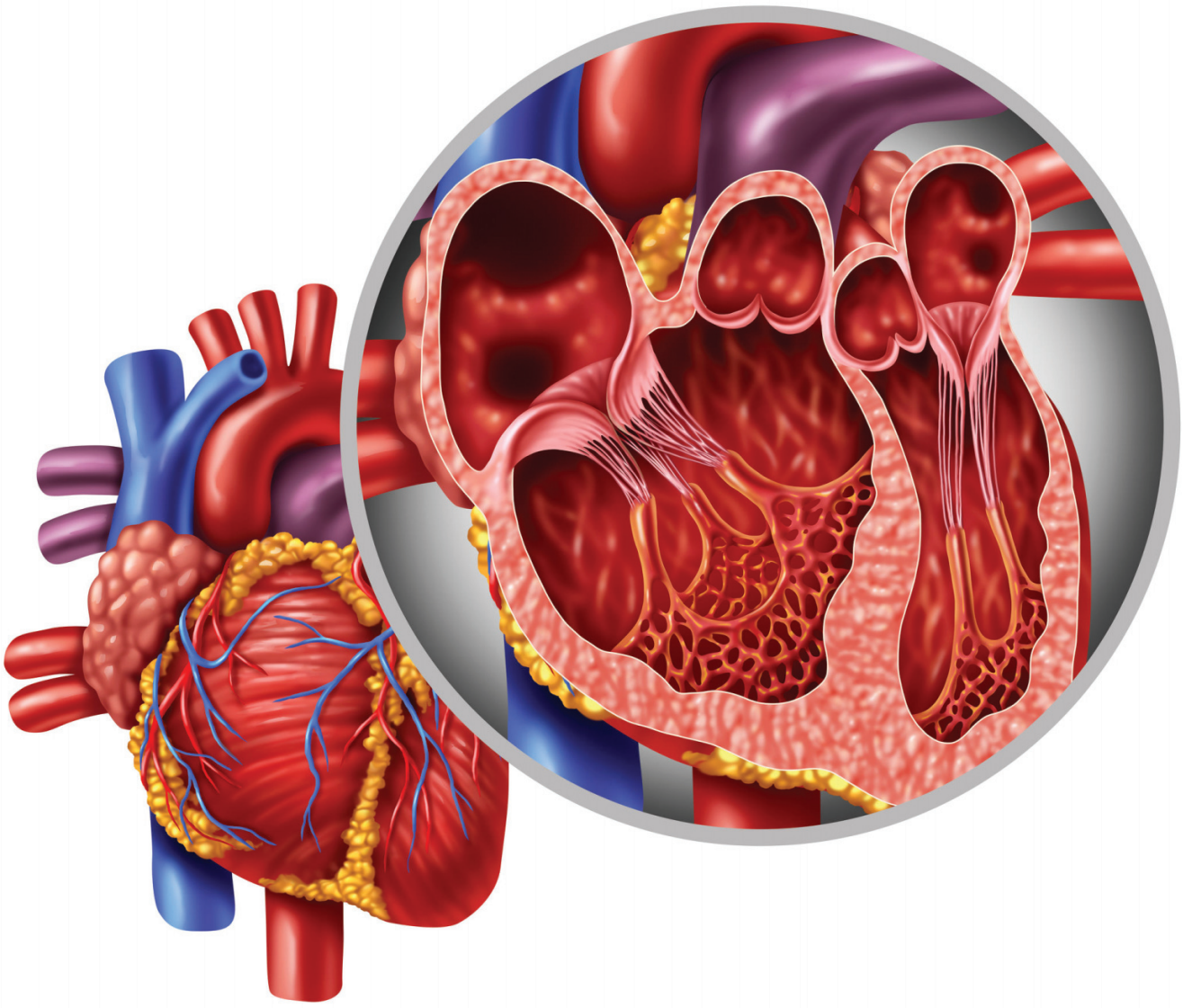
Syllabus for valve disease

Version 1



British Heart Valve Society

Introduction

Valve disease is increasing in incidence as our population ages and is now an important cause of premature death, morbidity and health care expenditure. Clinical care for patients with valve disease is variable and needs to be improved. A vital component of improvement is education and training. Currently no adequate syllabus for valve disease exists anywhere.

This document is to describe the nationally agreed core syllabus for valve disease and will contribute to the definition of subspecialisation in valve disease. It is applicable to all disciplines involved with valve disease including cardiologists, cardiac surgeons, general practitioners, nurses, physiologists, and sonographers.

