NCAP

NATIONAL CARDIAC AUDIT PROGRAMME

NICOR

National Adult Cardiac Surgery Audit (NACSA)

2024 Summary Report

(2020/21 – 2022/23 data)

Adult cardiac surgery - Report at a glance

2022/23 data unless otherwise stated.

13% fall in adult cardiac surgery procedures since 2019/20 (almost 4,000 operations per year)

28 out of **32** NHS hospitals performed fewer cases than in 2019/20

Mortality rates were 'as expected' for all hospitals in England, Wales and Northern Ireland during the last 3 years (2020/21 to 2022/23)

119 days waiting time (from coronary angiography to operation) for elective coronary artery bypass graft (CABG) was up from **96** days in 2017/18

Only 6 hospitals achieved the target waiting time for elective CABG of under **84** days

13 days average waiting time in England for urgent CABG (NHS target is 7 days), 14 days in Wales and 23 days in Northern Ireland

77% of elective patients had day of surgery admission (DOSA) in the best hospital (target is **50%**) and 5 hospitals had rates over **25%**

17 hospitals had DOSA rates under **5%**

7% to **80%** of aortic valve replacement (AVR) patients aged under 60 across individual hospitals received a 'tissue' valve against current guidelines

95 operations per consultant continued the decline in procedures per year (consultants would be expected to perform **168 procedures** based on **2 cases** per list and no cancellations).

Recommendations

Number of procedures

1. Hospitals should aim for consultants to undertake at least 150 cardiac surgical operations a year and should identify and resolve any issues that are preventing this.

Care pathways

2. More patients should be offered day of surgery admission (DOSA) and hospitals should review their systems to enable compliance with the Getting It Right First Time (GIRFT) recommendations to enable this.

3. Hospitals with longer post-operative length of stay (PLOS) should investigate the reasons for this and implement changes to improve performance.

Complications

4. Hospitals with higher bleeding rates should review their practice and implement changes to reduce these.

5. Hospitals with higher deep sternal wound infection (DSWI) rates should review their practice and implement changes to reduce these.

Data completion

6. All hospitals should ensure complete and accurate data are submitted to the audit, especially with respect to:
- complications following surgery
- transfusion rates
- use of multi-disciplinary team meetings.

Introduction

The National Adult Cardiac Surgery Audit (NACSA) is 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 in adult cardiac surgery by tracking trends in activity and outcomes, and benchmarking hospital performance against peers and guidelines/standards.

This report principally focuses on data from the last three years (2020/21 to 2022/23). Earlier years are also included where helpful in illustrating longer-term trends. The COVID-19 pandemic caused major disruptions to the provision of cardiac surgery. The consequences of this are clearly still being seen in 2022/23 as cardiac surgical activity has not yet returned to pre-pandemic levels.

The audit has operated in one format or another since 1977, including reporting outcomes at both hospital and surgeon levels since 2005. Scottish hospitals no longer participate in the audit (instead submitting data to the Scottish Cardiac Audit Programme). Consequently, any data labelled as 'UK' in this report represents England, Northern Ireland and Wales.

This report is of value to a wide range of stakeholders but importantly it allows patients and their relatives to better understand adult cardiac surgical care and its outcomes in the UK. For the first time this year **the slides in the report are interactive so you can select and explore the data that interest you.** It is often said that a picture is worth a thousand words, so we hope that this new format conveys in a more visual and digestible format what would previously have been contained within a lengthy document.

Additional important and regularly reported outcome and quality improvement metrics (described here), with accompanying interactive tables and graphs, can be found here. Together with this report, these give a comprehensive picture of the current state of UK cardiac surgery.

All participating hospitals have contributed data for 100% of their NHS patients undergoing cardiac surgery. We are indebted to the local clinical and audit teams for their dedication and engagement with the data collection, without which this report would not have been possible. 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 cardiac surgery in the UK.

The NICOR NACSA audit team

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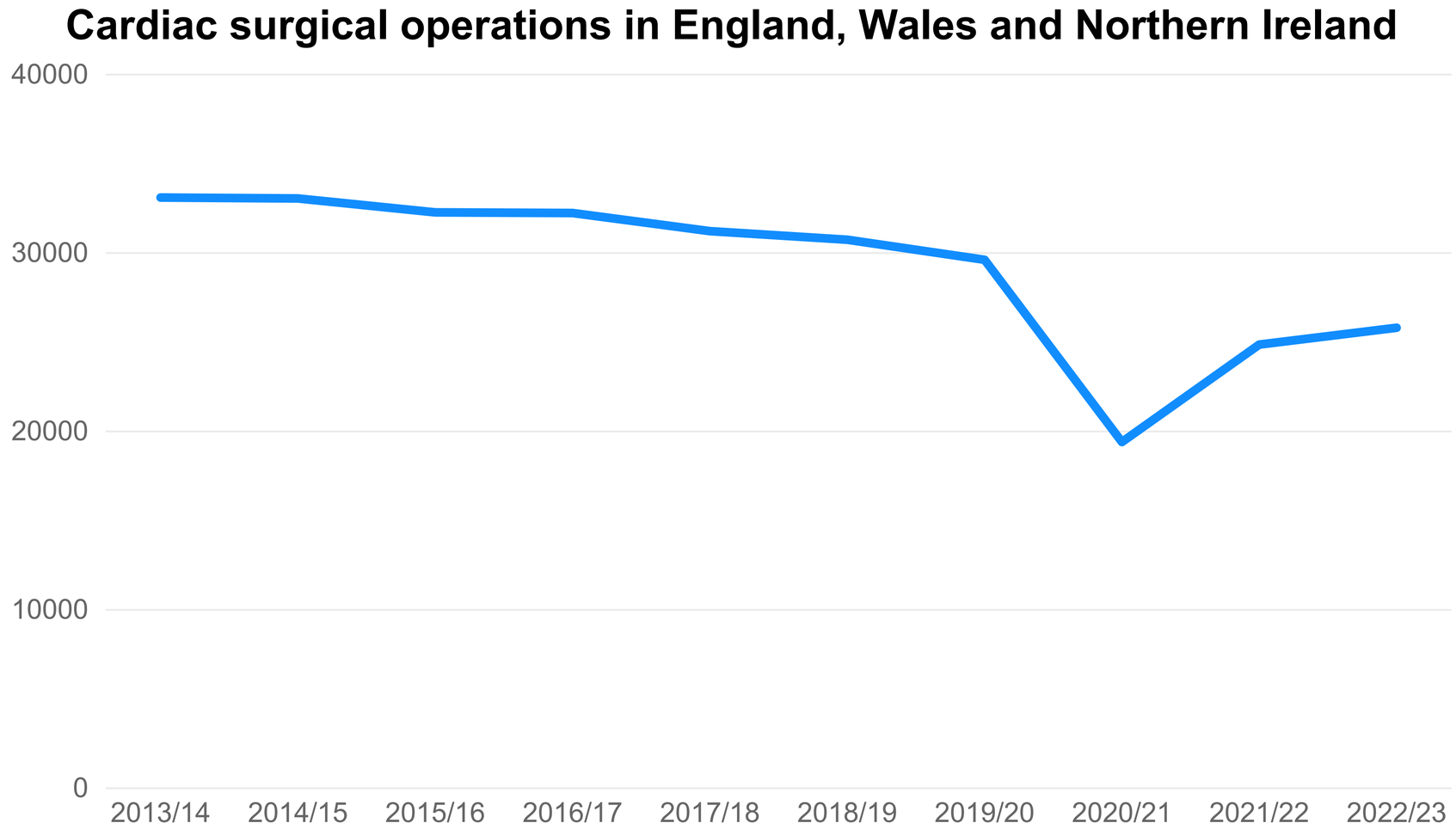
The number of cardiac surgical cases is on a long-term downward trend

The annual number of cardiac surgical operations has gradually declined over the last decade, with a big dip in activity during the COVID-19 pandemic.

In 2022/23, the total of 25,764 operations was 13% lower than in 2019/20 and down by more than a fifth from ten years earlier.

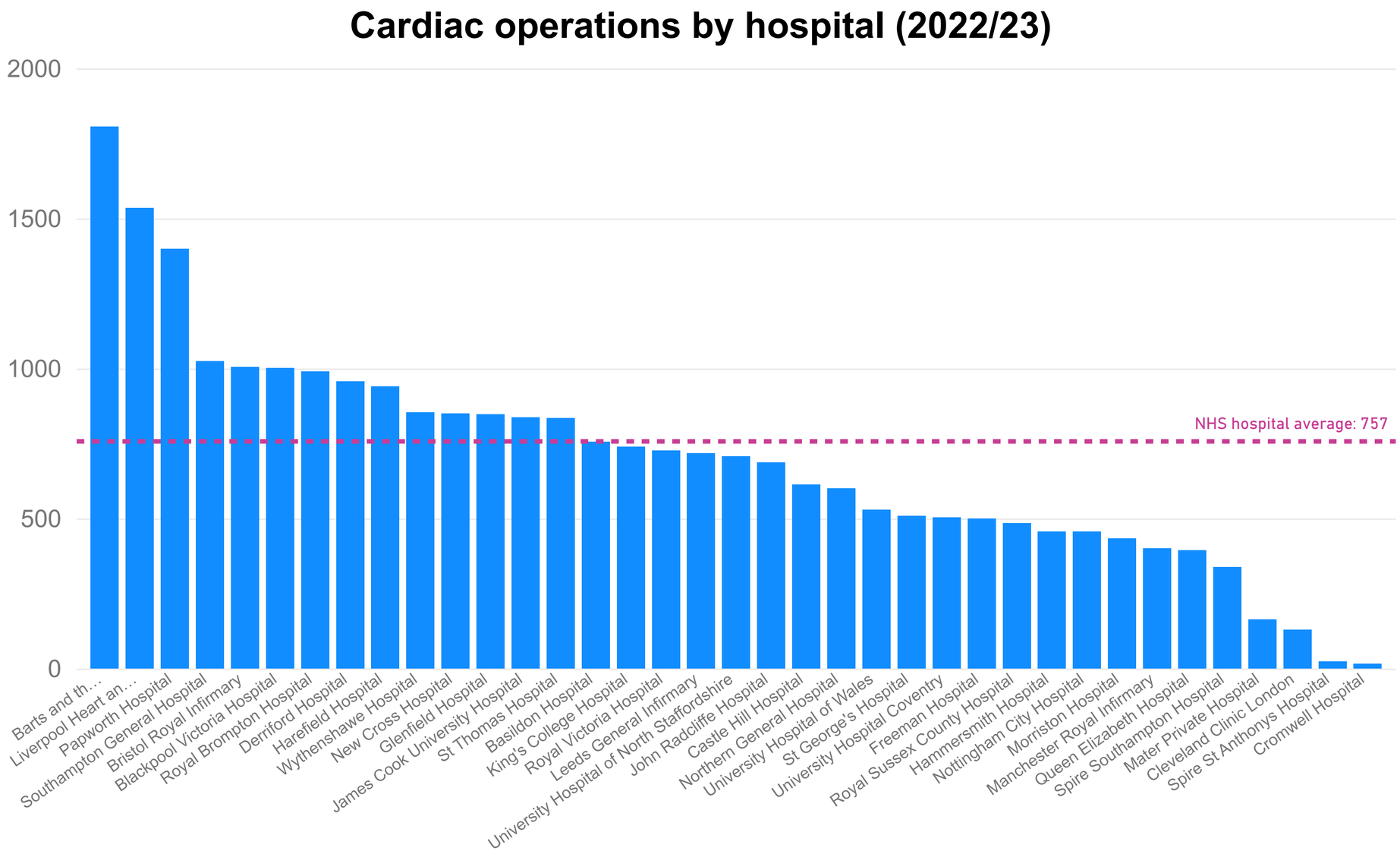


Cardiac surgical centres within NHS hospitals performed between 394 and 1,806 operations in 2022/23

On average, each NHS hospital performed 757 adult cardiac operations in 2022/23.

The highest number of operations was 1,806, while the fewest operations performed by an NHS hospital was 394.

Six NHS hospitals performed fewer than 500 operations.



The reduction in cardiac surgical activity since the COVID-19 pandemic can be seen across all types of procedure

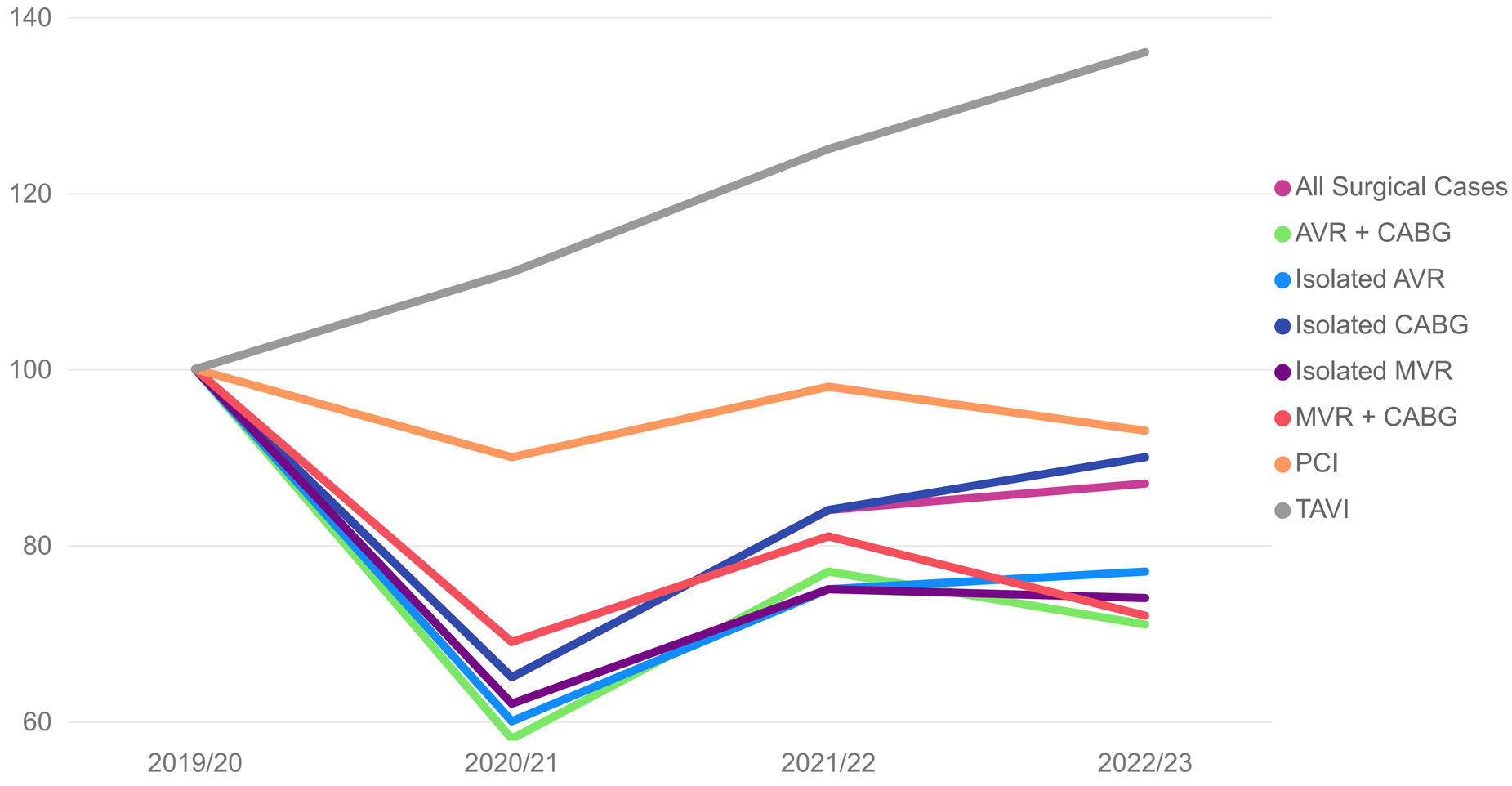
The fall in the number of cardiac surgical procedures since the COVID-19 pandemic is evident for all types of operation, whether involving isolated or a combination of procedures:

- coronary artery bypass grafting (CABG)
- aortic valve replacement (AVR)
- mitral valve (MV) operations.

This compares with transcatheter aortic valve implantation (TAVI) cases, which were more than a third higher in 2022/23 compared with 2019/20.

The number of percutaneous coronary intervention (PCIs) procedures has also returned closer to pre-pandemic levels.

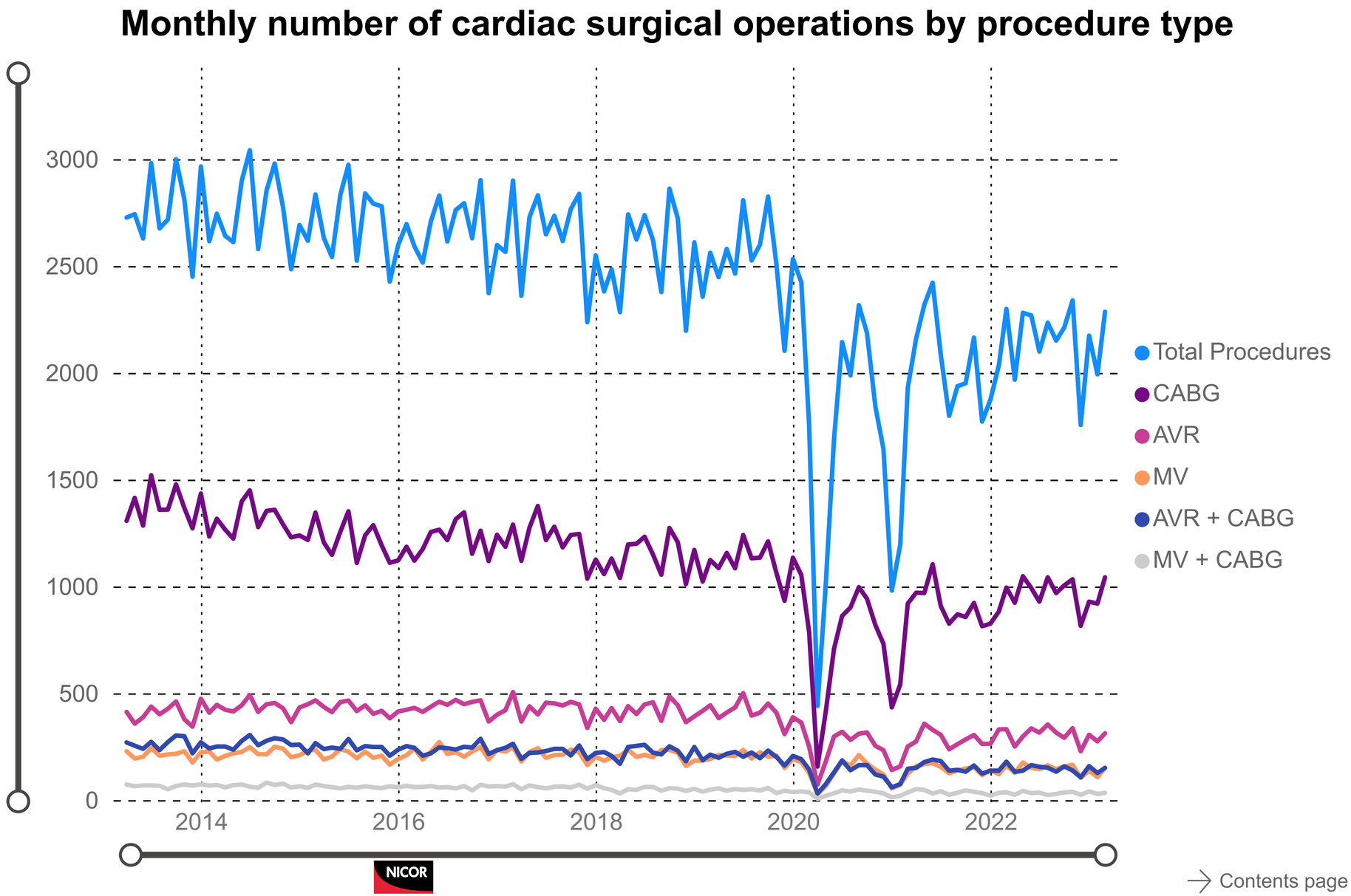
Percentage of cases each year compared to activity in 2019/20



Monthly activity data highlights the impact of the COVID-19 pandemic, especially for coronary artery bypass graft procedures

On a monthly basis, operation volumes in 2022/23 remained largely below pre-pandemic levels for coronary artery bypass grafting (CABG), aortic valve replacement (AVR) and mitral valve (MV) operations.

The monthly data also highlight the dramatic impact of the pandemic during the first two waves in March 2020 and the winter of 2020/21.



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On average, hospitals performed 85% of the procedures undertaken in 2019/20, prior to the COVID-19 pandemic

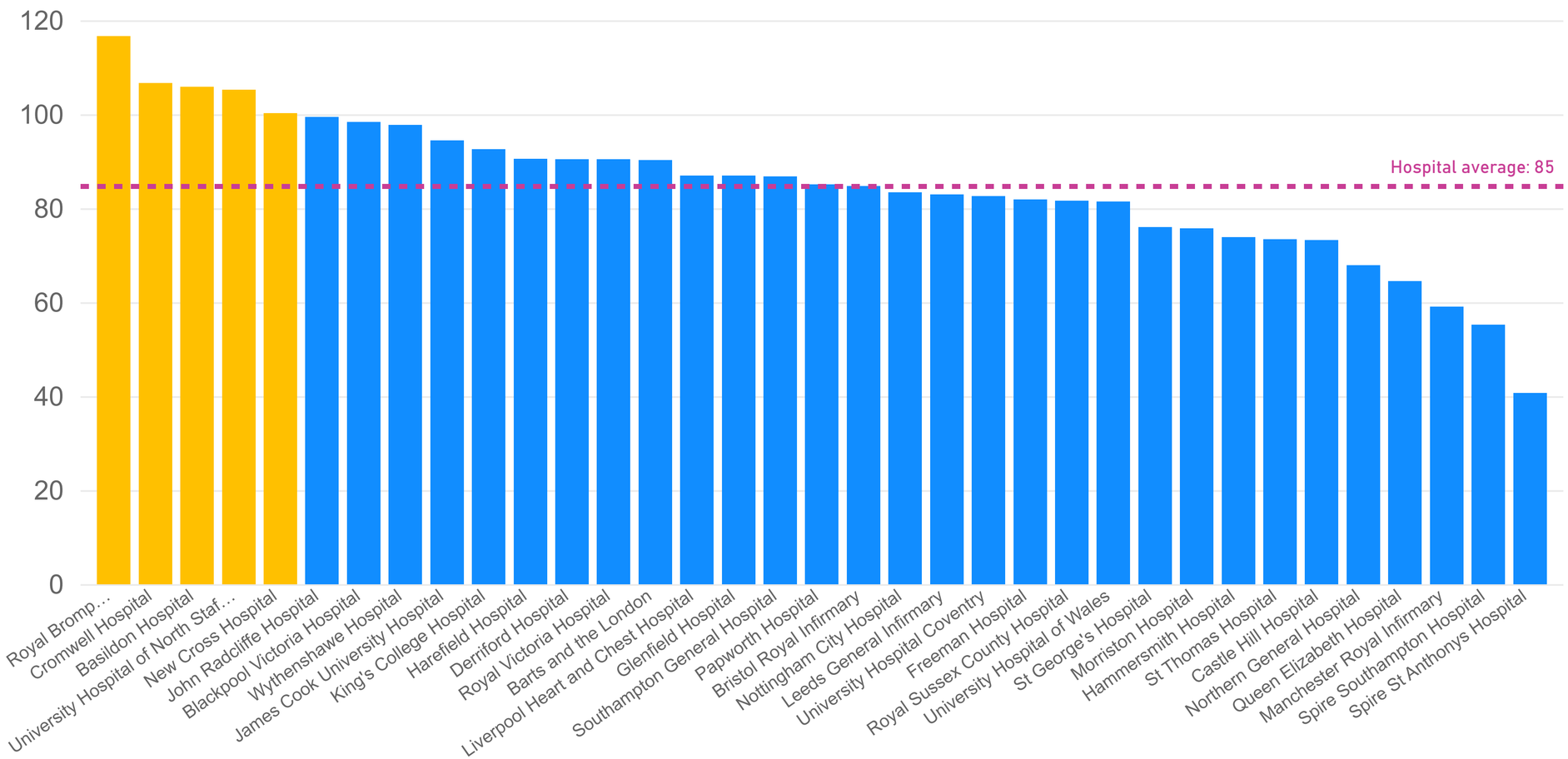
During 2022/23, individual hospitals performed between 59% and 116% of the procedures they did in 2019/20.

The average across all hospitals was 85%.

Only five cardiac centres (four within NHS hospitals) carried out more cases than they did prior to the pandemic.

Thirty hospitals (28 of them NHS) had lower activity, with six hospitals performing less than 75% of their pre-COVID-19 levels.

