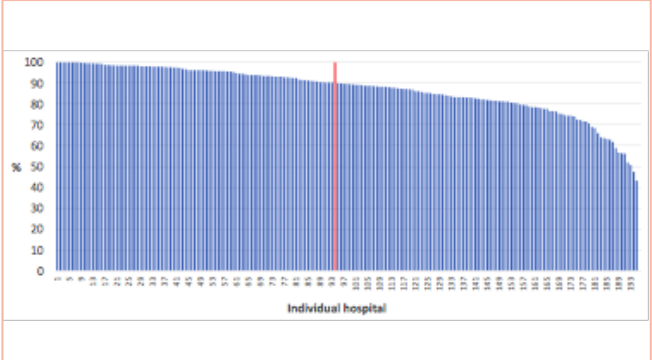
3.1.2 Audit results

Figure 3.1: Percentage of HF patients receiving ECG and echocardiography diagnostic tests, 2014/15 – 2020/21 [NHFA data]



Forty-eight percent of hospitals achieved an echocardiography rate of 90% or more, a decrease of 13% from last year [Figure 3.2].

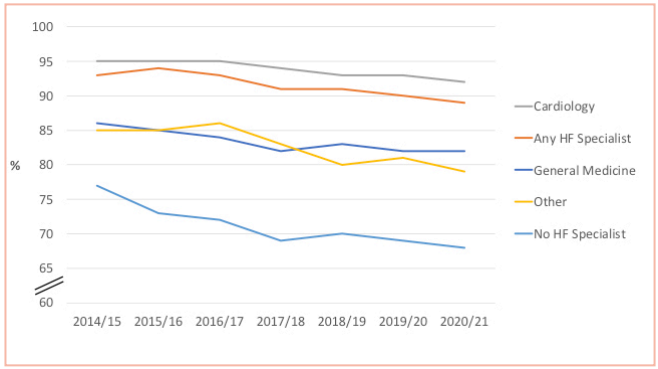
Figure 3.2: Percentage of HF patients in England and Wales undergoing echocardiography by hospital, 2020/21 [NHFA data]



*Hospitals to the right of the red line are **not** achieving the 90% of heart failure patients receiving echocardiography. Data from 195 hospitals; hospitals reporting <20 cases were excluded.*

Figure 3.3 shows that patients admitted to cardiology wards were more likely to have echocardiography than those admitted to general medical wards (92% versus 82%). However, it should be noted that patients receiving specialist input to their care, no matter where they are admitted, had higher rates of echocardiography (89%) but they were still inferior to those achieved on cardiology wards.

Figure 3.3: Percentage of HF patients in England and Wales receiving echocardiography by place of care (or with specialist input regardless of the place of care), 2020/21 [NHFA data]



There was also a substantial drop in the echocardiography rate for those aged 75 years or more (down to 83%) and also for those not having access to specialist care (down to 69%).

Females were also less likely to receive an echocardiogram than males (83.5% compared with 86.2%).

CASE STUDY

Dr Resham Baruah, clinical lead for heart failure at the Chelsea and Westminster Hospital, London, explains how they maintained their high echocardiography rate during COVID-19

Chelsea & Westminster is a busy central London teaching hospital. During the audit period almost all people admitted with suspected HF received timely in-patient echocardiography.

Improved access was affected by multiple factors; a significant fall in outpatient work and cardiology admissions. Sonographers, integral HF team members, focussed on inpatients, and all echo referrals were triaged by Consultants. Most of the cardiology team moved into the echo department, driving improved collaboration and Consultant access.

The cardiology service was supported between March-June 2020 by redeployment of out-of-programme registrars. The additional staffing provided flexibility and resilience to rotas. The value added by the HF team, was reflected by the avoidance of redeployment of the specialist HF nurses and physiologists to the COVID-19 wards in subsequent waves.

Emerging from the pandemic, we continue to work hard to attract, train and retain new team members, so that we maintain and build on our outstanding care.

3.1.3 Recommendations for those not achieving the standard

Hospitals not achieving the recommended standard of the use of in-patient echocardiography for patients with acute heart failure should urgently review their clinical pathways and ensure that echocardiography is performed and ideally within the first 48 hrs of admission.

3.2 Place of Care: More patients should be admitted to a cardiology ward

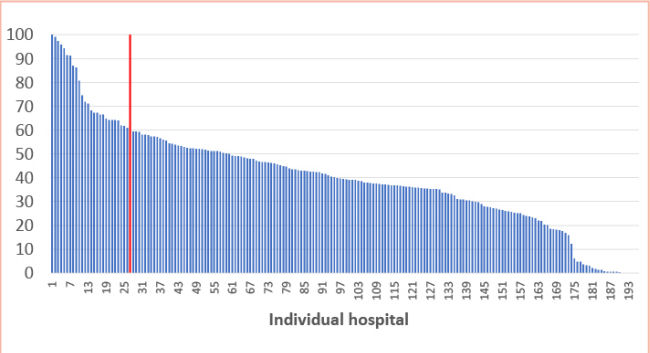
3.2.1 Overview of QI Metric

QI Metric Description/Name	Place of care
Why is this important?	Place of care is a key quality indicator for HF as care in cardiology wards is associated with lower in-hospital and subsequent mortality, better treatment for patients with HFrEF on discharge, and more access to specialist care.
QI theme	Effectiveness, safety.
What is the standard to be met?	There is no official standard. The NHFA has recommended improved access to cardiology wards as it is associated with better outcomes.
Key references to support the metric	NICE Clinical guideline [CG 187]. Acute heart failure: diagnosis and management.[2]
Numerator	All patients admitted with acute heart failure admitted to a cardiology ward.
Denominator	All patients admitted with acute heart failure.
Trend	In this audit cycle, as in the preceding six years, fewer than half of patients were admitted to cardiology wards. However, the trend is upwards again with 48% getting to cardiology this year. Whilst the low figure may reflect a fixed number of cardiology beds being available in most hospitals, there is an enormous variation within the audit in the percentage being treated in cardiology wards (0-100%) [Figure 3.4]. Access to cardiology wards was lower for those >75 years at 42% versus 60% for those ≤75 years. Similarly, females were less likely to get to cardiology (42%) than men (52%). Improving access to a Cardiology ward needs to be addressed locally as a matter of urgency.

