



NATIONAL CARDIAC AUDIT PROGRAMME

NATIONAL HEART FAILURE AUDIT (NHFA)

2021 Summary Report

(2019/20 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, and additional support from NHS Scotland.

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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.

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NHFA AT A GLANCE

Data from the period April 2019 to March 2020

Access to cardiology wards and specialist HF care is associated with better survival for all and improved treatment at discharge for those with HFrEF.










69,556
total admissions

All patients

Admitted to
cardiology
ward

Seen by a
specialist

	All patients	Admitted to cardiology ward	Seen by a specialist
 Patients diagnosed with echocardiography	86%	94%	90%
 Patients receiving specialist care	82%	99%	100%
 Patients with HFrEF discharged on all three disease-modifying drugs	49%	56%	51%
 Patients who received a cardiology follow up	46%	61%	51%
 Patients who received a Heart Failure nurse follow up	55%	67%	63%
 Patients referred to cardiac rehabilitation	15%	22%	18%
 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








The National Heart Failure Audit (NHFA) deals with a specific and crucial phase in the trajectory of patients with heart failure (HF). It reports on the characteristics of patients requiring admission to hospital with HF and describes their in-hospital investigation, treatment, access to specialist care. The report also deals with discharge planning as well as the follow-up which they are offered.

The purpose of the audit is 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 and International Clinical Practice Guidelines and Quality Standards, and by following robust referral pathways.

The audit reports a number of achievements in the 2019/20 cycle, despite the very end of the audit year being affected by the first wave of COVID-19. However, there remain no new treatments for acute heart failure (AHF) but this year's audit demonstrates that there is still considerable scope for improving patient outcomes by focusing on providing high quality in-patient and peri-discharge care.

KEY MESSAGES

	Focus of attention	Audit finding
	Admission rates	69,556 admissions captured in the audit in 2019/20, a 7% reduction from the previous year COVID-19 resulted in some data not being entered into the audit, though 80% of admissions are still recorded
		
	Overall mortality	Mortality is static despite the ageing population
	Factors affecting patient mortality	Patient mortality, whether pre- or post-discharge, is highly dependent upon three hospital characteristics: 1. Patient care under the cardiology team 2. Those with reduced ejection fraction (HFrEF) being discharged on all three disease-modifying drugs 3. Patients having specialist cardiology follow-up
	Age of patients	The mean age of patients in the audit is increasing (by 0.4 years in this cycle)
	Age and quality of care	There is a marked reduction in access to diagnostics, life-saving drugs and specialist care in older people All the data on both aggregate and hospital variation Quality Indicator (QI) benchmarks are worse in older people
	Diagnosis	86% of patients received an echocardiogram (down from 92% in 2014/15) with rates higher for those admitted to cardiology (93%) rather than general medical (82%) wards

	Nature of the condition	<p>Fewer patients have systolic dysfunction, which we know how to treat, and more have valve disease. This must lead to reconfiguration of cardiology services</p>
	Patients being seen on a cardiology ward	<p>Now only 43% with considerable variation between hospitals This ensures far greater access to specialist HF care (99% see a consultant cardiologist and/or a HF nurse compared to 70% on a general medical ward) and is a key area for improvement</p>
	Specialist input into care	<p>Number of patients seen by HF specialists static at 82% This falls to only 70% where patients are seen on non-cardiology wards compared to 90% in cardiology care Proportion of hospitals providing specialist care to 80% or more of patients has increased by 4% Given the positive impact of specialist care on outcomes, these figures remain low</p>
	In-patient echocardiography	<p>There is a downward trend in the percentage receiving the gold standard diagnostic test, now at 86%</p>
	Beta-blockers for HFrEF patients	<p>10% improvement in the number of hospitals achieving the 90% or greater prescription of these drugs</p>
	Discharge on the three disease-modifying drugs	<p>Performance here remains static with considerable variation, declining after the median age of 60 years</p>
	Follow-up at 2 weeks	<p>Continues to be poor at 40%</p>
	Specialist follow-up	<p>Overall only 56% of patients see a HF nurse and 46% have cardiology follow up</p>
	Rehabilitation	<p>Slight improvement to 15% but remains too low.</p>

1 | Introduction

The National Heart Failure Audit (NHFA) deals with a specific and crucial phase in the trajectory of patients with heart failure (HF). It reports on the characteristics of patients requiring admission to hospital with HF. It describes their in-hospital investigation, treatment, access to specialist care, and also deals with discharge planning as well as and the follow-up which they are offered.

The purpose of the audit is 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 Guidelines³ and Quality Standards,^{4,5} and by following robust referral pathways.

For a general introduction to HF and the audit methodology see Appendices 1 and 2 [here](#).

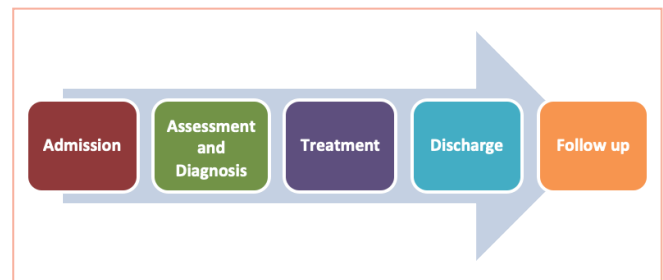
We report important clinical indicator data on over 80% of admissions with a primary diagnosis of HF in England and Wales. We seek to demonstrate quality improvement at the 'national' level in two ways. Firstly, by reporting trends of the key performance indicators (KPIs) and outcomes compared to previous years on aggregate data, and secondly by reporting hospital variation in achieving agreed benchmarks for our KPIs.

We encourage hospitals to aim to achieve the following KPI targets:

- 70% case ascertainment
- ≥90% use of ECG and echocardiographic as diagnostic tools
- >85% specialist team input during admission
- ≥60% patients being admitted to cardiology care
- >85% HF with reduced left ventricular ejection fraction (HFrEF) on discharge on all 3 disease-modifying drugs
- >50% to have 2-week follow-up appointments.

The results in this report, based on data for 2019/20, are presented according to the patient journey for people hospitalised because of HF [Figure 1.1].

Figure 1.1: The patient pathway for a typical patient entered into the National Heart Failure Audit.



1.1 Activity levels

1.1.1 Number of patients in the audit

Reporting on demographics and case ascertainment is important in demonstrating the validity of the audit. The audit has to ensure a robust sample size to describe trends, confirm that the cohort described reflects the true epidemiological picture of patients hospitalised for HF, and mitigate against hospitals selectively reporting their best data.

Data were provided on 69,556 hospital admissions with acute heart failure who either died as in-patients or who survived to discharge between April 2019 and March 2020 [Table 1.1]. This is a 7% reduction from last year. This audit represents just over 80% of HES/PEDW coded admissions with heart failure in the first diagnostic position. Records were submitted on 81,951 admissions, a decrease of 9.7% from last year's total of 85,287.

The reduction in overall submissions this year reflects the impact of the beginning of the first wave of COVID-19. However, the case ascertainment rate remains greater than 80%. These data, therefore, still give a very accurate picture of hospitalised HF patients in England and Wales.

Table 1.1: Records submitted and case ascertainment, 2019/20

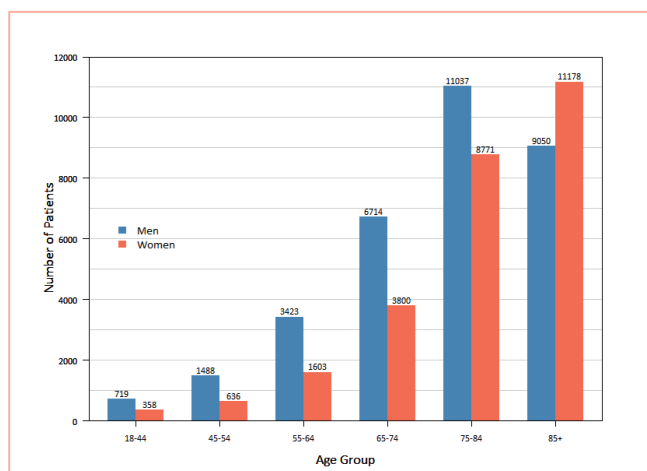
Country	Records submitted	Confirmed HF records	HES/PEDW	Case Ascertainment (%)
Overall	81,951	69,556	102,355	80.1
England	78,360	66,427	97,616	80.3
Wales	3,591	3,129	4,739	75.8

1.1.2 Demographics

The age spread in the audit data is as follows:

- Mean age - 78.4 years
- Median age - 81 years
- Mean age men - 76.5 years
- Mean age women - 80.8 years
- The mean age of patients is 0.4 higher than last year. This reflects a trend over the last few years and is entirely consistent with the increasing prevalence of HF in the elderly. There were more men in each age category other than the 85+ age group where women were in the majority [Figure 1.2].

Figure 1.2: Age and sex demographics at first admission, 2019/20

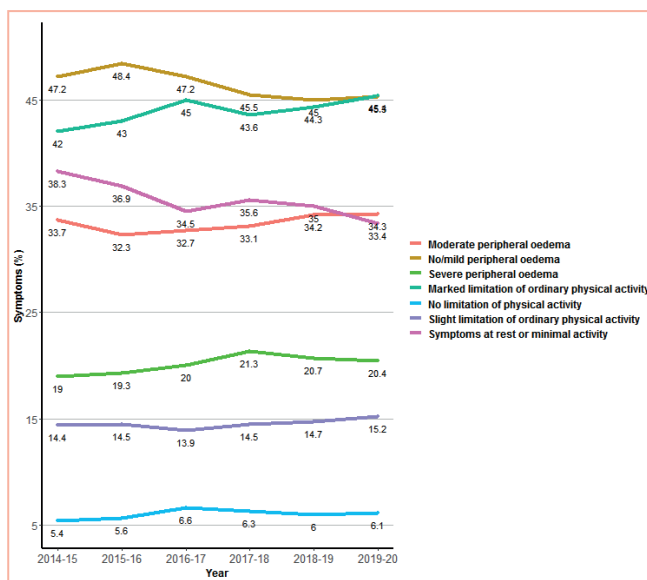


1.2 Trends

1.2.1 Trends in symptoms

The pattern of symptoms and signs of HF remains indicative of a population with advanced HF. Forty-five percent of admissions had a marked limitation of ordinary physical activity (NYHA Class III) and 33% had symptoms at rest (NYHA Class IV) [Figure 1.3]. Over half of admissions (54%) were associated with moderate or severe oedema. These data are reflected in the poor outcomes that we see and confirm that hospitals are not selecting patients with milder disease for entry.

Figure 1.3: Trends in symptoms and signs of HF over the last 5 years, 2014/15 - 2019/20



1.2.2 Type of LV dysfunction, causes and comorbidities of heart failure

Echocardiography provides crucial information on the type of HF and its underlying aetiology. Again, this year, very few patients had a normal echo (<1%) [Table 1.2]. Those with a normal echocardiogram were excluded unless they had atrial fibrillation recorded.

Most patients had HFrEF (62%), although this is slightly lower than the 64% reported last year. The declining proportion of HFrEF is important as it remains the only type of heart failure with therapy proven to alter the natural history of the disease. This will translate into our outcome data over time as the older, more comorbid population with heart failure with preserved ejection fraction HFpEF will increasingly impact on the overall outcomes, underscoring the need for more research into HFpEF to generate disease-modifying therapies. Also of note is the increasing prevalence of significant valve disease, at over 40%, which will necessitate the need for greater access to percutaneous and surgical options for valve disease in HF patients in the future.