Percentage of cases performed by individual hospitals in 2022/23 compared to 2019/20



The number of cases per consultant cardiac surgeon has fallen by almost a third over the last decade

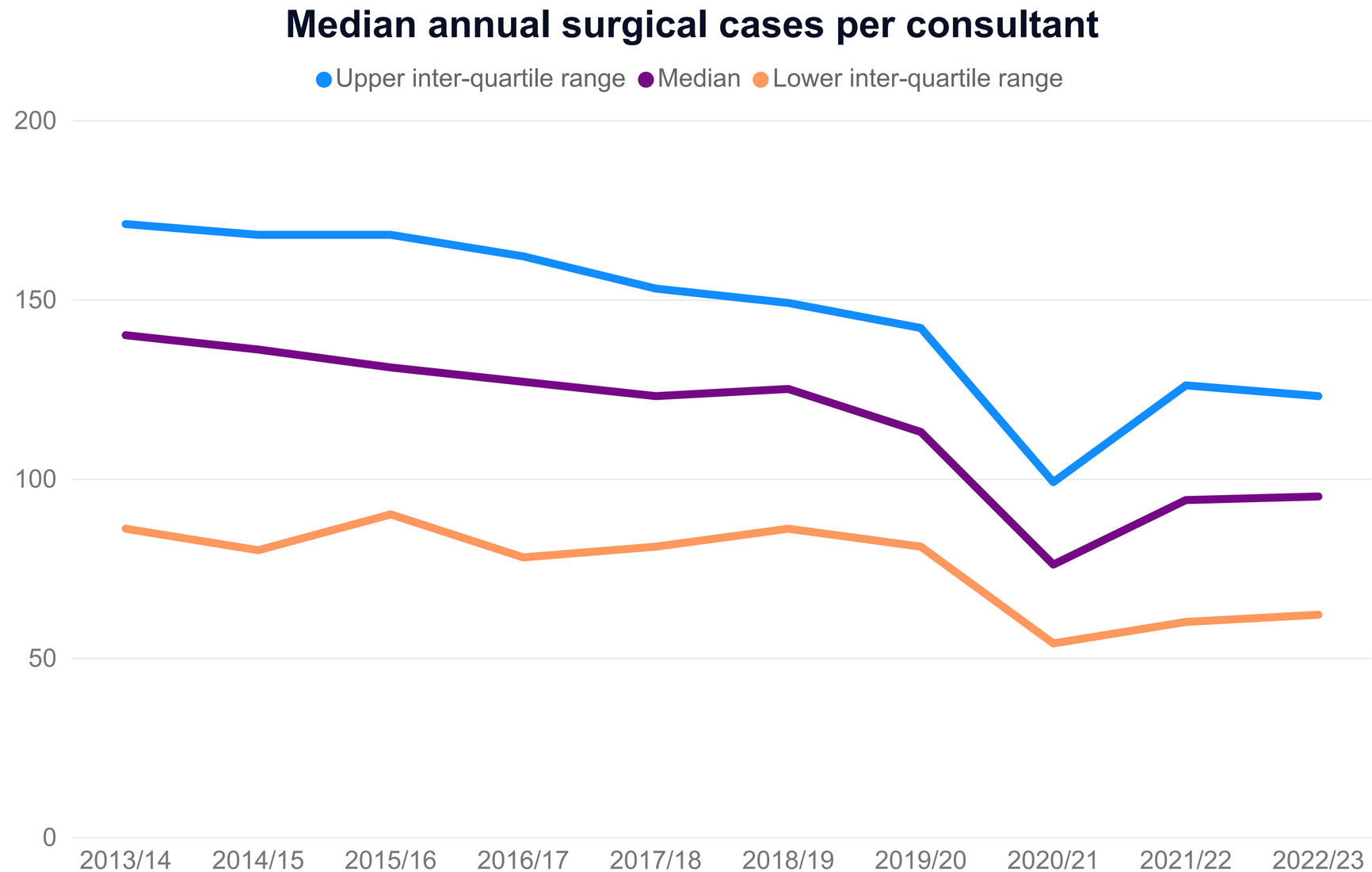
A typical consultant would be expected to perform 168 cases per year (assuming they undertake two lists per week, two cases per list and no cancellations). Surgeons performing very complex surgery might perform only one case on any given day.

However, consultant surgical activity is falling well below these levels. In 2022/23 the median caseload was only 95 operations compared with 140 in 2013/14.

Consultants in the top quartile performed at least 123 cases a year in 2022/23, down from 171 or more cases in 2013/14.

There are many reasons for not achieving expected throughput, most commonly a lack of ITU beds.

Note: Only consultants performing over 100 cases per 3-year audit cycle are used in these figures (including emergencies but excluding dual consultant cases).



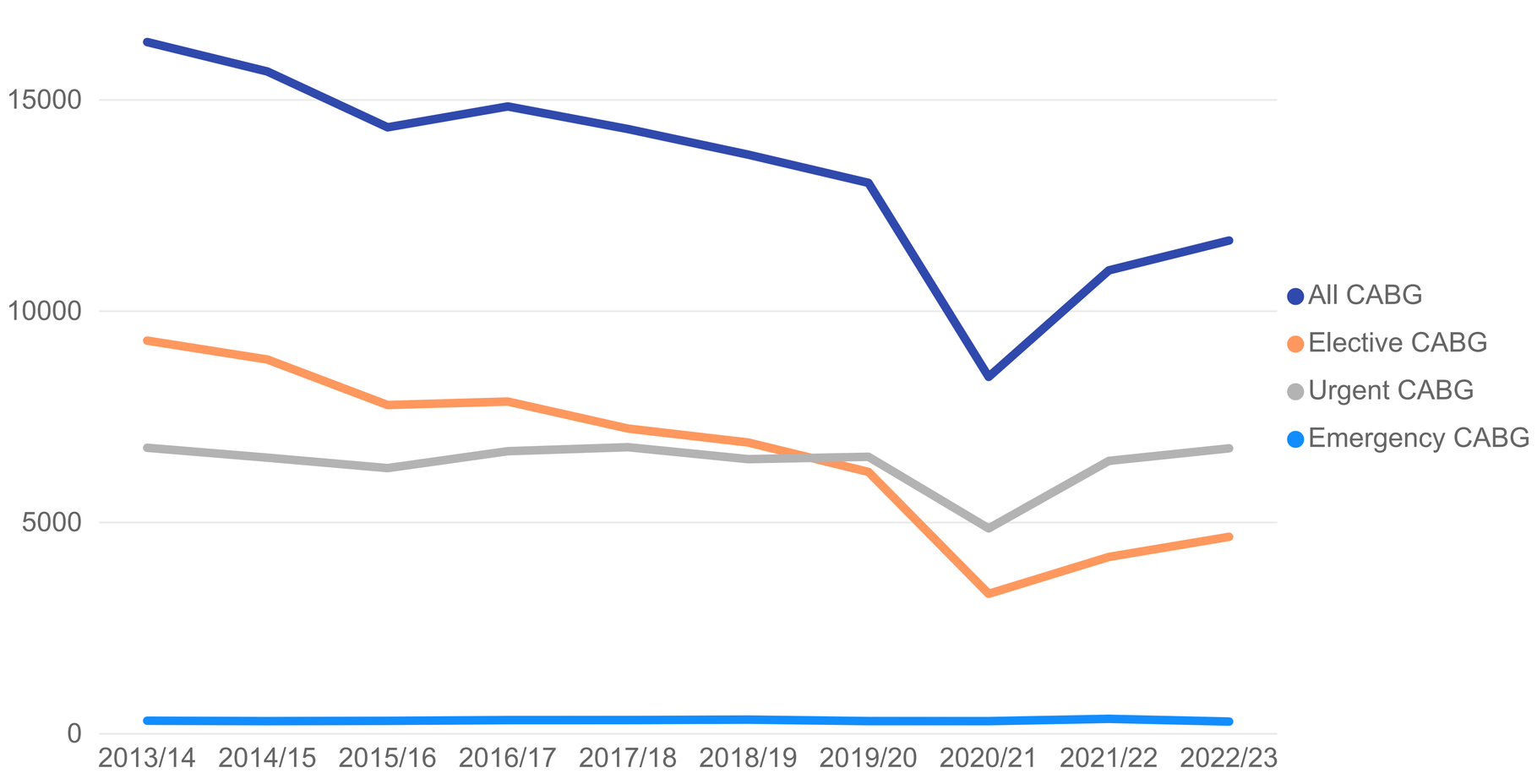
The drop in isolated CABG operations is a result of fewer elective cases

The 11,653 coronary artery bypass graft (CABG) operations in 2022/23, while rising since 2020/21, still appear to be continuing a fall seen over the last decade.

This is driven by a decline in the number of elective CABG cases, with a 25% reduction since 2019/20.

It is not clear whether this reflects a delay in post-pandemic recovery or reflects a new level of required elective procedures. Conversely, the number of urgent CABG procedures, usually recommended during the same admission after a heart attack, was 3% higher than pre-pandemic levels.

Number of isolated CABG procedures by urgency



The rise in PCI relative to CABG has fallen back since the COVID-19 pandemic

The total number of patients undergoing some form of revascularisation procedure has been falling since around 2017/18.

Revascularisation techniques include both percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG).

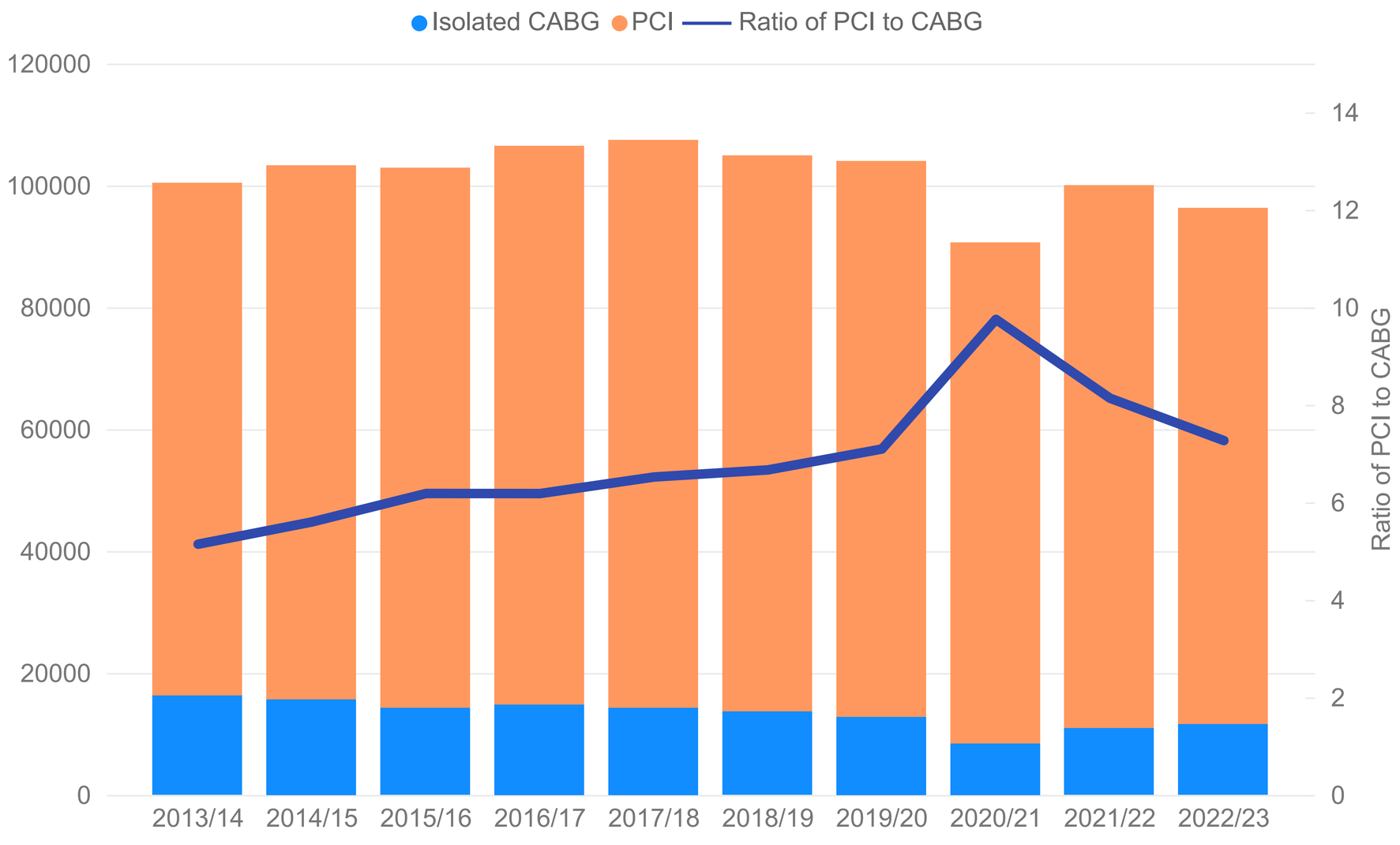
This reduction in overall revascularisation may reflect:

- a reduction in need (e.g. a possible falling incidence of coronary disease and heart attacks)
- under-provision as hospitals struggle to return to pre-pandemic levels of activity (some evidence exists for this with lengthening CABG waiting lists).

The ratio of PCI relative to CABG was on an upward trend prior to the pandemic, peaking in 2020/21 (at almost 10:1) when surgical throughput was affected by the COVID-19 pandemic.

Since then, the PCI:CABG ratio has fallen back to 7.3:1

Numbers of PCI and CABG procedures and ratio of PCI to CABG

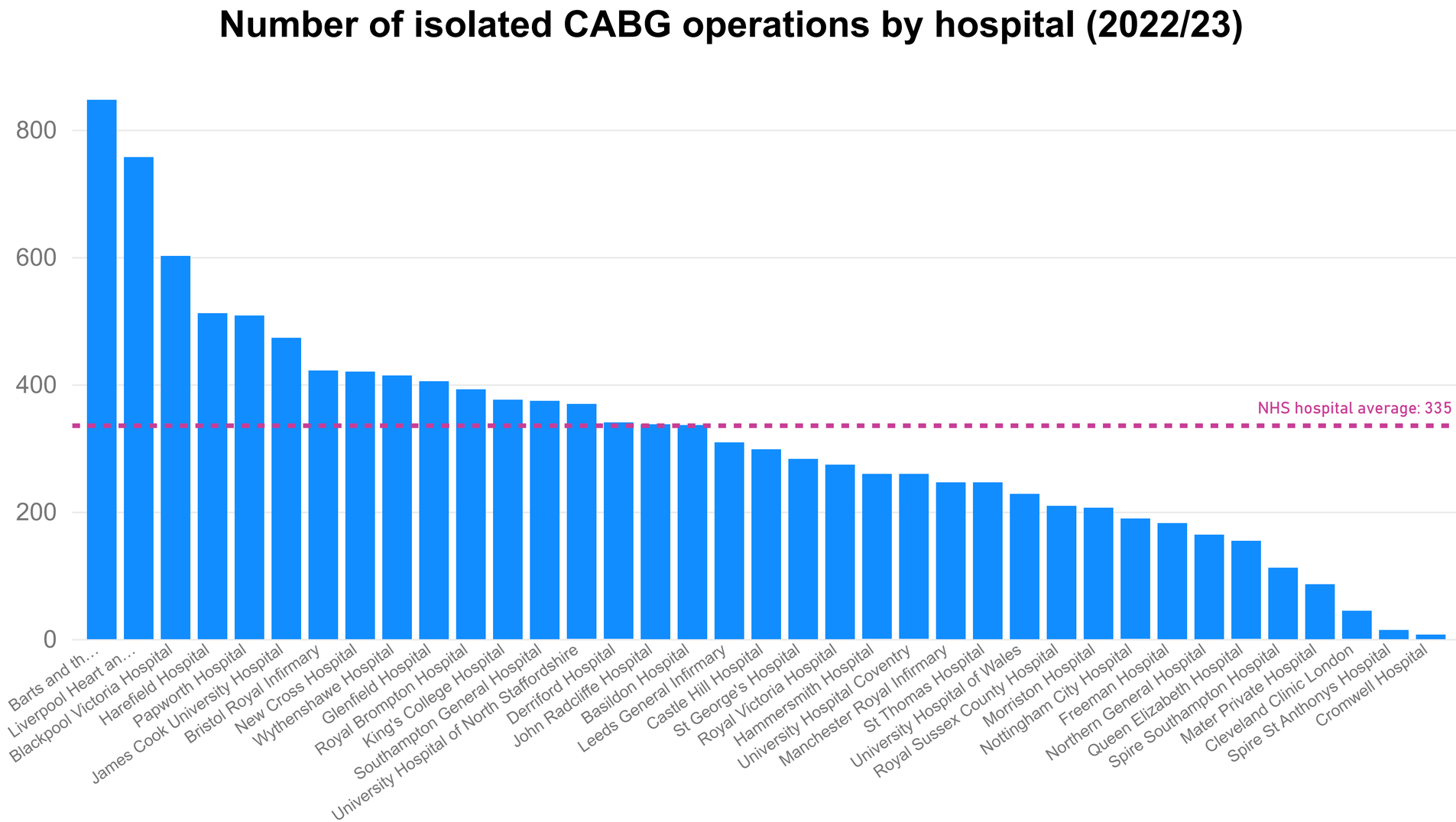


The number of isolated coronary artery bypass operations in NHS hospitals in 2022/23 ranged from 154 to 847

In 2022/23, 11,653 isolated coronary artery bypass grafting (CABG) operations were performed in England, Wales and Northern Ireland.

NHS hospitals undertook 335 CABG cases on average, with 847 being the highest number and 154 the lowest.

Five hospitals performed more than 500 cases, while nine hospitals carried out fewer than 200 operations.



AVR operations for low-risk cases are especially down on pre-pandemic levels with evidence that TAVI is being considered more for these patients

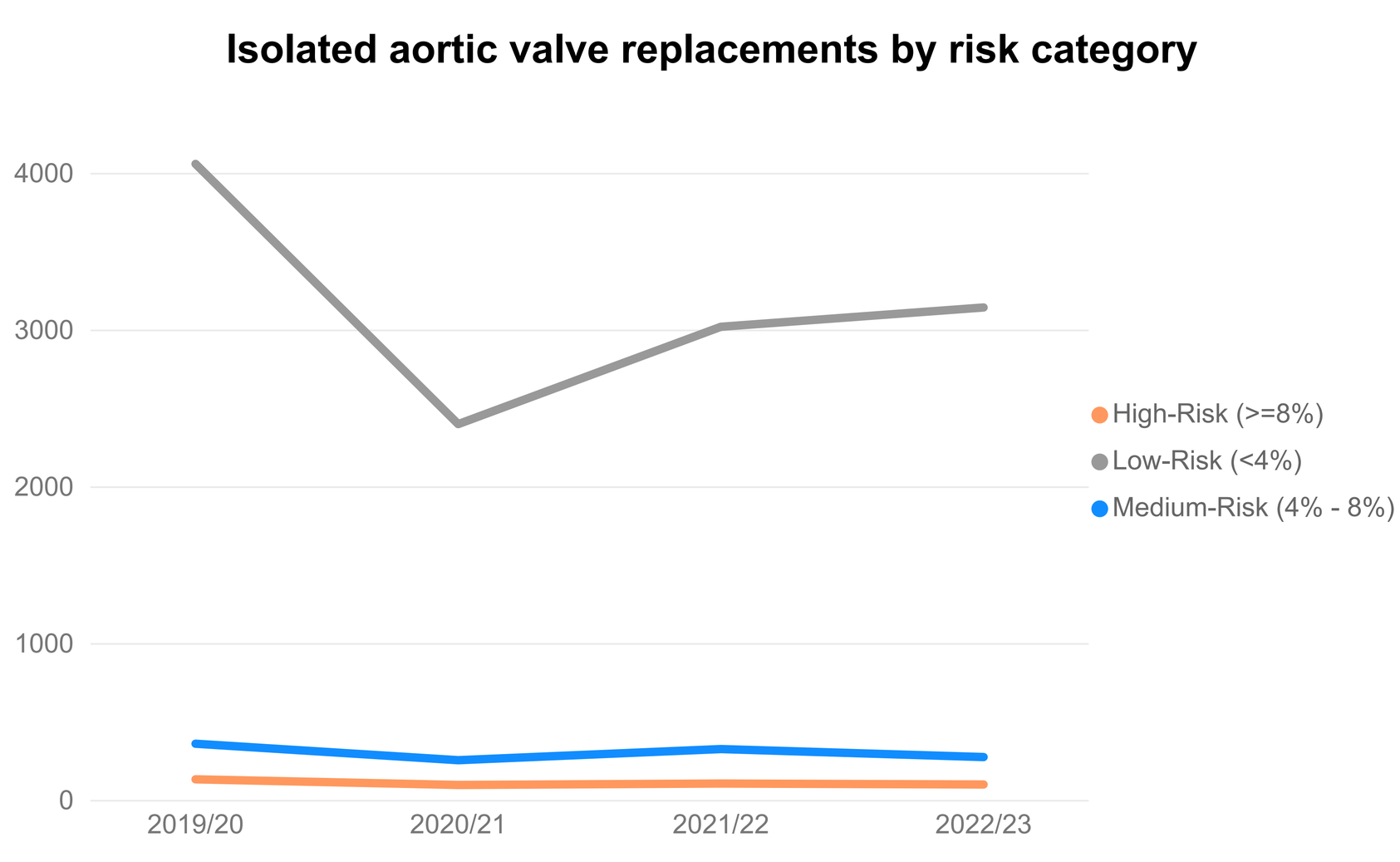
A total of 3,623 isolated aortic valve replacements (AVRs) were performed during 2022/23 in England, Wales and Northern Ireland.

NICE guidance from 2021 recommends that patients with low- or medium-risk for surgery should undergo aortic valve replacement (AVR) in preference to transcatheter aortic valve implantation (TAVI).

The proportion of patients deemed at low-risk (EuroSCORE2 <4%) has stayed roughly the same at 87 to 89% over the last four years. Despite this, overall AVR numbers are falling.

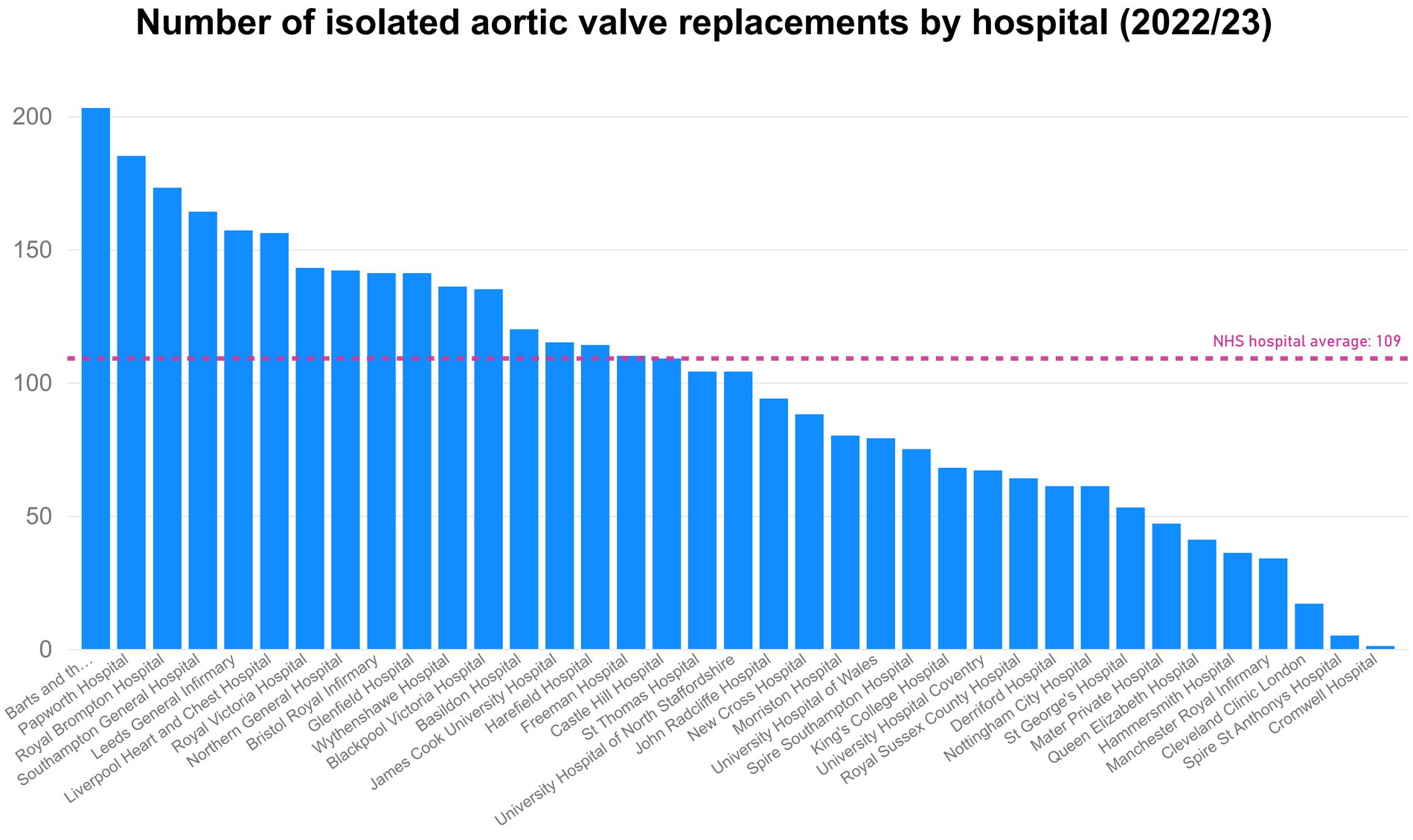
Results from recent publications studying TAVI in low-risk cohorts is challenging the NICE guidance and there is evidence that TAVI is now being considered more commonly for this patient group.

In 2022/23, only 2.7% of AVR cases were in the high-risk category (EuroSCORE2 >=8%). These patients are likely to have had factors making TAVI unsuitable (e.g. endocarditis or vascular access problems).



There is a wide variation in the number of isolated aortic valve replacements performed by individual NHS hospitals

The number of isolated AVR procedures in NHS hospitals ranged from 34 to 203 with a hospital average of 109.



