Overview
of the
British Society of Echocardiography
Adult Transthoracic Echocardiography Exam
& the ‘New Practical Assessment’

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4 steps to the process, (From March 2015)

Step 1: British Society of echocardiography adult TTE written examination. Consists of 2 parts:
- Part 1: Theory section &
- Part 2: Reporting section, (Imaging)

Step 2: Log book collection and submission.

Step 3: Video/Digital case collection and submission.

Step 1

Written examination:

(Comprises 2 Parts which are done on the same day)

Part 1 of written exam, Theory section:

• 25 questions with 5 True or False questions in each, totaling 125 True or False questions.
• Lasts 60mins.
• 5 questions, (25, T or F), are on ultrasound physics.
• 20 questions, (100, T or F), on knowledge of echocardiographic findings and cardiac anatomy.
• Questions reflect on day to day findings in an echo lab, eg. There will be more questions on valve pathology/IHD findings and measurements in comparison to ratio of questions on adult congenital defects, as they are seen less.

Theory section continued..

• Pass mark is 95/125, (76%) approx.
• Tips for passing is:
  - Practice all the free distance learning modules on BSE website. The questions in these are similar to the exam and they will get you use to the tricky wording.
  - Read BSE journals, also available on BSE website.
  - Read recommended reading list eg. Feigenbaums echocardiography and Making sense of echocardiography A. R. Houghton 2nd ed, to make sure you cover all of syllabus.
  - Get plenty of hands on echo practice with senior staff to learn how to do measurements.
  - Learn all BSE valve and chamber measurements of by heart, 1 week before exam as many marks are based on knowing your measurements. (Theses can be found on BSE website or free ‘Echocalc’ app for your mobile phone.
• See www.bsecho.org accreditation section for full breakdown of syllabus.
Part 2 of written exam: Reporting, (Imaging section)

- **10 video cases** shown one after to other, no breaks! Lasts 90mins, but the times goes so quick!
- Each video case has 5 questions with 4 possible answers for each question, you pick the best answer. Note all answers may be correct or even 2 out of the 4, but you have to pick the **Most correct one**.
- You are shown moving images and stills for 1-3mins on projector, then screen goes blank!
  - There is a break to read questions & possible answers for 1-3mins and answer if you have time.
  - Then images and stills are shown once more for 1-3 mins, then screen goes blank.
  - Then you get a final 1-3mins to answer the rest of questions and then projector goes straight onto next case. **You need to be very focused!!!!**
- 50 questions altogether, 5 per video case, each case worth 5 marks giving total marks obtainable 50. Pass mark normally 30/50 = 60%.
- Note: The obvious pathology on video is not always what they ask the questions on!
- They normally throw in a few unusual and rare pathologies in the videos, also. They usually give questions that you need to calculate the answers in, so know your AVA continuity equation and bernoulli equations of by heart!

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Step 2

Logbook collection and submission:

- 250 transthoracic cases personally performed and reported by you during 24 months post receiving pass results from Written exam, (Step 1).
- All cases have to be **fully anonymous**, name, ID, DOB except yr. (Black marker covering name not allowed anymore – see pack on how to fully anonymise logbook.
- All 250 **signed** by you by pen at bottom.
- 250 cases reflect a normal case load of a general dept., eg. 25 should show LV function assessment, 50 on valve disease assessment, 10 on valve replacements, etc. See Accreditation info pack for specific requested breakdown required on BSE website.
- All should be in **1 binder** with a total tally and tally on each section in the summary sheet provided in info pack.
- **Dividers and good presentation** is very important.
- You must **bring your Logbook to the Practical Assessment day** where it will be assessed and you will be told pass or fail on the day, (See Step 4 later in this presentation on how they are assessed).
- Candidates supervisor should let candidate know if logbook is not up to the mark pre practical assessment day.
**Step 3**

**Video/Digital Case collection and submission:**
(Also must be collected within the 24 month period)

- 5 full studies with reports, anonymised.
- Each in separate folders on a Power Point presentation. Reports printed separately and signed by you. You must bring your laptop to practical assessment to play these 5 cases for assessors.
- Cases should be of high standard, showing good echo skills, measurements on screen, optimisation of doppler, ECG signal, gains and sector width shown, specific measurements demonstrated as per specific pathologies on screen and these measurements matching in reports.
- Candidates supervisor should let candidate know if digital cases are not up to the mark pre practical assessment.

