GIG CYMRU NHS WALES
Cyd-bwyllgor Comisiynu
Joint Commissioning Committee

Cardiac Surgery (Adults)

Service Specification: SS205

Document Information	
Document Name	Cardiac Surgery (Adults)
Document Number	SS205
Document Purpose	Service Specification
Publication Date	July 2025
Version	1.0
Commissioning Team Author	Cardiac
Target Audience	Chief Executives, Chief Operating Officers, Medical Directors, Directors of Finance, Cardiac Surgeons, Cardiologists, Radiologists
Description	NHS Wales will routinely commission this specialised service in accordance with the criteria described in this policy

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Abbreviations

ACTACC	Association for Cardiothoracic Anaesthesia and Critical Care
AVR	Aortic Valve Replacement
CABG	Coronary Artery Bypass Grafting
CAD	Coronary Artery Disease
CHD	Coronary Heart Disease
CT	Computed Tomography
CVD	Cardiovascular Disease
EACTS	European Association for Cardio-Thoracic Surgery
ECG	Electrocardiogram
ESC	European Society of Cardiology
IPFR	Individual Patient Funding Request
MDT	Multidisciplinary Team
MDM	Multidisciplinary Meeting
MV Repair	Mitral Valve Repair
MVR	Mitral Valve Replacement
NWJCC	NHS Wales Joint Commissioning Committee
NICOR	National Institute for Cardiovascular Outcomes Research
PCI	Percutaneous Coronary Intervention
SCTS	Society of Cardiothoracic Surgeone in Great Britain & Ireland
TAVI	Trans-catheter Aortic Valve Implantation
VHD	Valve Heart Disease

Statement

NHS Wales Joint Commissioning Committee (NWJCC) will commission the service of cardiac surgery for adults with acquired heart disease in accordance with the criteria outlined in this specification.

In creating this document NWJCC has reviewed the requirements and standards of care that are expected to deliver this service.

Welsh Language

NWJCC is committed to treating the English and Welsh languages on the basis of equality, and endeavour to ensure commissioned services meet the requirements of the legislative framework for Welsh Language, including the Welsh Language Act (1993), the Welsh Language (Wales) Measure 2011 and the Welsh Language Standards (No.7) Regulations 2018.

Where a service is provided in a private facility or in a hospital outside of Wales, the provisions of the Welsh language standards do not directly apply but in recognition of its importance to the patient experience, the referring health board should ensure that wherever possible patients have access to their preferred language.

In order to facilitate this, NWJCC is committed to working closely with providers to ensure that in the absence of a Welsh speaker, written information will be offered and people have access to either a translator or 'Language-line' if requested. Where possible, links to local teams should be maintained during the period of care.

Decarbonisation

NWJCC is committed to taking assertive action to reducing the carbon footprint through mindful commissioning activities. Where possible and taking into account each individual patient's needs, services are provided closer to home, including via digital and virtual access, with a delivery chain for service provision and associated capital that reflects the NWJCC commitment.

Disclaimer

NWJCC assumes that healthcare professionals will use their clinical judgment, knowledge and expertise when deciding whether it is appropriate to apply this document.

This document may not be clinically appropriate for use in all situations and does not override the responsibility of healthcare professionals to make decisions appropriate to

the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian, or Local Authority.

NWJCC disclaims any responsibility for damages arising out of the use or non-use of this policy.

1. Introduction

This document has been developed as the Service Specification for the planning and delivery of cardiac surgery for adults with acquired heart disease resident in Wales. This service will only be commissioned by the NHS Wales Joint Commissioning Committee (NWJCC) and applies to residents of all seven Health Boards in Wales.

1.1 Background

Cardiac surgery involves operations on the organs contained within the chest, including the heart and major blood vessels. It involves major, technically demanding operations on patients who have life-threatening disease[1].

Cardiac surgery is conveniently divided into that dealing with acquired heart disease and that with congenital disease. The group of adults with congenital disease is most conveniently dealt with alongside paediatric cardiac surgery and falls outside of this Service Specification.

Acquired heart disease that may be dealt with surgically falls into different categories. The largest single group relates to coronary/ischaemic heart disease and may lead to revascularisation of the heart following problems with its blood supply associated with narrowing and/or blockages in the coronary arteries. The next most common is related to malfunction of one of the valves in the heart. These ensure that there is a one-way flow of blood through the cardiac pumping chambers. There has been growth in this area of adult heart surgery.

There is a smaller group of acquired conditions related to problems with the aorta as it leaves the heart and traverses the chest. These problems generally relate to enlargement of this vessel with the potential for rupture (or dissection) as the vessel enlarges. Finally, there is an associated group of conditions such as surgery of cardiac arrhythmias and obstruction of the flow of blood through the heart due to cardiac muscle enlargement[2].

Coronary Heart Disease (CHD; Ischaemic Heart Disease)

There are a variety of diseases that lead to abnormalities of the coronary arteries. Coronary artery disease (CAD) (also called coronary heart disease or ischaemic heart disease) happens when the build-up of a fatty substance narrows or blocks the arteries restricting supply of blood to the heart muscle, which may cause chest pain (angina) or a heart attack. Revascularisation in patients with CAD can be performed surgically (Coronary Artery Bypass Grafting: 'CABG') or by percutaneous techniques (PCI).

[1] GIRFT: Cardiothoracic Surgery, GIRFT Programme National Specialty Report, March 2018
[2] NHS England Service Specification: Cardiac Surgery (Adults), A10/S/a

Coronary artery bypass grafting aims to improve the flow of blood to the heart muscle. The surgeon uses a healthy blood vessel, usually taken from the chest or the leg, and attaches it on the heart muscle so that blood can get round (CABG) the affected part of the coronary artery. CABG, most often is performed 'on pump', maintaining the circulation and oxygenation of the blood extracorporeally using a cardiopulmonary bypass machine, while the heart is arrested (not beating)[3]. Whereas PCI is a non-surgical procedure to widen the coronary artery using a balloon catheter to dilate the artery.

Valve Heart Disease

The heart has 4 valves (aortic, mitral, tricuspid and pulmonary) that control blood flow. In heart valve disease, valve function can be impaired by:

- stenosis, a narrowing or stiffening of the valve, which restricts its opening and obstructs the forward flow of blood
- regurgitation, failure of the valve to close completely, which allows blood to flow backward

There can be stenosis and regurgitation of the same valve (mixed valve disease) or disease may affect more than one valve (multiple valve disease)[4].

Valve Heart Disease (VHD) is frequent and often requires intervention. Decision making for intervention is complex, VHD is often seen at an older age and, as a consequence, there is a higher frequency of comorbidity, contributing to increased risk of intervention[5].

Isolated valve disease is somewhat different with a steady increase that appears to have reached a plateau. There has been a slow but steady growth in the number of patients requiring intervention for valve disease because of the changes in population demographics and because of the increasing numbers of patients with mitral regurgitation being diagnosed.

There has been a long history of surgery for abnormal heart valves. Initially surgery started for congenital disease with surgery for rheumatic valve disease taking off simultaneously. Initially this comprised of closed mitral valvotomy which was a highly successful operation. As the post-war epidemic of rheumatic valve disease abated the incidence of degenerative aortic valve disease rose. This was seen particularly in the elderly who are susceptible to this degenerative problem. As our population ages the

[3] National Institute for Health and Care Excellence: Off-pump coronary artery bypass grafting (IPG377), January 2011
[4] National Institute for Health and Care Excellence: Heart valve disease presenting in adults: investigation and management (NG208), November 2021
[5] European Society of Cardiology, ESC/EACTS Guidelines: Guidelines on the management of valvular heart disease, (2012)

requirements for this operation rises. This rise has been accompanied by improved prosthetic valves with increased survival of these prosthetic valves.

This has also been accompanied by improved diagnostic techniques, particularly echocardiography which is the key technique used to confirm the diagnosis of VHD.

In addition, there has been a slower rise in the diagnosis of patients with mitral regurgitation accompanied by improved expertise in the techniques in mitral valve repair procedures. Again, improved access to echocardiography has added to this.

In the former group of patients with aortic valve disease, some of these elderly patients have important co-morbidities which contributes to their operative mortality. All patients for valve disease need careful assessment and usually need to be presented to a multidisciplinary team (MDT) to assess that surgery is the most appropriate treatment[2].

Aortic valve surgery is an operation in which a narrowed or leaky aortic valve is replaced by a valve made of tissue or artificial material, or repaired, to relieve breathlessness and help prevent heart failure.