The highest ever number of patients with aortic valve disease were treated in 2022/23, with TAVI procedures more than double isolated AVR operations

While isolated AVR procedures are falling, the total number of patients receiving aortic valve intervention was at its highest level in 2022/23, combining those patients undergoing:

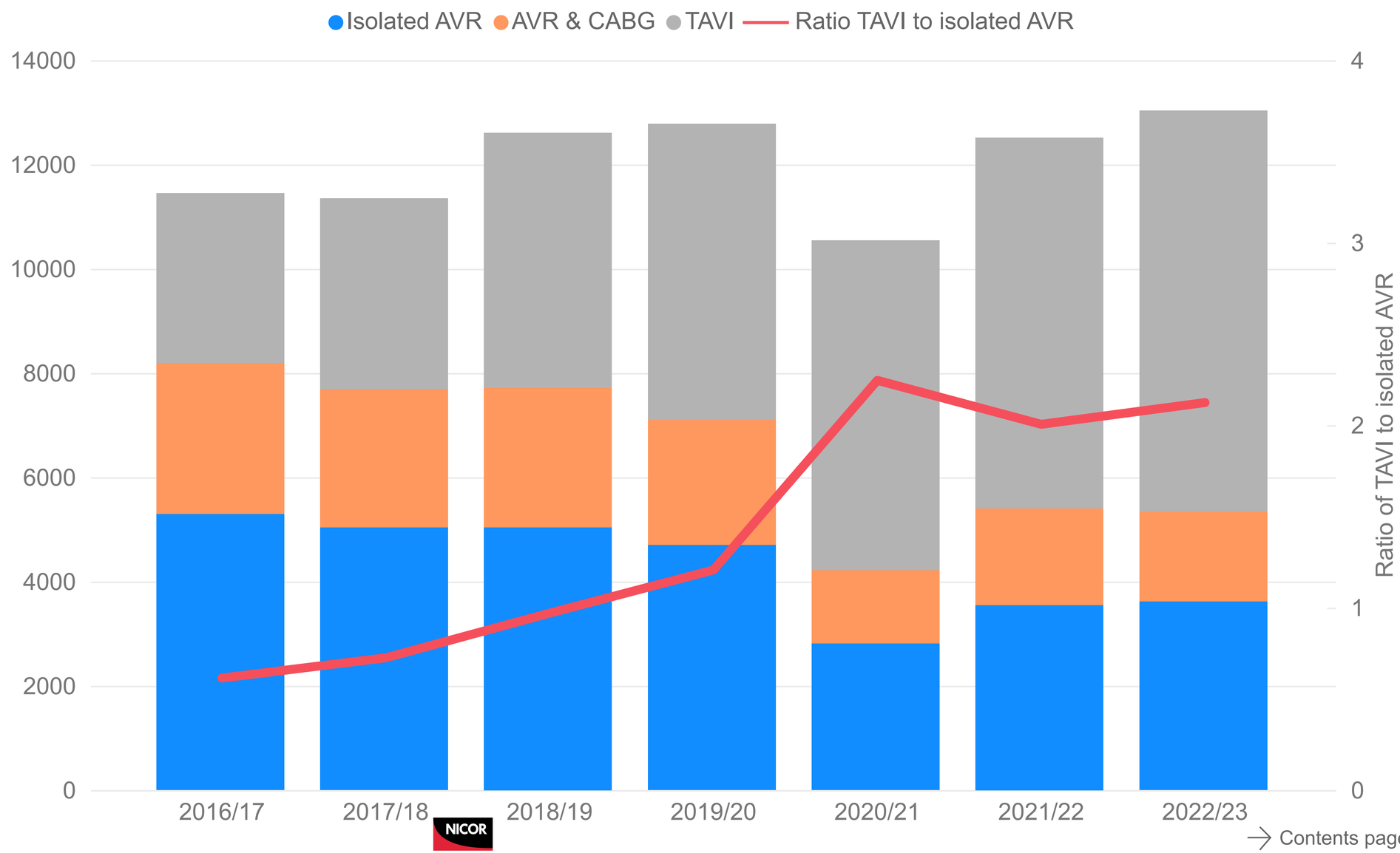
- surgical aortic valve replacement (AVR) with or without concomitant coronary artery bypass grafting (CABG)
- those undergoing transcatheter aortic valve implantation (TAVI).

A total of more than 13,000 AVR procedures were performed, an increase of 4% over 2021/22.

The use of TAVI has been increasing and, compared to cardiac surgery, the capacity to deliver this treatment was not as affected by the COVID-19 pandemic.

In 2022/23, TAVI procedures were more than double the number of isolated AVR operations.

Types of aortic valve procedure and ratio of TAVI to isolated AVR



A quarter of younger patients undergoing aortic valve replacement receive a biological valve, contrary to current recommendations

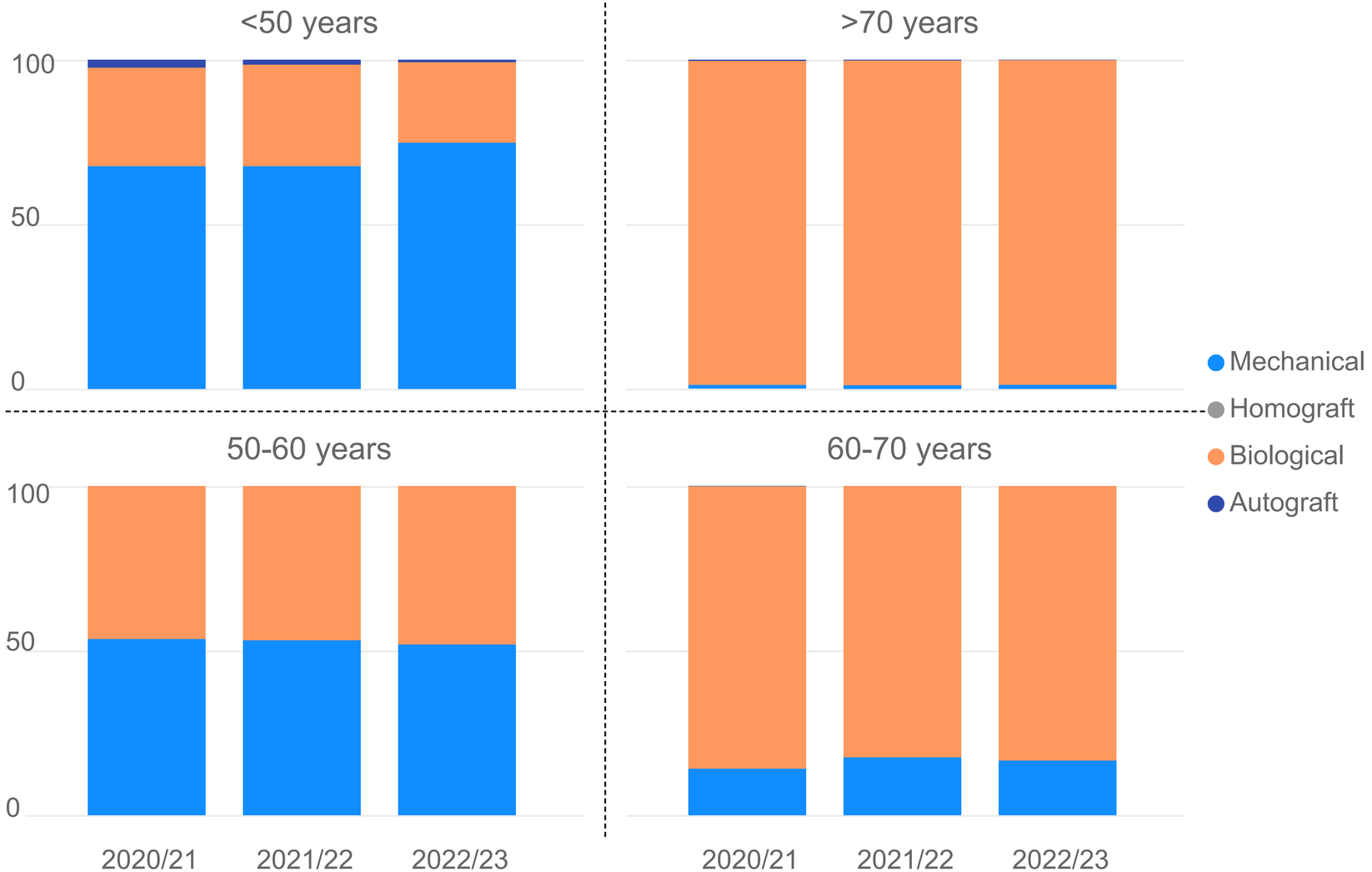
Once implanted, biological ('tissue') valves are more prone to long term structural failure than mechanical valves. This may result in the need for either repeat aortic valve replacement (AVR) surgery or transcatheter aortic valve implantation (TAVI).

On the other hand, while there is evidence that mechanical valves give younger patients better life expectancy when compared to tissue valves, there is a need for lifelong anticoagulation, meaning patients are more prone to bleeding-related complications.

Guidelines therefore recommend mechanical valves in younger patients (<50 years) and biological valves in older patients (>70 years). For patients between 50-70 years, there is debate as to which is better, especially since the advent of TAVI, which provides an option for a 'redo' procedure over time.

In 2022/23, almost all of AVR procedures in patients over 70 years old used biological valves. **However, 25% of AVR procedures in patients under 50 were performed using biological valves, against the current guidance (accepting some small sub-groups where this might be appropriate).**

Percentage of different valve types using in isolated AVR by age group



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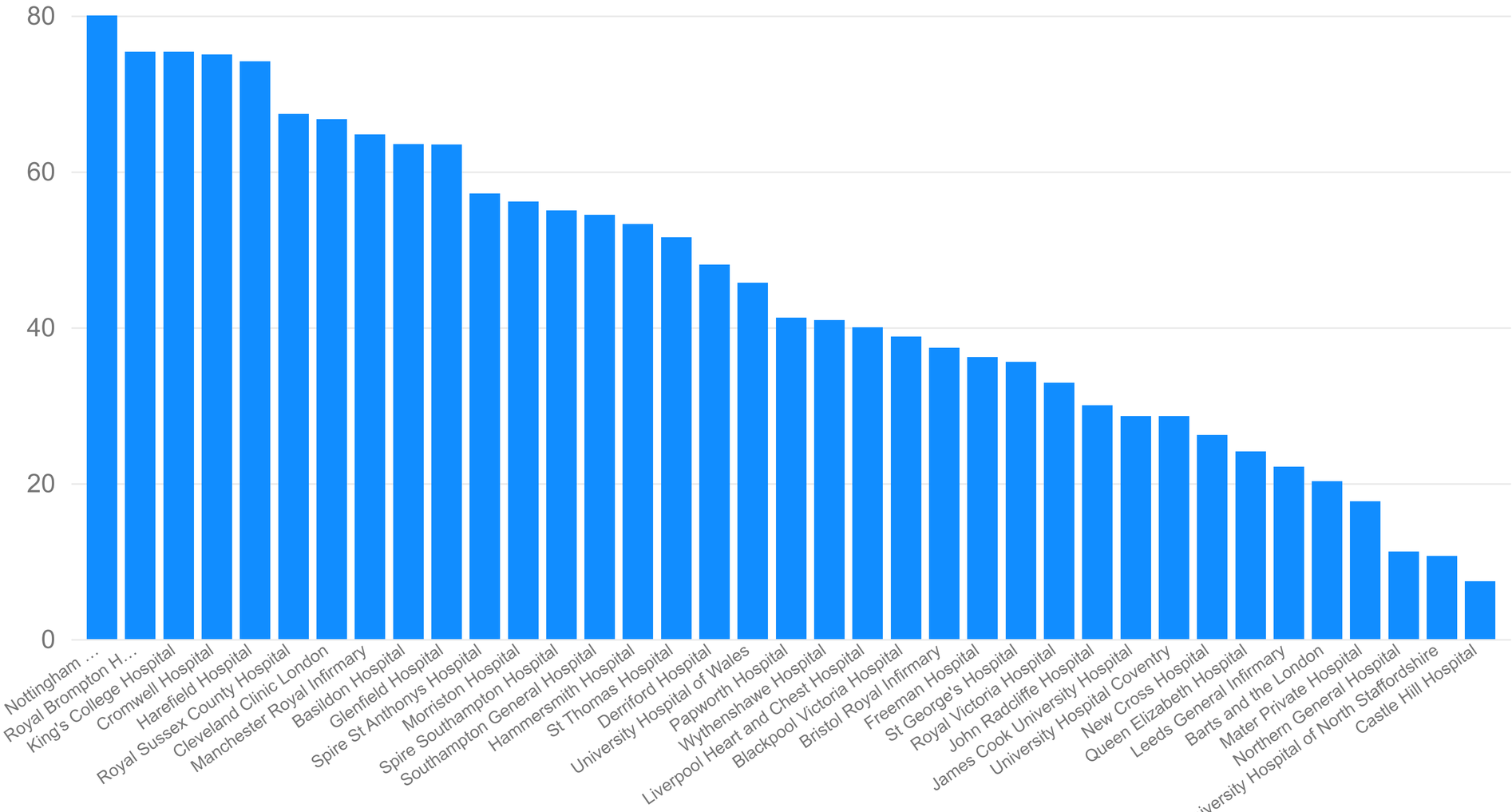
The proportion of patients under 60 receiving a biological valve during isolated AVR operations varies hugely across hospitals

Most patients aged less than 60 years undergoing isolated aortic valve replacement (AVR) would be expected to receive a mechanical valve according to current guidelines.

There is huge variation in practice across the UK in the proportion of this group who instead receive a biological valve against these guidelines.

The range for this in NHS hospitals is from 7% to 80%.

Percentage of patients under 60 receiving a biological valve during an isolated AVR operation (2022/23)



The number of mitral valve operations remains well below pre-pandemic levels

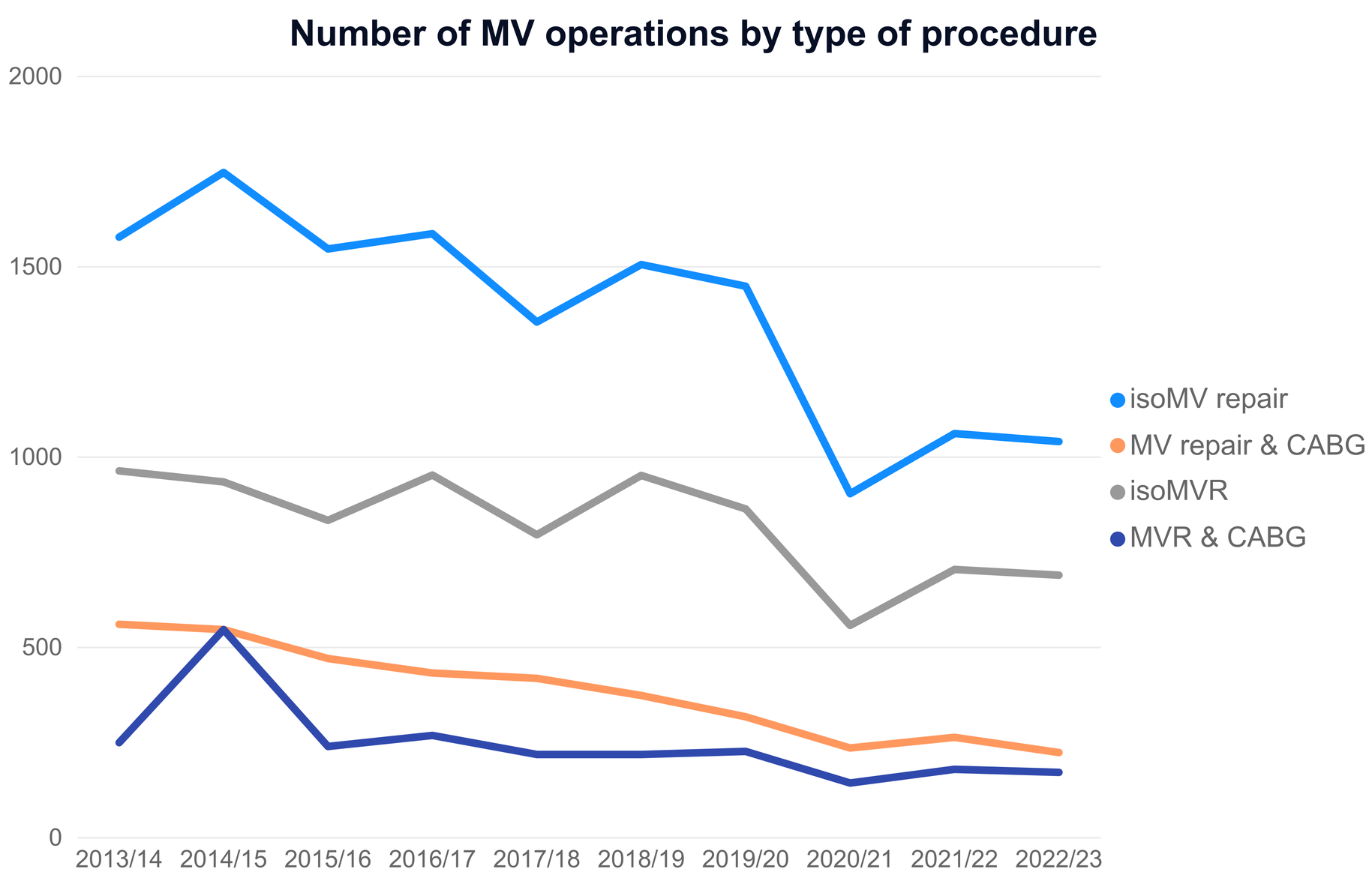
Mitral valve replacement (MVR) and mitral valve repair (MV repair) can be undertaken either as isolated procedures or in conjunction with coronary artery bypass grafting (CABG).

The number of mitral valve (MV) operations has been decreasing over the last decade with a major dip during the COVID-19 pandemic.

After rising slightly in 2021/22, all forms of MV procedure fell again in 2022/23, with 688 isolated MVR procedures and 1,039 isolated MV repairs (a 28% reduction compared to 2019/20).

It is unclear whether this reflects an issue related to post-pandemic recovery or represents a new level of requirement.

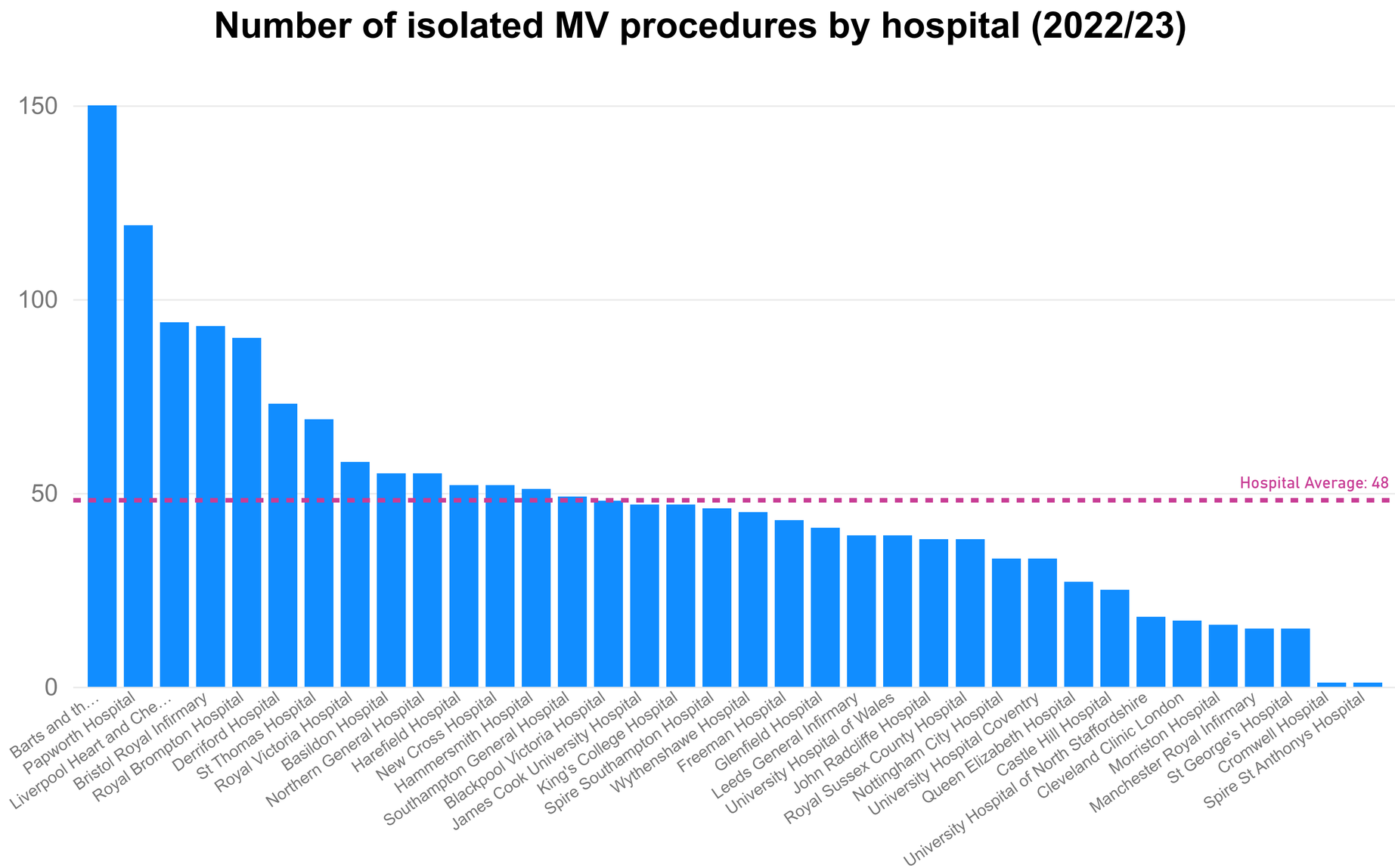
Other options are also now available to treat MV disease (such as MitraClip), but their recent introduction is unlikely to explain the longer-term reduction in surgical activity.



There was a 10-fold difference in the number of mitral valve procedures performed by individual NHS hospitals in 2022/23

In 2022/23, a total of 1,732 isolated mitral valve (MV) procedures (including both replacements and repairs) were performed across England, Wales and Northern Ireland.

The most active NHS hospital performed 150 procedures while the least active centre undertook only 15 cases.



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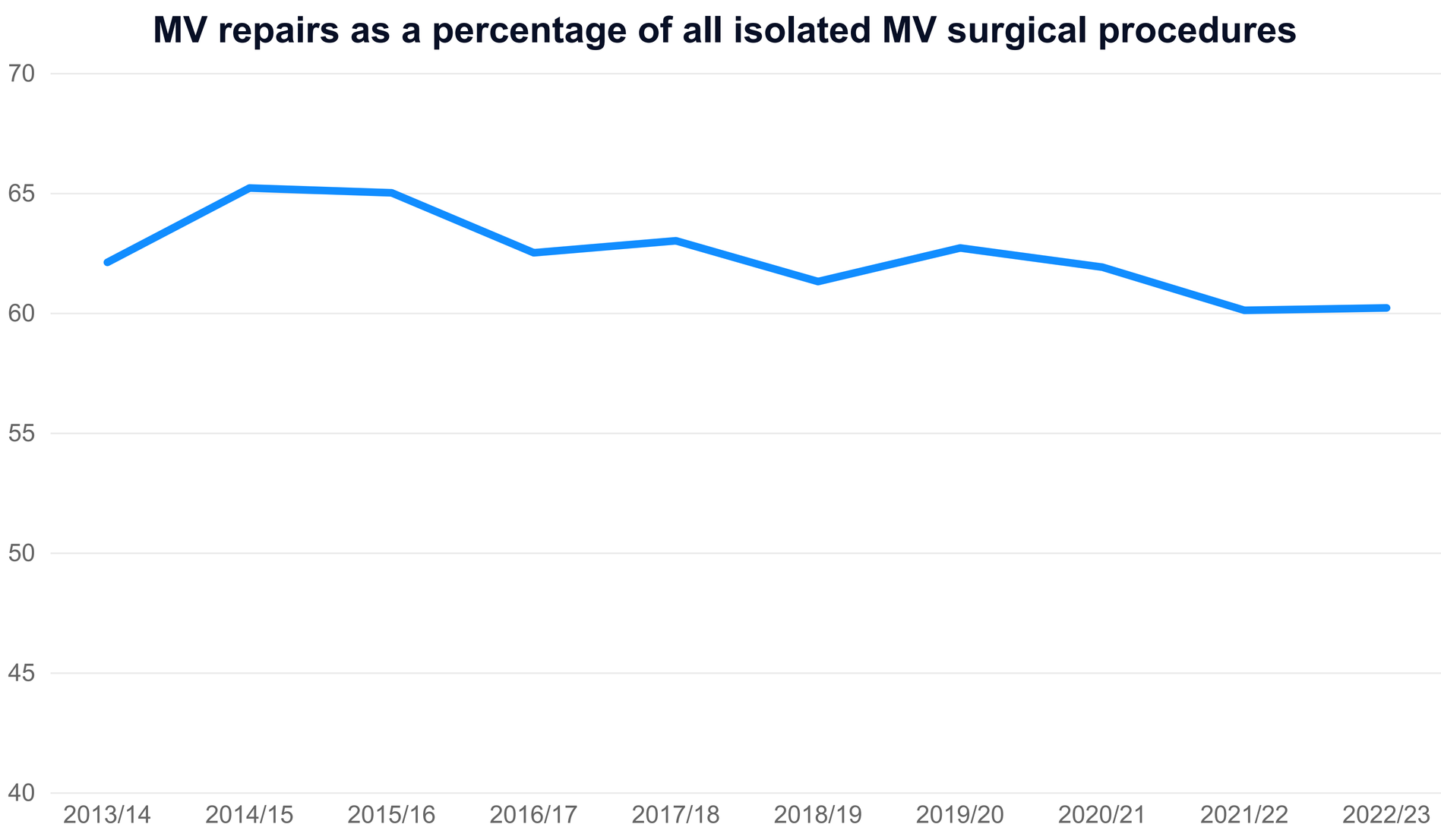
The rate of mitral valve repairs has fallen as a proportion of all isolated mitral valve surgery

The best treatment for suitable patients with degenerative mitral valve (MV) disease is mitral valve repair rather than replacement of the valve (MVR).

Not only has the total number of MV repair procedures been falling, but the rate of these procedures as a proportion of all patients having an isolated MV procedure is also declining slowly (to 60% in 2022/23).

