NCAP

NATIONAL CARDIAC AUDIT PROGRAMME

NICOR

National Heart Failure Audit (NHFA)

2024 Summary Report

(2022/23 data)

BRITISH SOCIETY FOR HEART FAILURE

Heart failure - Report at a glance

2022/23 data unless otherwise stated.

63,530 confirmed hospital admissions for heart failure, down **8.6%** since 2019/20, this representing **86%** of admissions according to HES/PEDW coding data (an **8%** increase from 2021/22)

3-fold difference in rate of HF admissions across different Integrated Care Boards (ICBs) in England and Health Boards (HBs) in Wales

About 50% of patients have reduced left ventricular systolic function, defined by an ejection fraction (EF) of **40%** or less

Only **40%** of HF patients cared for on a cardiology ward, this proportion continues to fall

82% of HF patients were seen by a specialist heart failure team

84% of HF patients underwent investigation with echocardiography

59% of patients with an EF of **40%** or less received 'triple therapy' with recommended drugs

59% of patients with an EF of **40%** or less received a sodium glucose co-transporter 2 inhibitor

78% of patients with an EF of **40%** or less were followed up in Specialist Nurse clinics

Only 15% of patients cared for on a cardiology ward were recorded as being referred for cardiac rehabilitation

There were significant variations across hospitals and ICBs/HBs for all performance metrics.

- In-patient mortality has increased from **9%** in 2021/22 to **11%** in 2022/23.

In contrast subsequent mortality is slightly lower:

- 30-day mortality at **13%**, down from **14%** in 2021/22
- 1-year post discharge mortality at **30%**, down from **32%** in 2021/22

Recommendations

In-patient echocardiography

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

Specialist care

2. High-risk cardiac patients, including those with heart failure, should have access to a cardiology ward.

3. Hospitals not achieving the standards for ensuring a patient with acute HF is seen by an HF team should review their pathways of care and consider a quality improvement programme to improve on their current performance.

4.Hospitals without a clinical lead for heart failure should appoint one (ideally a consultant cardiologist with sub-specialty training in HF) and the lack of a named lead should feature on their risk register.

5. Hospitals without access to specialist HF nurses in their hospital team or in the community should urgently seek to appoint them.

Best-practice drugs

6. All patients with HFrEF should receive best-practice disease-modifying drugs unless there is a contra-indication.

7. Hospitals should make every effort to record all medications at discharge and avoid entering ‘unknowns’ in their audit submissions.

Follow-up and rehabilitation

8. All patients should be referred for Cardiology & Specialist HF Nurse follow-up, ideally leaving hospital with their first appointment.

9. Hospitals should review their pathways for referral to cardiac rehabilitation to offer greater access and encourage uptake for HF patients.

Introduction to the report

This report summarises the key findings from the National Heart Failure Audit (NHFA), part of the National Cardiac Audit Programme (NCAP) which is run by the National Institute for Cardiovascular Outcomes Research (NICOR).

The audit aims to drive quality improvement (QI) in the care and outcomes for patients with heart failure (HF) both during and then subsequent to an admission to hospital. This is done by:

- Capturing data on clinical indicators and other metrics 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
- Ensuring patients follow robust referral pathways.

The audit reports on the care provided to HF patients in England and Wales between April 2022 to March 2023, with longer-terms trends included to highlight changes to the scale and quality of HF services over time. It explores the characteristics of patients requiring acute admission to hospital with HF, describes their in-hospital investigation, treatment, access to specialist care, discharge planning and the offer of post-hospital follow-up. A general introduction to HF can be found here. More detail is also available on the QI metrics and NICE guidance/technology appraisals, the audit methodology and NICOR.

This report is designed to be of value to a wide range of stakeholders and importantly it allows patients and their relatives to better understand how HF services are delivered. **The slides in the report are interactive so you can select and explore the data that interest you.** In moving to this new online format, changes in the methodology to present the data using the tools available in the Power BI software means that there may be small discrepancies with previous audit reports.

The audit relies on the active contribution of participating hospitals. Detailed information on over 80,000 patients has been diligently entered by local clinical and audit teams before analysis is undertaken by the NICOR team. We are very grateful to all these staff for their contributions. We would also like to thank the NHFA Domain Expert Group (DEG) for its role in steering the audit. We will continue to work closely with hospitals, patients and other stakeholders to improve the quality of audit data and how these are used to improve the delivery of high quality care for patients with HF.

The NICOR NHFA team

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Although submissions to the NHFA have increased since 2020/21, the number of confirmed cases is 8.6% lower than prior to the COVID-19 pandemic

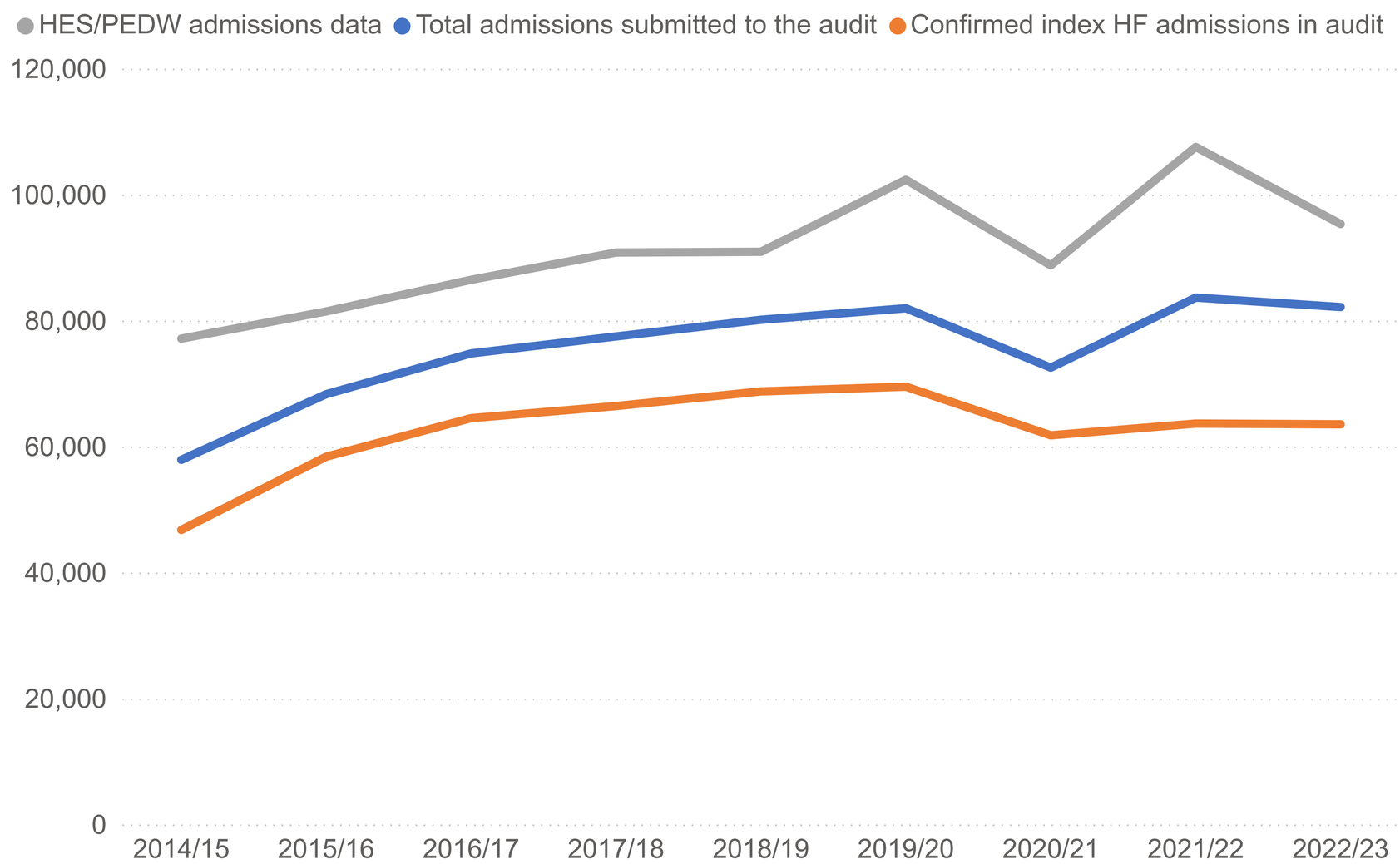
The rapid rise in the number of patients admitted to hospital with heart failure (HF) since 2014/15 appears to be flattening out. In 2022/23, 63,530 index HF admissions were confirmed by the National Heart Failure Audit (NHFA), a very similar number to the previous year.

The number of total submissions to the audit (including cases that were not subsequently confirmed as acute heart failure admissions) actually dropped slightly.

A much bigger fall can be seen in the hospital record data collected contiunually through the Hospital Episode Statistics (HES) system in England and the Patient Episode Database (PEDW) in Wales. This could partly be the result of more reliable HES/PEDW coding within hospitals.

Note: The index admission for a patient is either their only acute HF admission or the first HF admission when more than one was submitted in the audit year. This is to ensure one patient's data from repeated admissions does not distort the statistics. In both instances the term primary indicates acute HF is the considered cause of the admission. The term confirmed is used when the data submitted is verified an acute HF admission.

Heart failure cases recorded in the audit and in HES/PEDW data



There is a more than a threefold difference in heart failure admissions across the Integrated Care Boards in England and University Health Boards in Wales

The maps show the confirmed heart failure (HF) admissions for:

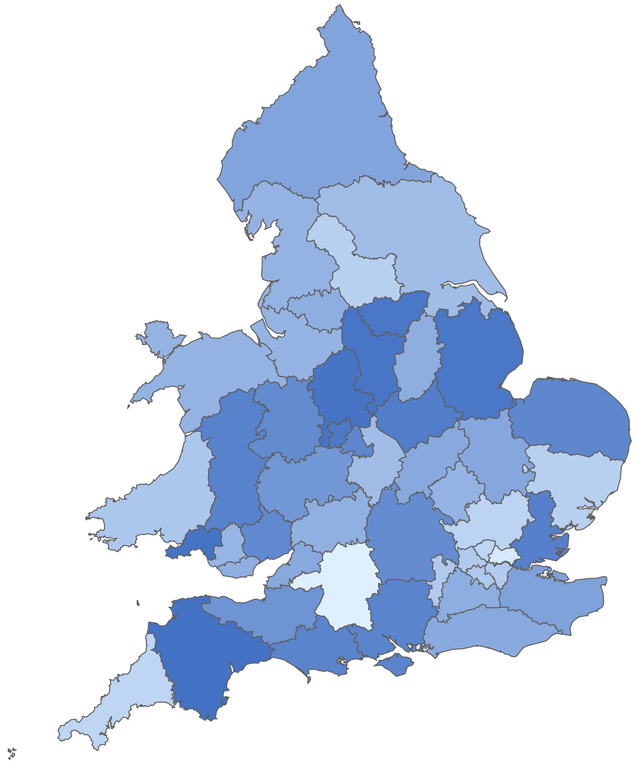
- the 42 Integrated Care Boards in England and seven Welsh University Health Boards (commissioning organisations)
- the 15 Cardiac Networks (operational delivery networks) in England.

The darker the area, the higher the rate of HF index admissions.

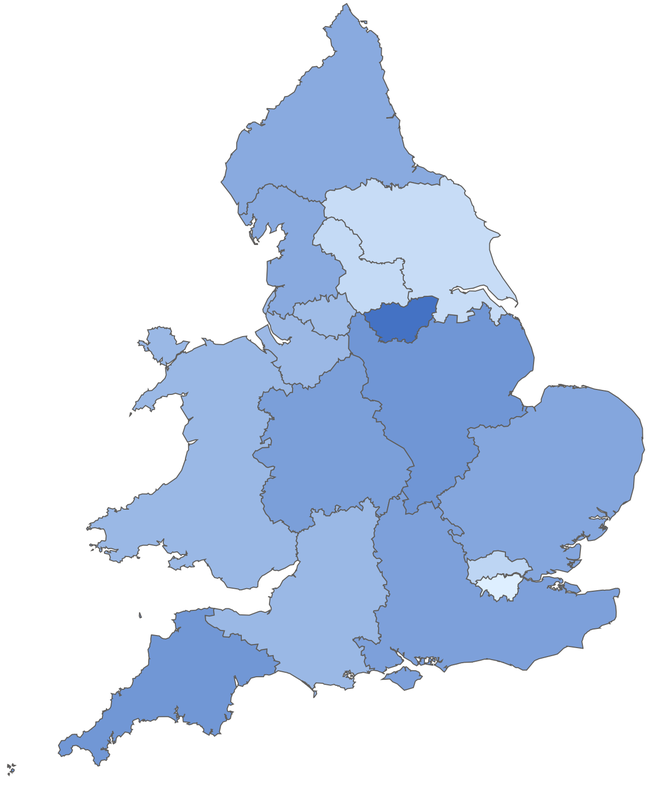
The ICB rates vary from 40 per 100,000 population in Bath and North East Somerset, Swindon and Wiltshire to 146 per 100,000 population in Devon ICB.

The Cardiac Network rates vary from 53 per 100,000 population in South London to 148 per 100,000 population in South Yorkshire.

Confirmed index HF admissions per 100,000 population based on patient home location by ICB/HB (2022/23)



Confirmed index HF admissions per 100,000 population based on hospital location by Cardiac Network (2022/23)

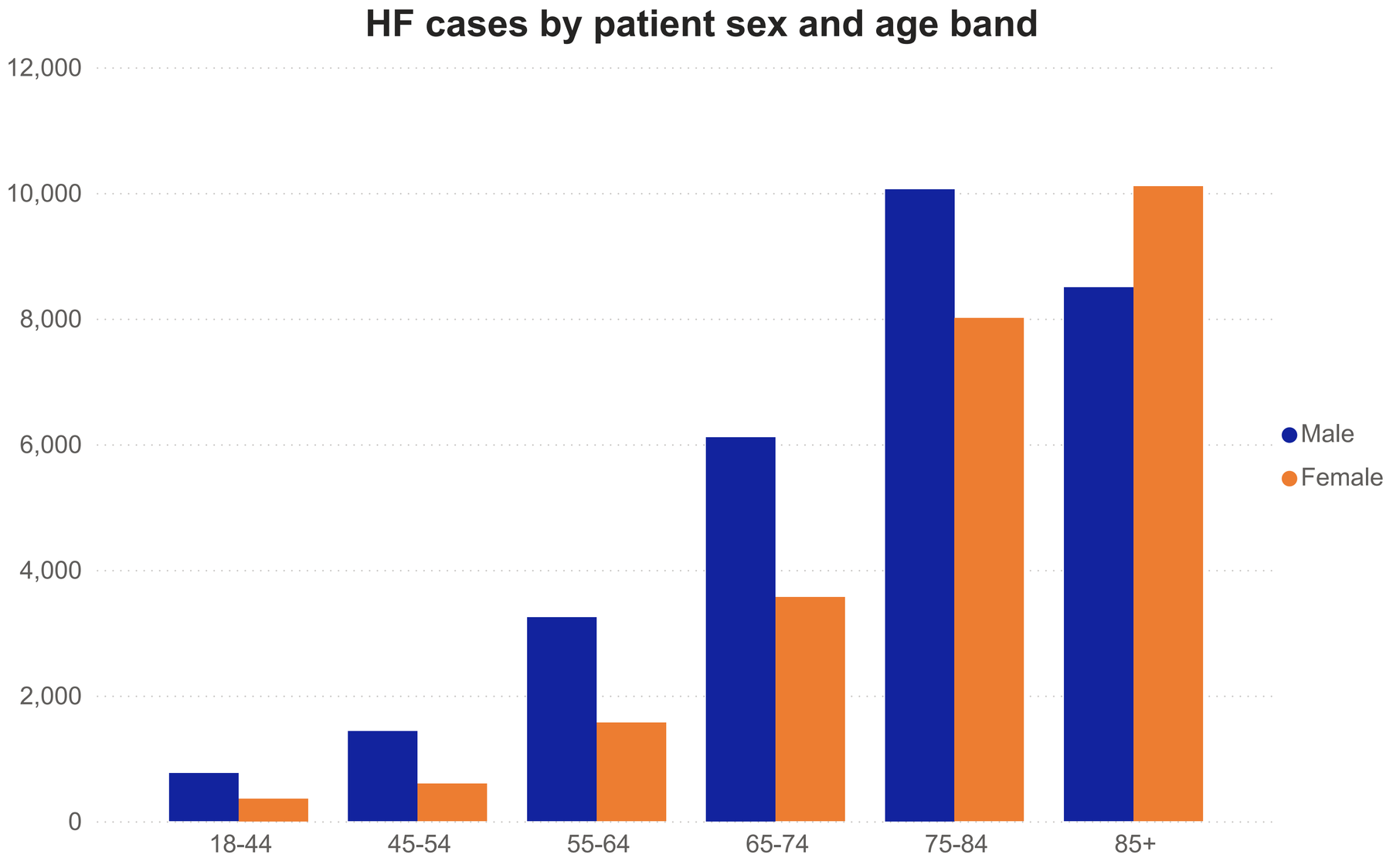


More males are admitted with heart failure for all age groups except those aged 85 years or older

The demographic profile of cases in 2022/23 is unchanged from the previous year:

- mean age = 77.7 years
- mean age men = 75.8 years
- mean age women = 80.0 years

There are more males than females in all age groups except for those 85 years or older.



Patients with reduced left ventricular systolic function make up the majority of cases of HF admissions, but their proportion is gradually falling

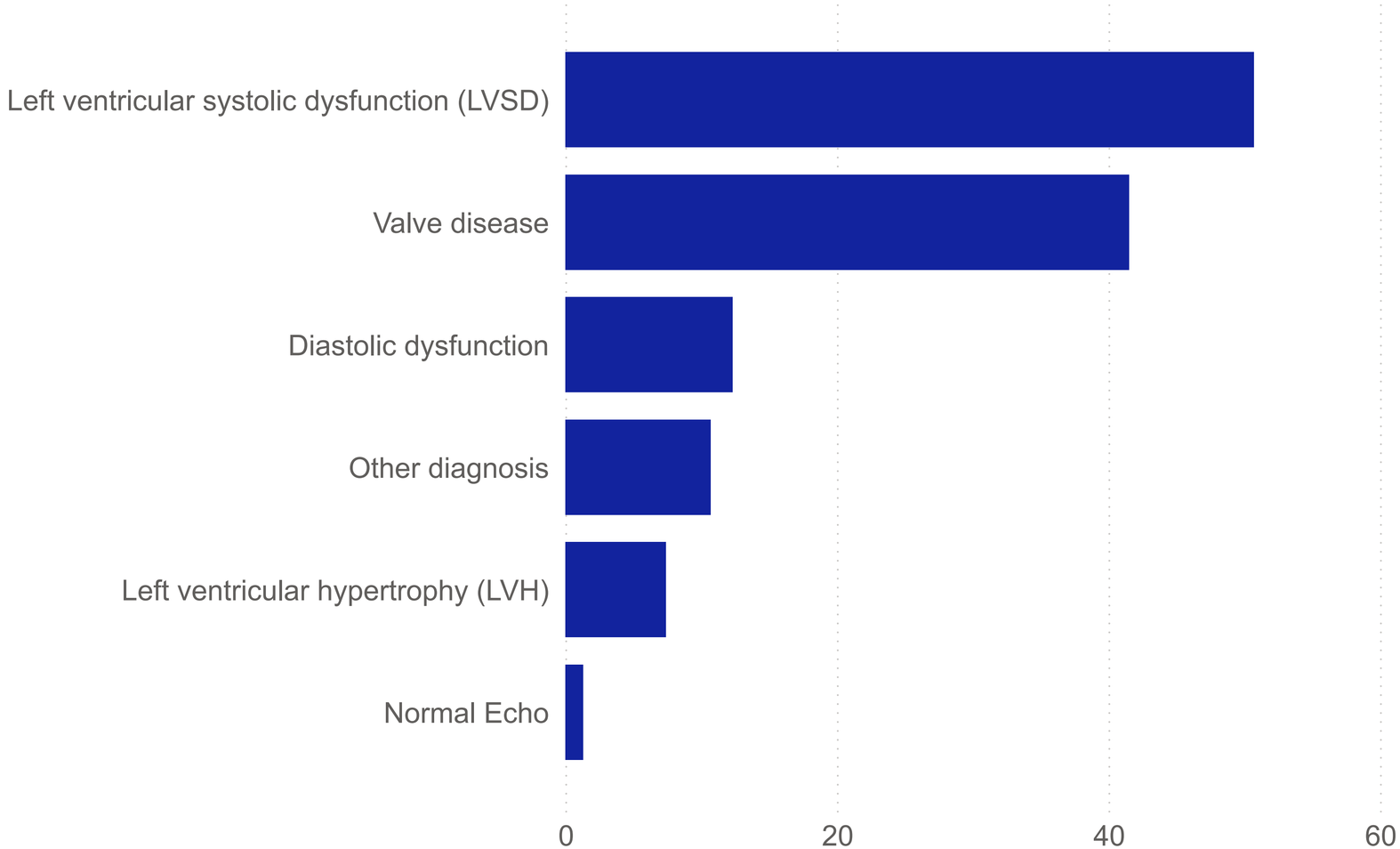
Heart failure can be associated with a range of echocardiographic findings which may occur alone, or in association.