Aortic stenosis is the most frequent type of VHD[5]. Surgical aortic valve replacement is offered to people with heart failure due to severe aortic stenosis and who are assessed as suitable for surgery[6]. Aortic valve replacement is the definitive treatment for severe aortic stenosis[5]. In some cases, where a patient is considered high risk for surgery then a Trans-catheter Aortic Valve Implantation (TAVI) procedure may be used.

Mitral regurgitation is the second most frequent valve disease requiring surgery[5]. Mitral valve surgery is an operation to repair or replace a narrowed or leaky mitral valve to relieve breathlessness and help prevent heart failure.

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)[7].

Aortic Vascular Disease

There are a variety of diseases affecting the aorta. Cardiac surgeons deal with surgery of the ascending aorta, the arch of the aorta and the descending aorta in the thorax[2]. When the aorta enlarges it can lead to untimely death from rupture or dissection. It can also cause important compression with adverse effects[2].

[6] National Institute for Health and Care Excellence: Sutureless aortic valve replacement for aortic stenosis (IPG624), August 2018
[7] NCAP/NICOR: National Adult Cardiac Surgery Audit (NACSA): 2025 Annual Report

The criteria for operating on the aorta, in the elective setting, depends on size and symptoms. In the emergency setting, surgery is carried out at high risk[2].

Epidemiology

There are around 340,000 people living with cardiovascular disease in Wales and around 6.4 million people in England[8].

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, 25,764 cardiac operations were performed across England, Wales and Northern Ireland[7].

Coronary artery bypass graft surgery (CABG) is the most common type of cardiac surgery[9]. In the 2022/23 period, there were 11,653 CABG operations performed. While this number represents an increase from the 2020/21 period, it still suggests a continuation of a decline observed over the preceding decade[7].

A total of 3,623 isolated aortic valve replacements (AVRs) were performed during 2022/23 in England, Wales and Northern Ireland. Whilst isolated AVR procedures are falling, the total number of patients receiving aortic valve intervention was at its highest level in 2022/23[7].

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 procedures fell again in 2022/23, with 688 isolated MV repairs (a 28% reduction compared to 2019/20)[7]. 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[7].

Coronary Heart Disease (CHD; Ischaemic Heart Disease)

In the United Kingdom, one in eight men and one in 14 women die from coronary heart disease[8]. More than 110,000 people are living with Coronary Heart Disease (CHD) in Wales. Each year in Wales there are 2,600 CHD deaths in men and 1,300 in women. Around 1,500 people under the age of 75 in Wales die from CHD each year. CHD was the leading cause of death in Wales in 2022. It was also the leading cause of death worldwide in 2019[8]. In 2023 ischaemic heart disease was the leading cause of death in both England and Wales (9.9% and 9.6% of all deaths, respectively)[10].

[8] British Heart Foundation Cymru: Wales Factsheet, January 2024
[9] NICOR: National Cardiac Audit Programme: National Adult Cardiac Surgery Audit (NACSA) 2021 Summary Report
[10] Office for National Statistics: Monthly mortality analysis, England and Wales: July 2023

Valve Heart Disease

Among people aged 65 years or over the prevalence of asymptomatic heart valve disease may be more than 50%, while the prevalence of clinically significant heart valve disease is around 11%[11]. Around 1.5m people in the United Kingdom aged 65 or over are thought to have heart valve disease, including aortic stenosis and mitral regurgitation. Estimates suggest this will double by 2046 and rise to 3.3m in 2056. This is due to an aging population[12].

Aortic Vascular Disease

In 2017, 14% of adults aged 16 and over, 15% of men and 13% of women, reported having any doctor-diagnosed cardiovascular disease (CVD)[13]. The prevalence of vascular disease increase with age. Smoking is a major cause of vascular disease and over 80% of vascular patients are current or ex-smokers. Around 20% of the population over 60 years of age have peripheral arterial disease, with about a quarter of these affected being symptomatic. Approximately 4% of men aged 65 have an enlarged aorta although not all go on to develop a significant aneurysm[14].

Current Service

Current providers of cardiac surgery are outlined in Section 2.7.

1.2 Aims and Objectives

The aim of this service specification is to define the requirements and standard of care essential for delivering cardiac surgery for adults with acquired heart disease.

The objectives of this service specification are to:

- detail the specifications required to deliver cardiac surgery services for adults who are residents in Wales
- deliver high quality clinical care and holistic support to service users in a culturally appropriate way
- ensure minimum standards of care are set for the use of cardiac surgery
- ensure equitable access to cardiac surgery
- identify centres that are able to provide cardiac surgery for Welsh patients
- improve the clinical outcomes, quality of life and experiences of people affected by the need for cardiac surgery

[11] National Institute for Health and Care Excellence: Heart valve disease presenting in adults: investigation and management (NG208), November 2021
[12] British Heart Foundation: Heart valve disease facing diagnosis crisis over next 40 years, 2018
[13] NHSE, NHS Digital: Health Survey for England 2017 Cardiovascular diseases, November 2019
[14] NHS England Service Specification: Specialised Vascular Services (Adults), 170004/S

- ensure that there is equity of access for all elements of the service and comparable clinical outcomes for all service users across all centres
- support and advise all professional groups within the system to offer care closer to home whenever it is clinically appropriate to do so
- deliver cardiac surgery services built around a model in each provider centre and across each region that supports an approach based around multidisciplinary teams
- ensure that the patients and families of service users are involved in care pathways
- engage in processes of continuous improvement and incorporate a patient safety culture
- provide treatment in a timeframe that is appropriate for the patient's condition
- ensure the appropriate alignment of patient, procedure and team (subspecialisation)

1.3 Relationship with other documents

This document should be read in conjunction with the following documents:

- **NHS Wales**
  - All Wales Policy: Making Decisions in Individual Patient Funding requests (IPFR).

- **National Institute of Health and Care Excellence (NICE) guidance**
  - Heart valve disease presenting in adults: investigation and management, NICE Clinical Guideline (NG208), November 2021
  - Heart valve disease presenting in adults: investigation and management, NICE Guideline, 2019
  - Chronic heart failure in adults: diagnosis and management, NICE Guideline (NG106), September 2018
  - Sutureless aortic valve replacement for aortic stenosis, NICE Guidance (IPG624), August 2018
  - Off-pump coronary artery bypass grafting, NICE Guideline (IPG377), January 2011

- **Relevant NHS England policies**
  - Service Specification: Cardiac Surgery (Adults), A10/S/a
  - Service Specification: Specialised Vascular Services (Adults), 170004/S
  - Service Specification: Cardiac Surgery (Adults), A10/S/a - 240701, July 2024

- **Other published documents**
  - British Heart Foundation Cymru: Wales Factsheet, January 2024
  - NCAP/NICOR: National Adult Cardiac Surgery Audit (NACSA): 2025 Annual Report

- Royal College of Anaesthetists: Chapter 18: Guidelines on the Provision of Anaesthesia Services for Cardiac Procedures 2024, January 2023
- Office for National Statistics: Monthly mortality analysis, England and Wales: July 2023
- ESC/EACTS: Guidelines for the management of valvular heart disease (2021)
- NICOR: National Cardiac Audit Programme: National Adult Cardiac Surgery Audit (NACSA) 2021 Summary Report, (2021)
- A joint report from the Association for Cardiothoracic Anaesthesia and Critical Care, the British Cardiovascular Intervention Society, the British Cardiovascular Society, the British Heart Valve Society and the Society for Cardiothoracic Surgery: Getting the best from the Heart Team: Guidance for the structure and function of cardiac multidisciplinary meetings, May 2021
- NHSE, NHS Digital: Health Survey for England 2017 Cardiovascular diseases, November 2019
- GIRFT: Cardiothoracic Surgery, GIRFT Programme National Specialty Report, March 2018
- Intensive Care Society/Faculty of Intensive Care Medicine: Core Standards for Intensive Care Units (2013)
- European Society of Cardiology, ESC/EACTS Guidelines: Guidelines on the management of valvular heart disease, (2012)
- European Society of Cardiology, ESC/EACTS Guidelines: Guidelines on myocardial revascularization, (2010)

2. Service Delivery

The NHS Wales Joint Commissioning Committee will commission the service of cardiac surgery for people (adults) with coronary heart disease, in line with the criteria identified in this specification.

2.1 Access Criteria

There are no specific access criteria for cardiac surgery. It is expected that the population of Wales can access cardiac surgery procedures in similar ways irrespective of geography, gender or race[2].

All referrals for cardiac surgery should come from a Cardiologist, other than those that present as an emergency in the Emergency Department.