3.2.2 Audit Results

Only 13% of hospitals achieved the aspirational target of 60% of HF admissions being managed in a cardiology ward.

Figure 3.4: Percentage of HF patients in England and Wales admitted to a cardiology ward, 2020/21 [NHFA data]



*Hospitals to the right of the red line are **not** achieving the 60% of heart failure patients being admitted to a cardiology ward. Data are from 195 hospitals; hospitals reporting <20 cases were excluded.*

3.2.3 Recommendation for those not achieving the standard

Hospitals should ensure that high-risk cardiac patients have access to a cardiology ward. Heart failure patients are often those in the highest risk groups.

3.3 Specialist multidisciplinary care: more patients on general wards should be seen by the HF team

3.3.1 Overview of QI Metric

QI Metric Description/Name	Access to specialist HF care
Why is this important?	Access to specialist HF care (by cardiologists and specialist HF nurses) is associated with lower in-hospital and out-of-hospital mortality, and better treatment of patients with HFrEF on discharge.
QI theme	Effectiveness, safety.
What is the standard to be met?	Accepting that some patients with HF may have multiple comorbidities and be more appropriately cared for by other physicians, the audit standard is that at least 80% of patients admitted with acute heart failure should be seen by a member of the specialist heart failure team. Teams looking after HF patients on non-cardiology wards should be encouraged to refer to the HF team and the HF team need to actively seek out these patients.
Key references to support the metric	NICE Clinical guideline [CG 187]. Acute heart failure: diagnosis and management.[2]
Numerator	All patients admitted with acute heart failure who are seen by a member of the HF team.
Denominator	All patients admitted with acute heart failure.
Trend	Sixty-five per cent of hospitals achieved specialist review rates of over 80%. This is an increase of 4% since last year [Figure 3.5].

3.3.2 Audit Results

Access to specialist care is a very strong recommendation in the NICE acute heart failure guideline.[2]

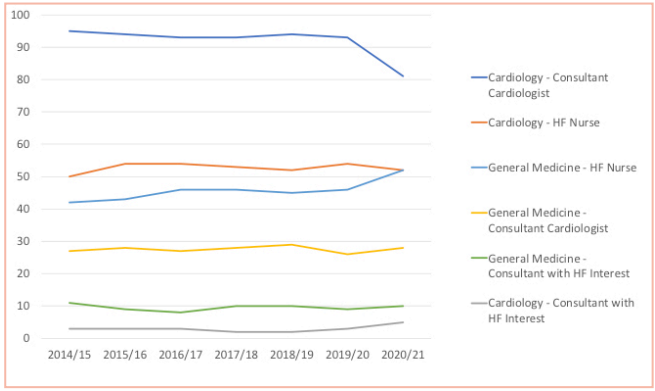
"All hospitals admitting people with suspected acute heart failure should: provide a specialist heart failure team that is based on a cardiology ward and provides outreach services."; and "ensure that all people being admitted to hospital with suspected acute heart failure have early and continuing input from a dedicated specialist heart failure team."

Eighty-eight per cent of patients were seen by a HF specialist during the admission. This can either be a consultant cardiologist, another consultant with specialist HF interest and training (usually a care of the elderly physician) or a HF specialist nurse (and ideally by more than one member). Fifty-three per cent of patients were seen by a consultant cardiologist and 49% of patients were seen by a HF specialist nurse during their admission.

For those on cardiology wards, 99% were seen by specialists, 82% were seen by a consultant cardiologist and 52% by HF nurses. There is a reduction from 90% seen by a cardiologist from last year [Figure 3.5].

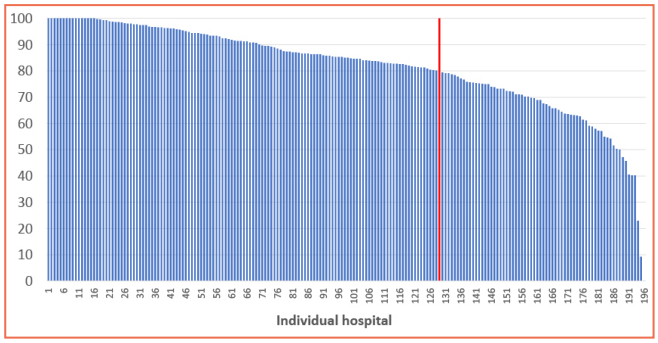
Overall, 74% of patients on general medical wards were seen by 'any HF specialist'. The proportion of those seen by specialist HF nurses decreased in cardiology (by 2%) to 52% and increased in general medicine wards (by 1%) to 46%, respectively.

Figure 3.5: Specialist input for HF patients (%) in England and Wales, 2014/15 – 2020/21 [NHFA data]



Specialist input rates of over 80% were achieved by 132 hospitals, 65% of the total in the audit [Figure 3.6]. This is another QI metric with huge inter-hospital variability and which presents significant scope for improvement. This is an improvement of 1% of hospitals since last year.