The proportions of those with left ventricular hypertrophy (LVH), diastolic dysfunction and valve disease have remained unchanged since last year [Table 1.3]. 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.

Of note is the consistently high co-morbidity burden with over one third of patients having diabetes and almost 20% have chronic obstructive pulmonary disease. Just under 10% are recorded as having asthma.

Table 1.2: Overall echo diagnosis breakdown, 2019/20

Assessment and Diagnosis	Total (%)
Normal echo	0.8
Left ventricular systolic dysfunction (LVSD)	62.4
Left ventricular hypertrophy (LVH)	7.1
Valve disease	43
Diastolic dysfunction	11.3
Other diagnosis	20.8

Table 1.3: Causes and comorbidities of Heart Failure, 2019/20

Medical History	HFrEF (%)	HFpEF (%)
IHD	44	34
Atrial fibrillation (from ECG)	41	51
Valve disease	28	34
Hypertension	53	61
Diabetes	35	34
COPD	17	19
Asthma	9.1	9.9

1.2.3 Mortality

Good specialist HF care can reduce mortality in HF, most especially in HFrEF.³ To reflect the entire HF journey we report on in-patient mortality (reflects the quality of in-patient care), 30-day mortality (reflects the quality of discharge planning and transitional care) and 1-year mortality (reflects the follow-up care and drug therapy for HFrEF).

In-hospital mortality this year is 9.0%, similar to last year. Mortality varies with age, being 4.9% for those <75 years and 10.9% for those ≥75 years. As in previous years, mortality is lower for patients admitted to cardiology (6.0%) compared to general medical (9.6%) wards and for those accessing specialist care (7.9%) compared to those who do not (13.3%) [Figure 1.4]. There has been a significant reduction in the mortality in cardiology of 0.5% compared to 2018/19 [Figure 1.5].

Figure 1.4: In-hospital mortality, 2019/20

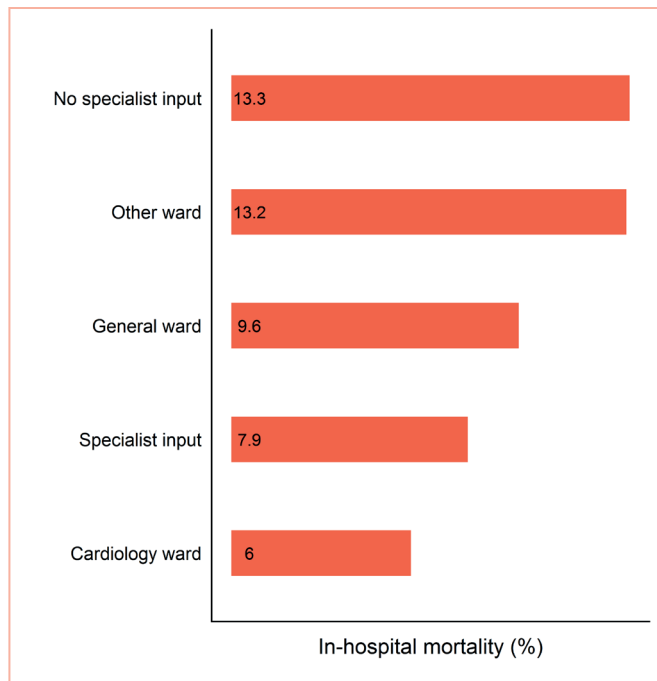
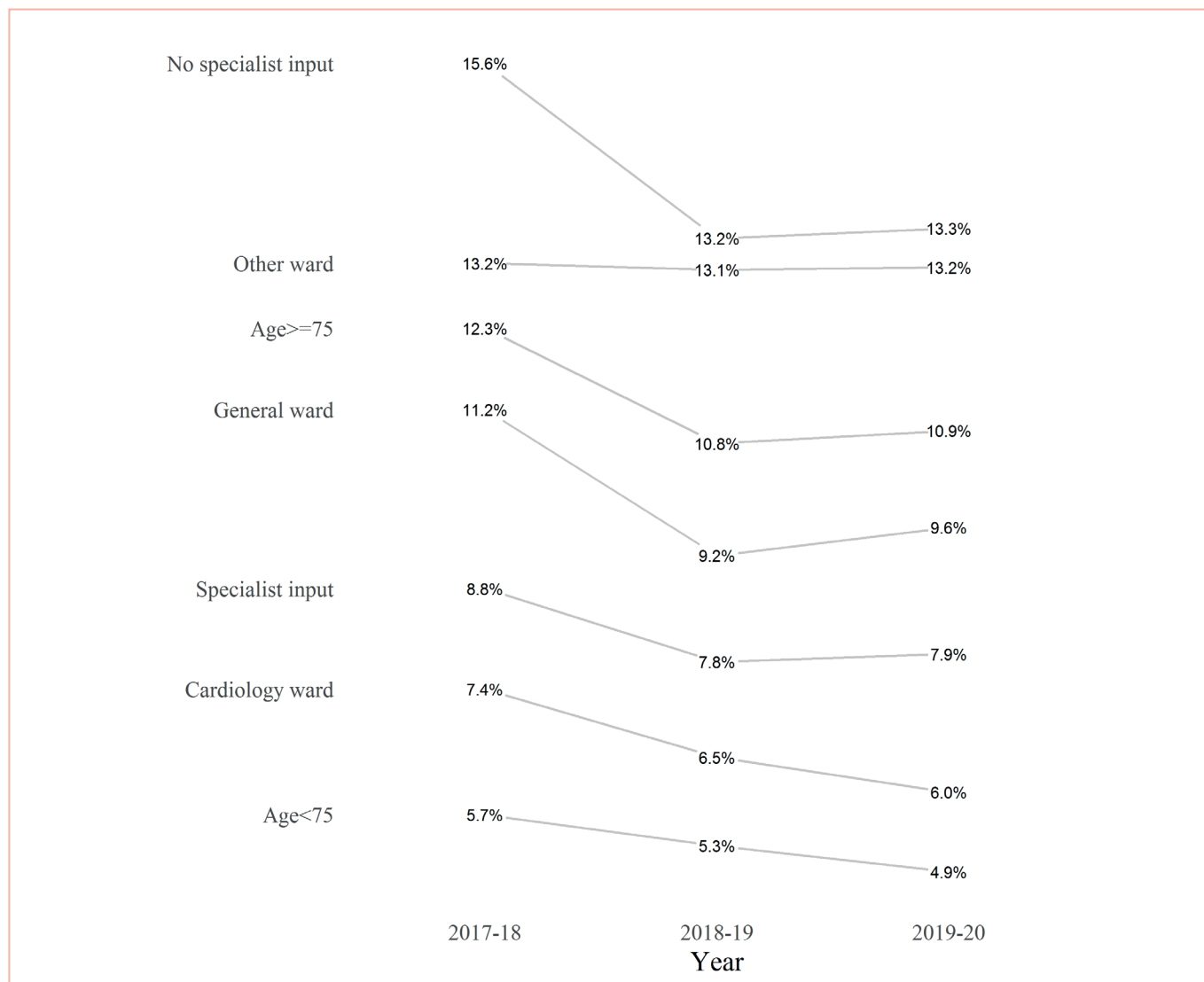


Figure 1.5: Three-year trends of in-hospital mortality by specialist care, age and ward allocation, 2017/18 - 2019/20

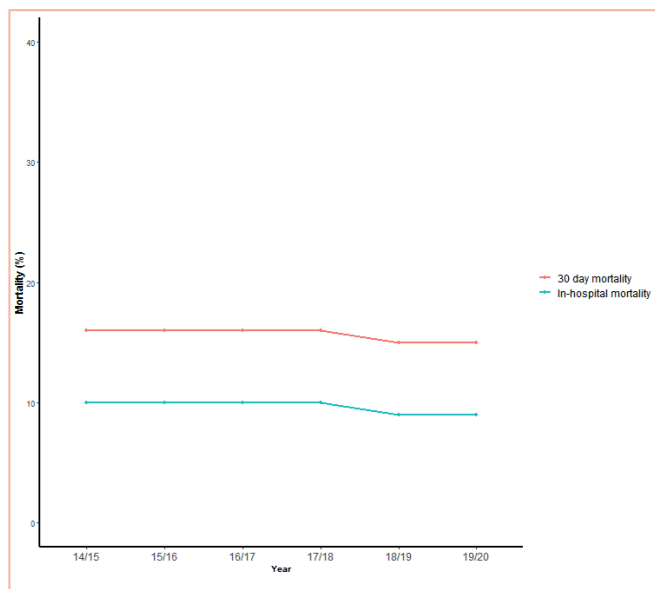


There is great variation in mortality rates between hospitals. This may be due to differences in patient characteristics and variations in care. A risk-adjustment model has been derived using data from the audit from its inception. The model will be validated in this year's audit data. Once the risk-adjustment model is robust, funnel plot analyses will be carried out to detect outliers for mortality. These will be published and available on the website.

30-day (15%) [Figure 1.6] and 1-year mortality rates (32%) [Figure 1.7] were unchanged from last year. This is despite the population becoming older and the audit cycle capturing the first two months of the COVID-19 pandemic first wave in the UK. Clearly, the aim has to be to continue to drive improvements in the years to come.

The high rates of mortality, compared to clinical trial patients with HF, can be explained by the large, comprehensive and representative nature of the audit, which includes all patients admitted with HF, dominated by an elderly, co-morbid population, including those with HFpEF as well as HFrEF, who have a high in-patient mortality.

Figure 1.6: Six-year trend of in-hospital mortality and 30-day admission, 2014/15 – 2019/20



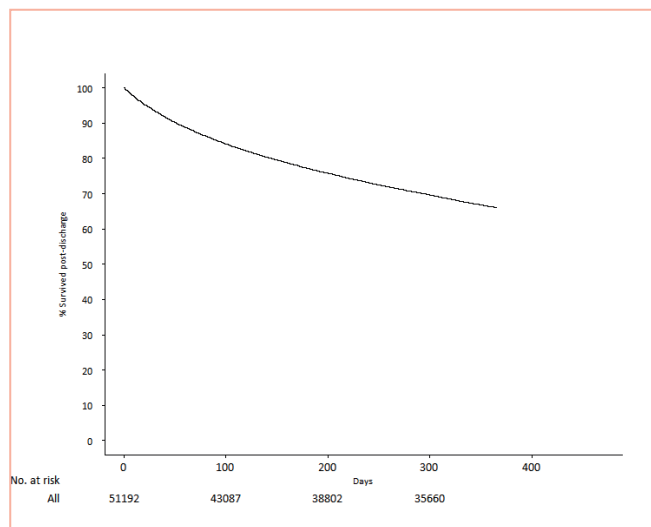
As we have had no new treatments for acute heart failure for over 20 years and no disease-modifying treatments for HFpEF, it could be argued that the high mortality seen is not surprising and not modifiable. However, the variation in in-patient mortality by place of care and specialist input suggests otherwise and underscores the need to strive for comprehensive, state-of-the-art multidisciplinary heart failure care in all wards and hospitals as it is associated with better outcomes. Prioritising patients for care in cardiology

wards, in view of the significantly lower in-patient mortality rates there, must be encouraged.

In addition, higher quality of in-patient care is associated with lower longer-term mortality. In multivariable analyses adjusted for age, not being admitted to a cardiology ward (HR 1.77, $p < 0.001$) continues to be an independent predictor of worse survival when other common markers of disease severity are included in the model (see Cox proportional hazards Table in [Appendix 3](#) for in-hospital mortality and [Appendix 4](#) for 30-day mortality).

