

# Executive summary and recommendations

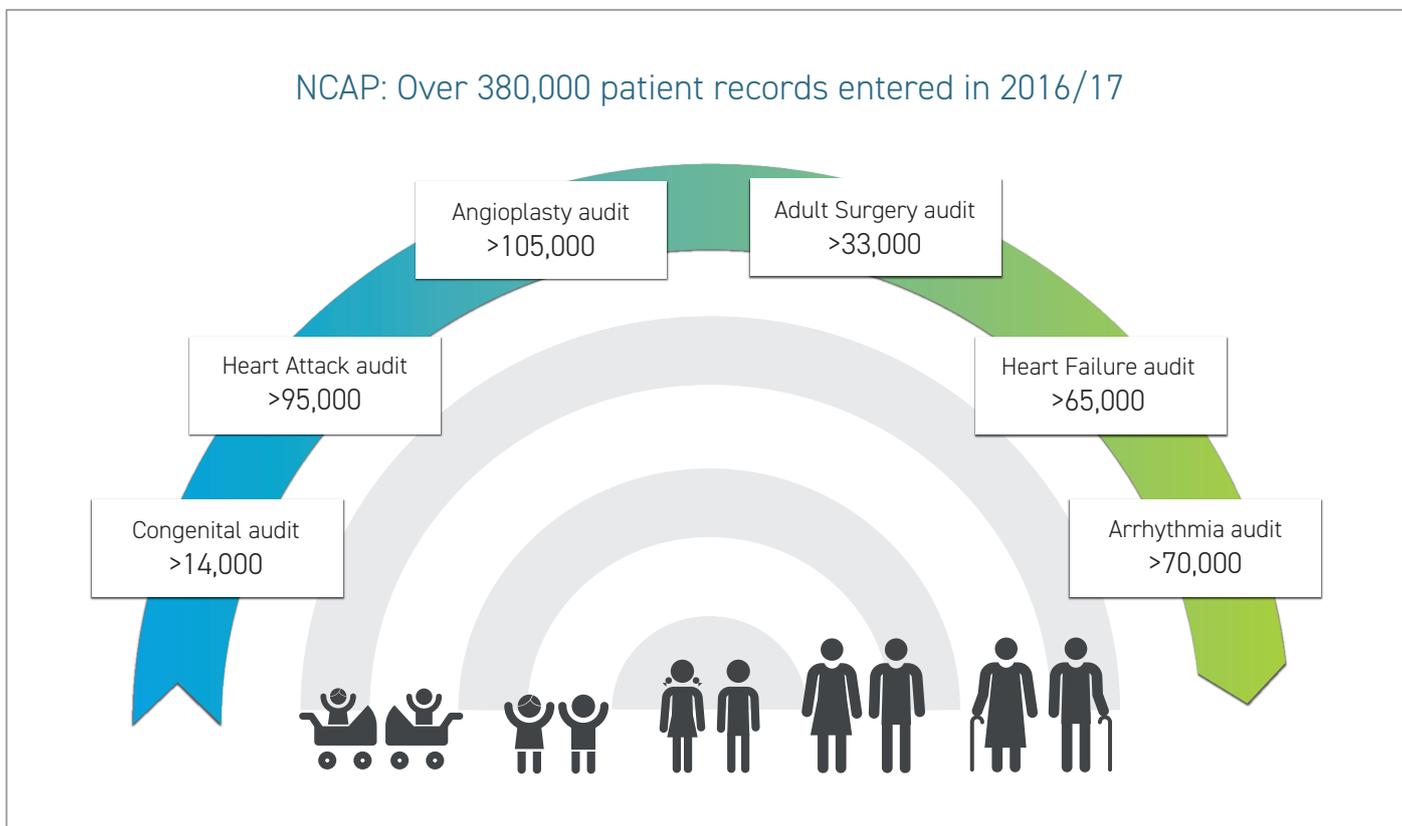
*The National Cardiac Audit Programme (NCAP) brings together, for the first time, six major national clinical audits of care of patients treated in the UK for heart disease. The six audits are:*