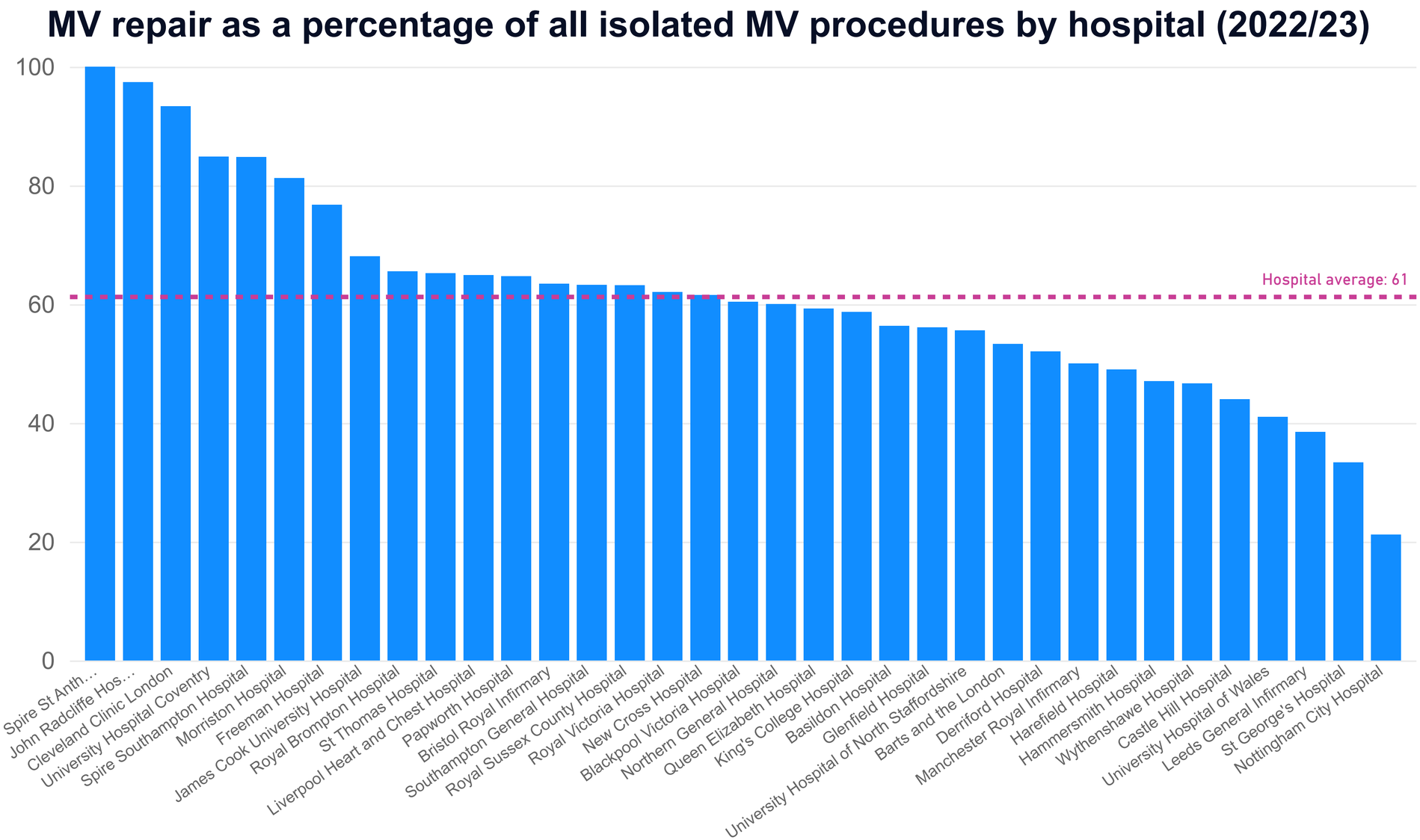


Mitral valve repair rates differ hugely by hospital, from 20% to over 90%

There is very considerable variation between hospitals in the number of mitral valve (MV) repairs performed as a proportion of all isolated MV surgical procedures.

In 2022/23, this ranged from 21% to 97% in NHS hospitals.

The average across all hospitals, including private centres, was 61%.

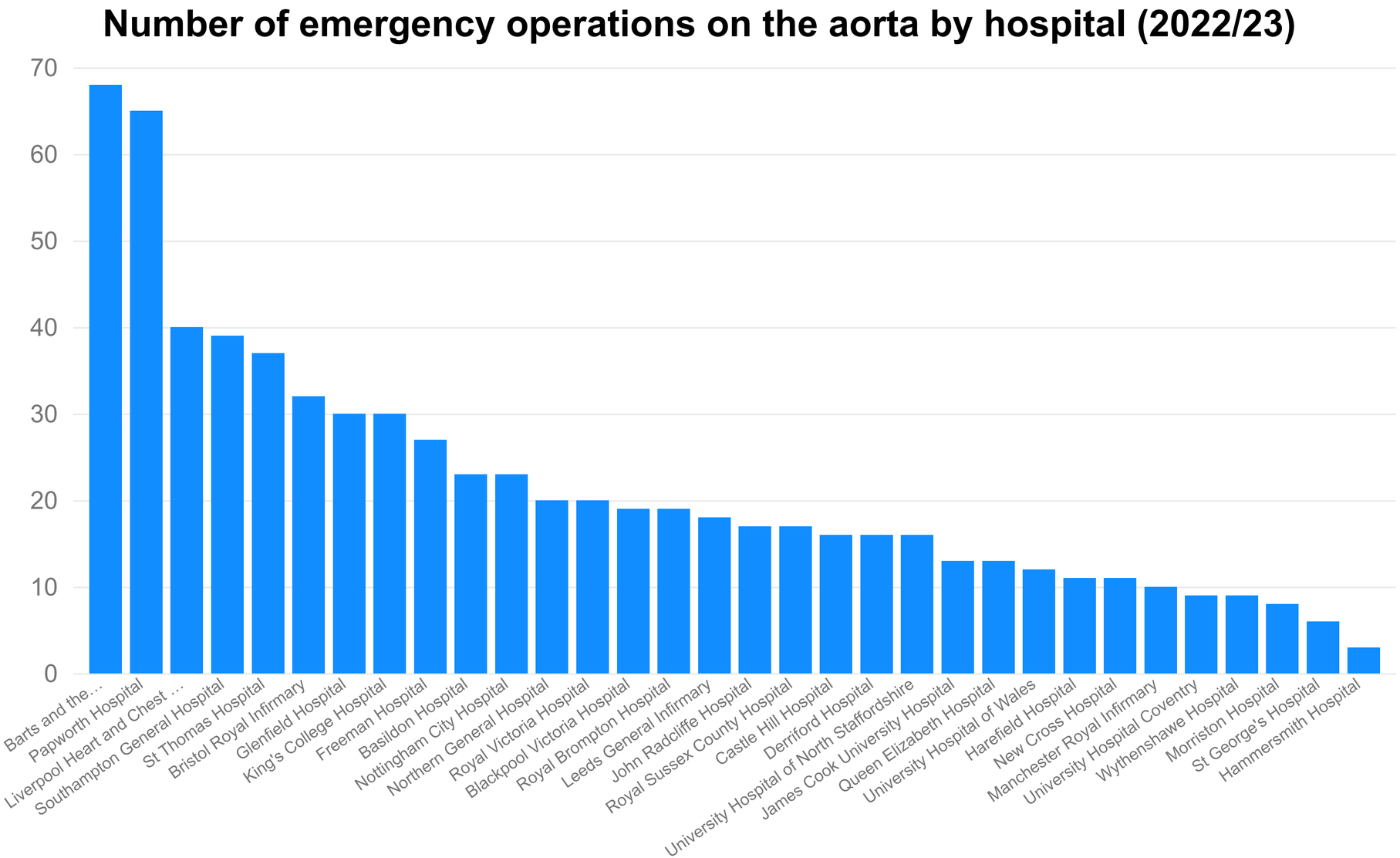


In 2022/23, the majority of hospitals performing emergency operations on the aorta carried out fewer than 24 operations

A total of 697 emergency operations were performed on the thoracic aorta in 2022/23. Most (but not all) of these were for acute aortic dissection.

The 2023 NACSA audit report suggested possibly improved mortality outcomes in centres undertaking 24 or more operations per year (based on UK results from the last decade).

In 2022/23, out of 32 hospitals performing emergency operations on the aorta, 23 did not reach the minimum recommended number of procedures, with the lowest carrying out just three cases.



Left atrial appendage occlusion (LAAO) procedures at the time of cardiac surgery have risen significantly

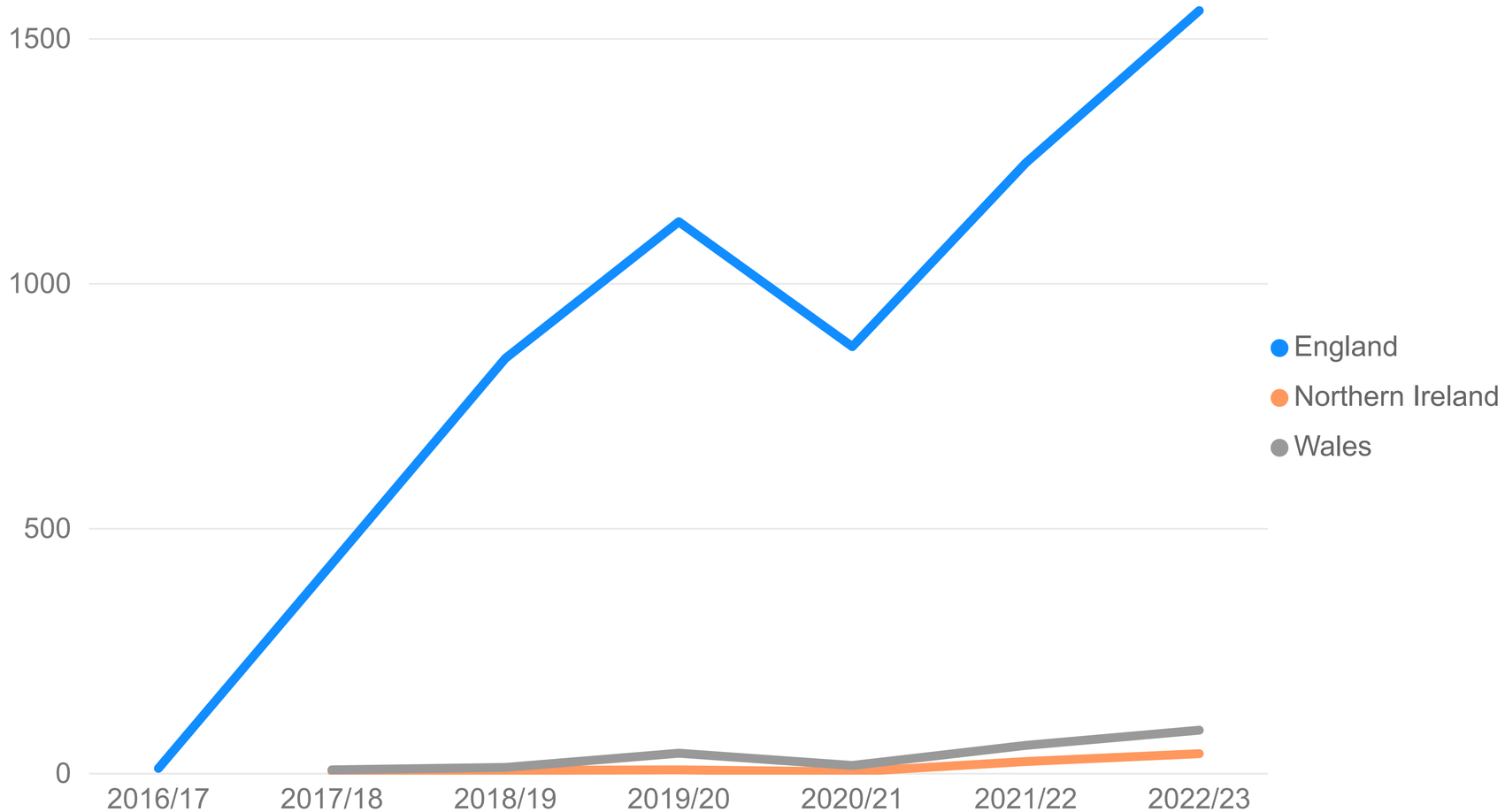
Left atrial appendage occlusion (LAAO) is very straightforward and quick to perform as a concomitant procedure at the time of undergoing surgery, and usually involves simply placing a clip across the atrial appendage.

The 2021 LAAOS III trial suggested that all patients with atrial fibrillation (AF) should undergo LAAO in order to reduce their future risk of stroke.

UK practice has clearly changed as a result of this evidence. There has been yearly growth in the procedures performed every year since 2016/17 (with the exception of the pandemic year of 2020/21).

In 2022/23, a total of 1,682 LAAO procedures were carried out.

Number of left atrial appendage occlusion procedures at the time of cardiac surgery

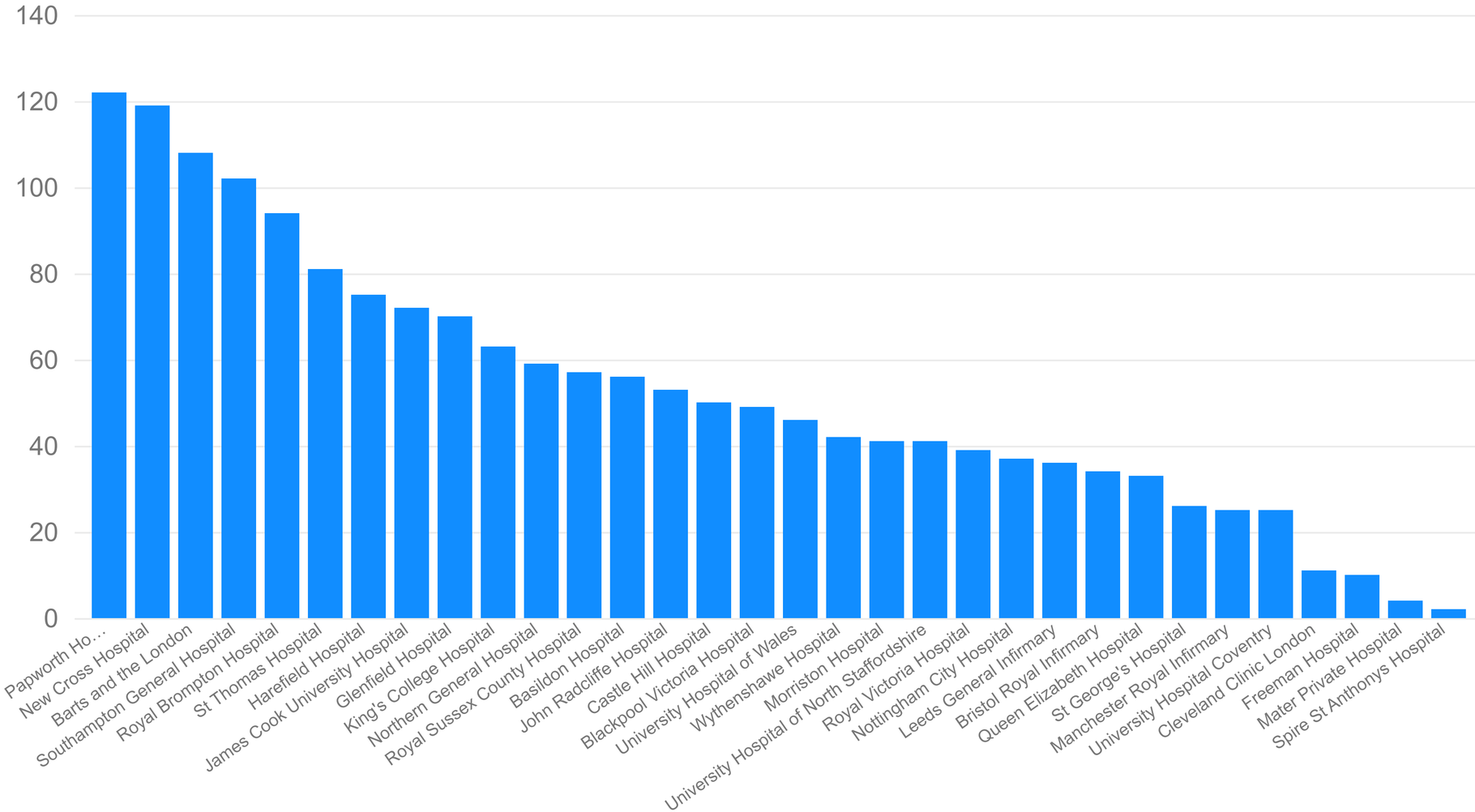


Larger centres are performing left atrial appendage occlusion (LAAO) procedures in between 10% and 14% of all cases

The most active NHS hospital performed 122 LAAO procedures in 2022/23 while 14 carried out fewer than 50 (the lowest being 10).

Reliable data on pre-operative rates of AF are not available, although units undertaking higher numbers of LAAO procedures are performing it in around 10-14% of all their cases.

Number of left atrial appendage occlusion procedures during cardiac surgery by hospital (2022/23)



Average waiting times for elective CABG remain significantly above the target

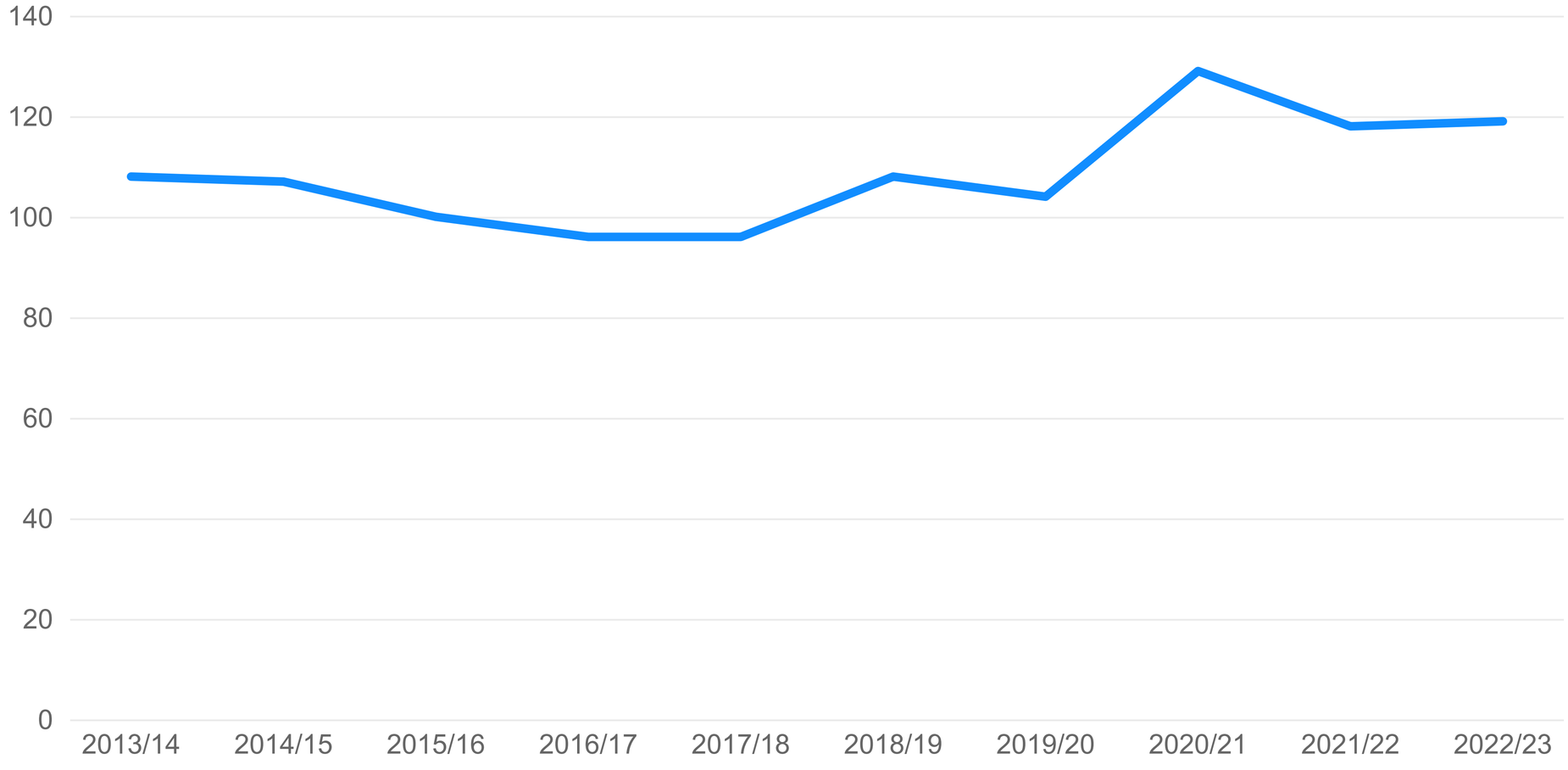
NHS hospitals have a 12-week target waiting time (under 84 days) for patients requiring elective coronary artery bypass grafting (CABG).

This time starts once the patient has gone through coronary angiography.

Waiting times had fallen to 96 days in 2017/18 but then started rising, with a sharp increase during the COVID-19 pandemic when they reached an average of 129 days.

In 2022/23, elective patients waited 119 days for their CABG operation.

Average waiting time (days) from angiography to elective CABG operation

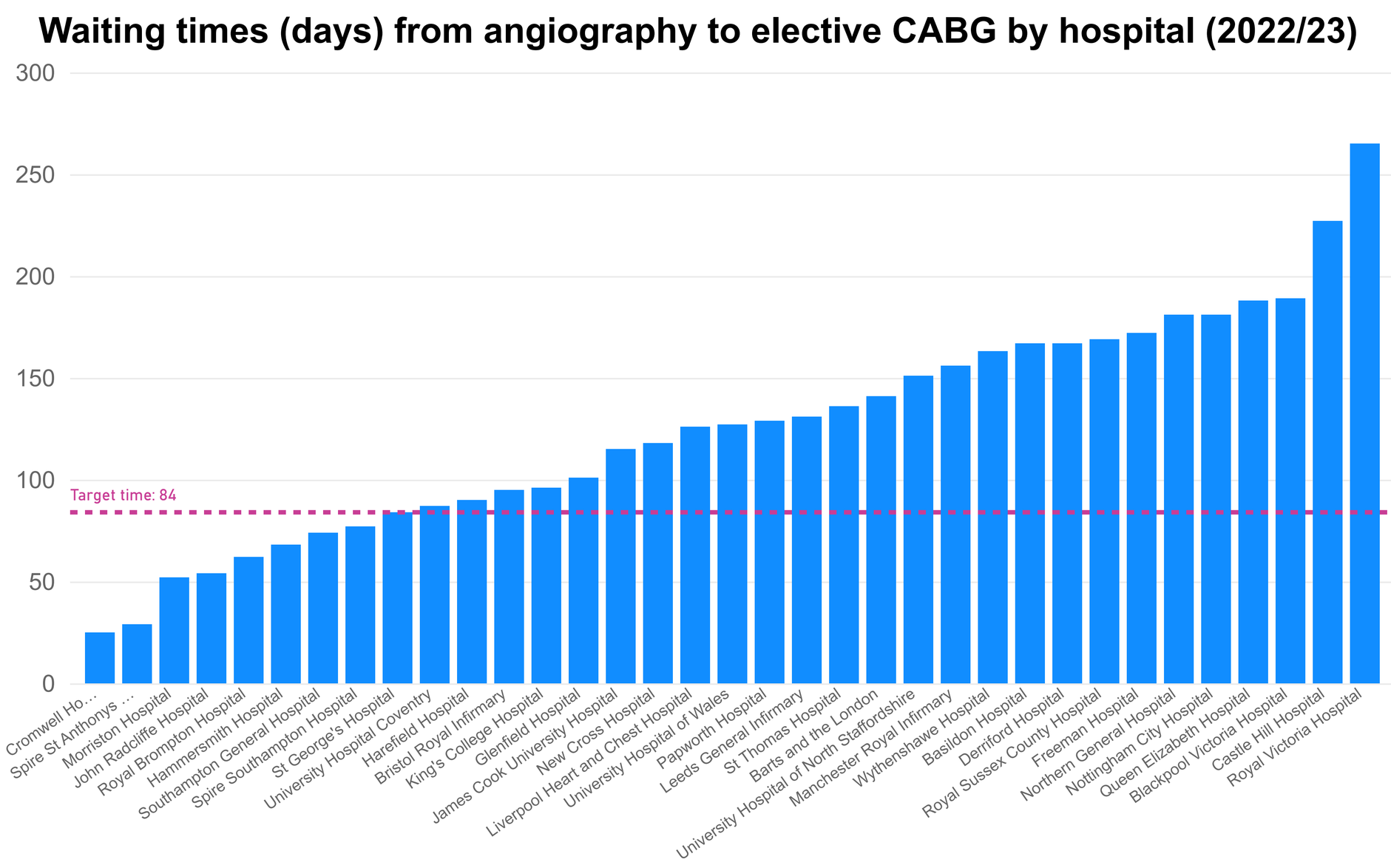


In 2022/23, only six NHS hospitals hit the target waiting time for elective CABG

In 2022/23, the waiting time for elective coronary artery bypass grafting (CABG) was 126 days (based on hospital-level averages).

Six NHS hospitals met the 12-week target (84 days) with a shortest waiting time of 52 days.

The longest waiting times were 227 days in England and 265 days in Northern Ireland.