The mortality rate at one year was 34% of people admitted with HF [Figure 1.7]. This year we have reported the Kaplan-Meier Survival at 1-year rather than crude mortality (as we had a longer delay in accessing ONS mortality data, which led to a slightly longer follow up, making true comparisons with previous years impossible). The Kaplan-Meier mortality curves for 1-year mortality are unchanged from last year.

Figure 1.7: Kaplan-Meier plot of all-cause mortality following discharge from hospital, 2019/20



As in previous years, mortality at 1 year was lower for patients admitted to cardiology wards at 25% [Figure 1.8]. Similarly, mortality at 1 year was lower for those having cardiology follow-up at 23% (compared with 39% without) [Figure 1.9] and for those seen by HF nurses (29% compared with 35% for no nurse follow-up) [Figure 1.10].

Referral to cardiac rehabilitation is also associated with a better outcome at one year (22% compared to 32% for those not referred for rehabilitation) [Figure 1.11]. This presumably reflects a selection bias for those being offered rehabilitation, given the small number of recipients.

Figure 1.8: Kaplan-Meier plot of all-cause mortality following discharge from hospital according to place of care during the admission, 2019/20

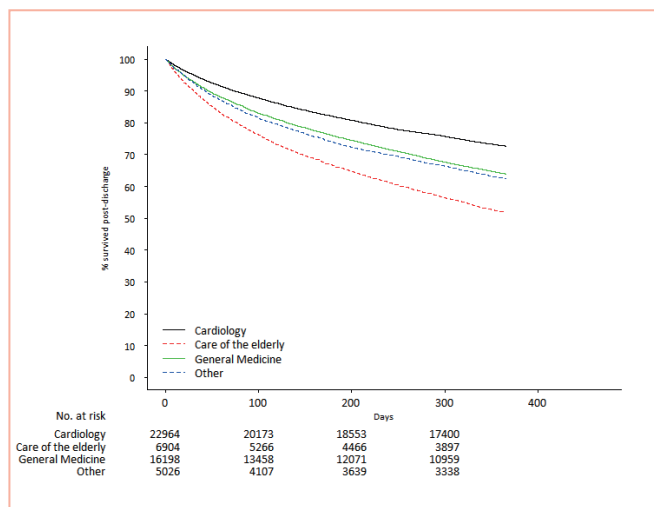


Figure 1.9: One year mortality according to cardiology follow-up, 2019/20

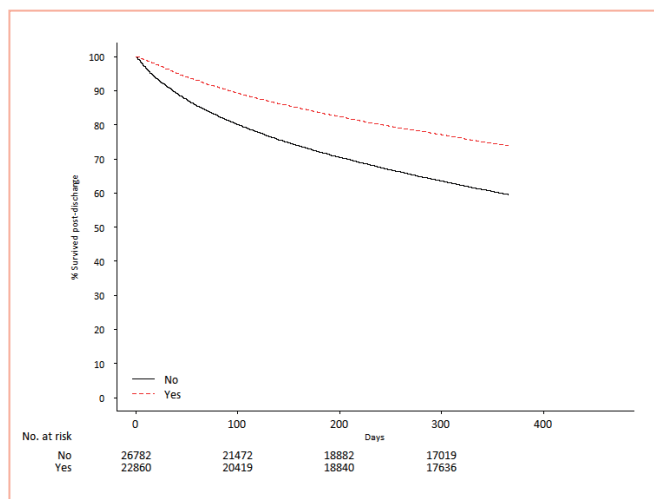


Figure 1.10: One year mortality according to HF nurse follow-up, 2019/20

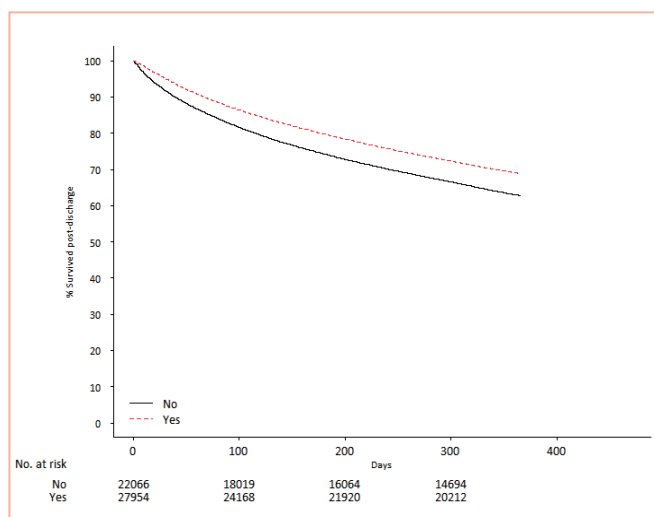
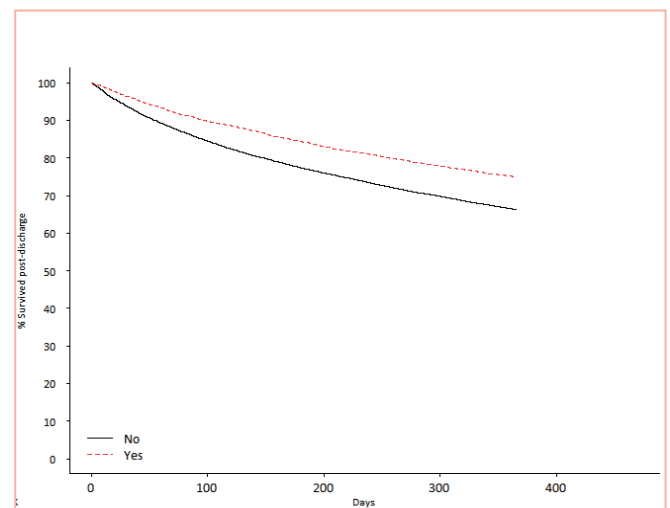
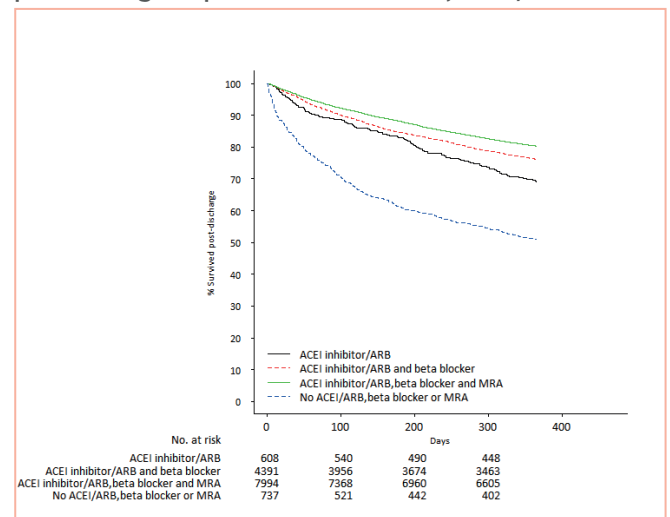


Figure 1.11: One year mortality stratified by referral to cardiac rehabilitation, 2019/20



Mortality post-discharge is highly dependent upon the prescribing of each of three disease-modifying drugs, with the greatest cumulative benefit seen in those who leave hospital on all three key disease-modifying drugs [Figure 1.12].

Figure 1.12: Mortality post-discharge associated with prescribing for patients with HF rEF, 2019/20



Those discharged on all three disease-modifying drugs had a 1-year mortality rate of 18% compared to 52% for those leaving hospital without any of the three key drugs.

The Cox proportional hazards model for 1-year mortality is shown in [Appendix 5](#). Not being a cardiology in-patient, not having cardiology follow-up and not being on an ACEI/ARB or a beta-blocker are all independent predictors of worse 1 year mortality. This appendix is available online [here](#).

For those discharged from hospital with a length of stay (LOS) of less than 1 day, the 1-year mortality rate was 23%. This does reflect that they are a lower-risk group than those who are admitted for more than 24 hours. However, they still have poor outcomes. Hospitals that are adopting a policy of ambulatory care should make sure that appropriate specialist follow-up is in place to ensure that these patients have the same access to specialist care and evidence-based therapy to improve their outcomes as those who are admitted for longer than 24 hours.

2 | Quality improvement metrics

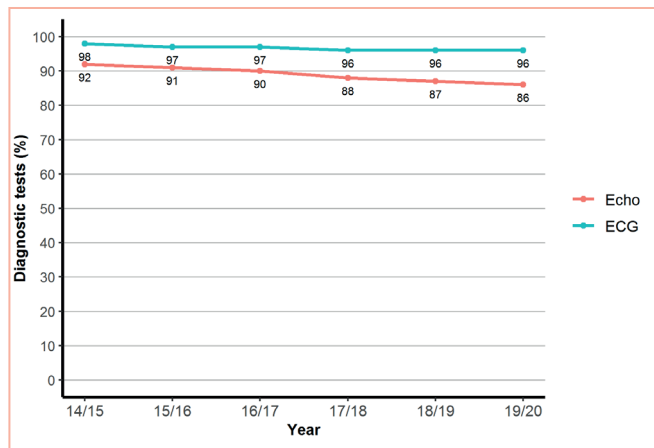
2.1 There is considerable room for improvement in the use of echocardiography in the assessment and diagnosis of HF

2.1.1 Overview of QI metric

QI Metric Description /Name	Use of echocardiography for assessment and diagnosis.
Why is this important?	<p>Attempting a diagnosis of heart failure on clinical symptoms and signs alone will result in an incorrect diagnosis 50% of the time.</p> <p>An accurate diagnosis requires an investigation to confirm an underlying structural or functional abnormality of the heart (most commonly performed by echocardiography).</p>
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 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	<p>Echocardiography is performed in 86% of patients. This is a decrease of 1% from last year.</p> <p>When we compare the last six year trends there is an obvious decline in echocardiography rates. While rates are still high, 14% of patients are either not undergoing echocardiography in hospital and/or have no record of an echo within the last 12 months [Figure 2.1].</p>

2.1.2 Audit results

Figure 2.1: HF patients receiving ECG and echocardiography diagnostic tests over six years, 2014/15 - 2019/20