One of the commonest echo findings is an inability of the heart to pump, or eject, blood effectively into the wider circulation. The amount ejected with each beat can be measured as an ejection fraction (EF), of the full pumping chamber. When this EF is reduced to ≤ 40%, it is known as left ventricular systolic dysfunction (LVSD,) and defines the associated Heart Failure with reduced Ejection Fraction or HFrEF.

The proportion of patients with this EF of ≤ 40%, or LVSD, is gradually falling and in those who had an echo, in the 2022/23 audit cycle, it occurred in 51%. It was less commonly found in females (40%) than in males (59%).

This LVSD matters because people with this echo finding can be treated very effectively with drugs that improve survival, lower hospitalisation rates, and improved quality of life.

Percentage of echocardiography findings in patients with heart failure (2022/23)



HF patients with an ejection fraction greater than 40% have more associated diagnoses such as hypertension and atrial fibrillation

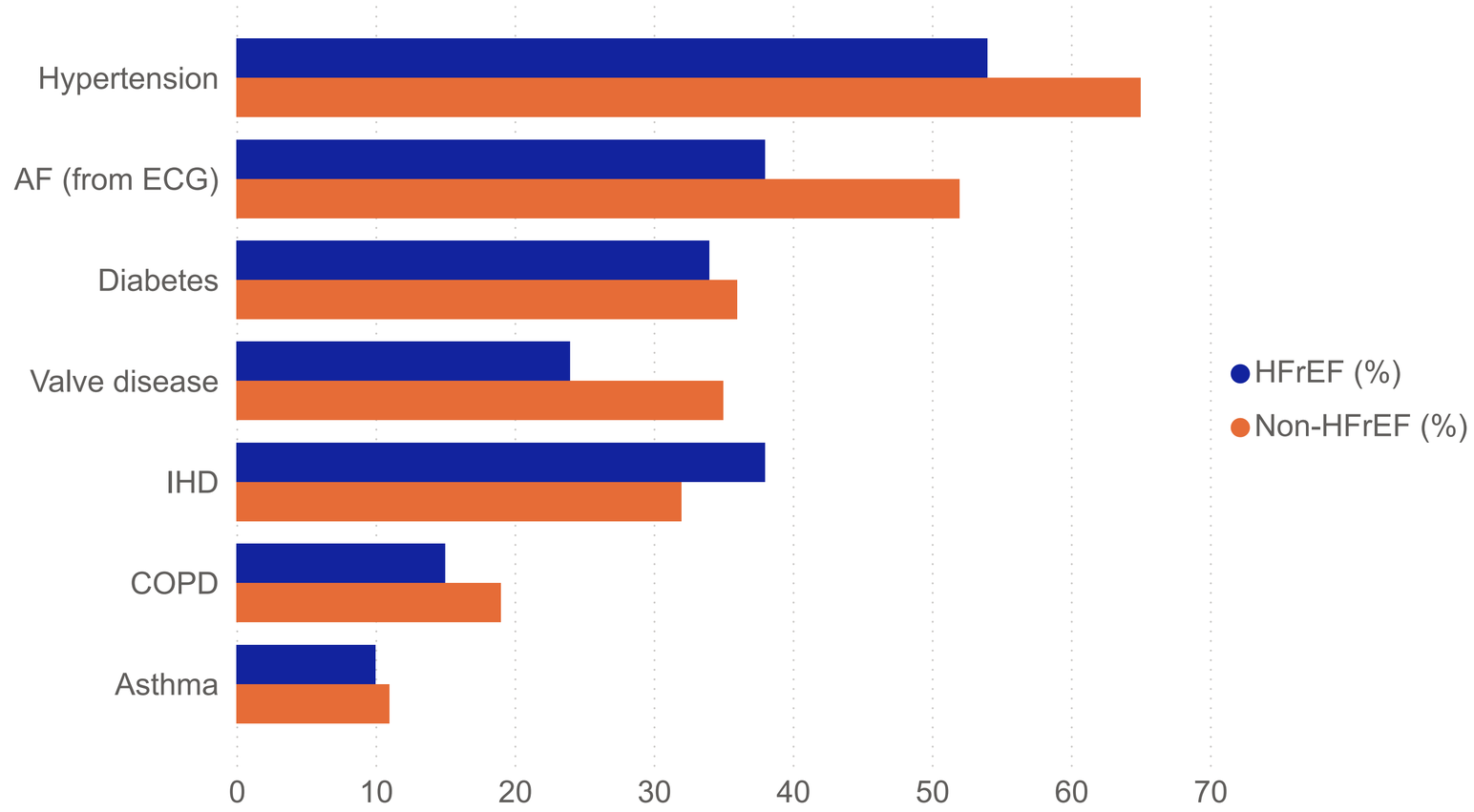
The frequency of associated conditions is shown for patients with heart failure with reduced ejection fraction (HFrEF) and also for all other patients, designated as Non-HFrEF.

Some patients with clinical symptoms and signs of HF have preserved heart pump function (HFpEF) and others have intermediate levels.

Hypertension, atrial fibrillation (AF), valve disease and chronic obstructive pulmonary disease (COPD) are all reported more commonly in patients with HF but without an EF of ≤40%, when compared with those with HFrEF. This pattern is consistent with findings from previous audit reports.

Key:
IHD = Ischaemic Heart Disease
COPD = Chronic Obstructive Pulmonary Disease

Percentage of HFrEF and non-HFrEF patients with associated conditions (2022/23)



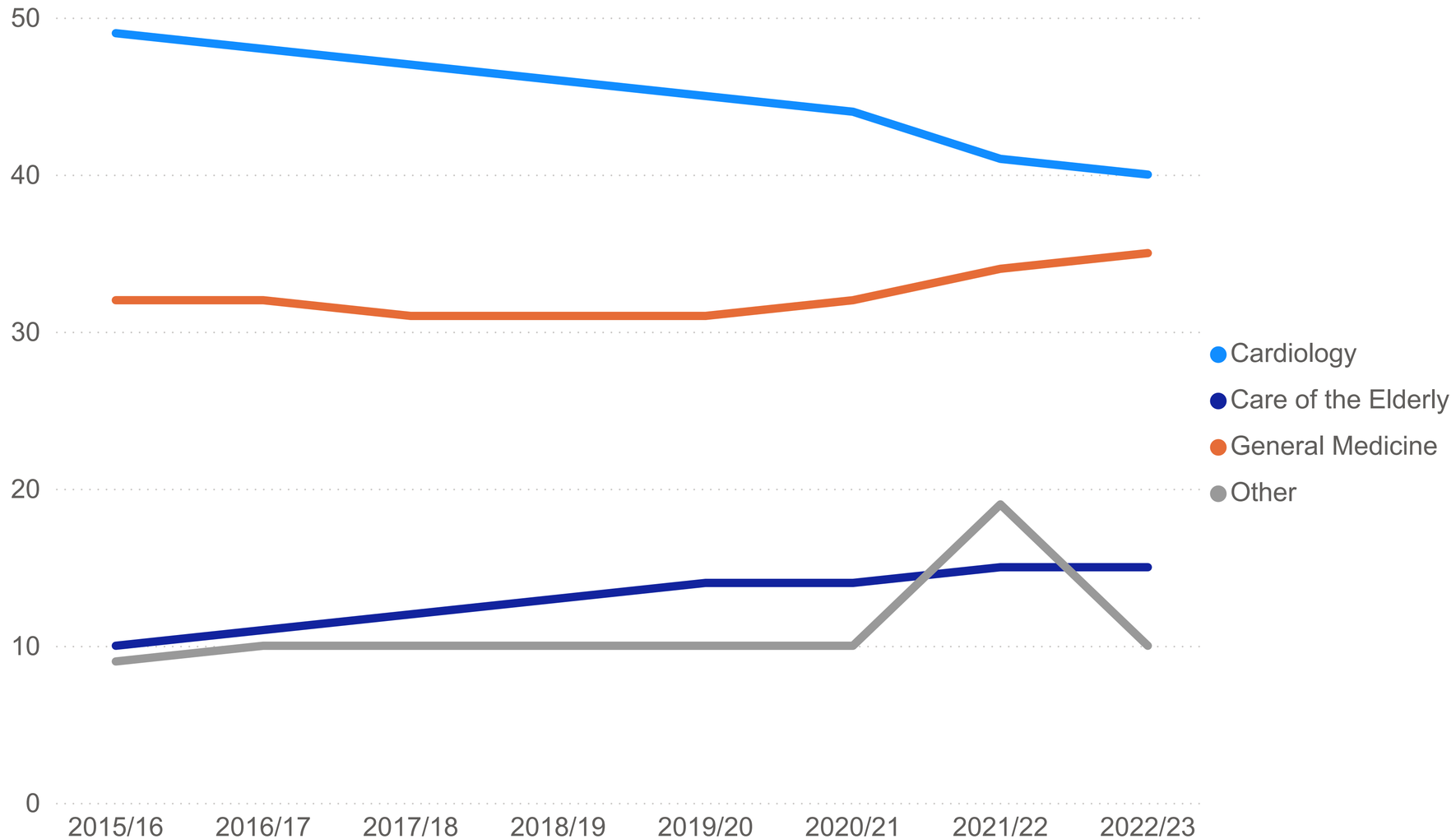
The proportion of patients being admitted to Cardiology wards is falling

The audit target is that 60% of all patients admitted with heart failure (HF) should have their care on a cardiology ward.

Instead of improving, this has been deteriorating gradually and in 2022/23 only 40% of HF patients were cared for on a cardiology ward.

This is of concern since patients with HF are amongst the highest risk patients admitted to hospital and their care is demonstrably improved under cardiology care. Access to protected beds for these patients is essential.

Percentage of HF patients receiving care in different types of ward (2022/23)



Only 15% of hospitals achieve the target level of 60% of patients admitted to a cardiology ward

Only 15% of hospitals achieved the target of 60% of patients being admitted to a cardiology ward.

All hospitals falling below the target line are not meeting the audit minimum standard.

Selecting a cardiac network or hospital below shows its data.

Note: Data are based on those hospitals reporting 20 cases or more.

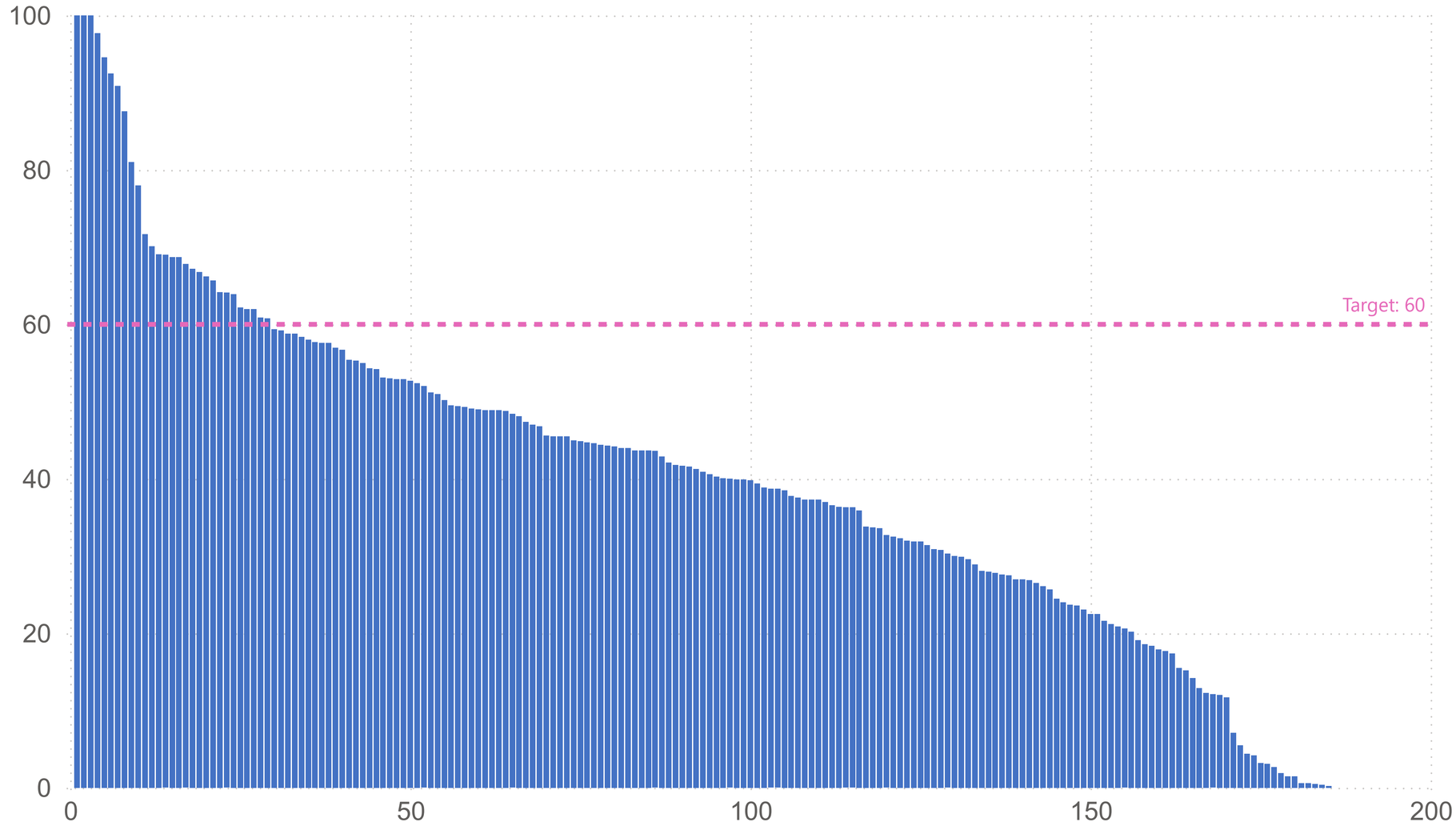
Select a Cardiac Network

All

Select a hospital

All

Percentage of HF patients receiving cardiology care by hospital in 2022/23



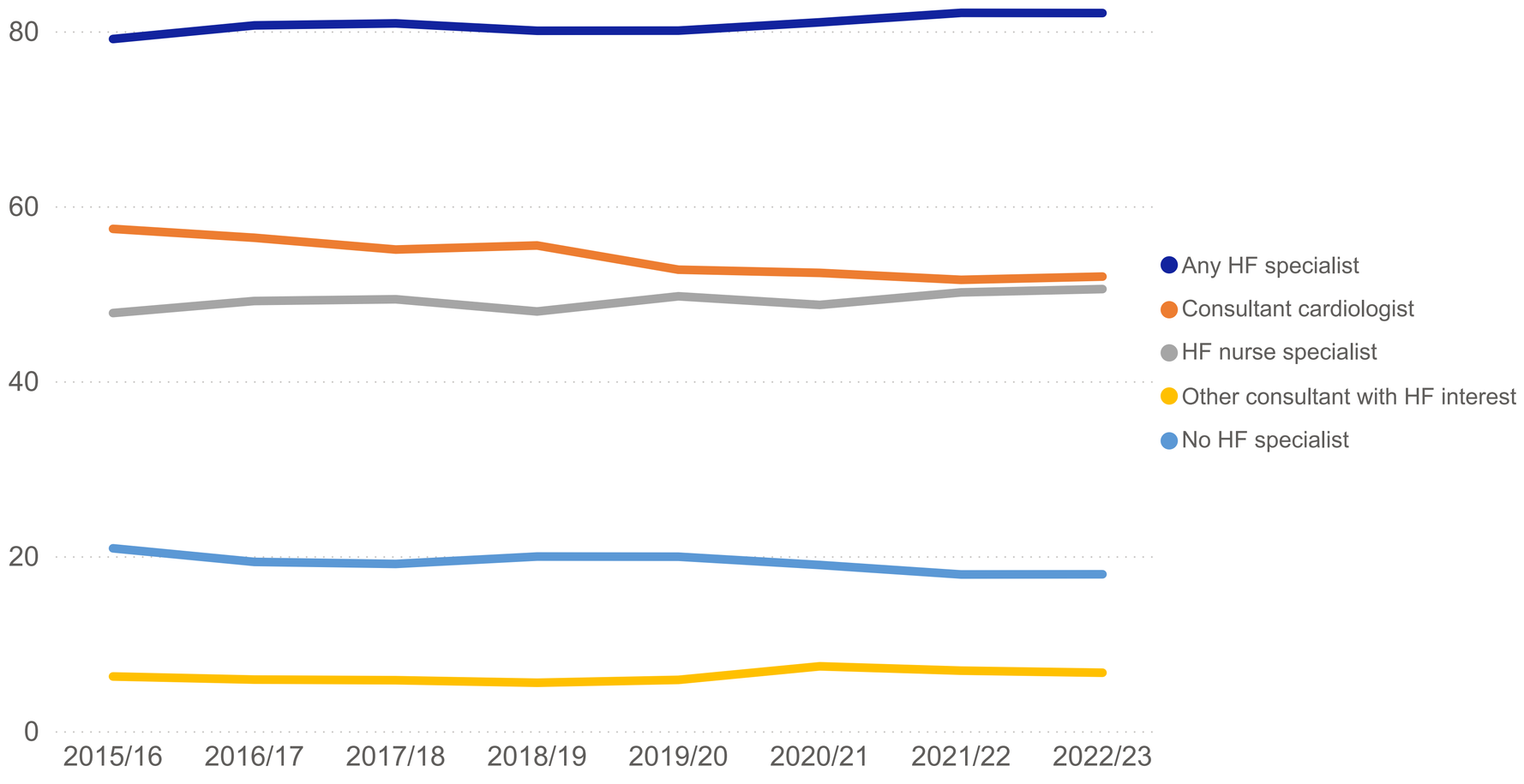
The majority of patients with heart failure are seen by a specialist HF team

Access to specialist HF care (by cardiologists and specialist HF nurses) is associated with lower in-hospital and subsequent out of hospital mortality, and better treatment of patients on discharge.

Whilst NICE guidance advocates that all these patients receive early and continuing specialist input, the current audit quality improvement (QI) target is that 80% of all those admitted with acute HF should have specialist input.

In 2022/23, 82% of patients had access to specialist HF care, meeting the audit QI target.

Percentage of patients seen by a specialist HF team in England and Wales



Almost 40% of hospitals failed to reach the target of 80% of all HF patients being seen by a specialist HF team

The current audit target is that 80% of HF inpatients should have input from specialist cardiology staff.

There remains considerable hospital variation and for 2022/23, only 62% of hospitals met this target, down from 64% the previous year.

Selecting a cardiac network or hospital below shows its data.

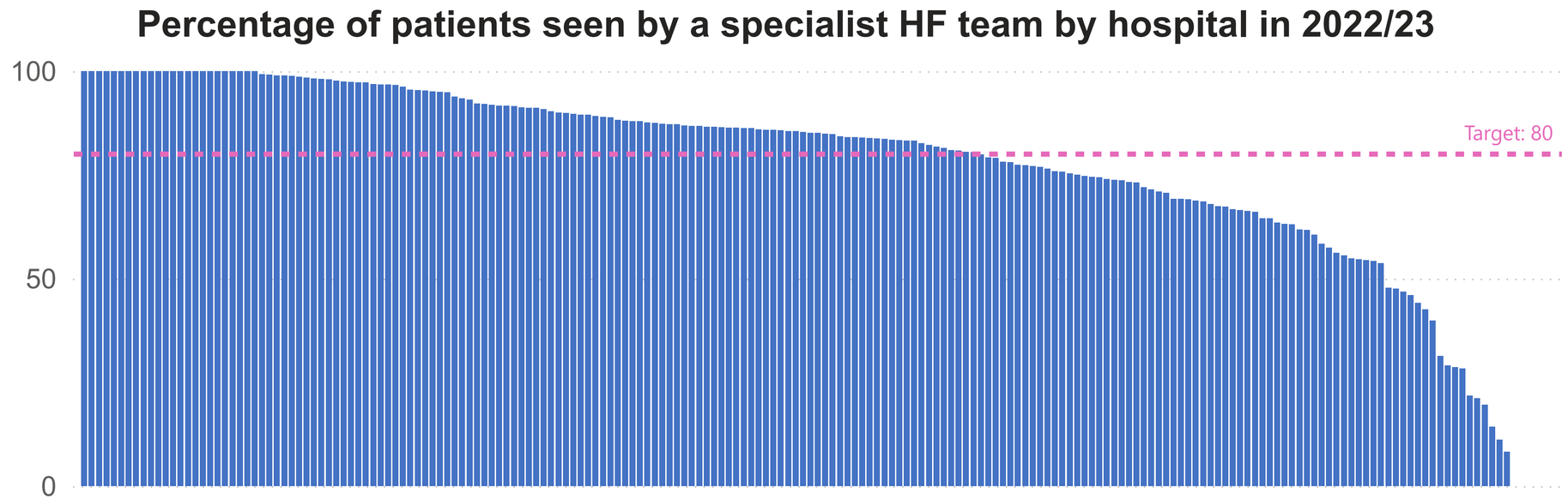
Note: Data from those hospitals submitting fewer than 20 cases were excluded.