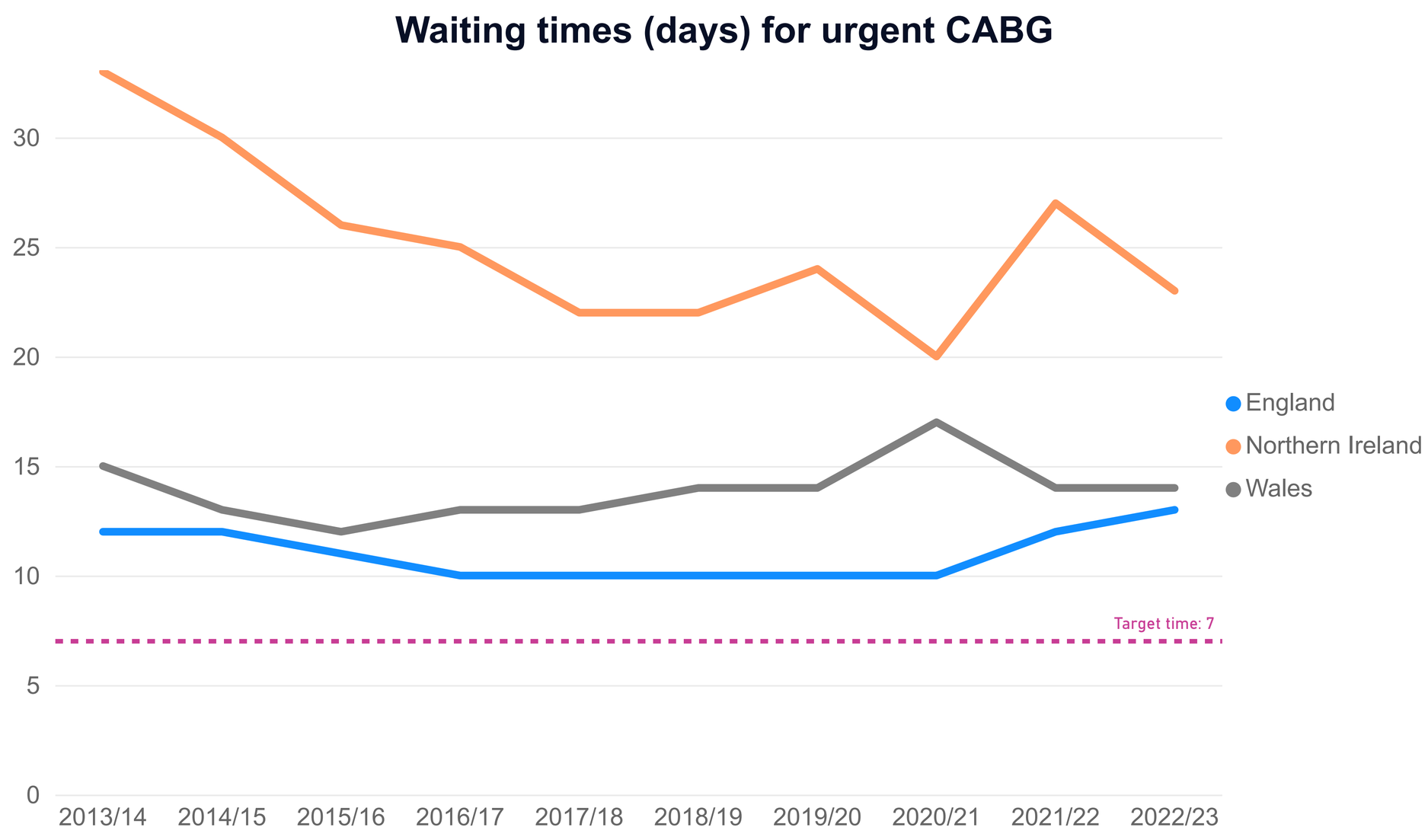
Urgent coronary artery bypass graft surgery waiting times are significantly longer than the NHS target

Current NHS targets specify that patients requiring urgent coronary artery bypass graft (CABG) surgery should receive this within seven days of diagnostic angiography.

In England the average wait had averaged 10 days prior to the COVID-19 pandemic but rose to 13 days in 2022/23.

In Wales, the wait for urgent CABG was 14 days in 2022/23.

Although there has been some improvement from 2021/22, the wait in Northern Ireland is much the longest at 23 days.



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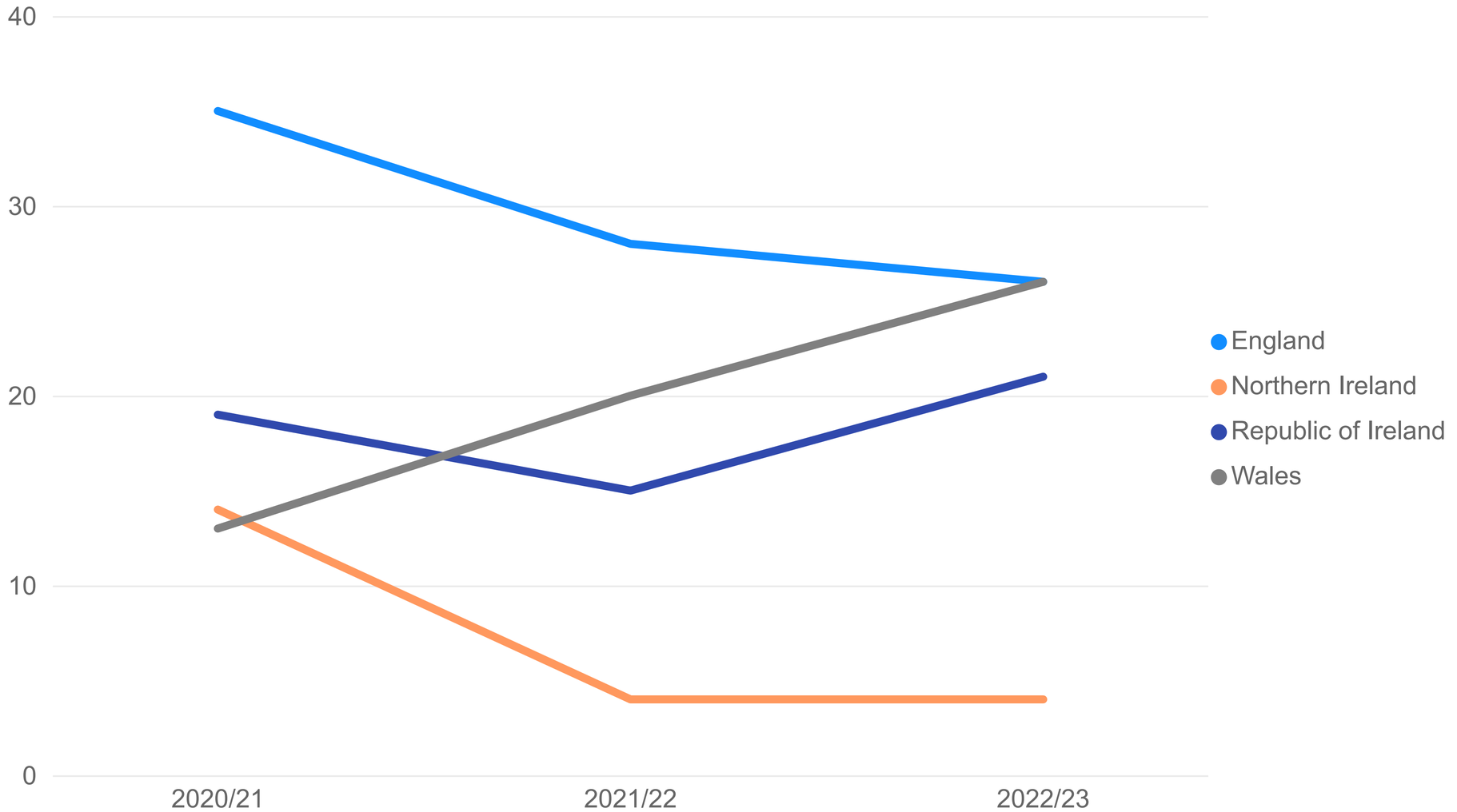
Only one in four patients requiring urgent CABG are operated on within seven days in England and Wales, and only one in 25 in Northern Ireland

The overall proportion of patients requiring urgent coronary artery bypass graft (CABG) surgery being treated within the 7-day target is falling in England. The figure was 35% in 2020/21 but fell to 26% in 2022/23.

The performance has improved in Wales and is now the same as in England (at one in four patients). There has been improvement also in the Republic of Ireland.

Only 4% of patients in Northern Ireland are operated on within seven days of angiography.

Percentage of patients undergoing urgent CABG within 7-day target by country

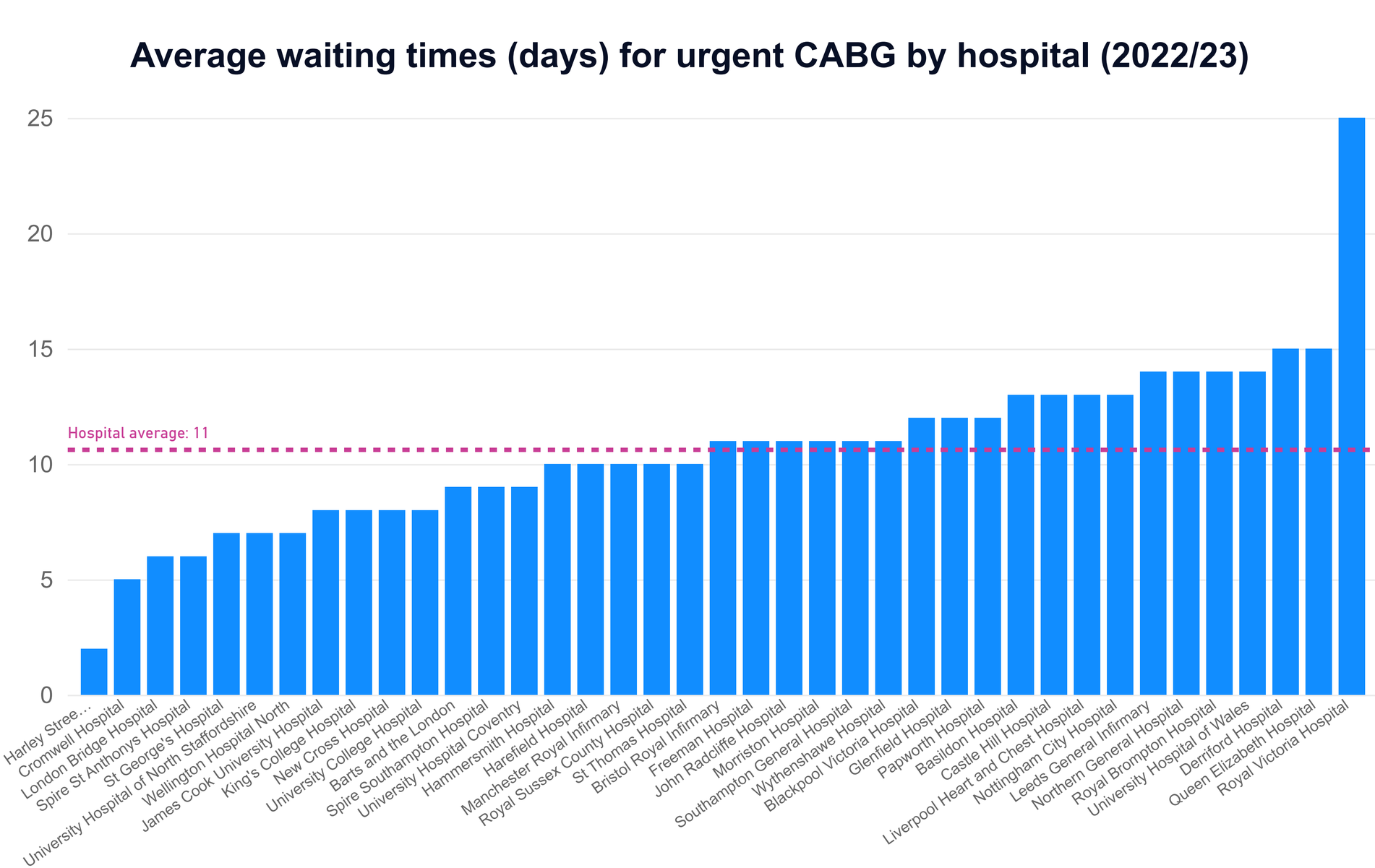


Only two NHS hospitals met the 7-day target for performing urgent CABG operations in 2022/23

In 2022/23, two NHS hospitals achieved the target of performing coronary artery bypass graft (CABG) for urgent patients within seven days on average (from time of angiography to surgery).

The average of the hospital waiting times was 11 days.

There is considerable variation in waiting times between hospitals with seven NHS hospitals having average waiting times of 14 days or more for urgent CABG surgery.



In 2022/23, no hospital achieved the target of operating on 75% of patients requiring urgent CABG within seven days of angiography

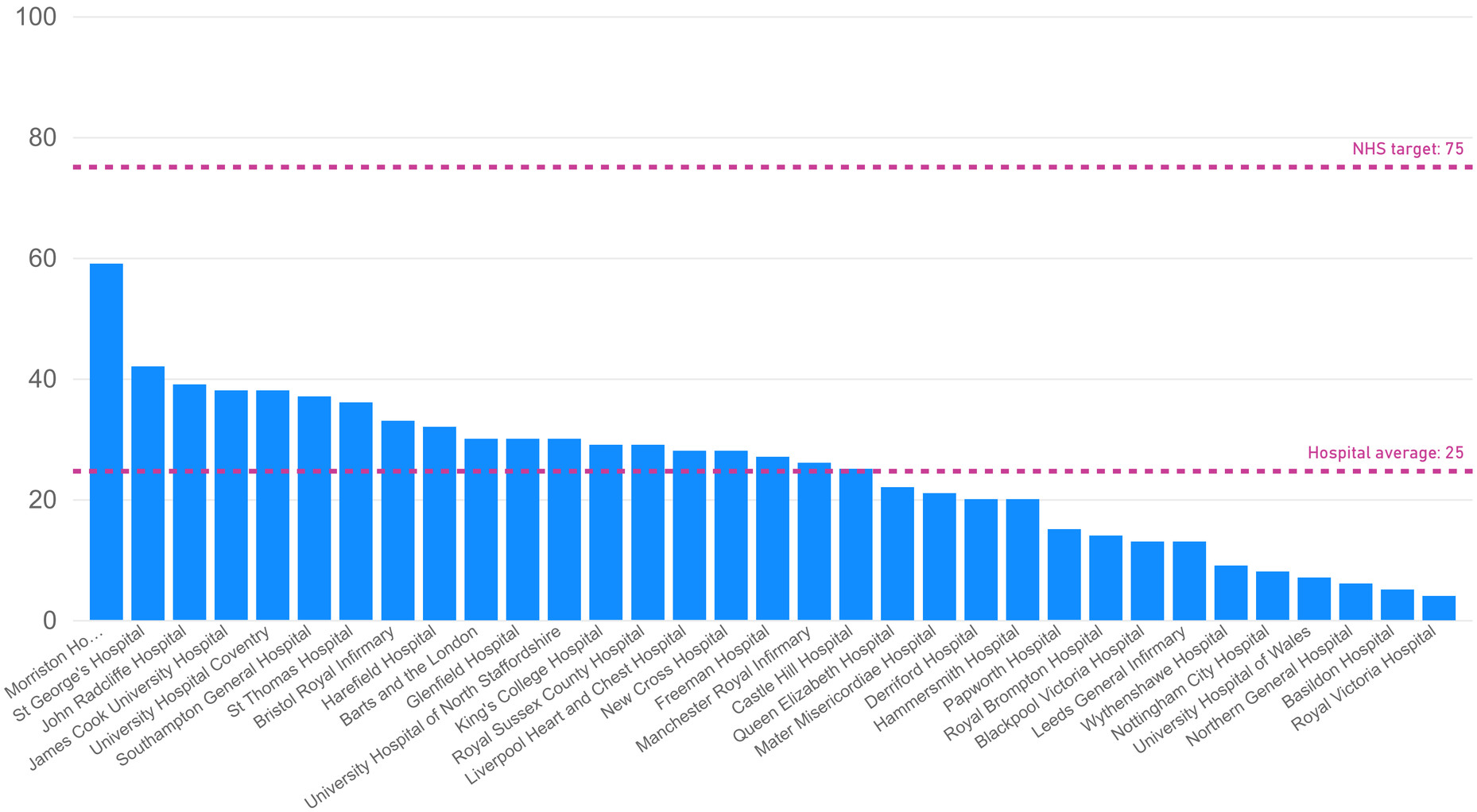
A target has been set for 75% of patients requiring urgent coronary artery bypass grafting (CABG) to have this performed within seven days of angiography.

In 2022/23, no hospital achieved this waiting time target.

The best performing hospital achieved this for 59% of patients while the average across all hospitals was 25%.

Twelve hospitals performed 20% or less of their urgent operations within seven days.

Percentage of patients undergoing urgent CABG within 7-day target by hospital (2022/23)



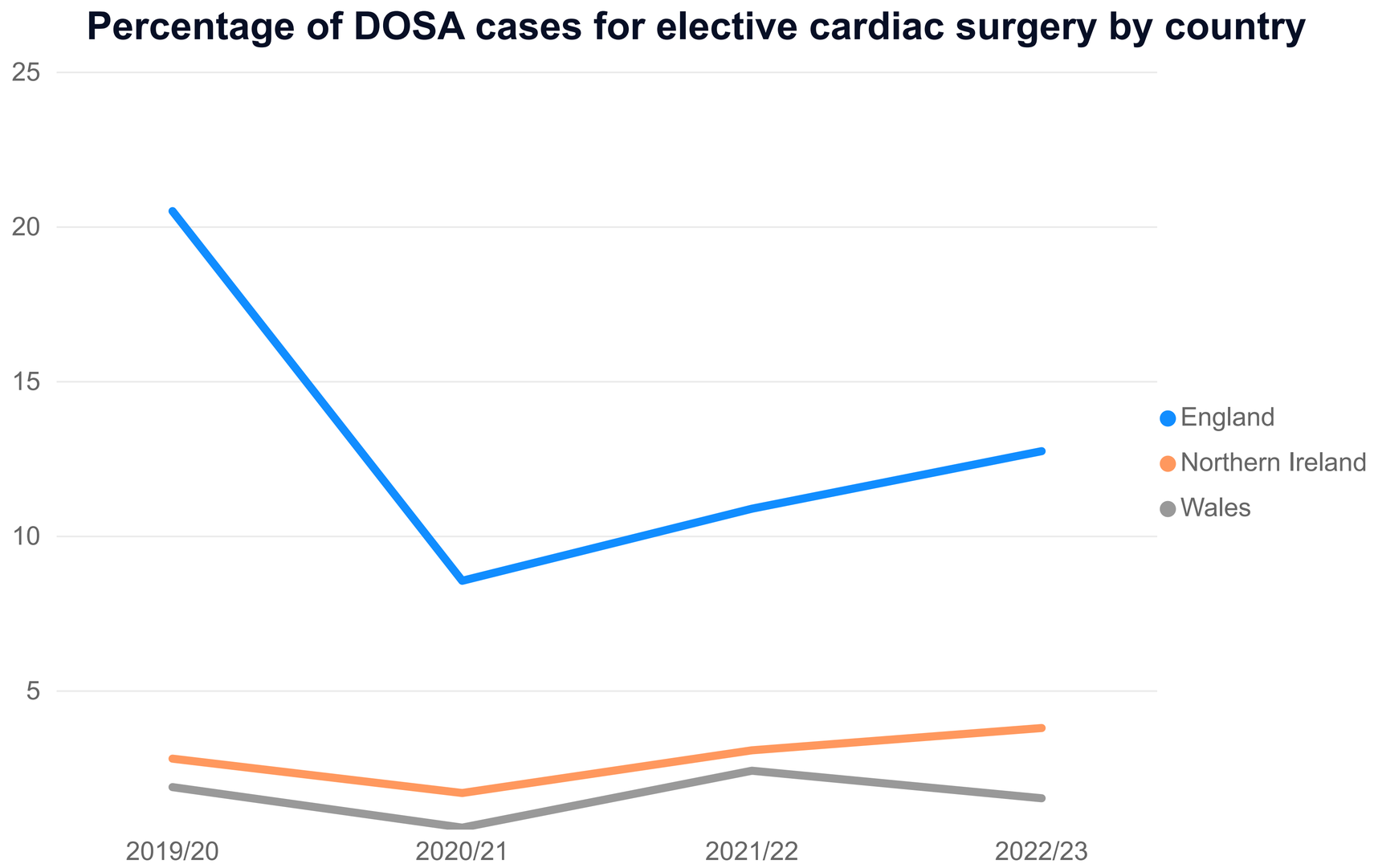
Following the pandemic, there is a slow rise in the proportion of patients with 'day of surgery admission' (DOSA) for elective cardiac surgery

The 2018 Getting It Right First Time (GIRFT) report recommended that all patients undergoing elective cardiac surgery should have day of surgery admission (DOSA).

This requires effective pre-operative assessment clinics which reduce the likelihood of operations being cancelled for medical reasons. It also allows greater efficiency in ward bed usage and reduces hospital costs.

The audit target is that 50% of elective patients should be DOSA cases. In 2019/20, England achieved over 20% while Wales and Northern Ireland were both under 5%.

The COVID-19 pandemic made achieving DOSA challenging, as it was difficult to run the necessary face-to-face pre-operative clinics. DOSA rates in England have since improved but are still well under pre-pandemic levels.



In 2022/23, only one NHS hospital achieved the audit target for 50% of elective cardiac surgery cases to have day of surgery admission

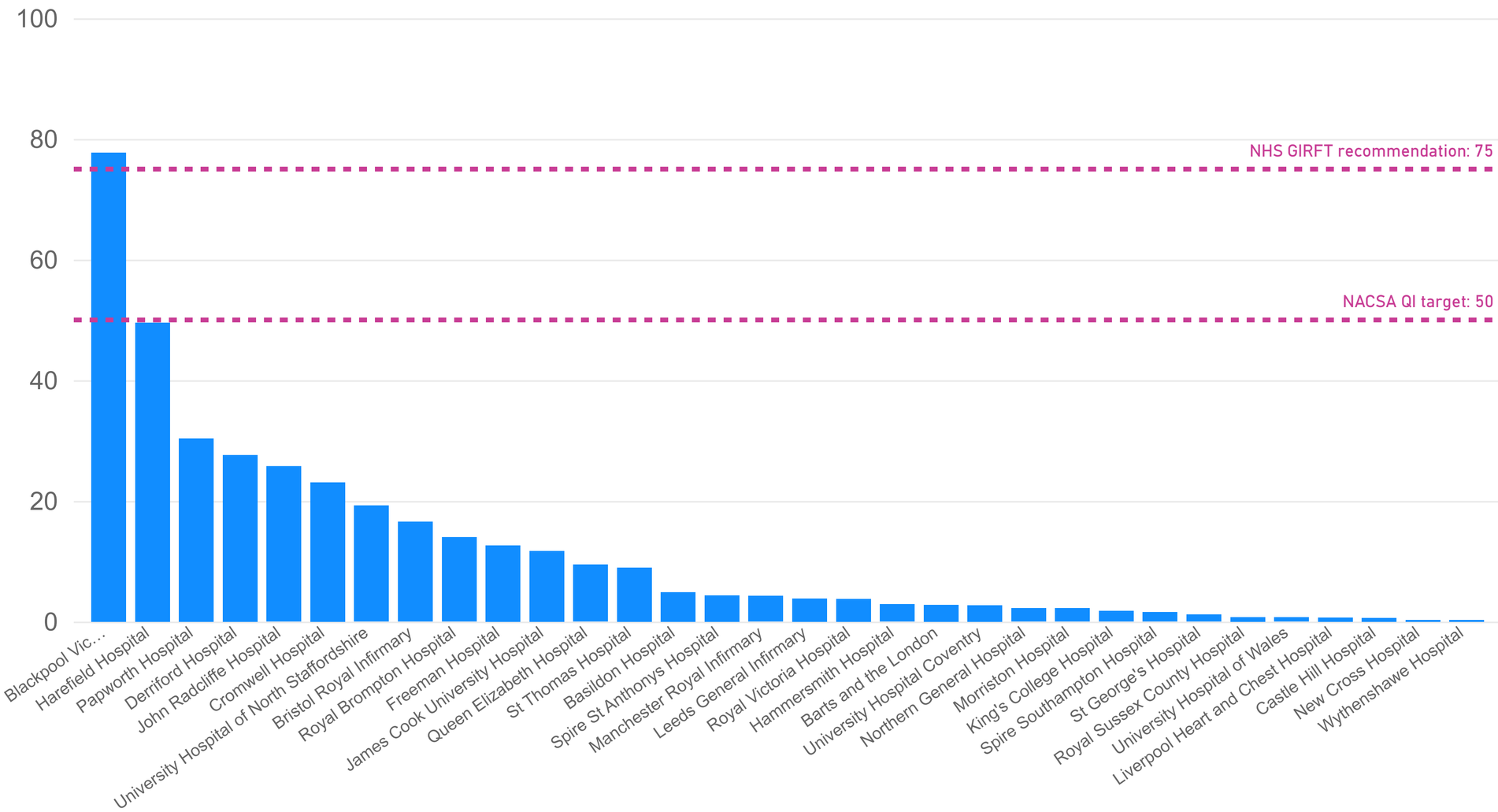
The NACSA audit promotes a target of 50% of elective patients to have day of surgery admission (DOSA).

This is a quality improvement (QI) 'stepping stone' on the way to achieving the ambition of 75% recommended by the NHS Getting It Right First Time (GIRFT) recommendations.

In 2022/23, only two NHS hospital got close to or surpassed the 50% target, with one of those also delivering the GIRFT ambition for DOSA.

Seventeen NHS hospitals had DOSA rates of less than 5%.