All non-emergency cardiac surgery should be discussed by a disease specific MDT[7].

Valve Heart Disease

- Adults (18 and over) with suspected heart valve disease
- adults (18 and over) with diagnosed heart valve disease (aortic [including bicuspid] stenosis and regurgitation, mitral stenosis and regurgitation, tricuspid regurgitation)

Specific consideration will be given to:

- pregnant women and women considering pregnancy
- people with bicuspid aortic valve disease
- people at higher risk from interventions, for example, people with multiple comorbidities (including cardiac comorbidities) or frailty, or both[15].

2.2 Service description

In addition to the standards required within the Contract, specific quality standards and measures will be expected. The provider must also meet the standards as set out below.

Facilities and equipment

The cardiac surgery service will have the following resources:

- Dedicated/ring-fenced cardiac surgery ward beds, with a minimum number of beds to accommodate the volume and case mix of the centre[1] [16].

[15] NICE Heart valve disease in adults final scope: investigation and management, 2019
[16] European Journal of Cardio-Thoracic Surgery: EACTS clinical statement: guidance for the provision of adult cardiac surgery, December 2016

- Cardiac surgery critical care beds, (level 2 and/or level 3). The critical care beds should be equipped with facilities to care for patients needing cardiovascular support, including mechanical circulatory support, respiratory and renal support (renal replacement therapy) and staffed by nurses and doctors with the required critical care skills[1] [16].
- A cardiac ward for patients requiring level 1 care[16].
- A minimum of two dedicated fully equipped theatres for cardiac surgery, with immediate access to a hybrid theatre[2]. To accommodate sufficient volume of elective and urgent procedures and support emergency and out of hour's activity[16].
- A dedicated perfusion service, which is fully compliant with Department of Health guidance 'A guide to good practice in clinical perfusion'. Monitoring during surgery needs to be compliant with the Surgical/Anaesthetic recommendations 'Recommendations of standards for monitoring during cardiopulmonary bypass', and that there be near patient testing available to both the theatres and recovery area[16].
- The clinical perfusion unit needs to be located in close proximity to the operating theatre and should be accommodated in an area to enable preparation and postoperative maintenance of the heart–lung machines (storage, preparation and priming, disposal and maintenance), mechanical circulatory support systems, cell savers, intra-aortic balloon pumps, extracorporeal life support, extracorporeal membrane oxygenation and ventricular assist device) and organ replacement equipment (haemo-filtration and haemodialysis). Suitable storage areas with sufficient capacity should be available[16].
- During the transfer of the patient at the end of surgery to the postoperative care unit, there should be access to electrocardiogram (ECG), invasive blood pressure monitoring, pulse oximetry, disconnection alarm for any mechanical ventilation system, fractional inspired oxygen concentration and end-tidal carbon dioxide[17].
- Access to cardiac output monitoring should be available for high-risk cardiac patients perioperatively[17].
- Additional monitoring may be required for patients with complex conditions, such as pulmonary arterial pressure monitoring and measurement of cardiac output. Facilities for on-bypass haemofiltration should be available, which may include cytokine haemadsorption filters in patients with higher inflammatory burden[17].
- Cardiac anaesthesia and surgery are carried out under intensive physiological patient monitoring. Equipment used routinely for monitoring during cardiac surgery should be available. This includes invasive pressure monitoring for both systemic arterial and central venous pressures[17].
- Transesophageal echocardiogram should be immediately available[17].

[17] Royal College of Anaesthetists: Chapter 18: Guidelines on the Provision of Anaesthesia Services for Cardiac Procedures 2024, January 2023

- Monitoring during cardiopulmonary bypass should conform to the standards recommended by the joint working group of the Society of Clinical Perfusion Scientists of Great Britain and Ireland, Association for Cardiothoracic Anaesthesia and Critical Care (ACTACC), and Society for Cardiothoracic Surgery in Great Britain and Ireland[17].
- An intraaortic counter pulsation balloon pump should be available[17].
- Equipment for temporary pacing should be available[17].

Staffing

Cardiac surgery is a specialist area. The care of patients undergoing cardiac surgery must be delivered by multidisciplinary teams suitably trained and accredited in the specialty.

Specialist teams

The cardiac surgery service will consist of the following specialist team:

- Single named lead clinician for the service who should also be a core multidisciplinary team member
- Consultant Cardiac Surgeons with a range of subspecialty skills, able to contribute to subspecialty rotas for aortovascular and mitral valve surgery
- Consultant Cardiologists with expertise in echocardiography and valve disease
- Intensivists
- Consultant Anaesthetists with specialist cardiac expertise
- Advanced Nurse Practitioners and/or Advanced Care Practitioner, and Clinical Nurse Specialists
- Specialist Radiographers with expertise in cardiac structural CT
- Perfusionists to manage the heart and lung machine during heart surgery and the mechanical circulatory support in the ICU
- Theatre staff with cardiac experience
- Specialist ward and Intensive Care Unit Nurses
- Case Managers
- Physiotherapists
- Dieticians
- Occupational Therapists
- Speech and Language Therapists
- Cardiac surgery trainees / Specialty Doctors
- Pharmacists
- Data Manager / Analyst
- MDM Coordinator

To ensure that the cardiac surgery unit is appropriately staffed the unit will need to:

- Undertake workforce capacity audit and develop robust, sustainable plans to ensure staff capacity matches demand requirements across all service areas.
- Enable workforce flexibility between providers through the introduction of passporting and other schemes.
- Undertake workforce skills audit and deliver a comprehensive programme of education and continue professional development (CPD) based on a local assessment of need to support clinical staff within the network.
- Feedback the results of the audit to the NHS Wales Joint Commissioning Committee and Health Education and Improvement Wales to enable a regional approach to any current or predicted future skills shortages e.g. an aging workforce or changes in entry routes to training or career pathways[18].

Support Services

- There should be immediate access to Haematology, biochemistry, microbiology and blood transfusion services 24 hours/day, 7 days/week and 365 days/year for cardiac surgery[16] [17].
- There should be a point of care laboratory in or near the theatre for the measurement of blood gases, electrolytes, haemoglobin, anticoagulation (including thromboelastography or thromboelestometry) and availability of blood products with rapid access[17].
- There should be immediate access to vascular surgery and interventional vascular radiology[2].
- There should be immediate access to expert radiology advice, x-ray facilities and computerised axial tomography services for patients undergoing cardiac surgery[17]
- There should be immediate access to dedicated echocardiography equipment, including transoesophageal echo in the operating suite and postoperative care areas. Those who deliver intraoperative echocardiography services should be trained to National/International echocardiography society accreditation standards available 24 hours/day, 7 days/week and 365 days/year through an appropriate on-call service. For specialist units performing valve repair surgery 3D echo facilities should be available[17] [16].
- There should be access to respiratory function measurements for patients undergoing cardiac surgery, including a facility for cardiopulmonary exercise testing[17] [16].
- Medical physics or suitably qualified technicians are required to maintain, calibrate and repair anaesthetic machines, mechanical ventilators, monitors, infusion pumps, heart–lung machines and all other equipment regularly used in the care of cardiac surgical patients[16].

[18] NHSE Cardiac Surgery Think Tank Recommendations: Cardiac Transformation Programme and Specialised Elective Recovery, May 2024

- There should be access to a range of specialist cardiology services[17].
- There should be 24 hour/day and 7 days/week access to cardiac electrophysiology services[17].
- There should be 24 hour/day and 7 days/week access to physiotherapy services during the preoperative preparation and postoperative care of patients undergoing cardiac surgery[17].
- All anaesthetic equipment should be checked before use in accordance with the Association of Anaesthetists published guidelines. Anaesthetic machine checks should be recorded in a log and on the anaesthetic chart[17].
- There should be clearly defined pain relief protocols for cardiac surgery patients[17].
- Critical care pharmacy services should be available for cardiac surgery patients in ICU.
- There should be access to pharmacy services 7 days/week[1].