Figure 3.6: Inter-hospital variation in percentage of HF patients seen by a specialist, 2020/21 [NHFA data]



*Hospitals to the right of the red line are **not** achieving the target of 80% of HF patients seen by a specialist. Data from 195 hospitals; hospitals reporting <20 cases were excluded.*

CASE STUDY 2:

Dr Angela Gallagher, clinical lead for heart failure at Newham University Hospital, London, explains how they achieved excellence in specialist care during COVID-19

We are a network site of Barts Heart Centre and were able to maintain an in-patient echo service throughout the pandemic. We have a cardiac physiologist dedicated to providing the service. It runs six days a week. The lists are jointly vetted in order of clinical priority.

A consultant of the week model for cardiology was introduced at the start of the pandemic. There is a daily consultant ward round to review new admissions and the other in-patients. There is also a dedicated cardiology registrar who covers in-patient referrals and discusses them with the consultant.

To improve the prescription of prognostic medications we have worked with medical, cardiology colleagues and pharmacists to increase awareness and education and to transfer heart failure patients to cardiology.

3.3.3 Recommendations for those hospitals not reaching the standards

Hospitals not achieving the standards for ensuring a patient with acute heart failure is managed on a cardiology ward or seen by a heart failure team should review their pathways of care and consider a quality improvement programme to improve on their current performance.

Hospitals that do not have a clinical lead for Heart Failure should appoint one: ideally a consultant cardiologist with sub-specialty training in heart failure.

Hospitals that do not have access to specialist heart failure nurses within their hospital team or in the community should urgently seek to appoint them.

3.4 Best-practice drug treatment at discharge for HFrEF should be followed

3.4.1 Overview of QI metric

QI Metric Description/Name	Best-practice treatment at discharge
Why is this important?	Prescription of an angiotensin-converting enzyme inhibitor (ACEi), beta blocker (BB) and mineralocorticoid receptor antagonist (MRA) are key performance indicators for patients with HFrEF as these drugs are associated with better survival, lower hospitalisation rates and improved quality of life.
QI theme	Effectiveness.
What is the standard to be met?	All patients with HFrEF should be prescribed an ACEi, beta blocker and MRA unless contra-indicated.
Key references to support the metric	NICE guideline [NG 106]. Chronic heart failure: diagnosis and management.[1] NICE Clinical guideline [CG 187]. Acute heart failure: diagnosis and management.[2] ESC 2021 Heart Failure Guideline.[4]
Numerator	All patients with HFrEF prescribed each of these drug classes, unless there is a contraindication.
Denominator	All patients with HFrEF.
Trend	High aggregate standards were again achieved with 84% of patients being discharged on an ACEi or angiotensin receptor blocker (ARB) and 91% on a beta-blocker. Further improvements were seen compared to 2019/20 with 61% on an MRA [Table 3.1]. However, arguably a more relevant and challenging target is the number discharged on all three medicines, which has increased only to 52%, from 48% last year. Prescription of diuretics has remained static and digoxin use has fallen to 20%.

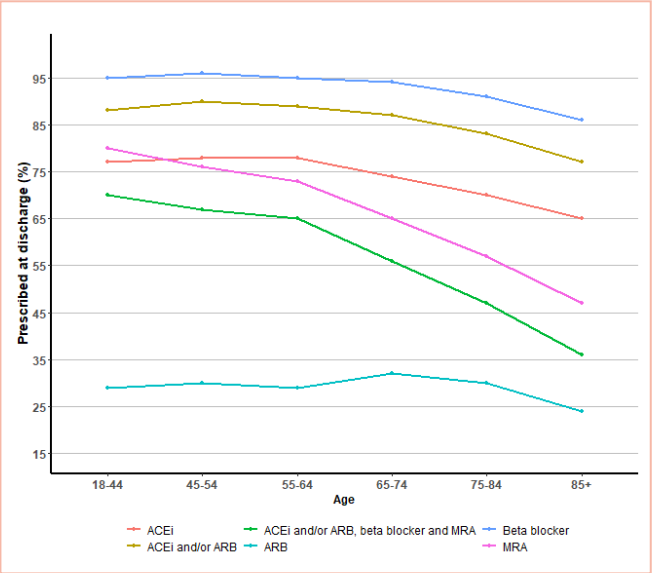
3.4.2 Audit Results

Table 3.1: Treatment on discharge for HFrEF, 2020/21 [NHFA data]

Medication	Total prescribed (%)
ACE inhibitor	72
ARB	29
ACEi or ARB	84
Beta blocker	91
MRA	61
ACEi or ARB, beta blocker and MRA	52
Loop diuretic	91
Thiazide diuretic	9
Digoxin	21

The differential prescribing of disease-modifying treatment with an ACEi/ARB, BB and MRA with age was also seen again this year [Figure 3.7]. The inflexion point for reduction in these drugs is in the 55-64 age group. The problem is greatest for MRA use. This is an area for urgently targeting better practice in the next few years.

Figure 3.7: Treatment on discharge (% receiving medication) for HFrEF by age, 2020/21 [NHFA data]



Angiotensin Converting Enzyme Inhibitor (ACEi); Angiotensin Receptor Blocker (ARB); Beta Blocker (BB); Mineralocorticoid (aldosterone) Receptor Antagonist (MRA).

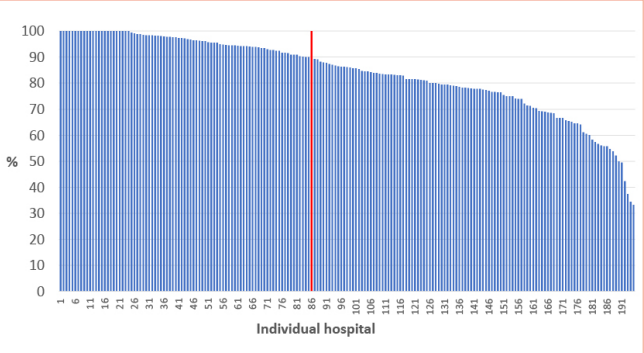
The trends in prescribing of the 3 key medicines reported over the last 7 years were either maintained or improving; in particular, the prescription of beta-blockers has improved markedly with a discharge prescription rate of 91%. MRAs are now prescribed to 61%, an improvement of 5% since last year.