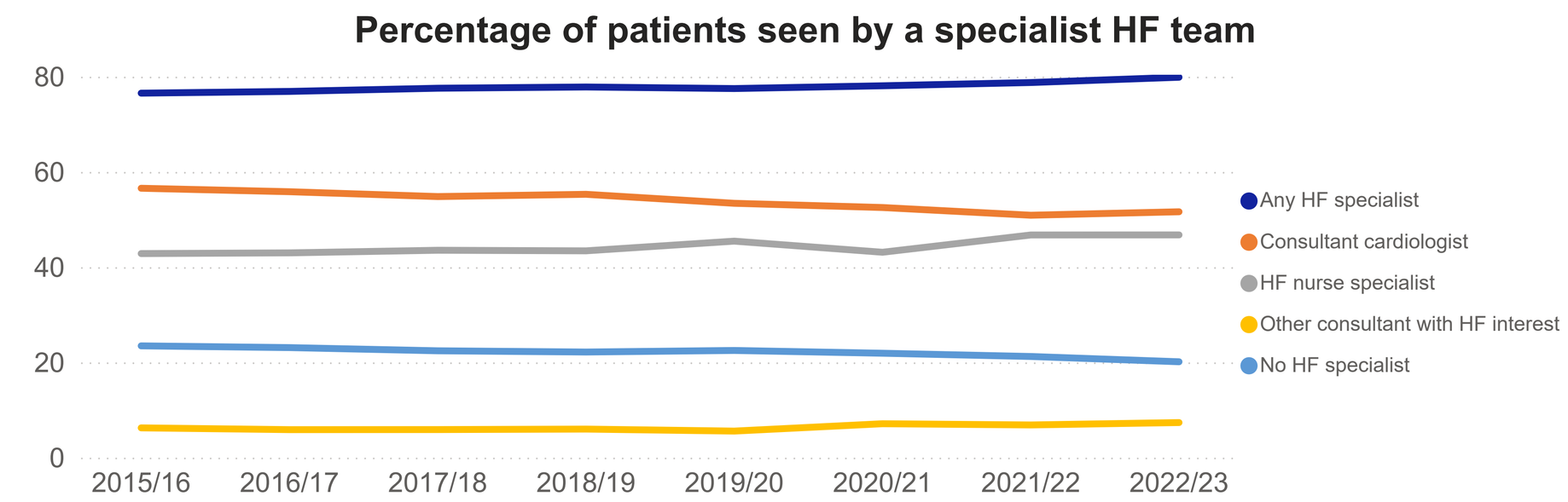
Select a Cardiac Network

All

Select a hospital

All





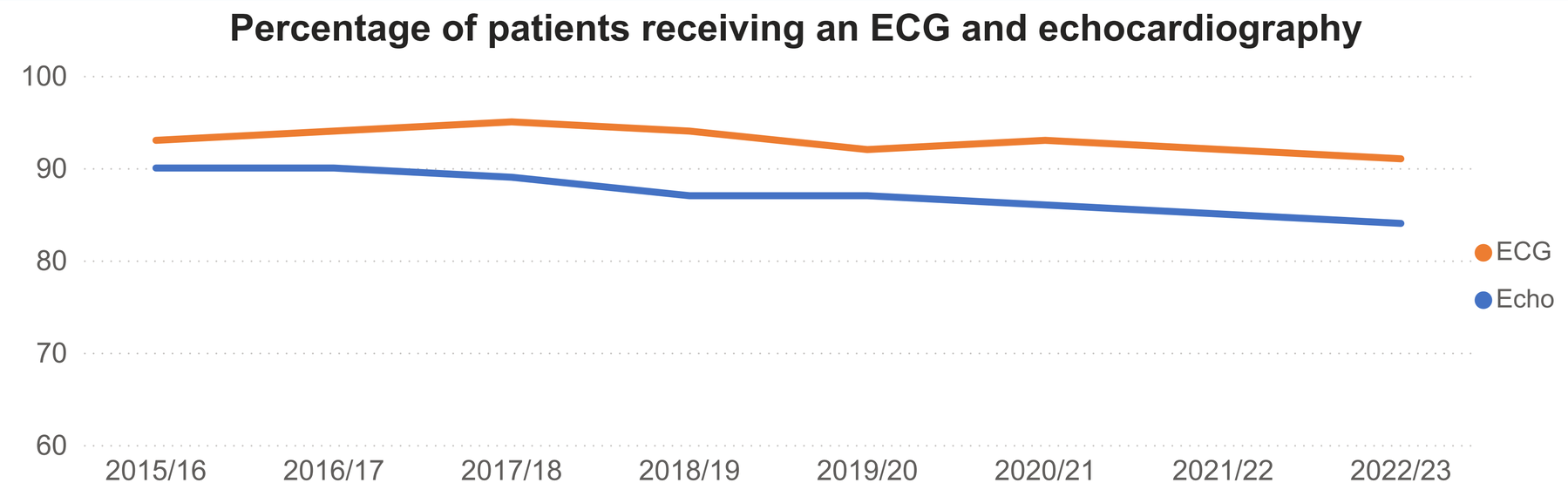
The percentage of HF patients investigated with an ECG and echocardiography is falling

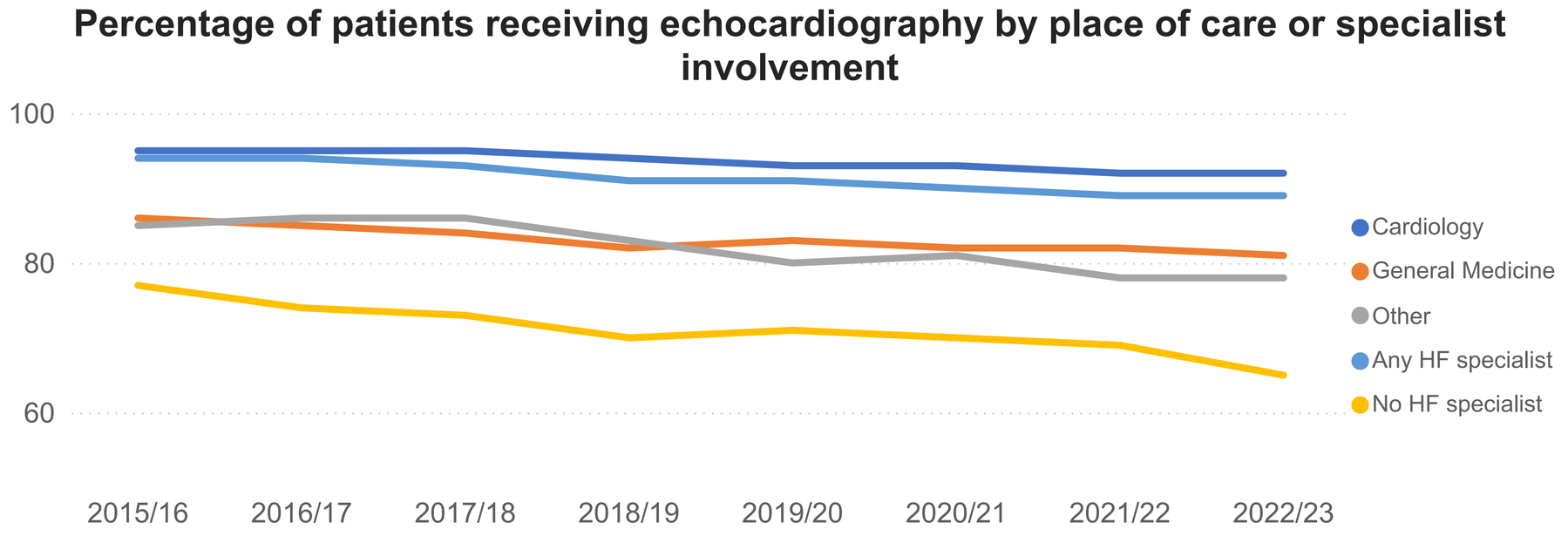
Inpatient echocardiography and electrocardiography are essential for an accurate diagnosis of HF and its phenotype, and will help determine optimal care.

The audit quality improvement (QI) target is that 90% of patients should be investigated with echocardiography. NICE emphasises the need for this to be undertaken early and ideally within 2 days of admission.

In 2022/23, the percentage of HF patients undergoing echocardiography remained between 89-92% for those receiving specialist care (whatever the place of care) or for those cared for on cardiology wards.

Echocardiography rates are inadequate and worsening for patients not cared for on cardiology wards and especially for those who do not receive HF specialist input (only 65%).





Only half of admitting hospitals achieve the target of 90% of HF patients being investigated by echocardiography

Only 51% of hospitals achieved the audit target of undertaking echocardiography in at least 90% of their HF patients, though this is 3% higher than 2021/22.

There is considerable variation between hospitals, with 31 undertaking echocardiography for fewer than 75% of patients.

Selecting a cardiac network or hospital below shows its data.

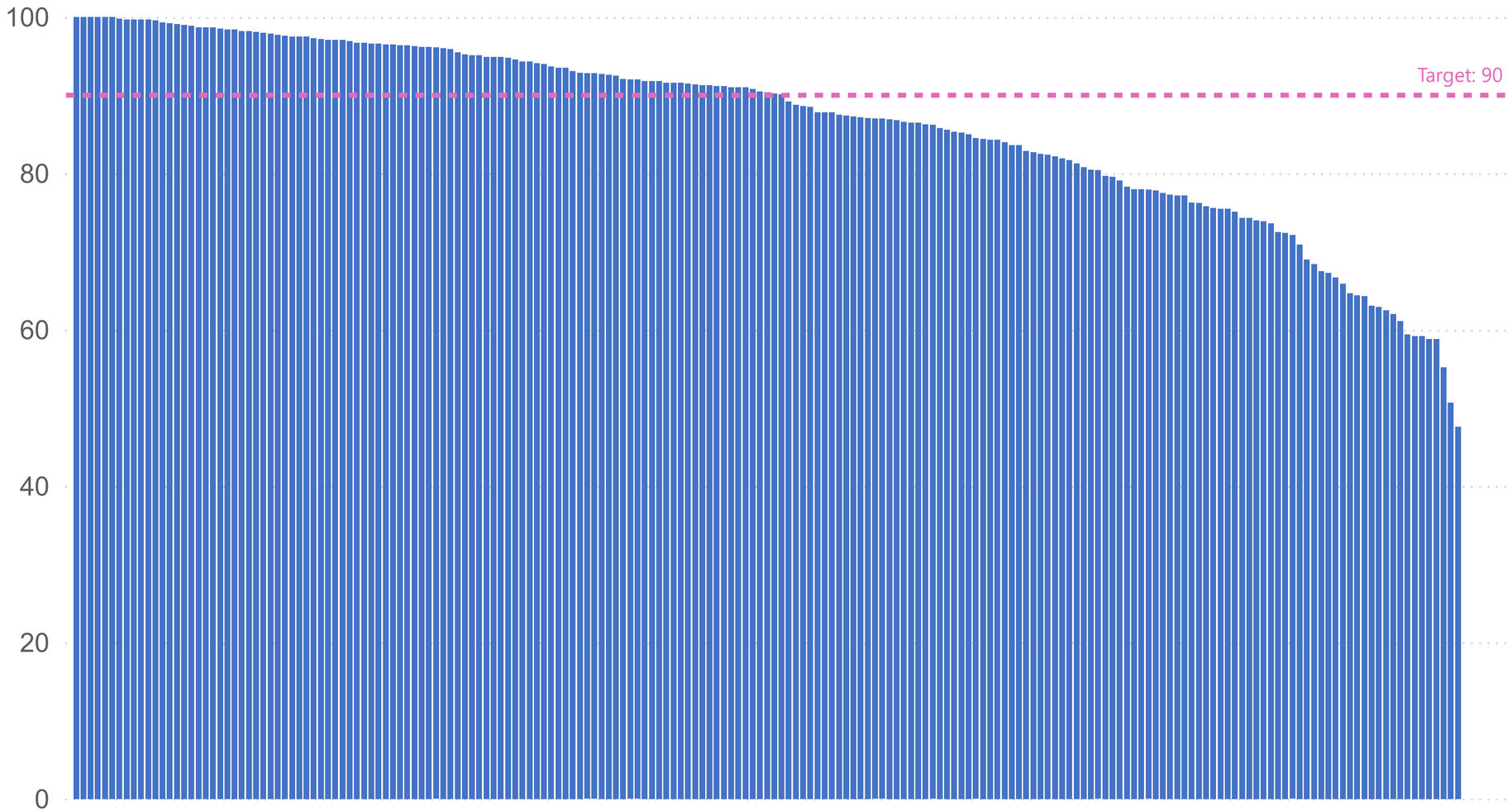
Select a Cardiac Network

All

Select hospital

All

Percentage of HF patients in England and Wales undergoing echocardiography by hospital in 2022/23



More patients are receiving drug therapy that improves longer-term outcomes

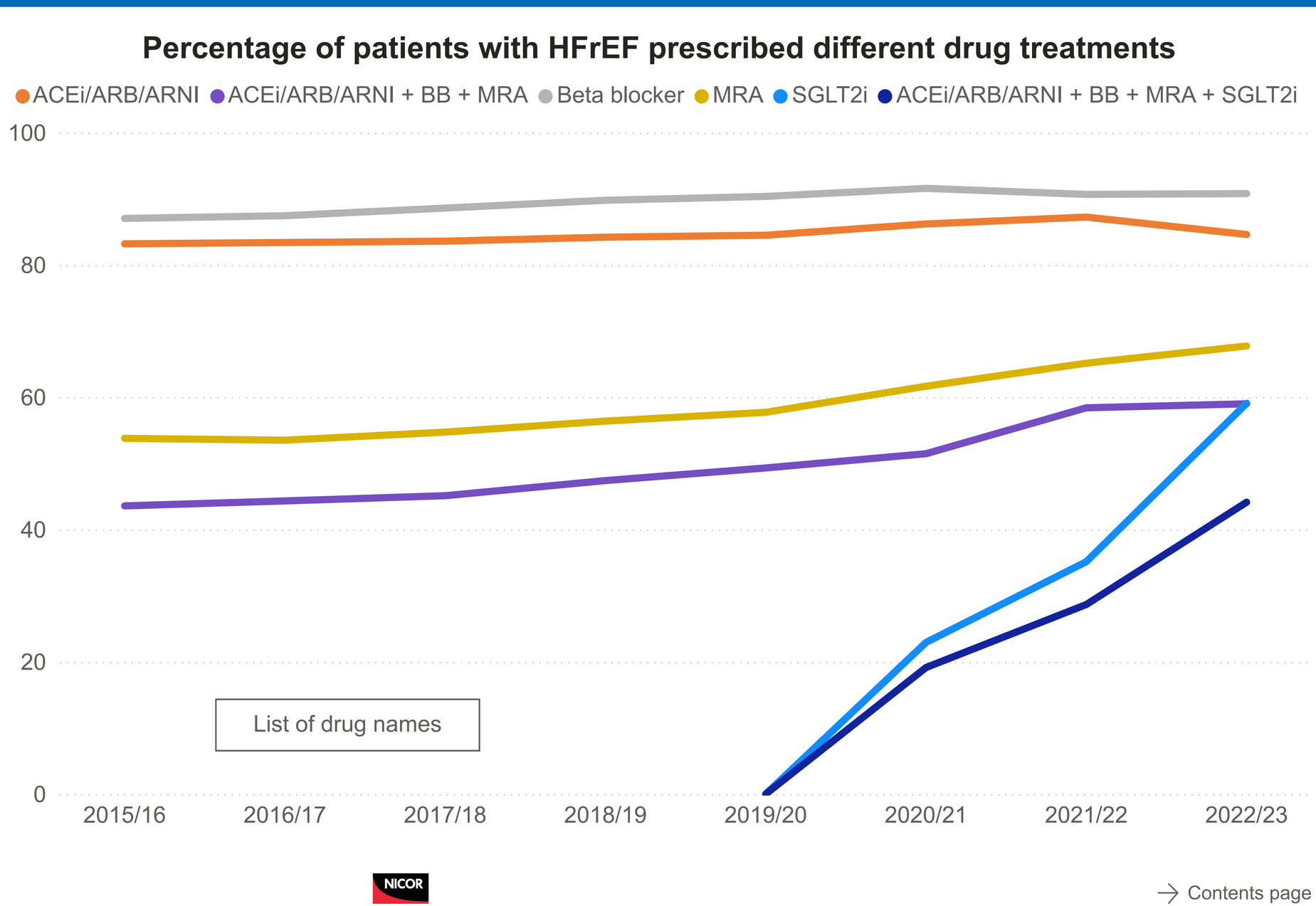
In general, the percentage of eligible patients with HFrEF being prescribed recommended disease-modifying drugs largely improved in 2022/23:

- **Beta blockers were prescribed to 91% of patients**
- **One of an ACE inhibitor, angiotensin receptor blocker or an angiotensin receptor/neprilysin inhibitor (ACEI/ARB/ARNI) to 85%**
- **Mineralocorticoid receptor antagonists (MRAs) to 68%**
- **All three classes of drugs to 59%.**

It is notable that, as recommended, the relatively newly-licensed sodium glucose transporter 2 inhibitor (SGLT2) drugs were prescribed to 59% of patients.

Some 44% of eligible patients with HFrEF were prescribed all four classes of disease-modifying drugs.

The audit quality improvement (QI) target for prescribing of all these drugs/combinations has increased to 90% for all eligible patients with HFrEF (i.e those without a contraindication).



Hospitals should provide more accurate data on the drug classes prescribed to patients with HFrEF

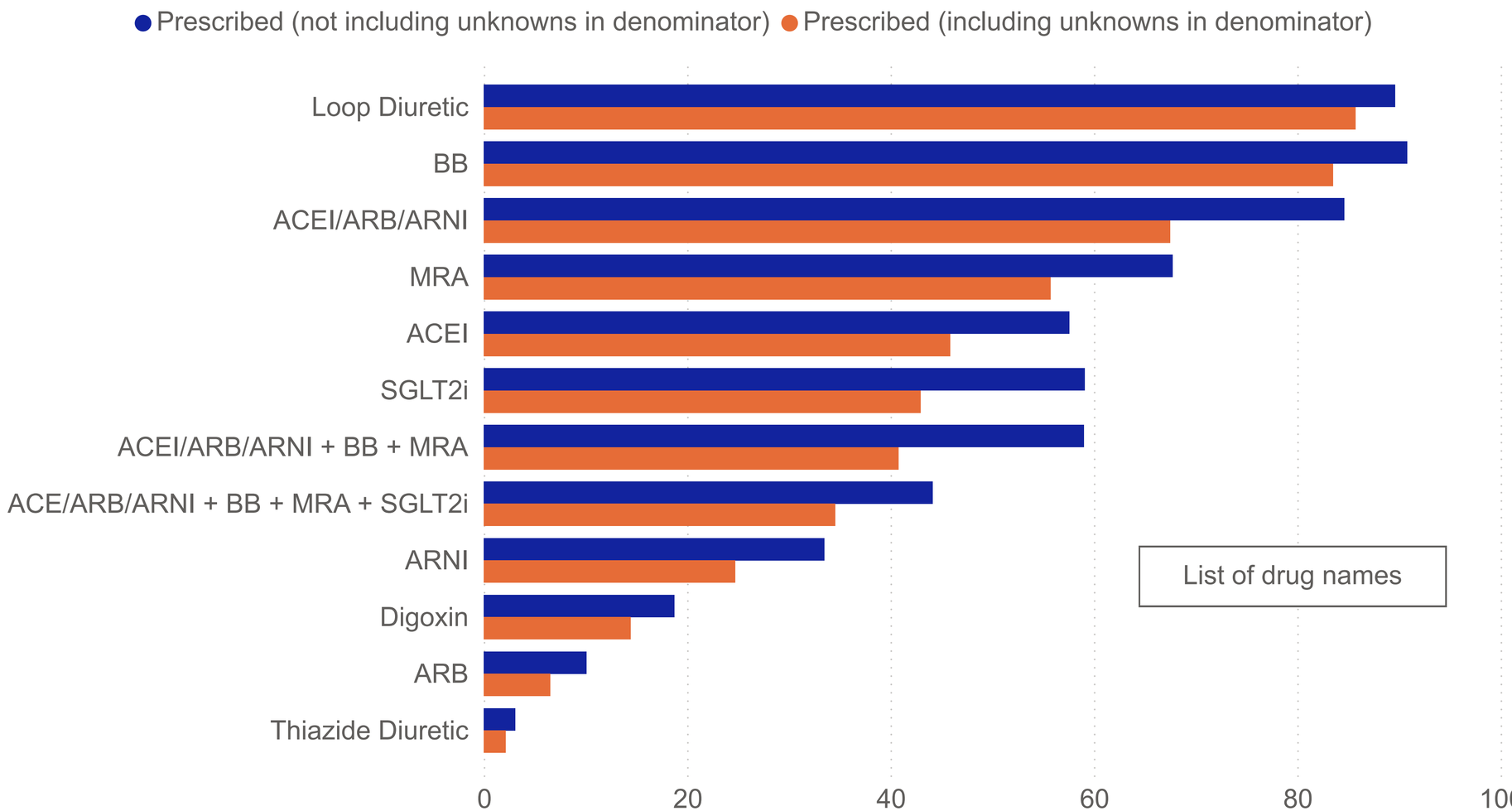
The calculation of drug prescribing rates for patients with HFrEF have until now always excluded submissions where the hospital responded ‘unknown’.