Percentage of DOSA cases for elective cardiac surgery by hospital (2022/23)



The average post-operative length of stay after CABG is eight days

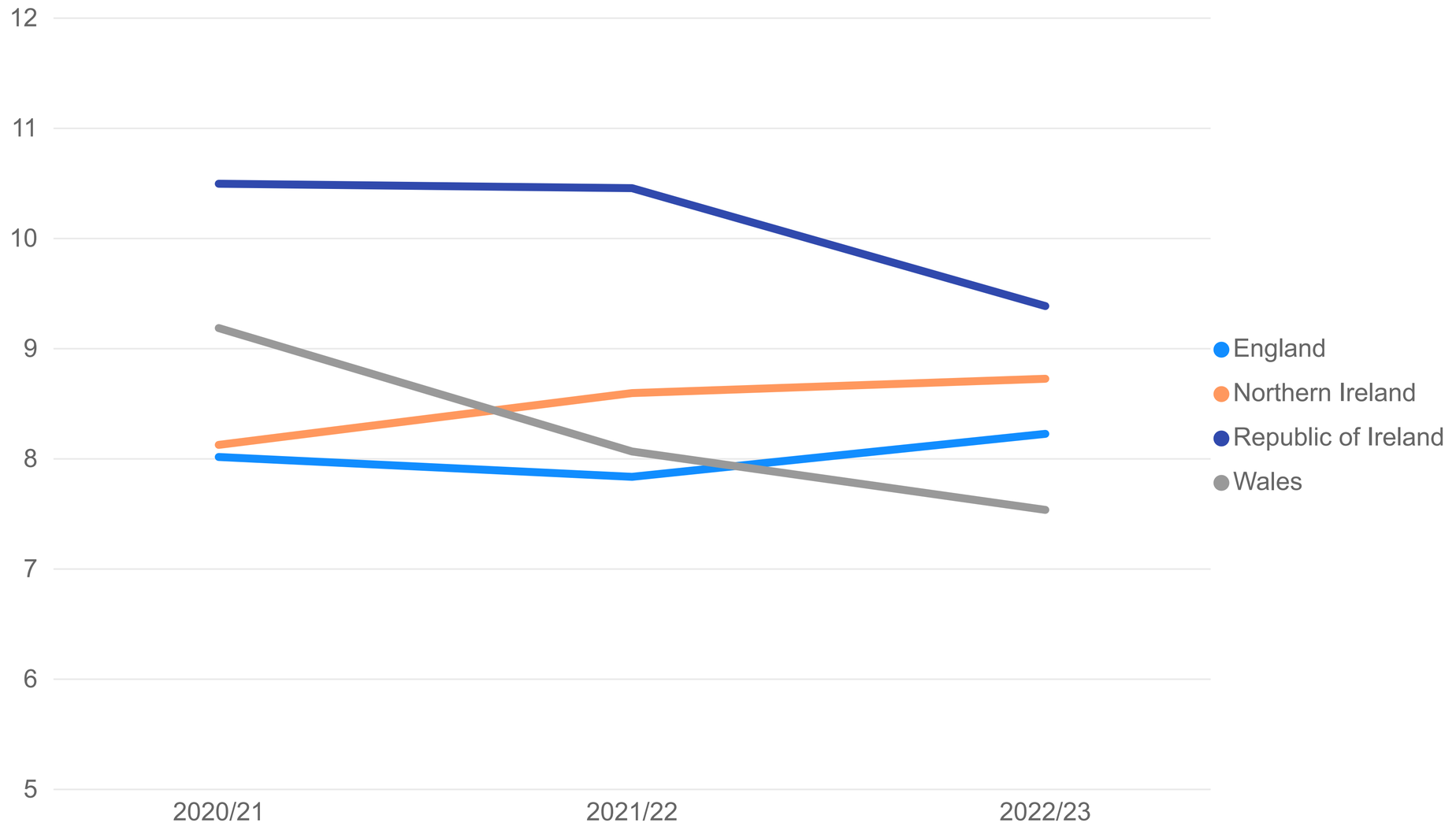
Post-operative length of stay (PLOS) following CABG surgery depends on a variety of factors including patient age and co-morbidity.

It also reflects rates of post-operative complications that may delay discharge (such as heart rhythm disturbances, stroke or wound infections).

A shorter PLOS is likely to reflect efficient bed usage and lower complication rates following surgery.

The PLOS figures in Wales have fallen from 9.2 to 7.5 days over the last 3 years, as have those in the Republic of Ireland whereas the times in Northern Ireland and England have risen slightly to 8.7 and 8.2 days respectively.

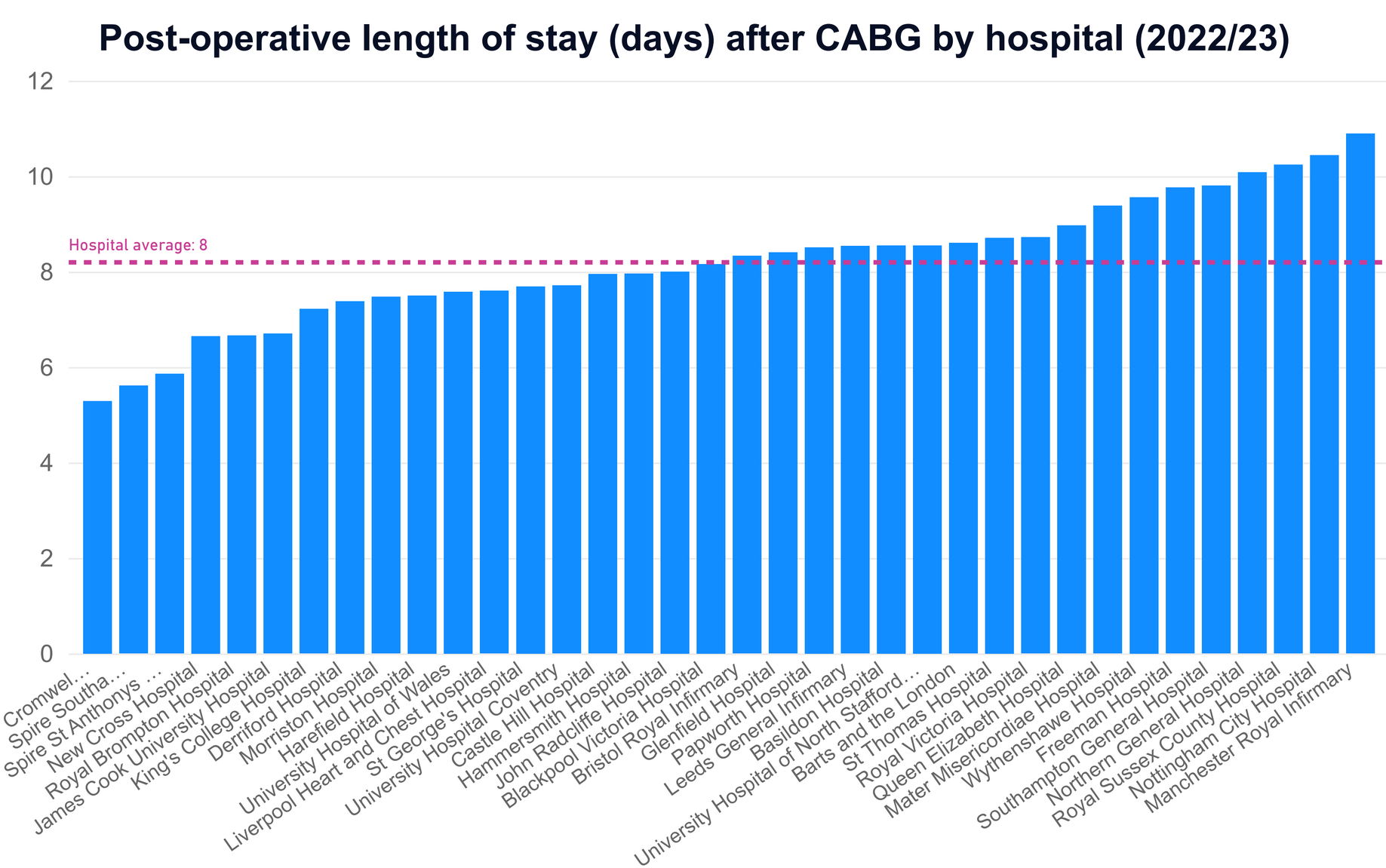
Post-operative length of stay (days) in hospital after CABG by country



The post-operative length of stay for the best performing NHS hospitals is a third shorter than those with the longest

The average PLOS across all hospitals was eight days.

The shortest average PLOS following CABG in an NHS hospital was 6.6 days while the longest was 10.9 days.



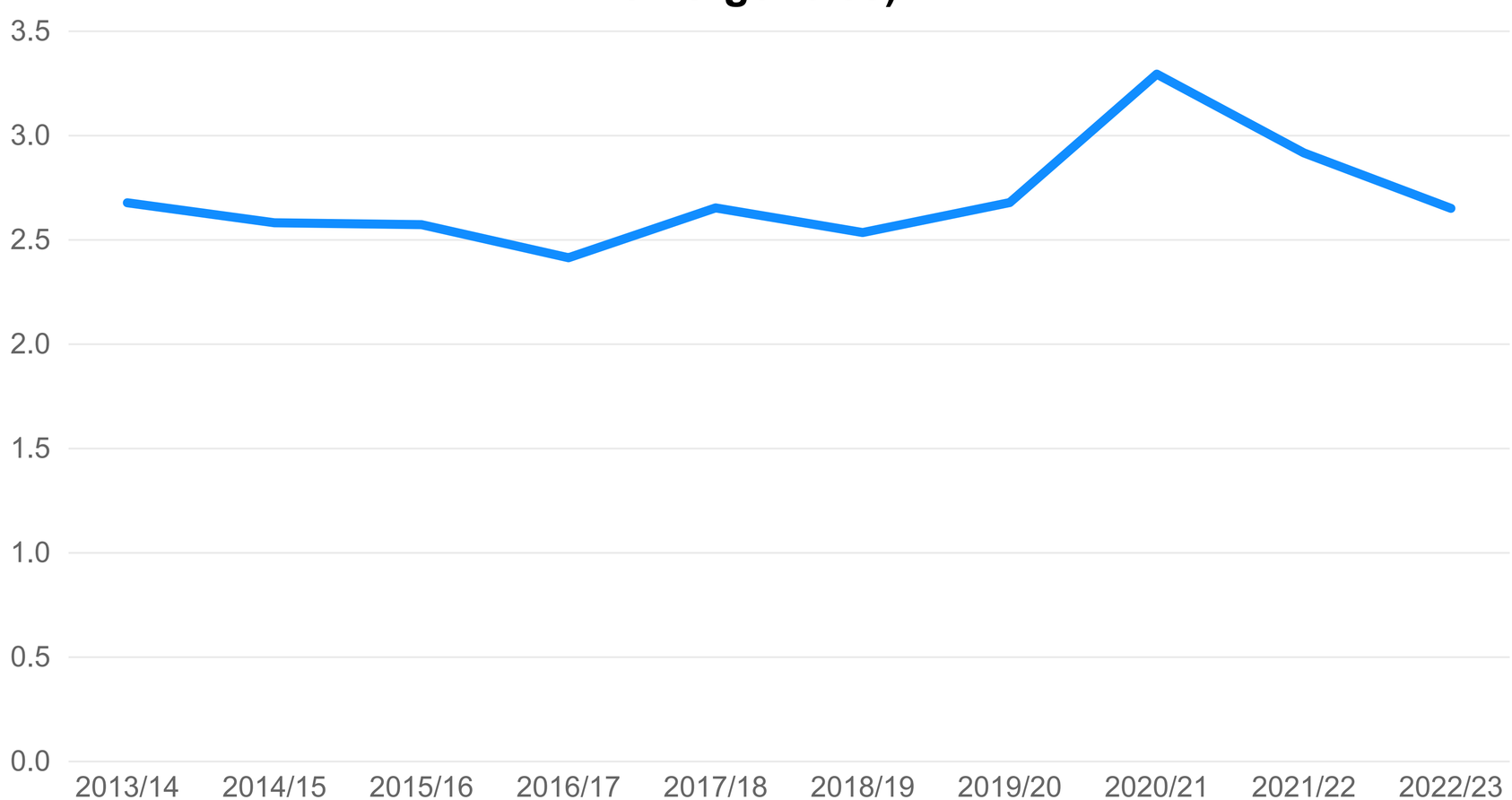
The overall in-hospital mortality rate for all cardiac surgery cases (including emergencies) was 2.6% in 2022/23, a return to pre-pandemic levels

Unadjusted (crude) mortality rates following all heart surgery, including emergencies, had somewhat plateaued up to 2019/20.

During the COVID-19 pandemic, crude mortality rose to 3.3%, a result of fewer elective cases and relatively more urgent and emergency cases being operated on.

In 2022/23, the mortality rate returned to its pre-pandemic level at 2.7%.

Unadjusted in-hospital mortality rate (%) for all procedures (including emergencies)



The NACSA audit uses risk-adjusted methods to compare outcomes at different hospitals performing cardiac surgical procedures

NACSA has worked with University College London Department of Statistical Science to develop a risk adjustment model to allow the outcomes of different hospitals to be compared.

A random effects model is used to infer outlier status for each hospital (details of the methodology can be found here).

The results of the latest analysis are displayed on the next slide using a forest plot (note these shows survival rates, the inverse of the mortality rates).

- Performance that is within expected limits (black dot) based on the survival probability using a random effects model.
- The observed survival (square) is the actual survival rate for each hospital. Certain high-risk procedures are excluded (details are available here).
- Predicted survival rate (X) is calculated using an annually recalibrated version of EuroSCORE logistic.

The y-axis has the abbreviated code for each hospital. Hovering over the button 'List of hospital names' shows the code for each hospital.

The numbers of operations performed in the last three years and the percentage data completeness are also shown.

All cardiac surgical centres are performing 'as expected'

All UK hospitals in the UK have survival / in-hospital mortality rates after cardiac surgery that are 'as expected' during the last three years (2020/21 to 2022/23).

The UK average survival rate during this three year period was 98.2%.

See previous slide for an overview of the methods used.

This visual does not support exporting.

List of hospital names

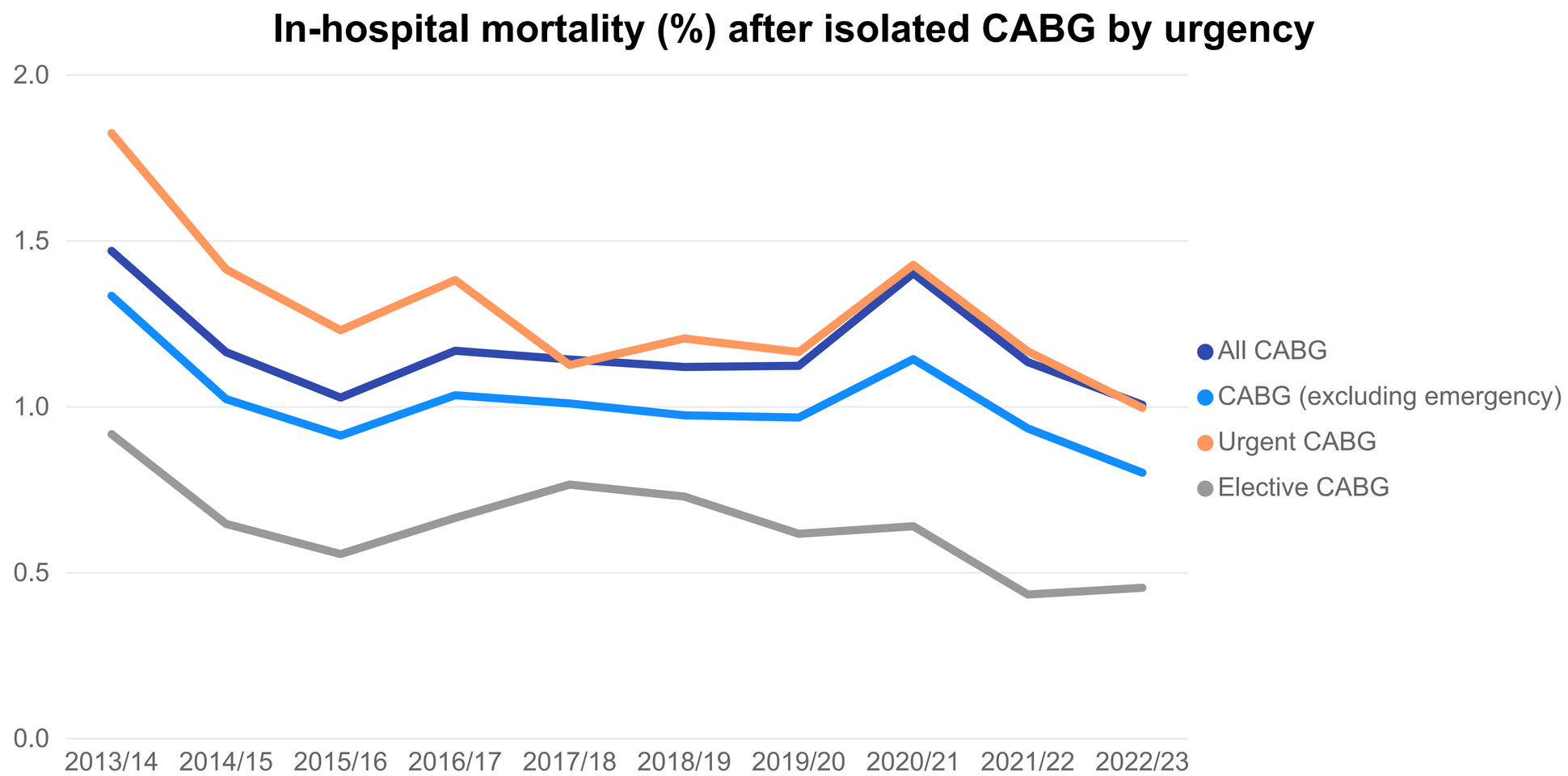
Key:
Black dot: Survival rate using random effects model is as expected
Open square: Actual survival rate
Black X: Predicted survival rate
Numbers in brackets after hospital code: Number of operations over three years and % data completeness

Unadjusted mortality rates following urgent isolated CABG are at a new low of 1% and rates for elective surgery are less than 0.5%

In-hospital unadjusted mortality rates after isolated CABG have been declining over the last decade.

Despite a slight rise in unadjusted mortality during the pandemic and a trend towards more operations being performed on an urgent basis, the overall mortality rate fell from 1.5% in 2013/14 to 1.0% in 2022/23.

Mortality after elective CABG was 0.45%.



In-hospital mortality rates after isolated aortic valve replacement are low, even when combined with coronary artery bypass grafting

In-hospital mortality after aortic valve replacement (AVR) has also been falling through the last ten years.

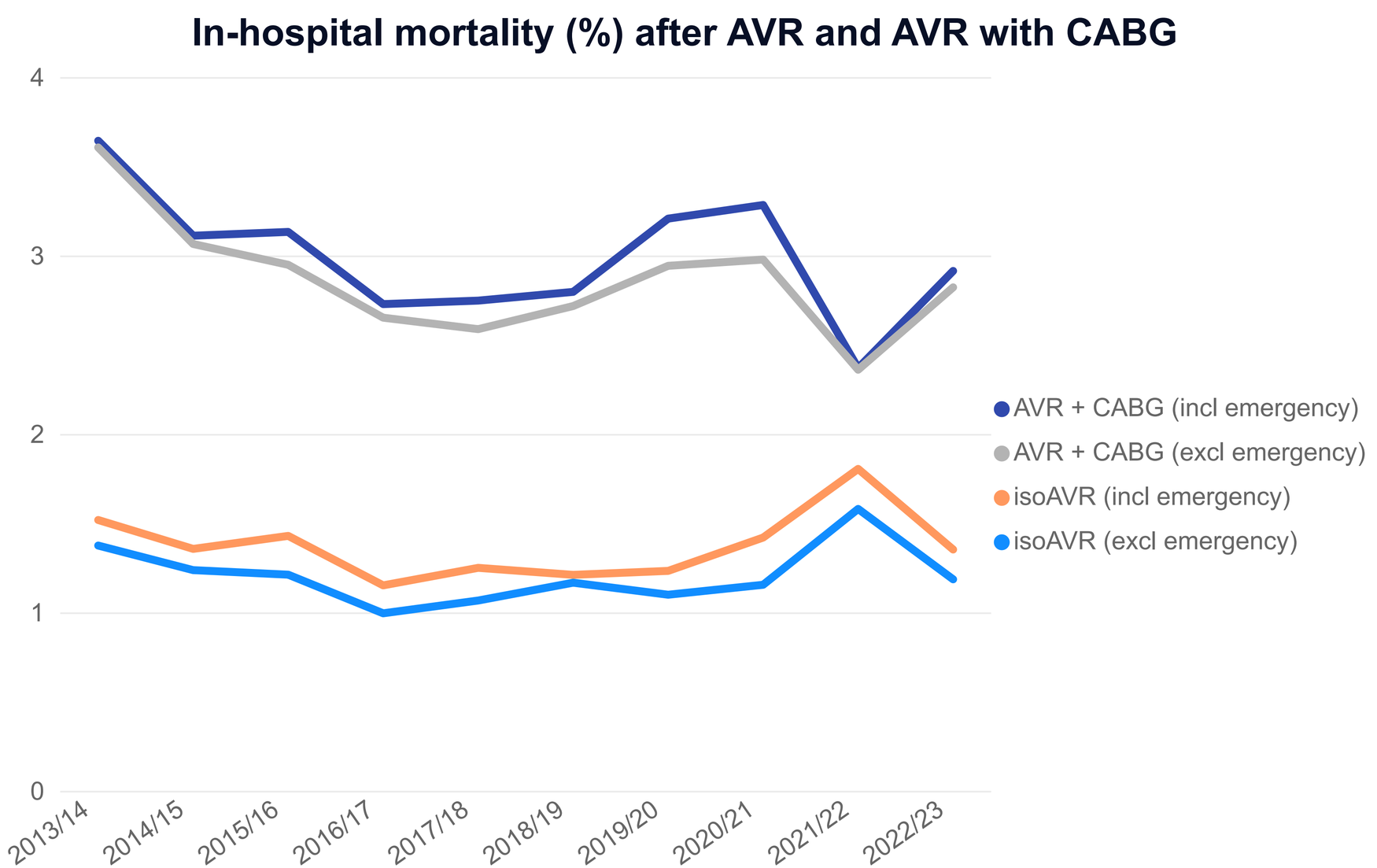
In 2022/23, the mortality rate for non-emergency cases was 1.2% for isolated AVR and 2.8% for combined AVR and coronary artery bypass graft (CABG) surgery.

The increasing mortality during the COVID-19 pandemic was probably because of changes to case mix changes.

The fall in mortality following AVR predates the rapid increase in transcatheter aortic valve implantation (TAVI) in recent years.

Recent changes in patient profiles, as more patients have TAVI (especially the elderly and higher-risk cases), will probably have contributed to improvements as well.

Greater use of pre-operative multi-disciplinary teams (MDTs) for deciding on the best treatment options for aortic valve disease may also explain better outcomes.

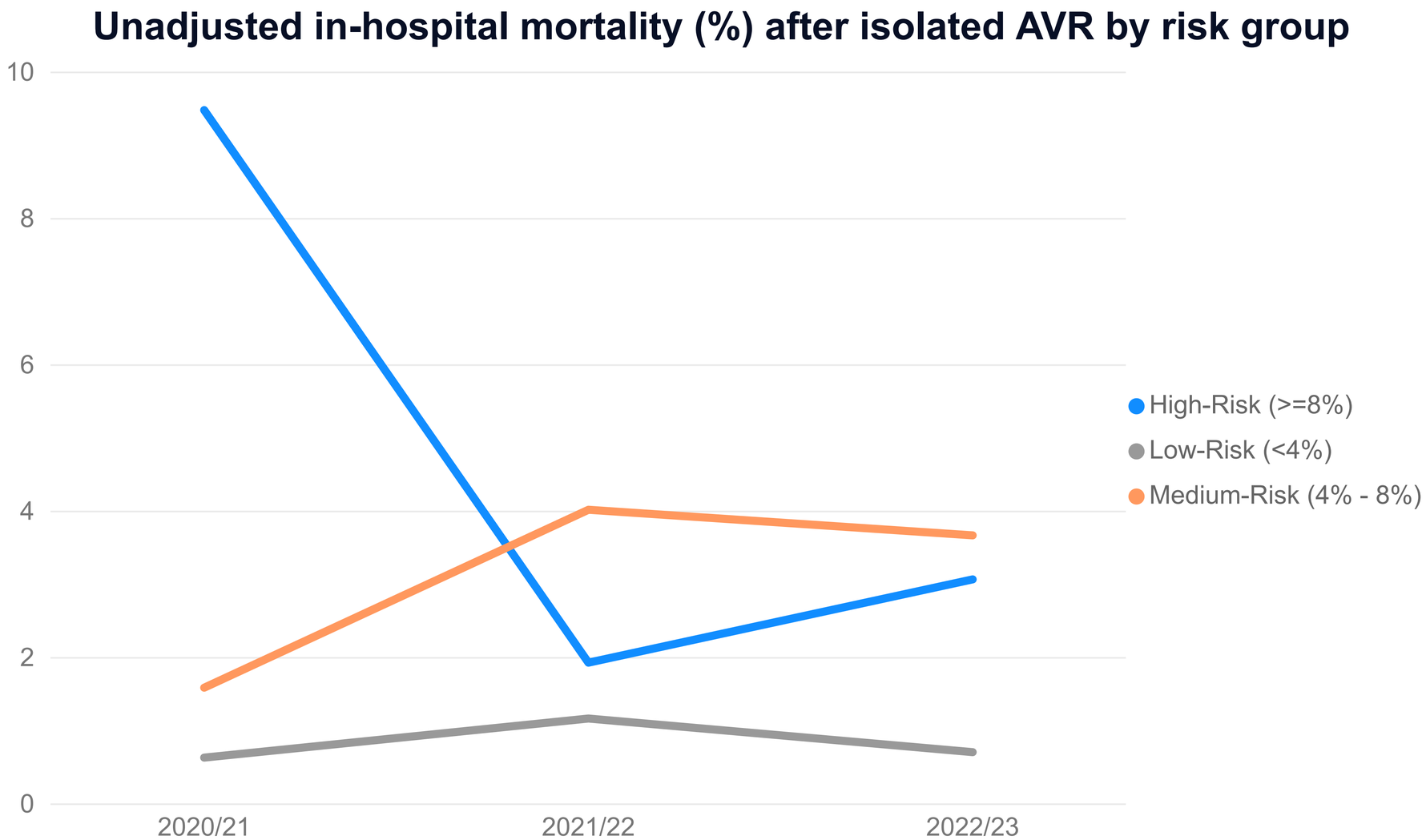


Mortality after isolated aortic valve replacement operations is lower than predicted in all risk groups

The results for the surgical treatment of aortic valve disease are excellent. In 2022/23, the mortality for aortic valve replacement (AVR) cases for low-risk patients (EuroSCORE2 <4%) was 0.7%.