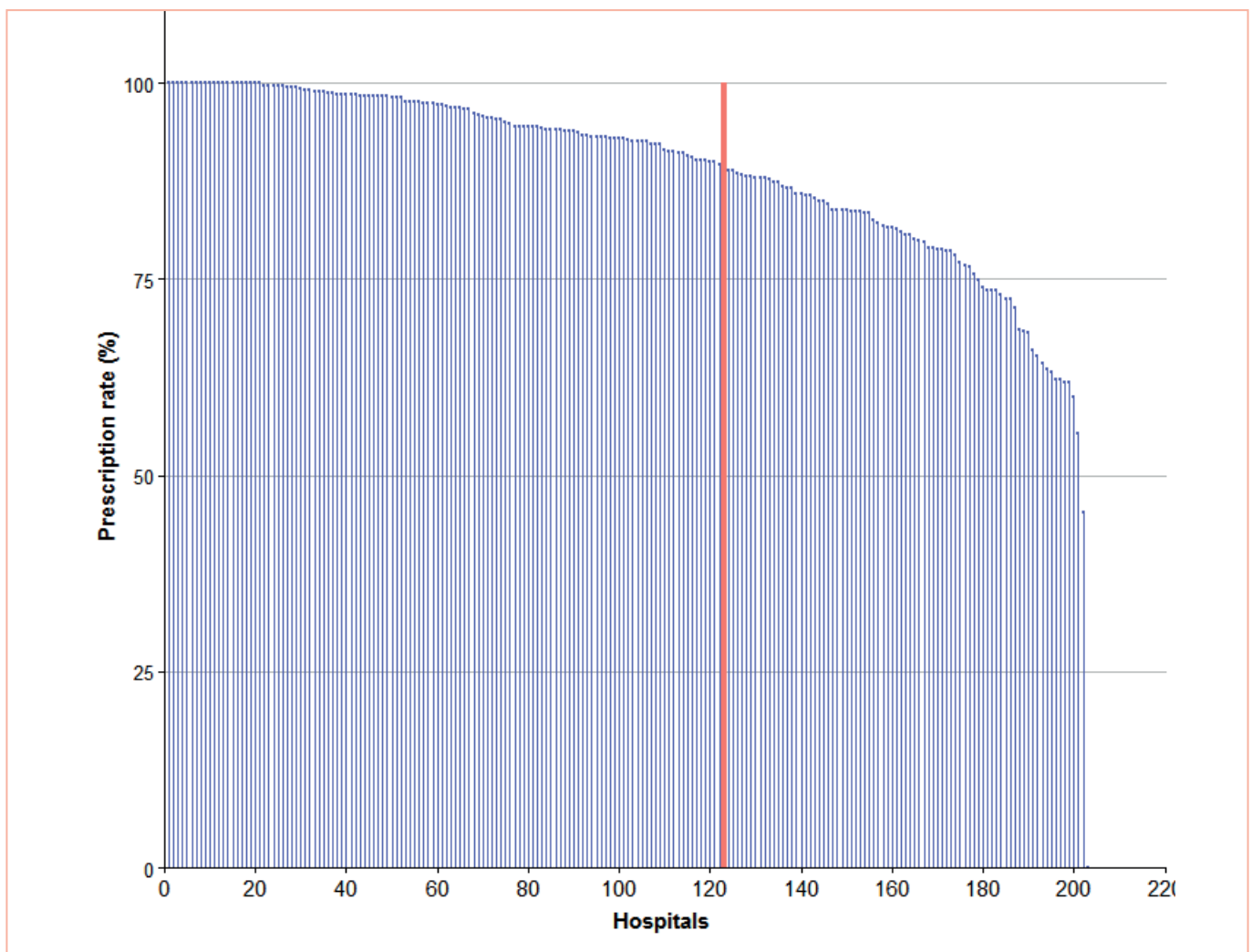


Sixty percent of hospitals achieved an echocardiography rate of 90% or more, an improvement of 1% from last year [Figure 2.2]. The hospital variation is also age dependent, with 72% of hospitals achieving the $\geq 90\%$ target for those <75 years compared to only 54% for those aged ≥ 75 years. Trusts need to ensure equitable access to echocardiography for older people.

Patients admitted to cardiology wards were more likely to have echocardiography than those admitted to general medical wards (93% versus 82%). However, it should be noted that patients receiving specialist input to their care, no matter where they are admitted, do have higher rates of echocardiography (90%) but they are still inferior to those achieved on cardiology wards [Figure 2.3].

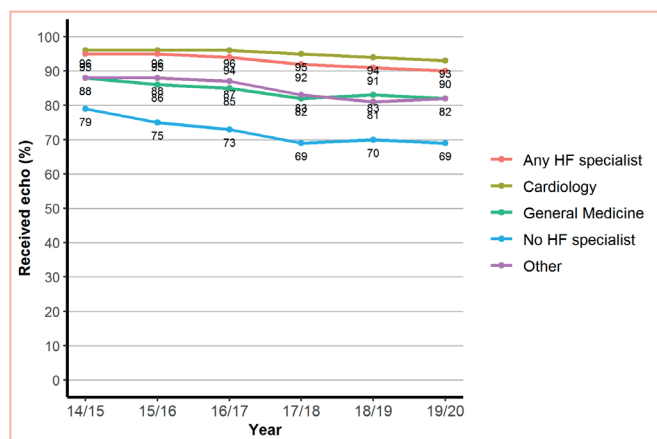
There is a substantial drop in the echocardiography rate for those not having access to specialist care (69%).

Figure 2.2: Variation between hospitals by percentage undergoing echocardiography, 2019/20



Hospitals to the right of the red line are not achieving the 90% of heart failure patients receiving echocardiography. Data from 205 hospitals; 2 hospitals reporting <20 cases were excluded.

Figure 2.3: Percentage of patients receiving echocardiography by place of care (or with specialist input regardless of the place of care), 2014/15 – 2019/20



The NICE acute heart failure quality standard recommends the audit of the number of patients with new heart failure and a raised BNP who have an in-patient echocardiogram.⁴ The NHFA has changed its dataset to allow for this analysis and we will report on it when there are sufficient data to allow a meaningful analysis. Meanwhile individual hospitals should do their own internal audit against the standard.

2.1.3 Recommendation 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 review their clinical pathways and ensure that echocardiography is performed and ideally within the first 48 hours of admission.

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

2.2.1 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 out-of-hospital 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 five years, under half of patients were admitted to cardiology wards. There is a downward trend over the last six years from 49% to 43% this year [Figure 2.4]. Whilst the low figure may reflect a fixed number of cardiology beds being available in most hospitals, there is a large variation within the audit in the percentage being treated in cardiology wards (0-100%) [Figure 2.5]. If there is no access to a cardiology ward this needs to be addressed locally as a matter of urgency.

2.2.2 Audit results

Figure 2.4: Trends in place of care over six years, 2014/15 - 2019/20

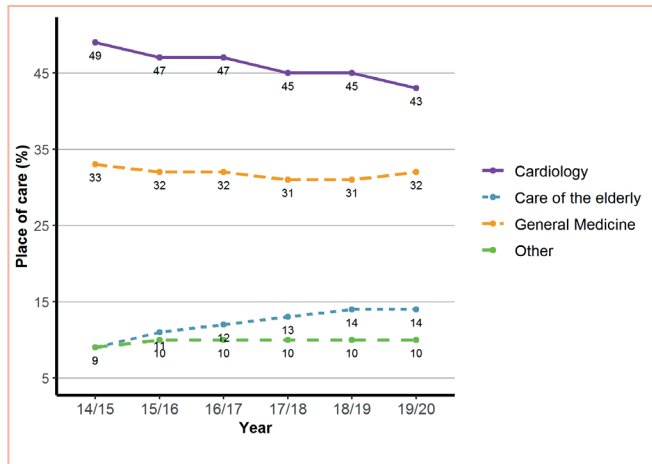
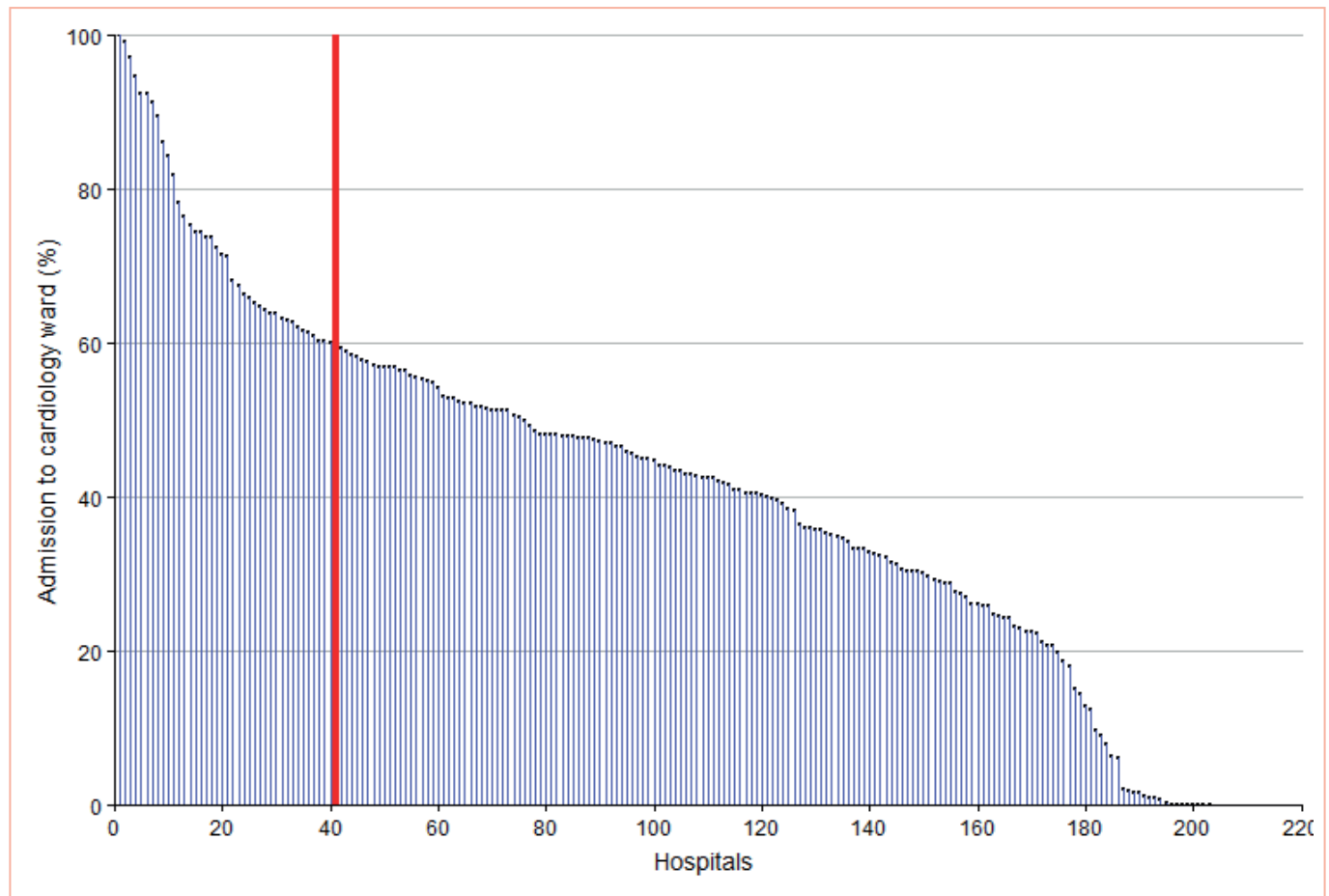


Figure 2.5: Hospital Variation in Admission to a Cardiology Ward, 2019/20



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 205 hospitals; 2 hospitals reporting <20 cases were excluded.

2.2.3 Case study: Getting more patients into cardiology wards

Dr C Plymen, *Clinical Lead for Heart Failure, Imperial College Healthcare NHS Trust shares the experience from Imperial College Healthcare NHS Trust:*

Our Trust comprises three acute sites: Charing Cross (CXH) and St Mary's Hospitals (SMH) both have busy A&E departments; Hammersmith Hospital (HH) serves as the cardiology base but has no A&E. We have developed two distinct pathways to ensure that patients presenting to our two acute sites have easy access to cardiology care as necessary.

- 1) Acute pathway: Patients presenting acutely unwell from a cardiac cause can be immediately transferred to our Heart Attack Centre. This accommodates a 24 hour 9-bedded unit (with 3 resus/assessment bays) with capacity to take such acute patients. This cardiac pathway facilitates the immediate 'no quibble' transfer of patients requiring in-patient care for primarily cardiac conditions from SMH & CXH to the Hammersmith HAC. Patients transferred whom are found not to have a primary cardiac problem and whom fulfil medical or other reasons to be admitted to hospital, are immediately accepted and transferred back to SMH or CXH via the same pathway, thus maintaining bed capacity.
- 2) Stable pathway: We provide a daily in-reach heart failure specialist service (nurse led/consultant led) at SMH and CXH. Patients identified as suitable are transferred to one of our two cardiology wards at HH for ongoing specialist HF input and further investigations as necessary.