Consequently, this has the potential to overstate the reported prescription rates. Since 2021/22, these ‘unknown’ responses have been included as ‘no’, reducing the achieved rates.

We intend to prioritise this analysis in future, which emphasises the importance of making certain that prescriptions at discharge are accurately completed for all cases submitted to the audit.

It is commendable that there has been an improvement in the data quality for this audit compared with previous years.

Percentage of patients with HFrEF prescribed different recommended disease-modifying drugs with and without 'unknowns' in denominator (2022/23)



Fewer older patients with HFrEF receive disease-modifying drug treatments

All patients, regardless of age, should be considered for treatment with disease-modifying drugs. However, the proportion of patients who receive disease-modifying drug treatments is dependent on their age group.

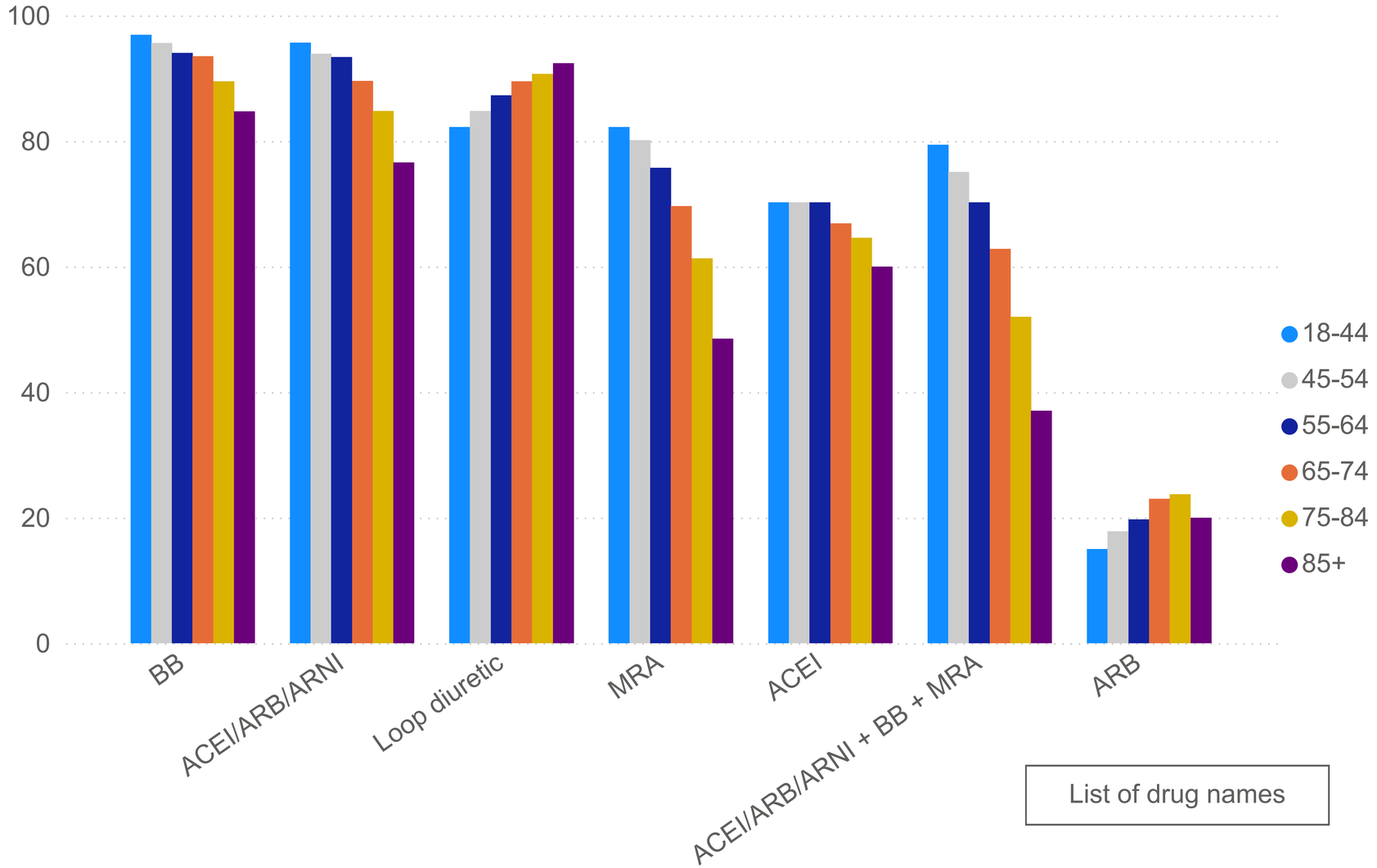
The inflexion point for the reduction in most of these drugs is in the 55-64 age group. This is greatest for MRA use, but much less pronounced for BBs, which are prescribed in 85% of patients aged 85 and above.

Loop diuretics, in contrast, are commonly prescribed to all but especially to older patients who are less likely to receive the other drug classes.

Paradoxically this may be poorly tolerated in older patients, whereas the introduction of the other drugs may obviate the need for loop diuretics in those with HFrEF.

It is a concern that clinicians might be holding back from prescribing for these patients because of fears of an adverse effect. Increasing specialist input in the older patients, who are not on the cardiology wards, is suggested.

Percentage of patients receiving different drug treatments by age group (2022/23)



There is considerable variation between hospitals in the proportion of patients with HFrEF prescribed an ACEI/ARB/ARNI

The audit minimum standard for ACEI/ARB/ARNI is that all hospitals should prescribe one of these drugs for 90% of their patients admitted with HFrEF, unless there is a clear contraindication.

In 2022/23, 47% of hospitals met this target, compared with 44% in 2021/22.

The effect of including the 'unknowns' in the denominator is to reduce the percentage of hospitals meeting this quality target to 24% (albeit better than the 15% reported in 2021/22).

Selecting a cardiac network or hospital below shows it results.

Note: Data are from 192 hospitals. Hospitals reporting fewer than 20 cases are excluded from the denominator.

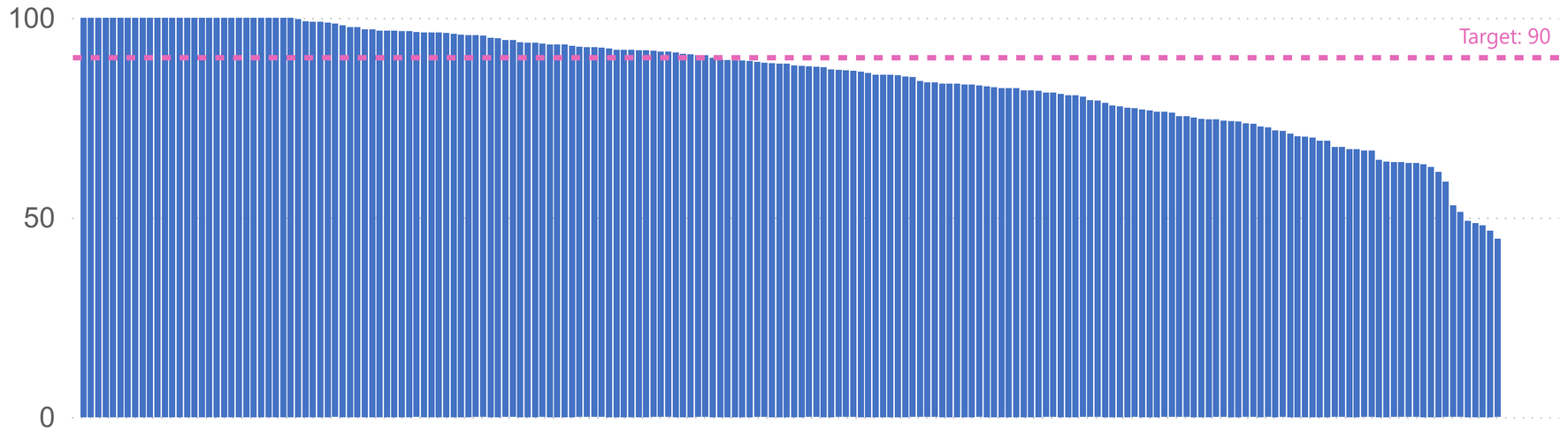
Select a Cardiac Network

All

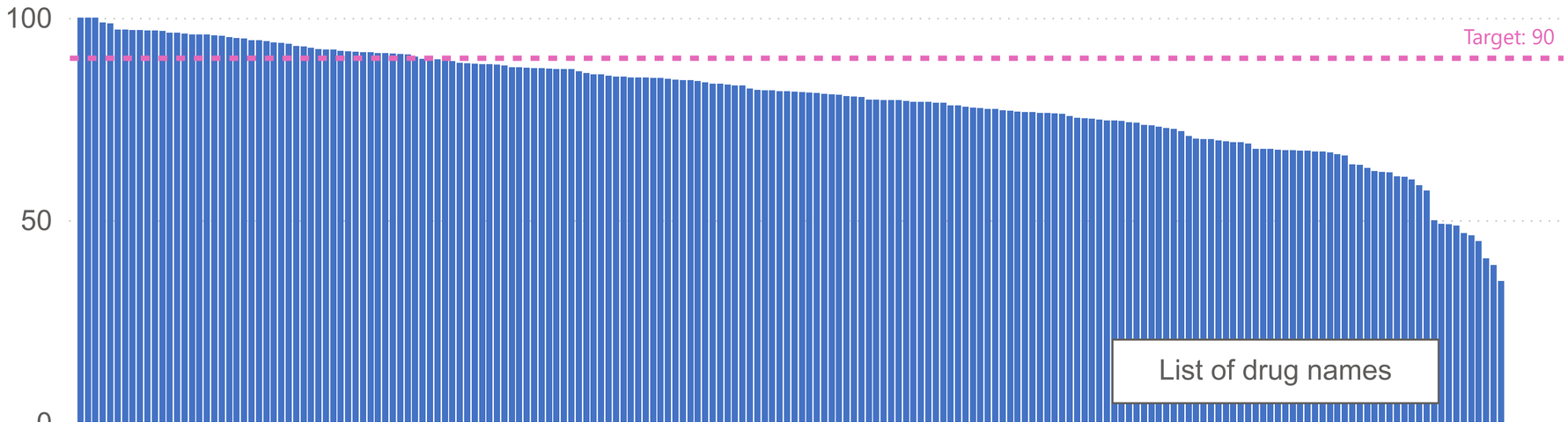
Select hospital

All

Percentage of patients with HFrEF receiving an ACEi/ARB/ARNI (excluding unknowns) by hospital in (2022/23)



Percentage of patients with HFrEF receiving an ACEi/ARB/ARNI (including unknowns) by hospital in 2022/23



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A significant proportion of hospitals do not meet the target of prescribing a beta blocker to 90% of patients with HFrEF

The audit target for beta blockers is that the hospital should prescribe a drug in this class in 90% of patients with HFrEF, unless there is a strong contraindication.

In 2022/23, 65% of hospitals met this target, an increase of 8% since 2021/22 (when the 'unknowns' are excluded).

Including the ‘unknowns’ in the denominator reduces the percentage of hospitals meeting this target to 49% (though still a 15% higher than the previous year).

These data show that more hospitals are meeting the minimum standard, alongside an improvement in data quality.

Selecting a cardiac network or hospital below shows it results.

Note: Data are from 192 hospitals. Hospitals reporting fewer than 20 cases are excluded from the denominator.

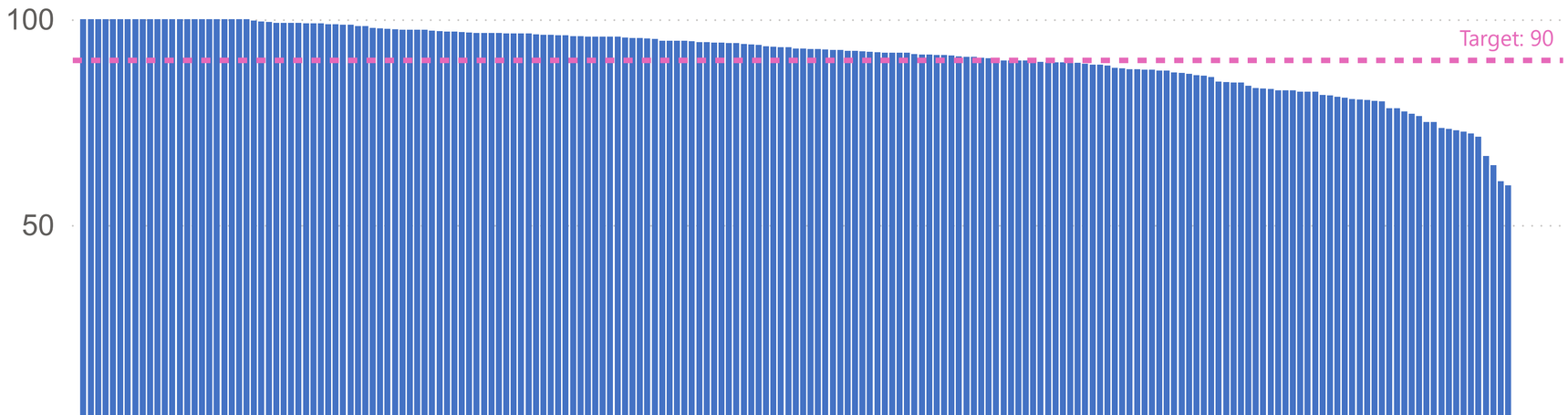
Select a Cardiac Network

All

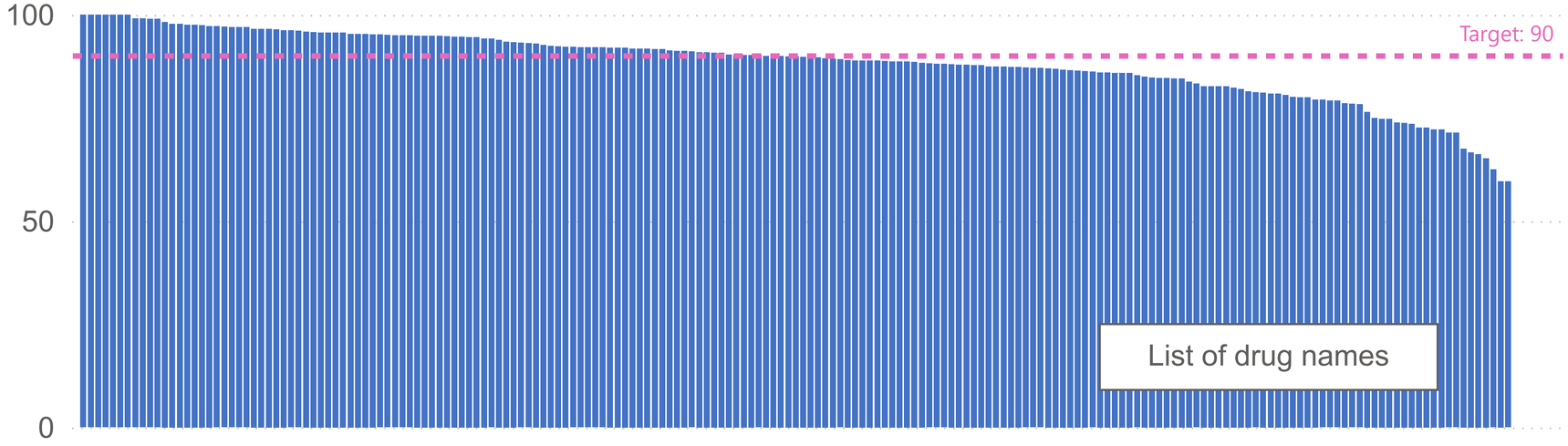
Select hospital

All

Percentage of patients with HFrEF receiving a Beta Blocker (excluding unknowns) by hospital (2022/23)



Percentage of patients with HFrEF receiving a Beta Blocker by hospital in 2022/23 (including unknowns)



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Very few hospitals are achieving the target of 90% of patients with HFrEF being prescribed a mineralocorticoid receptor antagonist

The audit target for mineralocorticoid receptor antagonist (MRA) has been raised so that hospitals should prescribe this drug to 90% of patients with HFrEF, unless there is a clear contraindication (previously 60%).

In 2022/23, only 18% of hospitals achieved the 90% target (71% of hospitals met the previous 60% target, an increase of 16% on 2021/22).

The effect of including the 'unknowns' in the denominator reducez the percentage of hospitals meeting the higher target to only 3% for the higher 90% target and 58% for the previous 60% target (up from 30% in 2021/22).

Selecting a cardiac network of hospital below shows it results.

Note: Data are from 192 hospitals. Hospitals reporting fewer than 20 cases are excluded from the denominator.

