

Guidance document for completion of Echo Multiple Consultant Review

How to use this document:

This document is used to inform both the trainees and echocardiography leads on how best to utilise the specific Echocardiography Multiple Consultant Review to record progress within training in echocardiography.

Echocardiography is a key clinical skill within Cardiology and all trainees need to be proficient prior to obtaining a CCT. Training is developed over a period of time and includes knowledge of appropriate theory as well as practical skills on the performance and interpretation of studies.

It is envisaged that trainees will collate practical experience through a log book of supervised cases and each year will provide a summary sheet of these to the designated echocardiography lead who will then assess their competency level and complete the MCR. Once adequate capability is achieved the regional echocardiography lead will complete a further MCR indicating that completion of core training in echocardiography has been achieved.

The theory component will be self-taught: your department should have suitable text-books. As an alternative or in addition, online training tools may be utilised, eg: <http://www.escardio.org/communities/EACVI/education/Pages/basic-echocardiography-course.aspx#>

Full transthoracic BSE accreditation will be accepted as equivalent to core echocardiography training completion.

Supervision:

- All trainees should have an on-site echo supervisor: a senior and experienced echocardiographer ideally having BSE accreditation. They should review your current learning needs and assist the echocardiography lead in assessing your progress through the MCR
- Trainees having difficulty in identifying their supervisor or in obtaining appropriate support for their echo training should inform their ES, TPD or STC echo lead **as soon as possible**.

Log book:

- Trainees should keep a log-book of all cases performed including an identifier (such as hospital number and date performed, not name) and capturing indication and key findings. There are no mandatory numerical requirements for echo but in order to achieve the required standard of scanning and reporting although an indicative number would be 50-100 cases during each of the first years of training.
- Additionally trainees should keep a log-book of image review cases where they did not perform the scan, such as during training day activity. Similar indicative numbers would be suitable in this area.

Detailed below are the types of experience that could be expected mapped against the Echo MCR. The trainee can use these to focus their training and the echocardiography lead to assess the trainees progress. The sections are not prescriptive and alternative ways of demonstrating progress can be considered.

REQUIREMENTS FOR COMPLETION OF ST4 (TRAINING YEAR ONE)

1. BASIC EMERGENCY ECHOCARDIOGRAPHY: sign-off by mid-point ST4

Practical competencies

Acquire 4 standard TTE views -

PLAX, PSAX, A4Ch, subcostal

Recognise potentially treatable causes of circulatory collapse
Pericardial collection – massive pericardial effusion
Severe myocardial insufficiency
Pulmonary embolus – massive and sub-massive
Severe hypovolaemia
Exclusion of VF

2. BASIC ECHOCARDIOGRAPHY: sign-off by mid-point ST4

Knowledge

- Basic principles of ultrasound
- Basic principles of spectral Doppler
- Basic principles of colour flow Doppler
- Basic instrumentation
- Ethics and sensitivities of patient care
- Basic anatomy of the heart
- Basic echocardiographic scan planes
- Parasternal long axis standard, RV inflow, RV outflow
- Parasternal short axis including aortic valve, mitral valve and papillary muscles
- Apical views, 4- and 5-chamber, 2-chamber and long-axis
- Indications for transthoracic and transoesophageal echocardiography

Practical competencies

Interacts appropriately with patients
Explains procedure, offers chaperone if appropriate
Shows respect for patient dignity at all times

Cares for machine appropriately
Understands basic instrumentation
Demonstrates appropriate use of sector width, gain control, focus

Can obtain all standard views:
Parasternal LAX and SAX, apical 4, 2 and 3 chamber
Subcostal, suprasternal

Can obtain standard measurements using 2D or M-mode
LV, LA and aortic dimensions, Simpson's biplane

Can recognise normal variants
E.g. Eustachian valve, Chiari network, LV false tendon

Can use colour examination in at least two planes for all valves optimising gain and box-size

Can obtain pulsed wave Doppler at

- a) left ventricular inflow (mitral valve)
- b) left ventricular outflow tract (LVOT)
- c) right ventricular inflow (tricuspid valve)
- d) right ventricular outflow tract, pulmonary valve & main pulmonary artery

3. LEFT VENTRICLE: sign-off by end ST4

Knowledge

- Coronary anatomy and correlation with 2D views of left ventricle.
- Segmentation of the left ventricle
- Wall motion: normal and abnormal
- Measurements of global systolic function (LVOT VTI, stroke volume, fractional shortening)
- Doppler mitral valve filling patterns & normal range
- Appearance of complications after myocardial infarction
- Aneurysm, pseudoaneurysm
- Ventricular septal and papillary muscle rupture
- Ischaemic mitral regurgitation
- Features of dilated, and hypertrophic cardiomyopathy
- Common differential diagnoses
- Athletic heart, hypertensive disease

