Strain Imaging
Made Practical For Stress Echo

The Stress Echocardiography Test
A stress echocardiogram (or stress echo) is a routine study for the evaluation and management of Coronary Artery Disease (CAD). During a stress echo, images of the heart are acquired before and after exercise or pharmacological stress. Those images are subsequently compared by the cardiologist. In the presence of CAD, the affected regions of the heart will have abnormal wall motion and a potentially reduced ejection fraction.

Difficulties in Stress Echo
Today, most stress echo studies rely on subjective visual wall motion assessment and ejection fraction estimation. When the wall motion is adequately imaged, stress echocardiography is an excellent test for the diagnosis and management of cardiac disease. However, the diagnostic quality of the studies vary, with up to 30% being un-interpretable due to a variety of technical issues.

Reduced image quality leads to difficulties seeing subtle wall motion changes. Because of the complexity, this test requires significant training and experience to interpret. Being a subjective test, diagnostic accuracy and inter-reader variability is an issue, especially as study quality degrades.

The more challenging a study is to read the longer the interpretation time and lower the accuracy of the interpretation.

What is Strain Imaging?
Strain imaging refers to several quantitative tissue motion measurements including strain, strain rate, velocity, and displacement. This may also include the assessment of ejection fraction and associated functional measurements. Over thirty years of research has demonstrated that strain imaging provides important information that is not available from standard grayscale B-mode images and can assist clinicians in improving stress echo interpretation.

Why add Strain Imaging to Stress Echo?
Although strain imaging may be useful for all interpretable studies, the greatest benefit will be for the studies that are challenging to read and have lower accuracy.

Strain Imaging can provide repeatable assessment of regional heart mechanics and consistent global functional parameters (EF and global strain). This added information can reduce interpretation time on the visually demanding cases and increase confidence for experienced and novice readers. The quantified data provided can also reduce variability between readers.

Strain imaging has been shown to have clinical value for other applications such as heart failure, cardio-oncology, cardiomyopathies, and cardiac resynchronization therapy (CRT).

Despite the benefits, strain imaging has not received broad acceptance as the software solutions have been research-oriented and cumbersome to use clinically, restricted to certain ultrasound systems, and lacked robustness. Additionally, these solutions have not been designed specifically for clinical stress echo interpretation.
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EchoInsight® for Stress Echo, a new standard for interpretation and reporting
Epsilon Imaging is delivering strain imaging and workflow tools to improve confidence, standardization and efficiency in stress echo interpretation. EchoInsight for Stress Echo includes features for global and regional function measurement, ejection fraction calculation, wall motion vector maps, wall motion scoring and streamlined reporting.

Epsilon’s Underlying technology
Epsilon Imaging’s proprietary TissueTrack™ speckle tracking technology enables multi-dimensional tracking of natural acoustic markers within tissue without the angle dependence and frame rate limitations associated with Tissue Doppler methods. Unlike many speckle tracking solutions, Epsilon Imaging’s fast TissueTrack algorithms process all speckle in the image allowing for robust performance of strain imaging data and works with radio-frequency (RF) or DICOM Cine Loop data.

Practical Application
EchoInsight for Stress Echo is designed with the clinician and practice needs in mind. Epsilon Stress Echo software provides global and regional measurements and motion visualizations, as well as assessment of myocardial borders for the calculation of ejection fraction and left ventricle volumes. Along with the benefits of strain imaging, EchoInsight for Stress Echo is intuitive and streamlines interpretation and reporting of studies. EchoInsight for Stress Echo is vendor neutral and easily integrates into the healthcare information technology (IT) infrastructures.

Ultimately EchoInsight for Stress Echo saves time, improves confidence and streamlines cardiac diagnostic workflow.

About Epsilon Imaging
Epsilon is creating a suite of vendor-neutral visualization and analysis applications that enhance, standardize, and streamline interpretation and reporting of echocardiography.

Learn more about enhancing your cardiovascular program with EchoInsight for Stress Echo visit www.epsilon-imaging.com

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