The aggregate QI target has at last been achieved [Table 3.1] but the KPI for this measure is increasing to 85%. The data presented in this audit are for patients eligible for these therapies (i.e. after those with contraindications have been removed) so arguably the rates of prescriptions for all three drugs should be approaching 100%.

We have set QI targets for prescription of ACEi/ARB and beta-blocker at ≥90% and at 60% for MRAs. The inter-hospital variation in percentage prescription of these drugs demonstrates that many hospitals fall far short [Figure 3.8, Figure 3.9, Figure 3.10, Figure 3.11]. Those achieving the ACEi/ARB target were static at 44%.

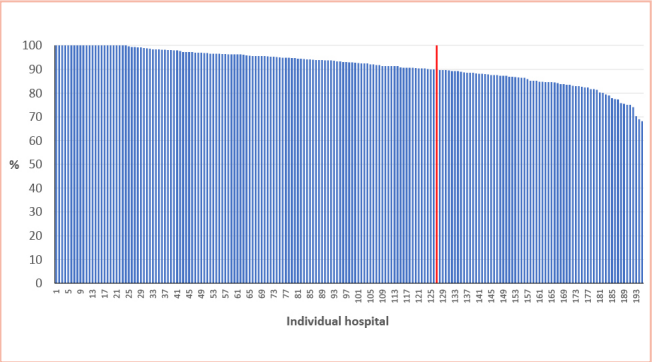
The proportion achieving the beta-blocker benchmark is similar to last year at 65%. The proportion achieving the target for MRAs was much improved at 60% compared with 51% in 2019/20. In particular, prescribing rates for the combination of all three drugs needs to improve in the in-patient setting.[2] However, the proportion of hospitals reaching the 60% benchmark set last year has fallen from 39% to 36%.

Figure 3.8: Proportion of patients (%) with HFrEF receiving an ACEi/ARB by hospital, 2020/21 [NHFA data]



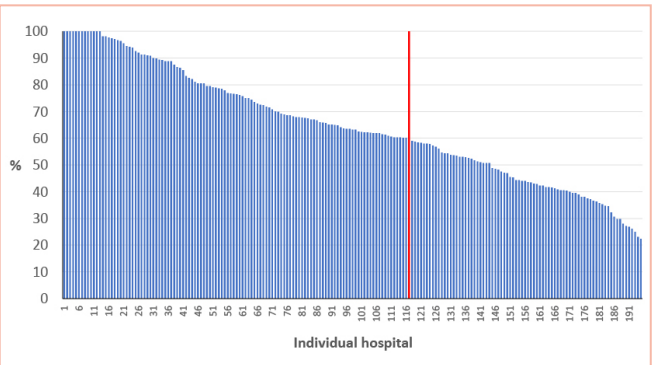
*Hospitals to the right of the red line are **not** achieving the 90% of eligible HFrEF patients receiving an ACEi/ARB. 85 (44%) of hospitals achieved this. Data from 194 hospitals. Hospitals reporting <20 cases were excluded.*

Figure 3.9: Proportion of patients (%) with HFrEF receiving a beta-blocker by hospital, 2020/21 [NHFA data]



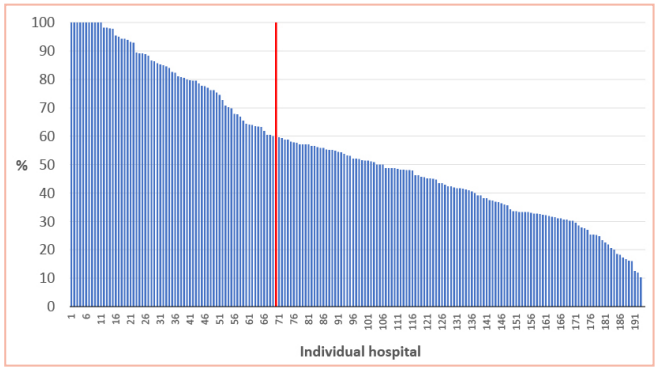
*Hospitals to the right of the red line are **not** achieving the 90% of eligible HFrEF patients receiving a beta blocker. 126 (65%) of hospitals achieved the target. Data from 194 hospitals. Hospitals reporting <20 cases were excluded*

Figure 3.10: Proportion of patients (%) with HFrEF receiving an MRA per hospital, 2020/21 [NHFA data]



*Hospitals to the right of the red line are **not** achieving the 60% of eligible HFrEF patients receiving an MRA. 116 (60%) of hospitals achieved the target. Data from 194 hospitals; reporting <20 cases were excluded.*

Figure 3.11: Percentage of HF patients with HFrEF in England and Wales HFrEF receiving all 3 drugs per hospital, 2020/21 [NHFA data]



*Hospitals to the right of the red line are **not** achieving the target of 60% of eligible HFrEF patients receiving all 3 disease-modifying drugs. 69 (36%) of hospitals achieved the target. Data from 193 hospitals. Hospitals reporting <20 cases were excluded.*

The trend seen over the last seven years is for an increase in the prescription of BB, and MRA and their combination in patients who have specialist input. Prescription rates for those who lack specialist input have also improved slightly this year. Of note there has been an increase, particularly by specialists, in the prescription of ARBs, which almost certainly reflects the use of sacubitril-valsartan. A separate dataset item to capture sacubitril-valsartan has now been created.

