



SCTS

Society for Cardiothoracic Surgery
in Great Britain and Ireland

Adult Cardiac Surgery

Quality Improvement and Quality Assurance

Proposal to Improve the Audit. 2021 to 2024 and beyond

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History of Adult Cardiac Surgery Audit

The Society for Cardiothoracic Surgery has pioneered the reporting of outcomes in heart and lung surgery. It began the first national registry of UK heart surgery in 1997. We continue to advocate for transparency, reporting of surgical outcomes and quality improvement. We do this through our own projects, and through support for national audits and quality improvement initiatives.

The current national audit for adult cardiac surgery was developed for the healthcare of 20 years ago, at the dawn of the new millennium. The audit was the first of its kind, publishing national outcomes for all patients undergoing cardiac surgery at national, unit and surgeon specific levels. Two decades ago, consultants exercised significant autonomy in deciding the treatment a patient should receive. Protocol-based care and clinical governance by trusts was still being developed. It seemed appropriate for the results achieved by individual and largely autonomous consultants to be reported.

The audit has brought transparency, quality assurance and quality improvement. Survival after cardiac surgery has improved, even though the patients operated upon today on average are older and less fit than before. Outcomes now vary less

between units and between individual surgeons. The UK can be very proud that it delivers the safest national programme of cardiac surgery. (SCTS Blue Book)

Changes in the Practice of Adult Cardiac Surgery

Cardiac surgery has fundamentally changed over the intervening 20 years, evolving into a team-based and multi-professional service. The adoption of clinical governance has encouraged more standardised and evidence-based working practices. The complexity of pre-operative and postoperative care has grown, and new professional roles have developed in response.

Although the surgeon remains pivotal in the team, intensive care doctors, anaesthetists and allied professionals now share decision-making. Together, the expertise of all these carers, and the resources available to them, combine to determine clinical outcomes. This move to team based working and shared decision making is welcomed; it has been associated with better outcomes and has promoted transparency. The Society's document "Modern Medical Professionalism" covers many of these issues.

Moreover, there are now multiple competing alternative treatments for many of the conditions previously managed by cardiac surgery. Significant changes that have occurred include the following:

1. The introduction of the 'Heart Team', an MDT structure to collate evidence for each patient and to recommend treatment options. This has largely replaced individual clinician decision making.
2. Urgent referrals are increasingly pooled between a unit's surgeons, as per the 2018 GIRFT report recommendation. Elective referrals are also often pooled to assure more equal access to the service. This pooling reduces average wait times to surgery and maximises theatre use, but it requires a shared responsibility between the surgeons who accept patients into a shared pool, and who undertake to operate on the patients accepted by other surgeons. This is in contrast to more traditional practice, where referrals are made from individual cardiologists to surgeons.
3. The importance of cardiology professionals in the decision to operate has grown, with patients requiring more investigations and more complex analysis, as opposed to simple diagnostic angiography and echocardiography. There has been a move from independent practitioners interpreting the findings of investigations like echocardiograms and angiograms, as we have become more aware of significant inter-observer variations. For example, the use of FFR and IVUS to interpret degrees of stenosis in native coronary arteries, and the need for multiple imaging opinions to interpret the findings of echocardiography. This support from cardiologists and anaesthetists is also given intra-operatively with interpretation of pre- and post-bypass trans-oesophageal echocardiography, which are paramount in surgical decision making and can have a significant impact on patient outcomes.