5 specific cases required:
1. A normal study.
2. Moderate or severe Aortic Stenosis.
3. Moderate or severe aortic or mitral regurgitation.
4. Previous or recent myocardial infarct.
5. Other interesting case.

(Review Accreditation info pack as per specific measurements required)

**Step 4**

**Practical Assessment:**

- All candidates are required to attend a scheduled practical assessment day after finishing collecting their logbook and video cases in the 24 month period.
- The candidate are required to bring their logbook binder and their laptop containing 5 video cases to this assessment to be assessed.
- There is 3 stations the candidate must pass all to fully pass the Adult TTE Accreditation process.

The 3 Stations are:

- **Station 1:** Logbook assessment.
- **Station 2:** Practical assessment, (Taking images).
- **Station 3:** Video/Digital cases assessment.
Passing and Failing of Stations in the Practical Assessment

• You will start on station 1, if you pass you can proceed to station 2. If you fail station 1, you have failed the whole process, but you are allowed to go through 2nd and 3rd station to see what they are like for future repeating of whole process again from step 1 – written exam.

• If you pass station 2 you can proceed to station 3. If you fail station 2, you have failed whole process, but are allowed to go through 3rd station to see what its like for future repeating of whole process again from step 1 – written exam.

• If you have passed station 1 and 2 you can proceed to the last station 3. If you pass station 3 you have completed all stations and passed, you are now fully accredited in BSE Adult TTE! Unfortunately if you fail station 3 you have failed the whole process. You can repeat the process from step 1, (Written exam), to start the whole process once again.

Note: There is over 90% success rate on the Practical Assessment

How to make sure YOU PASS the Practical Assessment??

You need to be able to tick all the boxes!
Station 1: Log book assessment

Firstly the assessors look at logbook in general, (Log sheet 1)

- The assessors have an overall look through the log book checking for approximate numbers and correct inclusion of sections. (They don’t count exactly).
- Assess each section and tick the boxes on sheet.
- Add feedback comments if necessary.
- Automatic Fail/minor breaches.
- In certain cases where a logbook has not met the required standard, the Assessors may request a reduced resubmission of up to 50 cases rather than 250. A specific case mix may be required.

Log sheet 1

<table>
<thead>
<tr>
<th>CANDIDATE ID</th>
<th>ASSESSOR ID</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Logbook submitted in one ring binder/file with dividers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cases collected within 24 month period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250 TTE reports performed and reported by the candidate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 cases reported by the candidate as 1st operator. (Can be countersigned)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cases fully anonymised</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct case mix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All reports with full name and signature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary sheet present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor/Mentor statement present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final check list present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Good presentation is the key, (Annoys assessors if not!).
- Note: A lot of automatic fails!!!
- Assessors don’t count exactly how many unless it appears too thin.
- All 250 must be personally signed by the candidate at the bottom.
Station 1 – Log book assessment

Assessors look at individual reports: (Log sheet 2)

• The assessor removes 15 random reports from log book including one from each section.
• They fill in log sheet using Pass/Fail criteria.
• No conclusion in reports = Automatic fail.
• More than two ‘N’, (No’s), = fail for that case.
• 30% of cases failed = Fail of log book.

Log sheet 2

<table>
<thead>
<tr>
<th>CANDIDATE ID</th>
<th>ASSESSOR ID</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports</td>
<td>1  2  3  4  5  6  7  8  9  10  11  12  13  14  15</td>
<td>Comments</td>
</tr>
<tr>
<td>Fully anonymised</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Indication for echo present</td>
<td>N</td>
<td>P</td>
</tr>
<tr>
<td>2D/M-mode measurements present</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Appropriate measurements/Doppler calculations present</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Doppler measurements/Doppler calculations match descriptions</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>All parts of heart described</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Descriptions complete</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Appropriate to request</td>
<td>N</td>
<td>P</td>
</tr>
<tr>
<td>Conclusion present</td>
<td>X</td>
<td>P</td>
</tr>
<tr>
<td>Pass or Fail</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

FAIL

*All parts of heart described = all 4 chambers and all 4 valves.
*Measurements must match description.
*You must answer the echo question in the summary.
*Must always have a conclusion/summary.
*If one spotted that is not fully anonymised, they will go through to check for more.
### Station 2: Practical Assessment
(10 specific images to acquire)