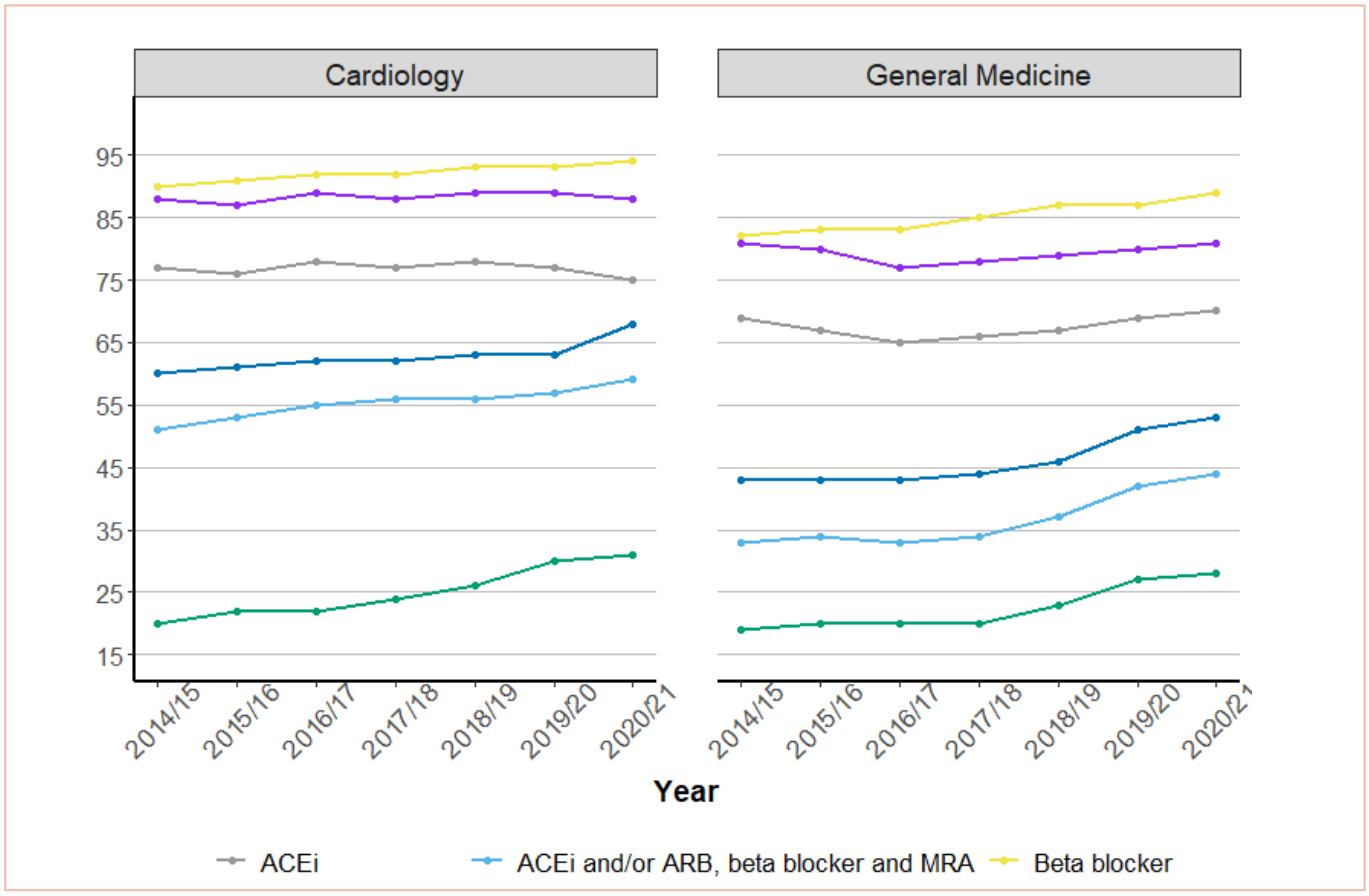
The audit continues to find that specialist care increases appropriate drug prescription and more should be done to ensure that patients receive this. The rate of prescription of all three disease-modifying medicines in combination improved to 58% last year on cardiology wards. It has also gone up modestly to 45% on General Medicine wards [Figure 3.12].