- **Congenital audit** – about one percent of children are born with abnormalities of the structures of their heart and/or major blood vessels, known as congenital heart disease. Operations and interventions can be undertaken from birth through to adulthood, encompassing life-long management of these conditions.
- **Heart Attack audit** – a common condition in adults is coronary heart disease, which has a range of consequences, including heart attacks.
- **Angioplasty audit** – coronary patients with obstructions in their arteries may require techniques to improve blood flow (called coronary revascularisation). This could involve the insertion of stents, known as percutaneous coronary intervention (PCI) or 'angioplasty'.
- **Adult Surgery audit** – adult patients with acquired diseases of the blood vessels, valves or the muscle of the heart may require heart surgery. The commonest operation is a coronary artery bypass graft (CABG), where a narrowed coronary artery may be 'bypassed' using a vessel taken from inside the chest wall, the leg or the arm.
- **Heart Failure audit** – patients with diseases of the heart muscle, for example as a result of heart attacks or from congenital conditions, might develop heart failure, which is a worsening of the heart's ability to pump blood.
- **Arrhythmia audit** – patients of all ages are prone to heart rhythm disturbances but the more dangerous rhythm disturbances occur most commonly in patients with badly damaged heart muscle, whatever its cause. The results for the Arrhythmia audit will be presented later in 2018.

The reporting of six audits as a unified cardiovascular pathway reflects the intention to move towards a single national dataset and harmonisation of the audit processes, including data validation, analysis and reporting. This is a large-scale

undertaking, with over 380,000 patient records entered into the NCAP dataset in 2016/17 financial year (Figure 2). The Angioplasty audit is based on data entered in the 2016 calendar year.

Figure 2 – Number of patient records across the NCAP pathway (2016/17)



Commissioned by the Healthcare Quality Improvement Partnership (HQIP) with funding from NHS England and GIG Cymru/NHS Wales (funding from Scotland has now been provided for some of the six audits and funding from Northern Ireland and the Republic of Ireland is under consideration), this is the first combined report that NCAP has published. It covers five of the six audits in NCAP (the findings and quality improvement suggestions from the Arrhythmia audit will be published in a version later this year, as the validation and analysis for this is ongoing).

As an 'aggregate report' for the six audits, it provides information of broad interest, sharing key messages and recommendations concerning quality improvements in the management of cardiovascular disease with a wide range of stakeholders including healthcare professionals, hospital managers, commissioners and, importantly, patients and the public.

The much more detailed information for each sub-specialty (including data on the performance of individual hospitals against the audit metrics) can be found [here](#) and via the links provided throughout this report. Two of the audits ([Angioplasty](#) and [Adult Surgery](#)) also provide specific data on the performance of individual 'operators' (i.e. the surgeon or other cardiologists undertaking the procedure).

The emphasis of this report has moved away from the simple reporting of data to the recommendation of key national improvement targets and the highlighting of best practice.

The report focuses on quality improvements grouped around three themes:

- **Patient outcomes** – what can we do to improve patient outcomes?
- **Safety** – how can services be made safer?
- **Clinical effectiveness** – are the best treatments being used and is care being delivered effectively?

## Improvements to patient outcomes

1. Hospitals providing care for children with congenital heart disease have low levels of 30-day mortality. Survival rates are high and continue to be better than predicted (see section 4.1).
2. The use of angiography and angioplasty are both driving outcome improvements for patients with coronary artery disease. Improved heart attack outcomes are associated with the increased use of angiography and fewer complications are being observed in angioplasty (see section 4.2).
3. Adult cardiac surgery outcomes continue to improve. Surgical mortality rates have fallen over the last ten years to under 2.5% in 2016/17, in spite of the fact that older and sicker patients are undergoing surgery. Post-operative stroke rates have been analysed for the first time and are

well below 1% for first time CABG operations and serious wound infections occurred in around one in 300 cases (although rates of reporting on complications are variable with poor data completeness from some hospitals) (see section 4.3).

4. Heart failure outcomes are improving as a result of access to specialist care, drugs and rehabilitation, with overall in-hospital mortality falling to under 10% in 2016/17. Patients receiving specialist care have a higher survival rate, as do those leaving hospital on all three recommended disease-modifying drugs (see section 4.4).

## Improvements to safety

**Published clinical recommendations outline the minimum annual volume of activity expected at hospitals performing surgical or interventional procedures.**

5. **NHS England has published expected standards for the optimal volume of surgical procedures performed by individual surgeons at congenital heart disease centres.**

Currently not all centres meet this standard.

**Recommendation 1:** *Hospitals undertaking congenital cardiac surgery should work with specialist commissioners and aim to meet the NHS England Standards for the number of surgeons and associated volume of surgical activity. All congenital heart centres should fully comply with the national data collection exercise to help demonstrate a high quality of care (see section 2.1.2).*

6. **The British Cardiovascular Intervention Society (BCIS) has published expected standards for the volume of activity at hospitals performing angioplasty.**

The majority of angioplasty centres perform levels of activity above the minimum recommended numbers but some centres do not reach these standards.