<table>
<thead>
<tr>
<th>Performance Competency</th>
<th>Criteria</th>
<th>F</th>
<th>BF</th>
<th>BP</th>
<th>Weighting</th>
<th>Guidance</th>
<th>Max Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks patients identity</td>
<td>Checks patient identity using 3 unique identifiers</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Checks the correct patient identifier. Award P if 3 unique identifiers are checked, BP if 2 unique identifiers are checked, BF, if 1 unique identifier is checked and F if no checks are made.</td>
<td>9</td>
</tr>
<tr>
<td>2D PLAX</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image although is able to identify remedial measure. F if unable to reproduce image, which reflects the PLAX in the specific model.</td>
<td>15</td>
</tr>
<tr>
<td>2D SAX LV</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image although is able to identify remedial measure. F if unable to reproduce image, which reflects the SAX LV in the specific model.</td>
<td>15</td>
</tr>
<tr>
<td>2D modified SAX aorta demonstrating main PA</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image although is able to identify remedial measures. F if unable to reproduce image, which reflects the SAX at Aortic level identifying Main PA in the specific model.</td>
<td>9</td>
</tr>
</tbody>
</table>

### Continued...

<table>
<thead>
<tr>
<th>Performance Competency</th>
<th>Criteria</th>
<th>F</th>
<th>BF</th>
<th>BP</th>
<th>Weighting</th>
<th>Guidance</th>
<th>Max Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PW pulmonary valve, (1 cm below PV in RNOT)</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality PW Doppler image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image, although is able to identify remedial measures. F if unable to reproduce image, which reflects the PW Doppler in RNOT in the specific model.</td>
<td>3</td>
</tr>
<tr>
<td>2D Apical 4 Chamber</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D apical 4 chamber image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image although is able to identify remedial measures. F if unable to reproduce image, which reflects the apical 4-chamber in the specific model.</td>
<td>15</td>
</tr>
<tr>
<td>PW mitral valve in the tops of the MV leaflets</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality PW Doppler image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image although is able to identify remedial measures. F if unable to reproduce image, which reflects the PW Doppler in the MV leaflet tips in the specific model.</td>
<td>3</td>
</tr>
<tr>
<td>2D Apical 2 Chamber</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D Apical 2 Chamber image in required timeframe. Award P if high quality optimized image, BP if clinically satisfactory image with limited optimization. BF if unable to accurately acquire image, although is able to identify remedial measures. F if unable to reproduce image, which reflects the Apical 2 chamber in the specific model.</td>
<td>15</td>
</tr>
</tbody>
</table>
Continued...

### Station 2 Tips and Process:

- Check predefined 10 images that are required and practice them, note these set images can change from year to year so check instructions first.
- 3 identifiers: Name, DOB, address.
- Offer to enter patients name on echo machine.
- The assessor will show you buttons on echo machine and if you can’t find the button you want they will assist you on request.
- Candidate should demonstrate optimizing of gains/dept/ECG/sector width/colour/doppler/focus etc.
- ECG will be on already, but you may need to optimise it.
- Assessor will ask you to do each image, you are timed on a stop watch how long it takes you to acquire each image from when asked.
- You get docked marks for foreshortening apical views.
- Adjust sector widths pre putting colour boxes on valves.
- Demonstrate breathe hold for acquiring difficult apical views if needs be.
- Demonstrate getting pt. to lie flat and bend knees up and breathe hold for sub-costal views.
- Stand alone probe to be demonstrated from 2 views to assess AV flow.
- Assessor may ask you to repeat certain images.

### Performance Competency Criteria

<table>
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<tr>
<th>Performance Competency</th>
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<th>F</th>
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<th>P</th>
<th>Weighting</th>
<th>Guidance</th>
<th>Max Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D ANN modified to show RV with colour Doppler, demonstrating TR regurgitation</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D modified Apical 4 Chamber image demonstrating Colour Doppler assessment of TR if present within required timeframe. Award P if high quality optimized image, B if clinically satisfactory image with limited optimization. F if unable to accurately acquire image although is able to identify remeal measures. F if unable to reproduce image, which reflects the 2D modified Apical 4 Chamber image in the specific model.</td>
<td>9</td>
</tr>
<tr>
<td>2D Subcostal 4 Chamber</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality 2D image in required timeframe. Award P if high quality optimized image, B if clinically satisfactory image with limited optimization, F if unable to accurately acquire image although is able to identify remeal measures. F if unable to reproduce image, which reflects the 2D subcostal 4-chamber image in the specific model.</td>
<td>9</td>
</tr>
<tr>
<td>Blinded CW descending aorta</td>
<td>Pays attention to detail and is able to recognize/acquire a good image</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Acquisition of good quality CW Doppler profile utilizing the Blinded/Unblinded Probe within the required timeframe. Award P if high quality optimized image, B if clinically satisfactory image with limited optimization, F if unable to accurately acquire image although is able to identify remeal measures. F if unable to reproduce image, which reflects the CW Doppler profile utilizing the Blinded/Unblinded Probe in the specific model.</td>
<td>9</td>
</tr>
<tr>
<td>Modification of patient position to optimise image quality</td>
<td>Pays attention to detail and is able to consider manipulation of the patient either positional or with the aid of respiratory manoeuvres</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>Demonstration of manoeuvres to assist in securing high quality echocardiography images in required timeframe. Award P if high quality optimized image, B if unable to demonstrate skills of manipulation in the specific model.</td>
</tr>
</tbody>
</table>