Service Delivery/Organisation

- The service must be configured so that there is sufficient volume to ensure workforce sustainability and maintain professional expertise and should serve a population sufficient to support a critical mass of infrastructure required to deliver the service.
- The cardiac surgical unit should have provision to deliver an elective, urgent and emergency service for most aspects of adult cardiac-acquired surgical conditions. Surgical care must be provided continuously on a daily basis 52 weeks/year[16]. Multidisciplinary care pathways should be defined and should reflect the cardiac surgical services provided. Care delivery should be designed according to existing clinical guidelines and through development of local multidisciplinary protocols of care. Protocols should cover care for the entire clinical pathway. Clear processes for care delivery should be defined and implemented. A mechanism of implementing, revising and updating such protocols and pathways should be available[16].
- All units should have arrangements and infrastructure for eligible patients to be discussed in multidisciplinary meetings[16].
- Patients should be assessed for their suitability for cardiac surgery and receive pre-operative and post-operative follow up care in dedicated cardiac surgery clinics[2].
- The service should have dedicated cardiac surgery theatre sessions. The number of cardiac surgical lists should be based on demand and capacity modelling for the population served. Steps should be taken to ensure that every theatre session available each day is utilised - annualised job plans, and pooling of patients create flexibility for operating on patients throughout the week[1].
- A system should be in place to ensure that every patient is reviewed by a consultant pre- and post- operatively and that this happens 7 days a week[1].
- A system should be in place to ensure that acute aortic syndrome patients are only operated on by rotas of acute aortic syndrome specialist teams[1].

- A system should be in place to ensure that patients with degenerative mitral valve disease are only operated on by specialist mitral valve surgeons[1].
- The service should establish smarter scheduling to utilise the resources available to achieve an optimal number of cardiac procedures and reduce cancellations. This will enable the unit to:
  - Understand the unit capacity from available data
  - Reduce unplanned admissions to maintain elective activity
  - Convert non-elective to elective activity
  - Reduce cancellations by ensuring lists are well planned and patients are ready prior to listing
  - Optimise post-operative recovery to reduce length of stay[18]
- A system should be in place to ensure that there is remote monitoring for patients on cardiac surgery waiting lists. This should include the development of a tailored approach for ongoing monitoring and harm reviews[18].
- Providers should work with the cardiac network and local improvement team to implement initiatives to support the optimal utilisation of core resources.
- Providers are required to participate in and contribute to a networked model of care to enable services to be delivered as part of a co-ordinated, combined whole system approach.

Non-elective provision

- Regional work-up protocols should be established for non-elective referrals[1].
- Patients should only be transferred to the tertiary centre once an operation date has been confirmed and pre-operative work-up has been completed[1].
- Appropriate numbers of vacant slots should be allocated to the operating schedule each week[1].
- Non-elective cases should be pooled for next appropriate theatre session and next appropriate available surgeon[1].

MDT (the multidisciplinary team)

- There should be an MDT responsible for the management of a patient on a disease specific pathway, which may extend from primary to tertiary care[19].
- There should be a facility for a virtual MDT with colleagues across the region[1].
- Mindful that assessment of risk will vary according to specific circumstances, the composition of the MDT should accommodate clinical expertise that enables the early identification and assessment of high-risk patients, such that an appropriate course of treatment can be ascertained at the earliest possible opportunity

[19] A joint report from the Association for Cardiothoracic Anaesthesia and Critical Care, the British Cardiovascular Intervention Society, the British Cardiovascular Society, the British Heart Valve Society and the Society for Cardiothoracic Surgery: Getting the best from the Heart Team: Guidance for the structure and function of cardiac multidisciplinary meetings, May 2021

- All non-emergency cardiac surgery should be discussed by a disease-specific MDT[7].

MDM (the multidisciplinary meeting)

- The MDM requires high professional standards, administrative support in order to coordinate cases and execute the decisions in a timely way, and processes which facilitate audit and quality assurance.
- The centres MDM should include:
  - Myocardial revascularisation
  - Aortic valve disease
  - Mitral and tricuspid valve disease
  - Endocarditis
- The MDMs need to encompass the full breadth of patients from those who are stable in the outpatient setting to patients who present acutely with haemodynamic instability.
- The MDM should include members of the MDT and should be convened for the purpose of reaching a consensus on the optimal management of a particular patient.
- There should be clear protocols for which patients should be reviewed in an MDM.
- All MDMs require a minimum dataset which must be completed for patients who are referred for discussion.
- The arrangements for MDMs need to reflect the pattern and volume of patient referrals such that discussions and recommendations can be made in response to the urgency of clinical presentations. There are three broad categories of patients: outpatients, urgent in-patient referrals, and emergency cases.
- Specialty MDMs should be convened on a regular basis to discuss outpatient cases. The frequency for most MDMs should be at least weekly.
- Whilst urgent cases can be discussed in the elective outpatient MDM, a weekly meeting is not sufficiently frequent to ensure discussion of all urgent referrals without some patients incurring a significant delay in their care pathway. Surgical centres should convene daily virtual MDMs at a fixed time for the consideration of urgent in-house and network referrals. This requires the availability of the MDM coordinator and, as a minimum, the on-call cardiac surgeon and cardiologist.
- The output of the MDM must include a record of the key decisions made and the reasons behind these decisions. The output should be incorporated into the patient's electronic hospital records (for in-house cases), and conveyed electronically to the referring consultant, to the GP and to the patient. The nature of the information included in the output form will vary according to the type of MDM, but essential information includes:
  - The named consultant responsible for ongoing care
  - Treatment recommendations
  - Key reasons for treatment recommendations

- Timing of treatment – elective outpatient treatment, discharge for outpatient treatment, urgent inpatient treatment
- Arrangements for interhospital transfer, if required
- Nature of any additional investigations required
- Process for review of any additional investigations
- Recommendations for specific aspects of care such as anticoagulants, antiplatelet therapy, antibiotic
- therapy for endocarditis, and assessment for implantable cardiovertor defibrillator/cardiac synchronisation therapy[19].

Education and Training

- Cardiac surgery should be delivered by multidisciplinary teams suitably trained and accredited in the specialty[16].
- The surgical teams should be led by experienced and practising surgeons (senior specialists) with appropriate nationally recognised training and accreditation qualifications. A minimum number of senior specialist cardiac surgeons is required to provide a full time elective and emergency out of hours service. The surgical teams also consist of medical staff or trainees in the specialty and/or qualified staff grade level specialists, and specialist surgical care non-medical practitioners. Minimal staffing levels to provide a multitier including the senior specialist and/or equivalent grade 24 hours, 7 days/week, 365 days/year on-call service should be employed[16].
- Consultant or autonomously practising anaesthetists intending to undertake anaesthesia for cardiac surgery should have received training to a higher level in cardiac anaesthesia for a minimum of one year in recognised training centres. Those providing critical care for cardiac surgical patients should have received training as described by the Faculty of Intensive Care Medicine (see Cardiothoracic Critical Care, Guidelines for the Provision of Intensive Care Services). This should include training in transoesophageal echocardiography[17].
- Postoperative care on ICU should be delivered by fully trained cardiac surgeons, intensivists and/or anaesthetists. Minimal staffing levels to provide a multitier including the senior grade 24 hours, 7 days/week, 365 days/year on-call service should be employed[16].
- The nursing staff should consist of qualified accredited nurses organised in a shift system to provide 24 hours, 7 days/week, 365 days/year cover. In the ICU areas there should be nurses who have undergone further training as specialist nurses for intensive care and anaesthesia. During each shift there should be a minimal number of senior and experienced cardiac nurses to provide a safe cover for all patients. The minimal number should be set by local, regional or national guidelines and should meet the level of care required by patients in the ICU[16].
- The clinical perfusion department should employ perfusionists with recognised national qualifications and available on a rota to cover 24 hours, 7 days/week and 365 days/year[16].

- Perfusion services should be provided by suitably trained and accredited clinical perfusion scientists and should comply with Department of Health guidelines. A suitable number of trained perfusionists should be always available according to the recommendations for standards of monitoring during cardiopulmonary bypass[17].
- Cardiac surgical units should provide opportunities for training of medical and non-medical staff. Training should be encouraged, unit recognition for training standards should be sought from the relevant local, regional and national training regulatory bodies[16].