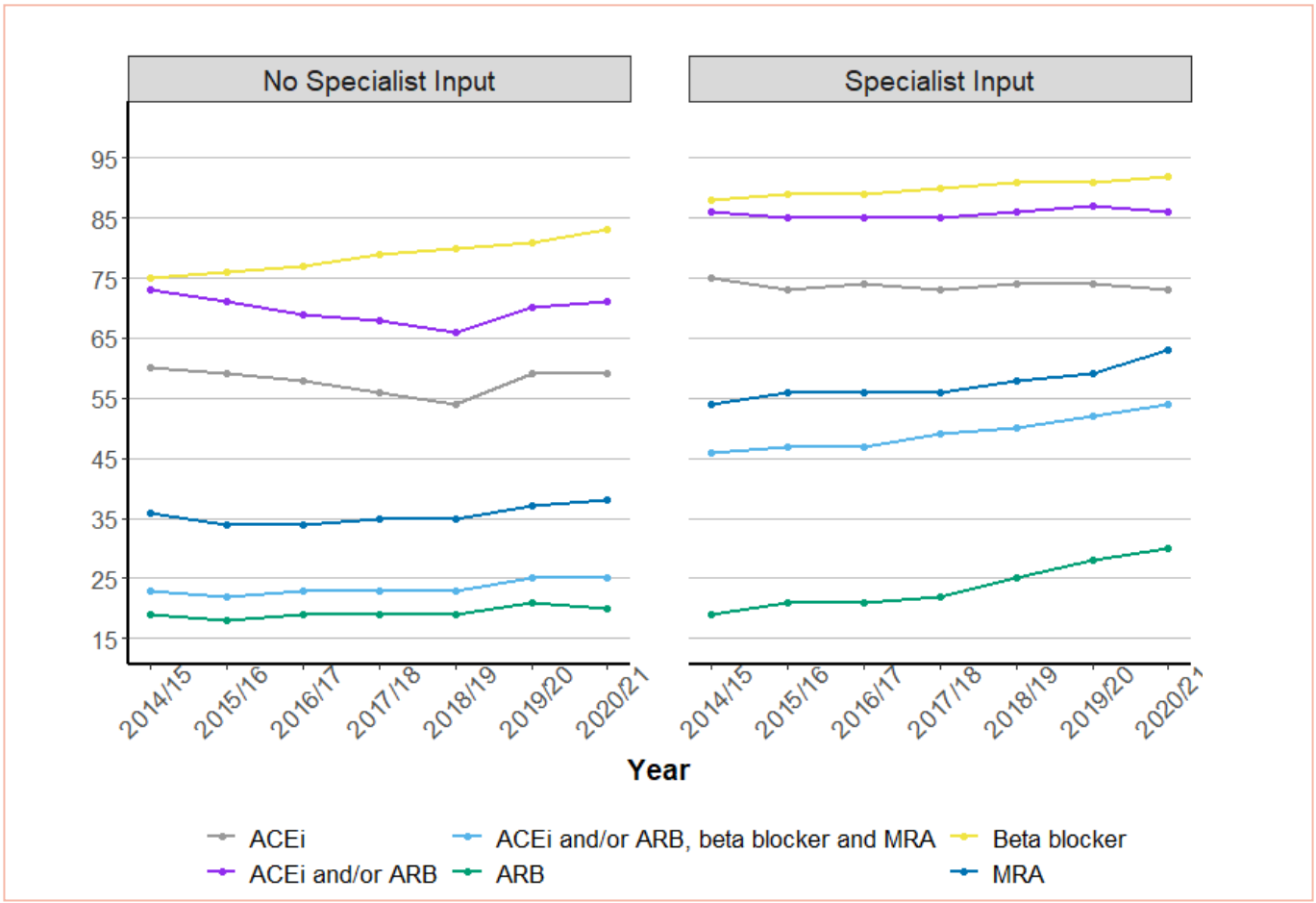
The proportion of patients prescribed all three medicines increased from 51% to 55% in the last year amongst those seen by a specialist. It is only 25% for patients not seen by a specialist, irrespective of their ward allocation. Thus, outreach services to other wards might improve care.

3.4.3 Recommendations for hospitals not reaching the standard

Greater attention is needed to ensure all patients with HFrEF receive the disease-modifying drugs that they should be on unless there is a contra-indication. This can be increased by patients being managed on cardiology wards or being seen by a HF specialist team, early during an admission. Those hospitals not meeting the expected standards should perform a clinical pathway review to investigate where improvements can be made.

Figure 3.12: Percentage of HFrEF patients on discharge by place of care and specialist input in England and Wales, 2014/15 – 2020/21 [NHFA data]





