VeriQ ™ Intraoperative TTFM and Doppler velocity measurements - specifically designed for blood flow and graft patency verification.

Cardiac, Vascular and Transplant Surgery Quality Assessment

TTFM and Doppler Velocity Measurements for Intraoperative Graft Patency Verification
Redevelop risk of early graft failure, myocardial infarction or recurrent angina – and provide the highest quality of life for your patients.

VeriQ™ offers both proven transit time flow measurement (TTFM) and Doppler velocity measurements that are specifically designed for intraoperative blood flow and graft patency verification.

The TTFM principle is based on measuring the difference between upstream and downstream transit time of a wide ultrasound beam. The transit time difference is directly proportional to the blood volume flow. This measurement principle gives an accurate quantification of the real time volume flow that compliments the Doppler principle's velocity measurement.

The Medistim VeriQ flowmeter provides an unique three-parameter assessment by the TTFM analysis that includes Pulsatility Index (PI), Diastolic Filling (DF) and Mean Flow. The system can measure up to four flow curves simultaneously. Synchronous ECG and pressure information can also be displayed, to further enhance the understanding of the flow measurements. Thus TTFM provides accurate and systematic assessments of graft patency and flow verification.

The Doppler velocity measurement determines flow velocity and flow direction. It can locate deep-lying vessels and pinpoint exact location and extent of the disease. It allows differentiating arterial from venous flow, accurate assessment of stenosis, and evaluating the severity of distal disease.

Both techniques are better at finding plaque and obstructions than your fingers are. Traditional finger palpation has been demonstrated to be inadequate and even potentially harmful.

Probes to fit a wide range of surgical applications

**CABG**

Recently TTFM, and the VeriQ in particular, have received recommendation for routine use during CABG procedures. The NICE recommendation supports the clinical evidence, suggesting reduction of early graft failure, stroke, myocardial infarction or recurrent angina, as well as an estimated cost saving of more than £115 per patient (in UK).

Performing flow measurements with the VeriQ is the quickest and most accurate way to verify graft patency while the patient is still in the operating room.

**Vascular**

VeriQ can assist with vascular reconstruction, from anastomosis assessment to blood flow verification – in procedures such as carotid endarterectomy, femoropopliteal bypass surgery, or flow measurements of AV fistula.

**Transplant**

Intraoperative assessment of organ transplants is often determined by verifying anastomosis quality and adequate perfusion, which can be easily documented using flow and Doppler techniques – improving outcomes and avoiding post-op complications and costly reinterventions.

**TTFM**

- Sizes for vessels 1.5-16 mm in diameter – additional sizes on request
- Designed to meet worldwide sterilization standards
- The probes are factory calibrated and require no further calibration during use
- Available with and without handle, for various surgical applications
- The TTFM QuickFit probe family has a flat face designed for good vessel contact without the need for aqueous gel.

**Doppler**

- 7.5 MHz Doppler Probe with built-in 45° angle
- Supplied with removable handle and stabilizer cups for hands-free use
- Specifically designed for cardiovascular procedures
- Can be used to sweep areas; does not have to fit around the vessel
- Reposition by simply sliding the probe across the surface

Reduce risk of early graft failure, myocardial infarction or recurrent angina – and provide the highest quality of life for your patients.
The VeriQ™ system gives surgeons the ability to easily search for and detect obstructions and flow irregularities, as well as quantify blood flow and verify graft patency – intraoperatively.

**Searching**

Doppler velocity

The Doppler probe can be fixed to the surface of a beating heart without the need for a stabilizer.

Locate intramural arteries easily by sweeping the probe across the approximate target area.

Differentiate arterial from venous flow.

**Detecting**

Stenosis grade

Assess stenosis and the severity of distal disease by moving the Doppler probe along the length of the vessel. The grade of stenosis is calculated and displayed.

Strategize graft placement and surgically intervene to provide optimal flow. After grafting, analyze the function of the anastomosis for possible sources of occlusion or compromised blood flow.

**Verification**

Real-time data

Obtain instant insight into the dynamics of graft function, and determine patency for intraoperative quality assurance, using proven TTFM in real time.

The established numeric indices Pulsatility Index (PI), Diastolic Filling (DF%) and Mean Flow, the basis of our 3-parameter assessment method, provide an accurate insight into the dynamics of graft function.

**Documentation**

Analysis and reporting

Store data, obtain accurate flow analysis, and produce a single documented report. This can be used as evidence of graft patency, as records for referring physicians, and for preparing publications.

These quality assurance measurements are simple and not time-consuming, and are shown to improve both the early and the long-term results, avoiding costly reinterventions.
Medistim VeriQ™ System

System features | Flow & Pressure channels | Part number | Measurement modes
--- | --- | --- | ---
19” touch screen | • 4 Flow, Doppler, 2 Pressure, 2 AUX | VQ4122 | 2D – B Mode
Onboard color printer | • 2 Flow, Doppler, 1 Pressure, 1 AUX | VQ | PW – Pulsed Wave Doppler
500GB patient archive | • 2 Flow, 1 Pressure, 1 AUX | VQ | USB output
No calibration required | Part number Measurement modes

Guidelines for Flow

1. Transit Time Flow Measurement (TTFM) should be used to verify graft patency, as recommended by guidelines issued jointly in 2014 by the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS). Guidelines on myocardial revascularization. European Heart Journal (2014) doi:10.1093/eurheartj/ehu278b.

2. Medistim’s VeriQ™ system recommended by NICE for routine clinical use (Nov 2011): The National Institute for Health and Clinical Excellence (NICE) has accepted the health economics derived from routine usage of the VeriQ system for assessing graft blood flow during coronary artery bypass graft (CABG) surgery, compared to clinical assessment alone. NICE reports an estimated cost saving of more than £115 per patient. NICE also support the clinical evidence, suggesting reduction of early graft failure, stroke, myocardial infarction or recurrent angina. Medical technologies guidance MTG8. Issued November 2011.

Please refer to the User Manual for indications, contraindications, warnings, precautions, and further specifications and descriptions. Specifications may be changed without notice. For a list of flow probes for other applications, contact your Medistim representative.

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