Clinical Standards

Providers should work to the following clinical and quality standards:

- Royal College of Anaesthetists: Guidelines for the provision of anaesthetic services
- Royal College of Anaesthetists: Chapter 18: Guidelines for the Provision of Anaesthesia Service for Cardiac and Thoracic Procedures 2021
- Royal College of Anaesthetists: Chapter 18: Guidelines on the Provision of Anaesthesia Services for Cardiac Procedures 2024, January 2023
- Society of Clinical Perfusion Scientists of Great Britain & Ireland Association for Cardiothoracic Anaesthesia and Critical Care Society for Cardiothoracic Surgery in Great Britain & Ireland: Recommendations for Standards of Monitoring and Safety during Cardiopulmonary Bypass, September 2023
- EACTS/EACTAIC: Guidelines on patient blood management in adult cardiac surgery in collaboration with EBCP (2024)
- EACTS/EACTA/EBCP: Guidelines on cardiopulmonary bypass in adult cardiac surgery (2019)
- ESC/EACTS: Guidelines for the management of valvular heart disease (2021)
- Intensive Care Society/Faculty of Intensive Care Medicine: Core Standards for Intensive Care Units (2013)
- Department of Health: Guide to Good Practice in Clinical Perfusion, July 2009

2.3 Interdependencies with other services or providers

All heart surgery is undertaken in fully equipped and staffed operating theatres by specialist cardiac anaesthetists with immediate availability of transoesophageal echocardiography. Patients who have undergone such surgery are returned to an area capable of managing such patients including those who do not follow a straightforward path and might necessitate prolonged ventilation and inotropic support, an intra-aortic balloon pump, haemofiltration and access to many additional specialists who will be available to attend at short notice. This should be available without a transfer of hospital. Such a service will be delivered in a dedicated area with core staff dedicated to the delivery of postoperative care of patients recovering from open-heart surgery. Such staff would be fully trained in the post-operative care of surgical patients, including their

resuscitation. Similarly, there should be dedicated intensivists who have experience and training in the management of the ill postoperative patient following open-heart surgery.

All cardiac surgical units must have detailed and robust working relationships with all other major branches of acute medicine and surgery, in particular; complex interventional cardiology, cardiac imaging, heart failure service, vascular services, renal, gastroenterological, general and plastic surgical, neurology (ideally with acute stroke teams) and intensive care programmes. In addition, there must be close links with physiotherapy and rehabilitation services[2].

2.4 Exclusion Criteria

This specification covers all cardiac surgery but does not include surgery for the following groups of patients who might require cardiac surgery:

- transplantation with or without Ventricular Assisted Device implantation
- surgery for congenital cardiac problems
- non vascular thoracic surgery[2].
- patients who have previously had surgery for congenital heart disease

Valve Heart Disease

- people with congenital heart valve disease, except bicuspid aortic valve disease
- children and young people 17 years and under[15].

2.5 Acceptance Criteria

The service outlined in this specification is for patients ordinarily resident in Wales, or otherwise the commissioning responsibility of the NHS in Wales. This excludes patients who whilst resident in Wales, are registered with a GP practice in England, but includes patients resident in England who are registered with a GP Practice in Wales.

2.6 Transition Arrangements

Transition arrangements should be in line with Transition from children's to adults' services for young people using health or social care services NICE guidance NG43 and the Welsh Government Transition and Handover Guidance.

Transition involves a process of preparation for young people and their families for their transition to adulthood and their transition to adult services. This preparation should start from early adolescence 12-13 year olds. Patients will transition from paediatric to adult services between 16 and 18 years of age, the exact timing of this will ideally be dependent on the wishes of the young person but will need to comply with local resources and arrangements.

The transition process should be a flexible and collaborative process involving the young person and their family as appropriate and the service.

The way this process is managed will vary on an individual case basis with multidisciplinary input often required and patient and family choice taken into account together with individual health board and environmental circumstances factored in.

2.7 Patient Pathway (Annex i)

All adult cardiac surgical units are appropriately configured to continue providing this service. The aforementioned National Institute for Care Excellence (NICE) and European guidelines for both coronary and valvular heart disease provide the basis for the care pathways that should be delivered by every cardiac centre. These standards will apply also to any patients subcontracted to the independent sector and the governance will remain with the referring Health Board.

It is expected that the centres will have well defined patient pathways which allow all patients presenting with cardiac disease, amenable to surgery, to have their condition investigated locally, have any invasive tests performed in a safe environment and to have a timely referral made to the relevant cardiac surgical centre.

Cardiac surgical centres must have arrangements for elective patients to be discussed at a multidisciplinary meeting. There should be network wide agreement as to which patients are discussed (including patients who are going straight for angioplasty). It is expected that centres will work with other colleagues in primary and secondary care so that there are consistent standards for diagnosing heart valve disease across Wales.

Patients presenting for heart surgery will be discussed at multidisciplinary meetings. It is anticipated that the following divisions (revascularisation, valve disease, aortic vascular disease, surgery for arrhythmias and endocarditis) would have their individual meetings. This is particularly important in the decision making when dealing with patients presenting with ischaemic heart disease.

Patients presenting urgently will be investigated locally depending on their presenting condition and transferred to their local cardiac surgical centre without delay. This will vary depending on the particular condition:

- Acute ischaemia with decompensation will normally be dealt with by the tertiary cardiology team who may place an intra-aortic balloon pump (IABP) and perform percutaneous revascularisation. Occasionally such a patient may require urgent surgery (such as those with a rupture of the intraventricular septum as a consequence of a myocardial infarction).

- For patients with acute aortic dissection the diagnosis is frequently made by CT scan wherever the patient presents and the patient transferred, directly, urgently, for surgery.
- With acute cardiac decompensation due to valve disease, patients are generally seen by a cardiologist, locally, and may be transferred to the tertiary cardiology team or directly for surgery.

There is a larger group of patients who need semi urgent surgery. Such patients commonly present with a non-ST elevation myocardial infarction (NSTEMI) but can present with valve decompensation, valve endocarditis or a critical anatomical narrowing of a coronary artery. There needs to be pathways of care to allow the safe and quick processing of such patients, again, so that irrespective of where a patient presents, they will be transferred in, and have surgery within an agreed time frame.

All patients should be offered cardiac rehabilitation. Phase 1 rehabilitation will be carried out during the inpatient stay. This will be undertaken by the High Dependency Unit (HDU) ward nurse/cardiac rehab nurse/physiotherapist.

Upon discharge patients will be referred to the local district general hospital or general practitioner, as appropriate, for medical review and to the local cardiac rehabilitation service for cardiac rehabilitation unless this is to take place in the base hospital when a similar referral will be made.

All patients will have a clear follow-up plan at the time of discharge along with a discharge summary and plan to be given to the patient and the GP.

All patients to be discharged on the full battery of evidenced based medicines[2].

2.8 Service provider/Designated Centre

South Wales

Cardiac surgery services are provided for South and Mid Wales from two centres:

- University Hospital of Wales
  Cardiff & Vale University Health Board
  Heath Park Way
  Cardiff
  CF14 4XW

- Morriston Hospital
  Swansea Bay University Health Board
  Heol Maes Eglwys, Morriston
  Swansea
  SA6 6NL

North Wales

For patients resident in North Wales and North Powys:

- Liverpool Heart and Chest Hospital
  Thomas Drive, Liverpool
  L14 3PE

Powys

As well as access to the two South Wales Centres and Liverpool Heart and Chest Hospital, patients resident in Powys have access to:

- The Queen Elizabeth Hospital
  Mindelsohn Way
  Edgbaston
  Birmingham
  B15 2WB

- Royal Stoke University Hospital
  Newcastle Road
  Stoke on Trent
  ST4 6QG

2.9 Exceptions

If the patient does not meet the criteria for treatment as outlined in this policy, an Individual Patient Funding Request (IPFR) can be submitted for consideration in line with the All Wales Policy: Making Decisions on Individual Patient Funding Requests. The request will then be considered by the All Wales IPFR Panel.

If the patient wishes to be referred to a provider outside of the agreed pathway, an IPFR should be submitted.

Further information on making IPFR requests can be found at: Individual Patient Funding Requests

3. Quality and Patient Safety

The provider must work to written quality standards and provide monitoring information to the lead commissioner. The quality management systems must be externally audited and accredited.