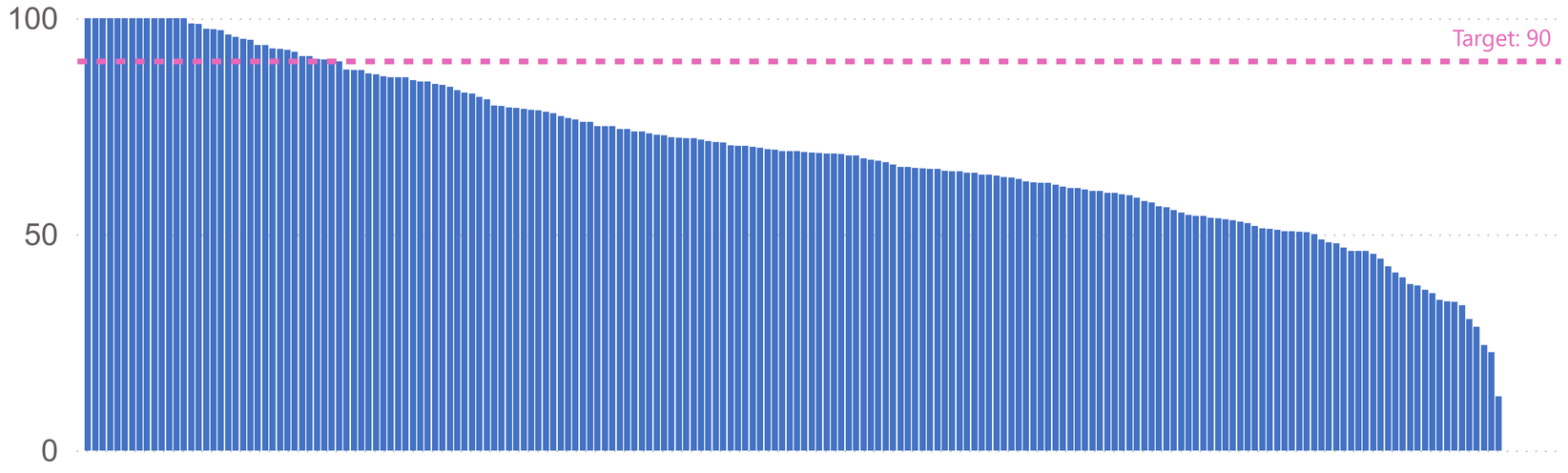
Select a Cardiac Network

All

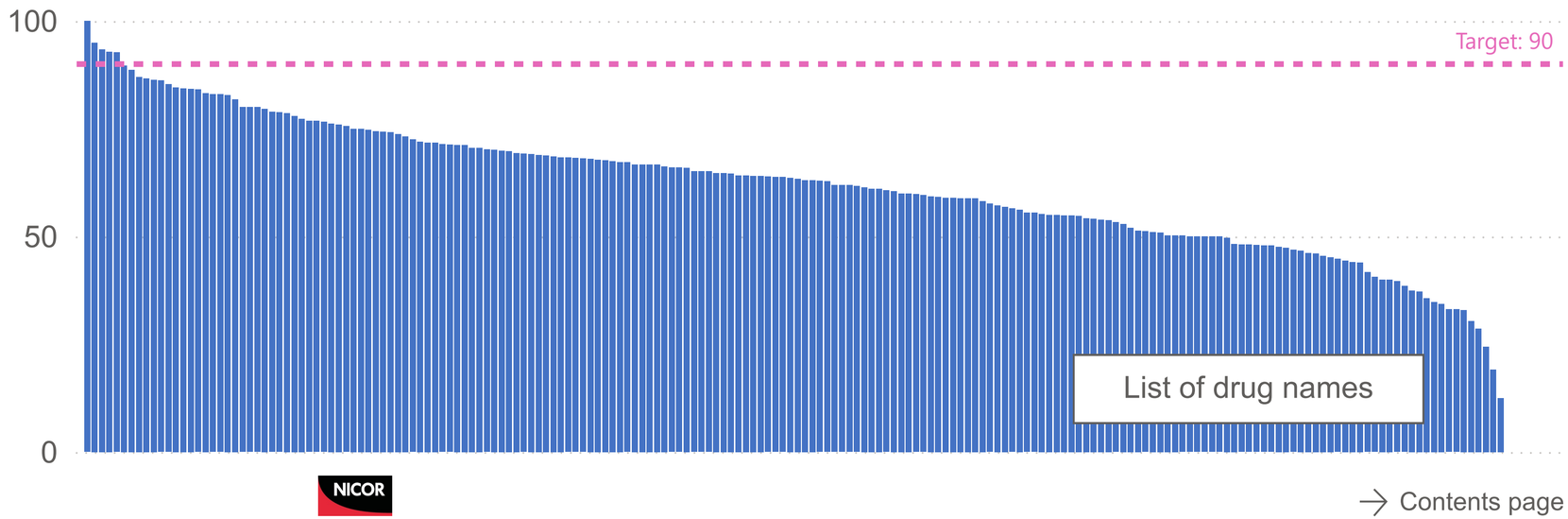
Select hospital

All

Percentage of patients with HFrEF receiving an MRA (excluding unknowns) by hospital (2022/23)



Percentage of patients with HFrEF receiving an MRA (including unknowns) by hospital (2022/23)



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Hospital teams need to ensure they consider prescribing all three standard outcome-improving drug treatments to patients with HFrEF

The audit target is for hospitals to prescribe a combination of all three standard outcome-improving drugs to 90% of patients with HFrEF, unless there is a clear contraindication to one or more of the drugs. The target has been increased from 60% to 85% and now again to 90%.

In 2022/23, 54% of hospitals achieved the 60% prescribing target, an improvement from 42% in 2021/22. This dropped to 16% for the 90% target.

With the unknowns included, the 60% target was met by 32% of hospitals (up 16% on 2021/22). However, only 2% of hospitals achieved the 90% target. Both prescribing by hospital and data quality are improving.

Selecting a cardiac network or hospital below shows it results.

Note: Data are from 192 hospitals. Hospitals reporting fewer than 20 cases are excluded from the denominator. Patients with clearly defined contraindications are not included in either denominator.

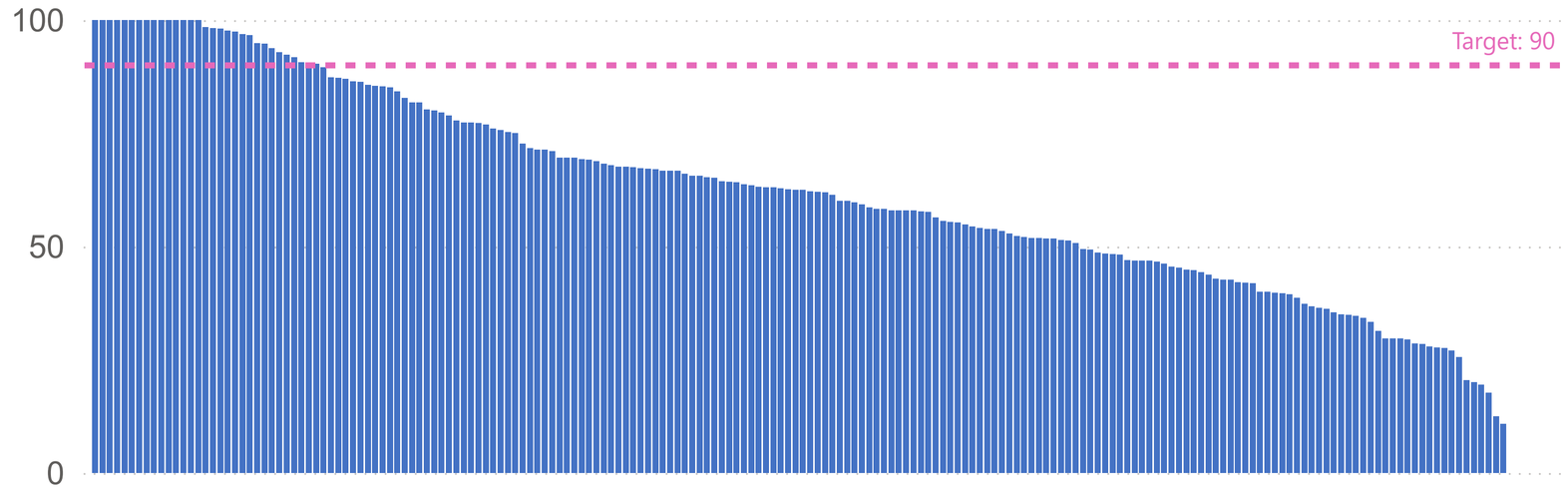
Select a Cardiac Network

All

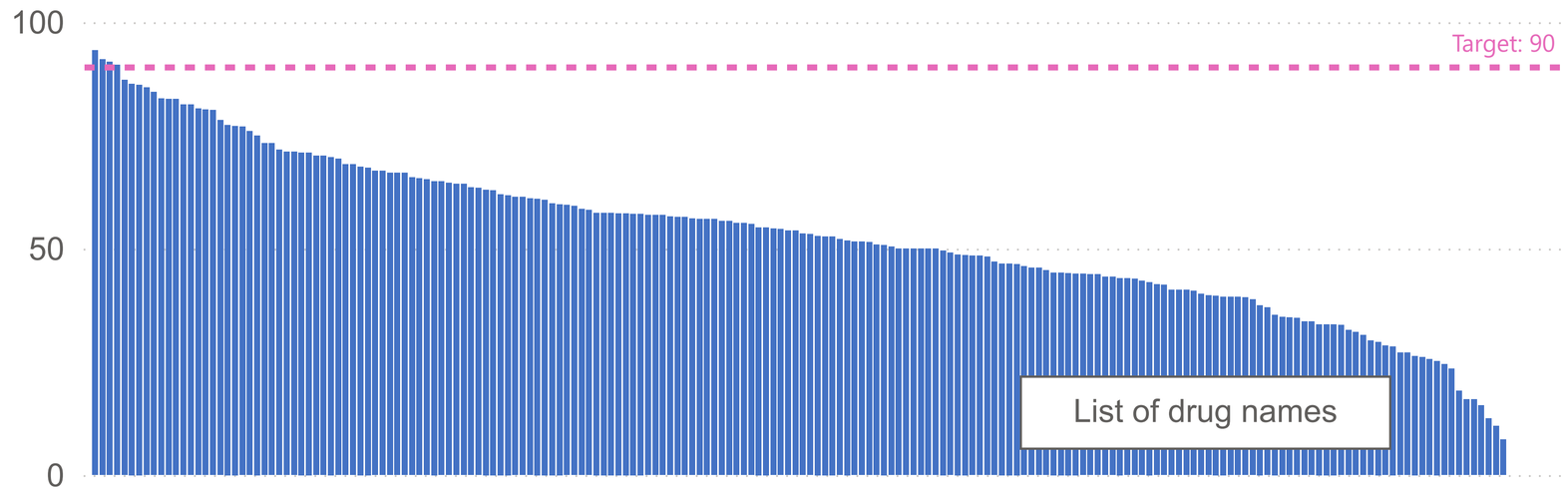
Select hospital

All

Percentage of patients with HFrEF receiving ACEi/ARB/ARNI + BB + MRA (excluding unknowns) by hospital (2022/23)



Percentage of patients with HFrEF receiving ACEi/ARB/ARNI + BB + MRA (including unknowns) by hospital (2022/23)



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There is a threefold difference in prescribing rates for all three outcome-improving drugs across Integrated Care Boards, Health Boards and Cardiac Networks

The maps show the prescribing rates for all three standard disease-modifying drugs across:

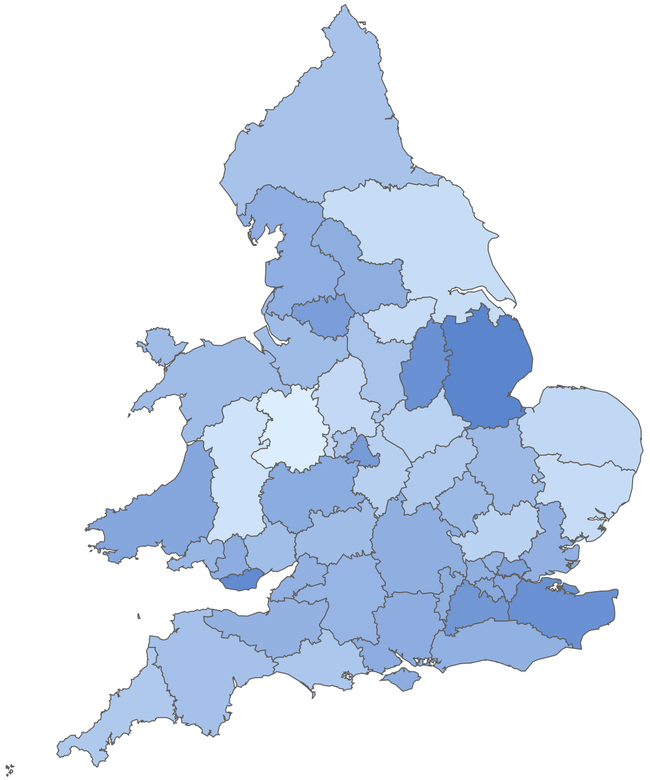
- the 42 Integrated Care Boards (ICBs) in England
- the seven University Health Boards (HBs) in Wales (commissioning organisations)
- the 16 Cardiac Networks (operational delivery networks)

Variation is seen in the prescription of all three standard outcome-improving drugs (ACEi/ARB/ARNI + BB + MRA) in patients with HFrEF. The darker the area the higher the prescribing levels.

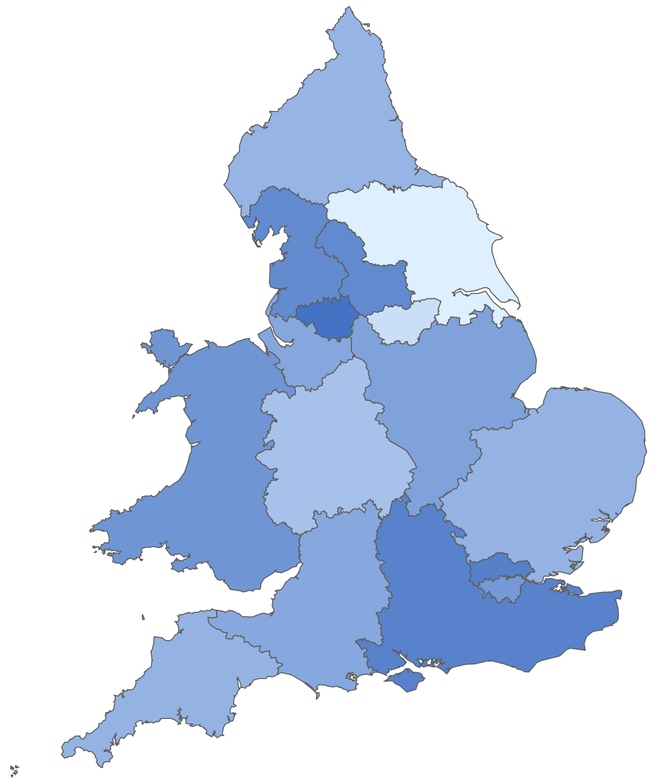
For ICBs and HBs, the lowest rate was 29% in Shropshire, Telford and Wrekin and the highest was 89% in Lincolnshire.

For the CNs, the lowest rate was 35% in Humber and North Yorkshire and the highest was 74% in Greater Manchester.

ACEI/ARB/ARNI + BB + MRA prescribing rates at discharge based on patient home location by ICB/HB (2022/23)



ACEI/ARB/ARNI + BB + MRA prescribing rates at discharge based on hospital location by Cardiac Network (2022/23)



List of drug names

Most hospitals are not achieving the target for the prescribing of sodium glucose co-transporter 2 inhibitor (SGLT2i) drugs to patients with HFrEF

Sodium glucose co-transporter 2 inhibitors (SGLT2is) are relatively new drugs. Within this drug group, both dapagliflozin and empagliflozin are licensed and recommended as an additional (fourth) disease-modifying drug to be prescribed by discharge for those with HFrEF, unless a clear contraindication exists.

As with the other drugs recommended in HFrEF, the target level of prescribing is now 90%. **In 2022/23, this was reached by:**

- **22% of hospitals where 'unknowns' are excluded**
- **one out of 184 hospitals where the 'unknowns' are included.**

Selecting a cardiac network or hospital below shows its data.

Note: Hospitals reporting fewer than 20 cases are excluded from the denominator. Patients with clearly defined contraindications are not included in either denominator. Prescribing of these drugs is monitored in the latest NHFA dataset (V5) which most hospitals use.

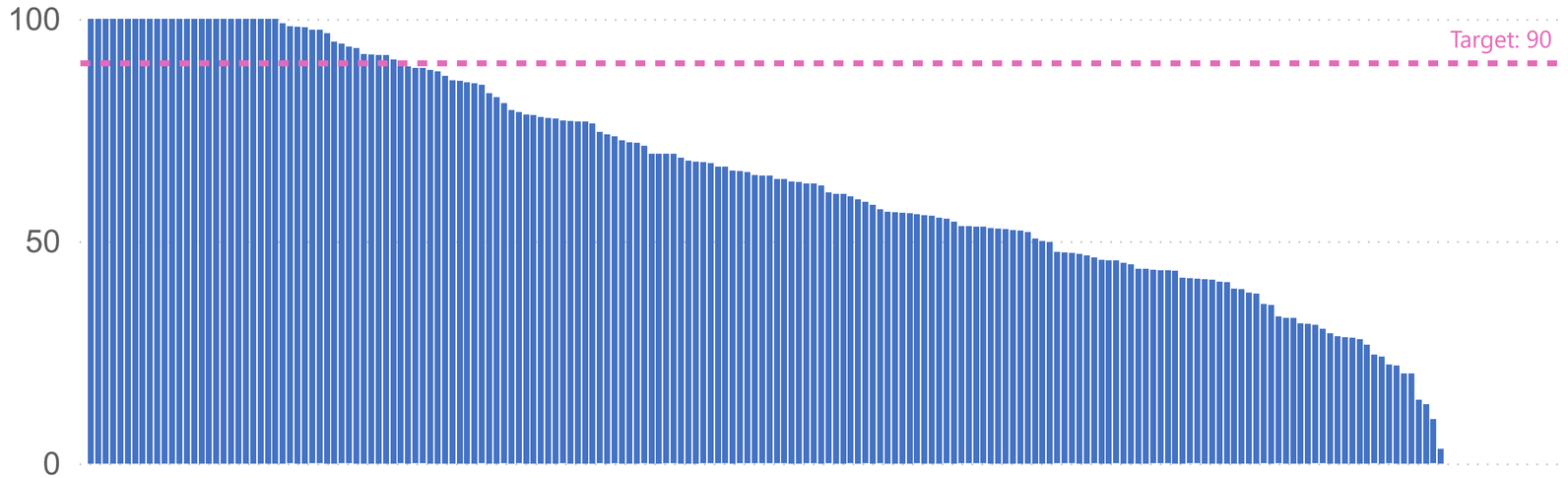
Select a Cardiac Network

All

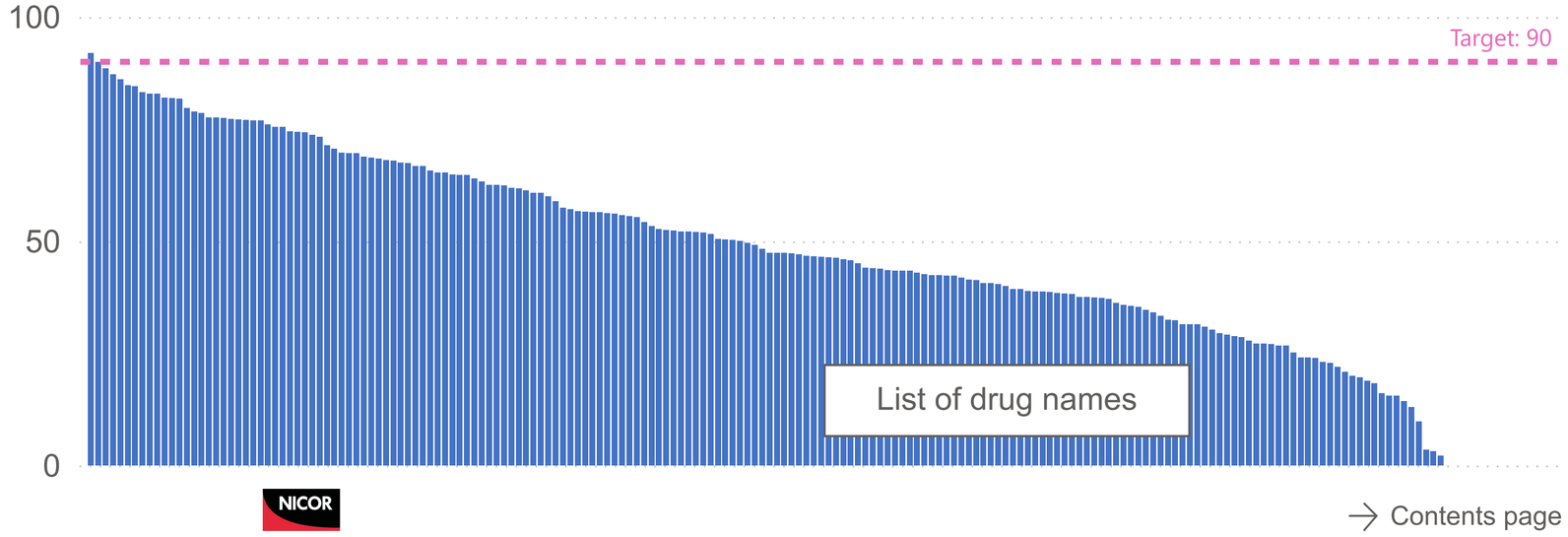
Select hospital

All

Percentage of patients with HFrEF receiving SGLT2i (excluding unknowns) by hospital (2022/23)



Percentage of patients with HFrEF receiving SGLT2i (including unknowns) by hospital (2022/23)



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Patients cared for in cardiology wards are more likely to receive outcome-improving drug therapy

Prescription of ACEI/ARB/ARNI, beta-blocker and MRA drug classes are key performance indicators for patients with HFrEF as these drugs are associated with better survival, lower hospitalisation rates and improved quality of life.