**Recommendation 2:** *Hospitals with an angioplasty centre should aim to meet the recommended annual activity volumes for angioplasty procedures. All angioplasty centres should report on outcomes to ensure a high quality of care (see section 2.1.2).*

**Early recognition and treatment of patients with a heart attack will improve outcomes.**

7. **Recommendation 3:** *Patients with a suspected heart attack should call an ambulance rather than take themselves to hospital (see section 2.3.1).*

Patients with higher-risk\* heart attacks who self-present to a hospital without angioplasty facilities are disadvantaged because they then have to be transferred to an angioplasty-capable hospital; these delays impact on outcomes.

8. **Recommendation 4:** *Ambulance trusts should review ambulance performance times to ensure they do not impact on angioplasty call-to-balloon times (see section 2.3.1).*

Call-to-door and therefore overall call-to-balloon times for patients receiving primary angioplasty have increased,

\* In this report, 'higher-risk' refers to ST-elevation myocardial infarction (STEMI) and 'lower-risk' to non-ST-elevation myocardial infarction (see Appendix A and Glossary for further details).

which may adversely affect outcomes. This may relate to pressures currently experienced by the ambulance services. Ambulance services need to minimise delays in diagnosing and transferring higher-risk heart attacks. The NCAP is currently providing data to support an NHS England review of ambulance performance standards.

- 9. Recommendation 5:** *Medical directors and their clinical leads should have clinical pathways that ensure the rapid detection of higher-risk heart attacks (see section 2.3.1).*

The hallmark of a higher-risk heart attack is 'ST-elevation on the ECG' and designing a pathway that ensures a timely transfer of patients with this to their local angioplasty services or to an angioplasty-capable hospital is a key improvement aim for all providers.

- 10. Recommendation 6:** *Those centres with poorer performance for angioplasty times should seek advice from centres with the best performance on how they achieve such good results (see section 2.3.1).*

Primary angioplasty is now the default mode of reperfusion for patients with higher-risk heart attacks. The national data for door-to-balloon times for patients undergoing primary angioplasty are within the standards set but there is still unexplained variation between centres.

#### **There is a growing use of specific techniques that are associated with safer outcomes.**

- 11. Recommendation 7:** *Clinical leads should ensure they are using radial artery access and drug-eluting stents during PCI whenever this is clinically appropriate to do so. When radial artery access is not being used, patients should be provided with information that informs them why this is the case (see section 3.3).*

There has been a year-on-year increase in the use of radial artery access for angioplasty and the use of modern generation drug-eluting stents, both of which are associated with improved outcomes for patients. There are still some centres, however, that fall well short of the performance of centres with the highest rates.

- 12. Recommendation 8:** *Commissioners and clinical leads should ensure that patients who are at high risk for surgical aortic valve replacement are considered for transcatheter aortic valve implantation (TAVI) (see section 4.3.6).*

TAVI procedures are now mostly performed under local anaesthetic and are associated with a more rapid recovery and a shorter length of stay in hospital.

#### **Delays to treatment are reducing but there is room for improvement.**

- 13. Recommendation 9:** *Hospitals with longer waiting times for adult cardiac surgery should reduce these by seeking advice from centres with good performance (see sections 2.3.3 and 2.3.4).*

Delays for elective and urgent CABG have reduced but there is still considerable variation between centres, with some

hospitals showing much longer waiting times than others. These should consider the lessons around the improved use and allocation of resources from hospitals with shorter times.

## Improvements to clinical effectiveness

### **Antenatal diagnosis of congenital heart disease requiring surgical or interventional treatment in infancy improves outcomes.**

- 14. Recommendation 10:** *Commissioners and providers of obstetric services with the support of tertiary centre fetal cardiologists should ensure that there is access to training and appropriate equipment for sonographers to support the prenatal detection of congenital heart conditions (see section 3.1).*

For children with congenital heart disease requiring a surgical or interventional treatment during infancy, there continues to be year-on-year improvements in the antenatal diagnosis of the congenital malformation although considerable regional variation persists. More than 4 in 10 of these children are now antenatally diagnosed.

### **Access to immediate and follow-up specialist care for patients is associated with better outcomes.**

- 15. Recommendation 11:** *Hospital providers and directors of nursing should review their clinical pathways for patients with lower-risk heart attacks as their primary diagnosis (see section 2.2.1).*

Patients with lower-risk heart attacks as their primary diagnosis benefit from being cared for on cardiology wards where possible.

- 16. Recommendation 12:** *Hospital providers and directors of nursing should review their pathways for patients with heart failure and where this is a primary diagnosis these patients should ideally be cared for on a cardiology ward with access to heart failure specialist teams (see section 3.5.2 and 4.4.2).*

Patients admitted to hospital with heart failure who are cared for in a cardiology ward are more likely to be seen by a heart failure specialist team and significantly more likely to receive the recommended disease-modifying drugs. There has been an increase in the proportion of patients admitted to medical wards who are seen by the specialist teams but there is considerable variation between hospitals.