3.1 Quality Indicators (Standards)

Locally defined and Provider outcomes

Provider(s):

- are to deliver this service/treatment in line with applicable national standards
- should aspire for each consultant to undertake at least 150 cardiac surgical operations a year in line with the expectations of the National Adult Cardiac Surgery Audit and, where required, should identify and resolve any issues that are preventing this where required[7]
- are to use network wide agreed clinical protocols, to establish the need for surgery and referral
- are required to use a risk stratification system to determine priority for treatment
- should use electronic referral systems to refer and transfer patients for urgent cardiac surgery
- should meet the waiting times standards for cardiac surgery
- with prolonged waiting times for elective CABG surgery should review their processes and referral pathways to identify the causes of any delays. If necessary, advice should be sought from centres with evidence of the best performance. A Quality Improvement (QI) action plan should be instigated to achieve this target[20]
- unit(s) not achieving the waiting times target should consider ring-fencing level 3 intensive therapy unit (ITU) facilities, and seek to make greater use of day of-surgery admissions (DOSA) and enhanced recovery after surgery (ERAS) to improve patient flows and outcomes[20]
- should offer day of surgery admission (DOSA) to patients and hospitals should review their systems to enable compliance with the Getting It Right First Time (GIRFT) recommendations to enable this (that all patients undergoing elective cardiac surgery should have DOSA)[7]
- should offer patients cardiac surgery in neighbouring hospitals with shorter waiting times if reductions in elective waiting times cannot be demonstrated[20].
- should ensure cardiac surgery patients with extended waits for surgery are being monitored for deterioration and that harm reviews are taking place as required with appropriate action taken to reduce future harm[18].
- Hospitals not reaching the target of urgent CABG performed within 7 days after coronary angiography should undertake a review of their processes to identify

[20] NACSA: National Adult Cardiac Surgery Audit: 2022 Summary report

where delays occur and how these can be avoided. If necessary, advice should be sought from centres with evidence of the best performance. A quality improvement (QI) plan should be instigated to reduce delays[20]

- Hospitals not reaching the DOSA target should undertake a review of their processes to identify the barriers to achieving this target (such as introducing pre-assessment clinics). If necessary, advice should be sought from centres with evidence of the best performance. A QI action plan should be instigated to achieve this target[20]
- Hospitals with longer post-operative length of stay (PLOS) should investigate the reasons for this and implement changes to improve performance[7]
- Hospitals with higher bleeding rates should review their practice and implement changes to reduce these[7]
- Hospitals with higher deep sternal wound infection (DSW rates should review their practice and implement changes to reduce these)[7]
- should establish regular MDT meetings whereby all cardiac surgery cases that have not gone well, including those who have died, are discussed and reflected upon. These morbidity and mortality meetings should be formal with registers and minutes, and most importantly, action plans for improvement[2]
- should ensure that patient outcome data is recorded and audited across the service
- should ensure complete and accurate data are submitted to the National Adult Cardiac Surgery (NACSA) audit, especially with respect to:
  - complications following surgery
  - transfusion rates
  - use of multi-disciplinary team meetings[7]
- should submit data pertaining to heart surgery to the NICOR national audit into postoperative death. The data must be of satisfactory quality (i.e. 100% completion of age, gender, responsible consultant, operation type, discharge status and >97% completion of other risk fields, and >95% completion of non-mortality outcomes). The submission must contain all patients operated on. It is expected that such audits will be 'live' audits in departments so that the data is used real time to improve outcomes for patients[2]
- should monitor and publish annually the following quality indicators:
  - % elective and urgent unplanned procedures return to theatre
  - % elective and urgent return to theatre due to a bleed or tamponade
  - % elective and urgent deep sternal wound infection
  - % new post-operative neurological dysfunction (inc TIA, paraplegia and paraparesis new CVA
  - % elective and urgent post-operative neurological dysfunction, permanent stroke only
  - % elective and urgent post-operative dialysis renal replacement therapy
  - Blood transfusion rates
  - Unplanned readmission to hospital

- should ensure that there is a structured patient experience data collection and analysis programme in place
- should enable the patients, carers and advocates informed participation and to be able to demonstrate this. Provision should be made for patients with communication difficulties
- should evaluate the centre(s) performance against the national standards, and compare the centre(s) with other hospitals with better performance and institute quality improvement measures where necessary
- should establish a formal Standard Operating Procedure for cardiac surgery data validation, risk adjustment, outlier identification, escalation plans and reporting for GIRFT metrics[1]
- should ensure that quality and reflective practice initiatives are implemented including identification of relevant outcome and process measures, data collection and outcome monitoring systems, mortality and morbidity multidisciplinary meetings, near misses reporting, clinical incident reporting and risk management departmental and institutional protocols[16]

3.2 National Standards

- Perform in accordance with the European Society of Cardiology/European Association of Cardio-Thoracic Surgery (ESC/EACTS) guidelines on both coronary and valvular heart disease[2]

3.3 Other quality requirements

- the provider will have a recognised system to demonstrate service quality and standards
- the service will have detailed clinical protocols setting out nationally (and local where appropriate) recognised good practice for each treatment site
- the quality system and its treatment protocols will be subject to regular clinical and management audit
- the provider is required to undertake regular patient surveys and develop and implement an action plan based on findings
- It is a requirement that the service looks for opportunities for participation in clinical trials and research relating to cardiac surgery

4. Performance Monitoring and Information Requirement

4.1 Performance Monitoring

NWJCC will be responsible for commissioning services in line with this policy. This will include agreeing appropriate information and procedures to monitor the performance of organisations.

For the services defined in this policy the following approach will be adopted:

- Service providers to evidence quality and performance controls
- Service providers to evidence compliance with standards of care

NWJCC will conduct performance and quality reviews on an annual basis

4.2 Key Performance Indicators

The providers will be expected to monitor against the full list of Quality Indicators derived from the service description components described in Section 2.2.

In particular, the provider will be expected to monitor against the following target outcomes:

- Cardiac Referral to Treatment Waiting Times and activity
- Cancellation rates
- Cardiac Component waiting times
- Urgent Waiting/transfer times
- Length of stay for patients having elective and urgent cardiac surgery
- Day of surgery admission rate
- Number of weekend discharges
- Clinical outcomes:
    - Treatment success rates
    - Adverse incidents or SUIs
    - Post procedure complication rates
    - Post procedure mortality
- Patient Reported Outcome Measures (PROMS)
- Patient Reported Experience Measures (PREMS)

Any centre performing cardiac surgery must provide outcome data (in the form of the agreed dataset), to a centrally held database for event tracking hosted by NICOR (National Institute for Cardiovascular Outcomes Research)

The provider should also monitor the appropriateness of referrals into the service and provide regular feedback to referrers on inappropriate referrals, identifying any trends or potential educational needs.

4.3 Date of Review

This document is scheduled for review every three years unless information is received which indicates that the policy requires revision.

If an update is carried out the policy will remain extant until the revised policy is published.

5. Equality Impact and Assessment

The Equality Impact Assessment (EQIA) process has been developed to help promote fair and equal treatment in the delivery of health services. It aims to enable NHS Wales Joint Commissioning Committee to identify and eliminate detrimental treatment caused by the adverse impact of health service policies upon groups and individuals for reasons of race, gender re-assignment, disability, sex, sexual orientation, age, religion and belief, marriage and civil partnership, pregnancy and maternity and language (Welsh).

This policy has been subjected to an Equality Impact Assessment.

The Assessment demonstrates the policy is robust and there is no potential for discrimination or adverse impact. All opportunities to promote equality have been taken.

6. Putting Things Right

6.1 Raising a Concern

Whilst every effort has been made to ensure that decisions made under this policy are robust and appropriate for the patient group, it is acknowledged that there may be occasions when the patient or their representative are not happy with decisions made or the treatment provided.

The patient or their representative should be guided by the clinician, or the member of NHS staff with whom the concern is raised, to the appropriate arrangements for management of their concern.

If a patient or their representative is unhappy with the care provided during the treatment or the clinical decision to withdraw treatment provided under this policy, the patient and/or their representative should be guided to the LHB for NHS Putting Things Right. For services provided outside NHS Wales the patient or their representative should be guided to the NHS Trust Concerns Procedure, with a copy of the concern being sent to NWJCC.

6.2 Individual Patient Funding Request (IPFR)

If the patient does not meet the criteria for treatment as outlined in this policy, an Individual Patient Funding Request (IPFR) can be submitted for consideration in line with the All Wales Policy: Making Decisions on Individual Patient Funding Requests. The request will then be considered by the All Wales IPFR Panel.