3.5 Follow up: more patients should be offered specialist follow-up and rehabilitation

3.5.1 Overview of QI metric

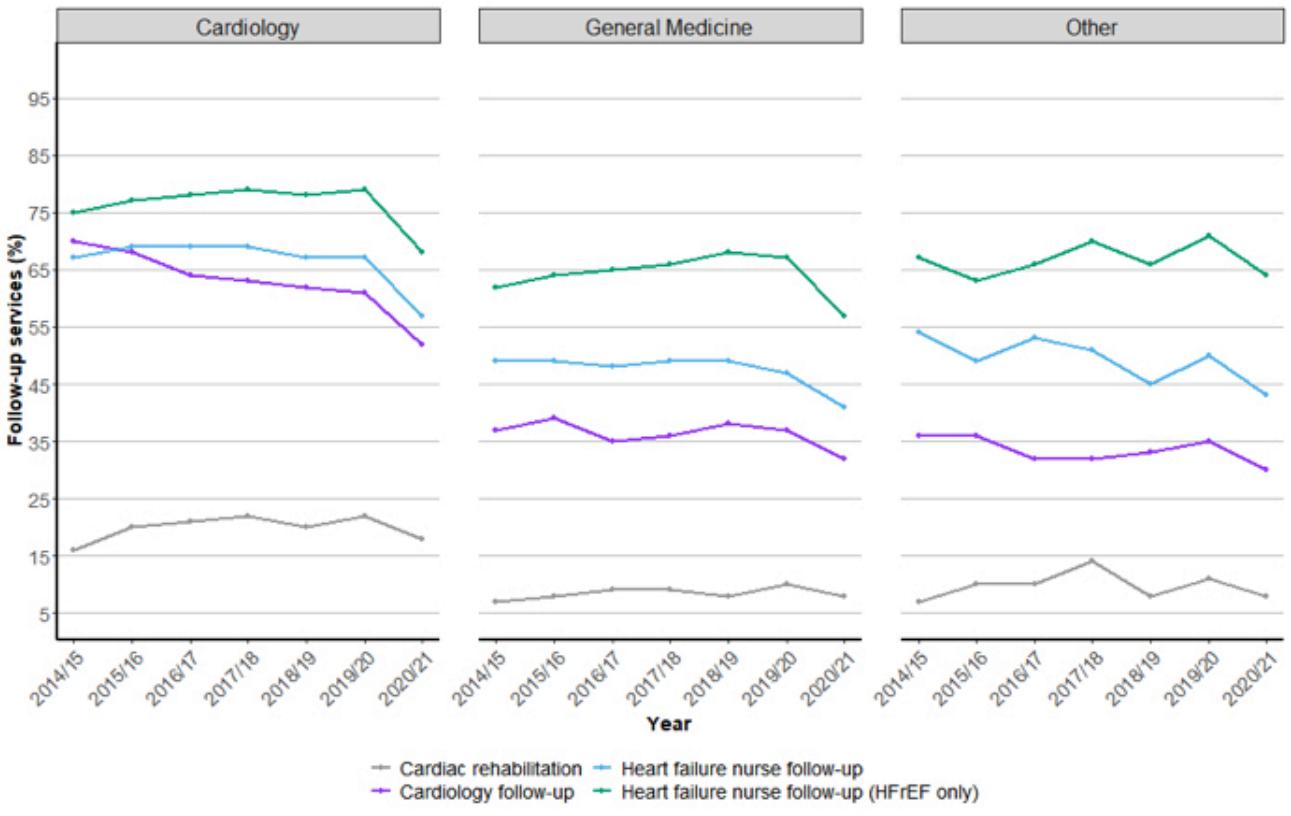
QI Metric Description/ Name	Follow-up appointment within two weeks of discharge.	Specialist follow-up and access to cardiac rehabilitation.
Why is this important?	People admitted to hospital due to HF should be discharged only when stable and should receive a clinical assessment from a member of a multidisciplinary HF team within 2 weeks of discharge. (NICE Quality standard 103).[5] This is a 'high-risk' period, when the patient is at increased risk of hospital readmission and is in danger of falling between the 'two stools' of hospital and community care.	Specialist cardiology and HF nurse follow-up and access to cardiac rehabilitation improves morbidity and mortality in HF.
QI theme	Effectiveness.	Effectiveness.
What is the standard to be met?	The standard should be 100%.	The standard should be 100% of stable patients fit for discharge.
Key references to support the metric	NICE Quality standard [QS 103]. Acute heart failure.[5]	NICE guideline [NG106] 2018. Chronic heart failure in adults: diagnosis and management 2018.[1]
Numerator	All patients discharged alive after an admission with acute heart failure with evidence of a follow-up appointment within 2 weeks.	All patients discharged alive after an admission with acute heart failure referred as an in-patient to cardiac rehabilitation.
Denominator	All patients discharged alive after admission with acute heart failure.	All patients discharged alive after admission with acute heart failure.
Trend	This metric has reduced markedly this year to 35% from 40% of patients in 2019/20.	Overall, 39% of those discharged have cardiology follow-up (down 7% from last year), and 47% have HF specialist nurse appointments post discharge (down 8% from last year). These rates were higher (but still lower than last year) for those being discharged from cardiology wards at 52% and 57% respectively. Trends for both cardiology and HF nurse follow-up fell last year. 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.

QI Metric Description/ Name	Follow-up appointment within two weeks of discharge.	Specialist follow-up and access to cardiac rehabilitation.
		Overall, 12.2% of patients are referred for cardiac rehabilitation during hospitalization (down 3% from last year). Rates are higher for those cared for in cardiology wards (18%), a decrease of 4% from last year compared to 8% for those seen on general medical wards (trend downwards by 1%). Anecdotally many more are purportedly referred after discharge by community teams; however, the audit does not capture this.

3.5.2 Audit Results

The COVID-19 pandemic has been associated with a marked reduction in all discharge referrals to cardiology, HF nurses and rehabilitation [Figure 3.13]. The rates were higher for those accessing cardiology care. Keeping cardiology specialist care going in hospital going during the pandemic is clearly vital to ensuring the specialist follow-up that is known to improve outcomes.

Figure 3.13: Trends in multidisciplinary HF team follow-up post discharge in England and Wales, 2014/15 - 2020/21 [NHFA data]



The percentage of patients referred for cardiac rehabilitation was extremely low (12%), even for those seen on cardiology wards (18%). Like many other aspects of the HF services, rehabilitation was variably suspended, or modified, for some or all of the present cycle which may have deterred referrals.

If hospitals are to achieve the NHS' rehabilitation goals from its Long Term Plan for cardiovascular disease ("amongst the best in Europe, with up to 85% of those eligible accessing [cardiac rehabilitation] care"), there needs to be a dramatic increase in the provision and prescription of cardiac rehabilitation services.

The investigation and establishment of remote rehabilitation services may prove a fruitful avenue for commissioners of services to investigate in order for the service to drive towards meeting the NHS' 2028 targets.

3.5.3 Recommendations for hospitals not reaching the standards

More attention to follow-up arrangements is required so that patients are referred for Cardiology & Specialist Heart Failure Nurse follow-up, ideally leaving hospital with their first appointment. Hospitals should review their pathways for referral to cardiac rehabilitation to allow greater access and uptake for heart failure patients.

CASE STUDY:

COVID-19 Response – University Hospitals Southampton (UHS) Specialist Multidisciplinary Heart Failure Team

The response to COVID-19 by the UHS HF team can be divided into 3 parts:

1. Pre-pandemic – a proposal on how best to manage HF patients during the pandemic was presented to the Trust Board at the end of February. Our strategy was accepted by the Trust, the HF team was designated an essential service and the nurses were not to be redeployed. Several of the in-patient HF nurses moved into the community to target patients at risk of admission; keeping one HF nurse in the hospital each day to see in-patients admitted with HF and provide telephone support to patients via the established advice line. The team have two ICU trained nurses who volunteered to work in ICU.
2. March 2020-June 2020 – 5.0 WTE HF nurses saw patients at home and a 0.8 WTE Associate Practitioner provided a domiciliary phlebotomy service, 1.6 WTE nurses continued to provide a service to in-patients on the wards. 2.0 WTE nurses worked from home as they were at high risk from COVID-19; these nurses provided telephone clinics and worked on NICOR submissions with support from admin and a NICOR data clerk. The HF fellows were re-deployed to ICU but the service always had a HF consultant allocated to help provide advice and support. Through COVID-19 the service has worked with UHS pharmacy to ensure urgent medications could be prescribed and delivered to patients; this facilitated admission avoidance initially, and optimisation subsequently.
3. June 2020 onwards –the inpatient service returned to working more normally; with the inpatient nursing numbers returning to normal levels. Community clinics were unable to be restored in GP surgeries or in the hospital at this time and so more telephone clinic and virtual optimisation protocols were developed and established. Patients discharged following an admission with HFpEF were initially telephoned; face-to-face visits were not allocated routinely to this group of patients unless there were ongoing symptoms of decompensation. Any staff who were required to self-isolate due to COVID-19 have been asked to help with NICOR submissions throughout. Throughout 2021 and into 2022 referral numbers continue to increase and there is growing pressure on the community service with respect of waiting times. Throughout the pandemic the HF service has been seen as an essential service by the UHS management team.

4 Future direction

Maintaining and improving the use of audit data to support the delivery of healthcare has never been more important. The 2020/21 HF data have been invaluable in confirming the essential role of the HF specialist teams in ensuring patients with acute heart failure can be safely admitted to hospital during a pandemic. This includes specialist nurses and cardiologists working from a cardiology ward.

In developing the audit into the future, the following areas will be prioritised to improve access to specialist heart failure care and drive down in-patient mortality rates.

4.1 Improving data quality and completeness

A new dataset has now been implemented that we will report on in the next audit cycle. The incorporation of the new data completeness tool will further improve the data quality. We also intend to undertake next year's analysis for key drug prescriptions for HFrEF imputing 'unknown values' as 'not taking the drug' to try and minimise the use of exception reporting and drive up the quality of reporting.

4.2 Identifying and understanding variance

In future years there will be increasing identification of those units that are not meeting the QI targets by using our validated risk-adjusted mortality models to look at statistical variations in mortality at hospital level. This should lead to improvements in both in-patient quality of care and mortality. In particular, it is hoped to improve outcomes at 1 year and, specifically, mortality for patients with HFrEF, for whom there is strong evidence that leaving hospital on disease-modifying treatments improves outcomes.

The poor uptake of cardiac rehabilitation, which has been impacted seriously by COVID-19, will remain a key QI target in future cycles. In addition, we need to urge hospitals to focus on providing equitable access to quality HF care for older people and women.

4.3 More detailed exploration of the data

As the audit matures, it is becoming obvious that there are three features of the data that we need urgently to explore further. The first is the relationship between length of stay and outcomes. This hopefully will lead to being able to advise as to the optimal range of length of stay for HF patients.

A second focus is admission to cardiology wards, which is still less than 50%. We will look at the variation in accessing this 'gold standard' of HF care. Changing this QI metric may be difficult due to the structural nature in many hospitals of the availability of specialist cardiology beds. This has been exacerbated by the lack of specialist beds during the COVID-19 pandemic. However, the audit is providing compelling reasons to enable more HF patients to access cardiology care, even more so during a pandemic, and some hospitals have succeeded in increasing bed access and dedicated HF beds. Others should also be able to follow the learning from these.

Finally, we aim to study the relationship between our QI metrics and ethnicity.

5 References

1. NICE guideline [NG 106] 2018. Chronic heart failure in adults: diagnosis and management.
2. NICE Clinical guideline [CG187] 2014. Acute heart failure: diagnosis and management.
3. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC): Developed with the special contribution of the Heart Failure Association (HFA) of the ESC.
4. McDonagh TA, Metra M, Adamo M, Gardner RS et al. Eur Heart J. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J 2021 Sep 21;42(36):3599-3726. doi: 10.1093/eurheartj/ehab368.
5. Nice Quality standard [QS103] 2015. Acute heart failure.
6. NICE Quality standard [QS9] 2011. Chronic heart failure in adults.
7. Bromage DI, Cannatà A, Rind IA, Gregorio C, Piper S, Shah AM, McDonagh TA. The impact of COVID-19 on heart failure hospitalization and management: report from a Heart Failure Unit in London during the peak of the pandemic. Eur J Heart Fail. 2020 Jun;22(6):978-984. doi: 10.1002/ejhf.1925.
8. Cannatà A, Bromage DI, Rind IA, Gregorio C, Bannister C, Albarjas M, Piper S, Shah AM, McDonagh TA. Temporal trends in decompensated heart failure and outcomes during COVID-19: a multisite report from heart failure referral centres in London. Eur J Heart Fail. 2020 Dec;22(12):2219-2224. doi: 10.1002/ejhf.1986
9. Shoaib A, Van Spall HGC, Wu J, Cleland JGF, McDonagh TA, Rashid M, Mohamed MO, Ahmed FZ, Deanfield J, de Belder M, Gale CP, Mamas MA. Substantial decline in hospital admissions for heart failure accompanied by increased community mortality during COVID-19 pandemic. Eur Heart J Qual Care Clin Outcomes. 2021 Jul 21;7(4):378-387. doi: 10.1093/ehjqcco/qcab040. PMID: 34043762
10. National Heart Failure Audit 2021 Summary Report (2019/20 data). www.nicor.org.uk/wp-content/uploads/2021/10/NHFA-Domain-Report_2021_FINAL.pdf

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Specialist clinical knowledge and leadership is provided by the BSH and the audit's clinical lead, Professor Theresa McDonagh. The strategic direction and development of the audit is determined by the Domain Expert Group. This includes major stakeholders in the audit, including cardiologists, a pharmacist, a GP, the BSH, Heart Failure specialist nurses, clinical audit and effectiveness managers, patients, NICOR Developers and HQIP.

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The NCAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). Please go to www.hqip.org.uk for more information.

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