This group makes up the vast majority (89%) of all cases performed.

Mortality for medium-risk AVR cases (EuroSCORE2 4-8%) was 3.7% and 3.1% for high-risk (EuroSCORE2 >=8%).



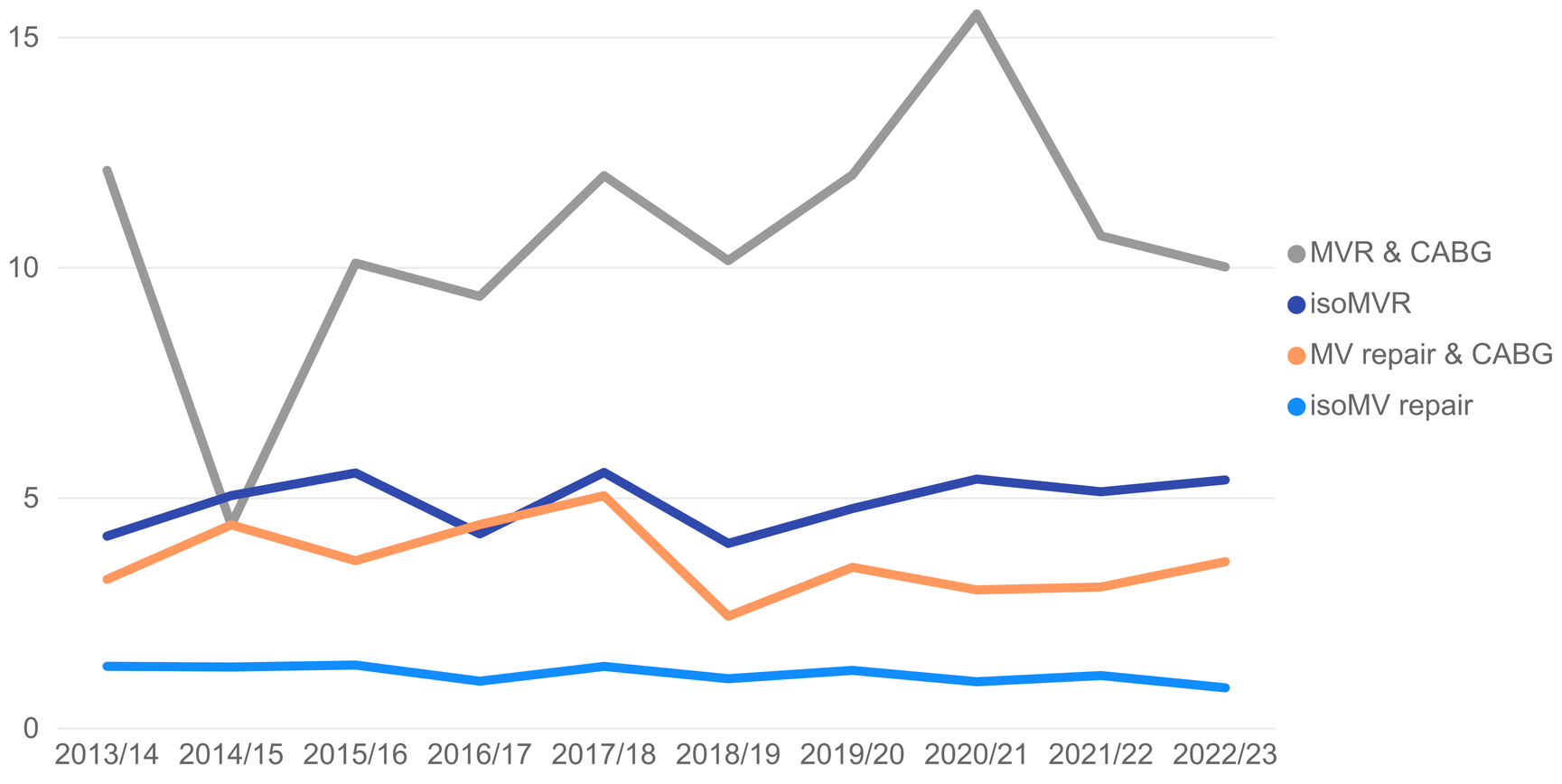
The unadjusted in-hospital mortality rates after mitral valve repairs is lower than for mitral valve replacements

In-hospital mortality after mitral valve (MV) repair is low and has been gradually falling over the last decade (from 1.3% in 2013/14 to 0.9% in 2022/23).

Unadjusted mortality rates are higher after MV replacements (MVRs) compared to repairs.

Relatively few operations are performed where MVR is combined with coronary artery bypass grafting (CABG). The unadjusted mortality rates for this are higher than for isolated MV operations (at around 10%).

Unadjusted in-hospital mortality rates (%) after mitral valve operations (with and without CABG)



In 2022/23, the re-operation rate for bleeding following CABG ranged from zero to 3.9%

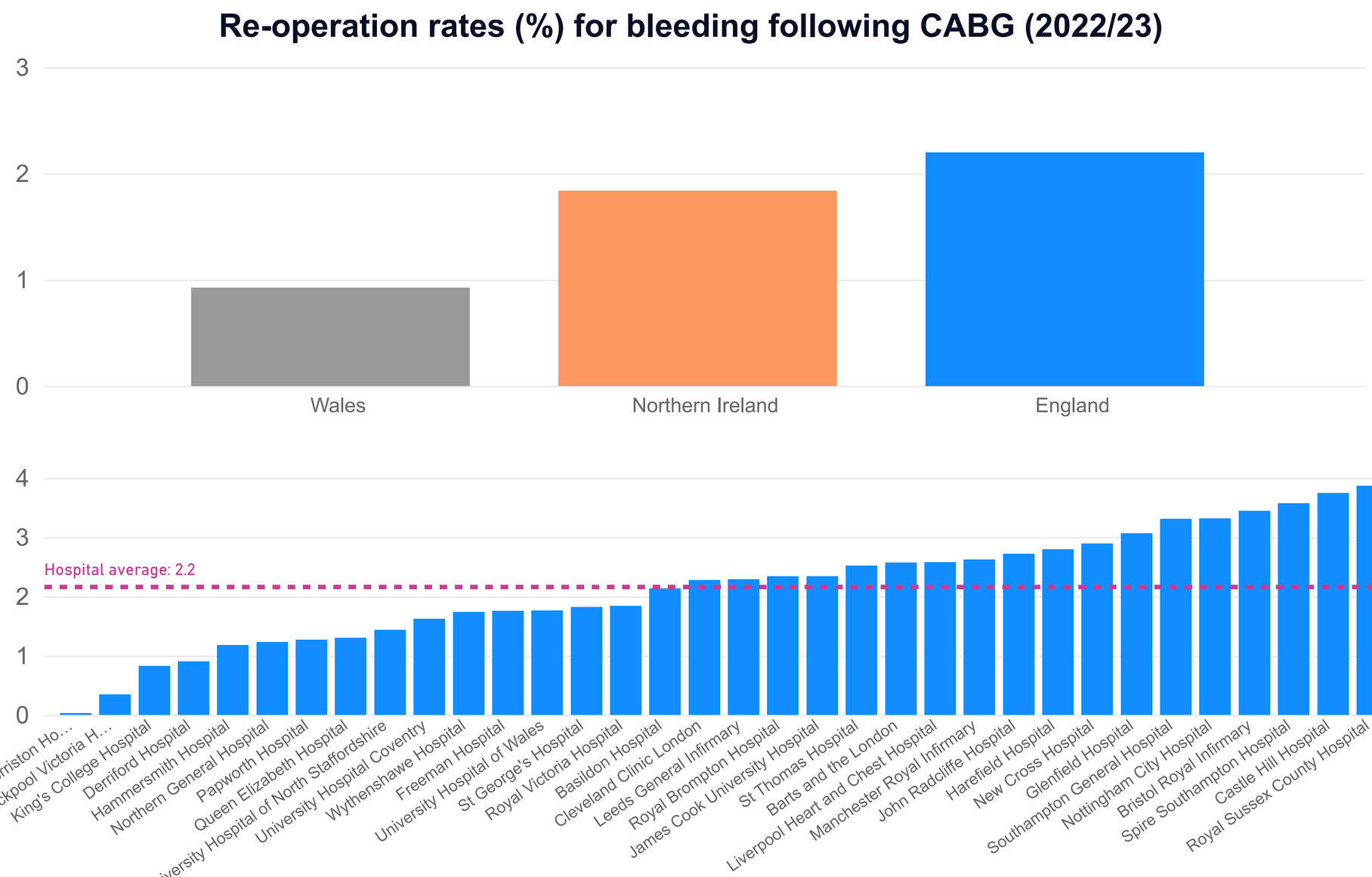
On average, 2.2% of patients undergoing coronary artery bypass grafting (CABG) in England required re-operation for bleeding following their surgery compared with 0.9% in Wales and 1.8% in Northern Ireland.

Many factors influence bleeding rates, including patient comorbidity and frailty, pre-operative drugs (especially anticoagulant and antiplatelet therapies), urgency of operation, as well as operative technique.

One NHS hospital reported zero re-operations in 2022/23.

The highest rate in an NHS hospital was 3.9%.

Note: Morriston hospital had a 0% rate instead of 'No Data'.



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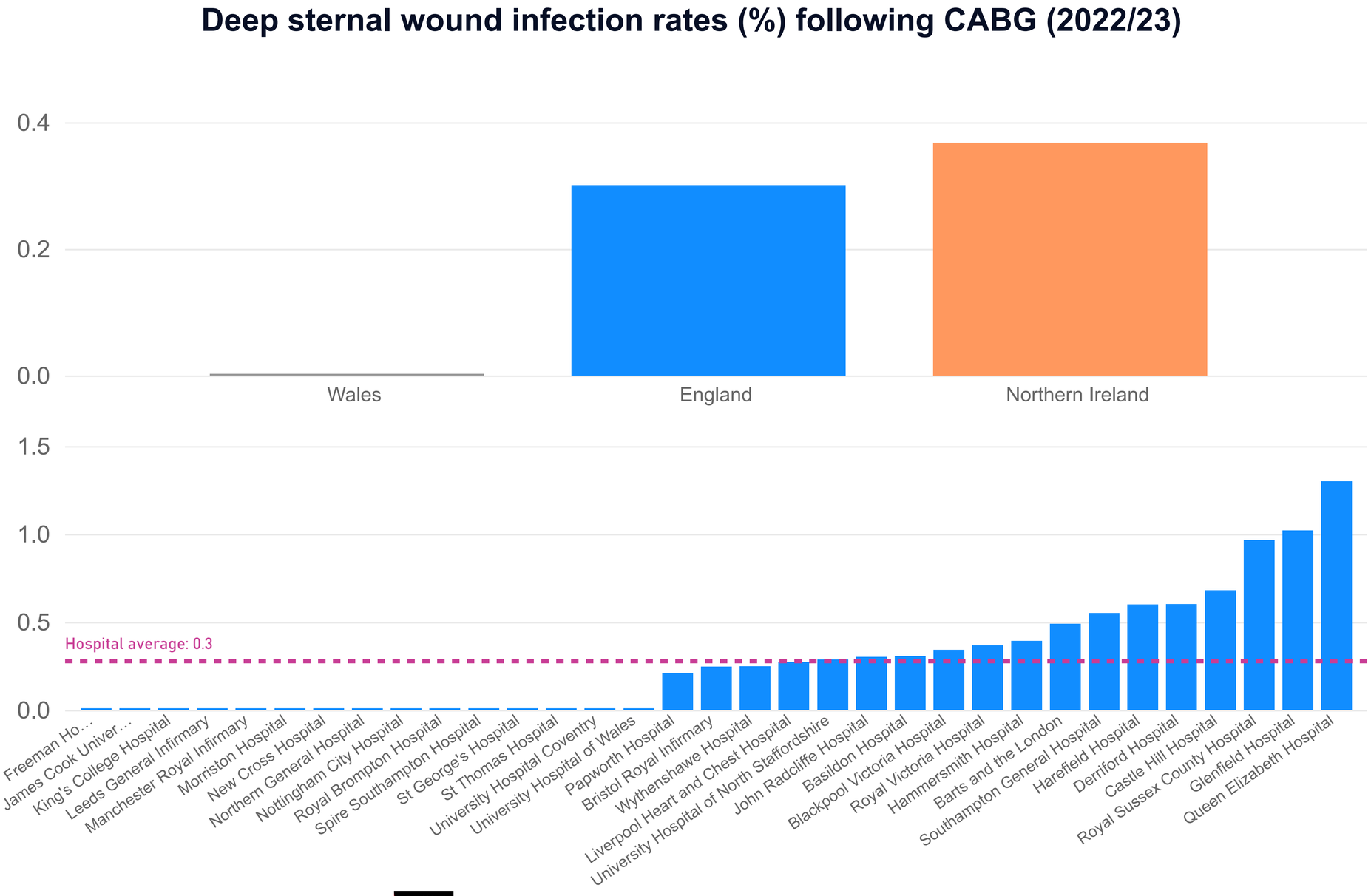
The rate of deep sternal wound infection following CABG is low

Deep sternal wound infection (DSWI) following coronary artery bypass grafting (CABG) that requires further surgery or debridement is a very-serious complication of cardiac surgery. It often leads to long-term after-effects or further complications for the patient.

Fortunately, rates of DSWI in the UK were low in 2022/23. No cases were reported in Wales and five hospitals in England recorded zero instances.

The overall rate across England was 0.3%, and 0.4% across Northern Ireland.

Note: There are five hospitals with 0% deep sternal wound rate (Morrison, Manchester Royal Infirmary, Royal Brompton, James Cook, and St Thomas' Hospitals). The ten other hospitals designated as 0% provided no data.



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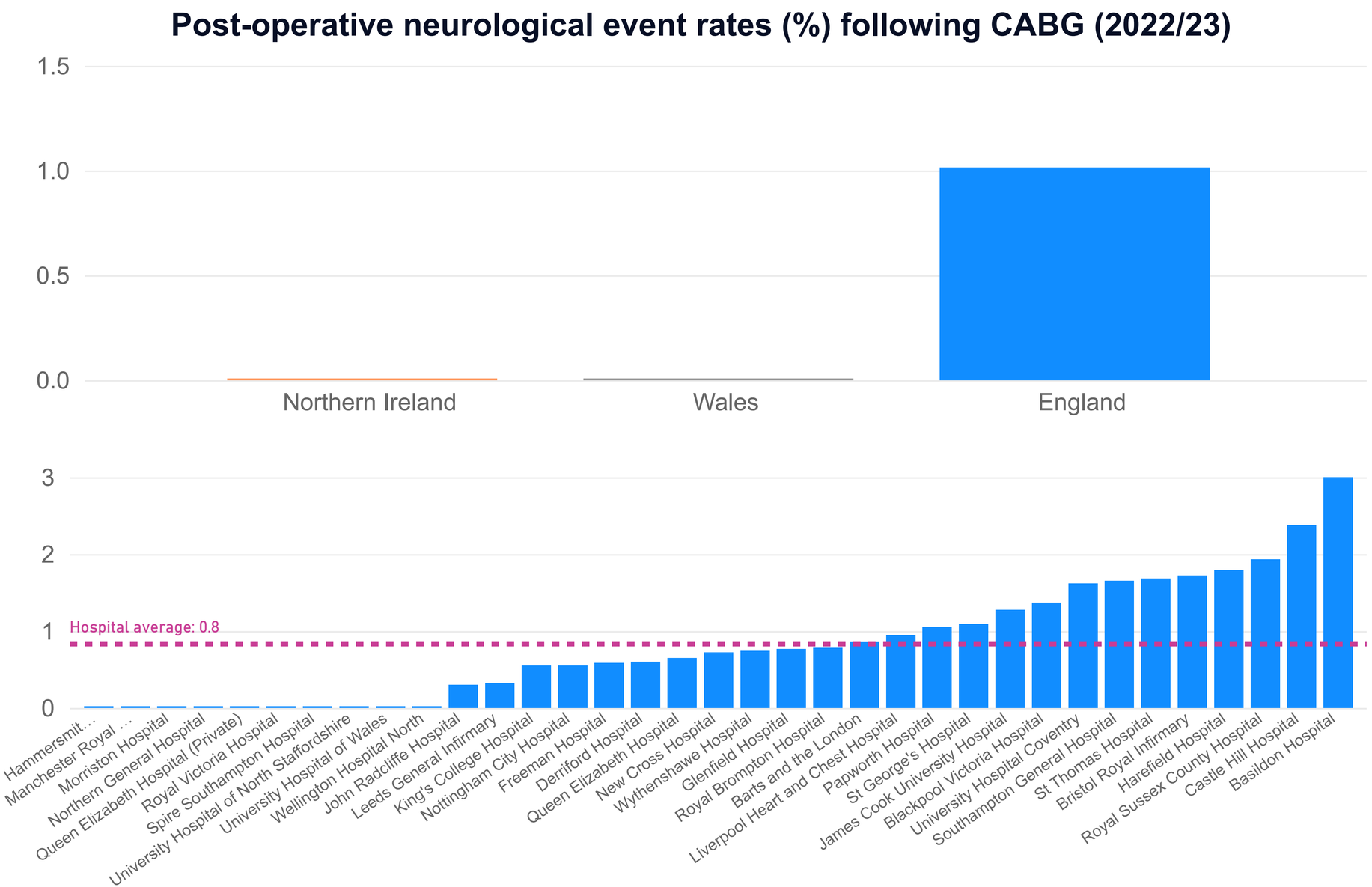
Serious post-operative neurological events following CABG occur in less than 1% of cases

Serious post-operative neurological events following coronary artery bypass grafting (CABG) include a cerebro-vascular accident (CVA, or stroke) and a transient ischaemic event (TIA).

The rate of serious post-operative neurological events has ranged from 0.53% to 0.64% in England over the last three years. In 2022/23, four NHS hospitals recorded no post-operative events. The highest rate was 3%.

Caution is needed in the interpretation of these data. Higher rates may reflect better detection and reporting of cases. Increased used of peri-operative CT scanning and Stroke Team input may identify cases that are less clinically obvious.

Note: There are five hospitals with 0% serious post-operative neurological events rate (Spire Southampton, Morriston, Manchester Royal Infirmary, Royal Victoria Belfast, and North Staffordshire). The other five hospitals designated as 0% did not provide data.



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The need for renal support therapy following CABG is low

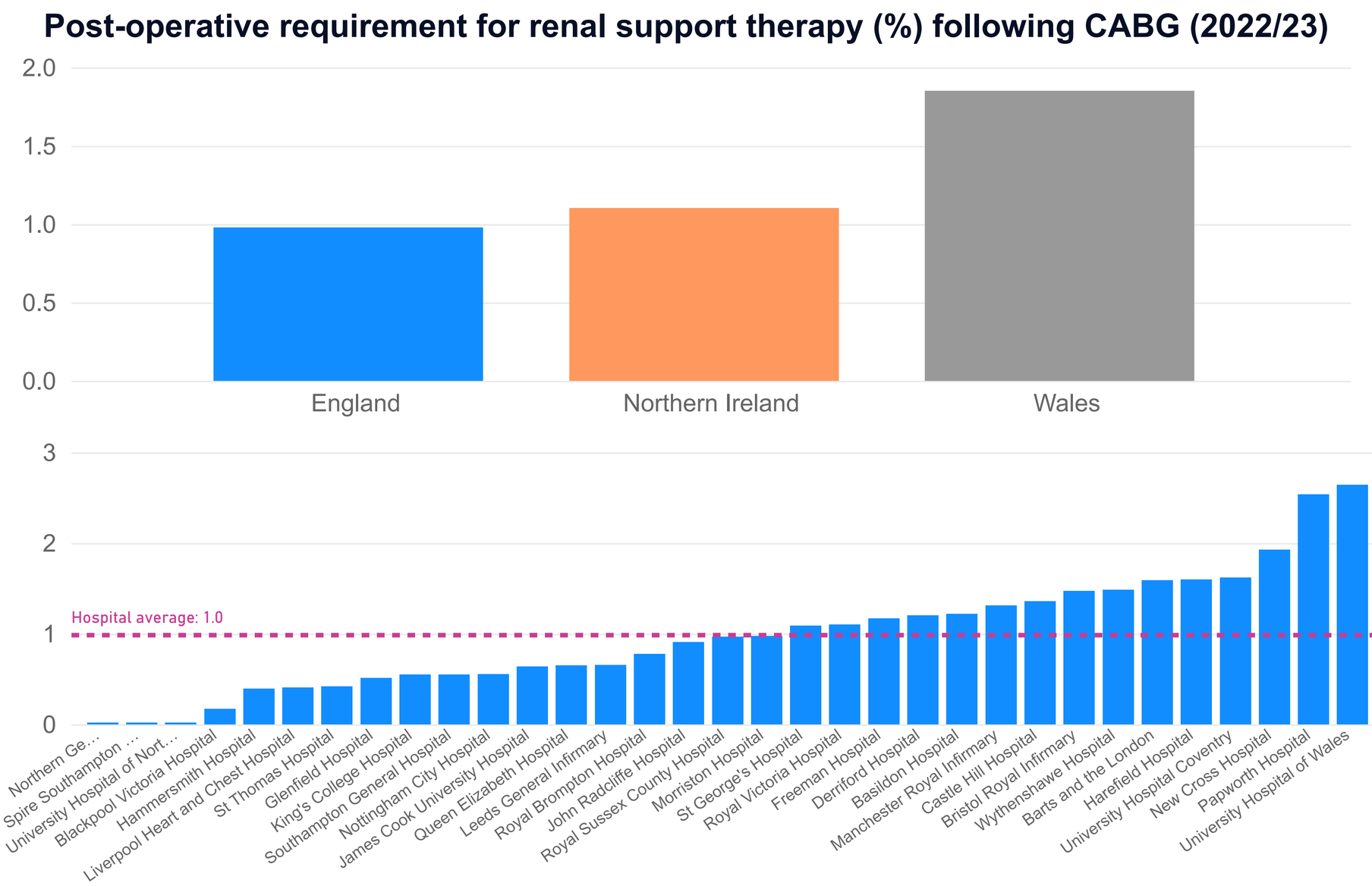
Kidney failure following surgery usually resolves, but not always. However, it is associated with worse outcomes, including a higher mortality rate, following cardiac surgery.

The rate of serious kidney failure (requiring renal dialysis or support therapy) following coronary artery bypass grafting (CABG) in England over the last three years has ranged from 0.98% to 1.45%.

Rates in Northern Ireland and Wales have been slightly higher than this.

In 2022/23, one NHS hospital reported no requirement for renal support therapy. The highest reported rate was 2.6%.

Note: University Hospital of North Staffordshire had a 0% rate but the other two hospitals designated as 0% provided no data.



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45% of patients undergoing isolated CABG received a blood transfusion

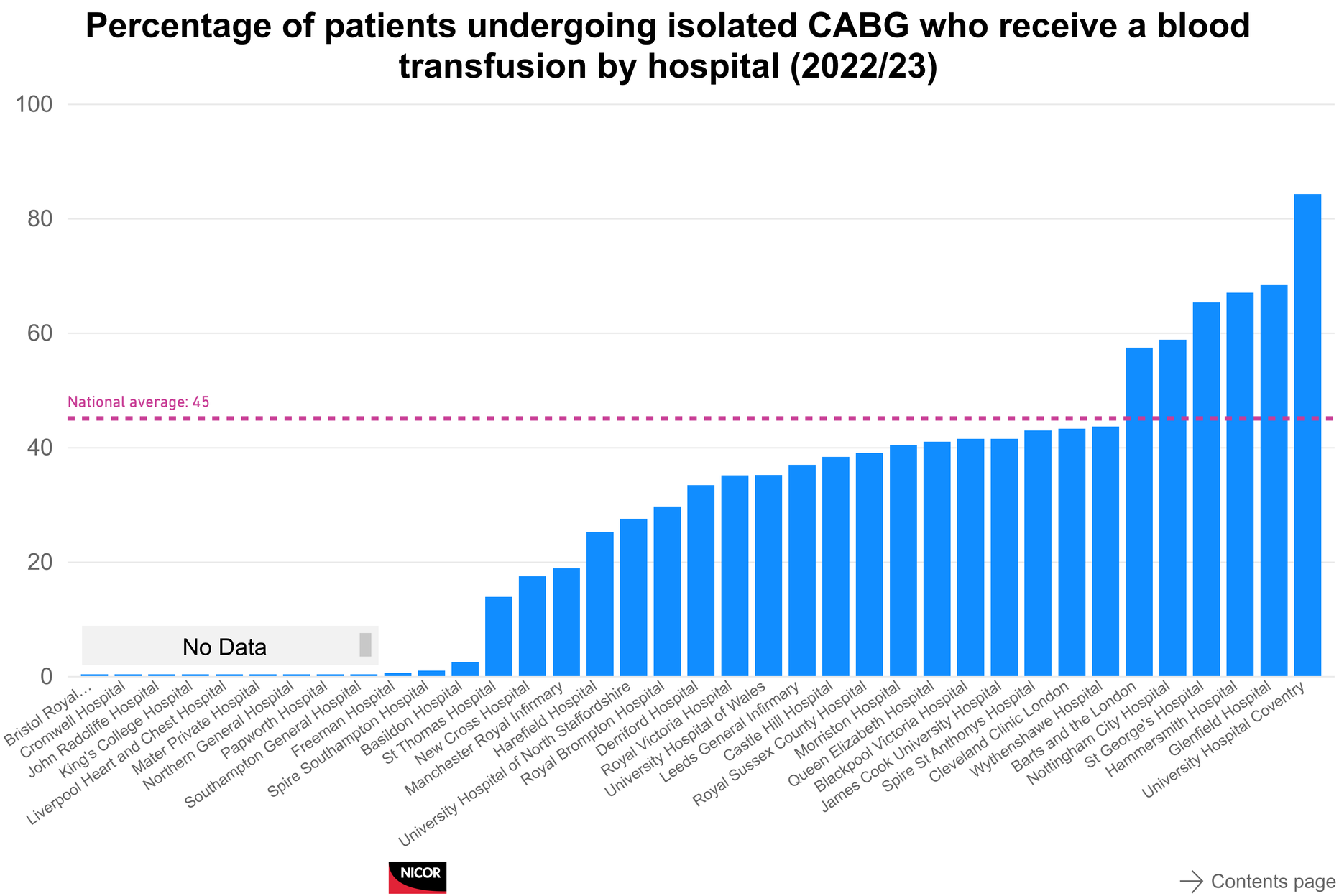
A 2018 GIRFT report recommended that all hospitals collect data on blood transfusion rates during or following cardiac surgery.