These service redesigns have resulted in this Trust achieving 75% of their HF patients having care in cardiology wards.

2.2.4 Recommendation for those not achieving the standard

Hospitals should ensure that high-risk cardiac patients have access to cardiology wards. Heart failure patients are often the highest risk.

2.3 Specialist Multidisciplinary Care: More patients on general wards should be seen by the HF team

2.3.1 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 who might not ask for specialist care involvement, 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.
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-one per cent of hospitals achieved specialist review rates of over 80%. This is an increase of 2% since last year

2.3.2 Audit Results

Eighty-two 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 (usually a Care of the Elderly Physician) or a HF Specialist Nurse (some are seen by more than one member). Fifty-four per cent of patients were seen by a Consultant Cardiologist and 51% of patients now see a HF Specialist Nurse during their admission.

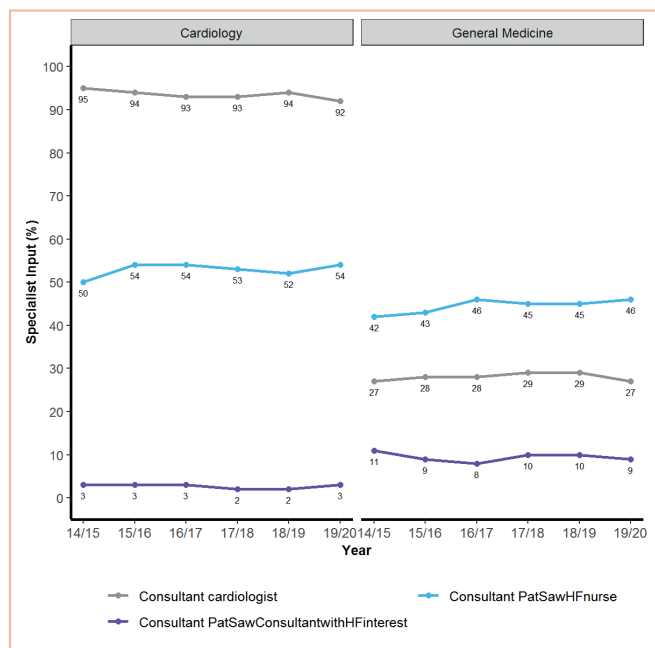
For those on cardiology wards, 99% are seen by specialists, 92% are seen by a Consultant Cardiologist and 53% by HF nurses. Overall, 70% of patients on General Medical wards are seen by 'Any HF specialist'. The proportion of those seen by Specialist HF Nurses

has increased in both Cardiology (by 2%) and in General Medicine wards (by 1%) to 54% and 46%, respectively [Figure 2.6].

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

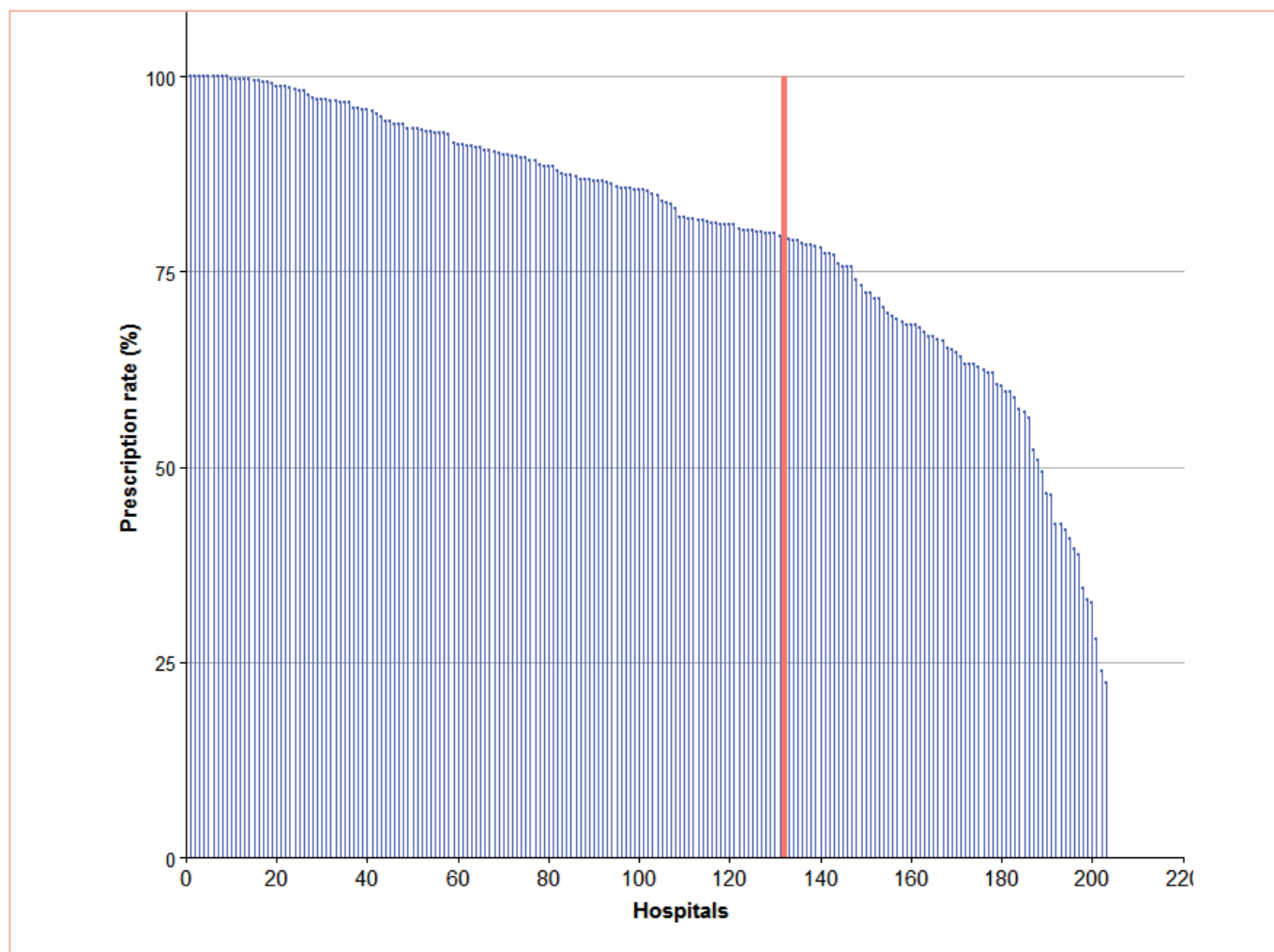
"All hospitals admitting people with suspected acute heart failure should provide a specialist heart failure team that is based on a cardiology ward and provides outreach services [and] ensure that all people being admitted to hospital with suspected acute heart failure have early and continuing input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

Figure 2.6: Six-year specialist input trends by place of care, 2014/15 – 2019/20



Specialist input is another KPI with considerable inter-hospital variability and therefore with scope for improvement [Figure 2.7]. 132 (64%) hospitals achieved specialist review rates of over 80%. This is an improvement of 3% of hospitals since last year. The hospital variation is also age dependent, with 80% of hospitals achieving the $\geq 80\%$ target for those <75 years compared to only 55% for those aged ≥ 75 years. Trusts need to ensure equitable access to specialist care for older people.

Figure 2.7: Inter-hospital variation in percentage of HF patients seen by a specialist, 2019/20



Hospitals to the right of the red line are not achieving the target of 80% of HF patients seen by a specialist. Data from 203 hospitals; 2 hospitals reporting <20 cases were excluded.

2.3.3 Recommendation for those not achieving the standard

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.

2.4 Short lengths of stay may be associated with high readmission rates

2.4.1 Overview of QI metric

QI Metric Description/ Name	Length of stay (LOS)
Why is this important?	LOS is a surrogate for quality of care as an in-patient. Very short LOS is associated with increased readmission rates for HF.
QI theme	Effectiveness
What is the standard to be met?	There is no standard for this measure but the data are provided for comparison with other hospitals and to show the national average. Patients should remain in hospital long enough so that they are stable for at least 48 hours prior to discharge and, if they have HFrEF, are established on all three disease-modifying drugs for HF.
Key references to support the metric	Not applicable
Numerator	All patients admitted with acute heart failure
Denominator	Not applicable
Trend	<p>The median LOS in 2019/20 was 9 days for those admitted to cardiology wards and 6 days for those in general medicine, unchanged compared to the 2018/19 data. Those receiving specialist care also have a higher median LOS at 9 days compared to 5 days for patients not seeing specialists [Figure 2.8].</p> <p>Mean LOS does seem to be falling across all sectors of care. That is much less marked for patients in cardiology wards and those seeing specialists, but LOS is clearly becoming shorter for those in general medical wards and those not being reviewed by specialists [Figure 2.8].</p> <p>The longer LOS for patients receiving specialist care will include referral of more severe cases for expert care, higher rates of implementation of disease-modifying therapies and greater care to ensure that the patient is stable prior to discharge.</p> <p>There is considerable inter-hospital variation in the mean length of stay [Figure 2.9].</p>

2.4.2 Audit Results

Figure 2.8: Six-year trend of mean length of stay based on place of care and specialist input, 2014/15 - 2019/20