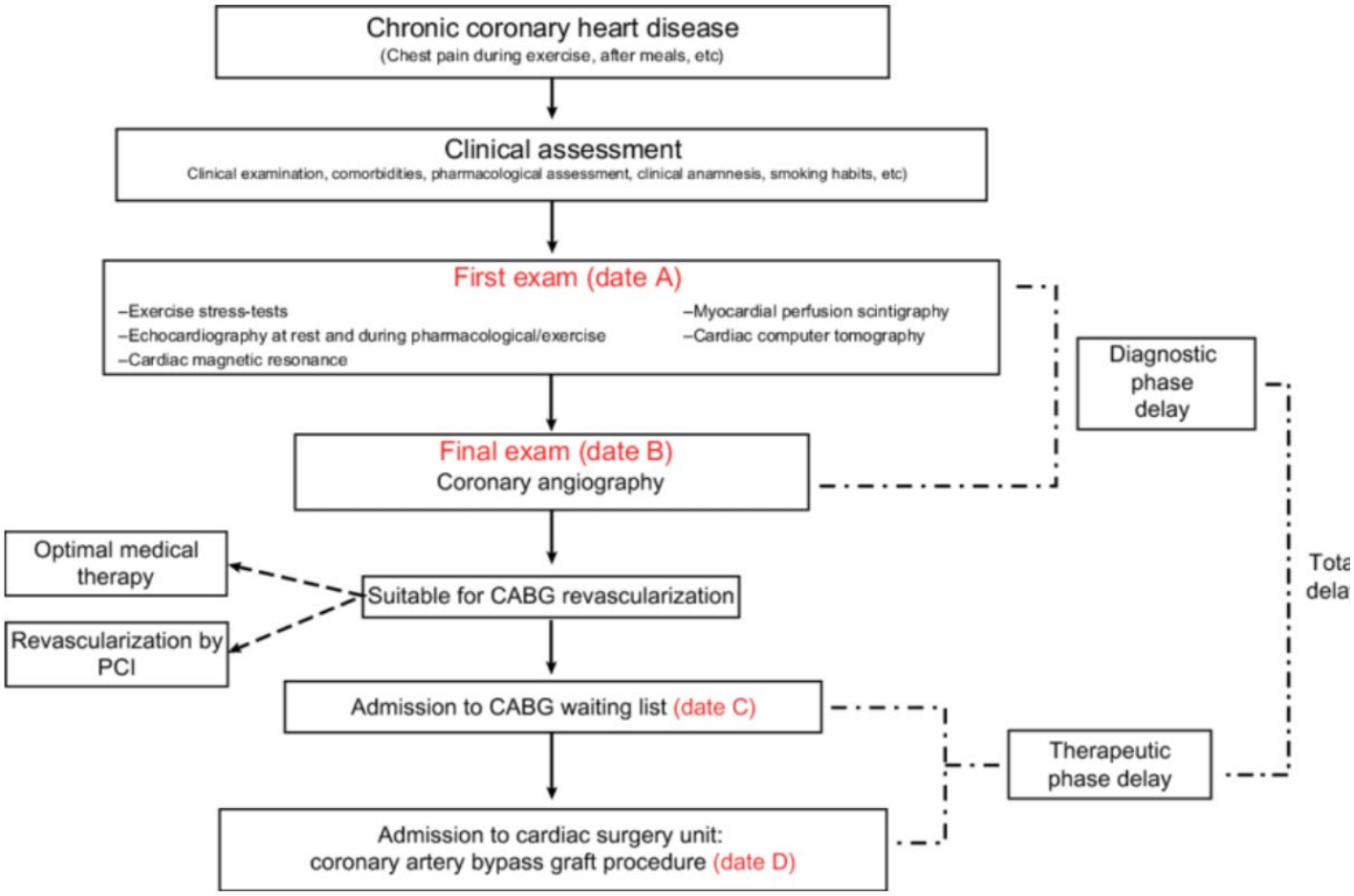
If an IPFR is declined by the Panel, a patient and/or their NHS clinician has the right to request information about how the decision was reached. If the patient and their NHS clinician feel the process has not been followed in accordance with this policy, arrangements can be made for an independent review of the process to be undertaken by the patient's Local Health Board. The ground for the review, which are detailed in the All Wales Policy: Making Decisions on Individual Patient Funding Requests (IPFR), must be clearly stated.

If the patient wishes to be referred to a provider outside of the agreed pathway, and IPFR should be submitted.

Further information on making IPFR requests can be found at: Individual Patient Funding Requests

Annex i Patient Pathway

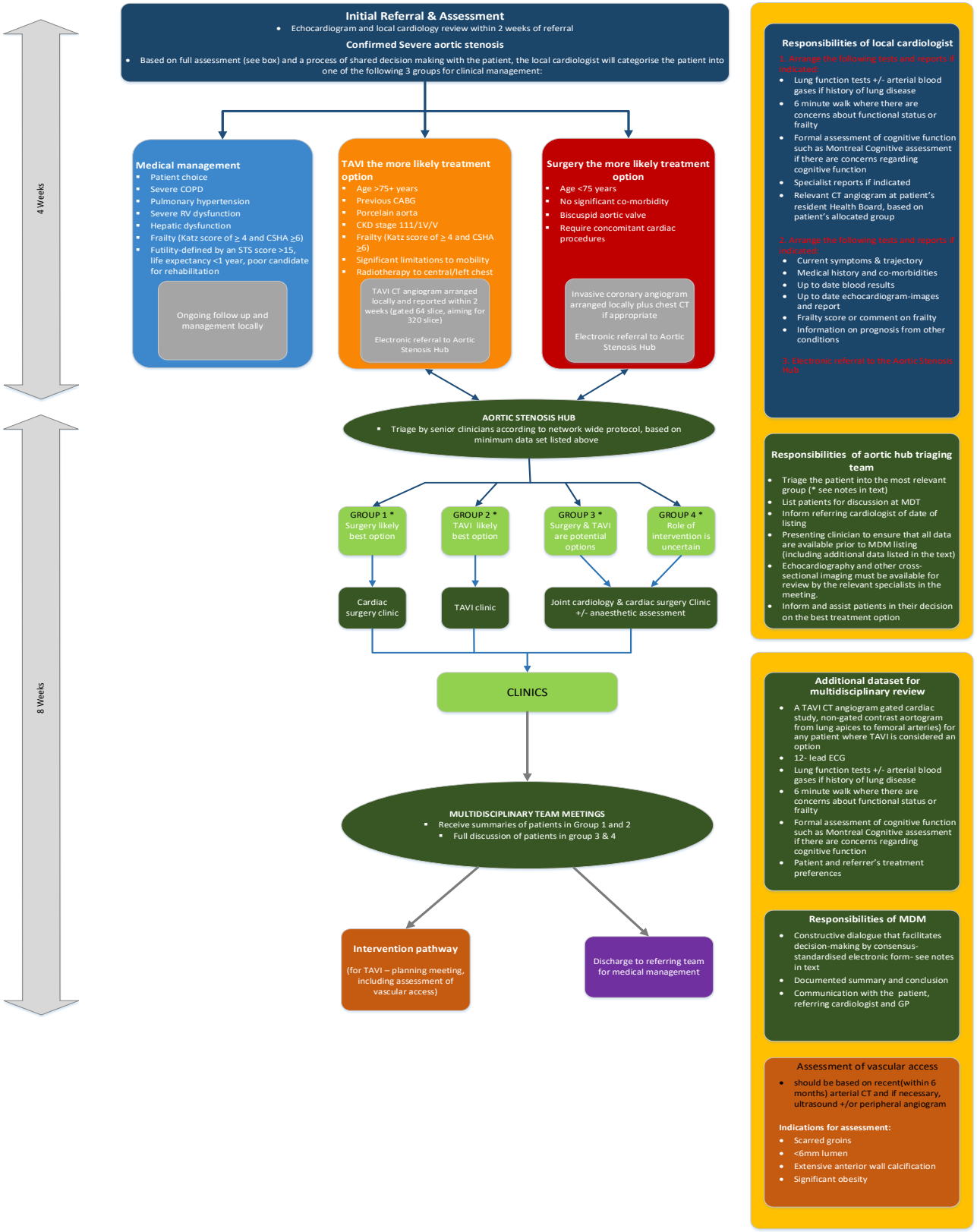
*Pathway diagram example included below:



Coronary heart disease patients' evaluations and clinical pathway till the eventual coronary artery bypass graft (CABG) procedure. Abbreviation: PCI, percutaneous coronary intervention.