4. Percutaneous treatments. Patients now have alternatives to surgery, such as multi-vessel PCI, TAVI, thoracic endovascular aortic repair (TEVAR) and now the introduction of trans-catheter mitral valve interventions. In 2016, more than 6 PCI procedures took place for every CABG operation. Often these therapies are used to complement surgical intervention and it is the combined effect of this with surgery that determines the long-term outcome of the patient.
5. Post-operative care has become more complex, and this has led to the foundation of the new specialty of intensive care medicine. These doctors increasingly direct the management of critically ill patients after heart surgery, a role previously filled by heart surgeons themselves. In addition, support from physicians and surgeons from other specialities to care for these patients with multiple co-morbidities and frailty is important to ensure optimal post-operative recovery.
6. The increased role of nurses and allied health professionals in delivering excellence in care. Specialist nurses and surgical care practitioners have greatly expanded their roles and portfolios of practice and are key in enabling good outcomes and patient experience.
7. Sub-Specialisation. The cardiac surgeon now will not be able to deliver excellence in all aspects of the specialty. Surgeons now have a sub-specialisation such as Mitral surgeon, Aortic surgeon. These specialisations require support from specific MDTs with cardiology, radiology and anaesthetic support.
8. There is now more minimal access surgery for aortic and mitral valve surgery. This is being introduced by a team of professionals, including multiple surgeons, anaesthetists, perfusionists and theatre practitioners, all responsible for the successful implementation of a new technique to an institution.
9. It is becoming more common for consultant surgeons to assist each other for difficult cases. This has been formally recognised in the 2019 NICOR audit for high-risk cases. These cases are not attributed to a single surgeon. This teamwork maximises the expertise available to the sickest patients and should be encouraged.
10. Fewer cases are being performed by individual surgeons. For example, there has been a 40% fall in isolated CABG procedures performed by individual surgeons (124/year in 2002 compared to 74 in 2015).
11. New appointees from NTN posts have performed fewer cases and less independent cases than their predecessors 20 years ago. This means they need more support and mentorship in their first years as a consultant and stresses the importance of a collegiate unit responsibility to ensure the best outcomes for patients being operated in a particular hospital.

Limitations of the Current Audit Structure

The 2006 audit for cardiac surgery has achieved quality assurance for survival at unit and surgeon level, but has been slow to deliver assurances on other outcome measures such as the incidence of stroke, renal failure, reopening rates, length of stay, etc. The audit has not addressed longer term outcomes, such as reintervention rates.

The audit is now not ideally suited for quality assurance and quality improvement for the following reasons:

1. There are still significant issues in several units with team working, where the interests of patient care and outcomes are not made the priority by the entire team. Prioritising team-working and a shared responsibility for results can be difficult when clinicians focus on the reporting of their personal results.
2. There are surgeons, often starting in their consultant career, that are not supported by the audit itself nor by the team they work in.
3. The burden of published consultant outcomes affects confidence and willingness to take on more challenging cases. A perception remains that the current audit has generated a culture of risk aversion in some units, which may mean that some patients are not given the opportunity for potential life or quality of life changing surgery.
4. The audit does not account for the need for excellence in cardiology assessment, radiology investigation and post-operative intensive care. There are areas of sub-specialisation, knowledge and skills in these specialties that are important to patient outcomes.
5. The audit process has a significant time lag before identifying issues and introducing improvements. Three years of data is required, followed by time for analysis and validation resulting in a four-year delay in identifying and addressing issues.
6. The audit does not optimally support quality improvement efforts. Process measures and non-mortality outcomes, such as length of stay and reintervention rates, are not being reported. These outcomes could be used to direct quality improvement more effectively than the isolated reporting of in-hospital mortality.
7. The recent welcome fall in mortality (2% mortality after isolated CABG in 2002 compared to 1% in 2015), coupled with the fall in individual surgeon activity (a 40% reduction in CABG activity over the same period) has reduced the number of events available for statistical comparison and identification of outliers using current methodology. Analysis of a single, increasingly rare adverse event (in-hospital mortality) makes it harder to identify both high quality and substandard care. The recent introduction of the potential for a patient to withdraw their data from inclusion in national data monitoring will

make this harder and potentially reduce the statistical significance of any future analyses at individual surgeon level.

8. The audit has focussed on surgeon specific outcomes that have included all activity in multiple institutions. This has obscured quality assurance for individual units.
9. Most quality improvement projects focus on changing structures and processes at unit or national level, not at individual clinician level. In contrast, the current audit focuses on a single outcome measure at individual clinician level. This risks deflecting attention from the root causes of some poor performance, such as inadequate working practices or processes and resource constraints.
10. Innovation. New techniques in cardiac surgery usually require the support and contribution from several members of the multi-professional team. The focus of the audit on individual surgeon impacts on the wider team's input and ownership of innovation, i.e., they will not necessarily appreciate their own responsibility to the successful implementation of innovation.

