

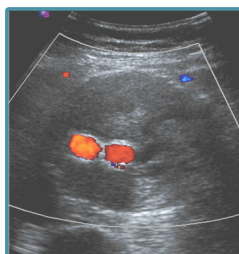
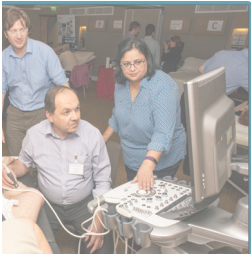


WESSEX DIAGNOSTIC

Over 35 years of medical ultrasound training and consultancy

QUALITY ASSURANCE TESTING OF ULTRASOUND SYSTEMS

2019



OUR SERVICE

Wessex Diagnostic provides an independent and objective evaluation of medical ultrasound equipment performance.

We have been providing comprehensive quality assurance testing of equipment for over twenty years and we are pleased this is now part of the National Care Standards Commission (NCSC) national minimum standards recommendations for Radiology ultrasound services,

Who are we?

Our team is a group of medical physicists, engineers and sonographers with extensive experience in the medical ultrasound field.

What is tested in Quality assurance of Ultrasound Systems?

This testing includes a series of measurements on the B-scan image, the Doppler ultrasound facilities and standard electrical safety procedures to check for leakage current and transducer electrical insulation.

This booklet gives a summary of the tests conducted in each area. Technical Protocols for each are available on request.

Reporting

A full report is provided for each system, in a format that is compliant to the NCSC recommendations.

Contact Helen for more information and a quote: [helen@wessexdiagnostic.co.uk](#)

B-SCAN IMAGE QA

B-scan image Quality Assurance Testing, is undertaken using a RMI 403GS test object.

Stage I: Standard settings are used for the following, which have to be well-defined and reproducible:

- Brightness
- Contrast
- TGC
- Transmitter power
- Receiver gain
- Reject dynamic range
- Pre and post-processing should be as near as possible to those employed in clinical practice

Stage II:

- Horizontal and vertical caliper accuracy
- Axial and lateral resolution
- slice thickness
- Penetration depth - low and high contrast
- Dead zone
- Crystal dropout
- Hard copy

The full B-scan Quality Assurance Technical Protocol is available on request.

DOPPLER IMAGE QA

Doppler Image Quality assurance testing is undertaken using a specially designed Doppler string phantom.

- Velocity direction indication
- Range gate registration
- Direction discrimination
- Maximum velocity estimation accuracy
- Mean velocity estimation accuracy
- Intrinsic spectral broadening

Velocity estimation accuracy

1. The nominal string position and angle are used.
2. Doppler waveforms are obtained with angle correction and the minimum and maximum velocities estimated. This is performed at a range of string velocities, for example 25, 50, 75, 100 cm/s
3. The velocity estimation error is calculated from the equation below:

$$\text{Error (\%)} = \frac{(\text{estimated maximum velocity} - 1) \times 100}{(\text{string velocity})}$$

$$\text{Error (\%)} = \frac{(\text{estimated mean velocity} - 1) \times 100}{(\text{string velocity})}$$

4. The degree equation of intrinsic spectral broadening (ISB) may also be obtained from the equation:

$$\text{ISB (\%)} = \frac{(\text{maximum estimated velocity} - \text{minimum estimated velocity})}{\text{maximum estimated velocity} + \text{minimum estimated velocity}} \times 100$$

Contact Helen for more information and a quote: helen@...

ELECTRICAL SAFETY TESTING

Each system and transducer electrical safety testing is undertaken with a Rigel 277+ electrical safety system to test medical equipment to the standard of the International Electro-Technical Committee (IEC) IEC60601.

Patient leakage current for each transducer to be measured.

1. Inspection of mains parts – mains plug, cable switch and any other visible parts for sign of excessive wear or damage.
2. Mains plug checked for correct wiring, that terminals are secure and fuse is of the correct rating.

The following safety tests are carried using a Rigel safety tester:

3. Earth bonding
4. Insulation resistance
5. System leakage currents.
6. Patient (transducer) leakage currents.
7. Mains on applied parts (transducer)

NEXT STEPS

Pricing structure

The charges are based on a fee per transducer and a fixed price per system for the electrical safety test.

Discounts

There are discounts of 5%, 10% and 15% for 2, 3, 4 or more systems respectively in each hospital and special rates can be negotiated for regional or national agreements.

Location

Our Quality Assurance service is currently available in England and Wales. If you are elsewhere in the UK, please contact us and we can assess on a case by case basis.

For a competitive quote or more information on our independent and objective Quality Assurance service, please contact us:

E: helen@wessexdiagnostic.com

T: +44 (0) 7305 845 478



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2019 Course programme

Join us to take the next steps in your ultrasound career.

Accredited, specialist training courses, with theory and guided practice on a range of ultrasound systems.

Introduction to ultrasound imaging: FAST, MSK, DVT & Vascular	6 CPD	September 10th 2019 <i>(parallel course)</i>	Birmingham, UK
Introduction to 2/3/4D Obstetrics Imaging	6 CPD	September 10th 2019 <i>(parallel course)</i>	Birmingham, UK
Vascular ultrasound imaging	10 CPD	October 8-9th 2019	Birmingham, UK
Venous ultrasound imaging	6 CPD	November 3rd 2019	Royal Society of Medicine, London
Venous surgical procedures using local anaesthetic	6 CPD	October 2019 + regular dates	Queen Elizabeth Hospital, Birmingham

To find out more please see the online programmes,
email info@wessexdiagnostic.com
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