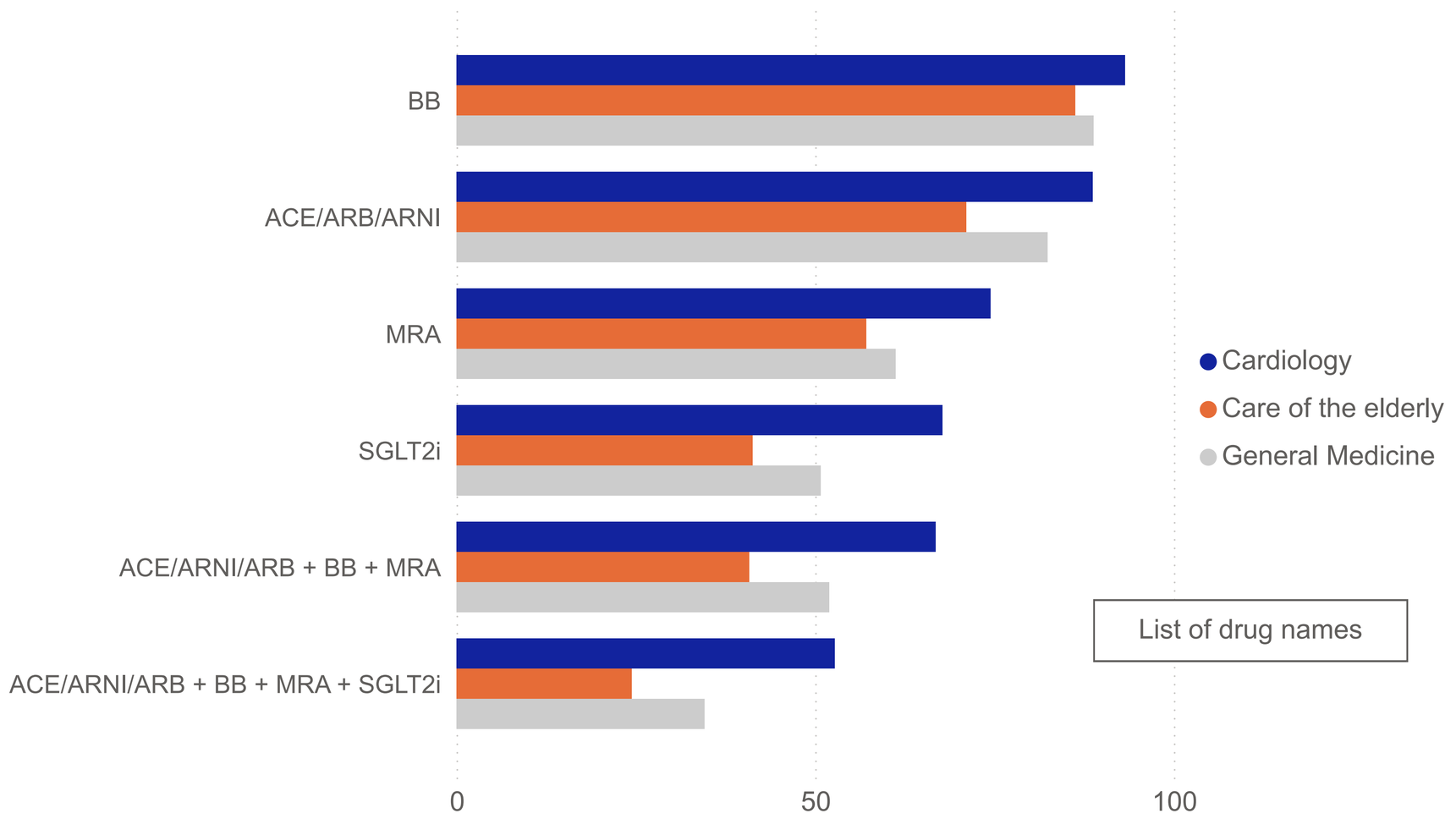
In addition to these drug groups, a fourth class, the SGLT2i drugs, confers additional benefit and is also recommended. Ideally patients are now discharged on all four drug groups.

In 2022/23, there was variation in prescribing these drugs across three different ward settings. The highest prescribing rates for all drugs and combinations are seen in cardiology wards and the lowest in the care of the elderly wards.

The main differentials in prescribing practice are seen with MRAs, drug combinations and SGLT2i drugs.

Notably, beta-blockers, and to a lesser extent ACEI/ARB/ARNi drug classes, are relatively well prescribed across all settings.

Percentage of patients with HFrEF who received disease-modifying drugs alone and in combination at discharge from hospital, by place of care (2022/23)



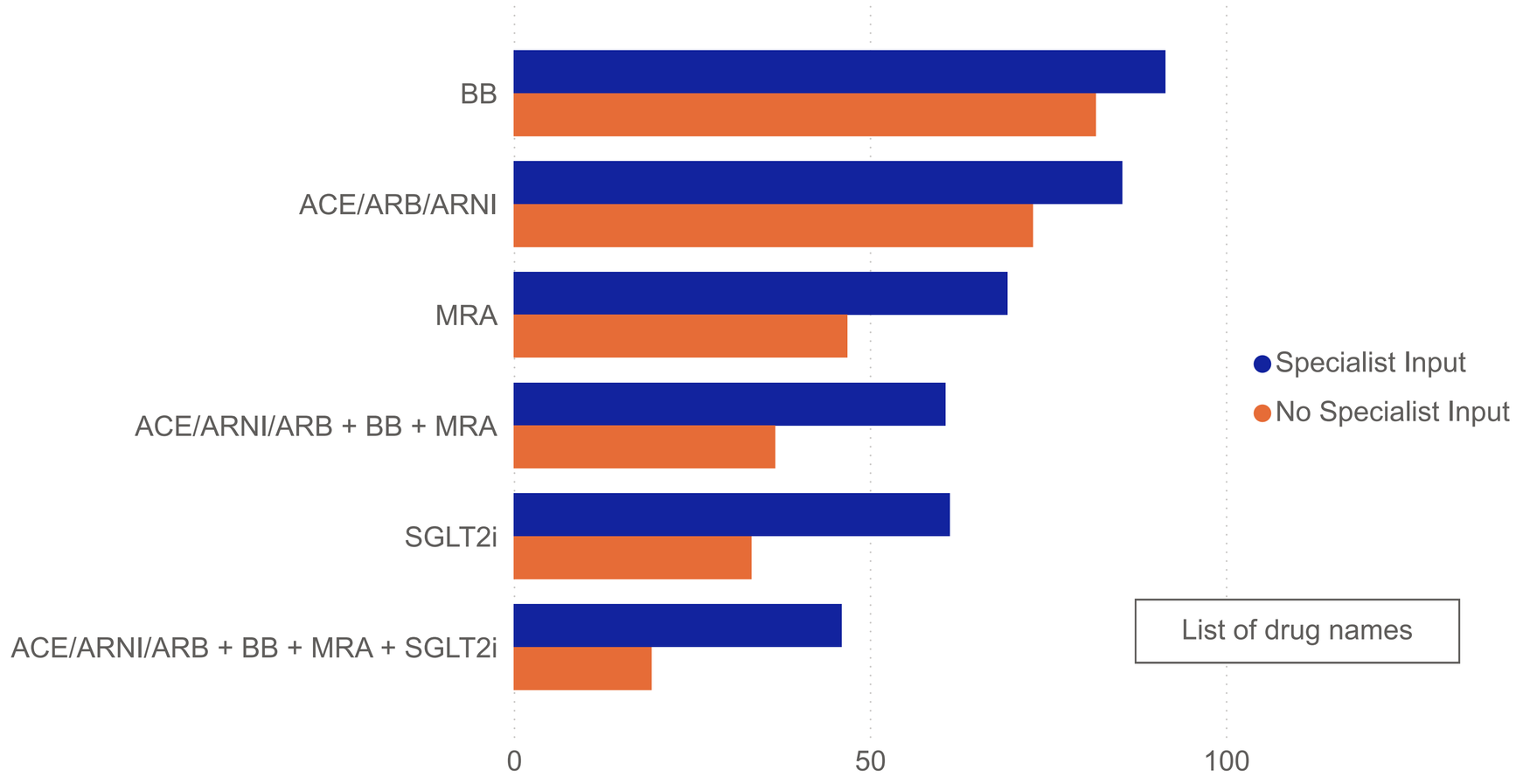
Patients seen by specialist heart failure teams are more likely to receive outcome-improving drug therapy

Prescription of the three important drug classes (ACEI/ARB/ARNI, beta-blocker and MRA) is a key performance indicator for patients with HFrEF as these drugs are associated with better survival, lower hospitalisation rates and improved quality of life.

In addition to these drug groups, a fourth class, the SGLT2i drugs, confers additional benefit and is also recommended. Ideally patients are now discharged on all four drug groups.

The 202/23 results show that patients with HFrEF were more likely to receive the recommended drugs if they were having specialist HF input.

Percentage of patients with HFrEF who received disease-modifying drugs alone and in combination, at discharge from hospital (2022/23)



A longer length of stay in hospital may provide better opportunities for optimal treatment

The median length of stay (LOS) for all HF patients remained at eight days in 2022/23. The LOS has been at this level for many years, even during the COVID-19 pandemic.

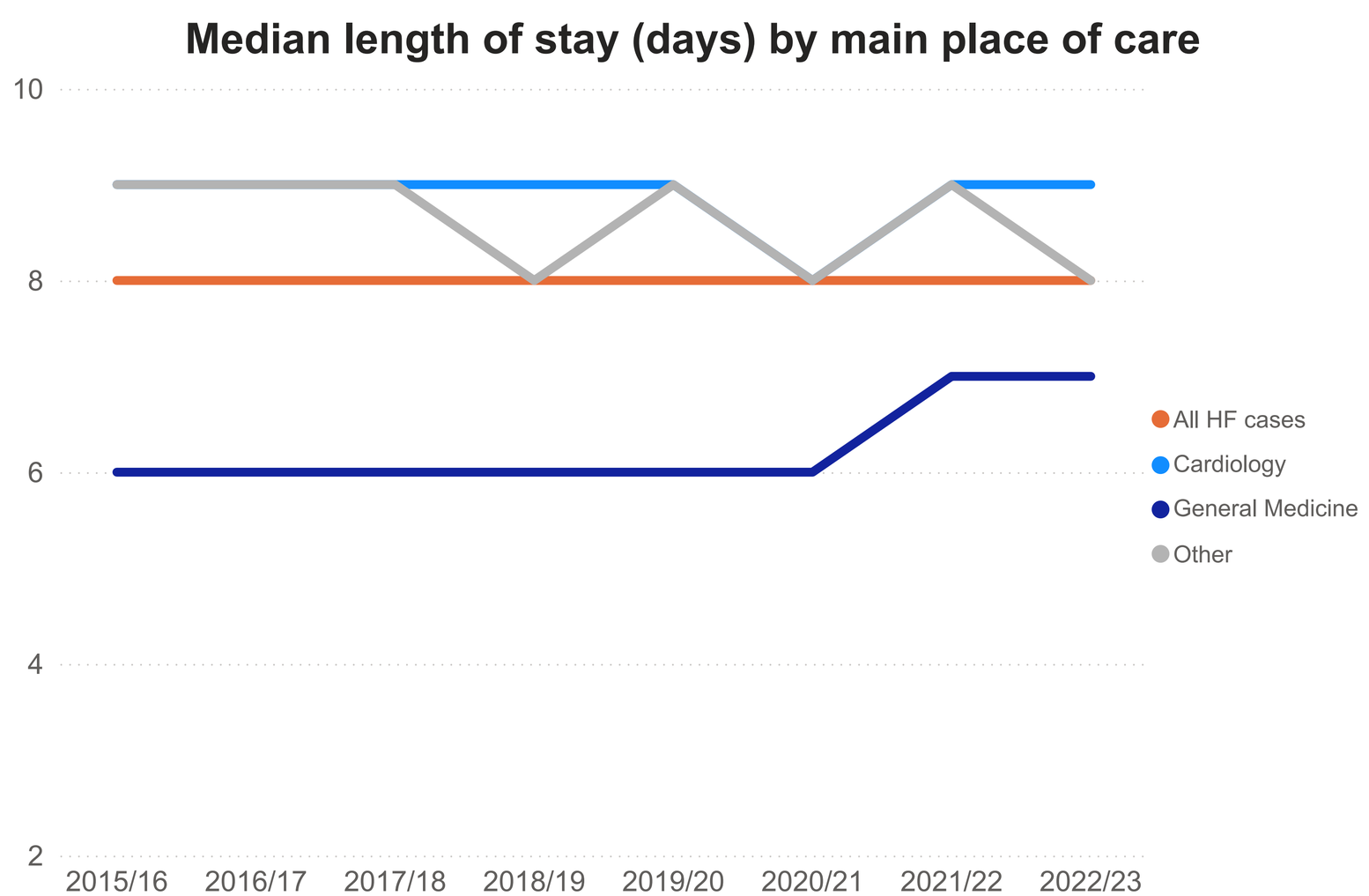
For patients cared for on a Cardiology ward, the long-term median LOS of nine days dropped briefly to eight during the COVID-19 pandemic in 2020/21.

For patients on a General Medicine ward, the median LOS rose to seven days in 2021/22 and remained at that level in 2022/23.

The optimal LOS is unknown and likely varies by patient. The optimal management suggested by NICE during an index admission may explain the longer values on Cardiology wards, and will improve inpatient and subsequent mortality, individual well-being and reduce likelihood of re-admissions.

Thus, a longer early stay is likely to result in fewer bed days overall for HF patients.

Note: The data on length of stay have previously been presented as means and medians, but given the skewed nature of the figures, this year we present only median values.



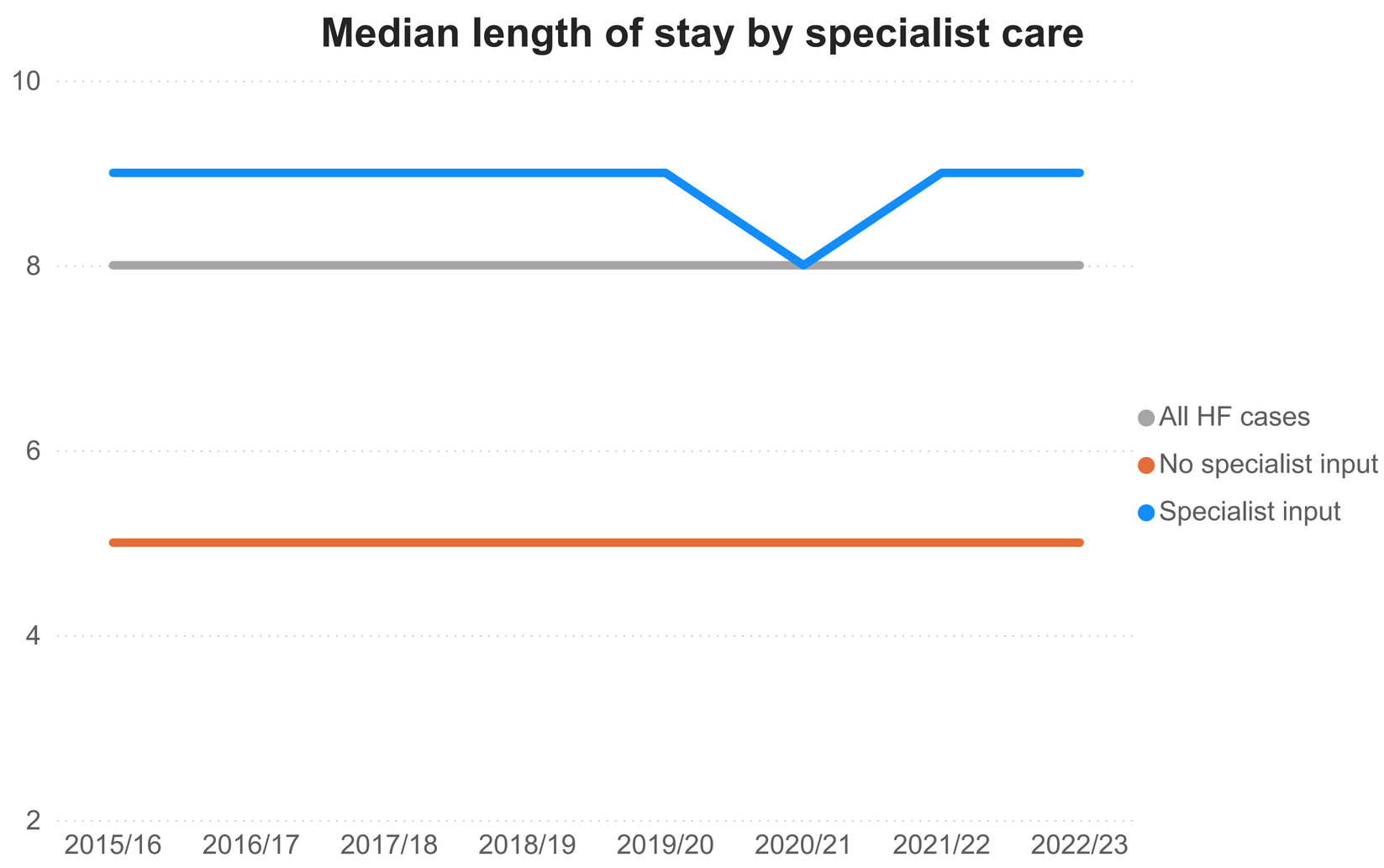
Length of stay is dependent on whether the patient is seen by a specialist HF team during admission

For patients who received specialist care, the long-term median length of stay (LOS) has been nine days.

Patients who have not been seen by a specialist HF team have consistently had a median length of stay of five days.

The optimal LOS is unknown and likely varies by patient. The optimal management suggested by NICE during an index admission may explain the longer values on Cardiology wards, and will improve inpatient and subsequent mortality, individual well-being and reduce likelihood of re-admissions.

Note: The data on length of stay have previously been presented as means and medians, but given the skewed nature of the figures, this year we present only median values.



Cardiology follow-up rates are declining but there is an increase in specialist nurse follow-up for those discharged from general medical wards

All patients fit for discharge should ideally leave hospital knowing when, where and by which member of the specialist HF team they will be reviewed within two weeks. They should also be referred to cardiac rehabilitation. Specialist follow-up and rehabilitation is associated with lower morbidity and mortality. The audit also now includes a first set of data on pharmacy follow-up.

In 2022/23, 81% of HF patients received some form of specialist follow-up. This was similar to the previous year but remains short of the 100% target.

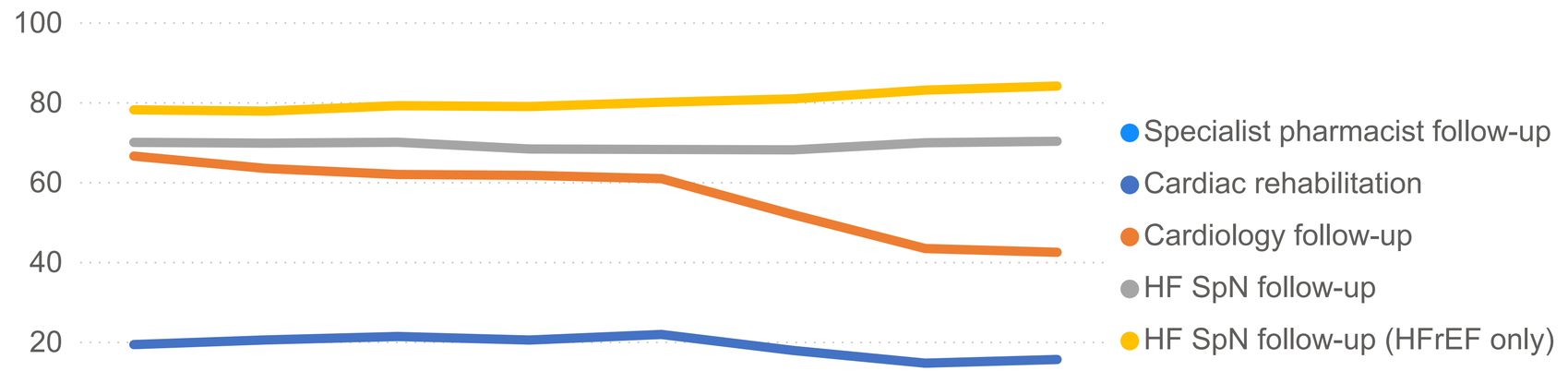
The rate of follow-up varies depending on the type of ward the patient was cared on:

- 81% if discharged from cardiology wards
- 71% if discharged from a general medical ward.