[Coronary heart disease patients' evaluations and clinical pathway till... | Download Scientific Diagram (researchgate.net)]

All Wales Aortic Stenosis (degenerative) Pathway



Responsibilities of local cardiologist

1. Arrange the following tests and reports if indicated:
   - Lung function tests +/- arterial blood gases if history of lung disease
   - 6 minute walk where there are concerns about functional status or frailty
   - Formal assessment of cognitive function such as Montreal Cognitive assessment if there are concerns regarding cognitive function
   - Specialist reports if indicated
   - Relevant CT angiogram at patient's resident Health Board, based on patient's allocated group
2. Arrange the following tests and reports if indicated:
   - Current symptoms & trajectory
   - Medical history and co-morbidities
   - Up to date blood results
   - Up to date echocardiogram-images and report
   - Frailty score or comment on frailty
   - Information on prognosis from other conditions
3. Electronic referral to the Aortic Stenosis Hub

Responsibilities of aortic hub triaging team

- Triage the patient into the most relevant group (* see notes in text)
- List patients for discussion at MDT
- Inform referring cardiologist of date of listing
- Presenting clinician to ensure that all data are available prior to MDM listing (including additional data listed in the text)
- Echocardiography and other cross-sectional imaging must be available for review by the relevant specialists in the meeting.
- Inform and assist patients in their decision on the best treatment option

Additional dataset for multidisciplinary review

- A TAVI CT angiogram gated cardiac study, non-gated contrast aortogram from lung apices to femoral arteries) for any patient where TAVI is considered an option
- 12- lead ECG
- Lung function tests +/- arterial blood gases if history of lung disease
- 6 minute walk where there are concerns about functional status or frailty
- Formal assessment of cognitive function such as Montreal Cognitive assessment if there are concerns regarding cognitive function
- Patient and referrer's treatment preferences

Responsibilities of MDM

- Constructive dialogue that facilitates decision-making by consensus-standardised electronic form- see notes in text
- Documented summary and conclusion
- Communication with the patient, referring cardiologist and GP

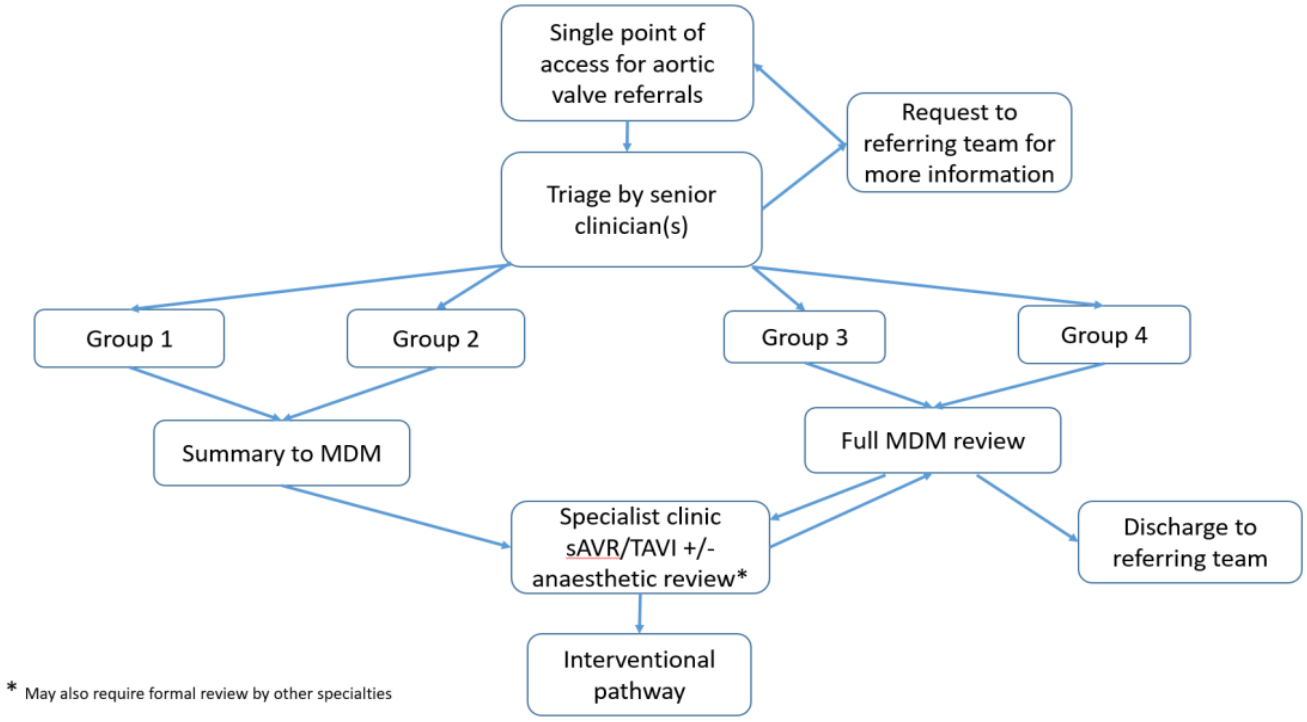
Assessment of vascular access

- should be based on recent(within 6 months) arterial CT and if necessary, ultrasound +/or peripheral angiogram

Indications for assessment:

- Scarred groins
- <6mm lumen
- Extensive anterior wall calcification
- Significant obesity

Aortic multidisciplinary meeting flow chart



Group 1: Patients for whom surgery appears the best option. Patients in Group 1 should, in general, be triaged towards sAVR as the preferred treatment option and seen in a surgical clinic.

Group 2: Patients for whom TAVI appears the best option. Patients in Group 2 should, in general, be triaged towards TAVI as the preferred treatment option and seen in a TAVI clinic.

Group 3: Patients where both sAVR and TAVI are potential options. Patients in Group 3 require a detailed review of the pros and cons of each intervention. With a full MDM discussion to determine the preferred treatment strategy.

Group 4: Patients where the role of intervention is uncertain[19].

Annex ii Codes

Code Category	Code	Description
OPCS	K4[01234567][123489], K45[56], K4[67]5	CABG
OPCS	K2[5678][1234589], K276, K3[01][123489], K34[12345689], K36[12], K38[123]	Valve surgery
OPCS	K33[134589]	Aortic root surgery
OPCS	L1[89][289], L20[289], L212, L22[1489], L23[15689], L25[124589]	Aortic surgery
OPCS	K38[56], K551, L1[89]1, L2[01]1	Aortic surgery (ascending)
OPCS	K12[1234589], K22[129], K23[123689], K249, K38[89], K48[123489], K53[1289], K55[345689], K67[189], K69[1289], K71[123489], L80[189]	Other cardiac surgery (requiring opening of the pericardium)

Annex iii Glossary

Hybrid Operating Theatre
A hybrid operating theatre is designed to combine traditional surgical procedures with advanced imaging capabilities.

Individual Patient Funding Request (IPFR)
An IPFR is a request to NHS Wales Joint Commissioning Committee (NWJCC) to fund an intervention, device or treatment for patients that fall outside the range of services and treatments routinely provided across Wales.

MDT (Multidisciplinary Team)
The MDT (or "heart team") is the group of healthcare professionals responsible for the management of a patient on a disease-specific pathway, which may extend from primary to tertiary care.

MDM (Multidisciplinary Meeting)
The MDM is a meeting of members of the MDT convened for the purpose of reaching a consensus on the optimal management of a particular patient.

NHS Wales Joint Commissioning Committee (NWJCC)
NWJCC is a joint committee of the seven local health boards in Wales. The purpose of NWJCC is to ensure that the population of Wales has fair and equitable access to the full range of Tertiary Services. NWJCC ensures that services within our portfolio are commissioned from providers that have the appropriate experience and expertise. They ensure that these providers are able to provide a robust, high quality and sustainable services, which are safe for patients and are cost effective for NHS Wales.

National Institute for Cardiovascular Outcomes Research (NICOR)
NICOR is a partnership of clinicians, IT experts, statisticians, academics and managers who, together, are responsible for six cardiovascular clinical audits (the National Cardiac Audit Programme – NCAP) and a number of new health technology registries, including the UK TAVI registry. Hosted by Barts Health NHS Trust, NICOR collects, analyses and interprets vital cardiovascular data into relevant and meaningful information to promote sustainable improvements in patient well-being, safety and outcomes. It is commissioned by the Healthcare Quality Improvement Partnership (HQIP) with funding from NHS England and GIG Cymru/NHS Wales, and additional support from NHS Scotland.

Society of Cardiothoracic Surgeons (SCTS)
The SCTS is an affiliated group of the Royal College of Surgeons of England and has charitable status. The Charity's objectives are to enable surgeons to achieve and maintain the highest standards of surgical practice and patient care.

Contact Us

If you have a question related to this document you can contact us using one of the methods outlined below.

If you would like this document in an alternative format and/or language, please contact us for assistance.

Email:

NWJCC consultation mailbox – nwjccconsultation@wales.nhs.uk

Telephone:
General Enquiries – 01443 433112

Website:

Contact us - NHS Wales Joint Commissioning Committee

Writing:

If you wish to contact the NHS Wales Joint Commissioning Committee, you can write to us at one of our locations below, we welcome correspondence in Welsh or English:

South Wales Offices

- Unit 1, Charnwood Court, Heol Billingsley, Nantgarw, CF15 7QZ
- Unit G1 The Willowford, Main Avenue, Treforest Industrial Estate, Pontypridd, CF37 5YL

North Wales Offices

- Unit 3, Media Point - Unit 3, Mold Business Park, Mold, CH7 1XY
- Preswylfa, Hendy Road, Mold, CH7 1PZ