In 2022/23, 3,344 patients undergoing isolated coronary artery bypass graft (CABG) had a blood transfusion, 45% of the total.

There is very considerable variation in performance between hospitals:

- Three NHS hospitals reported rates of less than 10%
- Six hospitals reported rates of more than 50%.

Note: This is a new metric and only two years of data are available. Nine hospitals did not provide data.



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43% of patients undergoing isolated aortic valve replacement received a blood transfusion in 2022/23

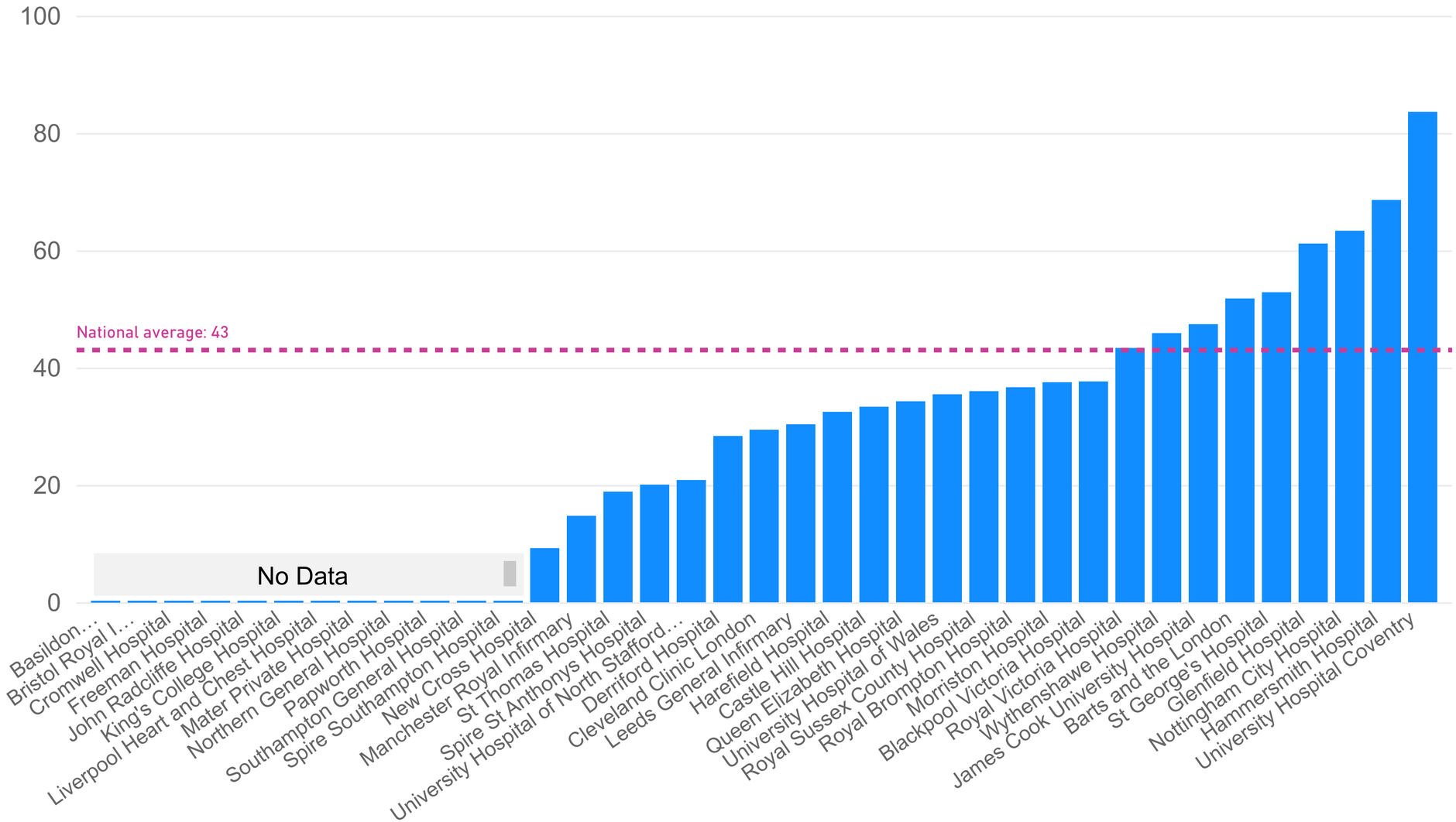
A 2018 GIRFT report recommended all hospitals collect data on blood transfusion rates during or following cardiac surgery.

The average blood transfusion rate for patients undergoing isolated aortic valve replacement (AVR) was 43%.

One NHS hospital reported a transfusion rate of under 10% while six hospitals had transfusion rates of more than 50%.

Note: This is a new metric and only two years of data are available. Twelve hospitals did not provide data.

Percentage of patients undergoing isolated AVR requiring a blood transfusion by hospital (2022/23)



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Almost 40% of patients undergoing isolated mitral valve replacement received a blood transfusion in 2022/23

A 2018 GIRFT report recommended all hospitals collect data on blood transfusion rates during or following cardiac surgery.

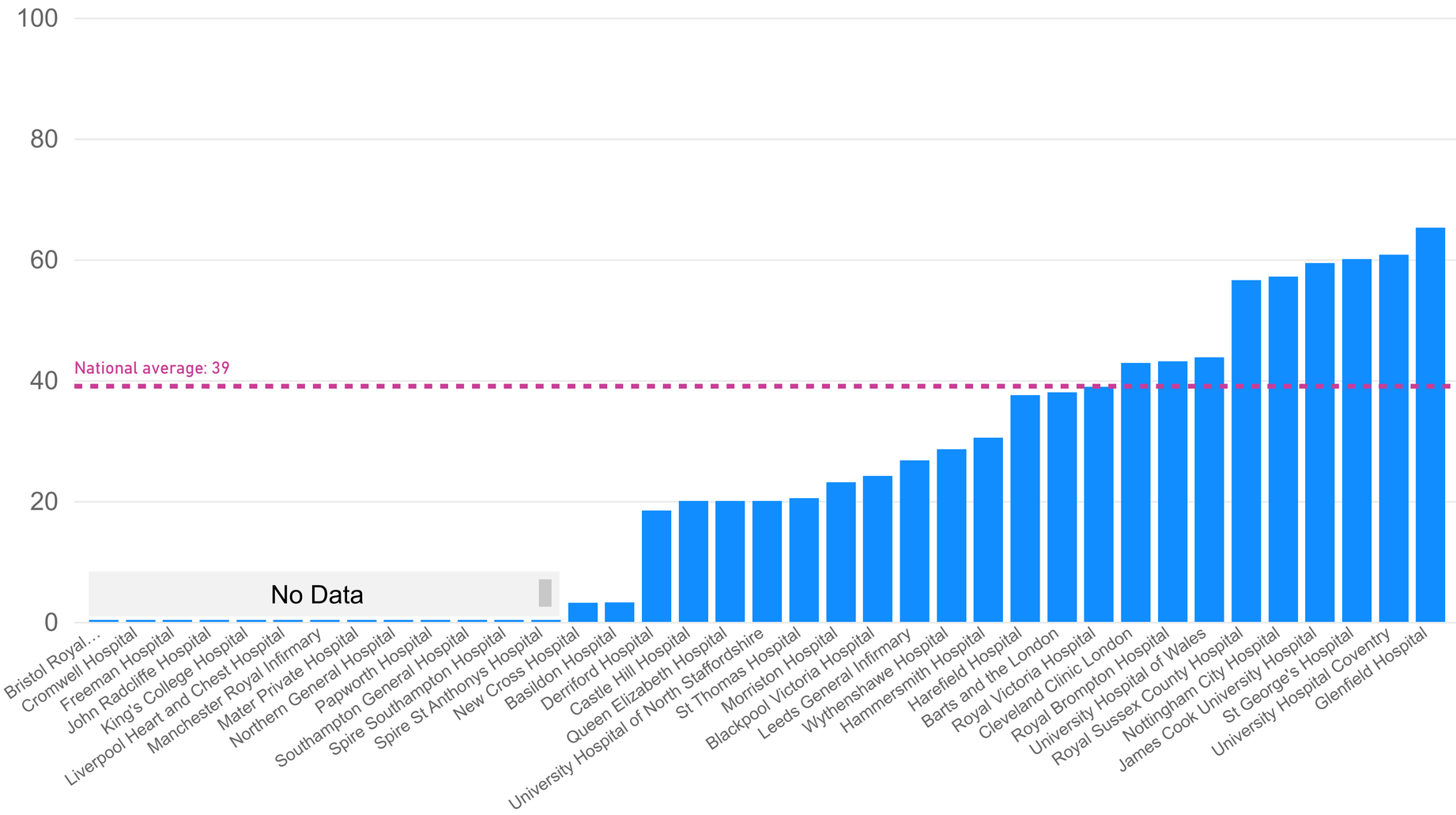
In 2022/23, the average UK blood transfusion rate was 39% for isolated mitral valve replacement (MVR).

This represented 214 patients who had a blood transfusion out of 554 cases for which data was reported.

Two NHS hospitals reported a transfusion rate of under 10% while six hospitals had transfusion rates above 50%.

Note: This is a new metric and only two years of data are available. Thirteen hospitals did not provide data.

Percentage of patients undergoing isolated MVR receiving a blood transfusion by hospital (2022/23)



There is considerable variation between hospitals in the take-up of MDT discussions for patients receiving an isolated coronary artery bypass graft

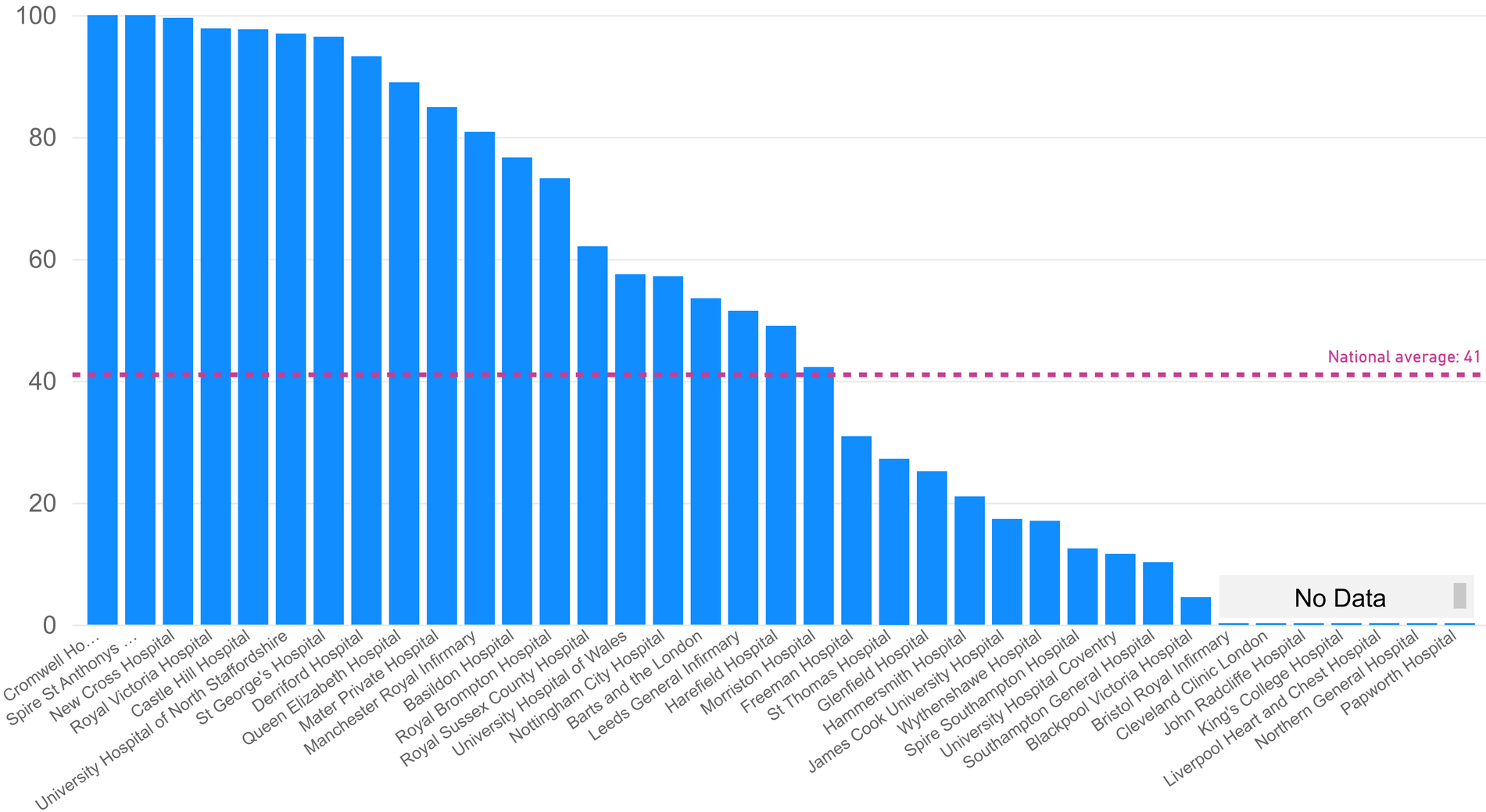
The 2021 GIRFT report recommended that all non-emergency cardiac surgery should be discussed by a disease-specific multi-disciplinary team (MDT).

In 2022/23, 4,750 patients receiving a coronary artery bypass graft (CABG) were recorded as being discussed at an MDT (41%).

There is very considerable variation in performance between hospitals. The best NHS hospital involved MDTs in over 99% of cases while the worst did so for only 4% of patients.

Note: This is a new metric and only two years of data are available. Data were not provided by seven hospitals and for a total of 3,164 patients.

Percentage of isolated CABG cases discussed at an MDT by hospital (2022/23)



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Just under half of patients undergoing isolated aortic valve replacement are discussed at an MDT

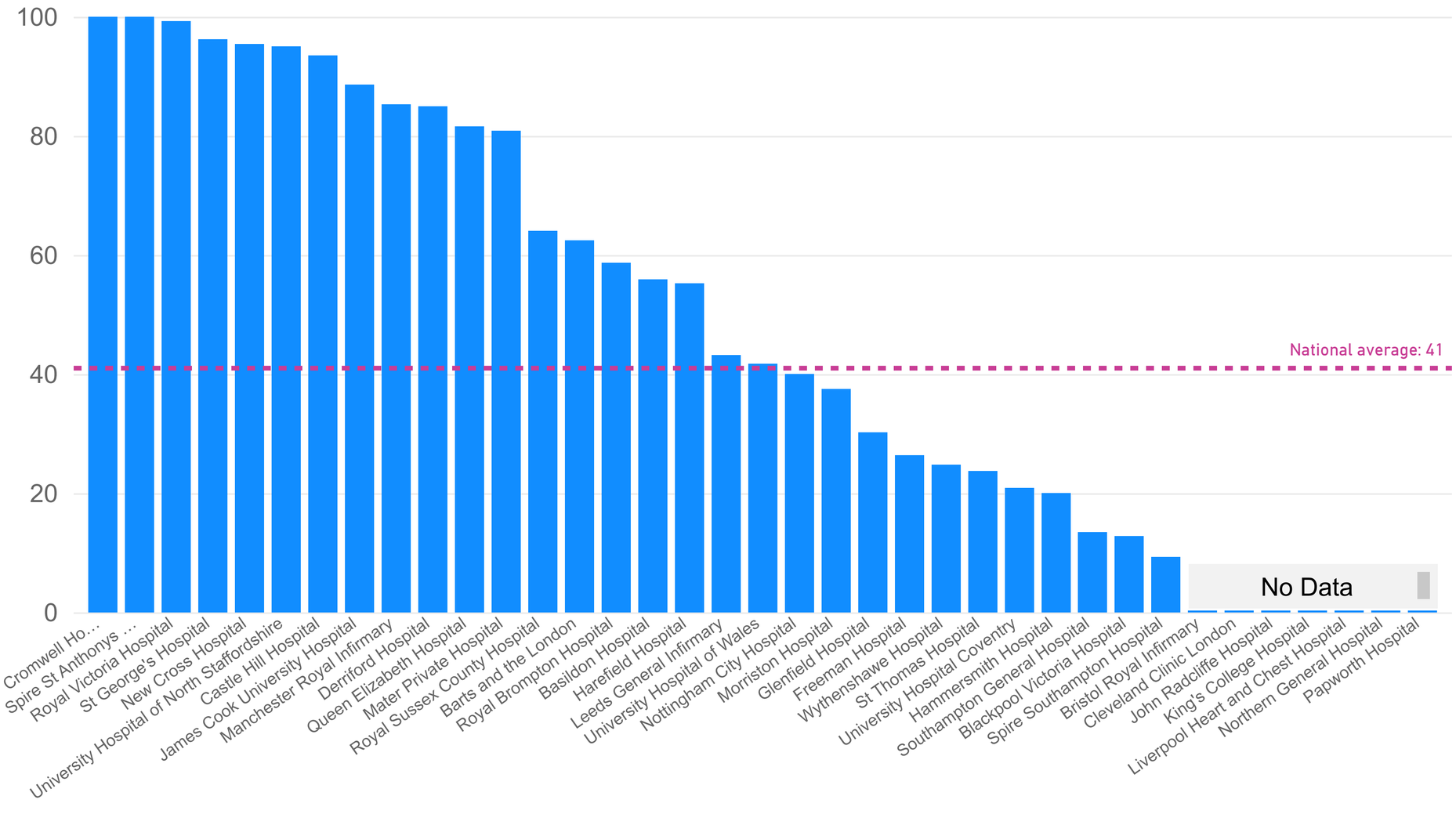
The 2021 GIRFT report recommended that all non-emergency cardiac surgery should be discussed by a disease-specific multi-disciplinary team (MDT).

In 2022/23, 41% of patients undergoing isolated aortic valve replacement (AVR) were recorded as being discussed at an MDT.

The best NHS hospital achieved over 99% and the worst only 12%.

Note: This is a new metric and only two years of data are available. Seven hospitals did not provide data.

Percentage of patients undergoing isolated AVR discussed at an MDT by hospital (2022/23)



Under 40% of patients undergoing isolated mitral valve replacement are discussed at an MDT

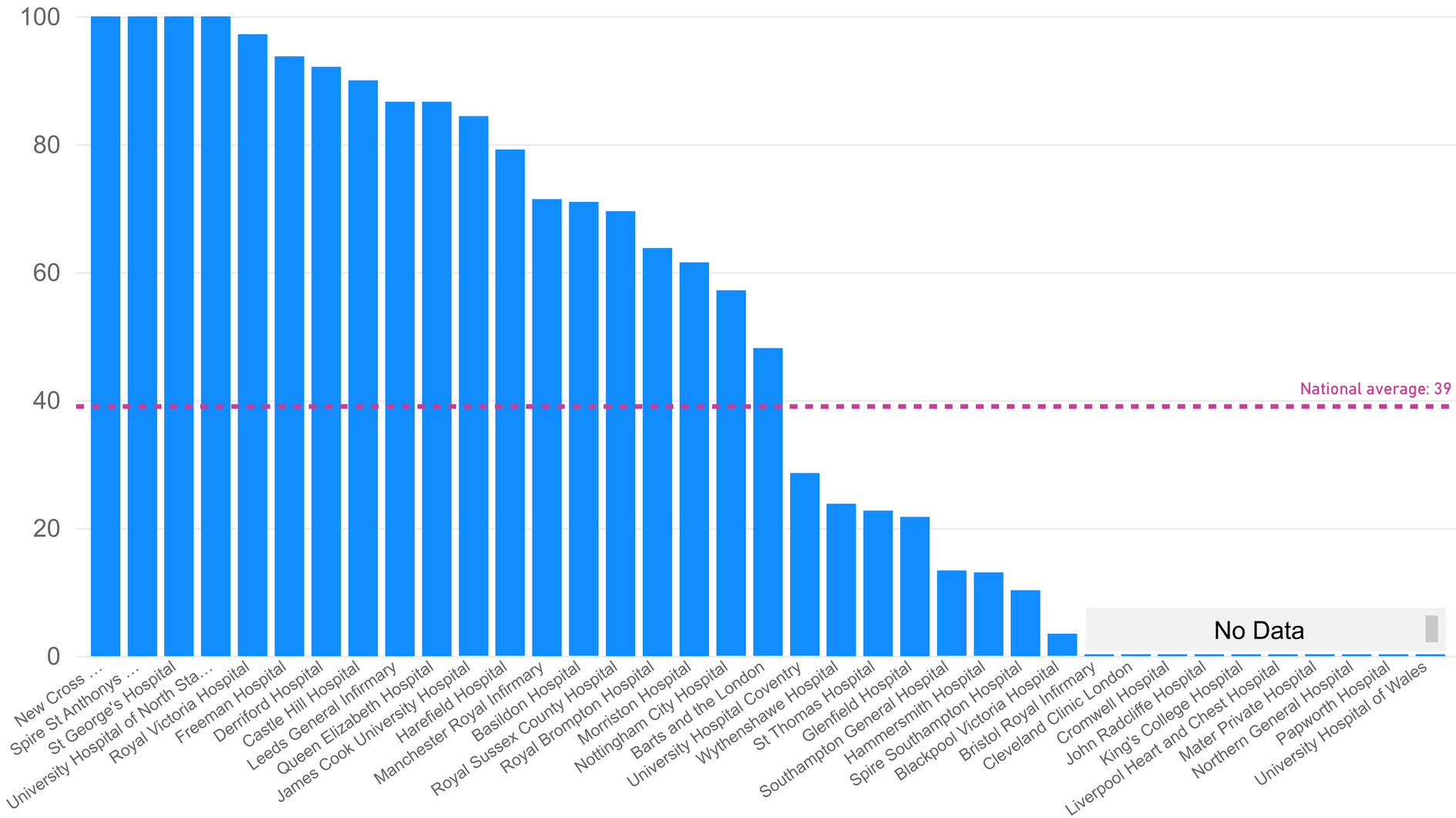
The 2021 GIRFT report recommended that all non-emergency cardiac surgery should be discussed by a disease-specific multi-disciplinary team (MDT).

Of patients undergoing isolated mitral valve replacement (MVR), 39% were recorded as being discussed at an MDT.

There is very considerable variation in performance between hospitals with three NHS hospitals achieving 100% compared with the worst, where only 3% of cases were discussed by an MDT.

Note: This is a new metric and only two years of data are available. Ten hospitals did not provide data.

Percentage of patients undergoing isolated MVR discussed at an MDT by hospital (2022/23)



ANT	St Anthony's Hospital, London
BAL	Barts Heart Centre, London
BAS	Basildon Hospital, Essex
BHL	Liverpool Heart and Chest Hospital
BRI	Bristol Royal Infirmary
CBS	Spire Hospital, Southampton
CHH	Castle Hill Hospital, Hull
CHN	Nottingham City Hospital
CCL	Cleveland Clinic, London
CRO	Cromwell Hospital, London
FRE	Freeman Hospital, Newcastle
GEO	St George's Hospital, London
GRL	Glenfield Hospital, Leicester
HAM	Hammersmith Hospital, London
HH	Harefield Hospital, London
HHW	Wellington Hospital, London
HSC	Harley Street Clinic, London
KCH	Kings College Hospital, London
LBH	London Bridge Hospital, London
LGI	Yorkshire Heart Centre, Leeds
MAT	Mater Misericordiae Hospital, Dublin
MOR	Morriston Hospital, Swansea
MRI	Manchester Royal Infirmary
NCR	New Cross Hospital, Wolverhampton
NGS	Northern General Hospital, Sheffield
NHB	Royal Brompton Hospital, London
PAP	Royal Papworth Hospital, Cambridge
PLY	Derriford Hospital, Plymouth
QEB	Queen Elizabeth Hospital, Birmingham
RAD	John Radcliffe Hospital, Oxford
RSC	Royal Sussex County Hospital, Brighton
RVB	Royal Victoria Hospital, Belfast
SCM	James Cook University Hospital, Middlesbrough
SGH	Southampton General Hospital
STH	St Thomas' Hospital, London
STO	University Hospital of NorthStaffordshire, Stoke
UHW	University Hospital of Wales, Cardiff
VIC	Blackpool Victoria Hospital
WAL	University Hospital, Coventry
WYT	Wythenshawe Hospital, Manchester

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