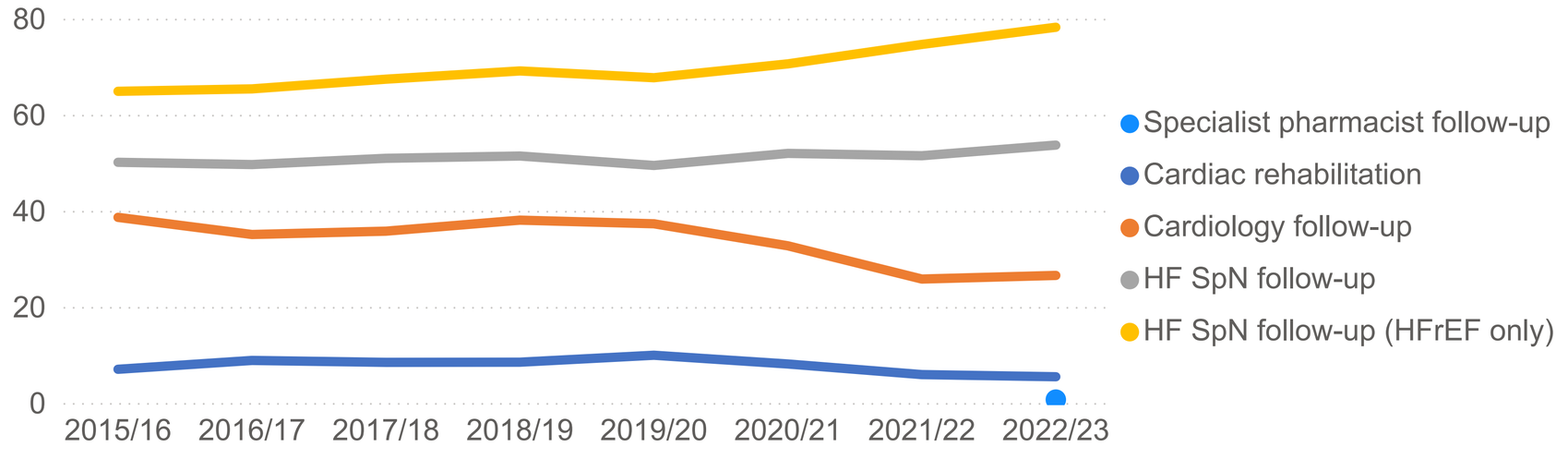
Follow-up in specialist nurse clinics increased in 2022/23 but dropped in consultant cardiology clinics. Referrals to cardiac rehabilitation at discharge also remain inadequate.

Note: The data on pharmacy follow up is likely an underestimation since this is a new field and we encourage accurate completion.

Percentage of patients treated in a Cardiology ward who received referrals to HF services post-discharge



Percentage of patients treated in a General Medicine ward who received referrals to HF services post-discharge



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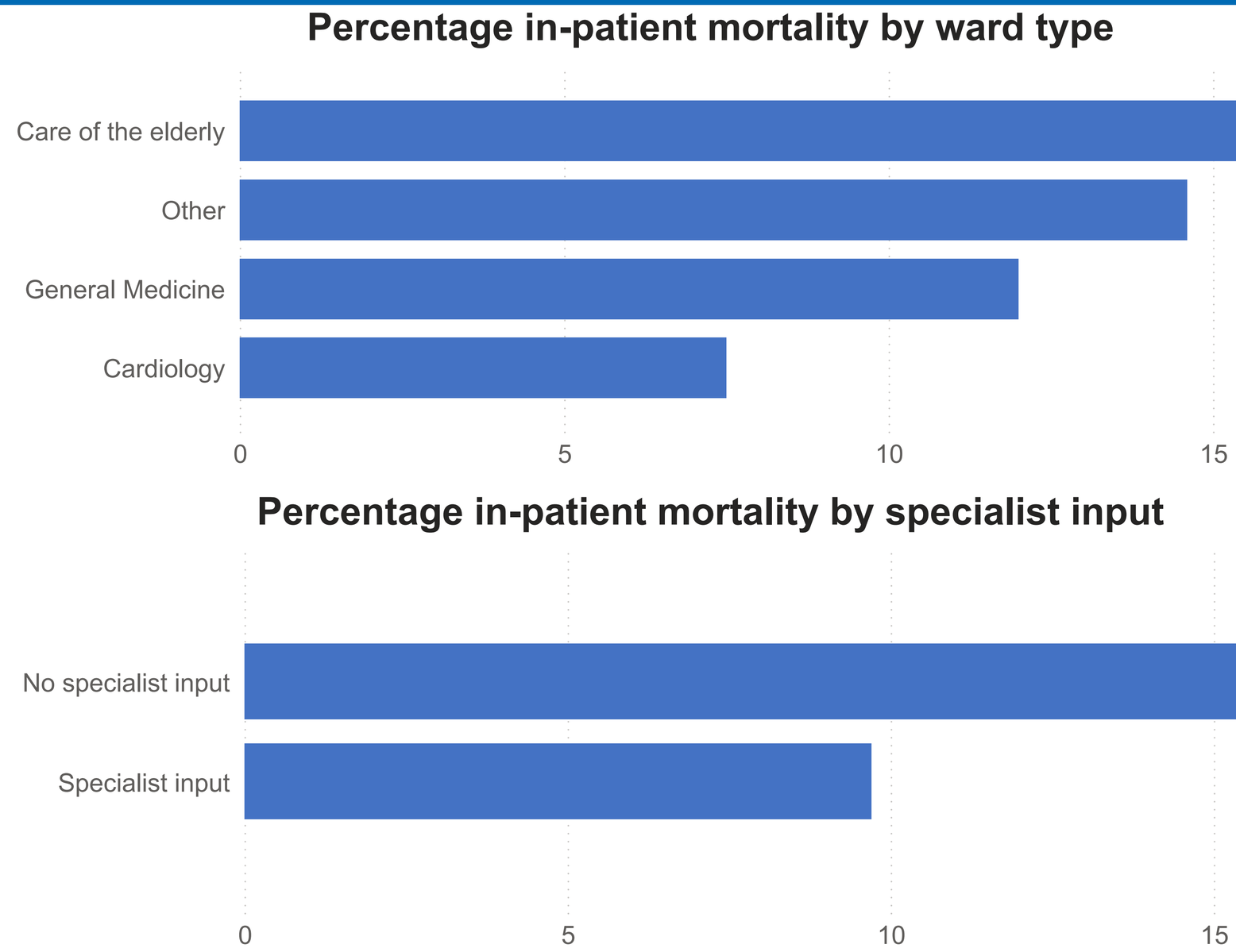
In-hospital mortality is lower for those admitted to cardiology wards and those who receive specialist care

Patients who were cared for on a cardiology ward had a lower in-hospital mortality than those who were cared for on other wards. Patients who received specialist care had a lower mortality than those who did not receive care from a specialist HF team.

These data are not adjusted for differences in patient characteristics but information on multivariate analysis is available in subsequent slides.



In-hospital mortality increased, although 30-day and 1-year mortality have decreased

In-patient mortality for all patients increased to 11% from 9% in 2021/22.

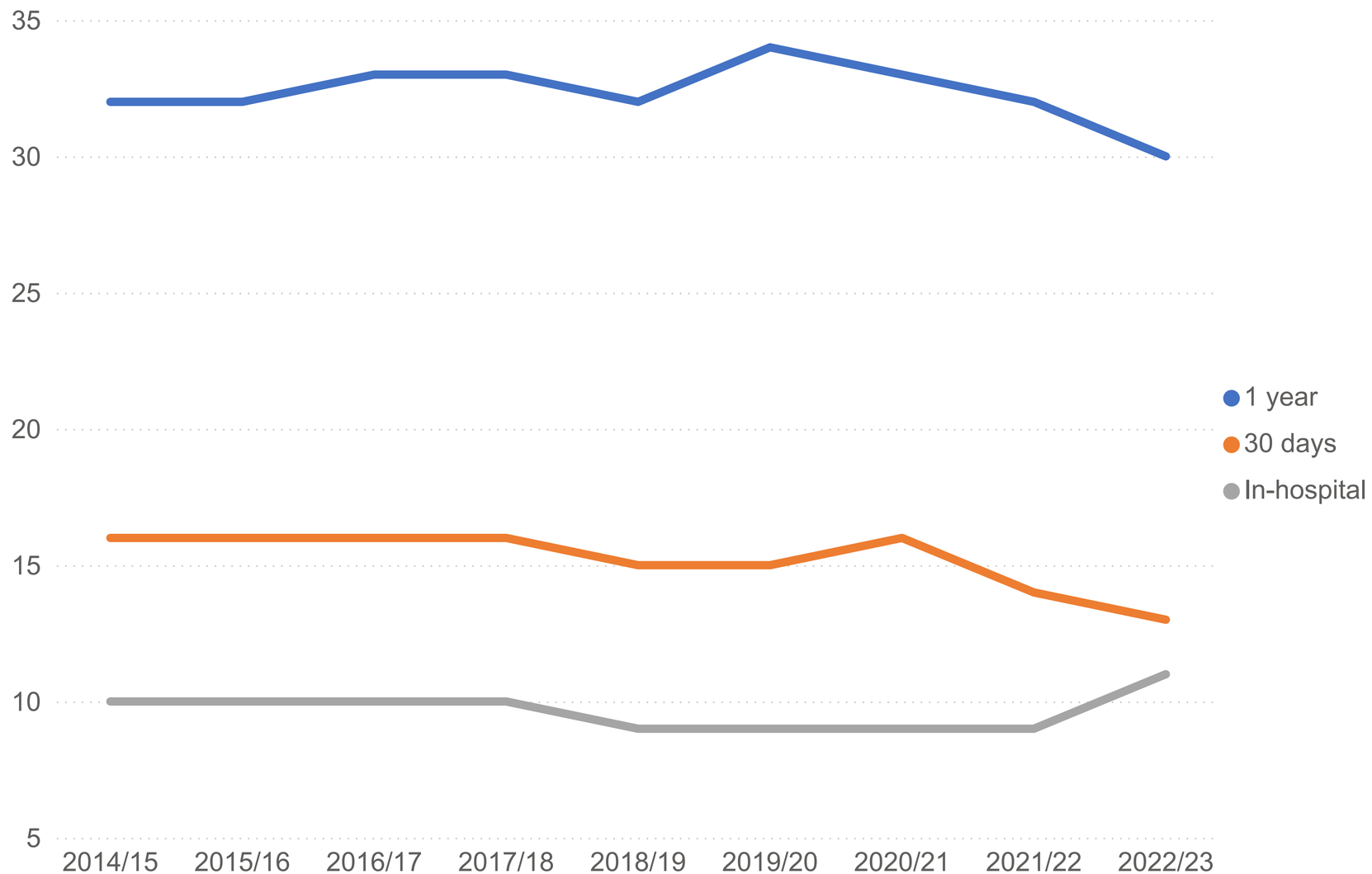
30-day mortality decreased from 14% in 2021/22 to 13%.

1-year mortality decreased from 32% in 2021/22 to 30%.

The improved 1-year mortality may reflect the increases seen in prescription of disease-modifying therapy for HFrEF.

The increase for in-patient mortality may reflect improved data quality with hospitals submitting data on patients who truly have acute heart failure as there have been no new disease-modifying treatments for the acute phase of heart failure for over 25 years.

Inpatient, 30-day and 1-year post-admission mortality (%) of HF patients in England and Wales, 2015/16 - 2022/23



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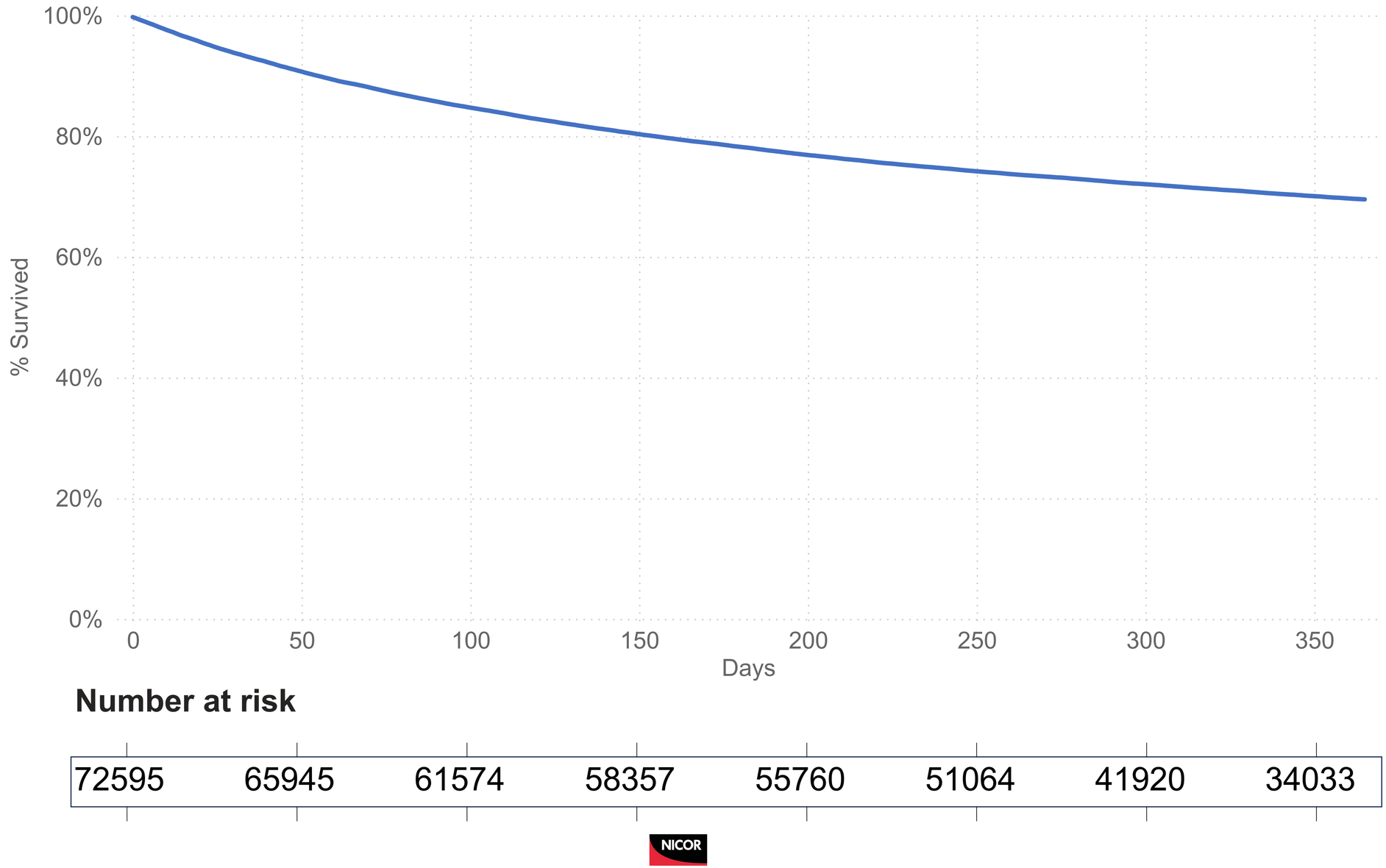
Appendices

The following pages contain analyses previously contained in the appendices available on the NICOR website. These contain supplemental data which may not be relevant to all users of our report.

1-year mortality post-discharge is modestly reduced at 30%



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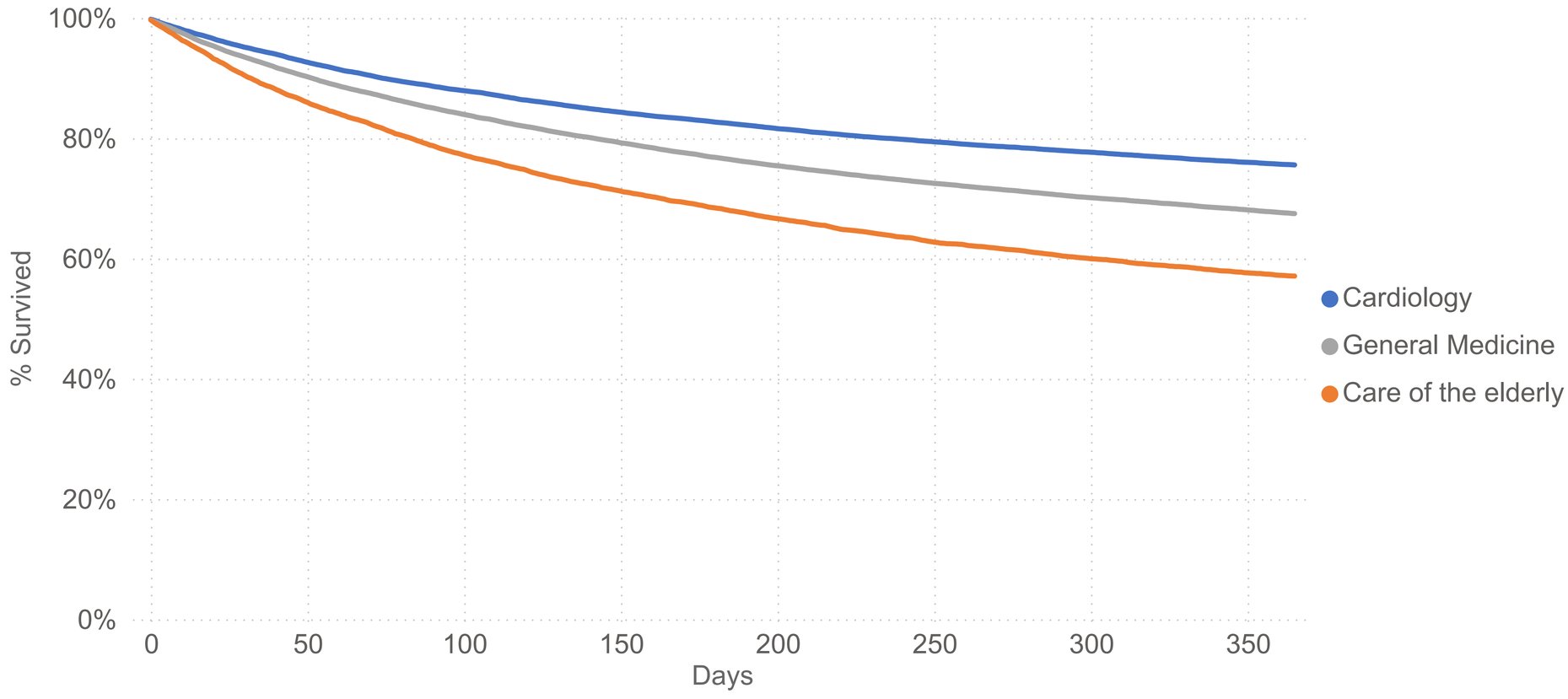
1-year survival is better for those discharged from cardiology wards

Kaplan Meier plot of survival following discharge from hospital according to place of care during admission, 2022/23



Number at risk

Cardiology	27491	25495	24181	23193	22425	20710	17161	14020
General Medicine	25174	22748	21159	19969	18966	17362	14210	11593
Care of the elderly	9483	8170	7334	6759	6309	5556	4506	3627

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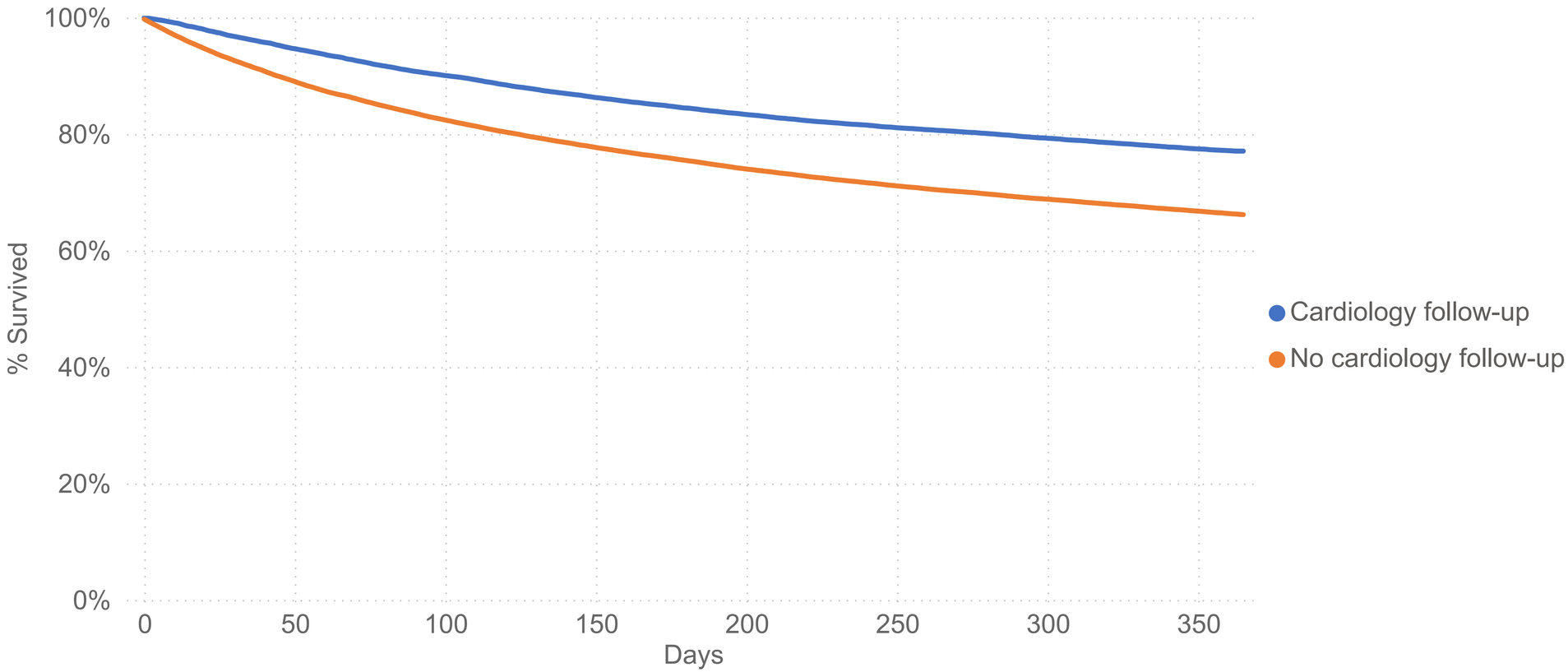
1-year survival is better for those receiving cardiology follow-up