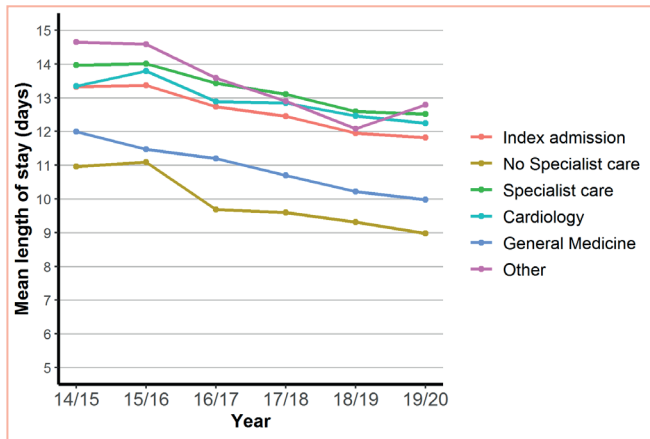
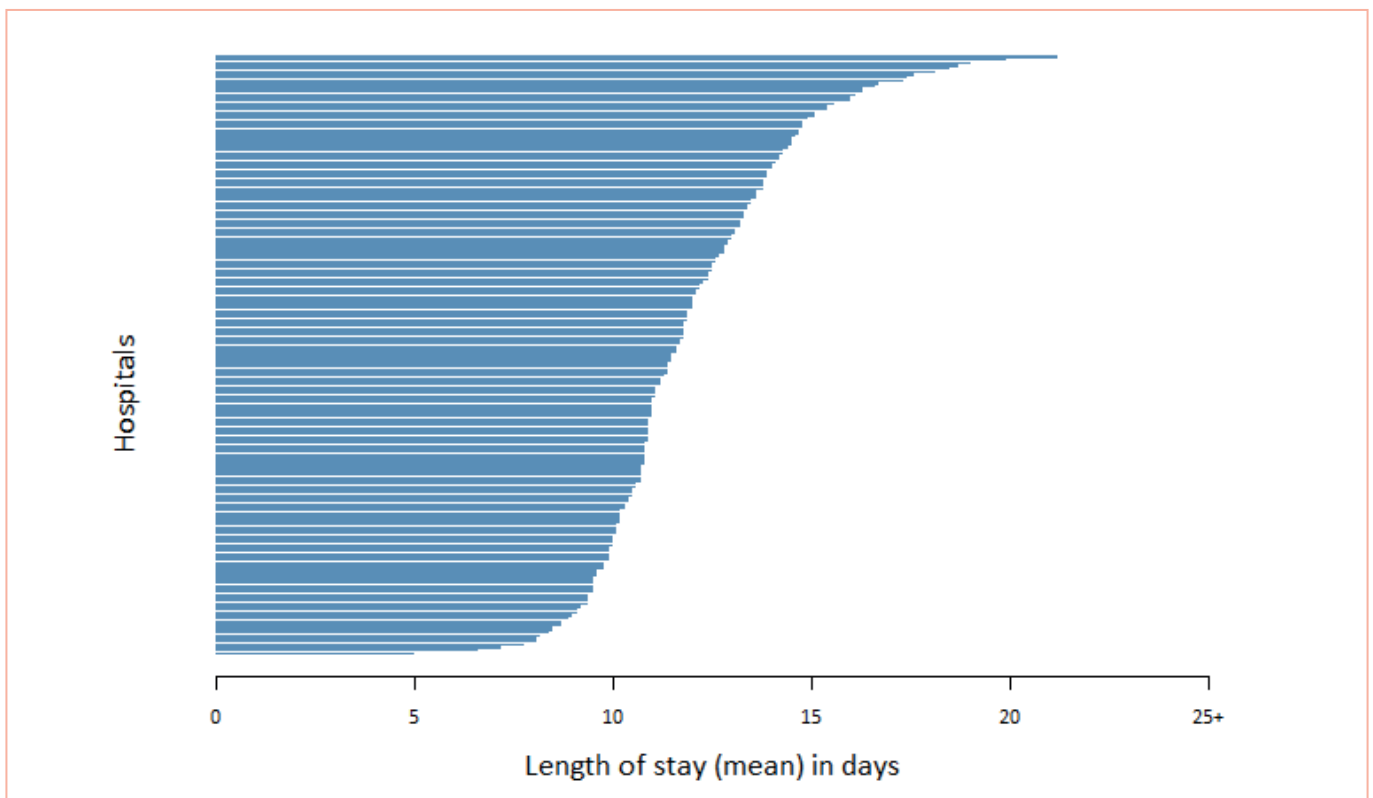


Figure 2.9: Hospital Variation in Length of Stay, 2019/20



2.4.3 Recommendations for research

Further research is required into the association between length of stay, severity of disease and outcomes, especially around the value of short periods of hospitalisation for initiation of care supported by community services

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

2.5.1 Overview of QI metric

QI Metric Description/Name	Best-practice treatment at discharge
Why is this important?	Prescription of ACEi, beta-blocker and MRA are key performance indicators for patients with HFrEF as these drugs are associated with better survival, lower hospitalisation rates and better 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
Numerator	All patients with HFrEF prescribed each of these drug classes, unless there is a contraindication
Denominator	All patients with HFrEF
Trend	<p>This year high aggregate standards were again achieved with 84% of patients being discharged on an ACEi or angiotensin receptor blocker (ARB) and 90% on a beta-blocker. Further improvements were seen compared to 2018/19 with 56% on an MRA [Table 2.1].</p> <p>However, arguably a more relevant and challenging target is the number discharged on all three medicines, which has increased only slightly to 49%, from 48% last year.</p> <p>Prescription of diuretics has remained static and digoxin use has now reduced to 20%.</p>

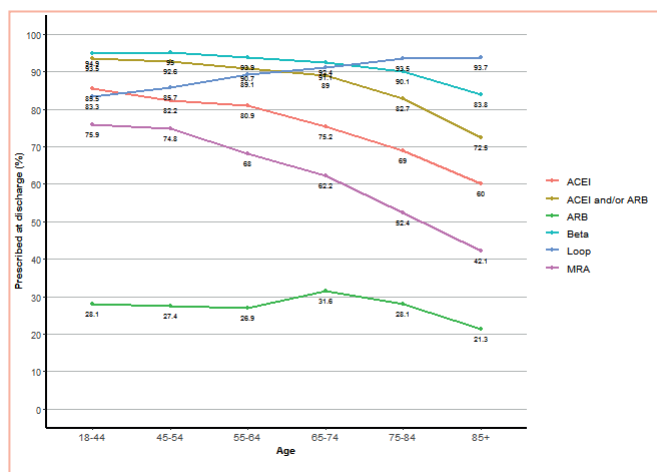
2.5.2 Audit results

Table 2.1: Treatment on discharge for HFrEF, 2019/20

Medication	Total prescribed (%)
ACE inhibitor	71
ARB	27
ACE or ARB	84
Beta blocker	90
MRA	56
ACEi or ARB, beta blocker and MRA	49
Loop diuretic	92
Thiazide diuretic	5
Digoxin	20

The differential prescribing of disease-modifying treatment with an ACEI/ARB, BB and MRA with age was also seen again this year [Figure 2.10]. 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 targeting better practice in the next few years.

Figure 2.10: Treatment on discharge for HFrEF by age, 2019/20



Angiotensin Converting Enzyme Inhibitor (ACEI); Angiotensin Receptor Blocker (ARB); Mineralocorticoid (aldosterone) Receptor Antagonist (MRA)

The trends in prescribing of the three key medicines over the last 6 years are either maintained or improving. In particular, the prescription of beta-blockers has improved markedly with a discharge prescription rate of 90%. MRAs are now prescribed to >56% of patients [Figure 2.11]. While these prescription rates compare favourably with contemporary clinical trial data, and are better than most international registry data, we would argue that this could, and should, be higher. The data presented in this audit are for patients eligible for these therapies (i.e. after those with contraindications have been removed). One could therefore argue that 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 2.12, Figure 2.13, Figure 2.14 and Figure 2.15]. Those achieving the ACEI/ARB target are static at 44%. However there has been an improvement from 56% to 66% in those achieving the beta-blocker benchmark.

The proportion achieving the target for MRAs was 49% compared with 50% in 2018/19. In particular, prescribing rates for the combination of all three

drugs needs to improve in the in-patient setting ([NICE AHF Guidelines 2014](#))². The proportion of hospitals reaching the 60% benchmark set last year has fallen from 40 to 39%.

The hospital variation in drug prescription for HFrEF is also age dependent. For ACEI/ARB with 54% of hospitals achieving the ≥90% target for those <75 years compared to only 31% for those aged ≥75 years. For beta-blockers, 66% of hospitals achieved the ≥90% target for those <75 years compared to only 47% for those aged ≥75 years. For MRAs, 64% of hospitals achieved the ≥60% target for those <75 years compared to only 35% for those aged ≥75 years.

For the combinations of all three drugs, 51% of hospitals achieve the ≥60% target for those <75 years compared to only 28% from those aged ≥75 years. Trusts need to ensure equitable access to disease modifying therapy for older people. Theoretically, there should be no differences by age as exception reporting for contra-indications, which are higher in the elderly is permitted.

However, a mitigating factor here is possibly that we first applied these benchmarks after the publication of the 2017/18 data in late September 2019. This cycle's data collection only finished in March 2020. We were already, at that point, six months through the current cycle, so it may take another year to see a marked effect of ranking hospitals against this benchmark.

In addition, we are aware that two new classes of therapy reduce mortality in patients with HFrEF: angiotensin neprilysin inhibition (sacubitril valsartan) and sodium glucose cotransport inhibitors (dapagliflozin and empagliflozin). The new HF dataset being rolled out in 2021/22 will capture these new therapies.

Figure 2.11: Six-year trends in prescription of disease-modifying therapies for HFrEF, 2014/15 - 2019/20

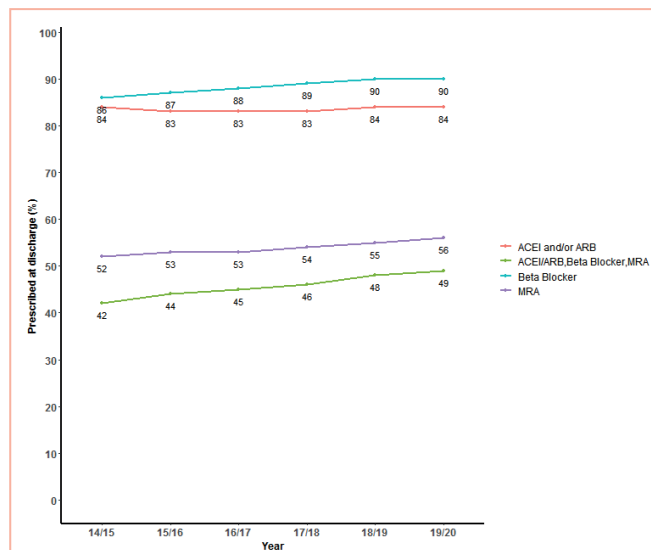
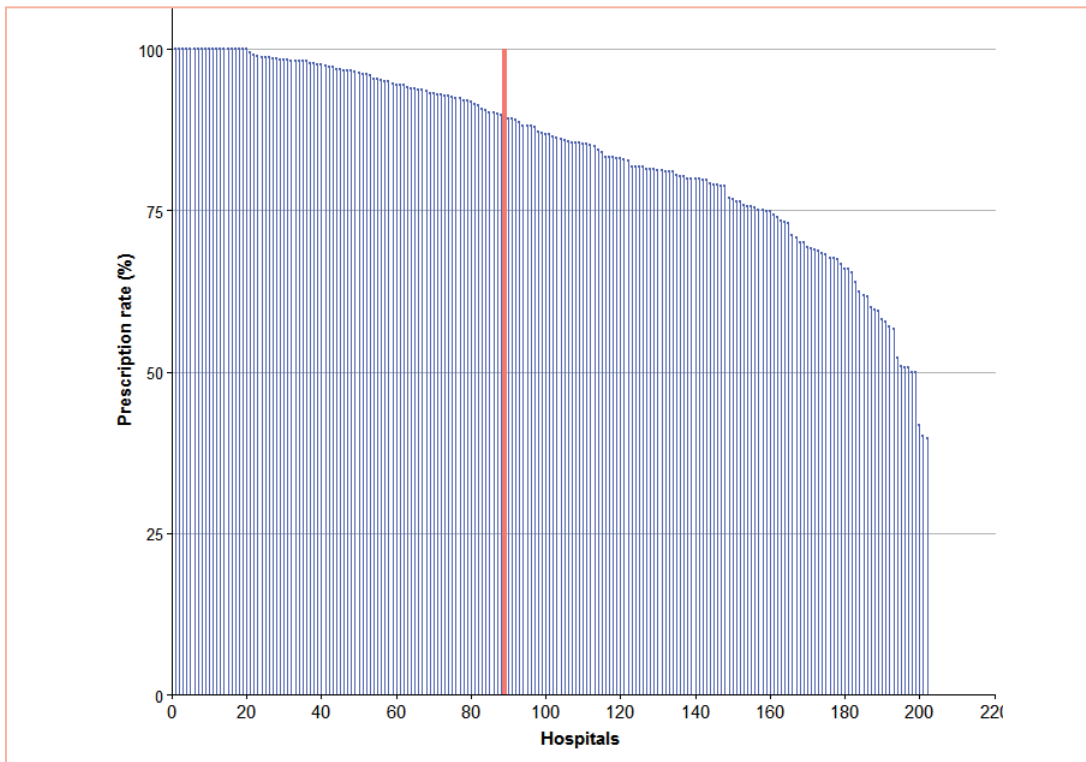
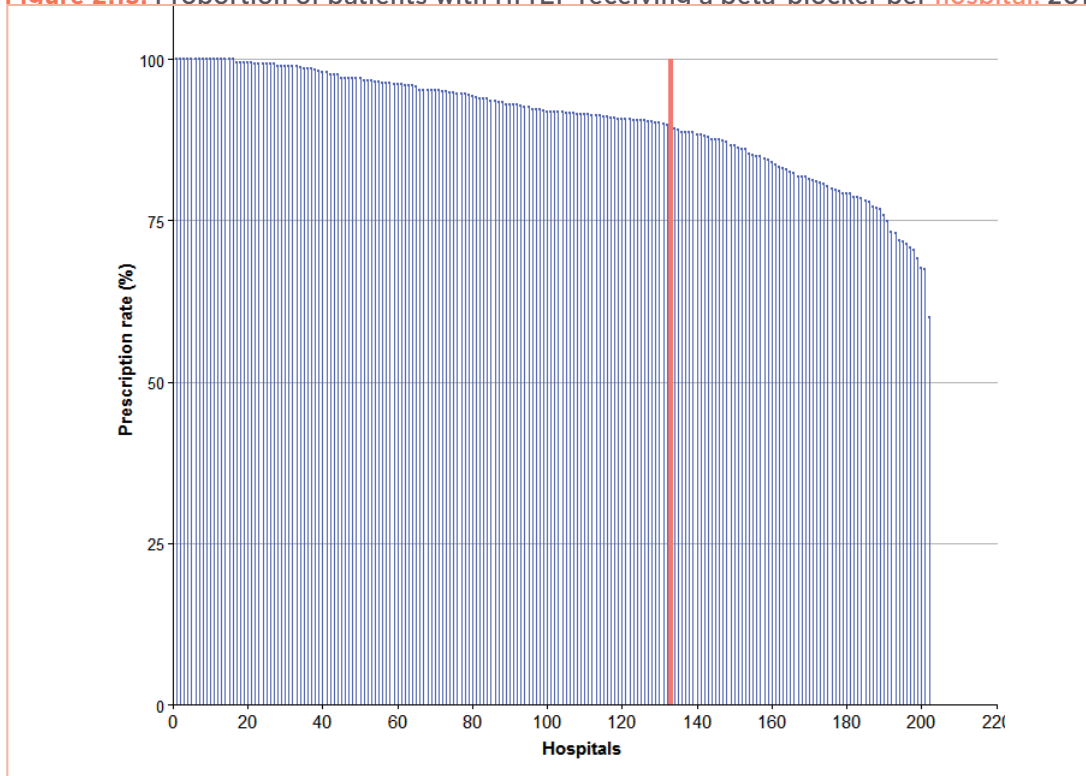