Epidemiology

- Epidemiology of heart valve disease. Variations in aetiology globally. Increase in degenerative and iatrogenic disease. Effect of ageing population. Device related endocarditis and IVDU.
- Global and local prevalence of valve disease. Results of population surveys including US-based, Norwegian and Finnish. Findings of EuroHeart Survey.

Mechanisms of disease

- Pathology of rheumatic disease. Jones criteria and WHO and other criteria for initial and subsequent attacks. Treatment of acute rheumatic fever and secondary prophylaxis including duration.
- Reasons for decline in rheumatic disease.
- Pathology of calcific aortic disease including similarities and differences compared with coronary disease.
- Pathology of carcinoid and similarities and differences with drug-induced valve disease.
- Radiation-induced valve disease.
- Valve disease in general medicine. SLE and antiphospholipid syndrome. Ankylosing spondilitis.

General care

- Management of patients requiring extracardiac surgery.
- Effect on driving and insurance. Advice to athletes. Pregnancy.
- Dental surveillance
- Advantages and draw-backs of population screening. Costs. Medicalisation of well people.
- Evaluating surgical risk. Drawbacks of EuroSCORE. Frailty index. Quality of life. Effect of multiple morbidities on symptoms and principles of assessment.
- Use of biomarkers notably BNP.
- Variation in access to specialist care globally and in UK. Interhospital variation in mitral repair rates and the effect of surgeon and hospital volumes. Methods for organising care including arguments for and against specialist valve clinics, and specialised surgeons.
- Reduced access by the elderly. Effect of TAVI programmes on conventional surgical rates.
- Models for community care including GP with special interest in valve disease, murmur clinic, open access echocardiography. Different yields from clinical vs echocardiographic screening. Groups at particularly high risk including the elderly, relatives of probands with bicuspid valve disease, migrants from countries in which rheumatic fever is endemic.
- Patient involvement. Effect of education on acceptance of results.

Aortic Stenosis

- Epidemiology
- Aetiology. Common causes and less common
- The bicuspid aortic valve. Functional vs anatomical. Patterns and their association with other anomalies including aortic dilatation, coarctation and mitral prolapse. Natural history including risk of developing haemodynamically significant valve disease or aortic dilatation. Low risk of dissection.
- Natural history including response of the left ventricle to pressure load. Gender differences in response. Effect of coexistent coronary disease and hypertension. Conduction disease. Effect of LV hypertrophy on outcome. Frequency of pulmonary hypertension and affect on outcome.
- Symptoms and signs. Exercise testing to reveal latent symptoms.
- Principles of assessment by echocardiography including the classification of severity including how to approach apparent discrepancies. Effect of incorrect readings. Use of dimensionless index and indexing to body habitus. Role of CMR and CT.
- Diagnosis and management of low-flow aortic stenosis with reduced and preserved EF
- The approach to the patient with moderate aortic stenosis and symptoms
- Frequency of surveillance
- Indications for and timing of surgery for severe aortic stenosis. Criteria for surgery at the time of CABG or aortic surgery. Indications for TAVI. Evidence for balloon valvotomy including possible role as bridge to conventional surgery. Postoperative complications including LV outflow acceleration
- Medical therapy to reduce the rate of progression and in and-stage inoperable aortic stenosis. Evidence for medical therapy in aortic dilatation

Aortic Regurgitation

- Epidemiology
- Aetiology. Primary and secondary causes
- Natural history including response of the left ventricle to volume load. Effect of LV size on wall stress.
- Symptoms and signs. Exercise testing to reveal latent symptoms.
- Principles of assessment by echocardiography including the classification of severity. Importance of LV volumes. Role of CMR .
- Frequency of surveillance
- Indications for and timing of surgery. Types of surgery including aortic valve repair and valve-sparing aortic surgery. Likelihood of permanent pacing.
- Medical therapy to reduce the rate of progression. Evidence for nifedipine, ACE inhibitors and AT receptor-blockers. Avoidance of beta-blockers.

Mitral Stenosis

- Epidemiology
- Aetiology. Rheumatic, SLE. Annulus calcification
- Natural history including effect on pulmonary artery pressures and right ventricular function.
- Symptoms and signs. Complications including thromboembolism. Exercise testing to reveal latent symptoms.
- ECG and radiographic features
- Principles of assessment by echocardiography including the classification of severity.
- Frequency of surveillance
- Indications for and timing of intervention. Balloon valvotomy favoured over surgery. Types of surgery including open valvotomy and replacement. Natural history after balloon valvotomy. Need to intervene for secondary tricuspid regurgitation.
- Medical therapy. Rate control. Criteria for anticoagulation in sinus rhythm.