- 17. Recommendation 13:** *Commissioners should ensure that access to specialist follow-up and to cardiac rehabilitation services is available to all patients following a heart attack as well as to patients admitted with heart failure (see section 3.6.2).*

Access to specialist follow-up and to cardiac rehabilitation services is associated with improved outcomes for patients.

- 18. Recommendation 14:** *Commissioners should expect and clinicians should provide an evidence-based 'bundle-of-care' for patients with heart attacks (see section 5.1.2). The NCAP*

*will work to facilitate this.*

Heart attack patients ideally benefit from the appropriate combined use of angiography, revascularisation, stopping smoking and appropriate advice on life-style choices, optimal secondary preventive medication and cardiac rehabilitation.

### **Timely care for patients with heart attacks improves outcomes and provides more efficient services.**

#### **19. Recommendation 15:** *Medical directors and clinical leads should review their local patient flow data to ensure that the time taken from presentation and diagnosis to angiography and revascularisation for patients with lower-risk heart attacks is as efficient as possible (see section 2.3.2).*

Almost half of all patients with lower-risk heart attacks are not receiving treatment within current guidelines on the time to angiography and there is significant variation in performance between centres. Patients presenting to a hospital without angioplasty facilities experience longer delays. Improvement in the timeliness of access to treatment could result in significant reductions in lengths of stay in hospital for patients.

## **Driving future quality improvement through audit**

The NCAP programme is committed to supporting improvements in the quality of care delivered to patients. The programme will continue to collect data to capture areas of good practice that can be shared across the system and will also identify unwarranted variations in care where performance will need to be improved. From these data the audit will define national improvement aims that when achieved will have maximum impact on patient care. To support clinical teams, commissioners and patients in achieving these aims, the audit programme will provide a range of new outputs designed to optimise local quality improvement initiatives.

### **20. Focus the audits on defining ambitious standards for quality of care.**

NCAP has commissioned a new IT platform with enhanced capability to support both data collection and reporting:

- a more comprehensive assessment of the clinical pathway, measuring all relevant aspects of the care pathway that have most potential to improve patient care
- incorporating new treatments into audits in a timely fashion, to ensure the audit reflects best clinical practice
- more timely and more frequent reporting of data
- better visualisation of data to support identification and communication of the key improvement messages
- increasing the value of audit outputs through the development of analytical approaches, risk models, and support of robust, real-world evaluations of treatment

(this extended use of audit data will 'future proof' quality improvement).

### **21. Use organisational audits to help identify the steps needed to deliver improved quality of care.**

'Organisational audits' are used by other national audits to understand the various inter-related changes that are made by hospitals in delivering improvements to services (including staffing, clinical and pathway protocols, levels of infrastructure, governance, partnership working and training).

### **22. Focus more on outcomes that matter most to patients.**

The aim is for NCAP to expand the range of patient outcome measures further, beyond mortality into additional aspects of morbidity, improved patient experiences and quality of life.

### **23. Understand the impact of changing demographics.**

The absolute number of elderly people in the UK is increasing, more people are living with long-term conditions, the younger population is seeing a rise in heart-disease-related risk and there is an increased incidence of congenital heart disease in certain ethnic groups. All of these are significant changes for commissioners and policy makers to deal with and the audits have a vital role to play in providing information that can make the most effective use of available resources to deliver high quality care to these groups across the entire system of health and social services.

### **24. Make use of increased data linkages to explore system-wide factors and track the entire 'patient journey'.**

A fundamental aim of bringing the NCAP audits together is to make greater use of linked data (both across the audit datasets and with others) to look at a much wider set of factors related to heart disease and to track the whole clinical 'journey' for each patient, between community and hospital care, thereby creating new insights into the drivers of quality improvement and how that can be achieved. Steps will be taken to provide the best audit information while minimising the burden of data collection.

### **25. Understand how the audit data are used by various levers for improvements of healthcare in the NHS and therefore the need for timely and accurate data.**

The NCAP audits are being aligned to other levers for improvements in healthcare, including Best Practice Tariff (BPT), Get It Right First Time (GIRFT) and the metrics used for the Care Quality Commission (CQC) reports.

**Recommendation 16:** *To allow timely assessment of performance and to ensure that every hospital is assessed correctly, hospital management teams must ensure that accurate data are provided to the national audit programme on time (see section 1.4).*

A summary of all key messages and recommendations can be found [here](#).