Figure 2.12: Proportion of patients with HF_rEF receiving an ACEI/ARB per hospital, 2019/20



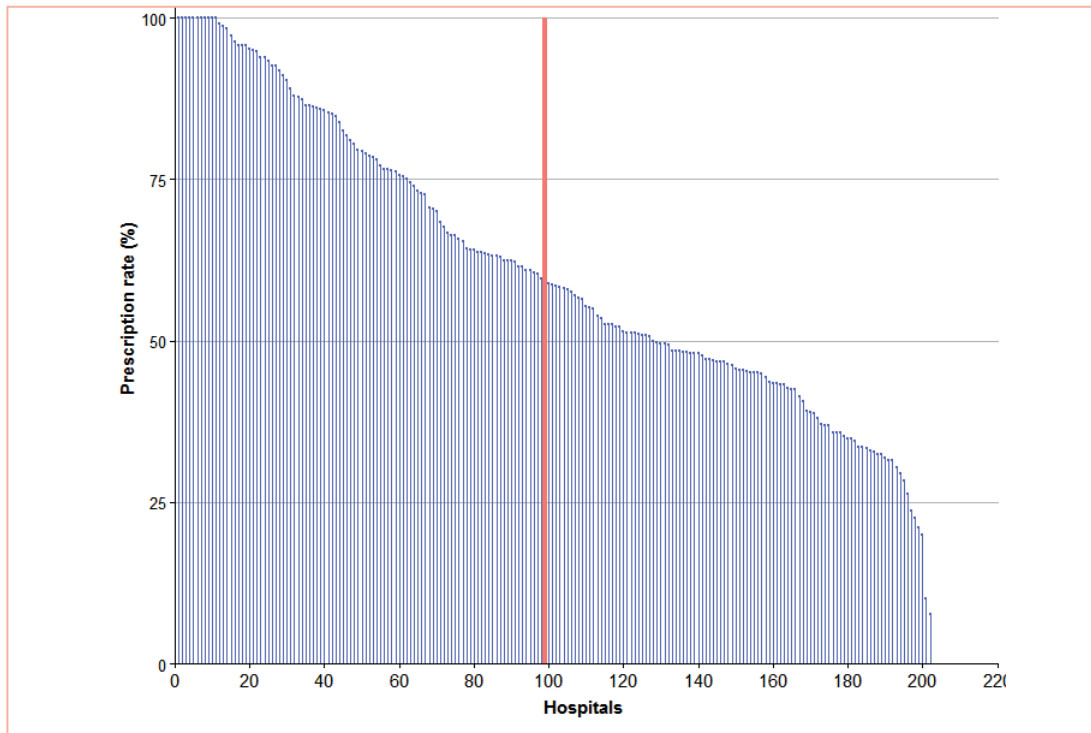
Hospitals to the right of the red line are not achieving the 90% of eligible HF_rEF patients receiving an ACEI/ARB. 89 (44%) of hospitals achieved this. Data from 205 hospitals; 2 hospitals reporting <20 cases were excluded.

Figure 2.13: Proportion of patients with HF_rEF receiving a beta-blocker per hospital, 2019/20



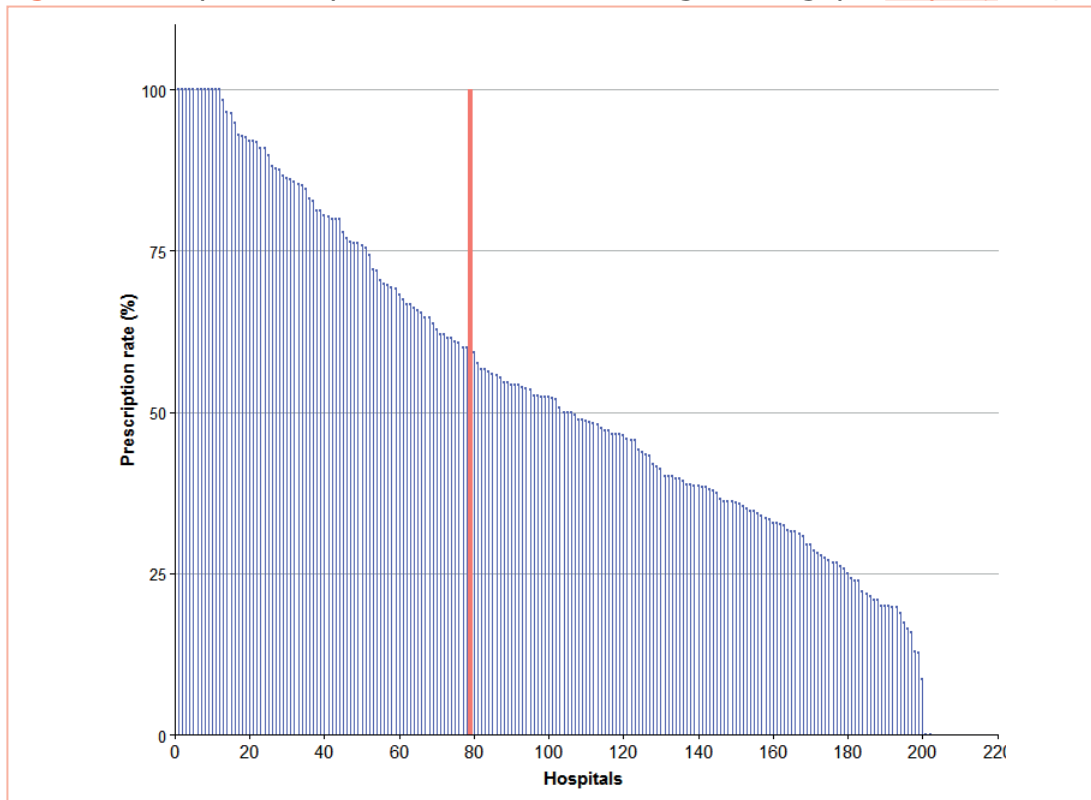
Hospitals to the right of the red line are not achieving the 90% of eligible HF_rEF patients receiving a beta blocker. 133 (66%) of hospitals achieved the target. Data from 205 hospitals; 2 hospitals reporting <20 cases was excluded.

Figure 2.14: Proportion of patients with HFrEF receiving an MRA per [hospital](#), 2019/20



Hospitals to the right of the red line are not achieving the 60% of eligible HFrEF patients receiving an MRA. 99 (48%) of hospitals achieved the target. Data from 205 hospitals; 2 hospitals reporting <20 cases was excluded.

Figure 2.15: Proportion of patients with HFrEF receiving all 3 drugs per [hospital](#), 2019/20



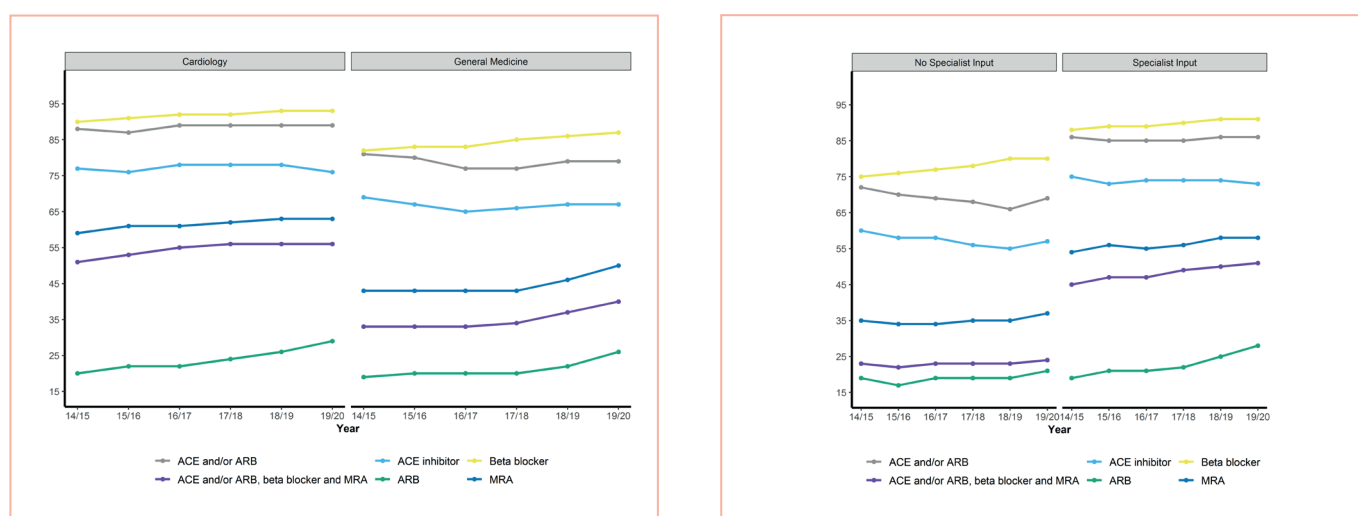
Hospitals to the right of the red line are not achieving the target of 60% of eligible HFrEF patients receiving all 3 disease-modifying drugs. 79 (39%) of hospitals achieved the target. Data from 205 hospitals; 2 hospitals reporting <20 cases was excluded.