Kaplan Meier plot of survival following discharge from hospital according to cardiology follow-up, 2022/23



Number at risk

Cardiology follow-up	22219	21044	20018	19181	18515	17157	14152	11488
No cardiology follow-up	47736	42571	39384	37120	35279	32109	26317	21348

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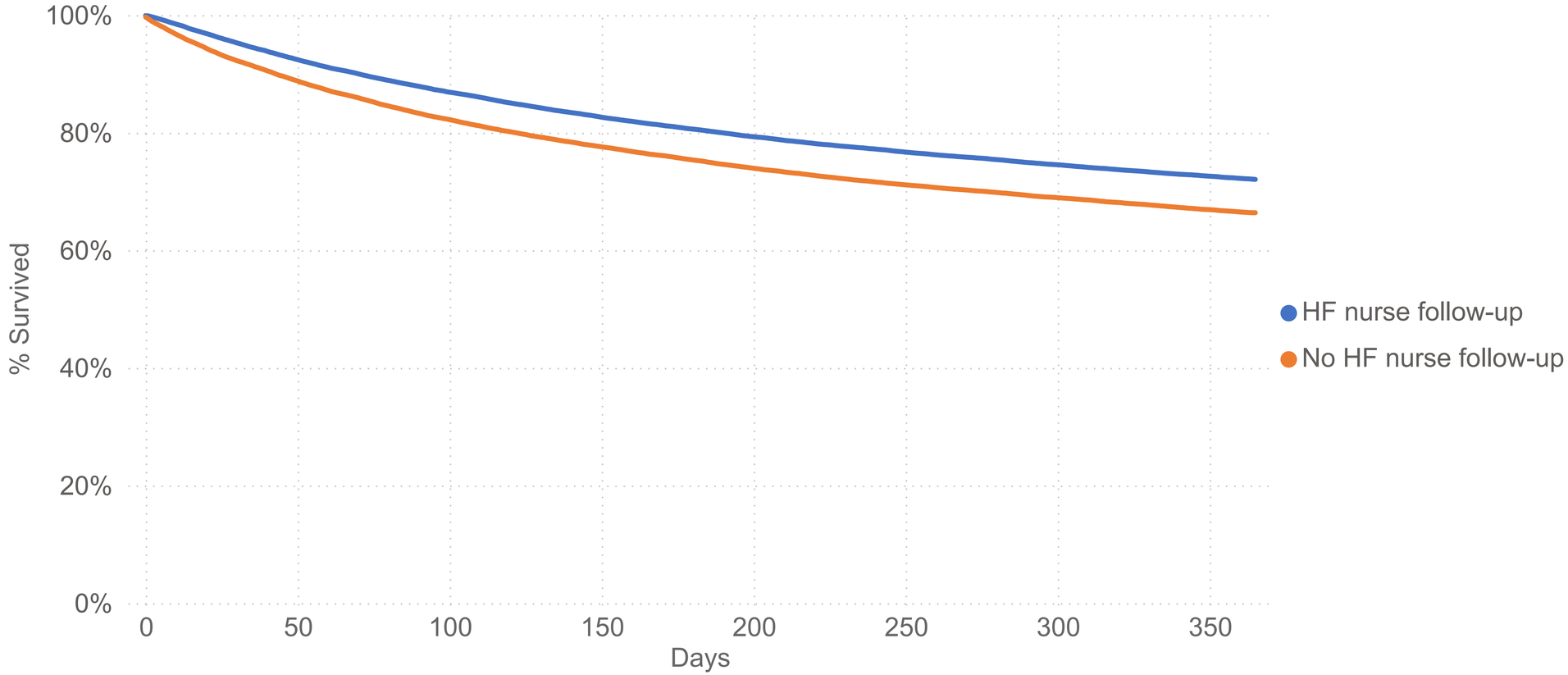
1-year survival is better for those having HF specialist nurse follow-up

Kaplan Meier plot of survival following discharge from hospital according to HF nurse follow-up, 2022/23

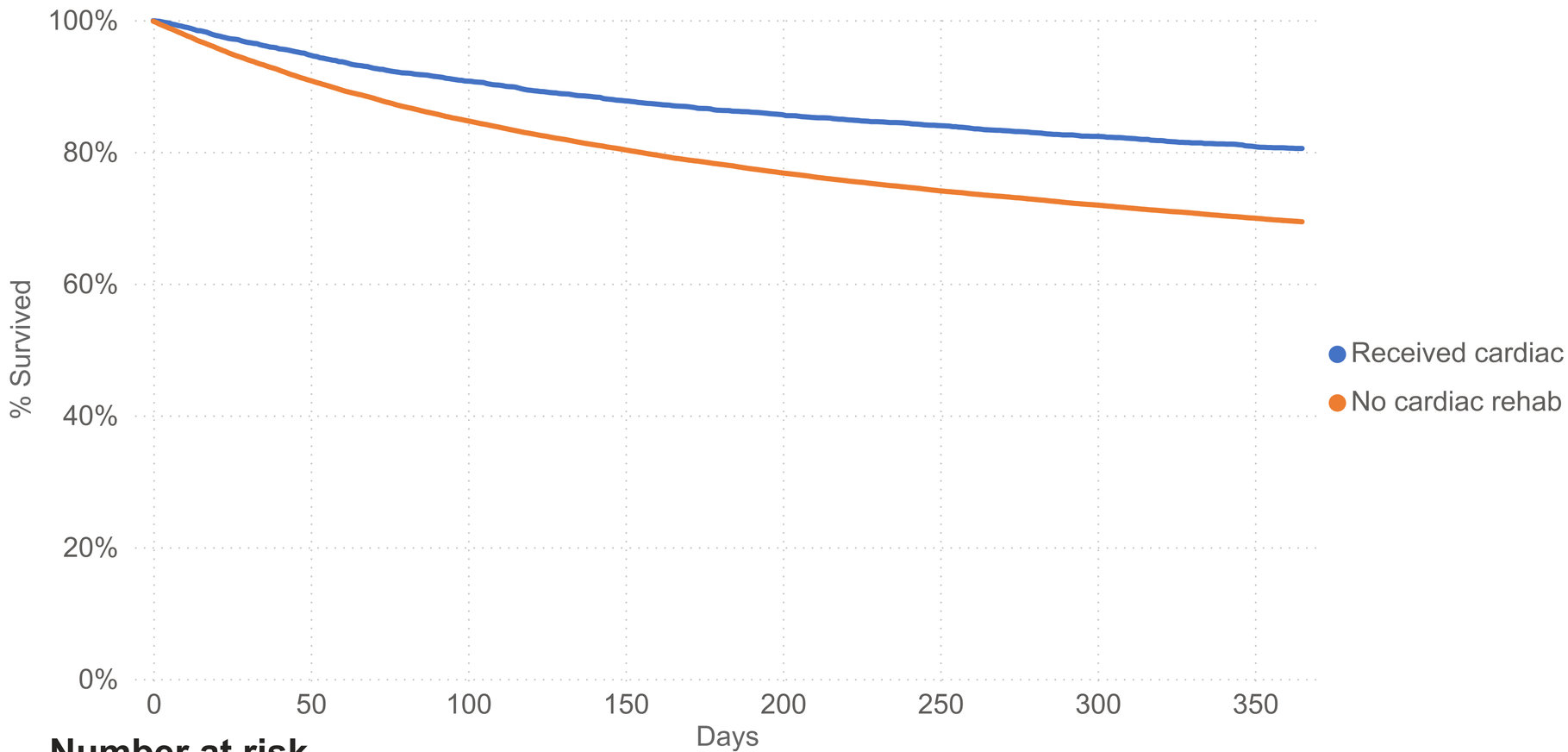


Number at risk

HF nurse follow-up	39029	36116	33935	32279	30930	28380	23283	18789
No HF nurse follow-up	30989	27560	25509	24058	22891	20882	17132	13985

1-year survival is better for those referred for cardiac rehabilitation

Kaplan Meier plot of survival following discharge from hospital according to referral for cardiac rehabilitation, 2022/23

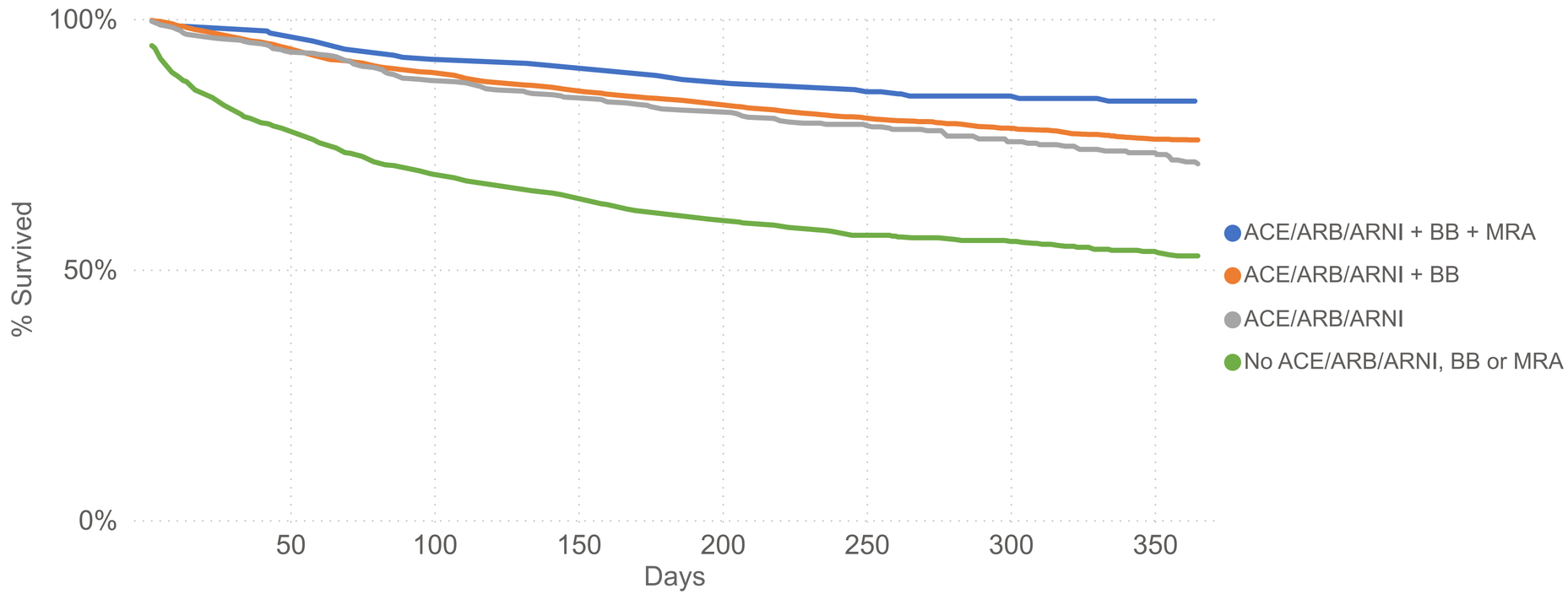


Number at risk

Received cardiac rehab	4590	4350	4165	4029	3928	3686	3047	2478
No cardiac rehab	45995	41823	38995	36966	35302	32318	26552	21616

1-year survival much better for those with HFrEF discharged on all three classes of disease-modifying drugs

Kaplan Meier plot of survival for patients with HFrEF following discharge from hospital according to drugs received, 2022/23



Number at risk

ACE/ARB/ARNI + BB + MRA	292	281	269	262	256	245	209	177
ACE/ARB/ARNI + BB	8619	8097	7665	7383	7104	6585	5393	4443
ACE/ARB/ARNI	2207	2070	1974	1891	1826	1674	1349	1100
No ACE/ARB/ARNI, BB or MRA	4334	3705	3368	3155	2954	2694	2217	1806

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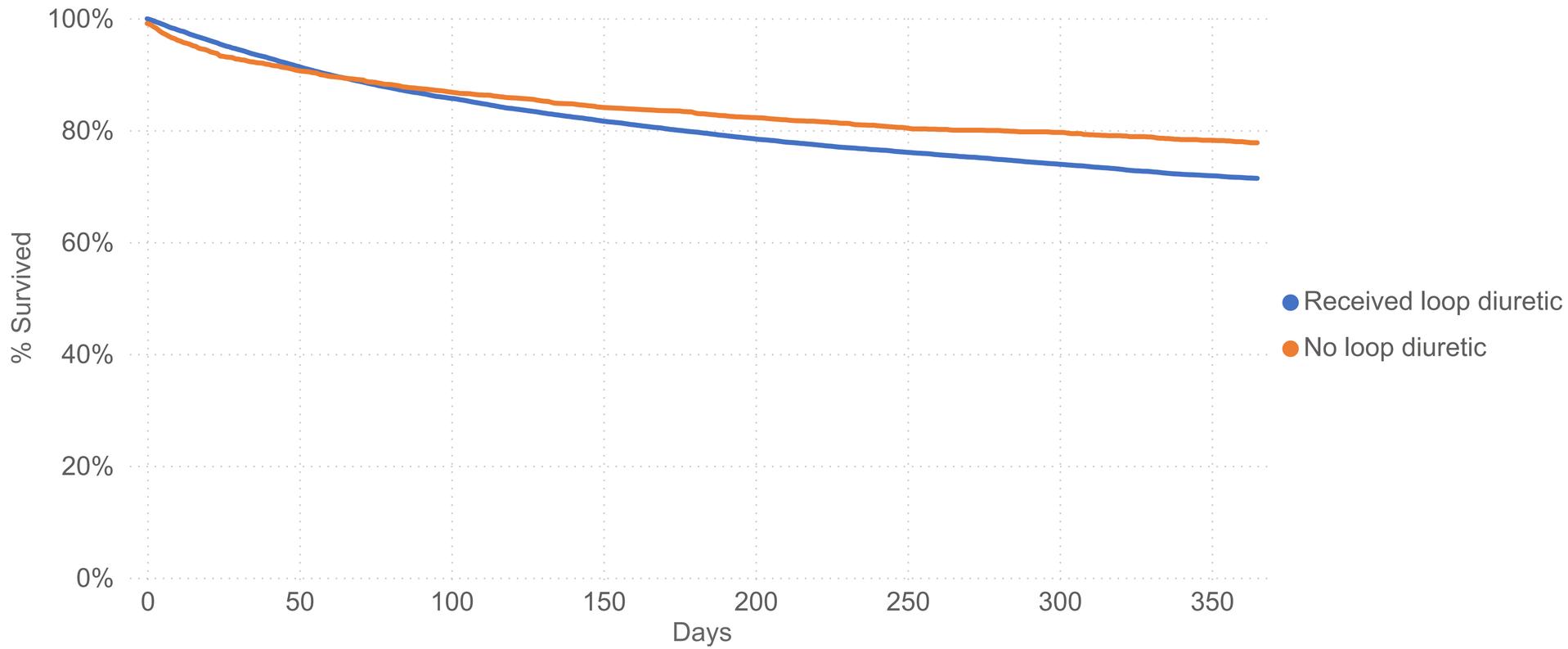
1-year survival is worse for those discharged on loop diuretics

Kaplan Meier plot of all-cause mortality following discharge from hospital according to loop diuretic prescription, 2022/23



Number at risk

Received loop diuretic	20371	18633	17468	16639	15964	14695	12160	9902
No loop diuretic	2365	2145	2054	1989	1941	1807	1537	1271

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Cox proportional hazards model for death in hospital, 2022/23

	Hazard Ratio	Lower CI	Upper CI	p-value
Age > 75	1.66	1.41	1.96	<0.001
COPD	1.20	1.02	1.41	0.0263
Creatinine (10umol/L increase)	1.00	1.00	1.00	<0.001
Heart Rate (5bpm increase)	1.02	1.01	1.02	<0.001
Ischaemic Heart Disease	1.18	1.03	1.35	0.019
Length of stay >= 16 days	2.17	1.80	2.62	<0.001
Length of stay 0-4 days	1.00			
Length of stay 5-8 days	1.03	0.79	1.21	<0.001
Length of stay 9-15 days	1.26	1.02	1.54	<0.001
Male	1.07	0.93	1.23	0.348
No ACEI/ARB/ARNI	1.68	1.47	1.92	<0.001
No beta blocker	1.27	1.09	1.48	<0.001
No cardiology follow-up	1.75	1.48	2.07	<0.001
No Echocardiography	1.28	1.12	1.48	<0.001
Not cardiology in-patient	1.34	1.16	1.54	<0.001
NYHSA III/IV	1.36	1.14	1.63	<0.001
Potassium <3.5 mmol/L	1.44	1.26	1.65	<0.001
Potassium >5.3 mmol/L	2.07	1.41	2.62	<0.001
Potassium 3.5-5.3 mmol/L	1.00			
Sodium Electrolytes < 135 mmol/L	1.43	1.25	1.64	<0.001
Sodium Electrolytes > 145 mmol/L	2.50	1.98	3.16	0.003
Sodium Electrolytes 135 - 145 mmol/L	1.00			
Systolic blood pressure (100mmHg decrease)	1.01	1.01	1.01	<0.001
Urea (5mEq/dl increase)	1.01	1.01	1.02	<0.001
Valve disease	1.30	1.13	1.49	<0.001

Cox proportional hazards model for 1-year mortality, 2022/23

	Hazard Ratio	Lower CI	Upper CI	p-value
Age > 75	1.94	1.82	2.08	<0.001
COPD	1.38	1.30	1.48	<0.001
Creatinine (10umol/L increase)	1.00	1.00	1.00	<0.001
Heart Rate (5bpm increase)	1.01	1.01	1.01	<0.001
Ischaemic Heart Disease	1.26	1.20	1.34	<0.001
Length of stay >= 16 days	1.90	1.75	2.05	<0.001
Length of stay 0-4 days	1.00			
Length of stay 5-8 days	1.12	1.04	1.22	0.005
Length of stay 9-15 days	1.38	1.28	1.50	<0.001
Male	1.01	1.01	1.01	0.038
No ACEI/ARB/ARNI	1.41	1.33	1.49	<0.001
No beta blocker	1.18	1.10	1.26	<0.001
No cardiology follow-up	1.27	1.20	1.35	<0.001
No Echocardiography	1.04	0.99	1.11	0.125
Not cardiology in-patient	1.42	1.34	1.51	<0.001
NYHSA III/IV	1.07	1.00	1.14	0.052
Potassium <3.5 mmol/L	1.31	1.21	1.42	<0.001
Potassium >5.3 mmol/L	0.96	0.74	1.26	0.793
Potassium 3.5-5.3 mmol/L	1.00			
Sodium Electrolytes < 135 mmol/L	1.29	1.22	1.36	<0.001
Sodium Electrolytes > 145 mmol/L	1.78	1.55	2.03	<0.001
Sodium Electrolytes 135 - 145 mmol/L	1.00			
Systolic blood pressure (100mmHg decrease)	1.01	1.01	1.01	<0.001
Urea (5mEq/dl increase)	1.01	1.01	1.01	<0.001
Valve disease	1.28	1.21	1.36	<0.001

List of drug names

ACEI	Angiotensin Converting Enzyme Inhibitor
ARB	Angiotensin Receptor Blocker
ARNI	Angiotensin Receptor/ Neprilysin Inhibitor
BB	Beta Blocker
MRA	Mineralocorticoid (aldosterone) Receptor Antagonist
SGLT2i	Sodium-glucose co-transporter 2 inhibitor