Proposal to change audit from April 2021

This paper proposes the changes to the structure of the audit that allow it to more effectively assess modern surgical practice, and to more effectively support quality assurance and quality improvement in the future.

1. The audit, starting with the three-year cycle 2021 to 2024 will aim to accredit units as SAFE, and HIGH QUALITY, based on survival and several outcome measures, and agreed standards of governance and the patient pathway
2. The audit will analyse individual surgeon performance within a unit but will stop national reporting of individual performance. The audit will clearly identify in each unit that THERE IS NO SIGNIFICANT VARIATION BETWEEN CONSULTANTS IN THIS UNIT. They will still be benchmarked against national standards and be analysed independently by NICOR. This will encourage a culture of responsibility to the wider team, shared ownership of outcomes, and will encourage colleagues to support one another to achieve optimal results. Strong local governance procedures will need to be enhanced to ensure any variations in practice are detected at any early stage and addressed.
3. The results for the standards and all outcome measures will be published at unit level.
4. The same current methodology will be used to identify outlier units at alert and alarm level. Positive alert and alarm units should receive appropriate recognition. Good practice from these units can be disseminated through audit reports and QI projects like GIRFT. Negative alert units will need

support and action plans. Negative alarm units should have been identified during the audit cycle and already be receiving support and action plans.

5. Where there is significant variation in a unit between surgeons (with a negative alert / alarm) then ALL the surgeon specific outcomes for that unit will need to be published. This will be to inform patients and stakeholders. It is the responsibility of all members of the team to ensure good performance in the unit, and therefore a colleague with a negative alert or alarm reflects poorly on the whole team and every member of that team. i.e. a) The aim of the team will be to support each other and finish the audit cycle with good outcomes and address issues in the cycle rather than reacting after publication. i.e. b) The team can ask for support* early in the cycle to address any developing variance.
6. The audit will need support of cardiology, anaesthetics, perfusion and intensive care. As the audit develops further it can draw in quality markers from these professional areas. i.e. Echocardiography accreditation, ICNARC data, Perfusion accreditation.
7. The audit should report more process-of-care metrics to drive quality improvement, together with longer term outcomes, such as reintervention and readmission rates. In addition to outcomes, the audit will also allow a focus on patient experience in a unit, which will be another marker demonstrating delivery of excellence in care. The introduction of new metrics should be informed by patient and public engagement activity.

This proposal moves the focus of the audit to excellence in patient outcomes for the whole unit, and away from the performance of the individual surgeon. The audit will give ownership of every patient journey to the whole team and not regarded as the responsibility of one surgeon - the language will change from 'Mr(s) X's patient has done badly' to 'our patient has done badly'. The team ethos will ensure the team look after new appointees with good support and mentorship.

Team based reporting is already used in the other HQIP/NCAPOP audits in cardiothoracic surgery (the NICOR National Congenital Heart Disease Audit and the Lung Cancer Clinical Outcomes Publication), documenting improvements in care for both. Our proposals will bring the adult cardiac surgery into alignment with these and other NCAPOP audits. Furthermore, it will give assurance that there is no negative variation within the team.

The standards in the audit can be linked to other work streams, such as GIRFT or other reports, such as mortality reviews of individual units.

Fundamentally this proposal is suggesting the audit changes from 'The pilot is safe' to 'The airline is safe', whilst still ensuring all the pilots are fit to fly.

*Support such as SCTS/ BCS / ACTACC/ SCPS advice, bring in senior leadership, IRM 'light' or full IRM.

Selected References

Maintaining patients' trust: modern medical professionalism. The Society for Cardiothoracic Surgery 2011. ISBN 1-903968-29-1

Cardiothoracic Surgery GIRFT Programme National Specialty Report. March 2018. David Richens. <https://gettingitrightfirsttime.co.uk/surgical-specialty/cardiothoracic-surgery/>

Activity and outcome data obtained from the National Institute for Cardiovascular Outcomes Research (www.NICOR.org) adult cardiac surgery database.