Practical competencies

Can differentiate normal from abnormal LV systolic function

Can recognise large wall motion abnormalities

Can describe wall motion abnormalities and myocardial segments

Can obtain basic measures of systolic function
(VTI, FS, LVEF)

Understands & can differentiate between diastolic filling patterns

Can detect and recognise complications after myocardial infarction

Understands causes of a hypokinetic left ventricle

Can recognise features associated with hypertrophic cardiomyopathy

Demonstrates appropriate use of tissue velocity imaging

REQUIREMENTS FOR COMPLETION OF ST5 (TRAINING YEAR 2)

4. MITRAL VALVE DISEASE: sign-off by end ST5

Knowledge

- Normal anatomy of the mitral valve, the subvalvular apparatus and their relationship with LV function
- Causes of mitral stenosis and regurgitation (ischaemic, functional, prolapse, rheumatic, endocarditis)
- Criteria for surgical referral and reasons for taking the relevant measurements

Practical competencies

Can recognise rheumatic MV disease

Can recognise mitral valve prolapse

Can recognise functional mitral regurgitation

Can assess mitral stenosis
(2D planimetry, pressure half-time, mean gradient)

Can assess mitral regurgitation, MR index,
chamber size, signal density, concepts of proximal flow
acceleration & vena contracta,

5. AORTIC VALVE DISEASE and AORTA: sign-off by end ST5

Knowledge

- Causes of aortic valve disease
- Causes of aortic disease
- Methods of assessment of aortic stenosis and regurgitation
- Basic criteria for surgery to understand rationale behind measurements

Practical competencies

Can recognise bicuspid, rheumatic, and degenerative AV disease

Can recognise a significantly stenotic aortic valve

Can derive peak & mean pressure gradients using continuous wave Doppler

Can quantify aortic regurgitation

Can recognise dilatation of the ascending aorta

(indexing to BSA, Z scores)

Knows the echocardiographic signs of dissection

REQUIREMENTS FOR COMPLETION OF ST6 (TRAINING YEAR 3)

6. RIGHT HEART: sign-off by end ST6

Knowledge

- Causes of tricuspid and pulmonary valve disease
- Causes of right ventricular dysfunction
- Causes of pulmonary hypertension
- Echocardiographic features of pulmonary hypertension
- Estimation of pulmonary pressures and pitfalls

Practical competencies

Recognises right ventricular dilatation

Ability to estimate RV systolic function
(TAPSE, awareness of role of 3D)

Can estimate PA systolic pressure

7. REPLACEMENT HEART VALVES: sign-off by end ST6

Knowledge

- Types of valve replacement
- Criteria of normality
- Signs of failure
- Indications for TOE

Practical competencies

Can recognise broad types of replacement valve

Can recognise prosthetic valve dysfunction
(morphology, seating, regurgitation, obstruction)

8. INFECTIVE ENDOCARDITIS: sign-off by end ST6

Knowledge

- Duke criteria for diagnosing endocarditis and limitations
- Echocardiographic features of endocarditis
- Criteria for TOE

Practical competencies

Can recognise typical vegetations

Can recognise an abscess

9. INTRACARDIAC MASSES: sign-off by end ST6

Knowledge

- Types of mass found in the heart
- Features of a myxoma
- Differentiation of atrial mass
- Normal variants and artefacts

Practical competencies

Can recognise a LA myxoma

Can recognise intracardiac thrombus and
Demonstrate awareness of role of echo contrast

10. CARDIOMYOPATHIES: sign-off by end ST6

Knowledge

- Features of different types of cardiomyopathies
- Role of other imaging modalities
- Indications for intervention (ICD, surgery)

Practical competencies

Can differentiate dilated, hypertrophic and restrictive CMP
and identify secondary/treatable causes

Can recognise high risk features
(septal thickness, LVOT gradient etc)

11. PERICARDIAL DISEASE: sign-off by end ST6

Knowledge

- Features of tamponade
- RV collapse, effect on IVC, A-V valve flow velocities

Practical competencies

Can differentiate a pleural and pericardial effusion

Can recognise the features of tamponade

Can judge the route for pericardiocentesis

Can attempt to differentiate restriction and constriction