Mitral Regurgitation

- Epidemiology
- Aetiology. Primary and secondary
- Natural history including effect of LV volume load and pulmonary artery pressures.
- Symptoms and signs. Exercise testing to reveal latent symptoms.
- Principles of assessment by echocardiography including the classification of severity and detailed anatomic and physiologic analysis to guide surgery. Differences in effect of grading in primary and secondary regurgitation. Role of stress echocardiography. Role of CMR.
- Frequency of surveillance
- Indications for and timing of intervention in primary and secondary mitral regurgitation. Types of repair including neochordae. Indications for small annuloplasty rings in secondary mitral regurgitation. Differences in indication according to suitability need for CABG. Natural history after repair. Indications for transcatheter procedures. Need to intervene for secondary tricuspid regurgitation.
- Medical therapy. Rate control. Evidence for ACE inhibitors and beta-blockers.

Right Heart Valve Disease

- Epidemiology of tricuspid and pulmonary valve disease
- Aetiology. Association with congenital syndromes. Primary and secondary causes
- Natural history including effect of RV volume load and pulmonary artery pressures.
- Principles of assessment by echocardiography including the classification of severity. Prominent role of CMR in pulmonary regurgitation.
- Frequency of surveillance
- Indications for and timing of intervention in tricuspid stenosis and pulmonary stenosis. Indications for and timing of intervention in primary and secondary tricuspid regurgitation. Effect of delay in surgery. Indications for and timing of surgery for pulmonary regurgitation. Types of repair. Prototype transcatheter devices.
- Medical therapy. Rate control and off-loading

Infective Endocarditis

- Frequency estimates. Changing epidemiology. Pathology of infective endocarditis (IE).
- Presentation of IE. Complications of IE and of treatment. The differential diagnosis between discitis and osteomyelitis.
- Causative organisms for native, prosthetic and IVDU. Causes of culture negative IE.
- When to suspect IE. Duke criteria for diagnosis. The differential diagnosis between IE and line infection. The difference between pacemaker pocket infection and device infection.
- Investigation of IE. Blood tests including blood cultures, number and timing. Role of imaging. Central role of echocardiography. When TOE is indicated and when TTE is sufficient. Role of CT and PET.
- Antibiotic management including dose and duration. Methods of delivery including PICC or central line. Indications and evidence for outpatient management (OPAT).
- Determinants of mortality. Indications for and timing of surgery. Effect of cerebral event and other complications. Effect of residual vegetation size.
- Special cases. Prosthetic valve IE. Right-sided IE. Management of implantable electrical device infection.
- Outpatient follow up. Recurrence and relapse rate. Requirement for surgery for residual regurgitation. Long-term survival. Management of IV drug use. Principles of managing representation in IVDU. The need for dental surveillance. Antibiotic prophylaxis including differences between NICE and international guidelines.

Replacement ('Prosthetic') Heart Valves

- Types of replacement valve. General design features (occluder, housing, sewing ring). Positioning (supra-annular, intra-annular, intermediate). Common designs of mechanical valve. Common designs of stented xenograft. Types of stentless xenograft potential advantages over stented valves. Homograft preparation and use. The Ross procedure and its indications.
- Complications of replacement heart valves. How common. Effect of valve design. Modes of primary failure of biological and mechanical valves. Natural history of different valve types. Patient factors in determining failure including age, diabetes and hypertension.
- Assessment of function including detection of obstruction and regurgitation. Identification of patient-prosthesis mismatch, its adverse effects and how it can be avoided.
- Management of anticoagulation including pregnancy, over-dose and active bleeding. Use of anticoagulants in biological valves. Role of non vit K antagonists.
- Management of valve thrombosis. Differentiation of thrombus and pannus
- Management of dehiscence, conservative treatments and indications for intervention. Transcatheter vs operative repair
- Principles of choosing type of valve. RCT of different designs of valve and microsimulation studies. Special cases, the woman of child-bearing age, the athlete, the fit elderly.
- Risks of redo surgery. Indications for valve-in valve transcatheter techniques.
- Future directions for research and development including biopolymers and stem cell research.