**Pass Criteria:** Candidates must achieve 85 marks which is equivalent to 66% of the total marks available in order to pass this station.

**MAX TOTAL MARKS:** 120
Before station 2 is finished

• The assessor will ask you ‘Would you like to take 5 minutes to repeat any of the images you have taken already?’ (The assessor will not give any hints unfortunately!)

They ask everyone this regardless of whether you have done good or bad. So advise would be to take this opportunity to try any images you were not happy with. If you get a worse image than before you are marked on the previous better image so not to panic if you do worse at this time.

At end of Station 2

• Candidate is asked to leave while marks are counted. Then asked to come back in 2mins later.
• You are told Pass or Fail almost straight away.
• The assessor will ask you about specific images they may not have being happy with and the assessor expects you to discuss them and say how you may have got them better. If you can demonstrate critical analysis on yourself you can redeem yourself somewhat.
• Whether Pass or Fail they will give you advise on how to improve on certain images.
Station 3

Video Cases:

• 5 predefined Video/Digital cases. Will go into detail of each later in this section. (The assessors usually only look at the Aortic stenosis, Myocardial Infarction/RWMA and Mod or Severe AR or MR case, as you have proven your normal in station 2 and have gotten this far).
• Candidate must put cases on a powerpoint presentation on your own lap top playable on the day.
• Candidate must also have reports printed for each and signed.
• Both Video/digital cases and reports must be fully anonymous.
• Measurements on report must match measurements on screen.
• All measurements must be on screen measured in correct place.
• Assessor in general looks for full study, (Minimum dataset), completed + any extra necessary to demonstrate particular pathology case.
• Accurate measurements, and taken from correct part of cardiac cycle.
• Assessor looks for good demonstration of optimisation of gains/depth/sector width/focus/ECG/colour & doppler scales etc.
• Measurements of good standard, eg. Showing Simpsons Rules with good endocardial border definition.

Station 3 continued:

(Discussing your cases with Assessor)

• ASSESSOR EXPECTS YOU TO DISCUSS YOUR PARTICULAR PATIENTS MEDICAL HISTORY AND HOW YOU GOT IMAGES AND DESCRIBE YOUR FINDINGS AS HE GOES THROUGH IT.
• ASSESSOR MAY ASK IS THEIR SPECIAL CONSIDERATIONS NEEDED TO BE TAKEN INTO ACCOUNT WHEN DOING CERTAIN MEASUREMENTS.
• THE ASSESSOR WILL ASK YOU QUESTIONS ON CERTAIN MEASUREMENTS IN REALATION TO YOUR PATIENT. THIS IS WHERE YOU CAN TALK ABOUT YOUR STUDIES MEASUREMENTS AND DEMONSTRATE YOUR CLINICAL KNOWLEDGE OF HOW YOUR ECHO MEASUREMENTS IMPACTS ON THE PATIENTS REPORT AND CLINICAL OUTCOME. THE ASSESSOR WANTS CANDIDATE TO DEMONSTRATE CLINICAL RELAVANCE OF ECHO MEASUREMENTS FOR PATIENT TO PROVE TO HIM YOU ARE AN COMPETANT ECHOCARDIOGRAPHER. (THIS IS VERY IMPORTANT AS THEY NEED TO KNOW YOUR COMPETANT, IN ORDER TO PASS THIS STATION AND THE WHOLE PROCESS).
Station 3, Case 1 Normal:

Station 3, Case 2: Aortic Stenosis
Station 3, Case 3: Regurgitation

Station 3, Case 4: Regional Wall Motion Abnormality
Thank you.

Any questions?