The trend seen over the last six years is for an increase in the prescription of BB, MRA and their combination in patients who have specialist input. Prescription rates for those who lack specialist input 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 remains at 56% for the last three years on cardiology wards. It has gone up, modestly to 40% on general medical wards [Figure 2.16]. The proportion of patients prescribed all three medicines increased from 50% to 51% amongst those seen by a specialist. It is only 24% for patients not seen by a specialist, irrespective of their ward allocation. Thus, outreach services to other wards can improve care.

Figure 2.16: Five-year trend of treatment of HFrEF on discharge by place of care and specialist input, 2014/15 – 2019/20



2.5.3 Recommendation for those not achieving 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 in the admission. Those hospitals not meeting the expected standards should perform a clinical pathway review to investigate where improvements can be made.

2.6 More patients should be offered specialist follow-up and rehabilitation

2.6.1 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?	<p>People admitted to hospital because of HF should be discharged only when stable and should receive a clinical assessment from a member of a multidisciplinary HF team within 2 weeks of discharge (NICE Quality standard 103).⁴</p> <p>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.</p>	<p>Specialist cardiology and HF nurse follow-up and access to cardiac rehabilitation improves morbidity and mortality in HF.</p>
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. ⁴	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 slightly this year to 40% from 41% of patients in 2018/19.	<p>Overall 46% of those discharged have cardiology follow-up (up 1% from last year), and 55% have HF Specialist Nurse appointments post discharge (no change from last year). These rates are higher for those being discharged from cardiology wards at 61% and 67% respectively [Figure 2.17].</p> <p>Trends for both cardiology and HF nurse follow-up are largely static. 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.</p> <p>Overall, 15.2% of patients are referred for cardiac rehabilitation during hospitalization (up 2% from last year). Rates are higher for those cared for in cardiology wards (22%), an increase of 1% from last year compared to 9% for those seen on general medical wards (trend static). Anecdotally many more are purportedly referred after discharge by community teams, however, the audit does not capture this [Figure 2.17].</p>

2.6.2 Audit results

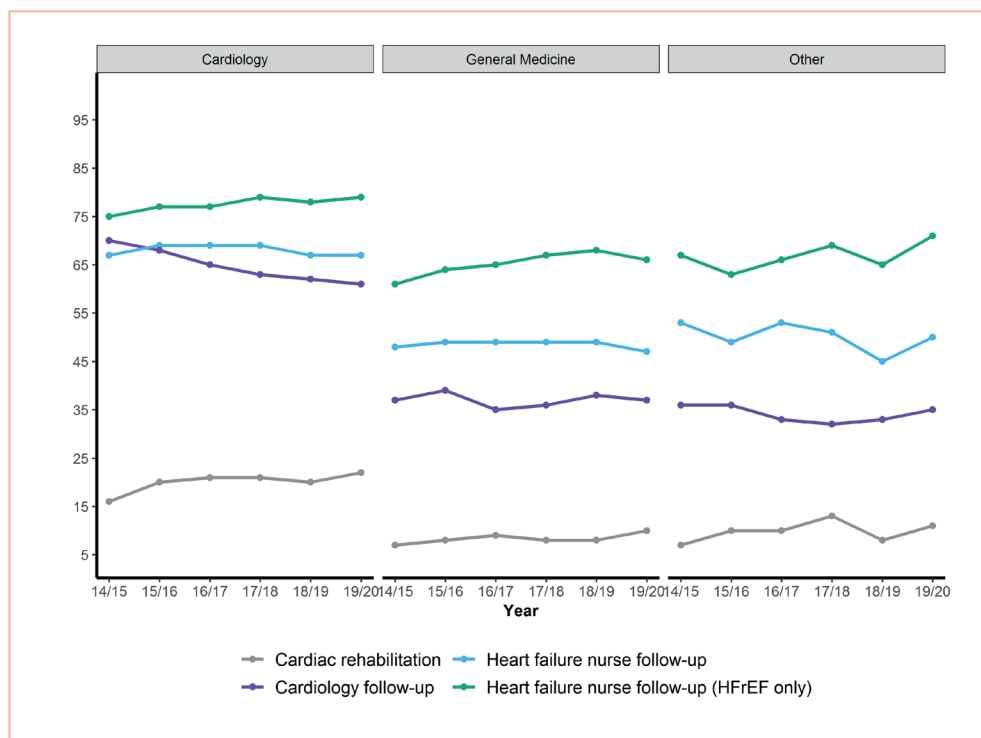
The variation between hospitals in referral for rehabilitation is large (0% to 100%) and requires further investigation with regard to referral practice and barriers to HF patients in rehab programmes including age, frailty and comorbidity. In previous audit cycles, there was no facility to record those declining the offer of rehabilitation. This audit cycle captures that data: 2% of patients declined the offer of cardiac rehabilitation.

In addition, the absolute number of patients referred for cardiac rehabilitation is extremely low (15%), even for those seen on cardiology wards (22%). If hospitals are to achieve the NHS' rehabilitation goals from its

Long Term Plan for cardiovascular disease⁶ (“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 of cardiac rehabilitation services and their prescribing.

Further, if as expected, rehabilitation rates are shown to fall further in next year's audit as a consequence of HF patients avoiding secondary care services during COVID-19, 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.

Figure 2.17: Trends in multidisciplinary HF team follow-up post discharge, 2014/15 – 2019/20



2.6.3 Case study – Achieving 77% referral rate to cardiac rehabilitation

Kettering General Hospital

The 2014/15 NHFA report for Kettering General Hospital demonstrated a 1.8% referral rate to Cardiac Rehabilitation (CR) compared to the National rate of 11.5%. Referral to CR was associated with a better patient outcome at 1 year, demonstrating its importance in heart failure management.

The results reflected the under-provision of CR for HF patients across the UK and at Kettering we were falling short by a long way. The QS statement 8 (2011) advocated a ‘...supervised group exercise based CR programme including education and psychological support’. In addition, NACR was reporting under-representation of certain patient groups, including HF. Locally the need for CR for HF patients became an action plan in response to the NHFA report. The National drivers and local action plan provided incentive for a business case to expand the existing Cardiac Rehabilitation Team.

Collaborative work between CR and HF was undertaken to identify the potential numbers of additional referrals, creation of a community based programme and referral pathways for HF patients including those having complex devices. The business case was successful in receiving funding, initially through NHS England, for increased staffing, equipment, and rental of community venues.

A phased recruitment and expansion of the service over the following 2-3 years has led to a very flexible service for HF patients offering programmes utilising community facilities, or the option of either home or hospital site programmes. The majority of referrals for patients with HF are sourced by the inpatient hospital HFNS team who identify suitable patients and refer at the point of discharge. Liaison between CR and HFNS teams is effective in supporting patients particularly with any change in symptoms.

Kettering’s rate of referral to CR now stands at 77% of cases submitted to the audit compared to 13% Nationally. The achievement reflects the Trust’s commitment to resourcing its CR Team and their innovative development of a flexible service using community facilities and home programmes.

2.6.4 The individual patient experience

A timely reminder of the need for specialist multidisciplinary input, empathy and better communication skills for all:

“From the patient’s perspective, symptoms are real, however trivial or silly they might sound to a healthcare professional (HCP). It takes courage, time, and honesty for an HCP to explain to patients their disease process, the treatment effects and what to expect. It takes courage, time, and honesty for an HCP to be brave enough to tell your patient that you don’t have an answer for some of their questions. The worst thing to say is ‘yes I understand your predicament’, because you really don’t. It makes the patient feel you are ignoring their symptoms without either explanation or empathy.”

This extract from a patient’s reflection on HF care is a timely reminder that there is so much to be done on the honing of all our communication skills, and arguably of the need for diversity within the specialist HF team. This ideally allows early access to specialist cardiology, nursing, rehabilitation, clinical psychology, and pharmacists, amongst others. Individual patients may experience a variety of needs at different times in their journey, and may derive benefit from different specialists, within the team, as those needs change.

If you would like to hear more about this patient’s experiences please see [here](#)

2.6.5 Recommendation for those not achieving 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.

3 | Future direction

3.1 Improving data quality and completeness

We will continue to use the audit data to highlight the importance of cardiology care and access to specialist heart failure care to drive down in-patient mortality rates. A new dataset is being implemented in the next audit cycle to reflect new advances in HF care. The incorporation of the new data completeness tool will further improve the data quality.

3.2 Identifying and understanding variance

In future years there will be increasing Identification of those units that are not meeting the QI targets using risk-adjusted statistics. This should drive improvement both for in-patient quality of care and mortality, as well as the outcomes at 1 year and specifically mortality for patients with HF_{rEF}, for whom there is strong evidence that leaving hospital on disease-modifying treatments improves outcomes. Addressing the huge variation between hospitals in drug prescribing at discharge is a priority, alongside early specialist follow-up. The poor uptake of cardiac rehabilitation will also 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.

3.3 Length of stay <24 hours

As we have now excluded patients being admitted for less than 24 hours (to ambulatory care units/other non-admission beds) from the QI part of the audit (as they do not stay long enough for optimising care or having specialist assessment, but are coded in HES/PEDW), we will continue to track their 1-year mortality to ascertain whether this practice is safe in the longer term.

3.4 Next steps

As the audit matures, it is becoming obvious that there are three features of the data that we need to explore further. Firstly, we need to examine 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. Secondly, as admission to cardiology wards seems to be falling, we will focus more on 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. However, the audit is providing compelling reasons to do so. Indeed, some hospitals have realised the potential to increase cardiology bed access and obtain dedicated HF beds. As it is better understood how to achieve this, others should also be able to do so. Lastly, we aim to study the relationship between our QI metrics and ethnicity.

This audit has always intended to be a tool to help drive up the quality of care for patients admitted to hospital with heart failure. We hope it can be used by everyone who contributes to the audit so that local data can be used in discussion with management to help increase resources, as well as demonstrating how the local team is doing.

In addition, we will work with the NACRM domain within the NCAP to investigate the use of device therapy in patients with left ventricular systolic dysfunction. When there are sufficient data, we will also report on the prescription of new drug classes at hospital discharge.

Given the disparity in care between those managed under cardiology teams and those under elderly care and general medical teams, the NHFA and the British Society for Heart Failure will work with the relevant agencies to enable educational opportunities for non-specialist colleagues.

4 | 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. [NICE Quality standard \[QS103\] 2015. Acute heart failure.](#)
5. [NICE Quality standard \[QS9\] 2011. Chronic heart failure in adults.](#)
6. Online version of the NHS Long Term Plan/
Chapter 3: Further progress on care quality and outcomes/Better care for major health conditions/
Cardiovascular disease <https://www.longtermplan.nhs.uk/online-version/chapter-3-further-progress-on-care-quality-and-outcomes/better-care-for-major-health-conditions/cardiovascular-disease/>

5 | Thanks and acknowledgements

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This report is available online [here](#)